**No. 58**

# Critical Mass:

***Weighing in***
**on *Force* Transformation & *Speed Kills***
**Post-Operation Iraqi Freedom**

***Newton's Second Law:***
***Force = Mass × Acceleration***

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## ABSTRACT

Wars are won at the operational and strategic level. And equally important, force structuring decisions made at the highest policy levels that drive the overall force capability development of any military also critically shape force-fighting orientation and by corollary future mission success. In distilling the lessons of the recent Gulf War II, it is important *not to overstate* the commonplace observation that *speed* overdrive by way of 'knowledge-driven' time-sensitive targeting through the use of high-tech weaponry increasingly substitutes the need for *mass* in the final force-combat power equation. Ignoring the right lessons and learning the wrong ones can result in disastrous mental Maginot lines in force structure and doctrine development. Deadly striking speed without sufficient mass to sustain any war effort up to *and* beyond culminating point can result in hollow forces with fatal consequences.

This paper's cautionary refrain is that the 'utility of *critical mass*' - of quantitatively *and* qualitatively superior concentration of 'boots to the ground' forces, tightly integrated with air and naval forces - still matters ultimately in packing a powerful winning punch on and off the future battlefield. In other words, having a critical mass of superior force-mix ensures greater operational flexibility and sustainability for meeting the conventional and unconventional challenges of contemporary and future military operations; a point especially salient for small armed forces formulating force re-structuring policies in a milieu of increasingly lean manpower resources and budget constraints.


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***Fast forward Into the Future:*** **Force =** ***SPEED x mass?***

In the realm of Newtonian physics, the amount of power (force) derived from mass multiplied with acceleration (speed). When one analogously applies the logic of physics into the realm of military strategy, there appears to be a tendency for many to assert that the conveniences of new economy Just-In-Time (JIT) speed in an age of rapid technological transformation makes the old economy Just-In-Case (JIC) mass paradigm (labour-manpower, inventory-supplies) obsolete. This analogy may well be true as a mantra for everyday life in the IT Age. In the foggy and frictional realm of warfare, however, it may be one thing to assert the triumph of overwhelming speed enabled by the (t)winning combination of knowledge warfare[1] with high precision technologies to wage swift and decisive *effects-based warfare*. It is quite another to declare conclusively that the former decidedly supercedes or obviates the need for massive forces in winning future battles such that even the traditional wisdom of having an attack-defence force ratio of 3:1 goes straight out the window. It has been said that lesson number one in *Operation Iraqi Freedom* (Gulf War II), is that *speed kills* – the adversary, that is. The draw of deadly speed with joint precision firepower on the ground, in the air and at sea has become a normative *modus operandi* in the application of decisive military force, and will no doubt be both emulated and further exploited in the years to come. As more and more defence establishments and analysts have come to advocate with increasing conviction: "The watchword is that quantity no longer matters; what the weapons can achieve is now all-

[1] As Admiral (Ret) Bill Owen puts it: "Knowledge Warfare is MUCH more important than 'mass' (numbers of ships, tanks, and airplanes)…information is more important than platforms and should not be considered to be 'in support' of' real operations…'Smarts', flexibility and mobility should be part of weighting not just mass!" See Bill Owens, 'The New World…The RMA Failed', in *Pointer*, Vol. 29, No. 3. (Singapore: SAFTI MI, Jul-Sep 2003), pp. 35-41.

important".[2] That said, the sharp technological focus on speed and precision should not blindside the need to maintain a powerful *critical mass* of manpower reserves and capabilities – operationally ready standing force in being. After all, speed and mass are not mutually exclusive force impact issues. This is especially true for small countries with little geographical strategic depth; notwithstanding their relatively small populations.

From an operational art perspective, small countries can ill afford to trade space to buy time. There is often no space to trade. For such states, the sheer mass of maintaining a strong and sufficiently sizable standing military by sheer appearance makes for credible deterrence and stout defence. With fiscal constraints imposed by shrinking defence budgets, coupled with negative indigenous demographic growth rates draining an already limited human resource pool, the real challenge for many increasingly lean armed forces like the Singapore Armed Forces is how to transform to meet the future threats while retaining the credible capability[3] to punch above its weight.

To overcome the challenges of the future battlefield, the SAF has initiated the process of 'deconstructive' transformation. It stands to reason that this process will entail redefining and sustaining the *critical mass* of manpower and firepower required to fulfill its key operational missions well into the future. To be sure, such a deconstruction[4] or transformative effort will involve the R&D-cum-rapid insertion of cutting-edge technologies, to at least maintain, if not increase its overall future force capability and lethality**.** As Singapore's Defence Minister Teo

[2] See Jonathan Eyal, 'Britain to Extend Reach of Military' in *The Straits Times*, (13 Dec 2003), pp. 28.
[3] Credibility is an ambivalent issue of perception that can be partial and ephemeral; albeit seldom is it empirical.
[4] A term used by Singapore's Permanent Secretary of Defence Peter Ho, cited in Robert Karniol, 'Singapore-Deconstruction Forges Ahead' in *Jane's Defence Weekly*, (27 Jun 2001), Vol. 35, No. 26.

Chee Hean had put it, the Singapore Armed Forces cannot rely on numerical superiority[5] for the obvious reason that it is not a viable option for a country dependent upon a relatively small population to undertake the vital mission of national defence. With this demographic given, the SAF's latest effort at transformation is occurring in an era of tight military budgets and mounting ancillary military missions like homeland security. This critical transformation effort also comes at a critical juncture in its development whereby "the SAF has reached a certain critical mass" to be "one of the most advanced and well-equipped armed forces in the region".[6]

There is no magic number to what constitutes *critical mass* for a military force, except I would hazard a possible broad definition - it is the optimum fighting mass necessary for securing both swift and decisive battlefield victory *and* backed by sufficient vital force structure reserves to successfully wage and sustain protracted conflict across the spectrum of conflict (from high to low intensity); albeit against the range of conventional and non-conventional threats in possibly more than one anticipated theatre of operations, subordinated to higher political aims defined. The force structure challenge of ensuring critical mass is therefore a moving target, dependent on domestic demographics, internal organizational mission demands and external interactive threat dynamics/dictates. Already, in the face of falling demographic trends, one analyst has argued that: "Regardless of how the SAF tweaks its order of battle to deal with the smaller National Service intakes – or how it chooses to leverage on technology to augment its manpower – there will be a threshold below which the SAF's ability to engage and sustain

[5] Cited in 'Wider Research Scope for New Defence Lab', in *The Straits Times*, (28 Nov 2003), pp. H16-17.
[6] See Andrew Tan, 'Military Transformation in a Changing Security Landscape: Implications for the SAF', in *Pointer*, Vol. 29, No. 3. (Singapore: SAFTI MI, Jul-Sep 2003), pp. 24-34.

combat operations will be compromised".[7] In tackling such pressing challenges head-on, the force-planning choices that increasingly lean armed forces, like the SAF, make on the issue of critical mass invariably impact on vital operational force structure, power posture and deterrent strength. Over time they can have potentially significant cascading effects on downstream operational outcomes and strategic success. Force planners now face an even more delicate challenge balancing lean allocation to fund current military programmes and operations, while ensuring experimental development of a future force-mix necessary for meeting the challenges posed by emergent threats and potential adversaries.

