THINKING STRATEGICALLY

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INTRODUCTION

External observers repeatedly comment on the lack of strategic thinking in India's military. In his 1995 analysis of the Indian Air Force (IAF), George Tanham commented that Indians "do little formal strategic thinking" and "strategies just appear to evolve in India and much is done on an ad hoc basis."[1] Fifteen years later, a book by Cohen and Dasgupta restates the same problem in detail. They point out that the Services follow independent strategies to fight their independent wars, with the focus being on operational issues, not strategic ones.[2] While their arguments and conclusions may be controversial, we would do well to, if not introspect, then, at least, try to understand the perspective from which these authors write. This article explores the concept of strategy, and the ingredients which make up a good military strategist.[3]

To do so, it first explores the concept(s) of strategy. After seeing how multiple definitions of strategy are related to the context, the article expands on the *ends*, *ways*, *means* definition. It shows how strategy pervades all aspects

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1. George K. Tanham and Marcy Agmon, *Indian Air Force – Trends and Prospects* (Santa Monica CA: RAND, 1995), p. 7.
2. Stephen P. Cohen and Sunil Dasgupta, *Arming Without Aiming: India's Military Modernization* (Washington: Brookings Institution Press, 2010), pp. 150-152, at http://www.gatewayhouse.in/sites/default/files/Arming%20without%20Aiming%20-%20Ch7%20Fighting%20Change.pdf. Accessed on October 13, 2012.
3. However, the article has an air force bias, written for the air force.

The strategist must develop the ability to use multiple lenses to view the world developing his unique understanding of the matter in question, first questioning his own biases, rather than jumping to conclusions. Last, he should be able to recombine his analysis into creative solutions. Implementing solutions is the job of the planner.

of life, but as the level of problem solving increases, it grows complex and open ended.

Next, it shows how all strategy springs from the mind, and so good strategists need to develop ways of thinking. Thus, any attempt to evolve strategists needs to concentrate on developing the mind. The mind uses analogies and makes its personal theories called *schemas* to solve problems. Mental development relies on enriching the mind with experience and education to form schemas. Education needs to include multi-disciplinary theory and the evidence base of history. The strategist also needs to practise something called slow thinking. He must develop the ability to use multiple lenses to view the world developing his unique understanding of the matter in question, first questioning his own biases, rather than jumping to conclusions. Last, he should be able to recombine his analysis into creative solutions. Implementing solutions is the job of the planner.

ON STRATEGY

Strategy means different things to different people. They are all correct – in the context. Clausewitz had said, "It is the use of an engagement for the purpose of war"[4]. He was referring to military strategy in the context of its relation to political guidance. According to Jomini, "Strategy is the art of making war upon the map"[5]. He limited himself to movement of forces, being most concerned about prescriptive writing which armies could use. Moltke observed "Strategy is a system of expedients…the transfer of knowledge to practical life…in accordance with constantly changing

4. Carl Von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret, (Princeton: Princeton University Press, 1989), p. 177.
5. Antoine-Henri Baron de Jomini, *The Art of War*, translated by Capt GH Mendell and Lt W P Craighill, (New York: Dover Publications Inc, 2007), p. 62.

circumstances"[6]. His context was about exploiting battlefield opportunities. Corbett understood it as "principles which govern a war", and also as "the art of directing force to the ends in view"[7]. He was talking about sea power and its relation to military power. Therefore, a theorist's sayings must be taken in the context in which he wrote. The one definition that I prefer is the most generalised and inclusive one: "It is the *ways* of achieving *ends* within available *means*".[8] The article will explain 'strategy' using this particular lens.

The point is that strategy is applied at every level down to tactics. Thus, even the common foot soldier uses strategy when he applies tactics. He evaluates the threat, his own resources and then takes action towards the goal of preserving himself and neutralising the enemy.

Strategy is all pervading, existing vertically at many levels, and horizontally in many disciplines. Thus, horizontally, we have not only military strategy, but business strategy and political strategy, to name a few fields. Military strategy, the primary context of this article, operates between strategy at levels both above and below. In the military context, today we understand that there is a hierarchical vertical gradation; grand strategy from which flows military strategy, Service specific strategy, operational art and, finally, tactics. Sometimes, the strategists have clearly demarcated these levels. For example, Corbett differentiated between major (today's military strategy), and minor strategy (Service specific operational plan), while Boyd referred to grand strategy and strategy[9]. At other times, it is left to the reader to understand what level of strategy is being referred to e.g. Jomini tackling the operational level in today's parlance. The point is that strategy is applied at every level, down to tactics. Thus, even the common foot soldier uses strategy when he applies

6. Daniel J Hughes, eds, *Moltke on the Art of War : Selected Writings* (New York : Ballantine Books, 1993), p. 47.
7. Julian S Corbett, *Some Principles of Maritime Strategy* (Annapolis: Naval Institute Press , 1988), pp. 15, 308.
8. Harry R. Yarger, *Strategy and the National Security Professional* (Westport, CT: Praeger Security International, 2008), p. 17. He cites Gregory D Foster, " A Conceptual Foundation for a Theory of Strategy," *The Washington Quarterly* (Winter 1990), pp. 47-48.
9. Frans P.B. Osinga, *Strategy and History*, vol. 18, *Science, Strategy and War:The Strategic Theory of John Boyd* (London: Routledge, 2007), p. 180.

