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# Warring Minds & Cognitive Ammo

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**Air Vice Marshal (Retd) Rajesh Isser, AVSM,VM (G)** was commissioned in the Indian Air Force (IAF) in Dec 82 and has over 8000 hours of flying to his credit, including combat experience in Sri Lanka (Indian Peace Keeping Forces 1987-88), Siachen Glacier, Kargil (1999) and Congo (UNPK 2003-04). He is a Category A flying instructor. He has operated with all Special Forces of the Indian Armed Forces in various operations since 1983. He has also trained with the NSG as helicopter crew for special missions. He has held numerous operational commands and staff appointments in his career of 37 years.

He has been the IAF's HADR Task Force Commander in many rescue and relief ops all over India, including Uttrakhand 2013, Ladakh-Leh 2010, Andhra-Karnataka 2009 and Arunachal Pradesh 2000. He has also done HADR coordination in Nepal, Bangladesh, Sri Lanka and Bhutan over the years. He has commanded an Aviation Unit in UN Peacekeeping Mission in DR Congo (MONUC) under Chapter VII. He flew and coordinated a number of humanitarian missions in DRC, Rwanda, Burundi and Uganda.

As a Director of Net Assessment at HQ IDS, he has coordinated numerous strategic projects and has authored strategy reports on many critical issues. He is an author of three books and has a number of articles to his credit in national and international journals on diverse subjects such as disaster response, peacekeeping, airpower in counter-insurgency, irregular conflicts etc. He is currently pursuing doctoral studies on leadership challenges in disaster response.

# Warring Minds & Cognitive Ammo

**Abstract**

*Warfare's most visible element is blurring of lines between wars and peace, competitors and adversaries, future friends and foes, and such like. It is an age of perception shaping and dominating the 'truth'. The Chinese have embraced this for centuries. Reflexive control, creating and dealing with complexity, strategic foresight and sharp power projection are just some facets of this battle for the minds. The core strength of a nation is the ability of its informed leaders to envision the future and take correct and optimal decisions to guide all national endeavours. Scenario planning, war gaming, envisaging contingencies are just some of the tools in hand. There are vexing variables to consider such as power of narratives, proxies and galloping advances in technology. Strategising for such mind games has to be coordinated at an apex national level.*

## Introduction

Strategic competition and warfare have truly morphed in the last few decades - in fact, the most visible element is blurring of lines between wars and peace, competitors and adversaries, future friends and foes, and such like. In an age where information pervades in every facet of human existence, it is a certainty that data, perception shaping and dominating the 'truth' will precede and prevail in any conflict and confrontation. Every element in a nation's kitty that collects, analyses and disseminates information becomes a participant. In order to create desired effects on the opposing side, all these become coordinated instruments of power.

The Chinese example is pertinent in that it possess a unique strength in terms of control over its society and to large extent information dissemination in it. Most elements operating in the information domain including foreign agencies are controlled by coercion to some degree. It scores a distinct advantage over noisy and dissent-filled democracies where this control over information is not absolute. On a level ideal field of free inter-connectedness among nations, they would have faced grave vulnerabilities. But the political bosses have fine-tuned and balanced peoples' aspirations with a carrot-and-stick

approach. Additionally, playing out nationalistic forces and invoking the historical legacy of injustice by foreign powers on China, people have been rallied around this highly centralised power pole. There are thousands of minor protests and channelized dissent allowed to serve as a vent for pent up steam. The benefits of trading profitably with the world has visibly moved more than 300 million people out of poverty, but at the same time the party's ruthlessness is evidenced in Xinxiang, Tibet, and very infamously at Tiananmen Square many decades back. Well before the Trumping of 'America First', the Chinese Government has all the time been quietly invoking a 'Han First' policy.

In the Chinese way of life and philosophical outlook, confrontation and cooperation can coexist to combine opposites to create opportunities for deceit and benefit. An example is Chinese trade practices with the world. It has indulged in widespread improper practices such as violating patents, stealing designs, offloading pirated products and cyber theft, but at the same time as a P-5 professes to the world at large about upholding of norms and laws. It deeply understands that shaping perception through short, medium and long term actions is key to accelerate its rise to the top.

This article looks at issues that affect the battle for the minds. It explores the example of reflexive control, dealing with complexity and some versions of power exercised by dominant nations. A pre-requisite to good strategy is to gauze into the future for threats and opportunities. Issues of strategic foresight and tools for scenario planning are then examined. Next, some vexing variables are deliberated over such as narrative power, proxies, and technology as a shaper of perceptions. Finally, some issues of higher level decision making and its processes are examined to draw out vulnerabilities within, which are always a primary target for an adversary. A way-forward is suggested to stay on top of this battle for the minds.

## Complex Mind-games

**Reflexive Control** B.H. Liddell Hart in his work *Strategy* famously said, "The profoundest truth of war is that the issue of battle is usually decided in the minds of the opposing commanders, not in the bodies of their men." Reflexive control is effectively communicating to any competitor specific and prepared information to induce action and decisions desired by the initiator. Most western writers and analyst believe that this science was formalised in Soviet Union flowing from human cognition research. It is essentially a covertly carried out mind warfare to lead the opposition to a desired end-state. For the Russians, the West has been indulging in it forever. For example, some consider that the Strategic Defence Initiative (SDI) was a classic example of US use of reflexive control. It compelled and forced the Soviet Union to keep pace and ultimately exhausted it to bankruptcy.

