### Shifting the Nuclear Security Focus to China

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In the seven decades of India's independent existence, China has had noticeable success in comprehensively outsmarting Delhi in every respect – political, diplomatic, economic and military. In the present day, its wealth and reach is such that it is now the equal of the United States. The Indian tortoise cannot match the Chinese hare, but what the former can do is use its nuclear weapons to, if not gain the initiative on the Line of Actual Control (LAC) and elsewhere in Asia, than to equalize the situation. This won't be easy considering the Indian government is not one to depart from the script that I have elsewhere described as "deterrence by half measures".<sup>1</sup>

The Bulletin of Atomic Scientists has advanced its famous 'Doomsday Clock' to two minutes to midnight, suggesting that the nuclear Armageddon is closest to happening since the 1962 Cuban Missile Crisis.<sup>2</sup> India seems not to have come to terms with this much more dangerous world of the 21st century, especially in its nuclear security aspects. The Modi regime seems unperturbed, for instance, by the full blown emergence of the rogue nuclear triad of China and its risk-taking acolytes – Pakistan and North Korea – that, between them, have all but dynamited the global nuclear order based on the 1968 Non-Proliferation Treaty (NPT). This was no bad thing to happen, however, had India quickly capitalised on the situation with the Modi government showing presence of mind, strategic purpose, and nimbleness of approach to nuclear security to use North Korea's successful thermonuclear test in August 2017, and three test-firings of its Hwasong Intercontinental Ballistic Missiles (ICBMs) in July and November, as a credible reason to resume open-ended underground testing to obtain proven high yield thermonuclear weapons of different designs and weight-to-yield ratios that the Indian military can have confidence in, and to rapidly develop and test-fire a genuine Agni ICBM of 12,000 miles range. It was a missed opportunity and a strategic blunder the country may pay dearly for. There was sufficient provocation. The North Korean hydrogen bomb test had, after all, upended the comfortable certainties attending on the existing nonproliferation order that Delhi subscribes to. India could have justly explained its resumed underground testing as a reasonable response to China's hand in North Korea's fielding fusion weapons and ICBMs, and the unravelling of the regional and international nuclear orders.

The Indian government, habitually fearful, and eager to respect the strategic sensitivities of the US and China, did nothing. When juxtaposed against Kim Jong-un's airy dismissal of threats by US President Trump as the ranting of a "mentally deranged...hard-of-hearing dotard", his unveiling of a plan to nuke Guam, the US military's gigantic mid-Pacific island base and, nearer home, Pakistan Foreign Minister Khwaja Asif's gumption in replying to Trump's demand for Islamabad to "do more" in Afghanistan with a statement, "We will not do more", has shown India up as too diffident to matter.<sup>3</sup> North Korea's showing steel and Pakistan cheekiness signal a sea-change in the strategic picture of Asia.

For one thing, the US nuclear security umbrella counts for little to its Asian treaty allies – Japan, South Korea and the Philippines – because such security guarantees are not credible now that Pyongyang can take out any city in the continental United States.<sup>4</sup> If Los Angeles is the price to pay for corralling North Korea, Kim Jon-un may be right in calculating that Washington would be unwilling to pay it. The US is unlikely to put itself in danger if Kim Jong-un starts firing his nuclear ordnance at Asian cities. This is at the heart of the problem of the 'extended deterrence' concept, which breaks down when the provider finds itself in the nuclear crosshairs of the very country it is providing security against. It is for these and other reasons that I had argued in 2008 that the falling of "Asian nuclear dominoes" was inevitable, and that a nuclear weapons-armed Japan would be quickly followed by nuclear weaponised South Korea and Taiwan – all countries with highly developed nuclear weapons programmes that were forced into hibernation by the US. I had also concluded that such a situation would help India because Asian states to its east and northeast bristling with nuclear weapons would automatically void China's strivings for hegemony.<sup>5</sup> In the rapidly changing nuclear context, what should India do? What is its best nuclear strategy?

There's always a penalty for a country getting its conventional military bearings wrong. The costs are infinitely higher in the strategic realm if, cued to a generalised threat and driven by vacuous thinking, the state's nuclear forces end up incapable of dissuading and deterring nuclear-armed adversaries, leave alone coercing or compelling them. It is precisely such concerns about the perceived deficiencies in the Indian nuclear doctrine, capabilities, strategy and posture that are fuelling the growing sentiment in the military and certain policy quarters to rectify them.