What then is the difference between these levels of strategy application? The difference is in two essential things: context, and flowing from that context, the scope of the strategy's three variables – ends, means, and ways. At the lowest levels, everything is limited in scope.

tactics. He evaluates the threat, his own resources and then takes action towards the goal of preserving himself and neutralising the enemy. The national level strategist does the same – evaluate the environment, fix the goal, assess the means and figure out how to reach them. Ends, means and ways are applicable at every level.

What then is the difference between these levels of strategy application? The difference is in two essential things: context, and flowing from that context, the scope of the strategy's three variables – ends, means, and ways. At the lowest levels, everything is limited in scope. At the lowest level of tactics, the ends are very limited, the means are fixed, so the ways are also few. Take the case of a fighter pilot flying an escort mission in war, who spots an adversary fighter aircraft. His limited *ends* are singular – ensure the strike does its job. The *means* at his disposal are his own formation, weapons, and relative energy state. His limited options (the *ways*) are to turn into the enemy to offer a fight, or turn away and escape. The choice he makes is dictated by the context of the stage of the mission and the relative advantage between the adversaries. Because means are fixed, and ends and ways limited, it is possible to reduce the strategy options into tactical Standard Operating Procedures (SOPs) and tactics manuals which pilots can learn by rote and self-actualise by practice.

The assertion that tactics is also small scale strategy may seem heretical. But, John Boyd's Observe, Orient, Decide, Act (OODA) loop theory has its roots in just such a tactical experience. Boyd's success in tactical combat as a fighter pilot led him to recognise the importance of the mind (and the right designed machine) in achieving "faster transients" at every level of war – from the cockpit, to creating "learning organisations," which would continue to always fight with advantage. The US Marine Corps was heavily influenced by Boyd's thought, enough to incorporate its essence in their

organisational structure and doctrine. Boyd was successfully able to apply metaphorical reasoning from the reductionist experience of the cockpit and combine it with insights from other branches of science to help create an artifact, the lightweight fighter (F-16). But the achievement he is more known for is his ability to extrapolate the same tactical concept to found his OODA loop theory.[10] He used tactical learning to develop higher level strategic theory.

As the level at which strategy is practised rises, all three variables expand in scope. The prime minister or president of a country has a canvas which is vast. Take the *ends*. Should he choose economic growth, or food security, or space exploration, or security first.[11] In which mix should he place priorities? Even after the *ends* are reduced to simpler forms (eg. territorial security), the *means* available are varied. They include diplomatic, military, and economic forms of strength. Should the nation get into an alliance to save on military expenditure, or buy the best equipment, or rely on tactical nuclear weapons to deter aggression cheaply, or go for large standing army? The final *ways* chosen would be a mix of many things, including creating future *means* (force structure). So, for example, Pakistan's '1000 cuts' strategy is being tackled using many *ways*: surgical strikes to send a message, relooking at the water sharing treaty to use leverage, a diplomatic offensive to achieve ostracisation, and demonetisation to squeeze terrorist funding. And unlike tactics, where the matter ends quickly, at the highest levels, the process is continuous, with priorities shifting as the context changes. All other forms of practising strategy fall somewhere between these two extreme examples; in terms of context, ends, ways, and means. At the higher levels of strategy, one of the better fitting definitions is Dolman's: strategy is about striving for "continuing advantage," rather than win in one situation.[12] At this level, strategists try more to shape the rules of the game rather than win any specific game.

10. Robert Coram, *Boyd: The Fighter Pilot Who Changed the Art of War* (New York: Little, Brown and Company, 2002).
11. The guns, butter, or bread, problem.
12. Everett Carl Dolman, P*ure Strategy: Power and Principle in the Space and Information Age* (New York: Frank Cass, 2005), p. 6.

Two conditions find organisation structure and culture unfit to deal with them. The first condition is when environmental evolution leaves the military outdated, but its culture and rules do not allow it to change. The second condition is that of war, a condition which is full of uncertainty, incomplete information, and an unpredictable adversary.

As the level of the context rises, not just scope, but the complexity of the problem(s) at hand increases. Different people have expressed this phenomenon of increased complexity in different ways. Rittel and Webber called such problems "wicked problems."[13] Others refer to them as "ill-structured problems." People with a systems view of the world see them as part of a "complex system," and often as part of a "complex adaptive system."[14] Understanding such problems, let alone attempting to solve them, requires a different mental skill.

Militaries have a peculiar dichotomy between simple and complex problems. Long periods of peace require standard outputs and the ability to solve the same simple problems repeatedly. This is one reason why militaries are organised mechanistically, with fixed outputs. But two conditions find the organisation structure and culture unfit to deal with them. The first condition is when environmental evolution leaves the military outdated, but its culture and rules do not allow it to change. The second condition is that of war, a condition which is full of uncertainty, incomplete information, and an unpredictable adversary. The mechanisation of output and thought proves unsuited to deal with complexity. In both these conditions," those in command of the organisation thus frequently find themselves facing issues which are inappropriately defined, and which they have no real idea of how to approach."[15] People used to simplicity are left perplexed when faced with complexity.