Design methodology followed by western armed forces helps make sense of complexity across operational environments, and connects execution with the commander's vision. Combined with processes of reflexive control, the framework offers a continuous iterative process throughout an operation or campaign. It informs and updates military leaders to leverage their strengths and enemy's weaknesses to exploit all opportunities by understanding adversary decision-making objectively as well as through the subjective lenses of other actors. Reflexive control allows leaders to challenge assumptions and

biases with facts, thereby reducing cognitive cobwebs. An understanding of opposition's assumptions, design, decision-making cycle and risk calculus assists in creative solutions.

Reflexive control must be well understood since the other side would also endeavour to get similar effects. Continuous and agile risk-analysis and decision support tools by competent staffs enable military leaders to employ and defend against reflexive control. Reflexive control exploits moral, psychological, cognition, as well as the personal characteristics of leaders. It includes deception at all levels, disinformation, encouragement, blackmail by force, and the compromising of various officials and officers. According to Thomas (2004), the central focus of reflexive control is on the less tangible element of military-art rather than the more objective military-science.[1]

The science and art of strategic-shaping is on similar lines. It is a coercive whole-of-government approach that aims to sow ambiguity and confusion in an adversary's calculus and intentions. Increasing complexity, uncertainty and large risk perception in the adversary's cognitive domain should result in multiple dilemmas and a sense of loss of control in their minds. Quite clearly, this needs to be planned and coordinated at the highest levels of the Government since timing, sequencing and tempo are critical when dealing with such complex variables.

**Chinese Strategy** China's anti-access and area-denial (A2AD) strategy is primarily aimed at keeping far superior US naval and joint capabilities far away from where it can be devastatingly effective. This is tailored to its eastern seaboard where all the maritime claims would inevitably cause friction and conflicts. Rarely has a medium power achieved a super-power status without conflict. China is getting ready for that, albeit planning to fight a war that it can through asymmetric approaches and not the one that the US wants it to fight.[2]

A2AD is essentially multi-domain with an integrated mix of sensors and shooters based on land, air and maritime platforms.[3] Weaponry includes long and medium range artillery, rocket regiments, surface-to-surface missiles, air launched munitions, a variety of anti-ship and anti-aircraft missiles, long range cruise and ballistic missiles etc. More importantly, they are all networked to align and respond quickly as per a larger strategic intent.[4] Space-based prowess and anti-satellite weapons add by improving own SA while degrading the adversary's. The final picture is completed with capabilities in the cyber and information realms. Primary targets for hard-kill would be large platforms in the carrier-fleet, airborne command and control aircraft, airborne refuellers and such others that would effectively curtail full spectrum freedom in the designated zone. All this would be done along with a core effort to degrade US' superior network-centric setup.

The war in the domains of space and information (cyber and EM) would start in right earnest well before the deployment in other domains. PLA reforms implemented since 2015 show a distinct trend towards 'informationisation'.[5] In addition to theatre commands to allow Multi-Domain (MD) operations, China established a Strategic Support Force (SSF) under the Central Military Commission (CMC), with a mandate to directly integrate and function with theatre commands.[6] Besides joint and integrated

operations with theatre commands, the mandate includes: full spectrum intelligence, surveillance and reconnaissance (ISR), management of satellite operations, defence of the electro-magnetic spectrum and cyber space tasks, and providing all these services to users.[7] This architecture clearly recognises the validity of MD operations. The Chinese believe that a potent mix of space, cyber and EW are key to the overall information campaign.[8] The SSF integrates these quite tightly.

**Dealing with Complexity** There are many strategic thinkers e.g. Gallagher et al (2012) who debunk the current obsession with complexity at the cost of need to strategise. Their whole argument is that the world was always complex and unpredictable, and wicked problems do not obviate the continuous search for solutions.[9] Rittel and Webber introduced 'wicked problems' in their seminal work *Dilemmas in a General Theory of Planning*, while trying to make a point that beyond science there may be a space for 'art' to solve such problems.[10] Theorists like Conklin (2006) claim that wicked problems are so complex that they may not allow good enough solutions, and only somewhat better or worse responses can be attempted.[11]

The US Quadrennial Defense Review 2010 warns that a "jack-of-all-trades, master-of-none" approach to complexity carries serious risk of attempting to pursue all possible options at once, and failing to prepare truly for any of them at all.[12] Too much attention to complexity may lead to a trap where lessons from the equally complex past may get ignored and some relevant lessons-learnt and useful analysis set aside. A complexity-based approach advocates more flexibility and less commitment, which is vague when prioritising resource allocation. Bousquet and Curtis (2011) assert that the possibility of nonlinear phenomena, butterfly-effects, self-organizing, adaptive systems without a central authority and emergence have always persisted. The need is to continuously examine key assumptions in changing circumstances that allows adaptability.[13]

Undoubtedly, the communication revolution and faster diffusion of technology has thrown up newer challenges of unpredictable groups springing surprises. Joseph Nye's paradox "power measured in resources rarely equals power measured in preferred outcomes", seems more apt today.[14] Gallagher et al (2012) suggest that getting out of the complexity trap involves a belief that good strategy allows coping. Strategy is a commitment to a particular course of action - a heuristic approach that allows management of large data, analysis and decision-making.