The international consensus is that there are two potential nuclear conflict areas: Northeast Asia and the Indian subcontinent. The first one involves North Korea, China, and the United States (with its allies suth Korea and Japan), the other India, China and Pakistan. Then there's the active "rogue triad" engaged in clandestine nuclear proliferation: China, Pakistan, and North Korea.<sup>6</sup> In all the three cases, China is the

common factor, enabler and pivot, providing cover for Pakistan's and North Korea's nuclear build-up and relentlessly provocative policies. These two client states, in turn, enhance Beijing's diplomatic leverage as a mediator with the US and Japan in one case, and as a security spoiler for India, in the other. It is the capacity strategically to discomfit its main Asian rivals on its two flanks – Japan and India – that China prizes.<sup>7</sup> Without the secret and sustained programme of Chinese transfer of expertise, materials, and technologies, Pakistan and North Korea would not be nuclear missile armed states, or be able to modernise their nuclear arsenals, and credibly prosecute their belligerent deterrence strategies premised on the threat of first, and imminent, use of nuclear weapons, while China stands by, providing cover in case their foolhardy posturing misfires.<sup>8</sup>

There are two ways to deal with these China-centred triads: try and disrupt the China-Pakistan and China-North Korea nuclear links, and/or conceive and implement an aggressive strategy to negate and disturb the Chinese strategy and blunt Beijing's nuclear edge. The option of disruption – by covertly transferring nuclear weapons and missile technologies to Vietnam and any other capable state bordering China that wants them – has not been exercised by India owing to Delhi's self-imposed restraint when it would be entirely within its rights to respond in kind and in tit-for-tat manner.<sup>9</sup> India's inability, moreover, to envision an economic and security architecture in South Asia by coopting Pakistan and rendering redundant its asymmetric low cost-high returns policy of using terror in Jammu and Kashmir (J&K), is matched by its losing traction in the Korean peninsula when it thinned out its previous albeit military cooperation arrangement with Pyongyang presumably to please Washington.<sup>10</sup> The more daring policy would have been to solidify relations with a growingly isolated Pyongyang as, say, Russia did, at precisely the time that the Xi Jinping regime, seeking to keep the mutually beneficial Sino-American relationship on an even keel, tilted tactically towards the US at the expense of its North Korean ally. By strengthening its support for the Kim Jong-un government, Moscow's ability to deal with both Beijing and Washington has become stronger.<sup>11</sup>

India, in contrast, has acted on its belief that to be on the right side of the US is more important than the national interest.<sup>12</sup> Despite not being a signatory to the 1968 NPT, India has played by its rules, and gained nothing. Delhi is apparently unappreciative of the importance of joining the existing international nuclear order on its own terms, and of the fact that a country's reputation as an international rule breaker, spoiler, and disruptor fetches bigger diplomatic and political dividends in terms of bargaining outcomes and strengthening nuclear deterrence than patting itself, when not being patted, on the back for being a "responsible" state. Not saddled by self-limiting strictures, China, Pakistan and North Korea, that also claim to be responsible nuclear states, have, with their keen sense of *realpolitik*, scrupled to nothing to protect their freedom of sovereign action, enlarge their nuclear arsenals, improve the quality and reach of their weapons and delivery systems, while shrugging off Western criticism and pressure to rein in their risky and destabilising policy of prompt use.<sup>13</sup>

In the last ten years, Pakistan has commissioned four Chinese-designed bomb-grade plutoniumproducing reactors in Khushab, activated a plutonium separation unit, and has the fastest growing nuclear weapons stockpile in the world.<sup>14</sup> In the same timeframe, North Korea conducted six tests, and emerged as a thermonuclear military with ICBMs and miniaturised hydrogen warheads.<sup>15</sup> The result is that these two nuclear outlier states have fortified their security, improved their negotiating positions and retained their freedom of action. India, meanwhile, has stayed mired in an un-nuanced "minimum deterrence" stance armed with unproven fusion weapons, which will be a goad in a serious strategic crisis for China, or even Pakistan, to call Delhi's bluff.