13. Horst W. J. Rittel and Melvin M. Webber, "Dilemmas in a General Theory of Planning," *Policy Science* 4, 1973, pp. 155-169.
14. Stephen E Wright, "Two Sides of a Coin", in Richard J Bailey et al., eds, *Strategy: Context and Adaptation from Archidamus to Airpower* (Annapolis: Naval Institute Press, 2016), p 235.
15. Gareth Morgan, *Images of Organization* (Thousand Oaks CA: Sage publications, 2006), p. 29.

MAKING THE SCHEMAS OF STRATEGY: EXPERIENCE AND EDUCATION

The brain uses self-formed theory more than we realise. It also rejects or downplays information which does not fit well with the schema/theory it is using. In such a case, availability of more varied schemas, and a conscious awareness or utilisation of theory helps judgment calls – better strategy making.

All strategy springs from the mind. The seeds of strategic thinking are sown from the time a human being is born. A child uses strategy to get what he wants, he cries, throws tantrums, smiles winningly, figures out what works, and employs that stratagem in the future. This method of learning strategy is from life itself—experience. He later applies lessons learnt in one sphere of life to others, through *schemas* and *analogies*. The term "*historical analogy* signifies an inference that if two or more events separated in time agree in one respect, then they may also agree in another....A *schema* is a generic concept stored in the memory...a person's subjective theory about how the world works .. derived from generalizing across one's experiences. An analogy is specific and concrete while a schema is abstract and generic."[16] They are both mental models to simplify thinking towards improving judgment.

There are well documented cases of statesmen and generals using historical analogies to make policy decisions. These studies also show that the use of historical analogies was wrong, more often than not. American President Truman thought that North Korea's invasion of South Korea was analogous to the German, Japanese and Italian expansionist policies which led to World War II. He further reasoned that not fighting back would be akin to Hitler's appeasement at Munich. And so he went to war halfway across the world, in a fight in which his country had no real stake.[17] The problem with historical analogies is not that they are useless, it is that the practitioners have often used them wrongly, not trying to consciously analyse which parts of the analogy fit, and where the two situations are not identical.

16. Yuen Foong Khong, *Analogies at War: Korea, Munich, Dien Bien Phu, and the Vietnam Decisions of 1965* (Princeton, N.J.: Princeton University Press, 1992), pp. 11,27.
17. Ibid., p. 4.

Schemas are even more problematic. Analogies imply events in the same field of study. But schemas are *personal theories*, and once formed, will be applied unconsciously by the brain in all judgment decisions. They also tend to work "top-down", which means that the brain squeezes the new information it is looking at, through the filter of pre-formed schemas. The brain uses self-formed theory more than we realise. It also rejects or downplays information which does not fit well with the schema/theory it is using.[18] In such a case, availability of more varied schemas, and a conscious awareness or utilisation of theory helps judgment calls – better strategy making. So, while the brain will use analogies and schemas, their use needs an education in both forming schemas, and learning how to use them.

And so, apart from experience, the other method of learning is by education. But, how much of a strategist's acumen is owed to life experience, and what proportion to formal education?

Genius needs little education. This assertion has been supported by many theorists starting from Clausewitz. Clausewitz has devoted an entire chapter on military genius[19]. At various places in his writing, he emphasises that true genius has no need of anything else to succeed[20]. Fuller calls genius the greatest master of the art of war and puts Alexander, Hannibal, Gustavus and Napoleon in this category[21]. The one conqueror who shows how genius needs little is Ghengis Khan, who grew up in the steppes of Mongolia, as an outcast, learning his lessons from the elements and the harshness of the elements. And contrary to popular opinion, his achievements were not just in warfare, he successfully reorganised his army, introduced meritocracy, understood the importance of terror as a tool of propaganda, and also put into practice policies to promote a free trade economy.[22] He learnt from life alone. This is the most common way of personal 'theory making' – extrapolating from the specific experiences to form the general schemas.

18. Khong, n. 16, pp. 37-39.
19. Clausewitz, n. 4, pp. 100-112.
20. Ibid., p. 136.
21. Col JFC Fuller, *The Foundations of the Science of War* (1926 *repr.* Fort Leaveworth: US Army CGSC Pres, 1993), p. 98
22. Jack Weatherford, *Genghis Khan and the Making of the Modern World* (New York: Broadway Books, 2004).

But unlike Ghengis Khan, most people's life experience is not enough; they need education. Even Clausewitz, who respects genius, says, "No activity of the human mind is possible without a certain stock of ideas."[23] Education provides these ideas from which *schemas* can be formed. The more varied the learning, the more the *schemas* available. Apart from his education in war as the son of a king, Alexander was educated about the world by Aristotle. Napoleon was influenced by theorists like Saxe, Bourcet, Guibert and Du Teil.[24] All three conquerors also learnt about war from the successive battles they fought. But the person education most benefits is the common man. Most of us are common men and women. So far, we have seen how these mental models or schemas need a combination of experience, and education But, for a peculiar reason, the military man needs education even more than others.

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For military strategists, wars are the best teachers. But for most countries, wars are few and far between. So most military organisations anticipate by hypothesis. Unlike other government bureaucracies," instead of being routinely 'in business' and learning from ongoing experience, they (militaries) must anticipate wars that may or may not occur."[25] So, in the absence of real life experience, the military mind needs education even more than a practitioner in any other field. This deduction further begs the question: what kind of education does the military thinkers' mind need, and what happens if this education is lacking?

23. Clausewitz, n. 4, p. 14.
24. Osinga, n. 9, p. 144.
25. Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1991), p. 8.