**A Template for Transformation - The Trident of a Titan**

Transformation – is the latest 'buzz-word'-of-choice coined by the US military to describe its on-going systemic renovation across the services. 'Transformation' takes over from the well-worn but more familiar term – the Revolution in Military Affairs (RMA). In his *oeuvre* on US Military Transformation published in *Foreign Affairs*, US Secretary of Defence, Donald Rumsfeld, had laid out the strategic roadmap for US force structure transformation which essentially called for the execution of swift and decisive joint effects-based warfare.[8] One of the key features in that transformational landscape is the focus on leaner, smarter and more mobile forces, equipped with high-tech precision munitions and network-enabled by integrated Command, Control, Communications & Computer Intelligence ($C^4I$). Following the lesson of

[7] See David Boey, 'What Fewer Babies May Mean for the SAF', in *The Straits Times*, (17 Dec 2003), p. 16. Despite numerous family promotion initiatives and incentives put in place, Singapore's population growth has remained at the worrying index of 1.37 for both 2002 and 2003; far short of the 2.1 needed for healthy population replacement.

[8] Rumsfeld has plans to transform what he sees as a large, slow and unwieldy force to a leaner, faster and more mobile military that can move and fight more readily than it now can. This would entail de-emphasizing large divisions (15,000 to 20,000 troops) with their heavy battle tanks in favor of smaller brigades (3000-5000 troops) with lighter armored vehicles. See Donald Rumsfeld, 'Transforming the Military', *in Foreign Affairs*, (May/June 2002), pp. 22-32; and Robert Kuttner, 'The Wolfowitz Doctrine', in *The Boston Globe*, (9 Apr 2003), p. A19.

the war in Afghanistan, the synergistic and symbiotic role of Special Forces[9] in dramatically increasing the effectiveness of aerial combat power has been quickly acknowledged: "Afghanistan showed that precision-guided bombs from the sky are much more effective if we get boots and eyes to the ground to tell the bombers exactly where to aim".[10] This key observation was repeated in the recent Gulf War when tons of guided precision-munitions rained in on 'kill-boxes' and pounded the three Iraqi Republican Guard divisions – the Medina, Hammurabi and Nida divisions - arrayed south of Baghdad, before US Coalition land forces steam-rolled into the 'softened' Capital city. Once there, tactical improvisation, innovation and intelligence backed by superior speed and firepower reconnoitered, sliced-up and stabbed at the city sector by sector, leading to the ultimate seizure of Baghdad when events on the ground outran war plans after a few tense days. Again, overwhelming US technological superiority and wizardry was vital to the rapid conventional military success, on top of a war plan which stayed 'Baghdad-centric'.

During US top brass debates on force structure and strategy for conducting the latest Gulf War, Rumsfeld, had reportedly insisted that a smaller, faster-moving attack force, combined with overwhelming air power would suffice in surging forces on scene and taking Iraq. But when stiff Iraqi resistance appeared to hamper US military plans, criticisms were quickly leveled at Rumsfeld for his apparent rejection of initial military plans calling for the involvement of a wide range of forces from the different US armed services. Initial US military plans had called for the fielding of at least four or more Army divisions which Rumsfeld had reportedly rejected

[9] For a good account of the role of Special Forces A-Teams in Afghanistan and Kosovo conflicts, see Dana Priest, *The Mission: Waging War and Keeping Peace with America's Military*, (New York: WW Norton, 2003).
[10] *Ibid*, p. 31.

as "too big".[11] Criticisms against Rumsfeld for sending what had appeared to be 'too small' a ground force into battle also noted his strident advocacy for urgent US military transformation that privileges greater speed and light forces. The US Secretary of Defence is well known for resisting political pressure to increase the size of the 1.4 million strong US military. To the media and many military analysts-commentators not privy to CENTCOM's warplans, the kinks in deployment patterns signaled that all was not going well in the Coalition war-room; especially when it had appeared that the required forces were not yet in place for a more decisive assault based on overwhelmingly massive forces.

Furthermore, to critics, the Pentagon's strategy of effects-based decapitation had appeared initially to have been ineffective and its selection too hasty and risky. For example, the 4th Infantry Division – the US Army's most modern mechanized division – which spent weeks waiting in the Mediterranean (due to Turkey's access denial) had to be diverted to the overtaxed port in Kuwait in the end. The move delayed its operational fielding. On top of that, the high-tech 1st Calvary Division which had just shipped out of Texas a few days before was not yet in theatre even though the US forces were already knocking on the gates of Baghdad by 3rd April 2003. Reportedly the division needed almost 23 days sailing time to reach the theatre of operations. Many in the Army resistant to idea of shrinking the size of the service, held that the active-duty force of 480,000 was already too small and were worried that occupation duty in Iraq would sap the US Army's strength.

[11] Seymour M. Hersh, 'Offense and Defense: The Battle between Donald Rumsfeld and the Pentagon' in *The New Yorker*, (7 Apr 2003), p. 43-45. See also H.D.S. Greenway, 'Vietnam's Lessons Forgotten in Iraq', in *The Boston Globe*, (4 Apr 2003), p. A17; Hiawatha Bray, 'Analysts: US Advantage May Reduce in City Warfare', in *The Boston Globe*, (4 Apr 2003), p. A17, & Greg Mills, **'**New War, Fresh Tactics... and Old Lessons'**,** in *The Straits Times*, (27 Mar 03).