Elsewhere, the Indian government's tendency to keep the Indian deterrent and everything associated with it under wraps, is contrasted by Islamabad and Pyongyang injecting credibility into their nuclear postures by frequently creating conflict situations in which they hint at conventional hostilities speedily transitioning to the nuclear level. Regional and international tensions as a consequence get ratcheted upward as do efforts to placate them. These incidents raise temperatures and alarms, but help in legitimating their status as nuclear weapon states. A global NPT-based nuclear order, sensitive to instability, would sooner concede such status to Pakistan and North Korea and pile them with nuclear deals of the kind India and Iran procured from the United States and the Nuclear Suppliers Group (NSG) than see the extant order break down.<sup>16</sup> From the Chinese, Pakistani and North Korean experiences, one can surmise that India could resume nuclear testing to obtain for itself a safe and reliable thermonuclear arms inventory without worrying overmuch about the bad consequences, as Delhi tends to do. The P-5 states, modernising their nuclear arsenals and weapons platforms, cannot afford to show their ire lest India disavow the NPT system altogether. Moreover, the strategic situation in Asia for most of the rest of the 21st century will likely be such that Washington cannot afford to rub India the wrong way, not if it is serious about having a regional state, with the requisite heft on its side to counter-balance China in Asia.

## Pakistan's Threat of 'First Use'

A successful policy to gain political recognition as nuclear weapon state does not, by itself, transform a state like Pakistan into a meaningful nuclear military power, even less, a threat to India. Objectively

speaking, Pakistan cannot pose any serious danger to the Indian state for the Indian military to overly worry about it. But, the Indian armed services have declared that a full-fledged conventional war with Pakistan is unlikely owing to "the nuclear overhang", in effect, validating the Pakistani view that the threat of "first use" works.<sup>17</sup> This may embolden Islamabad into taking bigger military risks.

The threat of first use is stoked by Pakistan's carefully cultivated image as an unpredictable and volatile state. In reality though, the deep state represented by the Pakistan Army has been remarkably cautious, rational and pragmatic in judging Delhi's tolerance threshold and never crossing it. Consider the 26/11 seaborne strike by the Pakistan Army's Inter-Services Intelligence (ISI)-controlled terrorist teams in 2008. I had pointed out at that time that had the Pakistani aim been to cripple the Indian Navy, the strike teams could have easily done that by including frogmen-saboteurs to sink the largely unprotected warships constituting much of India's Western Fleet at anchor in the Mumbai harbour, literally a stone's throw from where the terrorists landed, and which would have involved only a slight deviation in the team's approach from the sea. Pakistan could have achieved a 'Pearl Harbour'-like spectacular. But, in the no holds barred war that would have inevitably followed, Pakistan, facing not the usual inconsequential war of manoeuvre as most India-Pakistan tussles have tended to be, but a war of annihilation, would have been decimated. In the event, the Pakistan Army was satisfied with the head-butt to the face of the Indian security establishment by the highly motivated jihadis shooting up two Mumbai hotels and a railway terminus and showing up the supposedly multi-tiered Indian maritime security system as leaky. Or, take the 1965 War in which Pakistan agreed to a negotiated peace in Tashkent: its supplies were down to six days of war (compared to India's 10 days). The Pakistan Army, however, takes risks and acts aggressively only up to a point when India begins to get serious about war. Such caution highlights the unique nature of the India-Pakistan conflict dyad marked by restrained wars of manoeuvre and limited counter-force actions owing to the two countries sharing common civilisational and cultural space, and buttressed by ongoing kith and kinship ties between divided communities.<sup>18</sup>

Countries consider war viable if they stand to gain more from engaging in it than by not doing so. In the modern era when war can prove fatal to the weaker party instigating it, the "exchange ratio" (ER) decides whether or not to go to war. ER is the ratio of the amount of destruction caused to the adversary to the amount of destruction absorbed by one's own country. If the ER is assessed to be bearable, military action follows but this ratio will always tilt against Pakistan, the smaller, weaker, state. Despite Islamabad's rapidly enlarging weapons holdings, in any conceivable nuclear war scenario, Pakistan faces certain extinction, meaning it will disappear in the Herbert Spencerian sense, as a social organism. The destruction of parts of Indian metropolitan areas, say, of Delhi and Mumbai will be horrible but, in the larger scheme of things, these are losses India, with its extensive landmass, can absorb. In exchange, the Pakistan state will be terminated. Pakistan's major problem is that it is vulnerable, offers easy target-sets. The economic and demographic distribution in that country is such that all its major population centres and wealth-producing areas – Gujranwala, Sialkot, Lahore, Bahawalpur, Rahim Yar Khan, Mirpur Khas – are arrayed in a north-south line not far from the Indian border and within short reach of India's weapons. In fact, in a post-mortem of the 1965 War, General Ayub Khan pointed out to his divisional commanders that this highly vulnerable "strategic corridor" was Pakistan's fatal weakness.<sup>19</sup>