THE EDUCATIONAL TOOLS OF A STRATEGIST: THEORY AND HISTORY

For the military strategist, education required to form varied schemas needs both the evidence base of history, as well as theory. Military theory differs slightly from theory as understood in the physical sciences. The Webster's definition of theory is "a coherent group of general propositions used as principles of explanation for a class of phenomena"[26]. Military theory has been defined as "the aggregate of theories, doctrines, and beliefs belonging to a particular individual, community or period. It refers to the concepts, hypotheses, or principles developed by soldiers and civilians to solve military problems"[27]. Thus, while using the term military theory, a person may refer to any or all of these terms. These theories are generalisations of observed phenomena, deductive inferences, and often a combination of both.

Military theory is not as exact as theory in the physical sciences. It cannot be proven by experiments. It is not always true. But this inexactness is tolerated because people understand that the complexities involved are too many to be reduced to simple equations. Its inexactness has been largely attributed to the human psychological factor[28]. Some examples of military theory include the writings of Sun Tzu and Clausewitz, parts of Kautilya, or even John Boyd or John Warden. Campaigns have been planned around some of their generalisations. So, despite all its inexactness, military theory is an essential tool for the budding strategist.

Theory does at least five things for the military professional. It defines the field under study, categorises it, explains, connects it to other related fields of study, and, finally, anticipates the future.[29] This article itself is an example of the use of theory. In the context of understanding strategy for the military professional, it has attempted all five things. First, it has tried to define what many people understand as strategy. Next, it has categorised,

26. Harold R Winton, "An Imperfect Jewel: Military Theory and the Military Profession," *Journal of Strategic Studies*, vol 34, issue 6, 2011, p. 2.
27. Osinga, n. 9, pp. 8-9.
28. Clausewitz, n. 4, pp. 136-137.
29. Winton, n. 26.

or divided this study into its constituent parts as per my perception – the depth and breadth of the subject. Third, it has expanded on each portion of this division to explain my conception of the subject. Fourth, it has connected military strategy with other fields of study: psychology, judgment , education, history and career path of military men, to name a few. Last, the entire article endeavours to help the reader figure out his way of how to use the insights presented here in order to conceptualise for the future. One of the subjects it attempts to anticipate is a template or method of educating better military thinkers.

Most people want to use this theory to predict the future, but Clausewitz believed its biggest utility was for it to be used as a way through which to view and internalise the lessons of history. A reading of military history by itself can do little for the military professional.

Most people want to use this theory to predict the future, but Clausewitz believed its biggest utility was for it to be used as a way through which to view and internalise the lessons of history. A reading of military history by itself can do little for the military professional. Data and facts by themselves are useless. "Only in the light of a theory....can they speak to us in revealing ways. Facts never speak for themselves....they are always spoken for."[30] There is no true objectivity; every study needs a subjective lens. Multiple lenses allow the limitation of each particular lens to diminish. At higher levels of problem solving, good strategists need to be erudite in both facts and theory, and in multiple fields.

As an example, take related fields like National Security or Foreign Policy. These fields require its officers to strategise at the highest levels on problems which have no black and white solutions, and a mix of conflicting interests. And as the former National Security Adviser and Foreign Secretary Mr Shivshankar Menon explains, strategy boils down to making 'choices' with incomplete information. In contrast to the military man who does not practise his craft at the highest levels, and so is forced to hypothesise, the Foreign Service man is a daily practitioner of his craft. A reading of Mr

30. Everett Carl Dolman, "Seeking Strategy", in Bailey et al. eds., n. 14, p. 30.

Menon's book, *Choices,* shows his awareness of the theories and theorists in multiple fields from defence to nuclear strategy to international relations. With an MA in history, he emphasises the importance of historical study for the strategist in saying "the best a practitioner can do is be aware of, and open to, the possibilities and consequences of choices, something historians are trained to do by their discipline."[31] Apart from his innate ability, his practise has been empowered by both theory and history.

Unfortunately, militaries in general, and air forces in particular, neglect both history and theory the most.[32] There are three causes for this blind spot. First, aviation is the newest technological form of military power, barely a hundred years old compared to thousands of years of land and maritime power's history. The first air forces carved themselves out of navies and armies, and so were organisationally pushed to adopt doctrines which justified their separate existence. This led to a negation of the importance of the 'old' ways of war, in terms of both history and theories.

Second, having a short history itself, air power practitioners assume there is not much to learn from the history of aviation, and tend to concentrate on current conflicts and the future. This bias against aviation history unknowingly becomes a bias against all history. They do not realise that the 'current situation' is but a snapshot in the vector of history, a snapshot which moreover is tinged with the biases which each observer carries unconsciously. Nor do they realise the interconnectedness of the theories amongst fields other than aviation. Thus, they do not know that solutions to problems in their field of practice also exist in fields other than their own.

The third reason for air forces being a-historic is that a force which perceives its power as stemming from technological machines (more than its men and women), is always looking for technological solutions to every

31. Shivshankar Menon, *Choices*: *Inside the Making of India's Foreign Policy* (Digital Edition :Penguin Books, 2016), Loc 2306. While he specifically mentions that he is a practitioner and not a theorist, his awareness of the theorists is visible in the bibliography and even the arguments he puts forth.
32. Take any higher command level course or even the National Defence College syllabus and analyse it for theoretical and historical content. One historian has done this analysis chronologically for the USAF, and shown how historical study has been a late entrant. Richard R Muller, "The Airpower Historian and the Education of Strategists", in Bailey et al., eds., n. 14, pp. 113-123.

problem. [33] So it is not surprising to find most air force course syllabi having large amounts of time devoted to the latest technology, current capability, latest wars, global developments – but little history. Technology is about building new systems and machines in the future to solve current problems. The past seems to have little relation to technology.