**Sharp Power** It constitutes all responses short of war, such as coercion, persuasion, political power and inducements to further one's national interests.[15] Joseph Nye first described soft power in his seminal work *Bound to Lead: The Changing Nature of American Power*, as a policy tool that nations can use to 'achieve desired outcomes through attraction rather than coercion'.[16] Smartness is achieved by adding elements of diplomacy and military force to strengthen the strategy against a target, mixing hard and soft components in complementary and synergistic ways. Soft power directly or indirectly influences people, cultures, values and policies; an example being help in humanitarian assistance and disaster relief involving both civilian and military aspects. US Secretary of State, Hilary Clinton saw smart power as using the "full range of tools at our disposal—diplomatic, economic, military, political, legal,

and cultural—picking the right tool, or combination of tools, for each situation."[17]

'Sharp Power' was described by The Economist as policies that help authoritarian regimes coerce and manipulate opinion abroad.[18] According to Manya Koetse (2018), China can radiate sharp power because it combines the world's second largest economy, second-largest defence forces, an authoritarian capitalist-communist regime (with Chinese characteristics), a President 'for life', capacities to contest the rules-based international order, a massive propaganda and information control machinery, and a large diaspora worldwide.[19] Essentially it aims to use three principal tools: win over the political elite by offers of investments; win over pliable and pro-China elites by inducements and offers and; create dependence and seek favourable political responses. China's foreign assistance budget at $9.49 billion is a 15.6 per cent increase from 2017 and almost 40 per cent higher than its 2013 allocation.[20]

Subtle economic coercion and arm-twisting in Africa and Latin America, Pakistan, Central Asian Region (CAR) states and some ASEAN countries have been enabled by such smart ingredients and economic muscle. It is believed that many countries out of the 68 Belt and road Initiative (BRI) members are at potential or serious risk of debt payments default.[21] At the same time, more than 500 Chinese funded and staffed Confucius Institutes worldwide and many more Confucius classrooms in schools all over the world are edges of smart power.[22]

Influencing and penetrating media in these countries and other targeted ones is another toolkit in the Chinese kitty. According to a Reuters report in 2015, state-funded China Radio International had a worldwide presence of 33 radio stations in 14 countries across four continents. A three-pronged approach consists of: developing presence of Chinese media in the country; establishing partnerships, content exchanges and cooperation agreements between Chinese state media and the local public media, media persons and media houses; and, offering exchange opportunities and training for journalists. For example, the cancellation of Chris Hamilton's book *Silent Invasion in Australia* was a first time that a foreign publisher was coerced into submission by Chinese threats.[23] The New York Times claims that under President Xi Jinping, China has grown increasingly confident in using its vast market as bargaining chip, forcing foreign firms to acquiesce to strict demands on free speech.[24]

## Decision-Making in Complexity

**Analysing Human Decision-Making** Analysts using human-factor analysis try to discover factors and variables that affect groups or individuals allowing strategies for information operations to influence behaviour. A psychological dissection includes biographic details, leadership study, and hierarchical decision-making processes. Factors such as group dynamics, bureaucratic interests and routines, and rationality processes are prime considerations. For example, cultural preferences and priorities can be used to infer logic of reasoning and underlying assumptions.

Matthew Wahlert (2012) in his article, *The 'motivated bias' Dilemma in Warfare and Intelligence* tried to explain how this bias affects behaviour of national security decision makers, and has been responsible for many intelligence and policy failures.[25] It is a personality aberration that makes one see only

previously held images and remain path-dependent without considering imperative alternate paths. So one essentially ignores pertinent information and chooses only that what confirms to previous beliefs. Additionally, in the military and other steeply hierarchical security organisations, there is an overpowering pressure to align the analysis to what the commander passionately believes in. This is aided by combination of promise of rewards and punishment, and even bias among lower staff and analysts. Add to this ego and hubris, so common in very powerful leaders, which inevitably lead to stubborn arrogance and inflexible beliefs. The way out is with leaders opening themselves to diverse analysis and 'loyal' dissent. Similarly, cognitive bias of 'Mirroring' and 'Rational Actor Theory' makes an analyst or decision maker see through his own lens and perspective, and expect rational reactions from the studied object which may be culturally and contextually flawed.

Culturally people reason in different ways because of varying preference structures and historical experiences, among other issues. Therefore, what is irrational to one group may be rational to another e.g. perceptions of liberty and equality, individual and collective rights, risk aversion and acceptance, tradition and modernity etc. Also, intuitional thinking of leaders may differ from logical reasoning and this needs to be anticipated and weighted. At the least, uncertainty and fog should be taken for granted in these processes. This is because of multiple variables, some predictable and some not. A way-forward is a trial and error processes in which carefully formulated hypotheses are falsified. War-gaming must throw up the unexpected and uncertainty, and not seek to justify what we believe in and 'want to see.'

