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Innovation and the Indian Army

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The history of scientific and technical discovery teaches us that the human race is poor in independent and creative imagination. Even when the external and scientific requirements for the birth of an idea have long been there, it generally needs an external stimulus to make it actually happen; man has, to speak, to stumble right up against the thing before the idea comes….

–Albert Einstein

Innovation

The word innovation is of Latin origin wherein innovation or 'innovare' means 'to make something new'. The etymology of the word is a good place to start understanding the term. This allows the interpretation/application of the word in several different ways, and in several different fields.

Commercially

Innovation involves employment of imagination, initiation and bringing to bear the available knowledge to extract greater value from resources and processes. Innovation may

Key Points

1. Innovation involves a new idea, process or methodology.
2. Military innovation is peculiar and distinctive and has no equivalence.
3. Military innovation includes technological, organisational and doctrinal innovation.
4. Military and technological innovations are not synonymous. Technological innovation is a subset of military innovation.
5. Military innovation has a number of constraints and is generally more difficult to effect vis-à-vis that in the commercial domain.
6. Indian Army has long road to travel to inculcate a culture of innovation in its rank and file.

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Innovation and ...

involve new technology or it may be the discovery of new methodology of executing an existing process. Innovation includes invention as well as the aspect of nurturing new ideas which may eventually benefit the end users of that process or product by maximising profit potential.

Militarily

In the military context, innovation is more constrained. Although a number of definitions exist for military innovation, the one which appeals the most was coined by Prof. Stephen P Rosen for a 'major innovation', which says:

> *A change that forces one of the primary combat arms of a service to change its concepts of operations and its relation to other combat arms, and to abandon or downgrade traditional missions. Such innovations involve a new way of war, with new ideas of how the components of the organization relate to each other and to the enemy, and new operational procedures conforming to those ideas. They involve changes in critical tasks, the tasks around which war plans revolve.*[1]

Types of Military Innovation

Military innovation is possible during all times such as peace, no war no peace (NWNP) (a state peculiar to India) or war. The definition mentioned above clearly brings out various aspects involved in military innovation, that is, technology, organisation as well as doctrine. Therefore, innovation is possible in all these domains individually or as a combination of two or more of these. Usually, innovation in the technological domain would almost certainly result in corresponding innovation in the other two domains. A telling quote from Maj. Gen. J. F. C. Fuller of the Royal Army is in order here; he said, "Tools or weapons, if only the right ones can be discovered, form 99 percent of victory…. Strategy, command, leadership, courage, discipline, supply, organization and all the moral and physical paraphernalia of war are as nothing to a high superiority of weapons—at most they go to form the one percent which makes the whole possible".[2] However, it should be clearly understood that military innovation and technological innovation are not synonymous. Technological innovation is a subset of military innovation and may or may not be required for a military innovation to happen.

Technological Innovation

There are various definitions existing for technological innovation, however the one coined by the Organisation for Economic Co-operation and Development way back in 1996 merits attention. It says:

> *A technologically new product is a product whose technical characteristics or intended uses differ significantly from those of previously produced products. Such innovations can involve radically new technologies, can be based on combining existing technologies in new uses, or can be derived from the use of new knowledge*[3]

The military technological innovation can be revolutionary or evolutionary. Revolutionary military innovation is always radical and is disruptive in nature. It changes the paradigm and is usually difficult to manage. However, when managed properly and married with the appropriate organisational and doctrinal structures, it results in a war-winning factor. On the other hand, the military evolutionary innovation usually dwells on adding new features and capabilities to current weapon systems/ equipment, that is, it is incremental in nature and is more often than not based on a preceding revolutionary innovation.

Organisational Innovation

Drawing from Prof. Cohen's definition cited above, in the context of the army, organisational innovation involves a change that forces one of the primary combat arms of a service to change its concepts of operations and its relation to other combat arms, and to abandon or downgrade traditional missions. This means that the service needs to create and adopt a new way of waging war.

