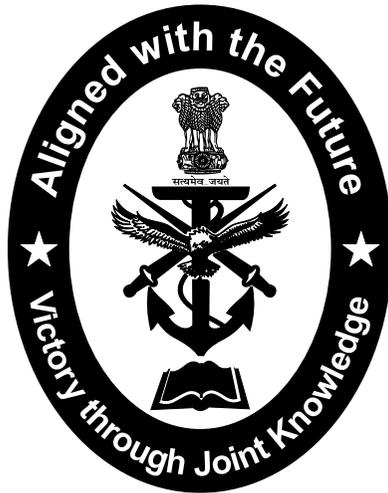


**The Multi-Domain
Battle Concept:
A Preliminary
Assessment**

The Multi-Domain Battle Concept: A Preliminary Assessment

By

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Foreword

In 2017, the U.S. Armed Forces publicly released documentation regarding what was referred to as a “difficult to fracture” concept, which was labelled “the Multi-Domain Battle concept”. In explanatory notes published prior and post the release of this documentation, it was asserted that this concept aimed to replace the AirLand and Air Sea Battle concepts that had, till then, underwritten the doctrine and operations of the U.S. Armed Forces.

Given the focus on “multi-domains”, “convergence” “integrated capabilities”, and “extended battlespaces, among other themes and topics, CENJOWS decided to undertake a preliminary analysis of the same. It was deemed important to do so because, as the authors point out, the championing of the Multi Domain Battle concept by the U.S. Armed Forces marks a significant shift in at least two ways. First, it marks a recognition that service-specific competencies may be applied – with positive results – within non-traditional operational spaces, thereby contributing to the complexification of the battlespace for the adversary, which leads, in turn, to the creation and exploitation of battlespace advantages. Secondly, and perhaps unwittingly, the Multi-Domain Battle concept appears to also provide an analytical framework within which to think through the problematics of a condition of – as two Chinese military theorists put it – “unrestricted warfare”.

From the Indian point of view, the first point holds special significance as we gradually design, develop and equip ourselves to take advantage of the “multiple domains” within which modern warfare is waged. Indeed, we are, in a sense, ideally positioned to take advantage of this and related developments. As we modernize ourselves, our weapon-design and development activities can be guided in a way that the use and exploitation of non-traditional domains is a design-feature rather than a later “add-on” capability. This will allow us to not only harmonize our diverse inventory of weapon-systems and platforms, it will also spur us to develop innovative doctrines and operational-tactical models, which will, in due course, enable us to operate within “extended battlespaces” and to “converge” the individual capabilities of weapon-systems to create significant strategic-operational advantages.

The second point, as the authors point out, allows us to develop an analytical framework within which the contours of “future warfare” may be worked out and acted upon. This will require us to, as the authors note, develop a nuanced understanding of how the “globalized world” also opens up the prospect of what the Chinese military theorists refer to as a condition of “unrestricted warfare”. Recent developments in the U.S. domestic political arena are indicative of the depth and extent to which the “unrestricted warfare” may be waged in which armed conflict is but one component.

The net conclusion one can draw from this preliminary assessment is that we are gradually segueing into a condition where, in military terms, we are witnessing the evolution of weapon-systems and platforms that are being designed to operate in domains other than which they have been traditionally deployed. This will, as mentioned above, have its concomitant impact on doctrine, training and ultimately on force-employment models. We further learn that the underlying principles that are driving this evolution also apply outside the narrow operational-tactical space and, as such, contributes to the development of a “concept of warfare” for the 21st Century.

The aim of this paper is to stimulate discussions on the topic of Multi Domain Battle and its extended concept, Multi Domain Warfare. It will be necessary in any subsequent detailed study to also understand how and in what ways the Indian Armed Forces, in particular, and the Indian strategic-military establishment, in general, may be impacted by contending with adversaries who bring such concepts and operational designs to battle. By the same token, subsequent studies should undertake more detailed analyses on how the Indian Armed Forces may creatively enhance such concepts and develop solutions that serve the national interests of India.

(Vinod Bhatia)
Lt Gen
Director CENJOWS

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Prepared by

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October 2018

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“If people use information-centric bio-weapons to attack a bio-computer, should this be counted as bio-warfare or information warfare?”

- *Unrestricted Warfare, 1999, p18*

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Introduction

The Multi-Domain Battle (MDB) concept as championed by the U.S. Armed Forces, particularly the U.S. Army, aims to supplant the Air Land and Air Sea Battle concepts.¹ This aim is underwritten by a growing appreciation that “[p]otential adversaries are closing the technology gap with the United States and developing strategies to keep U.S. forces at bay.”² Further, it has been assessed that “separatist forces [are] able to gain air superiority via the land, without even an air force... [they are] able to take down large land forces with a combination of electronic warfare, cyber, autonomous systems, drones, et cetera – not with a close-in battle.”³ In short, the conclusion is that the U.S. strategic-military establishment requires “urgently” – depending on who is asked – “a very difficult-to-fracture concept.”⁴ By positioning the MDB concept as a successor to the Air Land and Air Sea Battle concepts, while the U.S. strategic-military establishment appears to be in the process of designing a “new” battle concept, it is also - at least implicitly - acknowledging that either (1) the previous two concepts have been “fractured” or run the imminent danger of being so, and/ or (2) they are now being increasingly rendered obsolete/ irrelevant given the technological and operational solutions/ counter-measures that “near-peer competitors but also separatists and other lower-end threats” are developing, adapting to, and deploying. The MDB concept is thus envisioned as “a more complex concept” that will expand the operational scope and reach of the US strategic-military establishment

thereby potentially thwarting the operational parity that near-peer competitors and other lower-end threats are alleged to be acquiring with growing alacrity.⁵

Clausewitz had observed, “everything in war is very simple, but the simplest thing is difficult”. Perhaps, following in a similar vein, though the MDB concept may yet prove to be difficult to actualize, as a concept, it is relatively simple to grasp. For our purposes, it is enough to observe that the basic idea is to “synchronize cross-domain fires and manoeuvre in all the domains to achieve physical, temporal and positional advantages.”⁶ This requires “mov[ing] beyond the mere synchronization of joint capabilities to the complete integration of capabilities”, which will allow, for example, “anti-air capabilities...coming from a ... submarine or anti-ship cruise missiles might be coming from an Army unit on the ground.”⁷ But, as the concept’s proponents hasten to clarify, “the multi-domain battle concept isn’t just about better integrating the operations of the services...It also requires each individual service to expand its areas of responsibility.” The security environment, it is claimed, “*will require all the services to exert influence in non-traditional domains.*”⁸ Consequently, “the multi-domain battle construct will require the U.S. Defense Department to rethink how its forces are organized, trained and equipped.”⁹

Why is this necessary? Because, it is argued, “[w]e’re not organized that way, we don’t necessarily train that way... Our equipment doesn’t necessarily operate that way.”¹⁰ The proponents of this concept offer some illustrative examples

of how they envision the concept playing out under combat conditions. Thus, for example, they assert, “[the] Army has got to be able to sink ships, neutralize satellites, shoot down missiles, and hack or... [damage] the enemy’s ability to command and control its forces.”¹¹ Such a posture, it is claimed, will allow for a re-imagining of the battlespace, which is somewhat colourfully described while referring to an Anti-Access/ Area-Denial (A2AD) complex – specifically, the Chinese Anti-Ship Ballistic Missile (ASBM) system - as “a block of Swiss cheese”, which will allow for seeking out gaps in the defensive designs of an adversary and attempting to trigger a systemic collapse of the adversarial defensive system by unleashing a lethal symphony of firepower and other non-contact, but equally disruptive, means.

Against this backdrop, this paper sets itself two objectives. First, it will argue that the MDB concept – particularly at the operational-tactical level - can and should be considered as being an offensive counter-part to the Anti-Access concept of warfare.¹² To this end, using the example of the Chinese efforts to design and deploy an ASBM system in the Pacific theatre, which is often held up as being a material manifestation of the anti-access concept, we will abstract from it the core logic that underwrites its design-intent and will place it against what we suggest is its “natural-born” counterpart – the MDB concept. In this way, this paper will argue that if we consider Stephen Biddle’s “modern system of warfare” to be Janus-faced, then the MDB and A2/AD concepts represent its two “most modern” antagonistic faces.

The second objective is more subversive. This paper will suggest that there may be an alternate way to view the import of the Multi-Domain battle concept. This, however, will require us to draw a very different genealogy which links the MDB concept not to the Air Land and Air Sea battle concepts as its proponents claim, but to some of the more radical and speculatively-oriented theorizations regarding the Information-Age RMA, the theory of Network-centric Warfare, and the Force Transformation project. Without contradicting or discounting its operational-tactical relevance as described in the previous sections, this paper will suggest that the MDB concept represents an effort – knowingly, or otherwise - to implement some of the cardinal principles of the theory of Network-centric Warfare and, as such, can also be placed squarely within the context of the erstwhile Force Transformation project. But to recognize and appreciate this will involve, among other things, re-viewing the MDB concept not simply in terms of a “battle concept” (like, say, the Air Land Battle concept), which limits its potential to the operational-tactical level, but also by casting it against a wider canvas.

To signify this, while remaining true to the multi-domain flavour, let us refer to such an “extended concept” as “Multi-Domain Warfare” (MDW). When considered in this latter extended sense, the MDW concept, while retaining its battle-centric operational flavour, appears to correspond - and respond - to what some Chinese military officers/ theorists, unofficially, have referred to as the concept of “unrestricted warfare”.¹³ While not openly discussed, and often arbitrarily dismissed in western military literature, the concept of “unrestricted

warfare” remains implicit within the Information-Age RMA literature. As we will see, the “unrestricted warfare” concept also invokes the notion of multiple domains, but it does so in a much broader sense as compared to the MDB concept. Within the “unrestricted warfare” construct, “domains” are not simply physical and electronic, they also include populations, economies, financial and other socio\politico-technical systems.¹⁴ Considered in this light, an extended understanding of the MDB concept, which we relabelled as MDW, may be considered to be an emergent concept of warfare that is responsive to the “unrestricted warfare” concept.

In pursuit of these aims, this assessment will stage itself through three movements. First, it will present a brief account of the contextual backdrop surrounding the emergence of the MDB concept; second, it will discuss the MDB concept and the A2AD concepts as the two faces of Biddle’s “modern system”; third, and perhaps more controversially, it will suggest that there is a viable case to consider the MDB concept in an “extended sense” – i.e., as MDW - which allows for its re-consideration as an emergent strategic-operational response to the concept of “unrestricted warfare”, and as an emergent analytical framework with which to address the strategic-security challenges of the 21st Century. By way of a conclusion, this essay will reiterate that while it is necessary to understand the MDB concept in its operational context, that is, as the “most modern” of Biddle’s modern system, whose operationally antagonistic counterpart is the concept of Anti-Access/ Area Denial, it is equally important to pay attention to its prospects and potential above and beyond its operational confines.

I. The Context: The “modern system” of warfare

To recognize and appreciate the significance of the MDB concept, it is necessary to first take a step back and pay attention to its antecedents. While the available literature does not overtly mention it, the MDB concept can be said to be grounded within a concrete reality, which Stephen Biddle refers to as the “modern system” of warfare.

Biddle describes the “modern system” of warfare as being “a tightly interrelated complex of cover, concealment, dispersion, suppression, small-unit independent maneuver, and combined arms at the tactical level, and depth, reserves, and differential concentration at the operational level of war”.¹⁵ It is important to bear in mind that this “modern system” of warfare emerged within the context of a “modern battlespace” that was, and continues to be, marked by an intensity of firepower – direct and indirect – that is growing exponentially.¹⁶ Biddle provides us with some stark examples. He observes that “both speed and apparent lethality have increased dramatically since 1900, and are continuing to do so...”¹⁷ Using an impressive set of data, Biddle demonstrates that

the maximum tank speeds for designs fielded between 1916 and 1991...shows an average increase of 0.5 m.p.h (miles per hour) per year, or a more than tenfold improvement across the interval as a whole; with the increasing use of helicopters on the battlefield after the 1960s, the effective increase in the speed of the most mobile ground forces is arguably at least fiftyfold since 1916.¹⁸

His observations regarding the exponential growth of the range of the lethality of weapons-systems are equally enlightening. His analysis of the relevant data-sets suggests that ground and air weapon systems have seen improvements

...from a maximum range of less than 100 meters for 200mm armour penetration by direct antitank weapons in the 1930s to more than 6000 meters by 1980; from less than 10 kilometers for tube artillery in 1900 to more than 250 kilometers for missile artillery in the 1990s; and from an unrefueled combat radius of under 500 kilometers for ground attack aircraft in the 1920s to more than 2000 kilometers today.¹⁹

Given this, it is not surprising that “[s]uch tremendous growth in speed and lethality creates a powerful incentive to find ways of limiting one’s vulnerability to such weapons.”²⁰ Biddle’s evidence shows that this “modern system” of warfare emerged during the First World War where the freedom to maneuver – indeed, to even consider its very viability - was increasingly curtailed by the intensity of direct and indirect artillery firepower leading to the infamous “trench warfare” conditions that marked the better part of that war.²¹

Max Weber, in his landmark study, *The Protestant Ethic and the Spirit of Capitalism*²², used a curious phrase, *stahlhartes Gehäuse*, which Talcott Parsons famously translated as “the iron cage” but which, in recent years, has been challenged and retranslated as “shell as hard as steel”.²³ Regardless, as Bohme points out, “[w]hat he [Weber] had in mind were the constraints that human beings have to impose on themselves

to make the rationalization of...life...possible.”²⁴ In the context of this paper then it could be said that “the modern battlespace” is akin to an “iron cage” within which military operations and, in an extended sense, military affairs - since 1918 - have unfolded. The growing intensity of firepower is, in a way, “rationalizing” the battlespace by imposing a set of constraints that restrict freedom of action at the tactical, operational and strategic levels. Equally, tactics and doctrine, which have evolved under such conditions and as a response to them, have also contributed to the “rationalization” of the battlespace. This has led to, as Biddle points out, a growing focus on “force employment” and, consequently, on doctrine and training.²⁵ It is also worth bearing in mind that “the modern battlespace”, in addition to the growing intensity and lethality of firepower, is also being increasingly draped with dense meshes of communication and surveillance networks, which seek to “illuminate” it thereby making the task of, in Biddle’s words, “limiting one’s vulnerability” to the intensity of firepower and the growing coverage, accuracy and depth of the mesh of surveillance networks a highly problematic one.