**Pitfalls in Analysing Data.** All militaries have many unique sources and databanks which include training and exercises feedback, inventories of all equipment held and personnel status records. This valuable but limitless data collected is constantly being updated in real-time. But all this exists in silos from where decision-makers can access and improve their situational awareness. There are tools for visualising and interacting with these, as well as some formats where computed ready-made analysis can be made available. However, reliability in terms for catering for multiple variables and functions are dependent on subjective-based inputs and interpretation.

But all this has changed with advent of machine-learning and artificial intelligence (AI), which are evolving and advancing in capabilities at an exponential rate. All major militaries of the world have flagged AI as the most critical component of future warfighting. The US President issued an executive order (No. 13859) on February 11, 2019 making this a priority area to maintain American technology leadership in the world. The US Army Futures Command has set up a task-force to experiment, train, deploy, and test machine learning capabilities and workflows. It is to explore how AI can improve readiness and response capabilities.[26]

Military decision-making at any level will involve: sensing (gathering information), assessing and analysing, taking decisions based on risk-management framework, execution and its monitoring, and constant evaluation and adaptation based on feedback. Added to these are factors of severity and probability which need to be adequately weighted. Time-sensitive situations would additionally demand consideration of timeliness of decision where delays could lead to highly adverse situations.

Modern conflict-management involves a whole-of-nation adaptive approach in dealing with multi-faceted threats and uncertainty in a dynamic environment. Operational plans will have to deal with actors with varying agendas, reactive capacities and competencies.

For example, in a counter insurgency (COIN) environment, data would have to be categorised initially under heads such as political, military, economic, social, information, infrastructure, physical environment, and time operational variables, along with socio-cultural aspects of beliefs, value-systems, customs, and linked behaviours. Keeping in mind the 'Pareto Principle' which states that roughly 80 percent of effects come from 20 percent of the causes, these all have to be carefully weighed in.[27] Time pressures to analyse and decide quickly may have cognitive and judgmental biases, and it would make sense to have these done by tested processes run by AI. Data can be explored for trends, correlations, and relationships by description analytics to understand operational aspects. Using statistics, mathematical and probability models, AI can give out initial predictive outcomes. If most variables have been identified and fed in, AI can produce prescriptive outputs to guide decision-making.

However, quantitative analysis by humans or machines may still contain traces of bias and assumption.[28] Military history is replete with examples: Operation Market Garden in WW- II where motivation levels of Wehrmacht was assumed incorrectly besides ignoring inputs of German armour deployments; the Vietnam War where McNamara's pure data-based decision-making process ignored human interactions and biases; and, the fall of Mosul in June 2014, where only a thousand Islamic State insurgents got the better of sixty thousand soldiers of Iraqi Army mainly due to ignoring tell-tale signs because of confirmation bias. The most obvious example of the WMD bogey leading to the First Gulf War is being avoided here because in the opinion of the author it was a clear agenda to dominate middle-east politics and finally pressure Iran.

As per Juran (1989), the Pareto Principle often makes analysts "fail to select the vital metrics from the trivial many."[29] A common reason for faulty analysis is attributed to the Reversal Paradox in which bits or parts of a dataset can lead to a wrong picture. For example, if one was to take the game of cricket (shorter forms), the penchant of lovers of the game especially commentators is statistical analysis. If it was determined that the best batsman was to be one with the highest strike rate, the initial batsmen facing a new ball, more swing and a responsibility to stabilise the innings, would lose out to those who come later and generally let loose. This despite scoring more runs consistently. There are many documented cognitive biases, such as seeking information that supports existing beliefs and discount that which is contrary. Similarly, a commander's aversion to risk supported by groupthink can waste opportunities in combat. Gen Sagat's example in the 1971 War to liberate Bangladesh is illustrative. 4 Corps commanded by him had a limited mandate by the Indian Army as compared to the main thrust from the west by 2 Corps. But his propensity for risk-taking and adaptability to new situations, allowed him to leap-frog his troops in Mi-4 helicopters and, unbelievably reach the doorsteps of Dacca. It was a game-changing moment.

Many commanders do not like getting out of their comfort zones, and therefore may not be able to discern decisive changes in tactics and operational manoeuvring by the adversary. There are many Indian examples in the recent past. First is the case of the 1962 War and the debacle against the Chinese. Despite information that forward posturing with limited troops against growing Chinese mobilisation was tactically unsound, the nexus of politician, bureaucracy and military leadership put its blinkers on. Worse still, the only asymmetry of offensive airpower was kept out of action because of invoking a false and impossible feat of Chinese airpower retribution.

Second example is the Indian Peace Keeping Force (IPKF) deployment in Sri Lanka. It is widely believed that when Gen Sundarjee was asked as to how many days it would take to liberate Jaffna, his assurance was in three days. It finally took a month to clear only the road from Palali Airport to the University. Even the fiasco of special heliborne operations in Jaffna University was based on perceptions of cherry-picking information and discounting the ones that were contrary. More importantly, despite clear signals that guerrilla tactics were the Liberation Tigers of Tamil Elam's (LTTE) forte, IPKF went in for large force action along predictable pathways. Rest of course is history.