Doctrinal Innovation

A military doctrine reflects the current thinking on the practical conduct of warfare and its basic purpose is to spell in clear terms how a military would wage war successfully. The military doctrine is based on a number of factors such as the national grand strategy, security environment, enemies identified, enemies'/own capabilities and technological opportunities to the enemy as well as own forces. Thus, a change in any one of these factors would require a doctrinal innovation, while a failure to do could have catastrophic consequences. The famous proverb 'preparing to fight the last war' has an inherent stagnation in as far as doctrine is concerned, which when seen from the other side is nothing but a failure to innovate.

Indian Army and Innovation Impediments

Militaries the world over, operate by and large in a similar manner and the Indian Army is no exception. The military structure which has generally been found to be successful and thus universally acceptable is that of a rigid command hierarchy with military customs and traditions, strict discipline, as well as supremacy of the civilian oversight. The impact of these aspects on the Indian Army's innovation perspective is discussed below.

Command Hierarchy

The Indian Army has a steep pyramidal command structure and 'seniority implies wisdom' is the common belief. Although the command hierarchy has its tremendous operational advantages, it does not augur well for the innovative spirit. Multiple layers of hierarchy create an atmosphere of 'do not rock the boat', and thus result in maintenance of status quo. The commanders in the chain while still open to young officers' ideas on technological issues would generally have none of it when these ideas or theories relate to organisational or doctrinal innovation. The very idea of change (which is the essence of innovation), at times is unpalatable and nixed in the bud primarily due to the hierarchical structure of the organisation. As a result, the officers/junior commissioned officers and other ranks attempting to innovate also tend to taper off due to the fear of getting on the 'wrong side' of a sceptical/uninterested senior officer. The career progression of officers and men can get adversely affected if an attempted innovation does not get accepted or falls foul with the hierarchy. This can be a major dampener because the avenues of promotion are as such limited in the pyramid of command.

Customs and Traditions

The Indian Army has a glorious history and its customs and traditions are legally and morally binding on all ranks. The Indian Army draws upon its customs and traditions for the physical and moral courage as well as the strict code of honour displayed from time to time by its personnel both on and off the battlefield. However, this aspect can at times be the undoing of the practitioners of innovation. Innovation generally requires 'non-traditional' thought process and dissent against the norms to succeed.

Strict Discipline

Hollywood war movies are replete with storylines wherein seemingly impossible operations have been launched employing so-called rogue or non-confirming soldiers. The underlying principle being these, men were considered capable of out-of-the-box, that thinking and improvisation on the go. That is the thing, 'out of the box'! Strict discipline, while being so essential for an army, can take away this important ingredient for innovation.

Civilian Oversight

This is the basic principle on which any military functions and is administered in a democracy and cannot be any different in the case of Indian Army. However, the lack of adequate integration of the service HQ with the Ministry of Defence is a major impediment. More often than not, the bureaucracy is inadequately equipped to understand the organisational and doctrinal issues of the army. The mutual distrust among the uniform fraternity and the Defence Research and Development Organisation (DRDO) also does not help the cause of technological innovation. Therefore, those innovations which do survive the hazards mentioned above may not get implemented or, at best, get partially implemented due to this aspect.

Recommended Way Forward

Innovation Management

The various distinctions between the varieties of innovations discussed earlier is one of the reasons why it is difficult to find a 'one-stop shop' for innovation. This then brings in *innovation management*. Innovation management is very important because these varieties of innovations would have an impact on a large amount of resources and personnel of the Indian Army. An innovation strategy which contains the goals and objectives addressing the strategic challenges being faced by the Indian Army needs to be thought of and monitored for implementation. Certain requisite steps are mentioned below.