One can see the evolution of this “iron cage” over approximately the last one hundred years. As mentioned above, the first evidence of the material reality of the “iron cage” can be said to have emerged during the First World War. The freedom to manoeuvre that military forces had enjoyed from the time of the Napoleonic Wars to the Franco-Prussian War of 1870 was severely constricted when faced with the growing role of the artillery.²⁶ But this state of affairs did not halt efforts to break out of this “iron cage”. As the imperatives of the emergent

battlespace imposed themselves on the combatants of the First World War, simultaneously, efforts were being made to identify optimal ways and means to “break-out” from within the growing constraints that “the modern battlespace” was imposing.²⁷ Most famous of these were the German efforts, commonly known as ‘infiltration tactics’ or von Hutier tactics, which later informed the peculiar (for the time) style of the Wehrmacht’s military operations as evidenced especially in the early years of the Second World War.²⁸ Additionally, though originally initiated by the British, the fundamentals of tank/mechanized warfare were also being explored by the major European powers, which also count as efforts being made to recover the element of mobility that was deemed to have been lost since the emergence of the “iron cage” of the “modern system” of warfare.²⁹

Given our specific interest relating to the evolution of the MDB concept, it is important recognize what may be considered to be an “organizing principle” that appears to have underwritten the German military operations in May 1940. Most overtly, of course, the Wehrmacht’s operations ensured the defeat and surrender of a feared adversary. More importantly, however, they also give us an insight into the advantages that accrue when considering an adversary in “systemic terms”, and in the designing of military operations that take into account a systemic view of an adversary’s strategic-military’s war-waging potential. When considered in this light, the Wehrmacht’s offensive operations – though they were never overtly assigned this objective, which is reiterated by the genuine exclamations of surprise expressed by some of its frontline commanders³⁰ – may

be said to have provoked a *systemic paralysis*, which broke the coherence of the French military command thereby triggering the collapse of the French ability to wage war.³¹ Interestingly, Soviet military theorists, particularly Isserson, Tuchachevsky, Triandafillov, among others, were already working – even in the late 1920s and early 1930s – on a military-operational model that took into account – albeit tentatively at the outset – a systemic consideration of an adversary.³² This was reflected with increasing sophistication in various subsequent versions of the Soviet theory of “deep battle” wherein the aim was (and remains) to target what are deemed to be critical nodes of an adversary’s defensive system in a bid to bring about a systemic collapse of his war-waging abilities. Considered in the context of the first two decades of the 20th Century, this was a highly advanced concept and one which underwrites the early discussions on “revolutions in military affairs” in the late 20th and early 21st Centuries. Our interest, however, is restricted to the perception of an adversary’s offensive and defensive capabilities in systemic terms for it is in this specific context that the MDB concept assumes its real significance.

Considering an adversary’s offensive and defensive capabilities from a systemic point of view enabled Soviet military theorists to refine and evolve the basic concepts underlying the German offensive operations, which they used to great effect in the latter stages of the Second World War. Nevertheless, the overhang of the “modern battlespace” remained.³³ As the Second World War drew to a close, it was evident that while successfully negotiating the “modern battlespace” was already a military-operational imperative, the German model had lost much of its

innovativeness, but not its relevance. The blunting of the edge of innovativeness was not because of some weakness of the model, but because, for the most part, virtually all the antagonists in the war had - to some degree or another - adapted to it and had employed it under combat conditions.³⁴ In other words, “blitzkrieg”, by May 1945, was not so much a “German thing”. It was employed as much by the Germans as it was by the Allies.³⁵ Moreover, the “modern battlespace” had also evolved in the interim. As the world segued into the phase of the Cold War and with the dawn of the nuclear age, in the context of conventional inter-state warfare, the “modern battlespace” continued to make its presence felt. While the density and intensity of firepower increased, so did increasingly sophisticated networks of command, control, communications and surveillance. With the rapidly increasing range of weapon-systems, coupled with emergent advanced capabilities like beyond-visual-range attack capabilities, sophisticated battlespace management systems, the growing ability to leverage the maritime and space domains, the concept of an “extended battlespace” began to make its appearance.³⁶ Marked by precision-guided weapons, and overwhelming intensities of targeted firepower, the operational-tactical aim was not so much to deter or defeat masses of an adversary’s field formations, but to target key links and nodes of his military-operational systems thereby engineering a system-wide military-operational collapse and, by extension, a strategic-political defeat. Such an aim also brought in its wake the need for an “integrated” effort given that, in the interim, “the extended battlespace” was expanding to include the Space, Electro-magnetic, and undersea domains which, by then, had begun to acquire increasing importance.³⁷

Much of this was observed and commented on by Soviet military theorists in the 1970s and early 1980s who referred to this transformation of the battlespace in terms of a military-technical revolution.³⁸ Indeed, their model of the Recon-Strike-Complex may be said to be a consequence of such emergent capabilities, which they perceived in, among other things, the Assault Breaker program of the U.S. military.³⁹ Soviet theorists understood the nature and import of the transformation that was taking place in “the modern battlespace” wherein massed firepower was (and continues to be) replaced by firepower of equal intensity, but delivered precisely. They recognized the fearsome effects of *integrated firepower* – across domains – that could be brought to bear on an adversary within an “extended battlespace” thereby constraining – to the extreme – his operational flexibility. Such assessments appear to validate Biddle’s emphasis on the criticality of “force employment” – both as a tool with which to assess military capabilities and effectiveness of adversaries, *and* as a sphere of activity that demands constant training, doctrinal development and innovation – in the context of “the modern battlespace”.

These assessments, of course, form the bedrock of the intense debates on revolutions in military affairs, Information-Age Warfare and Network-centric War. Critically, the common thread that runs through these debates is an appreciation – explicit and implied – of the harsh and uncompromising nature of “the modern battlespace”. Thus, it is within this context that the MDB concept must be considered and its significance assessed.

II. What is the Multi Domain Battle concept?

The rationale underwriting the aim to develop a “difficult-to-fracture” concept is perhaps best summarised by Perkins and Holmes who are, it is important to note, Commanding Generals of the U.S. Army Training and Doctrine Command, and of the Air Combat Command, respectively.

Our potential adversaries have studied our battlefield successes since the First Gulf War. It is now clear that they have learned three macro lessons. First, do not let the United States and its allies gain access to the area of operations. Once established, we have the operational advantage and can provide overwhelming logistic, firepower, and command and control (C2) support. Second, try to fracture our operational framework by isolating the air domain from the land domain in order to defeat air and land forces in sequence. Third, fix us and do not allow our forces to maneuver and bring all of our elements of combat power (including leadership) to bear in order to gain a position of advantage.⁴⁰

Thus, it is deemed imperative that a concept be designed “for this changing world” wherein

[f]uture adversaries will possess significant integrated defense capabilities, integrated air defenses, and long-range fires, as well as sophisticated intelligence, surveillance, and reconnaissance (ISR); offensive and defensive information; electronic warfare; and cyber capabilities...[and wherein]... [i]t will no longer be possible to maintain total domain dominance in all domains all the time.

To this end, the MDB concept, while not “unprecedented”,

...is about using capabilities in more innovative ways to overcome new challenges. Multi-Domain Battle allows US forces to outmanoeuvre adversaries physically and cognitively, applying combined arms in and across all domains. It provides a flexible means to present multiple dilemmas to an enemy and create temporary windows of localized control to seize, retain and exploit the initiative. Employing Multi Domain Battle, Army and Marine forces with cross-domain capabilities provide a credible capability to deter adversary aggression, deny enemy freedom of action, overcome enemy anti-access and area denial (A2AD), secure terrain, compel outcomes, and consolidate gains for sustainable outcomes.⁴¹

When considered in this way, the MDB concept, thus, principally involves responding to a set of strategic-military *and* operational-tactical concerns, which may be listed as under:

1. How to deter the escalation of violence, defeat adversary operations to destabilize the region, and turn denied spaces into contested spaces should violence escalate?
2. How to manoeuvre from contested strategic and operational distances and with sufficient combat power in time to defeat enemy forces?
3. How to conduct deep manoeuvre by air, naval, and/or ground forces to suppress and destroy enemy indirect fire and air defense systems and reserve forces?

4. How to enable ground forces to defeat the enemy in the Close Area?
5. How to consolidate gains and produce sustainable outcomes, set conditions for long-term deterrence, and adapt to the new security environment?⁴²

It also presumes not only a “systemic” understanding of the form and function of the adversarial force, but also a “map of battle” spread out across time and space, which may be represented by the diagram below.⁴³

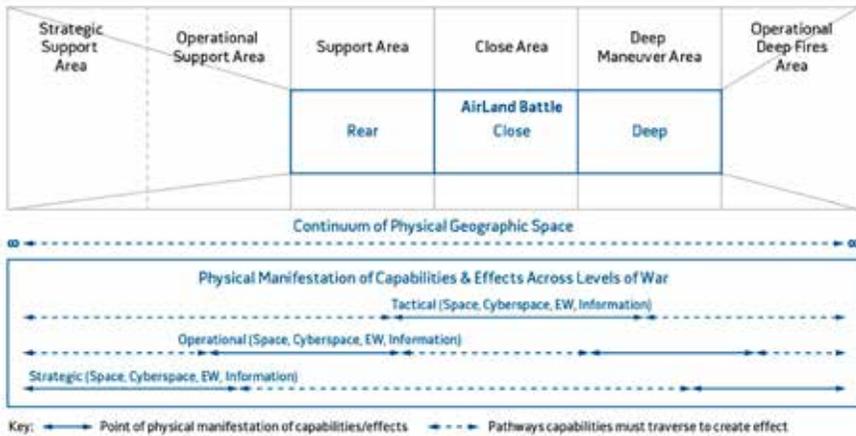


Figure 1: Outline of the “extended battlespace”⁴⁴

As will be evident, the basic design-principles of this “concept” of war-fighting harkens back to the theory of “deep battle” that the post-1945 Soviet Armies had adopted in Europe. The primary cause of concern for the NATO forces on the Central Front in Europe was to be able to deter and/ or defeat the heavy flow of Soviet combat elements, which were deeply echeloned such that they would not overwhelm the numerically inferior

defensive forces fielded by the NATO armies. Thus, the intent to, in Don Starry’s words, “extend the battlespace” was already in place.⁴⁵ This is quite clearly evident in the diagram above, which displays “the extended battlespace” in its entirety.

The MDB project may thus be considered as being the most recent of efforts to “extend the battlespace” in a bid to reach and engage with even the rearmost areas of an adversary’s “space of operations”, and to interdict and/ or deter forces before they move into and initiate combat in what is referred to as the “close area”. This is represented by the diagram below.

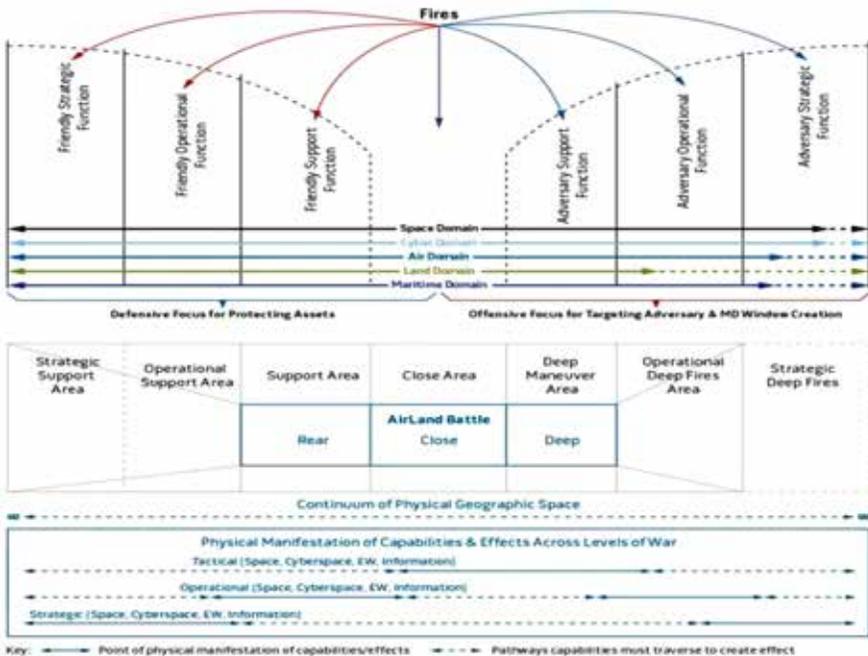


Figure 2: “Deep Battle/ Operations”⁴⁶

Thus, it would not be far-fetched to say that the MDB concept envisions a comprehensive engagement with an adversarial military *system* with the explicit aim of fragmenting enemy forces by a combination of means which may be sourced from multiple and varied domains. In this way, the U.S. Armed Forces claim, they will be able to achieve a much higher degree of synergistic combat capabilities which they can bring to bear on an adversary.⁴⁷

What then are the perceived benefit of the MDB concept and operational framework?

