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THE TIMES OF INDIA

Wed, 22 Mar, 2017

In House, Centre defends `sahayak' system of Army

`Shouldn't Be Made To Do Menial Tasks'

The government in Parliament strongly defended on Tuesday the “sahayak“ (orderly) system in the Army , holding that it provides “essential support“ to officers and junior commissioned officersin fulfilling their assigned duties both in times of peace and war.

Union minister of state for defence Subhash Bhamre, however, added that “exhaustive instructions“ are repeatedly issued to all Army units to stress that sahayaks should “not be employed for menial tasks“ which are “not in conformity with the dignity and self-respect“ of combatant soldiers.

Responding to questions in the Rajya Sabha, which came in the backdrop of the sahayak system being criticised as a vestige of the colonial era and a couple of jawans posting videos on social media against the practice, Bhamre said Sahayaks have “clearly defined military du ties“ and form “an integral part of the organisational structure of a unit“.

“During operations in field areas, a sahayak and the officerJCO act as buddies in arms. One covers the movement of the other buddy and protects him in operations where support has to be total, whether mental, physical or moral,“ he said.

The sahayak also provides “an alternative contact“ for the officer with the troops under his command, getting feedback on “grass-root issues“ through informal means. “The rapport between officers and buddies has led to enhancement of the spirit-decorps in a unit, which is vital during war and peace,“ said Bhamre, ruling out any adverse impact of the sahayak system on the morale of troops. The Navy and IAF do not have the sahayak system. As was first reported by TOI, the Army in May last year had proposed to the defence ministry that soldiers deployed as sahayaks could be replaced by the 29,543 “service assistants or non-combatants“ in peace stations, while maintaining “status quo“ in field areas with officers posted along the borders or in counter-insurgency op erations continuing to get “buddies“ as before.

The Army says the recruitment of the service assistants, on the lines of the system of “non-combatants enrolled“ in the IAF , would be “cost-neutral“ since it would be off-set from the existing manpower in the 1.3-million strong force. But the proposal is still being examined by the defence ministry .

The Army , which currently has 41,162 officers, contends that an officer gets a sahayak for upkeep of uniform, weapons and other equipment, as also act as his radio operator and “buddy“ during combat.

THE HINDU

Wed, 22 Mar, 2017

Centre rejects joint venture plan on Viraat

A.P. wants to convert it into museum

The Defence Ministry has turned down the proposal of the Andhra Pradesh government to set up a joint venture to convert decommissioned aircraft carrier INS Viraat into an aircraft museum.

The rejection has once again put the fate of the Centaur-class aircraft carrier in question as this was the only firm proposal sent forward to preserve the iconic warship. “The proposal for equity participation was not accepted by the Ministry of Defence and the same has been communicated to the Government of Andhra Pradesh on December 14, 2016,” Minister of State for Defence Subhash Bhamre said in a written reply, in the Rajya Sabha on Tuesday.

Business Standard

Wed, 22 Mar, 2017

Speculation in Washington about nuclear doctrinal changes by India

Will India strike first if it feels Pakistan is about to cross the nuclear threshold?

By Ajai Shukla

A day after *Business Standard* reported a new approach in New Delhi strategic circles to India's use of nuclear weapons, the influential Washington D.C. think tank, Carnegie Endowment, discussed the same issue --- the possibility of an Indian "first strike" to defang Pakistan's nuclear arsenal.

At the Carnegie International Nuclear Policy Conference on Monday, a prestigious annual event at which important strategic policy chances are often signalled, a discussion took place on whether India was moving away from massive counter-value retaliation (i.e. nuking towns and cities) to counter-force targeting (i.e. nuking enemy nuclear forces and command structures).