However, as events turned out, the initial consternation was overtaken by subsequent combat success that matched the long odds. General Frank and Rumsfelds' preferred speedy roadmap for military success in Iraq appeared to have been validated when Baghdad fell swiftly into Coalition hands after somewhat surprisingly light organized resistance. As a US senior military official put it: "No one expected them to smash the Republican Guards to bits so quickly".[12] The fact that US military commanders and analysts had wanted more time and more forces appears to suggest that they were too conservative and the conventional war was actually fought and 'won' by much fewer forces than was thought possible. Major military objectives were virtually secured within a month, even though the *de facto* 'victory' declaration on 1 May 2003 by President Bush was watered-down to manage public expectations. In contrast, Gulf War I took over 42 days with much more limited aims.

On the ground, operational success was achieved despite initial worries about the vulnerability of US supply lines from the harassment of irregular *Feedayeen* fighters and suicide bombers in the first two weeks of the conflict. By the time the dust had settled, Saddam's defence plan appeared fatally disorganized and flawed in its heavy reliance on citizens in Baghdad taking up arms and their failure "to anticipate the speed of US forces".[13] In the end, the Coalition blitz north combined with round-the-clock bombing quickly destroyed the three Republican Guard divisions defending Baghdad. The Coalition's 'rolling-start' strategy proved to be a bold and risky venture that paid off with an impressive military 'victory' for the US coalition forces.

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[12] cited in Kim Sengupta & Christopher Bellamy, 'Iraq Conflict: Why Drive to Baghdad is a Lesson in Efficiency, Flaws and All', in *The Independent*, (12 Apr 2003), p. 4.
[13] Dave Moniz & John Diamond, 'Iraq Colonel's Capture Sped Up Taking of City', in *USA TODAY*, (10 April 2003), p. 2A.

From a potential disaster, the armored rush to Baghdad was quickly heralded as a brilliant operational move that threw off enemy operations and put Baghdad at risk from the third day of war.[14] The 'thunder-run' tactic basically brought a quick end to Saddam's regime with what was essentially a *coup d'etat*.[15] To top if off, the plan was executed with only two tank divisions without the help of a third tank division planners had intended to send in from Turkey – which had been denied basing rights by the Turkish parliament. And in a campaign widely touted to be without parallels in the annals of modern warfare, it took merely half the number of ground troops and two-thirds the numbers of attack planes compared to Gulf War I to accomplish a much more difficult task. The much-discussed strategy that has since become much clearer was to move heavy forces quickly to Baghdad to destroy the Republican Guard while using lighter special operations and airborne forces to secure cities and supply lines in the rear. Coalition forces braved dust storms and death squads in the high-risk 'roll-of-the-dice' drive northwards. On route, they secured Iraq's southern oilfields, took out terrorist camps in the north and south, secured large areas of western Iraq preventing the regime from firing scud missiles at it neighbours. The idea was to avoid combat on the way to Baghdad and to seek out Saddam's forces once there[16] - adhering, as it were, to a Sun Tzuian maxim to 'Attack where the enemy is unprepared and sally forth where he does not expect you…What is of the greatest importance in war is extraordinary speed'.[17] In an earlier 1996 publication, *Bombing to Win: Air Power and Coercion in War*, Robert Pape had discussed in detail the strategic-shock effectiveness of focusing sharply on *decapitation* strikes to swiftly and

[14] See remarks by Retired General John Reppert of Harvard University's Kennedy School of Government, cited in Sengupta & Bellamy, *Op Cit.*
[15] In a typical coup, "you basically grab the airport, grab the main government buildings downtown, grab the TV station, claim you are in charge and dare anyone to dispute you," - John Pike cited in Sengupta & Bellamy, *Op Cit.*
[16] *Ibid.*
[17] Samuel B. Griffith, *Sun Tzu: The Art of War*, (Trans.) (London, Oxford University Press, 1963) p. 69-70.

decisively attain the political goals: "The first Gulf War is…the real test of a new coercive air strategy, decapitation, which seeks to achieve both punishment and denial effects by destroying a small collection of crucial leadership targets."[18] With the military success of Gulf War II, proponents of 'shock and awe' appeared to have won an important argument in heralding the dawn of a brand new age of *effects-based warfare*.

The initial run-away triumphant rhetoric of 'shock and awe', supposedly coined by a journalist, had raised expectations amongst the general public and media circles for a quick end to the war. But media news cycles and military operations work on different clocks. The 'tactically-oriented' media reports of embedded journalists invariably distorted the real operational situation on the ground. In forecasting on the tactical 'embedded media' picture on the ground, it missed the bold and determined operational maneuver over the vast desert tracts towards capture of Baghdad, for what it really was – a bold rush north to tip the real strategic centre – the seat of Iraq's political power to effect regime change. As the 'wave of steel' speeded towards its strategic objective, other Coalition forces were tasked to simultaneously seize key cities - operational decisive points – on route. The entire campaign as portrayed by the unprecedented 'embedded media' coverage initially lent weight to the impression that the strategy of decapitation with a light footprint of forces instead of a massive display of *shock and awe* as had been anticipated, appeared to contradict, if not abandon, the core tenet of the Powell doctrine. The Powell doctrine had called for the steady amassing of overwhelming force before unleashing decisively crushing military power, so successfully executed in the previous 1991 Gulf War. The case could be made that the contradiction was more apparent

[18] Robert A. Pape, *Bombing to Win: Air Power and Coercion in War*, (Ithaca & London: Cornell University Press, 1996), p. 54.

than real. In *Operation Iraqi Freedom*, Powell's doctrine was modified with a sharp focus on speed to target the Iraqi leadership first with an 'opportunistic' decapitation strike with more than 40 cruise missiles based on time-sensitive intelligence. The US and coalition forces had combat supremacy in the air and at sea well before the first round was fired in anger. Overwhelming force was nevertheless applied at decisive points with surgical precision where the battle was joined in Gulf War II to shock the enemy into submission and dissipation. In other words, *there was* overwhelming force *when* the Coalition forces on the ground needed it. The main inflexion when compared with Gulf War I was that even more deadly and precision ordnance was delivered with airpower/naval strike power, backed up by relatively lighter and more mobile, *but* no less, lethal land forces. In overall relative terms, the combat force ratio was slightly changed between Gulf War I and Gulf War II – 600,000 (Coalition) – 1.2 million (Iraqi) compared with 280,000 (Coalition) – 437,000 (Iraqi) respectively. At the 'declared' end of the conventional battle, *Operation Iraqi Freedom* cost the lives of 171 coalition fighters (138 US and 33 UK – almost comparable to Gulf War I casualty figures), with a disproportionately high loss-ratio of thousands suffered on the Iraqi side.