As per one historian, history can do at least four things for air power practitioners and thinkers. First, its study can "instill corporate spirit and foster awareness of air power's rich heritage."[34] Thus, a study of our wars of 1947, 1962, 1965, 1971, and 1999 tells the story of the evolution and contribution of our predecessors. The heroic feats of stalwarts like Baba Mehr Singh in saving Kashmir in conditions so much worse than those in which we currently operate, can instill a sense of awe and pride in the rookie pilot. Next, history can explain the origins and logic behind the "current doctrine, operational concepts, organizational reforms, or weapon systems."[35] For example, the role of the rocket attack on the governor's house at Dacca in bringing about the surrender brings home the lesson about air power's coercive effect, without having to defeat fielded forces. Third, "it can improve current practice by establishing a common vocabulary, providing a basis for analogical reasoning, or identifying broad patterns of development."[36] So, a study of related fields like say the evolution of the Marut aircraft can inform the practitioner who is curious about technological

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33. For example, air forces measure casualties in terms of aircraft shot, own or the enemy's, as a measure of performance. Armies, instead, count casualties in terms of lives lost. The least count of combat power is an aircraft for air forces and an individual for armies.
34. Muller, n. 32, p. 123.
35. Ibid., p 124.
36. Ibid., p. 125. Most of the current military usage is encompassed by this reason – a quest for 'lessons learned' and 'takeaways.'

evolution, of likely pitfalls and solutions in developing the Light Combat Aircraft (LCA). Most importantly, it instills "habits of the mind," and fosters "patterns of inquiry," in military professionals. [37] While the first three reasons help all practitioners, this last reason is the most compelling in the making of thinkers, and this is something Mr Shivshankar Menon too has emphasised.[38] It addresses the issue of learning 'how to think' rather than 'what to think,' especially in using lessons of the past to either solve current problems or peer into the future.

Also, the emphasis on 'hard sciences' means that right from intake to retirement, militaries produce a certain kind of thinker – the linear thinker. For most air forces, the officer corps and especially the 'war fighters' "are mostly male, with educational backgrounds in STEM – Science, Technology, Engineering, and Mathematics."[39] These types are "linear thinkers," because "most of what the military does is linear *tasking*," ….. "things done in an orderly manner, moving from step one to step 'last' in an efficient and effective manner."[40] They perform well till the stage where tasks require linear thinking – tactics in war-fighting, and planning in peace-time. Thus , these are great planners, who can plan well a defined job; for jobs ranging from yearly training planning, to flying exercises, to fly-pasts and managing many such events. This type of personality, "STEM-oriented linear thinkers with strong personality tendencies towards accomplishment rather than reflection," is also just what we need in large numbers for addressing a majority of day-to-day problems and tasks. The problem occurs when we are faced with complex issues in an uncertain environment, which need

37. Ibid., p.125.
38. Menon, n. 31, Loc 2306.
39. Wright, n. 14, p. 234. For the IAF pilot, intake mandates physics and mathematics in class XII. Professional courses which have to do with Instruction (QFIC) or Tactics (TACDE) continue to emphasise these subjects. The next educational degree at Staff College is tellingly an MSc, not an MA. The air force, in particular, is biased towards the hard sciences over the arts. Hard sciences translate to linear equations with a high degree of certainty biased towards statistical methods and minimum ambiguity. Arts, on the other hand, thrive in the domain of subjectivity and uncertainty.
40. Ibid., p. 234. The STEM emphasis also leads to the belief that theories only exist in hard sciences, and, therefore, the emphasis of air forces, and now the Indian Navy for the science background student. Thinkers like Clausewitz are relegated to 'could know' knowledge, while hard sciences are 'must know.'

strategists to understand and frame guidance which planners can then execute. Peace-time policy formulation and war-time strategy are two such problems. These problems require abstract thinking.

This relation between strategists and planners explains why at the operational art level, Command Air Operations Centres (CAOCs) of the Western air forces have an organisational structure which includes a separate strategy cell / division, for guidance, which another cell executes by developing an Air Tasking Order (ATO).[41] While both cells need continuous interaction, the strategy creation mechanism has been deliberately separated from the planner's mechanism. Both need differing mental skills.[42]

In times of prolonged peace, the organisations may not even realise that they are grooming no strategists and all planners. This is because you can't fail in peace. And even if you fail in war, linear thinking will quickly attribute cause to effect, and address, more often than not, the symptoms rather than the malaise. So, for example, flowing from the Kargil Review Committee's analysis, the headquarters of the Services were renamed, rather than reorganised. All three Services also ended up building more technological capability, but not much else.