Creating a Culture

Successful innovation by the Indian Army would largely depend upon its capability to create a culture of innovation. One of the most important tasks for the Army Design Bureau (ADB) should be that of identifying and nurturing potential innovators. This can be done in consultation with army training command, various schools of instructions and other class A/B institutions involved in thinking/learning process. The private defence industry and academia should also be encouraged to share their ideas with the ADB on an appropriate platform (this has already started and needs to gather pace and direction). Further, as discussed above, innovations require 'out-of-the-box' thinking and considerable effort, which may not be the primary task of an individual. This can bring in questions and doubts about relevance of the work being undertaken and justification for the time and money involved. The atmosphere thus can intimidate the innovator(s). Encouragement and career protection of such personnel is an essential requirement for the culture of innovation to take roots in the Indian Army. Also, the piecemeal innovation efforts being undertaken by the field army needs to go beyond the brochures and innovation *melas* and should get implemented at appropriate levels. A beginning has been made towards this end by the ADB but it needs to be pursued with utmost vigour and zeal to successfully establish the innovation environment in the Indian Army.

Creating an Organisation

An organisation needs to be created (ADB being a good candidate) to manage the innovations on behalf of the Indian Army. As discussed earlier in this brief, this organisation can have its ear to the ground to gather new ideas/concepts, find imaginative employment for the old ones and put these through the paces to realise and implement the resultant innovation. This then should create an ongoing cycle of thinking–realising–implementing. Further, while this organisation goes about managing innovation, it would also provide the necessary inputs to the army hierarchy and the Directorate General of Military Operations about the likely nature of future wars and scenarios in NWNP. Thus, various innovations impacting technology, doctrine, organisation, training, leadership, infrastructure and policy can be addressed.

Field Army Pull: Innovation Organisation/ADB Push Model

For the field army pull, the innovation organisation/ADB needs a strong information-gathering mechanism to qualify the field army's needs. A well-oiled research and development team has to translate the needs of the field army into practical weapons/equipment proposals. Therefore, the organisation doing the innovation/ADB has to continually have good contact with various commands to ensure the weapon/equipment meet their expectations. On the other hand, in the innovation organisation/ADB push model, it would be about weapons/equipment, organisations and doctrine that the field army is not thinking about in the present moment. For the technological innovations of the push model, it would require a very strong technological base (which is absent as of now). Basic research in new materials, methods and techniques is required, which would take considerable time, effort and money. While innovation in sustaining technologies would always remain simpler and provide immediate/near-future gratification, it is the disruptive technologies that would prove to be the game changers and provide the war-winning means. For the organisational and the doctrinal innovation thought of individually or as a result of a technological innovation, an existing entity such as Army Management Study Board may be subsumed in the innovation organisation/ADB and tasked accordingly.

Budgetary Support

There is a school of thought that believes that budget is not a constraint and innovation is possible in the absence of huge funds. This is all the more true in case of the Indian Army. Various establishments such as Army Technology Board, Directorate of Indigenisation, Simulator Development Division and technical schools of instruction have adequately demonstrated this in the past. However, the issue at hand is less of realisation of the prototype or validation of concept but more of lack of implementation. This needs to be redressed by creating adequate budgetary support at the business end of the whole exercise, that is, organisation-wide implementation and necessary follow-up.

Conclusion

Indian Army soldiers are known for their indomitable spirit and finding innovative solutions to their pressing tactical problems. The idea of *jugaad* is not new to the Indian Army and it has done wonders with this theory in the past. However, the army needs to cultivate an environment and culture of innovation. Failed innovation attempts (which there are going to

be lots) should be seen in a positive light and not as sunk costs. It has been seen and experienced in the past that personnel being afraid of failure or having lack of confidence in how their innovation is likely to be received by the hierarchy have failed to realise the full potential of that innovation, even prematurely terminating it in some cases. Indian Army must create an environment wherein the potential innovators do not feel threatened and their careers are protected. Adequate budgetary support is also crucial to the innovation at the implementation stage and needs to be catered for. It is not for the lack of ideas that Indian Army is still playing the catch-up game with the other modern armies but it is the lack of innovation management that has resulted in it being so.

Notes

1. Stephen Peter Rosen, "New Ways of War: Understanding Military Innovation," *International Security* vol. 13, no. 1, Summer 1988, p. 134.
2. Chris Hables Gray, *Postmodern War* (New York: The Guilford Press, 1997), p. 107.
3. Organization for Economic Cooperation and Development, *Oslo Manual* (Eurostat: European Commission, 1996), p. 33.

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