[it] allows commanders to visualize the posture and convergence of capabilities across domains, environments, and functions required to manoeuvre. Technological developments and the integration of a wider variety of capabilities into operations, along with increased adversary capabilities, drive the requirement for a new operational framework to succinctly describe the operating environment and organize friendly operations. The operational framework is a visualization tool that enables commanders to position and converge capabilities to produce windows of advantage that enable freedom of manoeuvre to defeat enemy systems and achieve friendly objectives outright. [Thus], the operational framework accounts for the extended ranges and complex relationships of all friendly and enemy capabilities across domains and levels of command (tactical, operational, and strategic).⁴⁸

In sum, therefore, “[t]he Multi-Domain Battle concept describes friendly force actions across domains, linked in time,

function, and physical space to defeat the adversary's systems in competition, armed conflict, and a return to competition."⁴⁹ In this connection, it is interesting to note that one of the issues that arises in the context of the MDB concept is the role of the ground forces.

Given that the MDB concept relies very heavily on sensors, precision-strike weapon-systems, and the mobilization and employment of long-range weapon-platforms, it could be argued that since these capabilities are already available in the Air, Space and Naval Commands of the U.S. Armed Forces, what role can and will the ground forces, i.e., the U. S. Army, play? The official documentation begins by posing the "military problem": "How will U.S. ground forces, as part of the Joint Force and with partners, deter and defeat increasingly capable peer-adversaries intent on fracturing allied and Joint Force cohesion in competition and armed conflict?" It answers this question by asserting that

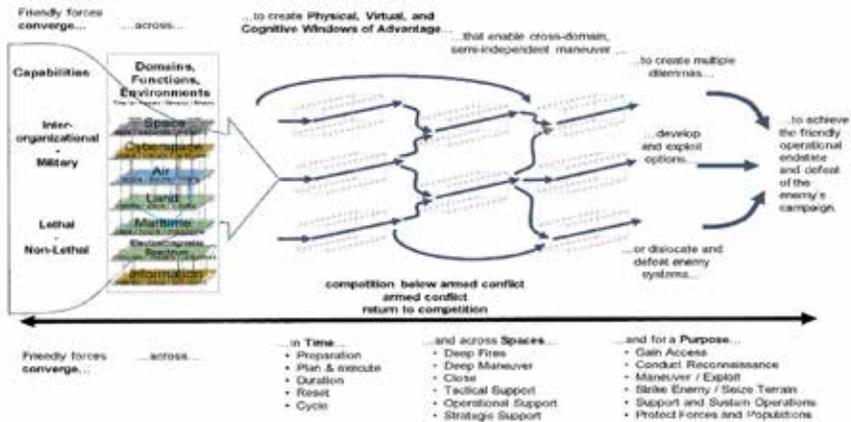
U.S. ground forces, as part of the Joint Force, conduct Multi-Domain Battle to deter and defeat increasingly capable adversaries in competition, armed conflict, and a return to competition by calibrating force posture; by employing resilient, cross-domain capable formations that can manoeuvre on the expanded battlespace; and by converging capabilities across multiple domains, environments, and functions to create windows of advantage that enable manoeuvre.⁵⁰

From this it is clear that there is not one but at least two critical elements underwriting the MDB concept: "jointness"

and “convergence”. While “jointness” is a well-known concept in strategic-military affairs and is integral to the development and deployment of a modern military force, “convergence” is an interesting addition to the mix. “Convergence”, in the official documentation, is defined as

“...the integration of capabilities across domains, environments, and functions in time and physical space to achieve a purpose. Multi-Domain Battle requires converging interorganizational and military, as well as lethal and nonlethal capabilities, across multiple domains and environments in time and space to create windows of advantage that enable the Joint Force to manoeuvre or gain a position of advantage.”⁵¹

This is not simply a matter of positioning troops and equipment before or during a battle. Rather, the aim is to employ battle formations to create “windows of opportunity and of advantage” within and across the “extended battlespace” to create (and exponentially expand) the freedom of manoeuvre. The unstated but obvious pre-requisite, of course, is “a sophisticated understanding of the relationship between time, space, and purpose.”⁵² The basic concept of “convergence” may be represented by the diagram below.

Figure 3: Convergence⁵³

In this way, the MDB concept appears to claim a fundamental and critical difference from the battle concept(s) that it aims to replace. In effect, the difference lies in the *nature* of the “intervention/ participation” of capabilities and weapon-systems across “domains”. Thus, the U.S. Army claims that the aim is to be able to orient ground forces to intervene in, say, a sea battle with the use of weapon-systems that are usually not a part of their arsenal like, for example, anti-ship missiles. Alternately, ground forces with offensive cyber warfare capabilities, if positioned appropriately, may be able to play a pathfinder’s role by targeting and neutralizing information systems that control enemy air defense systems thereby allowing the air force to conduct air strikes with relative impunity. As we have seen above, given the source of the MDB concept – i.e., the U.S. Army - the emphasis of the literature released thus far suggests that it appears to be almost a plea for the U.S. Army’s continuing relevance. While this is made more than obvious if we consider the following statement: “...

the Army has got to be able to sink ships, neutralize satellites, shoot down missiles, and hack or... [damage] the enemy's ability to command and control its forces",⁵⁴ nevertheless, the MDB concept – considered in its abstract form – is intended to be an “all arms” and “all capabilities” affair.

It is also worth pointing out that perhaps one of the more interesting elements of the MDB concept is the insight that it gives us into the “vision of the battlespace” that underwrites it. Recall here Admiral Owens’ “system of systems” concept.⁵⁵ It is worth reminding ourselves that the Admiral was well versed in the Soviet theorization of the Recon-Strike-Complex which, as we have noted previously, was a distillation of what in its ordinary form was the Soviet theory of deep-strike operations of Georgi Isserson and Mikhail Tukhachevskii. While the basic tenet of the Soviet theory was maneuver warfare (with a growingly important and refined role being accorded to Operational Maneuver Groups (OMGs)), the conceptual premise, however, was grounded in “systems theory” which, in the Soviet context, drew heavily from the “scientific materialism” of Marxist-Leninist theory. Roughly speaking, this Soviet theory of warfare – “deep battle/ strike” - was based on the understanding and rendition of an adversary in terms of “systems of capabilities” consisting of nodes and links. The basic aim of such a theory was principally to attack and neutralize (and/ or destroy) selected nodes and links of such an adversarial system thereby triggering a breakdown of the feedback and control loops that maintained and fostered the consistency of the system. This would, or so it was conjectured, lead to the eventual “stretching” of the enemy system leading

to a systemic collapse. The key point here is to recognize the unmistakable “systems-theoretical” approach underwriting the assessment of and engagement with an adversary’s military and combat capabilities within the MDB concept.

Thus, it would not be incorrect to state that the MDB concept implicitly presumes a confrontation – spread out across multiple domains - against “a system” comprising of nodes and links under combat conditions. Consideration of an enemy’s capabilities in this way allows for an expansive understanding of the comprehensive combat capability of the adversary. Simultaneously, it also allows for the identification and targeting of not simply critical nodes and links, but also of “portals”, “windows of opportunities”, and “pathways” *that lead into* the adversarial system to expose and to lay open to interdiction deep vulnerabilities. It is important to recognize that this visualization of the adversary, and of the battlespace, is multi-dimensional in nature, which is evident in how an “anti-access” system – here with specific reference to the Chinese ASBM system - is described as a “block of Swiss cheese” with holes rather than as an impenetrable iron dome.⁵⁶ Thus, for example, an “anti-access” system (which includes, but is not limited to the Chinese ASBM project) may be considered to be an assemblage of a number of overlapping “zones” wherein adversarial combatants experience calibrated levels of deterrence. These levels of deterrence, which culminate in a kill-zone, are contingent on not only the capabilities of the weapon-systems that constitute the “anti-access” assemblage, they also depend to a very large extent on how these capabilities are integrated, deployed, and the cumulative “effects” that such

capabilities can generate. In effect, an “anti-access” system aims to present an asymmetric counter to *the potential* of a concerted offensive assault. This asymmetry is expressed and actualized by designing concept-technology pairings which aim to subvert the critical capabilities of the offensive weapon-systems that are expected to underwrite the offensive assault.

When considered in the above context, the MDB concept appears to be designed to degrade the “deterrent potential” of an “anti-access” system, and to render ineffective its “kill-chain”. While the conventional approach would be to neutralize a defender’s “anti-access” system with overwhelming force, the MDB concept seeks to selectively target - in a bid to degrade and/ or destroy - key capabilities of the “anti-access” system. Such efforts would include, among other things, the targeting of satellite constellations that coordinate and “integrate” such systems; corrupting or otherwise distorting the critical data links that provide terminal guidance to the key weapon-payloads; targeting ground-based radar systems, interfering with the electro-magnetic spectrum etc. Given this, it would not be wrong to say that the MDB concept serves as the emergent counter-part of the “anti-access” concept. In the section that follows, we will have occasion to examine how the MDB and the “anti-access” concepts may be said to represent the two “most modern” antagonistic faces of “the modern system” of warfare.⁵⁷

III. *The two “faces” of the “modern system” of warfare: The MDB and “anti-access” concepts*

Much has recently been made about the alleged Chinese claim

to target a U.S. carrier battlegroup in the Western Pacific Oceans. The whole point of this alleged capability is to create and maintain an “anti-access” posture – as a deterrent-in-being – vis-a-vis the critical arm of the U.S. military capability that is used to project power. In short, if reports about this Chinese capability are true, then they represent a direct threat to the Mahanian framework within which the U.S. naval and maritime interests are articulated and operationalized. Andrew S. Erickson and David D. Yang suggest that, as such, then this emergent Chinese capability could be a potential “game-changer” – a physical and material expression of “Shashoujian” which, in its barest of essences, may be represented in the following manner:

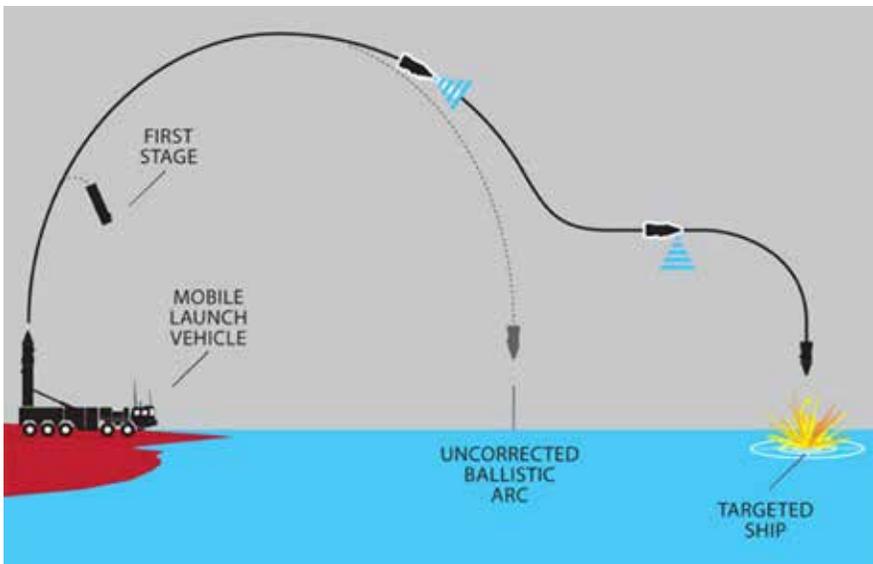


Figure 4: The Anti-Ship Ballistic Missile Concept⁵⁸

It involves the launching of a missile – in the case of China, the missile would most likely be the DF-21D Intermediate

Range Ballistic Missiles (IRBM), which is a modified version of the Chinese IRBM mainstay, the CSS4 DF21 series – against a U.S. naval carrier-group. The U.S. Department of Defense has confirmed the existence of the DF-21D land-based ASBM system, which is the world’s first and the only one of its kind.⁵⁹ By combining manoeuvrable re-entry vehicles (MaRVs) with a terminal guidance system, the DF-21D is capable of targeting a slow-moving aircraft carrier battle group from a land-based mobile launcher. The maximum range of the missile is reputed to be 3,000km, possibly achieved by carrying a smaller payload.