Strategic thinking at higher levels of complexity requires *slow* rather than *fast* thinking, but fast thinking is the default mode for most of us. Daniel Kahneman coined these two terms. He explains how fast thinking (or what he calls System I) is a necessary inbuilt evolutionary mechanism, by which we unconsciously absorb environmental inputs and always have an answer to most problems with minimal inputs. This mode is always working unconsciously, "shaped by evolution to provide a continuous assessment of the main problems that an organism must solve to survive."[43] So, for example, if someone asked you about the likelihood of rain tomorrow, you are ready with an answer within seconds. A slow thinker would instead reach out

41. For example, see Fig 2 of Wg Cdr Redvers TN Thompson "Post Cold War Development of United Kingdom Joint Air Command and Control Capability ,"at http://www.au.af.mil/au/afri/aspj/airchronicles/apj/apj04/win04/thompson.html.
42. And yet, these boundaries between strategising and planning skills cannot be mutually exclusive. The strategist needs to understand planning limitations, while the planner needs the ability to visualise conceptual guidance.
43. Daniel Kahneman,*Thinking , Fast and Slow* (Digital Edition: Penguin, 2011), Loc 1543.

When a senior pilot with lots of tactical experience is suddenly faced with operational or strategic level problems, it is natural to default to schemas formed by his life experience. This situation is especially challenging if he is asked to work in the absence of rules, procedures and SOPs, which are what the planner uses as starting points before he can do any work. The strategist, on the other hand, helps frame these boundaries, frameworks, and establishes *what* is to be done, and frames guidelines about how it is to done, after understanding the context.

to a meteorologist, a website or statistical data before venturing to answer. Availability of multiple theoretical schemas allows the slow thinker many ways of developing an understanding of the problem.

In the evolutionary mechanism, a slow thinker would also perish fast. Our ancestors had to quickly make decisions about 'fight or flight,' based on minimal inputs, and fast decision-making. We continue to need this mode even today; for example, in the earlier situation of two fighter pilots meeting in the sky during war-time: a slow decision would mean death. Slow thinkers also tend to perish in organisations, for, metaphorically speaking, the urban jungle also follows evolutionary laws. As per one commentator, while most abstract thinkers in the military perish "as a result of a thousand cuts," the few, who survive, hide.[44] This does not imply that the two modes of thinking are mutually exclusive. Just that slow and abstract thinking is rarer, and atrophies due to organisational pressures.

For all thinkers, the default mode of thinking, the System I / fast thinking mode, working on 'autopilot,' kicks in even when trying to solve complex problems at higher levels of decision-making. In the absence of theoretical and historical learning, when faced with new and complex problems, our planner's brain will use fast thinking to pull schemas informed by his life experience. He will use these schemas as filters with

44. Wright, n. 14, p. 235.

which to view the situation. All his understanding of situations will flow from his not inconsiderable tactical experience, much of which is from inside the cockpit.[45]

Especially for military aviators, his life experience is unsuited to form varied schemas. The aviator's understanding of war-fighting is limited to tactics for almost 20 years of his experience. The centralisation of air war-fighting at the command level means that the majority of military aviators are never exposed to even hypothetical operation art for most of their careers. This is in contrast to armies, where war-gaming is routine, and all ranks of officers are routinely exposed to the complexities of operational art, at escalating levels of unit, brigade, division, corps and then command.[46] Thus, when a senior pilot with lots of tactical experience is suddenly faced with operational or strategic level problems, it is natural to default to schemas formed by his life experience. This situation is especially challenging if he is asked to work in the absence of rules, procedures and SOPs, which are what the planner uses as starting points before he can do any work. The strategist, on the other hand, helps frame these boundaries, frameworks, and establishes *what* is to be done, and frames guidelines about how it is to done, after understanding the context.[47]

Slow thinking is difficult, requires effort, and the human brain tends to avoid it. This is because the complexity of the problem requires effort to "simultaneously maintain in the memory several ideas that require separate actions, or that need to be combined according to a rule"[48] (or theory).

45. Interestingly, an army officer posted as staff at the College of Air Warfare pointed out that air force officers (pilots) tend to view the world from inside the cockpit, and to understand it better, they needed to view it from outside. Conversation, February 2017, *after* this paragraph had been written. This is another way of expressing John Boyd's postulate that reality can never be correctly perceived from within a system.
46. Although repeated exposure to 'company policy' in a closed environment can also atrophy creative skills. Diversity of exposure is a prerequisite for good schema formation.
47. To see the differences between the strategist and the planner in greater detail, see Wright, n. 14, pp. 236-242. Also, to understand why air forces are so much more SOP dependent, as compared to armies, which are task-oriented, see Ashish Singh "Arms and the Game: Accepting Competition and Encouraging Cooperation," *Journal of Defence Studies*, vol. 10, no. 1 January-March 2016, pp. 17-42, at http://www.idsa.in/jds/jds_10_1_2015_arms-and-the-game .
48. Kahneman, n. 43, Loc 593.

In his path to the OODA loop theory, John Boyd explored these concepts in his essay, *Destruction and Creation*.[49] He explored how we make concepts either through deduction or induction; from the general to the specific or from the specific to the general. Using Heisenberg's uncertainty principle, the Laws of Entropy, and Godel's Incompleteness mathematical theorem, he showed how there will always be a mismatch between reality and our understanding of it. He also tried to show a way to tackle this problem through destructive deduction (taking concepts apart) and inductive creation (synthesising the separate threads in new combinations) to create new concepts / realities.[50] In a way, he was exploring creativity. This is part of a strategist's job. This skill is unlikely to develop without practice.