The last example is more recent of 2005. The US and allied forces had just taken over Iraq after Saddam's forces had melted away. The US tried to enlist Indian troops (a division plus) to dominate Southern Iraq. It was a crucial time of Indo-US bonhomie and a possibility of the nuclear deal. Despite all available data and analysis that pointed to the inevitable pitfalls and the much larger ramifications (so obvious today in hindsight), the file was cleared by everyone in the process and troops were readied for departure at Delhi. It is only Prime Minister Vajpayee himself who called it off, and saved India some future blushes.

Decision-making based on pure quantitative metrics could be laced with untested assumptions and selective choice of information. It is therefore, important to test assumptions in plans and visualise contingencies along the way beforehand. This is where traditional qualitative techniques such as war gaming and table-tops can help. Today, these are adequately supported by integrated data warehouses, expertise and optimised software.[30] AI could effectively replace heuristics and good enough decision-making thereby bringing in standardisation and confidence to take decision. What is critical is an open-mind to questions and validation. Any framework of decision-support must be freely examined by leaders and their advisors for reliability of data, choice of data-analytic parameters, consideration of human factors, vigorous testing of assumptions, risk-assessment, and probability of contingencies.

**Al in Decision-Support.** As every sensor and shooter gets networked into the 'combat cloud', the volume and velocity of data flows become impossible to be effectively handled by human decision makers. However, human ingenuity, creativity and adaptability cannot be yet replaced by anything else. But what Al can do is handle this data in terms of monitoring, triage, scoping etc. at a basic level, and have manageable information for decision makers to handle. Machines could also provide decision-support on suggested actions to be taken. Decision-support tasks would include: data-mining from all forms of inputs and fusion into a standard form; applying big-data analytics and suitable presentation;

providing courses of actions and their consequences; and, provide means to validate the reliability of all these functions.

**Intuition in Decision-Making.** Herbert Simon's pioneering research and resulting model of Bounded Rationality accounted for the varied practical limits on rationality in a world of uncertainty and complexity. Then two Nobel Laureates, Daniel Kahneman and Amos Teversky showed the role of a wide variety of biases and cognitive short cuts in quick or just-enough decision-making. Henry Mintzberg and many other social scientists claim that intuition and judgment are not necessarily inferior to rationality. Many are clear that problem-solving areas involving creativity, many competing goals and variables may be better served by informed intuition rather than detailed analysis; therefore, the imperative to combine analysis and intuition in planning. According to Mintzberg (1994), the key quality of planning is that it is a formalised procedure that is made necessary in large organizations by the need to coordinate internally and take account of the future in a rational manner. Increasing aggregation of data with more questions on the emerging bigger picture can bring in greater subjectivity.[31]

Colin S Gray (2007) warns about using an all-too-familiar phrase 'the foreseeable future' because it is not. It highlights the challenge to cope with uncertainty, and not try to diminish it.[32] It is non-optimal to plan and invest for a worst-case scenario, as it is to plan for a best case. Gray advocates an approach that combines: making small mistakes rather than big ones; adaptability and flexibility; prepared for surprises when known trends interact in unexpected ways. Complexity does not allow predictability, and the role of strategy is to have coping capacities. Gray makes a few pertinent observations about the future. First, both interstate wars and insurgencies assuredly will scar this new century; second, disruptive and asymmetric approaches by adversaries to turn own strength to weakness; third, terrorism does not threaten our civilization, but an over-reaction to it could do so; and, nuclear proliferation is here to stay.

**Multi-Domain Synergy.** Modern war fighting seeks cross-domain synergy by close synchronisation which is enabled by high degrees of situational awareness and freedom of decision across all sensors and shooters connected to a 'combat cloud'.[33] This allows distributed effects that not only foxes an adversary but also covers up vulnerabilities in any domain. It even enables local and temporal superiority in any domain through cross-domain support. Since networking and connectivity are the foundations of a MD battle, it obviously becomes a prime target for any adversary. Data linking is underlined by a need for accuracy and addressing vulnerabilities that can lead to degradation.[34] Besides built-in redundancy against soft and hard kill effects, an important point is recognising the degree of degradation which allows reconfiguration or other measures to allow the battle-tempo to continue. With shorter OODA (Observe, Orient, Decide, Act) loops enabled by technology and AI, it is imperative that this happens equally fast. Protecting a network's reliability is possibly a more important issue than acquisition of large expensive platforms. Most networks are robust enough to avoid any single-point failure architecture; however, ingenuity of the human mind assisted by machine algorithms will continue to throw up new challenges. There will always be a need for constant human-machine interface for innovation and adaptability to counter this.[35]

**Beyond Doctrine.** Doctrine is built on historical successes and experiences. But it should serve as only a guiding framework as it may not always be relevant to a situation; ingenuity and innovative tactics may be battle winners instead. Far more relevant is to ensure alignment of tactical and operational actions to strategic objectives all the time. Despite uncertainty, leaders often think within the box and persist with a chosen (but flawed) approach rather than reframing the problem and innovating. These could not only make a problem bigger, but also cause multi-order effects with unintended consequences for a long time. In a conflict with large uncertainties and imponderables, one can pay a heavy price for being dogmatic and non-adaptive. A cultural shift in the environment is required to allow leaders to think and reflect in a non-linear fashion.