The stark reality is that even in the current age of hyper-speed warfare, marked by real-time intelligence, synchronization and maneuver, it still takes time for forces to conquer territory (space) and any expectations of a bloodless cakewalk is unrealistic and hubris. Any practitioner of *operational art* conversant with the factors of *space-time-force* would know that war is executed in different phases of accomplishment over time and space. Fog, friction and chance are inherent in the nature of warfare. As Field Marshal Helmuth von Moltke, Sr. had once put it baldly:

> No plan of operations extends with certainty beyond the first encounter with the enemy's main strength. Only the layman sees in the course of a campaign a consistent execution of a preconceived and highly detailed original concept pursued consistently to the end.[19]

Having said that, it is arguable that the Gulf War II plans perhaps comes very close to achieving its war aims with minimal fog and friction and within schedule. And by most accounts, the conventional war did end swiftly and was a run-away success at the operational level, if not politico-strategic level at least - bearing in mind that victories on the battlefield can sometimes turn out to be pyrrhic when one takes the long view of history. In any case, overwhelming force surgically applied by deadly cutting-edge technologies significantly increased the speed towards the attainment of the stated operational objectives with enhanced lethality, precision, holistic exploitation of the OODA (Observe-Orientate-Decide-Act) cycle of the adversary. Ultimately, advanced Intelligence, Surveillance and Reconnaissance (ISR) and superior $C^4I$ technologies fusing sensors and weapons, and operated by 'smart' forces in the Coalition order of battle, employing a lightning manoeuvre strategy did have a significant effect on the outcome of the battle.

In a news forum article entitled '*Shock and Awe Misunderstood*', Harlan Ullman argued that the doctrine of *Shock of Awe* had not actually, initially at least, been applied fully according to how he and his study team (veteran generals of Gulf War I) had originally envisioned it in their doctrine development work after Gulf War I. He argued that their version of *Shock and Awe*,

[19] See Helmuth Graf von Moltke, *Moltke on the Art of War*, ed. Daniel J. Hughes, trans. Daniel J. Hughes and Harry Bell (Novato, Calif.: Presidio, 1993), viii.

called for "360-degree, non-stop campaigns using all elements of power to coerce the enemy regime into succumbing rapidly and decisively".[20] According to Ullman, there were two reasons for the difference between conceptual intent and subsequent application. The first was that "the opportunity to target Saddam accelerated the war's start before all of the military elements were in place". And second, "the decision to pause to see whether Saddam's generals would choose not to fight tempered the intensity of the initial onslaught".[21] Other analysts had similarly noted that U.S. commanders anticipating a possible quick victory had "pulled some punches in the opening days of the airstrikes" by dropping two dozen targets from the hit list.[22] Despite the strategic restraint and initial scaled-back intensity, the administration's restrained version of *shock and awe* was applied with a sustained strategic air campaign and quick ground advance on the centre of gravity (Baghdad) – a contemporary manifestation of *blitzkrieg*, as it were. The relatively swift and 'decisive' military victory appeared to show that just the right critical mass of forces, rather than the sheer mass of overwhelming forces was applied at the right time, pace and space to win the conventional war for the American coalition forces.

Although Operation Iraqi Freedom did not quite manifest the full-blown application of *shock and awe*, as some had expected, it was nevertheless a harbinger for US force transformation. In this regard, there are three important aspects to *Shock and* Awe that warrant revisiting to see how future wars could be fought even more speedily, decisively, and with leaner forces. Based

[20] Through the rear-view mirror darkly, the atomic bombs dropped on Hiroshima and Nagasaki in World War II were historical examples, *in extremis*, of the goal of *Shock and Awe.* See Harlan Ullman, 'Shock and Awe Misunderstood', in *USA Today*, (8 April 2003), p. 15A. See also Lawrence Freedman & Saki Dockrill, 'Hiroshima: A Strategy of Shock', in Saki Dockrill (ed.) *From Pearl Harbor to Hiroshima: The Second World War in Asia and The Pacific, 1941-45*, (New York: St Martin's Press, 1994), pp. 191-212.
[21] *Ibid.*
[22] Most of the targets dropped from the initial hit list were mainly communication nodes and a few leadership sites. See Bradley Graham & Vernon Loeb, 'An Air War of Might, Coordination and Risks', in *The Washington Post*, (27 April 2003), p. A1.

on Ullman's team study[23], I have surmised that the following capabilities will be critical for achieving *shock and awe* warfare. Additional qualifications have been inserted (*in italics*).

1. *Pin-point Intelligence and Speed of Striking at Distance*. The possession of unprecedented *real-time and accurate joint civil-military* intelligence about the enemy (*leadership, military and population*) is critical for formulating decisive offensive strategies *involving successful time-critical decapitation targeting*. *Achieving operational surprise of 'first shot-first kill', if not strategic surprise, will be especially critical for operational success in achieving strategic aims.*

2. *Constantly Tilting at the Right Tipping Points*. Effects-Based targeting for striking at critical nodes to collapse an adversary's military and political power rapidly should be applied with *overwhelming force right from the onset of battle and unrelentingly applied with extreme prejudice throughout its continuum*.

3. *Munitions of the Mind with Weapons of Mass Communication*. Besides inducing *physical incapacitation and dislocation,* the enemy should be completely rendered impotent and defenceless to force it to surrender as soon as possible. *This can be done by conducting offensive Psychological and Information Operations to erode an adversary's combat morale, public support and leadership confidence; albeit causing intense psychological disorientation and extreme distress.*

[23] *Ibid.*

From the strategic and operational standpoint, the prescription above for critical mission success in future warfare will no doubt be followed closely by the major and minor armed forces of the world, already busy assessing the operational and strategic offense-defense ramifications of such an elaborate and expensive force structure transformation for their respective armed forces in the wake of *Operational Iraqi Freedom*. The American way of war which substitutes firepower for manpower had shown that stunning military success with low casualties can be achieved with a strategy of precision long-range lethality. As retired US Army General Bob Scales had put it: "We expose as few troops as possible to close contact with the enemy. We do that by killing as many enemy as we can with precision weapons".[24] Others like Bruce Berkowitz have even asserted that: "Gone is the reason to create overwhelming mass of troops – now, troops concentrations merely present easier targets. Instead stealth, swarming and zapping (precision strikes on individuals and equipment) are the order of the day."[25] This latest mantra may well be true for a towering Titan with unrivaled (s)trident-power on the global stage. But in emulation, the world's military 'minnows' would do well not to throw all caution to the new 'Transformation' wind of fighting - fast, furious and light.