Thinking strategically requires a combination of critical and creative thinking. Critical thinking is "thinking that is purposeful, reasoned, and goal directed…..the deliberate, conscious, and appropriate application of reflective skepticism."[51] It includes analytical thinking. Analytical thinking requires the strategist to do Boyd's destruction: of taking things /ideas/ concepts apart, understanding the essence of an argument/ event/ or history itself. Creative thinking is the third and final part of this three-step process. Creative thinkers display the following characteristics[52]:

49 John R Boyd, "Destruction and Creation," September 3, 1976, at http://globalguerrillas.typepad.com/JohnBoyd/Destruction%20and%20Creation.pdf. Accessed on December 21, 2016.

50. In his famous briefings, he gave an example of this process. He asked the audience to imagine a skier, motor boat, a toy tractor/tank with rubber treads and to take them apart mentally till they were left with only skis, an outboard motor, handlebars, and rubber treads. He now asked them to create something new. He next showed them how these components extracted in a destructive process could be combined via synthesis to create something new – a snowmobile. Osinga, n. 9, pp. 202-203. You can do this with anything – machines, organisations, or concepts – provided your mind is used to doing it.

51. Col Stephen J Gerras, "Thinking Critically about Critical Thinking" (US Army War College, 2008), p. 3, at http://www.au.af.mil/au/awc/awcgate/army-usawc/crit_thkg_gerras.pdf.

52. Osinga, n. 9, p. 79.

Thinking Abilities	Personality Characteristics	Thinking Styles
Uses metaphors in thinking. Flexible decision-maker. Uses broad categories. Uses mental images. Can cope with novelty. Can break mental sets. Finds order in chaos.	Willing to take intellectual risk. Curiosity and inquisitiveness. Openness to new experiences. Tolerates ambiguity. Broad range of interests. Playful with ideas Intuitive.	Challenges assumptions. Looks for novelties and gaps in knowledge. Draws new ideas out of existing knowledge.

Our military is not to blame for the lack of emphasis on the strategic thinking skills. Instead, our educational system has a major role to play. This point can be easier understood by parents who have switched their children's education from a traditional Central Board of Secondary Education (CBSE) to an International Baccalaureate (IB). IB is fast gaining popularity in India. The traditional way of education, which most of us have gone through emphasises rote learning, information processing, and recall. The syllabus, condensed into books, forms the core content of education, and the student is tested from within the book. The IB, on the other hand, depends heavily on the enquiry method of learning concepts, emphasises creativity, and has no prescribed books. The advantage of the CBSE format is its relative lower dependence on the quality of the teacher, where the book content can help score in the standardised syllabus. The IB method, on the other hand, is very dependent on the teacher, and so can result in disaster in the hands of a bad teacher. Our military education system is only a continuation, and reflection, of the traditional education system in general. [53] Most military education also tends to conform to the CBSE style emphasis on précis or manuals or doctrine books, whose contents are to be learned by the student. And the same dynamics of teacher quality versus model of education hold well in the military. Educating military men to think strategically will require, above all, quality teachers. In the absence of quality teachers, we will have to fall back on quality books.

53. For this insight, I owe my wife who holds a Masters in education.

The strategists' education is not for everyone. This is because the military needs linear thinkers and with good fast thinking reflexes for most tasks. However, two classes of people cannot do without strategic thinking skills. The person who most needs this kind of education is the leader. The second class of people comprise his advisers. In military parlance, this translates to the general and his advisory staff. The general needs to be both a leader of war-fighting men, and a strategist in thought. He needs both fast thinking (System I) to fight the battle and slow thinking (System II) skills to strategise the uncertainty of war, as well as for organisational evolution. His advisory staff (as opposed to the planning staff), also needs strategic thinking skills. And this is the reason why the greatest military generals and statesmen had their IB style great teachers: Aristotle(Alexander), Dronacharya (Pandavas), or Chanakya (Chandragupt Maurya). The best generals mastered both forms of thinking as they were educated.

However, a particular kind of school or college education system still does not mass produce strategists. On the contrary, even in the Western militaries, the default soldier is still the planner. This is one reason why all militaries follow reductionist logics. All military organisations are prone to reducing everything, including complex concepts, to the two big 'Ps' – procedures or processes. Whether it is the Centre of Gravity (CoG), Effects-Based Operations (EBO), Appreciations, Military Decision-Making Process (MDMP), Political, Military, Economic, Social Infrastructure Information (PMESII), or Joint Operation Planning Process (JOPP), militaries routinely publish a SOP or process on everything: the 'how to' manuals. This is because they are catering for the linear thinking planner at the tactical level of war.

At the operational level of war, the relatively new concept of Operational (Op) Design has been developed to deal with the initial understanding of messy military problems. This concept ties together many theories – of critical and creative thinking, taxonomy of learning, systems theory, the nature of problems, and military constructs—to try and develop a mechanism for a shared understanding amongst the problem solving team of the nature of the messy problem facing them. This approach to understanding the nature of the problem facing the strategist and the planner helps in developing

solutions through the shared understanding between the two. The importance of Op Design is more in the initiation of the planning process and reduces as planning gathers momentum.[54] At its essence, it spends more effort in understanding the problem, rather than looking for solutions. That is the mark of 'strategist thinking' as opposed to the planner's solution driven thought.