Massachusetts Institute of Technology professor, Vipin Narang, outlined a scenario in which a Pakistan-backed terrorist strike on India killed scores of civilians. New Delhi mobilised its three strike corps and attacked Pakistan. With the armour-heavy 21 Corps bludgeoning along, Pakistan ordered a "demonstration" strike with tactical nuclear weapons (TNWs) --- its short-range Nasr missile batteries --- as a nuclear warning to India. New Delhi's response, according to traditional Indian nuclear doctrine would then be "massive counter-value retaliation against Pakistani cities, leaving aside how credible or incredible that might be."

But then Narang sprung the surprise. "There is increasing evidence that India will not allow Pakistan to go first. And that India's opening salvo may not be conventional strikes trying to pick off just Nasr batteries in the theatre, but a full 'comprehensive counterforce strike' that attempts to completely disarm Pakistan of its nuclear weapons so that India does not have to engage in… tit-for-tat exchanges and expose its own cities to nuclear destruction."

Narang pointed out that this dramatic change did not surface from "fringe voices", but from former national security advisor Shivshankar Menon in his new book; and former chief of India's strategic forces command, Lieutenant General B S Nagal, both of whom have questioned India's traditional "massive counter-value retaliation". Narang pointed to a possible "decoupling" of Indian nuclear strategy vis-a-vis China and Pakistan. While retaining NFU and massive counter-value retaliation against China, New Delhi was considering a disarming counter-force strike against Pakistan.

Also in question was India's longstanding "no first use" (NFU) policy, with Narang pointing out that it had been questioned at least four times already. First, India's official nuclear doctrine, published in 2003, officially eroded the sanctity of NFU by invoking nuclear use against chemical or biological weapons. Second, in November, former defence minister Manohar Parrikar stated (later clarified to be in his personal capacity): "India should not declare whether it has a NFU policy". Third, General Nagal, in his writings questioned the morality of NFU, asking whether it was possible for India's leadership to accept huge casualties by restraining its hand well knowing that Pakistan was about to use nuclear weapons.

Fourth, Menon undermines NFU's sanctity with this paragraph in his book: "There is a potential grey area as to when India would use nuclear weapons first against another NWS (nuclear weapons state). Circumstances are conceivable in which India might find it useful to strike first, for instance, against an NWS that had declared it would certainly use its weapons, and if India were certain that adversary's launch was imminent." Said Narang at Carnegie: "Indian leaders can disavow all of this as personal opinions, but when a sitting defence minister, former Strategic Forces commander, and highly respected NSA all question the sanctity of NFU, it all starts to add up."

Also quoted was Menon's argument in his book that clearly indicates that strategy has shifted from counter-value targeting to counter-force strikes. Menon refers to counter-value targeting in the past tense, writing:

"[T]he logical posture at first was counter-value targeting, or targeting an opponent's assets, rather than counter-force targeting, which concentrates on the enemy's military and command structures."

Menon continues: "There would be little incentive, once Pakistan had taken hostilities to the nuclear level, for India to limit its response, since that would only invite further escalation by Pakistan. India would hardly risk giving Pakistan the chance to carry out a massive nuclear strike after the Indian response to Pakistan using tactical nuclear weapons. In other words, Pakistani tactical nuclear weapons use [or imminent use] would effectively free India to undertake a comprehensive first strike against Pakistan."

Bringing these views together, it might not be Pakistan that first resorts to a nuclear strike in South Asia. Rather it could be India, acting pro-actively when it believed Pakistan was about to cross the nuclear threshold.

So far, there has been no reaction from New Delhi. In the past, any questioning of NFU or "massive retaliation" has evoked a swift quasi-official rebuttal.

THE TIMES OF INDIA

Wed, 22 Mar, 2017

Dragon Threat - Don't meddle in Nepal, SL, China media warns India

By Saibal Dasgupta

The Chinese media has threatened to "fight back " any Indian attempt to meddle with China's attempts to enter into military collaboration with Nepal and Sri Lanka. The threat comes amid the ongoing visit of Chinese defence minister Chang Wanquan to Sri Lanka, which will be followed by a tour of Nepal. Chang is accompanied by deputy commander of the navy, Su Zhiqian.