**A Cautionary Model for 'Minnows'?**

Events as they had played out in Iraq may have vindicated somewhat Rumsfeld's faith in the lethality of decisive speed accorded by high-tech precision weaponry from the air and sea with

[24] See Dennis Cauchon, 'Why US Casualties were Low', in *USA Today*, (21 Apr 2003), p. 1A
[25] See Bruce Berkowitz, *The New Face of War: How War Will be Fought in he 21st Century*, (New York: Free Press, 2003).

the fielding of lean mobile forces on the ground.[26] They may also have invariably reinforced the view that it is possible to boost the fighting strength of the military without increasing its size, in part by outsourcing some 'tail' jobs and moving more soldiers to the 'teeth' - combat units. But there is still room for paying heed to some speed-bumps; especially for smaller armed forces with no superpower pretensions. After all, lessons learnt from the last war through the prism of hindsight can all too often be used to confirm one's convictions and pet-theories. What is perhaps less acknowledged, is that they can also serve to complicate one's confident assumptions as well; especially if the interactive context and contingent variables in the conduct of a specific war were given a more critical review.

As is common wisdom, one of the most dangerous lessons often overlooked in the flush of victory is to learn the wrong lessons from the last conflict. Every conflict must be planned and assessed on its own unique merits and shortcomings, even though invaluable general lessons can be distilled from each one. One key risk about watching the recent US-Iraq war is making the erroneous analogical reasoning that the way of war waged by the world's sole superpower can necessarily be repeated or replicated by minnows, albeit *writ small*. As Milan Vego had warned: "Lessons can be learnt as well as mislearnt. Those mislearnt might not be obvious until some grave event occurs that results in high losses" in the next major conflict. The key cautionary caveat succinctly put is that "lessons should be learnt by avoiding overemphasis of one factor over the other. Perhaps the most serious error is to exaggerate the role of a single service or a single weapon system by underestimating or completely ignoring other factors that

[26] See Thomas E. Ricks, 'Rumsfeld Stands Tall After Iraq Victory', in *The Washington Post*, (20 April 2003), p. A1; and Dave Moniz & John Diamond, 'Rumsfeld is Perched at Pinnacle of Power', in *USA Today*, (1 May 2003), p. 10A.

contributed to the victories".[27] For example, one of the key factors that should not be downplayed in the recent US-Iraq Gulf War II, was that the US forces though much leaner than the Gulf War I forces in absolute terms, were undisputedly a much more sophisticated, better equipped and deadlier force. The enhanced capability made the already wide disparity in US military superiority over the Iraqi military even more overwhelmingly stark in comparison.

The other big factor was also that US forces faced an adversary that was demoralized, disorganised and ineffective. Furthermore, the US forces had unchallenged air supremacy having seriously degraded much of the Iraqi air defences and power after more than a decade of hard-hitting coalition 'No-fly zone' enforcement strikes. More decisively, both the USAF and UK Royal Air Force were able to maintain persistent airborne reconnaissance of Iraq's airspace and pin-down any Iraqi air action with time-sensitive targeting. In fact, the Iraqi air force was effectively grounded throughout the entire conflict.[28] Little surprise then that the Iraqi land forces melted quickly under the incessant barrage of US coalition precision bombings. Indeed, some commentators may even say that the three-week conventional war was won hands-down without any real-fight. On top of this, the deployment of the US aircraft carriers in the Gulf theatre as well as the absence of any real threat to them[29] meant that persistent Superpower from the air and sea was assured. The same cannot always be said of smaller countries with a few key airbases that are well within reach of hostile enemy scoot-and-shoot artillery, air and special operations disruption/destruction during proximate conflict.

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[27] Milan Vego, *Operational Warfare Addendum*, (Newport: US Naval War College, Jan 2002), p. 60.

[28] For an analysis of why the Iraqi Air Force was reluctant to fight and stayed grounded, a trend which continued from the previous Gulf war in 1990-1, see Craig Hoyle, 'Grounded: Why Iraq's Air Force Won't Fight', in *Jane's Defence Weekly*, (9 Apr 2003), p. 28.

[29] Although, the fortuitous capture of Iraqi commercial ships laden with mines by Australian coalition forces during *Operation Iraqi Freedom* did highlight the maritime danger posed to coalition maritime operations and commercial shipping.

With a thriving global arms trade making long range precision weapons available on the open (and black) market, keeping an adversary at arm's length and one's strategic air strike assets out of reach poses strategic challenges for small states facing proximate threats.

Another key issue not to be overlooked is that more than a decade of economic sanctions had taken its toll on the combat morale and capability of the Iraqi forces. Non-lethal operational fires in the form of a massive informational warfare campaign were also waged before and during the conflict. However, there are limits to the success of Coalition information operations (propaganda) trying to leverage on Saddam's brutal reign for justifying its moral high ground of 'liberation'. The subsequent emergence of pockets of Iraqi resistance and sporadic demonstrations against perceived US occupation showed how even the cruelty and collapse of Saddam's regime did not quite overcome Iraqis' sense of patriotism, religio-solidarity and deeply tribalized nationalism.

In step with this line of critical inquiry, counterfactuals can be illuminating if not instructive. In reminding us of the unpredictability of war, George Friedman pointed out that part of the problem lies in the interactive arena of combat where one should not forget that 'the enemy gets to vote'.[30] What if Saddam's most loyal troops had not voted with their feet and melted into the masses by abandoning their positions/equipment, or if chemical (& biological) weapons had been used by the Iraqis, as was originally feared? Would Baghdad have turned into an urban death trap for coalition land forces, as the Russians discovered in the extended bloody resistance of Chechenya? What would have happened if the Iraqi Republican Guards

[30] George Friedman, 'The Unpredictability of War and Force Structure', in *The STRATFOR Weekly*, (29 Sep 2003).

had offered fierce resistance by dragging out the conventional war instead of abandoning their positions? Notwithstanding Saddam's recent capture, this possibility appears to be playing itself out, from the increasingly bloody guerilla struggle with 'pinprick fighters'[31], and further straining US' troubled victory in Iraq.