In this context, how credible is Pakistan's 'first use' philosophy resting on the belief that such threat deters and, in any case, should deterrence breakdown, that escalation can be controlled, or that the country would somehow survive a nuclear exchange? Given the concentration of exposed high value Pakistani targets in the 'corridor', this belief doesn't hold. Together with a completely unfavourable ER, it should convince the Special Plans Division (SPD), Chaklala -- the Pakistani nuclear secretariat, nuclear forces command, and the agency exercising oversight over nuclear arms production, that Pakistan cannot afford a nuclear war no matter what the Indian "provocation", and why its talk of nuclear first use is, in practical terms, hollow.

Pakistan has a forward defence-in-strength policy nestling within, which is the fear of Indian armoured and mechanised forces breaching its defences. The initiation of tactical nuclear weapons against aggressor Indian units inside Pakistani territory is seen by Pakistan as a means of dissuading India from advancing into Pakistan's heartland-corridor in the first place by creating uncertainty around the extent of penetration inside its territory that would trigger a tactical nuclear response. Islamabad, perhaps, envisages that between its first tactical nuclear hit and whatever happens next, there will be space for the concerned big powers (the US and/or China, in the main) to step in and even prevent an Indian nuclear retaliation. The possibility of such external intervention can be increased if its initial firing is immediately announced as accidental owing to the confusion and "fog of war". In the 'best case' scenario for Pakistan, of big powers keeping India from unleashing its full range of nuclear non-use taboo, not suffer any real consequences and, by way of a psychological ploy, slyly send a message to Delhi that it is game for nuclear war-fighting. The "worst case" would be that as per the 2003 official Indian doctrine, massive retaliation will follow, which Pakistan cannot survive. A "median" scenario may involve India departing from its doctrinal script and reacting with a proportional nuclear tactical strike – "a flexible response" – on

Pakistani armoured units inside Pakistan instead. In the wake of such counter-tactical nuclear strikes, a containable situation could emerge with extra-territorial powers forcefully intervening to head-off unbridled escalation involving crowded cities.<sup>20</sup> There are three critical assumptions here that (1) the big powers will, in fact, so intervene; (2) India can be so pressured into reacting in the manner Pakistan anticipates; and (3) Pakistan's tactical nuclear first use will have only localised battlefield consequences for it, which last may not be the case, whence the previous two assumptions stand negated.

Consider why such self-serving assumptions are wrong. A single low yield (1-2 Kiloton – KT) strike on an aggressor Indian armoured formation inside Pakistan may, in fact, have strategic ramifications. This is how: The fireball from the mini-nuclear strike will rise, forming an irradiated debris cloud that stabilises around 1-3 mile altitude where rain bearing clouds usually form. Further, that radioactive rain would be induced by the seeding effects of the debris downwind of ground zero in a 5 to 10 sq km area.<sup>21</sup> In the "campaign season" of north Indian winters, moreover, the winds blow west to east. Depending on how far inside Pakistan Indian tanks are struck by the Pakistani nuclear ordnance, there's every chance of the resulting radioactive clouds drifting over the border with the prevailing winds, and the precipitation occurring on Indian towns well inside India and affecting a large Indian population with radioactivity.<sup>22</sup> Even if not so intended, the Pakistani first use of tactical nuclear arms would amount to the targeting of the Indian civilian population. The traditional restraint shown by Delhi, or the possibility that Pakistan may be banking on of the retaliatory Indian response being tempered by mediating foreign countries, will not then obtain, and a disproportionate nuclear reply, if not "massive retaliation", will surely follow.