China is worried that it may not be easy to overcome decades of Indian influence in these countries. Accusing India of trying to counter-balance China's growing influence in South Asia, Beijing-based Global Times said in a commentary , "If such tendencies in India continue, China will have to fight back, because its core interests will have been violated. This is not what we hope for, but the ball is in India's court."

However, People's Daily, the Communist Party organ, has taken a different stance refraining from making such bitter attacks. People's Daily is regarded as a parent of Global Times.

Beijing is apprehensive about the forthcoming visit to Indian Army Chief Gen Bipin Rawat to Nepal from March 28 to 31, which may influence Kathmandu's decision making during Chang's visit. Rawat is expected to discuss sale of military hardware and software to Nepal, which is what China is trying to do. This explains China's worries, observers said.

DECCAN Chronicle

Wed, 22 Mar, 2017

North Korea nuclear programme in 'new phase': IAEA

Yukiya Amano told the Wall Street Journal that the isolated state's nuclear capacities are being ramped up.

Seoul: North Korea's uranium enrichment facility has doubled in size over the last few years, the UN's atomic watchdog chief has warned, as global tensions grow over Pyongyang's burgeoning nuclear weapons programme. Yukiya Amano, head of the International Atomic Energy Agency (IAEA) told the Wall Street Journal that the isolated state's nuclear capacities are being ramped up.

"The situation is very bad... It has gone into a new phase," Amano said, in the report published Monday. "All of the indications point to the fact that North Korea is making progress, as they declared."

International alarm over Pyongyang's military ambitions has risen after a series of missile launches and nuclear tests last year, and earlier this month it fired four rockets in what it described as practice for an attack on United States military bases in Japan.

The North, which also tested a powerful new rocket engine at the weekend to coincide with a trip to Asia by US Secretary State Rex Tillerson, has long coveted a missile capable of hitting the US mainland with a nuclear warhead.

Pyongyang has rapidly expanded its facilities for enriching uranium and plutonium production in recent years, Amano told the Journal, expressing doubt over the potential for a diplomatic solution.

During his visit to South Korea last week, Tillerson declared Washington would drop the "failed" approach of "strategic patience" with Pyongyang and warned that US military action was possible.

That marked a sharp divergence from China's insistence on a diplomatic approach to its neighbour, which it has long protected.

In January, South Korea said the North had enough plutonium to make 10 nuclear bombs, as well as a "considerable" ability to produce weapons based on highly-enriched uranium. The North has boosted plutonium supplies by reactivating its once-mothballed nuclear reactor in Yongbyon.

The Statesman
PEOPLE'S PARLIAMENT, ALWAYS IN SESSION

Wed, 22 Mar, 2017

China must persuade N Korea: WH

The United States expects China to persuade its ally North Korea to abandon its nuclear weapons and ballistic missile programmes, the White House has said,warning that the policy of “strategic patience” is over. “We expect China to increase its role in persuading North Korea to move away from nuclear weapon and ballistic missile development and toward steps to create a better future for the North Korean people,” Press Secretary Sean Spicer told reporters. The statement comes a day after President Donald Trump said that North Korean leader Kim Jong-Un was “acting very, very badly”, after Pyongyang conducted a ground test of a new type of high-thrust rocket engine on Saturday.

The Korean Central News Agency called the test “a great event of historic significance” for North Korea's indigenous rocket industry. Trump's remarks came as Secretary Rex Tillerson concluded his three-nation trip to Japan, South Korea and China, wherein North Korea's “provocative” actions dominated his discussions. Tillerson yesterday briefed Trump on his visit. “This trip set the stage for future leader-level engagement between the US and China,” Spicer said.