What is so significant about such a capability? Why is it considered to be a “game changer”? Superficially, while it may appear that there is nothing compelling about an ASBM system, a closer examination, shows that a missile-warhead hurtling towards a relatively slow-moving target – at a minimum speed of 4.2 km/s – is well-nigh unstoppable. This means that, if accurately plotted, an American aircraft-carrier, which is almost always ensconced within the protective defensive perimeter laid out by her supporting Aegis-equipped naval combat group, would be unable to defend itself against such an attack. It is equally important to appreciate that the targeting of the carrier-group does not necessarily have to be a hit-to-kill operation in the first instance. While it would, most likely, be a costly proposition, it is conceivable that a first wave of missile attacks may target the electromagnetic spectrum in a bid to degrade the carrier-group’s situation-awareness, its Command and Control (C2) and other battle networks as a preparatory stage for a hit-to-kill attack. Note also how the ASBM system can be said to be implicitly presuming an “extended battlespace”

which, in the naval context, is volumetrically immense covering vast spaces of the hydrosphere. The vastness of this battlespace is further augmented by the Space domain in which the vital space assets that provide early warning and surveillance, targeting cues, and communications hubs reside and which, in turn, also present themselves as viable, indeed critical, targets as each of the adversaries struggle to degrade the other's war-waging capabilities.

The Chinese ASBM initiative thus appears to fit the criteria of a "battle scenario" that corresponds to what the MDB concept aims to interdict. But first, it will be helpful to revisit the meaning of the term "anti-access/ area denial". Sam Tangredi observes:

[d]enying access to an enemy is a natural objective for any defender and should be considered an integral component of any military campaign. However, the terms anti-access and area denial – as currently used – are specifically meant to denote a strategic approach intended to defend against an opponent that is judged to be of superior strength or skill in combat operations...Therefore, the objective of an anti-access or area denial strategy is to prevent the attacker from freely operating within the region and maximizing its combat power.⁶⁰

Following Tangredi's observation, Erickson writes:

It is not hard to see why China is deploying an anti-ship ballistic missile (ASBM). Specifically, China's leaders strongly desire the ability to both deter advocates of

independence on Taiwan and to prevent the United States from intervening effectively in the event of a future Taiwan Strait crisis or any other Near Seas conflagration. Beijing has defined its immediate strategic concerns clearly in this regard. More broadly, China is interested in achieving an ASBM capability because it offers the prospect of limiting the ability of other nations, particularly the United States, to exert military influence on China's maritime periphery, which contains several disputed zones of core strategic importance to Beijing. ASBMs are regarded as a means by which technologically limited developing countries can overcome asymmetrically their qualitative inferiority in conventional combat platforms.⁶¹

With the key intent being to limit the ability of the United States to exert military influence on China's periphery, the ASBM project is, in this sense, a deterrent, which appears tailor-made as a counter-part of the MDB concept. This can be represented in the following manner:

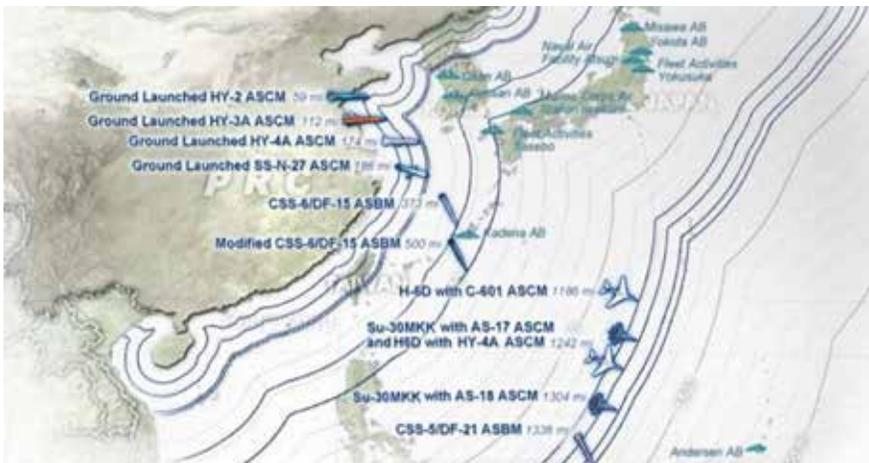


Figure 5: Chinese deterrent capability in the Western Pacific⁶²

But an effective ASBM capability comes with some prerequisites. As noted above, for such a capability to be effective, it presumes (1) the design and operationalization of a robust C4ISR network (2) a canopy of space-based assets (principally SAR satellites that can penetrate cloud covers (and other natural phenomena that obscure clarity) to cue the ASBM system (3) a robust Communications network (4) a transportation network that can enable the movement of the ASBM assets in a bid to increase survivability and for targeting purposes (5) air, naval and missile assets that can increase the volume (in addition to precision) of fire to overwhelm any local area defence that the carrier-group may employ. From this, it is evident that the ASBM system thus requires a plethora of military assets that are spread out across multiple domains, namely, Space, Air, Sea, Land. To this one must add both tactical cyber-warfare capabilities (computer-network attacks) and a broader information warfare capability (principally aimed at distorting the image of the battlespace that enemy commanders operate with) both of which account for the electromagnetic/ cyber domain. Cast in this way, the ASBM project itself takes on the form of a multi-domain assemblage of weapons and capabilities spread out over the vast expanses of an “extended battlespace”.

This was brought into sharp relief by an observation, which we have referenced above, made by Admiral Locklear III, Commander, US Pacific Command in Nov 2013. He noted:

We need to look at it [China's anti-access defense] not as an iron dome but as a block of Swiss cheese that gets more dense as you get closer to the center. ... The way you deal

with it is you find the holes in the Swiss cheese and widen them. Those holes in the Swiss cheese ... that's where our ... money ought to go. You've got to buy the things that increase our asymmetric advantage, and we have many, many, many of them. [Everything else], let it go, because we're just throwing money into places that aren't going to make a difference.⁶³

This is a particularly acute and penetrating observation and it gives us an insight into how U.S. strategists are tending to look at the future conduct of war. In the first instance, while the Admiral's invocation of "an iron dome" may simply be to contrast it with the cratered and perforation-ridden "block of Swiss cheese", it is interesting to note that the term "Iron Dome" (in Hebrew, *kippat barzel*) is also the nomenclature assigned to a very specific weapon-system, namely, a mobile C-RAM (counter-rocket/ artillery/ mortar) and all-weather air-defence system (ADS), which was jointly developed by Rafael Advanced Defence Systems and Israel Aerospace Industries.⁶⁴ What is even more interesting is that following its initial operational deployment in 2011, it was being reported that, by March 2012, the system had "[u]pped] its interception rate to over 90%"⁶⁵ leading to its being recognized as "[a] missile shield that works".⁶⁶ Considered in operational terms, this success rate is phenomenal, which hints at its "near impenetrability". As a consequence, when deployed efficiently, it poses a considerable threat to the effective performance of critical air and ground elements of an adversary's offensive capability. In turn, this threat to the very short range (artillery) and short range (rockets with ~70kms range) offensive

capabilities of an adversary multiplies when the Iron Dome is combined with other existent and emergent elements to form what can be a theatre-wide missile and air defence system.⁶⁷ The promotional image below depicts the system in operation.

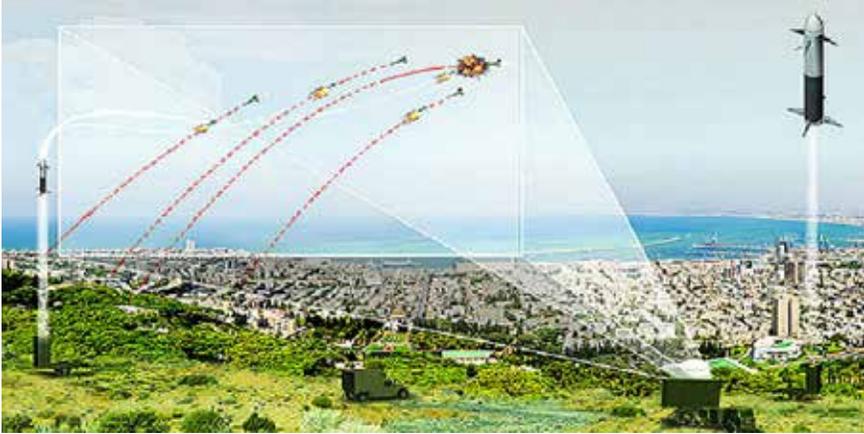


Figure 6: The Iron Dome System⁶⁸

As an aside, it could also be said that the Weberian “iron cage” finds its material – and martial - instantiation in the “Iron Dome” system. Further, it also appears to powerfully reinforce Biddle’s notion of the “modern system” of warfare, albeit in more tightly-focused tactical-operational terms.

One can thus appreciate why the Admiral may have chosen to compare “the iron dome” with “a block of Swiss cheese” in the specific context of the Chinese ASBM system/ capability. Unlike the “Iron Dome” system, the Chinese ASBM system is a much looser assemblage of capabilities spread out over a much larger geo-hydro-space. In other words, it is truly a system/ capability that operates within the construct of “the extended battlespace”. It also aims to accomplish a very

difficult operational task, namely, that of identifying a moving target against a vast operational canvas. Moreover, unlike the “Iron Dome” system, which is most effective at the tactical level, and whose effects are, for the most part, designed to be felt at those levels, an ASBM system serves as an operational-tactical expression of an “anti-access” strategy, whose effects are *first* registered at the strategic-cognitive level, i.e., *as a source which increases the complexity of the battlespace and as a potent deterrent* - and subsequently at the operational-tactical levels.⁶⁹ Thus, while the defence of a weapon-system like the “Iron Dome” is much easier to organize (conversely, it also serves as a focused target for interdiction), the ASBM system, which is, by design and necessity, spread out over large spaces and across multiple domains, is more difficult to defend thus allowing an attacker to develop multiple vectors of attack.

In effect, therefore, what the Admiral is drawing our attention to is a *perceived* critical *systemic-level* weakness of, specifically, the architecture of the Chinese ASBM system, namely, *penetrability*. Unlike the Iron Dome, the Chinese ASBM system is thus perceived as offering a greater number of portals or “windows of opportunities” by which the system can be penetrated. It is important to recognise and appreciate the nuanced *concept of operation* that the Admiral seems to be underscoring, namely, *to disintegrate the ASBM system from within*. Note that the aim is to *penetrate* the system, *not to overwhelm it*, with a full and frontal assault. It is *both* the act of penetrating the system at carefully chosen points *and* of targeting key nodes and links *within and intrinsic* to the adversarial system that destabilizes it thereby rendering

it increasingly ineffective and, ultimately, leading to its *disintegration*. Diagrammatically, this may be rendered in the following manner:

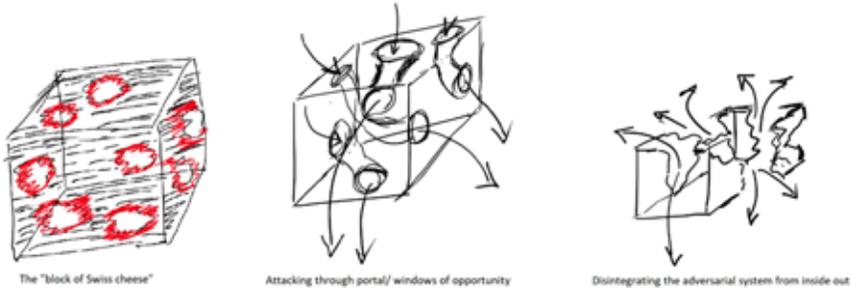


Figure 7: Disintegrating “the block of Swiss cheese”⁷⁰

This leads us to a second consideration, namely, how is this to be achieved?