The gradual exclusion of military men in India from national strategic decision-making processes and structures has been blamed on many things. These include change of business rules, inter-organisational rivalry, structural problems, and lack of wars, amongst some others. However, politicians are some of the smartest practising strategists. Unlike any other class, they fight 'campaigns' every few years, and so test their election and governance strategies at election time. They know enough about the essential arguments in multiple fields. While they could be prone to privileging short-term expediency over long-term benefit, they rarely take unreasoned decisions. So, the exclusion of the military from the highest decision-making entities may also have something to do with lack of meaningful advice in tackling wicked problems like those of national security. Reduction in the quality of advice is natural if the advice is being given by super specialist planners as opposed to educated multi-disciplinary strategic thinkers.[55] Organisations are especially prone to giving advice only within the repertoire of their own

54. *Planner's Handbook for Operational Design* (Suffolk: Joint and Coalition Warfighting, 2011). Gen James Mattis, the new secretary of defence of the US, is a proponent of Op Design. It's also a bit ironical that the complex subject of Op Design has been reduced to a handbook! The origins of Op Design may lie in Fredrick Taylor's management theory.

55. Evidence of this cause and effect is unavailable due lack of open source historical records in India. However, such evidence is available in the case of the US, where records are more easy available. After Eisenhower, the US Service chiefs lost the trust of the Kennedy-Johnson Administration as their advice lost touch with the political imperatives. As per the award winning work by McMaster "the Joint Chiefs lost direct access to the president, and, thus, the real influence on decision-making that the Eisenhower NSC structure had provided.." H.R. McMaster, *Dereliction of Duty* (New York: HarperCollins, 1997), p.5. In India's case, the earliest leadership came from economically privileged backgrounds, with attendant educational advantage. For example, ACM PC Lal, a great thinker, had a diploma in journalism from King's College, London, and was attending the Bar at the Middle Temple when World War II caused a switch in careers. However, fortunately, even today, many generals are self-educated, making up in some measure, the organisation's lack of formal education in theory, history, and the 'arts.'

Dealing with complexity requires more generalist knowledge as opposed to specialisation. One problem often flagged about India's Higher Defence Organisation (HoD) is that the Ministry of Defence (MoD) is staffed by generalist civilians. But, at the highest levels of strategising, a generalist scores over a specialist.

output.[56] Not just Clausewitz, the political leader would also respect the general who understood policy with all its complexity.

Dealing with complexity requires more generalist knowledge as opposed to specialisation. One problem often flagged about India's Higher Defence Organisation (HDO) is that the Ministry of Defence (MoD) is staffed by generalist civilians. But, at the highest levels of strategising, a generalist scores over a specialist. While lack of specialisation, no doubt acts as an impediment in the decision-making quality of the MoD,[57] super-specialisation of the uniformed leadership, at the cost of generalist knowledge may be a worse impediment. The ideal mix is one where the junior military leadership has specialised knowledge, while the level of generalist knowledge keeps increasing as the level of leadership rises.[58]

CONCLUSION

This article is about strategy and strategists. It explores strategy first. It shows how the term means different things to different people, depending on the context. Strategy pervades life both horizontally in many disciplines and vertically in any discipline. One understanding is the *ends*, *ways*, *means*,

56. Graham Allison and Philip Zelikow, *Essence of Decision* (New York: Longman, 1999), Air forces will tend to bomb problems, armies to capture it, while diplomats will see the use of force as a professional failure.
57. "Armed Forces Modernisation," p.5 at http://visionias.in/beta/sites/all/themes/momentum/files/interview_issues_2016/Armed_Forces_Modernization.pdf. Accessed on February 3, 2017.
58. While not explicitly articulating this need, the Indian military institutions of higher learning implicitly seem to acknowledge the need for broadening of horizons at higher levels of leadership. Thus, most long and short term courses like the Higher Command , National Defence College, etc have curricula which invite experts in diverse fields to talk about their domains. However, the institutions do not emphasise on educating students about the theories underlying these fields.

construct. In that sense, in the military realm, tactics, strategy, and grand strategy is all strategy. However, as the level of practice rises, the complexity of the problem rises, all three variables increase in scope, and everything becomes open ended. At these levels of problem solving, strategy becomes a "quest for continuing advantage" rather than victory in a particular battle. It also needs a different kind of thinking.

All strategy springs from the mind. So we need to explore how the mind works, and to make strategists, we need to know how it learns. A combination of life experience and education can improve strategic thinking. This education needs to be a combination of theory and history. The end result is the availability of enough analogies and schemas, and, more importantly, *ways of thinking*.

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In the absence of the schemas enriched through education, the STEM type planner will default to tactical experience as his theory base, and linear thinking as his way of thinking. The end result may be the "Tactical General."[59] This article is really about education. But it hasn't really addressed the solution. Instead, it has spent effort in understanding the wicked problem of creating strategy and strategists. The solution(s) would be the subject of another article.

59. The term was coined by P.W. Singer, *Wired For War: The Robotics Revolution and Conflict in the 21st Century* (New York: Penguin Books, 2009), p. 329. This also explains bar-room comments by pilots about some senior officers occasionally continuing to do the flight commanders' job when occupying high chairs of responsibility. In these cases, the general is not only defaulting to earlier schemas in how he attempts new jobs, but also to what he is doing, by continuing to do the old job he is most experienced at. He chooses to see/solve tactical level problems over strategic level ones. However, I believe these are exceptions rather than the rule.