“I think he sent a very clear signal that our policy of strategic patience is over. The President and the Secretary of State have an expectation that China employed multiple points of pressure on North Korea,” Spicer said. “We know that, we don't agree 100 per cent of the time with China, but as the State Department noted yesterday,both President Xi (Jinping) and Secretary Tillerson agreed that there are opportunities for greater cooperation between China and the US, and acknowledged that there are and will be in the future differences between the two countries,” he said. Tillerson's trip helped set them down that path. “The follow-on meetings that the leaders intend to have will be helpful in that vein,” Spicer said.

The State Department, meanwhile, said Tillerson talked about the challenges of North Korea during his China visit. “That was, frankly, a theme throughout his trip and how do we address it going forward; how do we address this threat going forward,” State Department acting spokesman Mark Toner told reporters. Toner also said that the US is not backing away from its concerns about human rights in China. “With respect to other

aspects of the relationship, we're not walking away from our concerns about human rights, personal freedoms within China."

The Indian EXPRESS
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Wed, 22 Mar, 2017

Flashes of inspiration

Strange signals from the sky may be signs of aliens

On August 24th 2001 the Parkes Observatory, in Australia, picked up an unusual signal. It was a burst of radio waves coming more or less from the direction of the Small Magellanic Cloud, a miniature galaxy that orbits the Milky Way. This burst was as brief as it was potent. It lasted less than 5 milliseconds but, during that period, shone with the power of 100m suns. It was, though, noticed by astronomers only in 2007, when they were poking around in Parkes's archived data. As far as they can tell, it has never been repeated.

Similar unrepeated signals have since been noted elsewhere in the heavens. So far, 17 such "fast radio bursts" (FRBs) have been recognised. They do not look like anything observed before, and there is much speculation about what causes them. One possibility is magnetars—highly magnetised, fast-rotating superdense stars. Another is a particularly exotic sort of black hole, formed when the centrifugal force of a rotating, superdense star proves no longer adequate to the task of stopping that star collapsing suddenly under its own gravity. But, as Manasvi Lingam of Harvard University and Abraham Loeb of the Harvard-Smithsonian Centre for Astrophysics observe, there is at least one further possibility: alien spaceships.

Specifically, the two researchers suggest, in a paper to be published in *Astrophysical Journal Letters*, that FRBs might be generated by giant radio transmitters designed to push such spaceships around. With the rotation of the galaxies in which these transmitters are located, the transmitter-beams sweep across the heavens. Occasionally, one washes over Earth, producing an FRB.

This idea is not completely mad. Human rocket scientists have toyed with something similar, in order to overcome one of the biggest problems of spaceship design: that a craft propelled by a rocket motor must carry its fuel with it. Fuel has mass. That mass must be moved by more fuel—which adds more mass to the craft, which thus needs still more fuel. And so on. For this reason, 90% or more of a conventional rocket's launch mass is its fuel.

It is possible, though, to separate the fuel from the craft. That is the principle behind a solar sail, which employs the gentle pressure exerted by sunlight to propel a vehicle. A nippier alternative is to use focused light beams to provide the pressure. Yuri Milner, a Russian billionaire with a long-standing interest in science, is paying for research into such a machine. He proposes to drive a tiny probe to Alpha Centauri, one of Earth's nearest stellar neighbours, using banks of powerful lasers.

Dr Lingam and Dr Loeb suggest FRBs might be the result of vastly bigger takes on the same principle, except that they employ the radio portions of the electromagnetic spectrum rather than visible light. The two researchers have worked out what would be needed if the transmitter behind such a burst were solar-powered. They calculate that the amount of sunlight falling onto a planet about twice the size of Earth, and at the right distance from its star to have liquid water on its surface, would yield enough energy to accelerate a spaceship weighing a million tonnes or so to a speed close to that of light before the propulsion beam became too attenuated to propel it any faster. This would be perfect for ferrying large numbers of beings from one star system to another, as long as there was an equivalent device at the other end to slow the craft down again.