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Detractors less sanguine about the speedy *effects-based warfare* basically question the wisdom of short-circuiting the prudent build-up of ground forces (mass) *before* launching overwhelming military force to secure a quick decisive victory, *and* whether there was sufficient forces on the ground, *in the rear and along the flanks*, to secure the key nodal cities in the long dusty road rushing to Baghdad. The size of the invasion force had reportedly been reduced through a series of high level decisions where two units – the tank heavy 1st Calvary Division and the fast-moving 3rd Armored Calvary regiment – were dropped from the war plan months before. Coupled with the no show of the 4th Infantry Division from Turkey, the Marines and Army's V Corps had exceptionally large areas of operations to cover with relatively few men.[32] As a former US intelligence officer had put it: "The military is not like a corporation that can be streamlined. It is the most inefficient machine known to man. It is the redundancy that saves lives".[33] Initial worries and commentaries had focused on how pushing too hard, too fast, too far without sufficient reserves (mass) had actually risked overextending supply lines without sufficient protection, making them vulnerable to attack. Concerns over shortages in fuel, water, spares and ammunition, coupled with serious maintenance problems at the front-line were on the minds of US military planners. At one point, three days of

[31] See Alvin & Heidi Toffler, ' 'Kill' or 'Do Nothing' – Inadequate Choices for Coping with the Riots, Looting and Terror of Tomorrow', in *Pointer*, Vol. 29, No. 3. (Singapore: SAFTI MI, Jul-Sep 2003), pp. 52-56.
[32] See Rick Atkinson, Peter Baker & Thomas E. Ricks, 'Confused Start, Decisive End – Invasion Shaped by Miscues, Bold Risks and Unexpected Successes', in *The Washington Post*, (13 April 2003), p. A1.
[33] Hersh, *Op Cit.*

monstrous weather with high winds and blinding dust virtually stopped all helicopter flights and some units of the 3rd Infantry Division were 'black' on food (ie. down to within a day or two of empty larders).[34] Had the logistic tail been compromised by stiff resistance and 'sliced up like a snake into many pieces' by the guerilla-like irregulars as the Saddam's generals had threatened *ala death by a thousand cuts*, who is to gainsay a very different outcome? The US-led coalition forces might even have reached *culmination point - prematurely and fatally* – tragically short of their decisive points (capture of oil-fields and major cities) and strategic objective (capture of Baghdad); not to mention desired military (commander's intent) and political end states. There were indeed justifiable worries over force protection and whether the rapidly advancing US wave of steel' over the Iraqi desert could provide enough force protection for supply lines and more importantly, whether they could hold out until reinforcements arrived. Plans that appear 'brilliant' and 'on-track' can quickly derail when the bright and shiny locomotive runs out of steam without sufficient resources, redundancies, replacements and spares (i.e. sustainment provision) to meet contingencies on the battlefield. After all, the Clausewitzian fog and friction of war is timeless on all battlefields. As a case in point during Gulf War II, Civil Affairs units of Coalition forces taking over Umm Qasr never expected that their first crisis would be in providing drinking water to the local population – "It was a mission that came up suddenly".[35] Fighting and shifting missions on the fly requires flexibility and sustainment. Having the right mass at the right place and time with the right expertise to get the mission done enhances operational flexibility. That may well be the fly in the ointment for forces that do not possess the critical mass to mount sustained operations at distance, complicated by critical vulnerabilities like supply lines and far-flung $C^4I$

[34] Atkinson *et al, Op Cit.*
[35] *The Boston Globe*, (4 April 2003), A21.

infrastructure. The key words are tempo, persistence, flexibility and sustenance. Broadly speaking, one US Army Colonel Larry Harman has referred to these challenges as 'Asymmetric Sustainment'. The term Asymmetric Sustainment occurs when own force is able to set the strategic, operational, and tactical conditions – before, during and after commencement of operations – so that the enemy cannot interfere significantly with the provisioning of one's forces.[36] It is clear that without securing Asymmetric Sustainment to one's own force advantage, the regeneration of lost combat power would be hampered on the ground. Sustainment weakness can create undesirable and unpredictable pauses in the conduct of advancing military operations which could then lead to further lost of tempo, initiative and even defeat. Post-conflict phase, US military ground commanders had also reportedly complained that although Defense Secretary Donald H. Rumsfeld's desire to fight the war with smaller numbers of fast-moving troops might have been a wise battlefield strategy, it had left them with too few personnel to police a California-size country of 25 million people. Army Lt. Gen. David D. McKiernan, the Commander of U.S. ground forces at Baghdad asked this question: "Imagine spreading 150,000 soldiers in the state of California and then ask yourself, 'Could you secure all of California, all the time, with 150,000 soldiers?" [37]

US management of the post-conflict situation in Iraq has not been an easy task, as US forces spread thinner than planned to get a better grip on the bloody challenge posed by Iraqi guerrillas. The nature of the Iraq war has changed from one of hotwar to one of troubled peace, forcing many to revisit cosy assumptions about swift and decisive victory with a better

[36] See Colonel Larry D. Harman, 'Asymmetric Sustainment: The Army's Future', in *Army Logistician*, (Jul/Aug 2003), p. 38-41.
[37] As he went on - "The answer is no. So we're focused on certain areas, on certain transportation networks we need to make sure are open." See Rajiv Chandrasekaran and Peter Slevin, 'The Ragged Reconstruction of Iraq', at *WashingtonPost.Com*, (8 May 2003).

enduring peace. And as the US becomes bogged down in an increasingly bloody quagmire, detractors have unsurprisingly questioned whether Iraq would be America's next Vietnam. Admittedly, in the current age of terrible asymmetric warfare, winning the peace is often a messy affair and arguably much more challenging than winning the war. Despite Saddam's surprise capture and his brutal regime's collapse, the guerilla problem still festering in US-occupied Iraq looks set to make the war another abject case-study for war termination and exit strategy. Granted the morass of problems are not just military per se, but deeply socio-political in nature. But they can only be compounded by a lack of critical mass and underweight operational forces on the ground.

Another important point is that the war, although unlimited in aims (regime overthrow and occupation) is nevertheless a limited one in means and a short one at that. However, often on the receiving end, smaller countries engaged in military operations may not have the luxury of fighting *limited wars* posing a threat to their vital national interests. In other words, wars of national survival are not to be waged *lightly* and they invariably require the full weight of the nation to be thrown into the war effort. Furthermore, limited wars can stretch out longer than anticipated and even become unlimited ones through escalation and miscalculation; despite cardinal Sun Tzu wisdom that 'there is no instance of a country having benefited from prolonged warfare'. Wars for small countries are by default, *total* in effort and enterprise. In contrast, had it not been for the constant reports of the recent War in Iraq by the US media and Network TV helicopters hovering above groups of anti-war protestors out in the streets, one could well have walked around downtown New York, without even remembering that a war was being waged thousands of miles away to safeguard America's interests. In other words, no

enemy bombs fell on the American soil throughout the war; and this was a nation supposedly at war!