John Haugeland in his book *Having Thought*, contends that "mind is not incidentally but intimately embodied and embedded in its world." Therefore, the prevailing culture and atmosphere has a bearing on the creative and reflective thought-patterns. An additional factor is work pressures. Competing priorities frequently interrupt cognitive task completion, and time pressures and efforts to multi-task can interfere with reflections. An only end-product race attempts to reduce complexity through simplification, with consequent errors.

## Peering into the Future

**Strategic Foresight.** Uncertainty, complexity and non-linear changes in the environment require agile and adaptive minds to cope, and therefore, a requirement to look at specialised skills development program for strategists. Among the many ingredients in this mix are vexing issues of climate change and social transformation. In a hyper-connected world with technology advancing at break-neck speeds, strategists have to seriously deliberate over effects including cascading, non-linear, Black Swan, among others. Strategic foresight is an interdisciplinary domain of anticipatory thinking that draws on cybernetics, systems thinking, management science, sociology, data science, cognitive psychology, and creative thinking, among others to support decision-making.[36]

Day & Schoemaker (2005) emphasise that sound peripheral scanning helps in preparing for uncertainty and unexpected events.[37] Superficial one-off scenario-building exercises may make decision-influencers or -makers feel they have done strategic foresight but it could just be reinforcing silos and blinkers. The endeavour should be to include diverse views that remove institutional blinkers. A key tenet of foresight is to explore a range of possible futures, and not look for what one wants to see. Integrated planning cycles must include horizon scanning for trends of change, integration into existing forecasts, impact assessment, and informed action.

Heifetz and Laurie (1997) suggest that humanity is in the first stages of a new era grounded in digital infrastructure. Digital ubiquity will require a deeper look at non-technological drivers of change such as culture, demographics, media and legal systems to prepare for the future.[38] Only an all-encompassing vision and systems thinking will allow sensing changes and opportunities beyond one's own sphere, questioning own assumptions, and looking for convergence that generate newer conditions. Emerging

scenarios promise social stress, violent conflict over ideologies, demographic displacement, and many other variables that will force militaries to integrate themselves to a whole-of-nation approach.

**Guessing Future Threats.** "There is a tendency in our planning to confuse the unfamiliar with the improbable. The contingency we have not considered looks strange; what looks strange is thought improbable; what is improbable need not be considered seriously." So wrote Thomas Schelling in his foreword to Roberta Wohlstetter's *Pearl Harbor: Warning and Decision*. He then warns of the real danger of routine obsession with familiar scenarios, ignoring newer ones. Perfect predictions are not possible but forecasting or estimating possible futures can be done based on data-synthesis, analysis, creativity, intuition and wisdom. The goal is not to predict accurately but be sensitised to important factors and issues before an event occurs.[39]

Scenario planning was coined by Herman Kahn at the RAND Corporation, and envisaged intentional development of scenarios for strategy development. Military war-gaming is one end of this process that illuminates actions to be taken in achieving a desired end-state or to handle a major contingency.[40] Kurtzman (1985) points to a further methodology evolution called Future-casting which adds science fiction and projects time-periods to 5-10 years into the future. From scenarios developed, it then plans actions by back-casting starting from the present to reach the desired future.[41] Alvin Toffler's Future Shock introduced the world to this unique methodology. Militaries use a more focussed 'Threat-casting' based on specific threats to back cast actions required to manage them. Lockheed Martin used strategic foresight tools to successfully win most major orders of frontline and futuristic aeroplanes for USAF such as U-2, F-117, F-22, and F-35.[42]

Geopolitical forecasting and net assessment are also methods of foresight to assist decisions for the long-term. George Friedman (2009) credits Andrew Marshall, the first director of Office of Net Assessment, who served for more than 30 years giving continuity to this art and science of exploring alternate futures.[43] In the corporate world, a shining example is the success of Royal Dutch/Shell Group's in 1970-80s to forecast energy and oil trends that are attributed to good scenario-building and forecasting. It established a Global Business Network that narrowed its focus on future trends to inform long-term company decision. It is quite similar to the threat-casting and future-casting, and made Shell a top global oil company.

But on their own, neither scenario planning nor war gaming allow for the development of alternative futures e.g. downsides, adverse contingencies that could prove major upsets to scenarios. Also, most methods have some shortcomings, which are mainly about the balance between levels of fitness and flexibility. Fitness is the effectiveness and suitability for a particular role or task given the objectives of a specific organization, while flexibility is the assessment of a method's level of modification or adaptability. Examples of highly effective and accommodative methods are net assessment and war-gaming, but they lack flexibility. Future-casting is far less affective but has high levels of flexibility. Fitzsimmons (2019) claims that threat-casting allows for even higher levels of desirability and flexibility compared to all other methods, therefore, its popularity with the military.[44]

**Strategy: Role of Scenario Planning.** In the US Armed Forces, scenario planning process has been effective in supporting capability and program development. Detailed data-based analysis and formal accountable process in scenario planning could be seen unnecessary by senior leadership who rely more opinions, debates and moving their agendas. Lawrence Freedman (2017) and most like thinkers view uncertainty and strategy as usually wrong in predicting the future of war.[45] Similarly, Gray in his study, *Meeting the Challenge of Uncertainty* brings out a list of speed-breakers to hold back by senior leaders such as making only small mistakes, exercising prudence, and quoting history to highlight incremental changes.[46] The pioneer of scenario planning, Peter Schwartz in 1991, saw it as a tool for ordering one's perceptions about alternative future environments in which one's decisions might be played out.[47]