To check whether such a machine is technologically plausible, the two researchers calculated that the necessary planet-sized array of radio transmitters could be kept cool by nothing more exotic than ordinary water. So, as far as they can see, while building such a machine would be a heroic feat of engineering, nothing in the laws of physics actually forbids it.

Saying that the features of FRBs are consistent with their being signs of an alien space-propulsion system is not, of course, the same as saying that this is what they actually are. One early explanation of pulsars—regular cosmic radio signals first observed in 1967 was that they were alien radio beacons. They later turned out to be caused by fast-spinning neutron stars. For physicists, though, that explanation was almost as interesting. A neutron star is one whose protons and electrons have merged with each other to create neutrons. These, together with the star's pre-existing neutrons, result in an object that has no atoms in it. Since atoms are composed mostly of empty space a neutron star, instead of being star size, is just a few kilometres across. If FRBs turn out to be even a fraction as curious as that, most astronomers would forgive them for not being artificial. *The Economist newspaper Limited 2017*

The Statesman
PEOPLE'S PARLIAMENT, ALWAYS IN SESSION

Wed, 22 Mar, 2017

The source of lipids

By Tapan Kumar Maitra

The endoplasmic reticulum plays a central role in the biosynthesis of membranes, writes

The biosynthesis of lipids and their fates within eukaryotic cells reveal that the endoplasmic reticulum is the primary source of membrane lipids including phospholipids and cholesterol. Indeed, most of the enzymes required for the biosynthesis of the various membrane phospholipids are found nowhere else in the cell. There are, however, important exceptions.

For example,while mitochondria import from the ER all of the phosphatidylcholine,phosphatidyl inositol, and phosphatidylserine found in their exterior and interior membranes, they acquire phosphatidylethanolamine indirectly by decarboxylating imported phosphatidylserine. Other significant exceptions are the biosynthesis of cholesterol and dolichol by peroxisomal enzymes and the synthesis of chloroplast-specific lipids in the chloroplast. Biosynthesis of phospholipid molecules is restricted to one monolayer of the ER membrane. Specifically, the active sites of the enzymes involved are exposed to the cytosol, and newly synthesised lipids are incorporated into the monolayer of the membrane that faces the cytosol. Cellular membranes, of course, are phospholipid bilayers, with phospholipids distributed to both sides.

Thus,there must be a mechanism for transferring phospholipids from one layer of the membrane to the other. Because it is thermodynamically unfavourable for phospholipids to spontaneously flip at a significant rate from one side of a bi-layer to the other, transfer depends on phospholipid translocators, or flippases, which catalyse the translocation of phospholipids through ER membranes. Phospholipid translocators, like other enzymes,are quite specific and affect only the rate of a process. As a result,the precise phospholipid molecules transferred across a membrane depend on the complement of translocators available. Therefore, this translocator specificity contributes to the membrane asymmetry.

For example, the ER membrane contains a translocator for phosphatidylcholine, but not for phosphatidylethanolamine, phosphatidylinositol, or phosphatidylserine. Consequently, phosphatidylcholine is found in both the cytosolic and lumenal layers of the ER membrane whereas the latter three phospholipids are confined to the cytosolic layer.When vesicles form from the ER membrane and fuse with other organelles of the endo-membrane system, the distinct compositions of the cytosolic and lumenal layers established in the ER are transferred to other cellular membranes. Movement of phospholipids from the ER to a mitochondrion or chloroplast poses a unique problem.

Unlike organelles of the endo-membrane system, mitochondria and chloroplasts do not grow by fusion with ERderived vesicles.Instead,phospholipid exchange proteins (or phospholipid transfer proteins) found in the cytosol convey phospholipid molecules from the ER membrane to the outer mitochondrial and chloroplast membranes.Each exchange protein recognises a specific kind of phospholipid, removes it from one

membrane,and carries it through the cytosol to another membrane. Such transfer proteins also contribute to the movement of phospholipids from the ER to other cellular membranes, including the plasma membrane.