Another noteworthy point is that the US forces that fought in Gulf War II were all volunteers and highly trained regular professionals; even if they were subsequently reinforced by US National Reserves after the hotwar proper. Exacting competency standards in warcraft and unshakable combat motivation are therefore as important, if not more so, for military forces which have a force mix of regular and conscript soldiers.

**Conclusion: Trim Down & Speed-Up, But Watch that Mass**

As a general rule, the accomplishment of higher-level operational or strategic objectives requires the employment of larger and more diverse forces than does the accomplishment of tactical objectives at the lower levels of war. But history has also seen small forces accomplishing strategic results. At the risk of contradiction, exceptional minnows can sometimes prove the rule despite lighter mass. As was seen in Afghanistan and Iraq, big mass makes for big targets by much smaller, more agile and highly networked 'tech-smart' forces. The old saying - 'the bigger they are, the harder they fall' - resonates well with this line of reasoning. US defense transformation advocates who believe that the Army needs to shrink have a strong case when they argue that sheer "mass is no longer a strength on the battlefield, because it simply presents a larger target."[38] And they are probably right. After all, a large mass of land forces without the necessary integration with air and naval elements is worst off

[38] Ricks, *Op Cit.*

by far compared to a smaller and jointly integrated adversary who moves fast and packs a wallop where it matters.

For example in World War II, forces no larger than an army corps conducted major operations. The relatively light but highly mobile German Panzer-Luftwaffe force spearheaded the *blitzkrieg* at Sedan cut off the major part of French and British troops in Northwestern France. Another example from the same era is the Japanese 25th Army with only three divisions, totaling some 35,000 men strongly supported by air and naval forces dispatched any opposition and conquered Malaya in only three months (8 December 1941-15 February 1942), despite confronting a much larger British force of some 70,000 troops.[39] In the end, many complex variables and contingent interactive forces (superior planning, operational art doctrine, leadership, morale and even the element of luck) account for the various operational successes. It is generally acknowledged that by avoiding time-consuming and costlier attrition warfare, "operational warfare can allow the smaller but better trained and skillfully led force, guided by sound strategy, to defeat a much stronger opponent relatively *quickly* and *decisively*".[40] In our current age, swiftly and decisively waged strategic dislocation warfare conducted in an integrated and joint fashion can yield significant strategic dividends for smaller militaries. After all, favouring the quick victory path of least resistance with clean surgical speed intuitively makes for a sound strategy-of-choice anytime over bloody brute force which often leaves a mess in its trail.

[39] Vego, *Op. Cit,* p. 11.
[40] Milan Vego, *Joint Maritime Operations Syllabus*, (Newport: Naval War College, 2002-3), p. 3.

On that note, the deadly application of high technology in warfare is an indispensable force multiplier. However, the question still remains as to just how much hyper-technology can substitute for having 'boots to the ground' critical mass in the ultimately projecting force to secure hard fought ground; albeit the real combat capability of any military force serious about mounting decisive operations, taking the fight to the adversary to win the war *and* secure the durable peace sought beyond. In the case of post-*Operation Iraqi Freedom*, some experts like Kenneth Pollack had argued that with US troops bogged down in Iraq and deployed at hotspots all over the world[41], the US army had "tapped out". He further argued that stabilising Iraq would require double the 140,000 US troops deployed there. Similarly, top US army generals have also voiced concerns that US troops in post-war Iraq had been stretched too thin, and were short of much needed 'boots-to-the-ground' infantry and military police. Despite the concerns, General John Abizaid, the American Commander in Iraq had maintained that "[t]he number of troops – boots per square inch – is not the issue." [42] But as others like former British Foreign Secretary Robin Cook have noted in the aftermath of *Operation Iraqi Freedom*, there is increasingly, a recognition that "a military 'lite' option does not work after victory".[43]

Prudence and necessity dictates that small countries with lean armed forces will continue to do well by leveraging on superior technology and training to compensate for limited

[41] Global deployment of US military personnel at end 2003 – Iraq: 140,000; Kuwait: 34,000; Afghanistan: 10,000; Balkans: 5,000; South Korea: 37,000.

[42] Towards the end of 2003, according to military analyst Michael O'Hanlon, nearly half the US Army's 33 combat brigades were already in Iraq. And with other commitments around the world, just 12 combat brigades were available for deployment and they were already being prepared for duty in Iraq. At the height of the Vietnam War in 1968, the number of American men and women in the Army, Navy, Air Force and Marine Corps was 3.5 million. It is 1.4 million today. Furthermore, the active duty Army, the service most needed for labour-intensive peacekeeping missions, has fallen from 1.6 million troops in 1968 to 480,000 by end 2003. See 'America's Military Stretched to its Limits', in *The Straits Times*, (26 Aug 2003), p. 7; and 'US Troops in Overstretched', *Today*, (26 Aug 2003), p. 18. See also Fareed Zakaria, 'Here's a Bet for Rumsfeld', in *Newsweek*, (6 Oct 2003), p.13.

[43] Cited in interview with Melissa Roberts, 'Leading Lights', in *Newsweek* - Special Issues 2004, (Dec 2003-Feb 2004), pp. 18-19.

demographics and little strategic depth. But the challenge remains in determining and maintaining a military critical mass that will ensure there will be no force (combat power) imbalance that could have negative strategic consequences. Strategic deterrence and operational flexibility/agility/endurance will rest on a credible force structure with a critical mass of standing forces and ramped-up forces, able to face-down or fend-off any threat by mounting effective operations on multi-fronts along the spectrum of conflict. Whether or not deadly hyper-speed technologies can help to reduce mass or even serve as a decisive 'force-multiplier' ultimately lies in its smart and decisive application in relation to a specific interactive force-field of combat engagement. Even Sun Tzu, in his revered wisdom and love for indirect strategies predicated on deception and intelligence, had not been remiss in pronouncing on the real value of mass: "When ten times to the enemy's one, surround him; When five times, attack him; If double his strength, divide him; If equally matched, you may engage him; if weaker numerically, be capable of withdrawing; and if in all respects unequal, be capable of eluding him, for a small force is but booty for one more powerful".[44] And as leading modern military historian John Keegan had concluded in his latest book on *Intelligence in War*: "ultimately, it is force, not fraud [deception] or forethought [intelligence], that counts".[45] In another telling pointer from Greek military history during the Peloponnesian Wars, Pericles' moderate policy of sea raids and fortified bases by leveraging on Athen's powerful navy did not deter Sparta's superior army. This was because Athens "simply did not have enough manpower to offer a credible offensive threat…Most Spartans did not have the imagination to understand the threat…Only the challenge of superior army could have held

[44] Sun Tzu, *The Art of War*, Griffith, *Op Cit.,* pp. 79-80.
[45] Cited in Evan Thomas, 'Spy Games Uncloaked: A Great Military Historian Says Intelligence is Oversold', in *Newsweek*, (1 Dec 2003) p. 52D. *Clarifying definition in parentheses mine.*

them back, and the Athenians had no way to produce that…So war came".[46] That remains a salient, if stark, parting shot from the Ancient Greeks on the quintessential character of geopolitical conflict and human nature.