In the US, joint scenario planning started in 2002 as a "comprehensive and systematic process to provide data for strategic analyses, using approved scenarios and ensuring that data are available, easily accessible, integrated, pedigreed, sufficiently detailed, and synchronized with Planning, Programming, and Budgeting System cycles."[48] Fitzsimmons' study identifies three weaknesses in the process. Firstly, individual service and departments using own scenarios, assumptions, threat assessments, models etc. to further own agendas. Second, strategic planning not accounting for uncertainty and wider alternate scenarios. And last, the limited involvement of senior leadership from US Dept. of Defense.

Fitzsimmon claims that six dilemmas or opposing principles have confounded organisers and participants in such endeavours: likelihood versus plausibility; high-resolution versus low-resolution analysis of a large number of cases; long, structured timelines versus the need to be responsive; transparent and collaborative process versus innovative exploration; validity in process of strategy development and force planning; and, prerogatives of civilian planning guidance versus military operational art.

In practice, there is a large gap between strategy and force structure development, and capability and program development. Strategy and force structure development deals with extreme complexity and unstructured problems that force leaders to be preoccupied in a highly inductive process. These cover important areas such as major resource allocation and balancing, power projection on a large scale, alliances and strategies for technology investment. This needs broader thinking of multiple variables within a defined framework that limits deeper analysis. On the other hand, capability and program development is focused on the generation of capability requirements and a narrower focus on technicalities, costs etc. But its detailed process may not allow analysis that could have supported strategy and force structure development.

## Vexing Variables

**Narrative Power: A Critical Component.** Strategic narratives are now a core component of any campaign planning and execution. For example, the power of ideas and solid narrative of the ISIS e.g. 'Crusader/Zionist Alliance Waging War against Islam' that was able to recruit from around the world faster than their depletion. The simple narrative was supported by many messages, mediums and activities. The real power of a narrative is the believable foundations that it is set on. Similarly, a

counter-narrative needs to be interactive and subtly supportive of main objectives. Also stories on the ground must be listened to and analysed to glean public perceptions. Needless to say own narratives have to be culturally sensitive and laced with local customs and rules, and what people are experiencing. Every aspect of the science and art of communication needs to be factored, including distortion and repetition. Even in this realm of perceptions there will be aspects of defence and offence.

Professional military education (PME) must aim to develop critical thinking skills of senior armed forces officers and test their intellectual capacity to improvise, adapt and constantly learn in a dynamic and complex environment of perpetual conflict and competition. According to Emily Bienvenue and Zachary Rogers (2019), trust is a key component in a multi-agency and multi-national setting when managing such competition.[49] It follows that rivals and adversaries would make it a key effort to disrupt such trust using the power of disinformation and perception-shaping available through technological advancements. The power of a 'narrative' is all important in any type of conflict and competition. Jil Lepore (2019) succinctly brings out the importance of sustainment of the enabling narrative along with the usual principle of maintenance of material superiority.[50] According to Jon Herrmann (2017), a faltering narrative results in other forms of power also faltering.[51]

In a digital era, even non-state actors like Al Qaeda and ISIS have fully exploited opportunities in the information domain to recruit and find support. The power of nation states and national governments to control or counter this ceaseless attempt is limited. Freier and Dagle (2018) claim that "chaos and disorder in the information domain undermine functionality in the Western liberal institutional tradition and degrade the basis of authority, legitimacy, and trust in the rules-based order."[52] David Kilcullen (2004) analyses that US military superiority forces adversaries to choose asymmetric arenas and unconventional means to compete, and therefore, unpredictability, ambiguity and complexity are a given.[53] It is these elements which combined and interacted with larger trends of lethality, diversity, and diffusion of warfare that have completely changed the character of warfare.

In this multi-domain and interdependent context, lines have blurred between civil and military, war and peace, and conflict and competition. Gray-zone engagement below unacceptable thresholds is more likely than all-out conflicts.[54] An effective narrative shot out like a precision weapon in a hyper-connected environment is as lethal as well directed artillery fires in a conflict zone; the difference being the exponential and ever-increasing effects of the former. According to Mann & Cobaugh (2018), an open and liberal society is particularly vulnerable to such attacks.[55]

**Proxy Actors & Irregular Forces.** While the use of proxy actors is by no means a new instrument of power-play among nations, dire consequences of all-out wars has led to multifarious employment of militias and other proxy actors. During the Cold War, these were generally propped by the US and the USSR engaged in proxy-based confrontation especially in developing or less-developed countries. Since the 1990s, militias as proxies for opposing forces in internal conflicts have emerged as a major theme. ISIL directly challenged the concept of nation-states. Militaries in many nations dominate politically by abuse of demographic, tribal and sectarian fault-lines. Meeting state security needs

with manipulation of ethnic militias 'under control' is a fragile framework that does go awry in many instances.