As we have seen, the basic architecture of the ASBM system comprises of, essentially, three core elements: the missile (with its manoeuvrable warhead) and associated infrastructure (launch facilities, power back-up systems etc.), radar systems (including the critically important OTH (Over-the-Horizon) radars and constellations of space-based radars), which are tasked with locating, identifying, and “fixing” targets with increasing granularity and, most importantly, a comprehensive C4ISR system, which integrates the other elements of the system and is comprised of numerous information and data links and a “processing” capability which converts the data acquired through the above-listed (and other measures) into “actionable” intelligence. This may be represented by the image below:

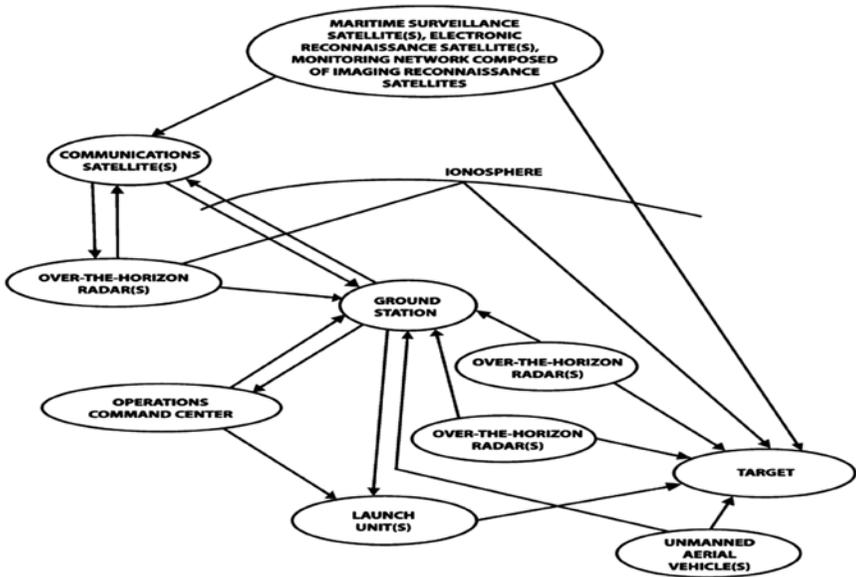


Figure 8: Constituents of an ASBM system⁷¹

The key element involved in any attempt to degrade and neutralize the ASBM system is to identify its “kill-chain”, which gives it its combat potential. Thus, it is not surprising to find U.S. strategists and tacticians ruminating along the following lines:

In order for one to conduct any kind of attack, whether it is a ballistic missile or cruise missile, you have got to find somebody. Then, you have got to make sure it is somebody you want to shoot. Then, you’ve got to track it, you’ve got to hold that track. Then, you deliver the missile. We often talk about what I would call hard kill—knocking it down, a bullet on a bullet—or soft kill; there is jamming, spoofing, confusing; and we look at that whole spectrum of operations. And frankly, it is cheaper in the left-hand side of that spectrum.⁷²

“To attack the ASBM kill chain, Navy surface ships, for example, could operate in ways (such as controlling electromagnetic emissions or using deception emitters) that make it more difficult for China to detect, identify, and track those ships. The Navy could acquire weapons and systems for disabling or jamming China’s long-range maritime surveillance and targeting systems, for attacking ASBM launchers, for destroying ASBMs in various stages of flight, and for decoying and confusing ASBMs as they approach their intended targets. Options for destroying ASBMs in flight include by (including the planned Block IIA version of the SM-3), accelerating the acquisition of the Sea-Based Terminal (SBT) interceptor (the planned successor to the SM-2 Block IV terminal phase BMD interceptor), accelerating development and deployment of the electromagnetic rail gun (EMRG), and accelerating the development and deployment of shipboard high-power free electron lasers (FELs) and solid state lasers (SSLs). Options for decoying and confusing ASBMs as they approach their intended targets include equipping ships with systems, such as electronic warfare systems or systems for generating radar-opaque smoke clouds, that could confuse an ASBM’s terminal-guidance radar. One observer has argued that active defenses alone are unlikely to succeed, and that the U.S. Navy should place stronger emphasis on passive defenses.”⁷³

It is quite evident from the sections quoted above that even before the formal declaration of the MDB concept, the orientation to combat the threat posed by the ASBM system

had already assumed a multi-domain posture.⁷⁴ The focus on obfuscating the ASBM system's ability to "detect, identify, and track"; interdicting supporting "long-range maritime surveillance and targeting systems"; destroying "ASBMs in various stages of flight...[by]... developing and procuring improved versions of the SM-3 BMD interceptor missile" (among other similar systems); "equipping ships with systems, such as electronic warfare systems or systems for generating radar-opaque smoke clouds, that could confuse an ASBM's terminal-guidance radar"; and, the direct targeting of Chinese space-based assets (principally radar constellations) suggests that the core objective of "jamming, spoofing, confusing" and, ultimately, of the "hard kill—knocking it [the ASBM] down..." is a project that spreads across the air, sea, space, and electromagnetic domains. Implicit in the above is the focus on what is perceived to be the weakest link in the ASBM's "kill-chain", namely, the C4ISR system that underwrites its effectiveness. When considered in this way, Admiral Locklear's comparison between an "iron dome" and "a block of Swiss cheese" - the latter representing the ASBM system - is not out of place.

It is worth reiterating that while the ASBM system is not a "new" concept *per se*, given that it employs technologies that have been available since the late 1950s, and the fact that this option was under active consideration by both sides of the Cold War, nevertheless, it demonstrates how an effective "concept-technology" pairing can thwart - or at least prove to be a deterrent to - the hitherto strategic-offensive posture that the U.S. Navy has historically maintained in the region.

Considered in this light, the MDB concept then serves two functions. First, it serves as an operational-level framework within which solutions to the operational-tactical problem posed by the ASBM system – specifically, the threat to the U.S. carrier battle-groups – may be designed and executed.⁷⁵ Secondly, the MDB concept also serves as a “solution” to a higher strategic-operational problem, namely, that of “denial of access” and the denial of the freedom to exploit that access to impose one’s will on an adversary.

As we have seen, according to Biddle, “the modern system of warfare” is “a tightly interrelated complex of cover, concealment, dispersion, suppression...independent maneuver, and combined arms at the tactical level, and depth, reserves, and differential concentration at the operational level of war”.⁷⁶ Our brief review of the Chinese efforts to develop and field a credible ASBM system suggests that given the “extended battlespace” that it seeks to operate within, it responds to the basic criteria of “the modern system of warfare”, particularly within an anti-access strategic-operational context. Similarly, the MDB concept also invokes the core elements of “the modern system” with a special emphasis on precision-targeting across domains. Both these concepts, while operating over and across an “extended battlespace”, aim to exploit “cover, concealment, dispersion, suppression”, and seek to retain the independence of maneuver while bringing to bear “differential concentrations” of force and of firepower on an adversary. Thus, within the analytical construct of the theory of Anti-Access Warfare, while the Chinese ASBM system aims to deny the U.S. Navy access to a position from which to launch and

sustain effective and impactful offensive military operations, the MDB concept seeks to counter this by seeking, as we have seen, “portals or windows of opportunities” to attack the ASBM “system” – *principally at the systemic level* - in an effort to degrade and, ultimately, to disintegrate it. With the array of increasing modern technologies being employed to operationalize and field these contending *concepts* of battle, it would not be incorrect to suggest that they - the Chinese ASBM system, which represents an innovative material instantiation of the Anti-Access Warfare concept, and the MDB concept, which represents an emergent material response to the former - form the two most modern faces of “the modern system of warfare”.

That said, it worth noting that we would be doing the MDB concept a disservice if we ignore its scope and potential as a *meta-concept* that addresses the much larger (but also more traditional) military problem of “anti-access”, particularly in the 21st Century. In what follows, we will examine how the MDB concept responds to the larger strategic-level problem of “anti-access” by juxtaposing it with the Chinese theory of “unrestricted warfare” (which is also not a “new” phenomenon).

IV. Multi Domain Warfare (MDW): Extending the MDB concept in the context of “unrestricted warfare”

As we have seen, most commonly, the direct lineage of the MDB concept is drawn from the AirLand (and AirSea) battle concepts which, in turn, were designed as counter-operational concepts stemming from an appreciation of the threat posed by Soviet ground and air forces - principally, on the Central

Front in Europe - during the early and middle years of the Cold War. This lineage, however, restricts our understanding and appreciation of the MDB concept to a specific military-operational problem posed by emergent instantiations of Anti Access Warfare concepts of which the Chinese ASBM system is a prime example.

In 1999, two serving Chinese military officers published a curiously titled text, *Unrestricted Warfare*, in which they observed, “...war itself has now been changed...it can no longer be carried out in the ways with which we are familiar...war will no longer be what it was originally...the metamorphosis of warfare will have a more complex backdrop.”⁷⁷ They then go on to describe the contours of emergent forms of warfare by highlighting “the financial attack by George Soros on East Asia, the terrorist attack on the U.S. embassy by Usama Bin Laden, the gas attack on the Tokyo subway by the disciples of the *Aum Shrini Kyo*...[and]...the havoc wreaked by the likes of Morris Jr. on the internet”⁷⁸ They observe that “the degree of destruction is by no means second to that of a war” and that *these instances represent* “semi-warfare, quasi-warfare, and sub-warfare, that is, *the embryonic form of another kind of warfare*”.⁷⁹ Thus, they assert,

[i]f we acknowledge that the new principles of war are no longer “using armed force to compel the enemy to submit to one’s will,” but rather are “*using all means*, including armed force or non-armed force, military and non-military, and lethal and non-lethal means to compel the enemy to accept one’s interests.” This represents a change. A change

in war and *a change in the mode of war occasioned by this*. So, just what has led to the change? What kind of changes are they? Where are the changes headed? How does one face these changes?...⁸⁰

Note the pointed reference to the phrase “using all means”, which reinforces the notion of “unrestrictedness” that the authors apply to war and its conduct as is evident from the very title of their book.⁸¹ Further, note their emphasis on how “a change in the *mode of war* occasioned by this” is taking place, which leads them to also suggest that this “new” *mode* of war (i.e., “unrestricted warfare”) requires the conceptualization, development and deployment of new types of capabilities. From this it would appear that the authors were – even in 1999 – already calling for a rather radical form of transformation in strategic-military affairs.

For our purposes, it is helpful to acquaint ourselves more intimately with what the authors mean when they use the word “unrestricted” in the context of war and its conduct. In their own words:

War in the age of technological integration and globalization has eliminated *the right of weapons to label war* and, with regard to the new starting point, has *realigned the relationship of weapons to war*, while the appearance of new concepts, and particularly new concept of weapons, has gradually blurred the face of war. Does a single “hacker” attack count as a hostile act or not? Can using financial instruments to destroy a country’s economy be seen as battle? Did CNN’s broadcast of an exposed corpse of a U.S.

soldier in the streets of Mogadishu shake the determination of the Americans to act as the world's policeman, thereby altering the world's strategic situation? And *should an assessment of wartime actions look at the means or the results?* Obviously, proceeding with the traditional definition of war in mind, there is no longer any way to answer the above questions. When we suddenly realize that all these non-war actions may be new factors constituting future warfare, we have to come up with a new name for this new form of war: *Warfare which transcends all boundaries and limits, in short: unrestricted warfare.* If this name becomes established, this kind of war means that all means will be in readiness, that information will be omnipresent, and *the battlefield will be everywhere.* It means that *all weapons and technologies can be superimposed at will,* it means that all boundaries lying between the two worlds of war and non-war, of military and non-military, will be totally destroyed and *it also means that many of the current principles of combat will be modified, and even that the rules of war may need to be rewritten.*⁸²

While it is sobering today to read such an assessment, which was originally made in 1999, a couple of themes which are of particular relevance to us are easily identifiable. Thus, for example, the authors pointedly note that increasingly “technological integration and globalization has eliminated *the right of weapons to label war* and...has *realigned the relationship of weapons to war*”. This roughly corresponds to what is being proposed in the context of the MDB concept, albeit at the operational-tactical level. As we have seen, the

MDB concept calls for the imaginative and innovative use of weapon-systems *outside* their traditional domains. This, in effect, will result in – as the Chinese authors put it – a ‘realign[ment] [of] the relationship of weapons to war’ and to its conduct. More confirmation is evident when the authors assert that “all weapons and technologies can be superimposed at will”. We take this to mean that in “the future” that the authors invoke in their writings, weapons and technologies will not be constrained by domain-centric concerns; rather, they will be effective across domains, which is a line of thinking that also resonates powerfully with the notion of “convergence” that underwrites the MDB concept.

Intriguing though these overlaps may be, it is important to bear in mind that such overlaps between the “unrestricted warfare” concept and the MDB concept are, strictly speaking, incongruous. This is because (1) while the former is a strategic-level construct, the latter oscillates between two lower levels of analysis, namely, the strategic-operational and operational-tactical levels; (2) consequently, while the former spans across, in the authors’ terms, “the military and non-military” spheres, the latter is a strictly “military” concept; (3) further, the understanding of “domains” that the concept of “unrestricted warfare” invokes is markedly different from that invoked by the MDB concept, which may be represented by the diagram below.

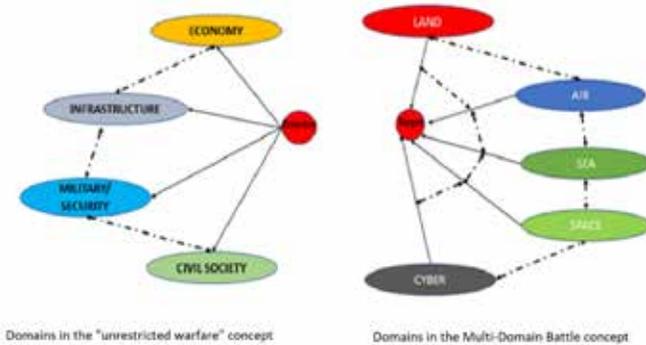


Figure 9: Understanding “domains” differently⁸³

There is, however, a way by which this incongruity may be eliminated. This is possible if, as we alluded to above, the MDB concept is considered in a wider context, more specifically, as a *concept of warfare* instead of its current narrower battle-centric (operational-tactical) sense. This led us to posit a higher-order concept, Multi-Domain Warfare (MDW), wherein, without disturbing the internal logic of the MDB concept, we widened the scope beyond the strategic-operational context to include a “battlefield [that] will be everywhere.”⁸⁴ But this, as mentioned above, requires us to also understand and use the word “domain” differently. Thus, in the context of the higher-order concept of Multi Domain Warfare, “domains” include, but are not limited to, the geophysical and electromagnetic categories. In the MDW context, “domains” parallel those invoked by the “unrestricted warfare” concept. This allows us to comfortably juxtapose the MDW concept with that of “unrestricted warfare”. It is important to note that this higher-order/ meta-concept – Multi Domain Warfare - does not deviate from or contradict the core principles embodied within the original MDB concept. Rather, it takes those principles

and applies them at a higher register, thereby registering itself as a conceptual counterpart of the concept of “unrestricted warfare”. The operational principles which apply to the MDB concept are equally applicable to its extended meta-concept, MDW. Thus, for example, one of the key features of the MDB concept is to seek “windows of opportunities” to penetrate a defensive complex at the operational-tactical level. In the context of the MDW concept, the aim – to seek “windows of opportunity” – remains the same except for the fact that these and similar attempts are made not simply at the operational-tactical level, but across the entire spectrum of engagement possibilities spanning both the military and non-military spheres. The diagram below highlights the linkage between the MDB concept and its higher-order version, the MDW concept.