Although the ER is the source of most membrane lipids, the compositions of other cellular membranes vary significantly from the composition of the ER membrane. For example,a striking feature of the plasma membrane of hepatocytes is the relatively low amount of phosphoglycerides and high amounts of cholesterol, sphingomyelin, and glycolipids an increasing gradient of cholesterol content from the ER through the compartments of the endo-membrane system to the plasma membrane.

This correlates with an increasing gradient of membrane thickness.ER membranes are about five nm thick, whereas plasma membranes are about eight nm thick.

The Statesman
PEOPLE'S PARLIAMENT, ALWAYS IN SESSION

Wed, 22 Mar, 2017

Do you wish to erase them?

By Ian Johnston

Scientists say that memories can be switched on and off but experiments on humans may not be possible any time soon due to ethical considerations.

Scientists have demonstrated “proof of principle” that traumatic memories can be erased from the brain — as seen in the science fiction film, Eternal Sunshine of the Spotless Mind. Studies in mice demonstrated that fearful memories prompted by a sound associated with an electric shock could be turned off and on. The researchers said, however, that attempting to experiment on humans was full of ethical problems and some way off. But their studies suggest it will be possible at some point in the future, for example, to treat people suffering from post-traumatic stress disorder or drug addiction. Speaking recently at the annual meeting of the American Association for the Advancement of Science in Boston, Sheena Josselyn said that they had been able to discover the specific brain cells where a particular memory was stored. “So we can target where in the brain a memory has gone,” she said.

“We can then decrease the activity in these cells ... And it is as if we erase the memory.” After this was done, the mice were unperturbed when they heard the sound they had previously learned to associate with the shock. Increasing the cells’ activity restored the memory of the shock — enough to be unpleasant but not to cause lasting harm — to the mice. “We can turn memory on and turn memory off,” Josselyn said, “It really does give us proof of principle. If there’s a memory problem, we don’t have to target the entire body or the entire brain.” Josselyn, of Toronto University, said that it was possible that in the future scientists could develop “a heat-seeking missile or a heat-seeking drug that would somehow operate on just the cells important for this memory”. “We can erase a fearful memory in mice, suggesting in people there might be a way of targeting just those cells that are important in just this traumatic memory and perhaps getting rid of it,” she said.

“The spotless mind,” interjected Professor Howard Eichenbaum, director of the Centre for Memory and Brain at Michigan University, who was taking part in the same briefing to the press at the meeting. In Eternal Sunshine of the Spotless Mind, an estranged couple erases memories of each other after breaking up, but things do not go quite to plan. Eichenbaum cautioned that there were a limited number of brain cells involved in such memories and killing off one memory might damage others. But he added, “If this memory was particularly severe and was destroying your life, then it might be a reasonable compromise.” Asked about the ethical considerations, Josselyn said that being able to target the potential treatment was a key issue, adding that she did not see a future in which brain cells would be killed off to remove memories.

“The ethics are a really important question. I think we are the sum total of our memories,” she said, “We all learn from our mistakes. If we erase the memory of our mistakes, what is to keep us from repeating them?”

But she added, “For something that really interferes with your everyday life, I think a treatment that targets just those cells could be appropriate.” In addition to removing fearful memories, the researchers have been able to get rid of memories associated with taking cocaine among the mice, suggesting this could lead to new ways of treating drug addicts. Memories are stored in what is known as an engram, which consists of brain cells that fire in a particular pattern. When something happens, the brain cells, or neurons, compete against each other to store the memory. Josselyn said, “We showed that if two related events occur in a small time window — six hours — then the same neurons win the competition for allocation to both engrams.

“This links the two related memories. If, on the other hand, two events occur more than six hours apart, non-overlapping populations of neurons are recruited and the memories are kept separate. “Our results suggest that this neuronal competition during memory formation is a mechanism that links or disambiguates related emotional memories.”