It has been alleged that Russian operations in Ukraine use its own Special Forces troops along with local self-defence volunteers, Cossacks and Chechens, and organized crime groups for military and political muscle. This hybrid approach synthesises conventional actions with terrorism, information war, economic pressure and cyber war. However, auditing and accountability of these are never fully in control, and how internal instability is affected later by them is historically a poor record. One such issue with proxies is an uncertainty as to where they are operating and under whose real agenda.

**Technology & Strategy.** So many factors, variable connections and interactions are a sure recipe for vexing complexity; and at times, acting on identified relationships is far easier than the actors themselves. The main issue is to extract advantages out of this combination of certainty and uncertainty. An all-of-nation approach with diverse tools of diplomacy, economic leverages and information is more effective than a military force alone. If a commonly accepted definition of technology is the practical application of knowledge to achieve a purpose, then the technology of combined effects strategy can create decision dilemmas for a competitor or adversary. Therefore, the strategy should be to identify the purpose of a particular competitive advantage (technology), generate supporting activities, and then manipulate to produce synergistic effects. A 'technology of strategy' where this function achieves strategic advantage is subtly different from a 'strategy of technology' where this technology is applied creatively to influence will and capability of a competitor.

**Forecasting and Innovation.** What is the difference between predicting and forecasting? It is akin to fool proof fortune telling versus estimation. Forecasting's main aim is to grasp the importance of an event or narrative before it occurs or simply to reduce its ambiguity in the minds of leaders. This allows the development of broader strategy that can cope better with the uncertain and unexpected. Just as the private and corporate sector indulge in strategic foresight to maintain their relevance to the public and ward of competition, militaries and security agencies do it to stay ahead of adversaries to avoid surprises and shock through disruptive actions and effects. One reacts to growth, expansion, and competition, and the other to potential and present threats.

In a fast changing world driven by even faster changing technology, it is important to understand the nuances and the consequences of disruptive innovation. Currently, three terms are most prevalent: disruptive innovations, sustaining innovations, and Blue Ocean Strategy; characterised respectively by unexpected interruptions to the normal, extended periods and entering uncontested spaces. Clayton M. Christensen (1995) is credited with coining the first two.[56] While personal computers, mobiles and Netflix are examples of disruptive modes that bring in quick game-changing moves, HD TV's evolution from normal TV is an example of sustained innovation. Another example is Lockheed Martin's Skunk Works, which as an innovation centre of excellence produced highly successful game-changing aircrafts like U-2, F-117, F-22, and F-35.

Blue Ocean Strategy is about businesses successful entering or creating an uncontested market. It is more relevant for competition in the commercial corporate sector to find newer grounds to operate independently of dominance of large corporations. Similarly, Time-series analysis is about studying patterns in the stock market to increase profitable moves. These two do not have much relevance as holistic methods for forecasting for military and national security analysts.

## Strategising Mind Games

The role that both mass media and social media play in the functioning of armed forces in conflict has effectively changed the rules of doing business between them. With an explosion of both forms of media, all sides in a crisis situation would try and exploit. In the absence of active engagement with media, the tendency to sensationalise events would be predominant. There is need for leveraging media and train specialists to handle an ever-evolving social media; as also to identify professionals and empower them by creating designated media cells at all levels. New Media devices pose a conundrum of problematic issues as well as windows of opportunities within the armed forces.

The entire national infrastructure now rides on electronic digital information, and therefore, this necessitates a whole-of-Government concern and action. The need to have structured offensive and defensive cyber capabilities requires a new breed of cyber-warriors. National Critical Information Infrastructure Protection Centre (NCIIPC) created on 16th Jan 2014 is designated as the national nodal agency in respect of critical information infrastructure protection. It is a start but only a small part of what should be a holistic plan. The requirement is a foundation which provides an integrated platform for situational awareness, information security and information operations. Key characteristics of such a structure would be resilience, robustness, interoperability and high response capacity, among others. As the *Joint Doctrine* for Indian armed forces suggests it is high time to go beyond just jointness among the three services. Information warfare is no more just in the military domain, it demands a whole-of-nation involvement orchestrated at very high levels.

Indian strategists and decision makers must seek to use the understanding of yesterday and today to prepare for an uncertain tomorrow by combining current ideas and practices with unexplored and novel ones. Successful new design would lead to inspired new planning and processes, which would mostly look transformative and opposite to what was being followed so far. Unfortunately, a linear planning approach generally tends to stick and align to the trodden path with plentiful selective analysis and self-confirmation, which is not enough in emergent and dynamic environments. The process per se has to be learning-oriented rather than a solution-based one if a break from institutional blinkers is truly aimed for. The distinction between innovation (unexpected) and adaptation (reactive) needs to be clearly understood.

According to psychologists, metacognition is 'thinking about thinking' and must be prerequisite for sound decision-making. Creativity, critical thinking and high ethics are intrinsically linked in a virtuous cycle. Many issues highlighted above in this 'Battle for the Minds' need to be deliberated upon

and become part of curriculum and sensitisation of leaders in the security realm. No-contact warfare, disruptive technological effects and more novel ways of conducting competition and confrontation are the new normal. We need to prepare holistically as a nation.

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