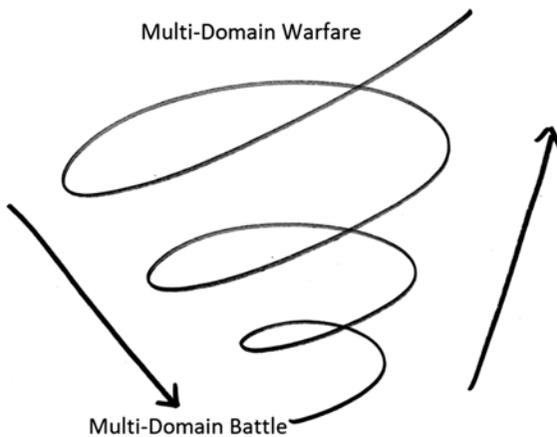


Figure 10: Linking the tactical to the strategic-operational⁸⁵

Our aim in juxtaposing the concepts of “unrestricted warfare” concept and Multi Domain Warfare – the latter being a higher-order version of the MDB concept - is to highlight *the emergence*

of two concepts of warfare, which share a significant degree of congruence and overlap. As meta-strategic concepts, they share similar concerns and their focus of interest exceeds the traditional strategic-military domain. They also share another very interesting aspect, which is worth examining in some detail.

The authors of *Unrestricted Warfare* make a pointed reference to two broad types of combat conditions, which they somewhat colourfully list as “Fighting the Fight that Fits One’s Weapons” and “Making Weapons to Fit the Fight”.⁸⁶ They claim that this “show[s] the clear demarcation line between traditional warfare and future warfare, as well as pointing out the relationship between weapons and tactics in the two kinds of war”.⁸⁷ This is an important consideration in the context of not simply the higher-order concept of MDW, but also at the level of the MDB concept. As the authors point out, as a general rule, strategic-military establishments, globally, try to avoid combat situations/ conditions wherein their comprehensive military-combat capabilities (expressed in terms of military hardware, strategy, doctrine, tactics and training) are at a disadvantage. And, since it is not always the case that such ideal conditions will be available to take advantage of, strategic-military establishments strive to invest in a range of capabilities – including designing and developing “agile systems” - in a bid to account for most contingencies. But there is a more pernicious side to this. In effect, as the authors observe, this “reflects the involuntary or passive adaptation of the relationship between man to weapons and tactics.”⁸⁸ This is because “only after one first has a weapon does one begin to formulate tactics to match

it. With weapons coming first, followed by tactics, the evolution of weapons has a decisive constraining effect on the evolution of tactics.”⁸⁹

When considered in the context of the MDB concept, we can see how an attempt is currently being made to break out of this bind. As we have seen, particularly with reference to the efforts of the U.S. Army, there is a growing intent to take weapon-systems out of their traditional and domain-specific operational contexts and to employ them in innovative and, potentially, unexpected ways. Similarly, with the Chinese ASBM system we find a concerted bid to use a “concept-technology” pairing to devise an operational-tactical option which, while not “new”, is certainly innovative and “unexpected”. But these attempts also remain ensconced within a cognitive framework that is heavily dominated by individual weapon-systems which guide tactical and operational considerations. As we move from the operational-tactical levels to the higher-order concepts of “unrestricted warfare” and “multi domain” warfare, we find that a blurring of the link between “man to weapons and tactics” taking place. As the authors of *Unrestricted Warfare* don’t hesitate to point out, when considered in terms of macro-categories such as “society” and “mankind”, “everything that can benefit mankind can also harm him. This is to say that *there is nothing in the world today that cannot become a weapon*, and this requires that our understanding of weapons must have an awareness that breaks through all boundaries.”⁹⁰ In other words, it would appear that what the authors are suggesting is that *the world-as-such is potentially weaponizable*. This is perhaps, though dark in its implications, one of the clearest

articulations of the “multi-domain” nature of the emergent battlespace that the concept of “unrestricted warfare” invokes. But, it is equally important to recognize how these underlying principles also approximate the fundamental logic of the MDB concept, and our expanded higher-order variant of it, MDW, where the aim is to generate and apply specific effects – relative to specific circumstances and situations – across the spectrum of engagement possibilities. If in the context of the MDB concept, which plays out at the operational-tactical level, this involves, as the literature asserts, the use of weapon-systems (like the use of anti-ship missiles by suitably trained U.S. Army elements) from outside their traditional domain, then it is reflective of how the logic of “engineering” capabilities outside domain-centric restrictions, albeit in its nascent stages, is playing out. These efforts, as we observed above, remain beholden to weapon-systems and thus are restricted by the possibilities afforded by the weapon-systems. But in its high-order application, when confronting a truly “extended battlespace”, where, as the authors of *Unrestricted Warfare* observe, “everything that can benefit mankind can also harm him”, designing “new concepts of weapons” becomes a distinct possibility.

The call to “rethink how we wage war” is not a new one. In the late 1990s and early 2000s, U.S. military thinkers and strategists were already revisiting the phenomena of “revolutions in military affairs” while simultaneously trying to understand and work through the implications of the rapid advance of technology, particularly, information technology. This led to a concerted effort to develop what we now recognize as the

“theory of network-centric warfare” (NCW), which was not so much a battle-concept (like the MDB concept) or indeed, “not narrowly about technology, but broadly about an emerging military response to the Information Age.”⁹¹ In an observation that is starkly reminiscent of some of the implications of the “unrestricted warfare” and multi-domain warfare concepts, the NCW theorists remarked:

NCW is about human and organizational behaviour. NCW is based on adopting a new way of thinking – network-centric thinking – and applying it to military operations. NCW focuses on the combat power that can be generated from the effective linking or networking of the warfighting enterprise. It is characterized by the ability of geographically dispersed forces...to create a high level of shared awareness that can be exploited via self-synchronization and other network-centric operations to achieve commanders’ intent.⁹²

Already we can see how elements of what we have labelled as MDW are already present in the theory of NCW. This led us at the outset to suggest an alternate genealogy for the MDB concept, which we said can also be traced to the theory of NCW and not necessarily to the AirLand Battle concept.⁹³ The benefit of drawing this parallel genealogy is evident in our being able to juxtapose the higher-order concept of MDW with the concept of ‘unrestricted warfare’ and thus to offer it, in the words of the NCW theorists, as “an emerging military response to the Information Age.”

Conclusion

Given our assessment thus far, it is only fair that this report concludes by revisiting what was offered as the fundamental motive underwriting the conceptualization, design, presentation and, now increasingly, operationalization of the Multi Domain Battle Concept, namely, to conceptualize and design “a very difficult-to-fracture concept.”⁹⁴

It will be recalled that the MDB concept seeks to replace the Air Land Battle concept, and it is in this context that it is referred to as being, possibly, “a very difficult-to-fracture concept”. Interestingly, a glance at recent U.S. military operations between 1999 and 2015 suggests that where large formations were involved, the emphasis on combined (or, as is more in fashion, “joint”) operations is obvious, which is one of the fundamental organizing principles of the AirLand Battle concept. Thus, it requires us to ask (1) whether or not the MDB theorists are insinuating that the AirLand Battle concept is “fractured” and (2) is the MDB concept indeed “difficult to fracture”?

The authors of *Unrestricted Warfare* point out that while the

“Air-land battle” was originally strategy devised...to stymie the enemy when dealing with the masses of Warsaw Pact tanks that could come pouring out like a flood at any time onto the plains of Europe, but the military suffered from never having a chance to show what it could do. The Gulf War [1990] provided a stage for a full performance by those in the U.S. military...⁹⁵

Indeed, they go further and observe,

“Desert Storm” was basically an “all-air”, “no-ground” campaign that lasted several dozen days, and they barely got to use “Desert Sword”, which was displayed at the last moment, including that beautiful “left-hook”, for only 100 hours before wrapping things up in a huff. The ground war...was like a concerto which winds up hastily after the first movement is played...[E]verything that happened in the air over the Gulf far exceeded the imagination... Whether in Kuwait or in Iraq...the air combat...represented an integrated air campaign that blended all the combat operations, such as reconnaissance, early-warning, bombing, dogfights, communication, electronic strikes, and command and control etc...and it also included the struggle for and occupation of outer space and cyberspace. *At that point, the Americans who proposed the “Air-land battle” concept have already gone quite further than Douhet.*⁹⁶

What do the authors mean when they say that “the Americans who proposed the Air-Land Battle concept have already gone quite further”?

[O]nce they resort to the theory of integrated operations in real combat, the scope will go far beyond what they [the Americans] initially envisioned, extending over a broad and all-inclusive range that covers the ground, sea, air, space, and cyber realms. Although it will still require some time...*it is already destined to become the starting point for the theory of “omni-dimensional” combat proposed by the elite of the U.S. Army...*

Reminding ourselves again that these observations were made in 1999, the point of interest is that, according to the Chinese authors, having made the commitment to pursue “the theory of integrated operations”, the U.S. strategic-military establishment has also committed itself – knowingly or otherwise – towards realizing “the theory of “omni-dimensional” combat” which, we argue, necessarily invokes the concept of what the Chinese authors term “unrestricted warfare”. Thus, the question of whether or not the Air Land Battle concept is fractured or not is beside the point. Indeed, it can also be argued that the linking of the MDB concept to the AirLand Battle concept is also of little value especially in the context of its possible evolutionary prospects. One way to corroborate this is to review some of the publications that emerged in Western strategic-military circles post the 1990 Gulf War. Recall that it was in this time-period that the interest in “revolutions in military affairs” was at an all-time high, early conceptual work on the theory of network-centric warfare had been initiated, and the first efforts to develop a “full spectrum dominance” capability was underway.⁹⁷ It should also be noted, however, that these discussions (with rare exceptions) have taken place – and continue to do so – under conditions which the Chinese authors refer to in terms of “only after one first has a weapon does one begin to formulate tactics to match it”. Nevertheless, as we have seen in the case of the MDB concept, it also marks the beginnings of “a blurring of the link between “man to weapons and tactics”.⁹⁸

With this serving as a contextual background, our response will require us to address the question regarding the susceptibility

of the MDB concept to being “fractured” across two levels of analysis. As an operational-tactical “solution” to the hard-military problems posed by increasingly innovative and sophisticated models of the anti-access concept of warfare, the default posture of the MDB concept is clearly offensively-oriented. The task – as Admiral Locklear and other U.S. military strategists and commanders have clearly laid out – is to seek out portals of entry, windows of opportunity, and other “pathfinder” vectors offered by “the block of Swiss cheese” (i.e., an anti-access system such as the Chinese ASBM system), to exploit them to launch precise and targeted attack-operations against key nodes and links that sustain the physical and informational integrity of the “defensive system”. As we have seen, this requires a strategic-operational mindset that is able to assess weapon-systems and estimate their effectiveness – individually and as an ensemble – *within and beyond* their traditional domains.⁹⁹ Yet, even as an operational-tactical “solution”, there remains a lurking suspicion that, somehow, the MDB concept heavily depends on that age-old military dictum which says, “he who defends everything, defends nothing”.¹⁰⁰ Indeed, the discovery and exploitation of the “portals” and “windows of opportunities”, which would lead to the neutralization and disintegration of the defensive complex, appears contingent on it. In other words, and after taking into account the complexity of fielding such complex and intricate systems such as the ASBM system, the operating assumption underwriting the MDB concept is that the defending forces would be spread too thin, which would allow for the discovery of “portals” and “windows of opportunities” taking advantage

of which the anti-access system may be compromised and neutralized. Obviously, at a more practical and operational-tactical level, U.S. strategists will, by default, take into account the fact that the anti-access defensive complex would itself be under the cover of a local “area defense” network, which would be multi-domain (here in the limited and strictly “military” sense) in nature, including the cyber/ electromagnetic and space domains. This local “area defence” network could be expected to be densely clustered around the more obviously exposed elements of the anti-access complex. Thus, the task of seeking “portals” and “windows of opportunities” will certainly not be easy. Given this, it could be said that while the MDB concept may not be susceptible to “fracture”, it certainly runs the risk of being “blunted”, that is to say, it runs the risk of having its intensity and effectiveness degraded as it pursues its aim to neutralize the anti-access complex.