This paper avers that small countries that are more likely to fight close-proximity wars - rather than far-flung ones - would do well to have a prudential force structure policy that ensures the development of a critical mass of force-mix and combat capability. In any case, such states must have sufficient redundancy in mass to present a credible deterrence with strategic capacity to compensate for a lack in geostrategic depth. In the drive to deconstruct militaries and transform into leaner, more lethal and mobile forces, there is a need to keep an eye on any potentially deadly imbalance – *more lethal speed but less long-distance mass* - in force structure that can degrade the capability to meet the full spectrum of threats not amendable to swift and decisive victory. As the recent wars in Afghanistan and Iraq have shown yet again, when the strategic and military objectives are finally attained, there is still the precarious question of whether the desired political end state has been secured.

Winding down the war machine from a rolling-start requires the transition from combat ops to hot-peace enforcement. Troubled-peace building operations can also quickly complicate the

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[46] This historical footnote in no way suggests that the rational calculus of comparative numerical strength alone would necessarily forestall conflict in every instance. That would be to make an "obvious fallacy", as Clausewitz had called it, to believe that "in the end one would never really need to use the physical impact of the fighting forces - comparative figures of their strength would be enough. That would be a kind of war by algebra." Ultimately, wars are still waged because of honour, interests, fear *and* miscalculation. See Donald Kagan, *On The Origins of War:And the Preservation of Peace*, (New York: Anchor Books, 1995), p. 74; and Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton: Princeton University Press, 1989).

very concept of military victory and undermine operational confidence in securing peace on the ground. The seductive vision of warfare as offered by the latest Gulf War can be misleading and misapplied, especially for military competitors and minnows of the world watchful in the long shadow of the world's sole Superpower. In drawn-out Low Intensity Conflict (LIC) and Stabilization and Sustainment Operations (SSO), what then is the critical mass necessary to not just to win the war but to restore/win the peace as well? While militaries continue to try to win wars with the minimum of fighting, with lighter brigades rather than heavy divisions, they should also be prepared for more complex political settings beyond hotwar.[47] For such eventualities, strength and stamina in numbers, just as surely, still count for something.

Banging on speed looks set to be *the* simple and obvious solution in the future combat force equation. But as Clausewitz had once cautioned: "Everything in war is very simple, but the simplest thing is difficult".[48] Any plans for swift and decisive victory must also prepare for a slow and inconclusive victory. Having the right capability mix and force mass will be not just necessary but critical for meeting the increasingly complex challenges thrown up by the fog and friction of warfare, and new or unanticipated missions. In addition, at the operational manning level, actual manning status at both the tooth and tail ends of the force organisation should match up with force manning structures approved on paper in so far as possible, to prevent the hollowing out of forces and creation of paper tigers.

[47] Robert H. Scales, *Yellow Smoke: The Future of Land Warfare for America's Military*, (Lanham: Rowman and Littlefield, 2003). See also Lawrence Freedman's Review of Scales' book in *Foreign Affairs*, (March-April 2003).
[48] von Clausewitz, *Op Cit.* p. 119.

In the end, *Mass* still matters. After all, the surest way to victory is still when the right forces are amassed at the right decisive points to overwhelm the objective, thereby adding decisively to the swift application of deadly force. *Mass* or the concentration of force remains a key principle of war, even if *economy of force* and *speed of command* are the others that have been on the operational ascendant of late. Ultimately, the operational art in warfare planning is to balance all the principles of war to achieve the desired strategic objectives. But by going beyond the notion of Mass as 'concentration of force' per se, having a *critical mass* of military capabilities facilitates both the concentration and flexibility of force employment *and* political options. To be sure, warfare is not always a symmetrical contest between equally matched forces. And small countries do not necessarily fight only fly-weight wars. To punch above their weight and deliver a knock-out blow, they will need to maintain a credible force mix of lethal high-tech capabilities with the critical mass of military strength in physical numbers and qualitatively superior wherewithal; albeit the joint power of land, air and sea forces to deliver the necessary firepower for operational success in future missions.

In terms of maintaining a healthy grip on strategic reality, one should be careful of the tendency to speed with blinkers-on towards the latest 'sound of the big guns' in the on-going doctrinal debate on transformation, as it were. It is worth reiterating that one of the potential pitfalls in learning from the last conflict, or applying the lessons of one conflict to another in a different context is that the particular lessons considered to be salient can be highly personalized and even politicized; in other words choosing what to learn and ignoring other lessons can lead to partial conclusions. It would be necessary for one to eschew privileging or exaggerating one factor over another. In this regard, overemphasis on the precision high-speed

technologies seen in the decade long US-Iraq Gulf War can obfuscate the important role played by mass. Decisive speed is increasingly crucial to securing victory with the minimum of own casualties in the battlefield and bringing armed conflict to swift closure for political resolution. But it can leave blind-spots in the blitz to victory. Mass should not be relegated to a small-print footnote in the future way of war, even as force structure gets more fleet-footed with lighter footprints. That said, mass is not an end in itself and neither is speed. There can be no shortcut to swift and decisive victory without critical mass. True enough, force structure development premised on more lean, faster, smart, agile and flexible forces are increasingly integral operational imperatives in an age where 'doing more with less' makes not just good economic sense, but a normative budgetary and demographic necessity; especially for small states. However, there should be no fundamental disconnect between strategy and policy when it comes to maintaining a critical mass of military force-in-being for deterring, fighting and winning the next war if it should come calling. In the end, there are limits to what downsizing with rapid technological augmentation can accomplish. That is worth remembering in the deconstructive dash to transform. The strategy-policy challenge will be in being clear-eyed about what those limits *and* deliverables are. Force planning choices that scrimp or, worst still, sacrifice critical mass do so at future peril.

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