As a “higher-order” *concept of warfare*, however, MDW takes on a different character. At this register, the question of whether or not the concept is susceptible to “fracture” is irrelevant. This is because, in the context of an “extended battlespace, which invokes a much wider understanding of “domains”, the MDW concept serves as a recognition of, and as a response to, the challenges that a condition of “unrestricted warfare” poses. As such, it not, strictly speaking, a “military strategy”. Instead, *as a concept of warfare*, it serves as a strategic-cognitive framework within which the traditional relationship between man, weapons and war may be challenged and revised. Thus, as the theorists of NCW had asserted when referring to the theory of NCW, the MDW concept is essentially about “about human

and organizational behaviour” and, as such, it is as resilient as the concept of “unrestricted warfare”, which it purports to respond to.¹⁰¹

The above analysis, as its title suggests, is a preliminary assessment. As such, it serves not only as a pathfinder to deeper and more penetrating analyses and interrogations of the means and processes underwriting the evolution of MDB concept, but also of efforts that may aim to refine and articulate the higher-order of MDW. While the former task is necessary – as we have seen in the case of the Chinese ASBM system – to address specific operational-tactical challenges, the latter is an equally, if not more important task for, in a more developed and refined form, the MDW concept could serve as a broader *concept of warfare* within which “new concepts of using weapons” and “new concepts of weapons” can be designed, engineered, and deployed in a bid to address the threats that conditions of “unrestricted warfare” may throw up in the near and distant future.

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(Endnotes)

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² Jon Harper, “Pentagon Pushing ‘Multi-Domain Battle’ Concept – Blog”, Oct. 05, 2016. Available at <http://newsmilitary.com/pages/81623199-pentagon-pushing-multi-domain-battle-concept-blog>

³ Megan Eckstein, “‘Multi-Domain Battle’ Concept To Increase Integration Across Services, Domains”, in USNI News, Oct. 04, 2016. The comment is attributed to Army Gen. David Perkins, commanding general of the U.S. Army Training and Doctrine Command (TRADOC). Available at <https://news.usni.org/2016/10/04/multi-domain-battle-concept-increase-integration-across-services-domains>

⁴ Sean D. Carberry, “Officials: DOD must adapt to multi-domain warfare model”, in FCW, Oct. 04, 2016. Available at <https://fcw.com/articles/2016/10/04/multi-domain-warfare.aspx>.

⁵ It is interesting to note the use of the term “a more complex concept”. In some ways it reflects on how the US strategic-military establishment understands its adversary. In other words, there appears to be an underlying assumption that the more complex a concept is, the more difficult it would be for an adversary to fracture or “crack it”. In turn, this suggests that those who would think in such terms assume that their adversaries are not necessarily intellectually or even perhaps cognitively equipped to “deconstruct” a complex battle concept.

⁶ Deputy Secretary of Defense Bob Work, *Remarks to the Association of the U.S. Army Annual Convention*, Oct. 04, 2016, Washington, DC.

⁷ Ibid.

⁸ Admiral Harry B. Harris, Jr., Commander, U.S. Pacific Command, “Role of Land Forces In Ensuring Access To Shared Domains”, Institute of Land Warfare (ILW) LANPAC Symposium, Sheraton, Waikiki, May 25, 2016. Available at <http://www.pacom.mil/Media/Speeches-Testimony/Article/781889/>

lanpac-symposium-2016-role-of-land-forces-in-ensuring-access-to-shared-domains/. My emphasis.

⁹ Sean D. Carberry, “Officials: DOD must adapt to multi-domain warfare model”, in *FCW*, Oct. 04, 2016. Available at <https://fcw.com/articles/2016/10/04/multi-domain-warfare.aspx>

¹⁰ Ibid. Quote attributed to Gen. David G. Perkins, U.S. Army

¹¹ Jon Harper, “Pentagon Pushing ‘Multi-Domain Battle’ Concept,” *National Defense*, October 4, 2016, p. 2. Available at <http://www.nationaldefensemagazine.org/blog/Lists/Posts/Post.aspx?ID=2319>

¹² We are persuaded by Sam Tangredi’s proposition that when we speak of Anti-Access and Area Denial in the same breath, we run the risk of conflating the strategic-operational (Anti-Access) with the operational-tactical (Area Denial). As we will see, the MDB concept applies to both registers. See Sam Tangredi, *Anti Access Warfare: Countering A2/AD Strategies*, (Annapolis: Naval Institute Press, 2013), pp 1-5

¹³ Qiao Liang and Wang Xiangsui, *Unrestricted Warfare: Assumptions on War and Tactics in the Age of Globalization*, [Chaoxianzhan - dui quanqiu hua shidai zhanzheng yu zhanfa de xiangding], (Beijing: Peoples Liberation Army Arts Publishers, Feb., 1999). For a brief background to this text, see <https://fas.org/nuke/guide/china/doctrine/unresw1.htm>. Various translations and publications of this text has been made over the years including that by the US FBIS, which is available at <http://www.c4i.org/unrestricted.pdf>

¹⁴ By socio/ politico-technical systems, we mean the infrastructure that underwrites social, political, economic, cultural, among other processes. Thus, for example, “an electoral system” may be considered to be an example of a socio/ politico-technical system. For a brief overview of socio technical systems, see Günter Ropohl, “Philosophy of Socio-Technical Systems” in *Techné: Research In Philosophy And Technology*, Spring, 1999, Vol. 4, Number 3. Available at <https://scholar.lib.vt.edu/ejournals/SPT/v4n3/ROPOHL.html>

¹⁵ Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle*, (Princeton: Princeton Univ. Press, 2006), p 3

¹⁶ See, for example, Jonathan B. A. Bailey, “The First World War and the birth of modern warfare” in *The Dynamics of Military Revolution, 1300–2050*, Ed. Knox and Murray, (Cambridge: Cambridge Univ. Press, 2001), pp 132-153. See also his *Field Artillery And Fire Power*, (Oxford: Taylor and Frances, 2009, e-version). Note also, the notion of a “modern battlespace” has been defined by the U.S. Army’s FM 1005, Operations, June 1993 in the following terms: “[1] Battle space is a physical volume that expands or contracts in rela-

tion to the ability to acquire and engage the enemy and [2] Components [are] determined by the maximum capabilities of a unit to acquire and dominate the enemy; [it] includes areas beyond the AO [area of operations]; it varies over time according to how the commander positions his assets. See Robert J. Bunker, “Advanced Battlespace and Cybermaneuver Concepts: Implications for Force XXI” in *Parameters*, Autumn 1996, pp. 108-120. Available at <http://ssi.armywarcollege.edu/pubs/parameters/articles/96autumn/bunker.htm>

¹⁷ Stephen Biddle, “The past as prologue: Assessing theories of future warfare”, in *Security Studies*, Vol. 8, 1998, p 13

¹⁸ *Ibid.*, p 13

¹⁹ Biddle, “Past as Prologue”, p 13

²⁰ Biddle, *Ibid.*, p 14

²¹ The Battle of Somme is said to epitomize the massacres involved with saturation-level artillery fire that reduced the battle to a bloody stalemate and which powerfully reinforced the critical role the artillery was to henceforth play in military operations with consequence impacts at the strategic-operational and even strategic-political levels. See, for example, Peter Hart, *The Somme: The Darkest Hour on the Western Front*, (New York: Pegasus Books, 2016).

²² Max Weber, *The Protestant Ethic and the Spirit of Capitalism*, transl. Talcott Parsons, with a foreword by R.H. Tawney. (London: G. Allen & Unwin, Ltd., 1930), p 181

²³ For a discussion of the appropriateness of Parson’s translation and of its suggested replacement, see Peter Baehr, The “Iron Cage” and the “Shell as Hard as Steel”: Parsons, Weber, and the Stahlhartes Gehäuse Metaphor in the Protestant Ethic and the Spirit of Capitalism, *History and Theory*, Volume 40, Issue 2, pages 153–169, May 2001.

²⁴ Gernot Bohme, *Invasive Technification: Critical Essays in the Philosophy of Technology*, Trans. Cameron Shingleton, (London: Bloomsbury Academic, 2012), p3

²⁵ Again, looking back at World War 1, it is instructive to see how armies adapted to such emergent conditions. For an interesting account of the Canadian experience, see Bill Rawling, *Surviving Trench Warfare: Technology and the Canadian Corps, 1914-1918*, 2nd Revised Ed., (Toronto: Univ. of Toronto Press, August 15, 1992)

²⁶ For an excellent account of the role of the artillery and the influence it is deemed to have had on the revolution in military affairs in the 1920-30s see

Jonathan B. A. Bailey, *Field Artillery And Fire Power*, (Oxford: Taylor and Frances, 2009, e-version)

²⁷ In Biddle's terms, these efforts may be understood as finding ways and means to innovate and to refine "force employment". See his *Military Power: Explaining Victory and Defeat in Modern Battle*, (Princeton: Princeton Univ. Press, 2006)

²⁸ For an excellent account of German "infiltration tactics" see Bruce I. Gudmundsson, *Stormtroop Tactics: The Innovation in the German Army, 1914-1918*, (Westport: Praeger Publishers, 1989)

²⁹ Williamson Murray, "Armoured warfare: The British, French, and German experiences" in Murray & Williamson, Ed. *Military Innovation in the Interwar Period*, (New York: Cambridge Univ. Press, 2009), pp 6-49

³⁰ Even a frontline commander of the stature of Guderian is reported to have observed, as his formations broke through the French defences in and around Sedan, and on crossing the Meuse, that "it was a miracle". (add reference)

³¹ As Zetterling observes in his study of *Blitzkrieg*, "[i]n many ways the German invasion of Norway is a milestone in the history of warfare. It was the first major operation that depending on the successful employment of ground, navy and air units. It was also an attempt to paralyze a country rather than simply defeating its armed forces, as the Germans had done in Poland." See Niklas Zetterling, *Blitzkrieg: From the Ground Up*, (Oxford: CaseMate Publishers, 2017), p 76 (e-version). This propensity to "paralyze a country", first evident in the German operations in Norway was replicated to a large extent (but not fully) in the Battle for France (1940). It remains important to remind ourselves that this orientation toward a "systemic" perspective on warfare was impromptu and not something that was actively promoted within the German military system.

³² One of the reasons suggested for this is because of the underlying Marxist-Leninist philosophy that underwrote the Soviet State which, among other things, privileged a "scientific" view of the world and of its affairs of which military affairs is but a subset.

³³ One only needs consider the sheer weight of firepower that the Soviet formations brought to bear on the German defenders in the last stages of the Second World War, particularly in the opening stages of the Battle for Berlin and, more specifically, at the Battle of Seelow Heights. It has been reported that the Soviets unleashed a military force comprising of over half-million soldiers, 3000 tanks and approximately 17,000 artillery pieces. Notice the high number of artillery pieces which suggests the volume and intensity of the fire-

power that was brought down up on the German Ninth Army, which boasted of approx. 125,000 soldiers, 512 tanks, 584 artillery guns and more than 300 anti-aircraft guns (serving in an anti tank role). For accounts of the Battle for Seelow Heights, see Max Hastings, *Armageddon: The Battle for Germany, 1944-45*, (New York: Vintage, 2005); Tony Le Tisser, *Zhukov of the Order*, (New York: Praeger Press, 1996); Earl F. Ziemke, *The Battle for Berlin: End of the Third Reich*, (New York: Ballantine Books, 1968).

³⁴ For an account of how this process of diffusion of idea, concepts and technologies in the strategic-military context takes place, see Emily O. Goldman & Leslie C. Eliason, Ed., *The Diffusion of Military Technology and Ideas*, (CT: Stanford Univ. Press, 2003).

³⁵ One way to think of this would be in terms of, as the Chinese theorists put it in their discussions on war and its conduct in the Information Age, “Information Age Warfare with Chinese characteristics”. Here Information Warfare is a thematic which, regardless of its source of origin, remains amenable to being “localized”, which is what the phrase “with Chinese characteristics” seems to imply. Similarly, while the moniker of “blitzkrieg” is most commonly applied to German tank and combined-arms warfare, in effect, however, as the war progressed we find “blitzkrieg” with American characteristics, with British characteristics, with Soviet/ Russian characteristics and so on. Indeed, one often refers to Israeli tank operations during the Arab-Israeli Wars as being “blitzkrieg” with Israeli characteristics.

³⁶ Bunker, “Advanced Battlespace and Cybermaneuver Concepts: Implications for Force XXI”, 1996. Available at <http://ssi.armywarcollege.edu/pubs/parameters/articles/96autumn/bunker.htm>

³⁷ It is evident that the U.S. strategic-military establishment was grappling with this problem since the late 1970s and early 1980s. The work of General Don Stary in this regard is worth noting, particularly his arguments in favour of “extended battlespaces” and “integrated firepower”. Of course, it should be borne in mind that these efforts were geared to address a perceived threat of a Soviet invasion of Europe using deeply echeloned combat forces whose collective weight – both in terms of numbers and firepower – would prevent NATO/US forces from reacting quickly to “stem the flood”.

³⁸ Andrew F. Krepinevich, Jr., *The Military-Technical Revolution: A Preliminary Assessment*, (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2002)

³⁹ Robert Tomes, “The Cold War Offset Strategy: Assault Breaker and the Beginning of the RSTA Revolution” in *War on the Rocks*, Nov. 20, 2014. Available at <https://warontherocks.com/2014/11/the-cold-war-offset-strategy->

[assault-breaker-and-the-beginning-of-the-rsta-revolution/](#). See also Thomas G. Mahnken, *Technology and the American Way of War*, (New York: Columbia Univ. Press, 2008), p 130

⁴⁰ David G. Perkins and James M. Holmes, “Multidomain Battle: Converging Concepts Toward a Joint Solution”, in *Joint Force Quarterly* 88, 1st Quarter, 2018, pp 54-55. Available at http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-88/jfq-88_54-57_Perkins-Holmes.pdf?ver=2018-01-09-102340-943

⁴¹ *Multi-Domain Battle: Combined Arms for the 21st Century*, United States Army-Marine Corps White Paper, 18 January 2017

⁴² *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century 2025-2040*, Ver 1.0, Army Capabilities Integration Center (ARCIC), U.S. Army Training and Doctrine Command, Oct. 2017, p

⁴³ It is interesting (and instructive) to note that the opening section of the Field Manual 3-0, which is regarded as being a foundational document in the context of the MDB concept, there is a dedicated paragraph on page 1-11 titled “Systems Warfare”. What is equally intriguing is that this paragraph is listed under the section titled “Threats”! The paragraph also directs readers to TC 7-100.2 “for a more in depth discussion of systems warfare”. “FM 3-0 Operations”, *Headquarters, Department of Army*, United States Army, (Washington DC: Oct., 2017), p 1-11.

⁴⁴ Image Source: David G. Perkins and James M. Holmes, “Multi-domain Battle: Converging Concepts Toward a Joint Solution”, in *Joint Force Quarterly* 88, 1st Quarter, 2018. Available at http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-88/jfq-88_54-57_Perkins-Holmes.pdf?ver=2018-01-09-102340-943

⁴⁵ Donn A. Starry, “Extending the Battlefield”, *Military Review*, March 1981, pp. 31–50.

⁴⁶ Image Source: David G. Perkins and James M. Holmes, “Multidomain Battle: Converging Concepts Toward a Joint Solution”, in *Joint Force Quarterly* 88, 1st Quarter, 2018. Available at http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-88/jfq-88_54-57_Perkins-Holmes.pdf?ver=2018-01-09-102340-943

⁴⁷ This point is powerfully reinforced in FM 3-0. Thus, for example, it is asserted, “[t]he interrelationship of the air, land, maritime, space, and the information environment

⁴⁸ *Ibid.* p4

⁴⁹ *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century - 2025-2040*, Version 1.0,

October 2017, p 22. Available at: http://www.arcic.army.mil/App_Documents/Multi-Domain-Battle-Evolution-of-Combined-Arms.pdf. Note: The referenced document has a disclaimer which is quoted in full and as is: “DISTRIBUTION RESTRICTION: DRAFT - NOT FOR IMPLEMENTATION. Approved for public release. The material in this publication is still under development. It is not an approved concept and cannot be used for reference or citation until it has been approved.”

⁵⁰ Ibid. p 21

⁵¹ Ibid. p 25

⁵² Ibid

⁵³ Image Source: *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century, 2025-2040*, Version 1.0 December 2017, p27. Available at www.arcic.army.mil/App.../Multi-Domain-Battle-Evolution-of-Combined-Arms.pdf

⁵⁴ Whyatt Olsen, “PACOM chief urges Pacific Army to master cross-domain warfare” in Stars and Stripes, May 26, 2016. Available at <https://www.stripes.com/news/pacific/pacom-chief-urges-pacific-army-to-master-cross-domain-warfare-1.411491>. Comment attributed to Adm. Harry Harris (USN), Speech at the Association of the U.S. Army, Honolulu, Hawaii,

⁵⁵ For a clear and detailed exposition of the “systems of systems” concept see William A. Owens, *Lifting the Fog of War*, (Boston: Johns Hopkins University Press, 2001).

⁵⁶ Admiral Samuel J. Locklear III, Commander, US Pacific Command, remarks to the National Defense Industrial Association conference, *Breaking Defence.com*, Nov. 4. Admiral’s comment in full was: ““We need to look at it [China’s anti-access defense] not as an iron dome but as a block of Swiss cheese that gets more dense as you get closer to the center. ... The way you deal with it is you find the holes in the Swiss cheese and widen them. Those holes in the Swiss cheese ... that’s where our ... money ought to go. You’ve got to buy the things that increase our asymmetric advantage, and we have many, many, many of them. [Everything else], let it go, because we’re just throwing money into places that aren’t going to make a difference.” Available at <http://www.airforcemag.com/MagazineArchive/Pages/2013/December%202013/1213verb.aspx>. We will have occasion to examine this curious statement in greater detail below. See also Steven Stashwick, “The US Army’s Answer for an A2/AD Shield in Asia” in *The Diplomat*, Oct. 15, 2016. Available at <https://thediplomat.com/2016/10/the-us-armys-answer-for-an-a2ad-shield-in-asia/>

⁵⁷ Janus is an Ancient Roman god of beginnings, gates, transitions, time, duality, doorways, passages, and endings. He is usually depicted as having two faces, since he looks to the future and to the past. See Varro apud Augustine, *De Civitate Dei*, VII 9 and 3; Servius Aen. I 449

⁵⁸ Image Source: David Cenciotti, “How to target an aircraft carrier?”, in *The Aviationist: David Cenciotti’s Weblog*, Jan 03, 2011. Available at <https://theaviationist.com/2011/01/03/how-to-target-an-aircraft-carrier/>

⁵⁹ *China Military Power Report 2008*, p1

⁶⁰ Sam Tangredi, *Anti-Access Warfare: Countering A2/AD Strategies*, Naval Institute Press, 2013, p 11 (e-version)

⁶¹ Andrew S. Erickson, *Chinese Anti-Ship Ballistic Missile (ASBM) Development: Drivers, Trajectories and Strategic Implications*, The Jamestown Foundation, 2013, p 27

⁶² Image Source: Jan Van Tol, Gunzinger, Krepinevich, Thomas, “AirSea Battle”, Presentation, May 18, 2010 (slide 18), *CSBAOnline*.

⁶³ See fn 46 above. My emphasis

⁶⁴ “Iron Dome Air Defence Missile System”, *Army Technology*, Available at <https://www.army-technology.com/projects/irondomeairdefencemi/> “Selected by the Israel Defence Ministry, Iron Dome provides defence against short-range missiles and rockets which pose a threat to the civilian population of Israel’s northern and southern border. The system was deployed by the Israeli Air Force (IAF) in March 2011.”

⁶⁵ Yaakov Katz, Yaakov Lappin, “Iron Dome ups its interception rate to over 90%”, *The Jerusalem Post*, March 10, 2012. Available at <https://www.jpost.com/Defense/Iron-Dome-ups-its-interception-rate-to-over-90-percent>

⁶⁶ Mark Thompson, Iron Dome: A Missile Shield that works”, *Time Online*, Nov. 19, 2012. Available at <http://nation.time.com/2012/11/19/iron-dome-a-missile-shield-that-works/#ixzz2Ci0JS7Us>

⁶⁷ These enhancements include integration of directed energy weapons (lasers) with the Iron Dome system, which is being marketed under the Iron Beam nomenclature, development and deployment of a naval version (C-Dome), and of a counter-UAV/UCAV capability.

⁶⁸ Image Source: Rafael Advanced Defence Systems. Available at <https://www.army-technology.com/projects/irondomeairdefencemi/>

⁶⁹ One only has to review the literature that has been published on these two “systems”. The speculation and theorizing that has followed post the revelations of an emergent Chinese ASBM capability far outstrips that which has surrounded the “Iron Dome” system. This does not mean that the “Iron Dome” system has not garnered critical military and civilian attention. Indeed, it could be said – as mentioned above

⁷⁰ Image Source: Authors

⁷¹ Image Source: Andrew S. Erickson and David D. Yang, “Using Land to Control the Sea?: Chinese Analysts Consider the Antiship Ballistic Missile”, *Naval War College Review*, Autumn 2009, Vol. 62, No. 4. P57. Original Source: Chen Haidong et al., “Study of a Guidance Scheme for Reentry Vehicles Attacking Slowly Moving Targets,” p. 6, fi g. 1.

⁷² “Interview: Adm. Jon Greenert,” *Defense News*, January 14, 2013, p. 30. O’Rourke notes, “The reference to ‘the left-hand side of that spectrum’ might be a reference to soft kill measures.” Quoted in

⁷³ O’Rourke, *China Naval Modernization*, pp. 63–64

⁷⁴ It must be remembered that the first discussions on the Chinese ASBM system (and thus of the “anti-access” strategy) predates the discussions surrounding the MDB concept by at least a decade.

⁷⁵ Interestingly, note how we have consistently posed the Chinese ASBM project as a “problem” and in terms of “a problem” that it poses to which the MDB may be considered, as we argue, to be a “solution”. But, it could also be argued, and justifiably so, that from the Chinese perspective the ASBM system/ project is the “solution” to the “problem” posed by powerful U.S. naval carrier-centric battle-groups. In effect, both the problem and the solution that is expressed and addressed at the operational-tactical level also represent a strategic-operational problem-solution combine, namely that of “access” and its denial.

⁷⁶ Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle*, (Princeton: Princeton Univ. Press, 2006), p 3

⁷⁷ *Unrestricted Warfare*, p 4-6

⁷⁸ *Ibid.* p 6. It is important to remember that this text was published/ released in 1999 and, as such, pre-dates the events of 9/11.

⁷⁹ *Ibid*

⁸⁰ *Ibid.* p 7. The quotes appear in the original. Emphasis mine.

⁸¹ It would be a gross simplification – and an erroneous one – to understand “using all means” and “unrestricted warfare” in terms of a “free for all” or pure anarchy. Contrarily, “using all means” and engaging in “unrestricted warfare” requires a deep appreciation and a nuanced understanding how an adversary is spread out across multiple domains as a means to identify “windows of opportunity” and then to engineer strategies, operations and tactics to either defend against and/ or to attack an adversary’s war-waging capabilities. “Unrestricted warfare” and “multidomain warfare” are not concepts of warfare that promote purely anarchic or even highly chaoplexic conditions; rather, they are concepts – “new” concepts – of warfare that aim to calibrate the complexity of an already chaoplexic (and, often at the tactical and sub-tactical levels, anarchic) condition that marks “the modern battlespace”.

⁸² Ibid., p 12. Emphasis mine.

⁸³ Image Source: Authors

⁸⁴ Ibid., p 12

⁸⁵ Image Source: Authors

⁸⁶ Ibid., p 19

⁸⁷ Ibid.

⁸⁸ Ibid.

⁸⁹ Ibid.

⁹⁰ Ibid., p 25. My emphasis

⁹¹ Ibid. p. 88. My emphasis

⁹² Alberts, Gartska, Stein, *Network Centric Warfare: Developing and Leveraging Information Superiority*, (Washington, DC: Command and Control Research Program (CCRP), US Dept. of Defense), 2002, p 88

⁹³ It can be argued, and justifiably, that the AirLand Battle concept itself a subset of what Dickson refers to the emergence of “the electronic battlespace”, whose origins lie in years immediately following the end of the Second World War. See Paul Dickson, *The Electronic Battlefield: Origins of America’s 21st Century Way of War*, (Bloomington: Indiana Univ. Press, 1976)

⁹⁴ See fn 4 above.

⁹⁵ Unrestricted Warfare, p 58

⁹⁶ *Unrestricted Warfare*, p68, my emphasis

⁹⁷ See, for example, Jim Garamone, “Joint Vision 2020 Emphasizes Full-spectrum Dominance”, June 02, 2000, *American Forces Press Service*, Available at <http://archive.defense.gov/news/newsarticle.aspx?id=45289>; *Joint Vision 2020: America’s Military: Preparing for Tomorrow*, U.S. Government Printing Office, June 2000, Available at <http://mattcegelske.com/wp-content/uploads/2012/05/Joint-Vision-2020-Americas-Military-Preparing-for-Tomorrow.pdf>; *The National Military Strategy of the United States of America*, U.S. Department of Defence, Washington, DC, 2004. See section titled “Full Spectrum Dominance” (p 23), among others.

⁹⁸ *Unrestricted Warfare*, p 18

⁹⁹ In this connection, it is also worth noting that this is somewhat reminiscent of the “force multiplier” concept.

¹⁰⁰ Attributed to Fredrick II of Prussia. Sun Tzu appears to have made a very similar point by observing that “[f]or if he prepares to the front, his rear will be weak, and if to the rear, his front will be fragile. If he prepares to the left, his right will be vulnerable and if to the right, there will be few on his left. And when he prepares everywhere he will be weak everywhere.” This appears in the chapter on “Weaknesses and Strengths” from his classic *The Art of War*.

¹⁰¹ Interestingly, one of the rare critiques of the MDB concept refers to precisely this “human and organizational” factor.

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