The initial Pakistani tactical nuclear attack, moreover, may not even succeed in stopping a massed advance by Indian armour. While cities can be destroyed with nuclear devices generating 3-5 pound per square inch (psi) over-pressure, the reason why Pakistan would avoid attacking urban conglomerations for fear of large scale counter-city nuclear bombardment by India, a formation of tanks capable of operating in "hatch-down" mode in an irradiated environment can, however, survive low-KT strikes. For instance, a single crewless Centurion tank with the Australian Army, placed 500 yards from ground zero of an 8 KT air burst in an atomic test on October 15, 1953 (Operation Totem) conducted at the Woomera test range, suffered not at all from radiation and thermal effects. Indeed, that particular tank went on to be used in military operations thereafter. But, the crew inside the tank would have been killed by the shockwave.<sup>23</sup> Extrapolating from that result, one can surmise that the indigenous 60 ton, Arjun Main Battle Tanks (MBT – the equivalent of the US M1A2 Abrams), for instance, with the layered Chobham-type armour, would remain unscathed 500 metres (m) from Ground Zero, with the tactical nuclear

weapon exploding at a height of 50 m and generating 258.6 kiloPascal (or 37.5 pounds per square inch) over-pressure.<sup>24</sup> If depleted uranium is made part of the Arjun MBT Mk2's armour material (as is the case with the Abrams tank), it will be even more survivable, because uranium absorbs deadly gamma rays and x-rays emitted by atomic fission. So, the armoured spearhead of a few Arjun tanks (or T-90s/72s) would be stopped because the crews inside them would be killed by the shock wave, and these tanks could end up deactivated, but the rest of the formation, skirting the radiation zone, can continue advancing to achieve their objective in dispersed mode to minimise the effects of more Pakistani tactical nuclear attacks on them.<sup>25</sup>

Moreover, Pakistan will need to fire a very large number of tactical nuclear weapons to seriously impede an Indian armoured bull run by independent armoured brigades, leave alone stanch a full-bore armoured attack. But such an attack would only materialise if India goes to war determined on a "final solution" of dismantling the Pakistani state which, short of sufficient provocation, is inconceivable. Even so, what would the size of the Pakistani tactical nuclear weapons stockpile have to be for such contingency? To destroy 50 percent of, say, the 500 plus armoured vehicles of all kinds in an armoured division advancing over a 15 km front and deployed to a depth of 25 km, will require, by one calculation, the expenditure of between 257 and 436 15KT tactical nuclear weapons. With 8KT yield weapons, the number of tactical nuclear weapons needed to achieve the same result would rise to 391-663.<sup>26</sup> Assuming Pakistan has, in fact, miniaturised a 2KT nuclear warhead to fit the 40-60 mm diameter Nasr battlefield missile which, incidentally, could not have happened without active Chinese help, by linear extrapolation, some 2,652 of these rockets would have to be fired to have the same effect. Pakistan is nowhere near acquiring such enormous numbers of low yield atomic weapons. And, in any case, the use of even a small fraction of these will herald a war of annihilation of Pakistan. So, Islamabad's huffing and puffing about first use is essentially to play on Delhi's queasiness about such a denouement and should be seen for what it is – a stratagem, a *ruse de guerre*.

If 'total war' against Pakistan is not the goal, and the Indian Army needs a face-saving strategy to justify its capital-draining three armour/mechanised units-heavy strike corps, then the 'Cold Start' doctrine is the wrong one to implement. Incidentally, the Pakistan military believes it was the first to test the concept of space for conventional conflict under the nuclear overhang by surreptitiously capturing the Kargil heights in 1999, and that this operation inspired the Indian Army's 'Cold Start' doctrine.<sup>27</sup> Moving fast, penetrating deep to capture a sizable amount of real estate as a bargaining chip but not deep enough to threaten Pakistan's survival and hasten first use of tactical nuclear weapons, requires the aggregating of eight Independent Battle Groups (IBGs) from the armoured and mechanised units in the three strike corps and pivot formations even as they are on the move to get to the staging areas. This is what the Indian Army trains for and is confident it can pull off in actual operations.<sup>28</sup> But such complicated manoeuvres of heavy battle mass are better managed on paper, sand-models, and in "war exercises" (such as the 2009 'Yog Shakti' involving II Corps), than in war, where nothing goes according to plan. And, further, because only a "shallow" penetration is planned for – the capture of some arid acreage around Rahim Yar Khan – such plans make little cost-benefit sense. In fact, Rahim Yar Khan is posited as a likely "funnel" that the Pakistan Army has deliberately created to draw in Indian IBGs, the easier to destroy them. This is so, says a senior General who has advised the Modi government, because of "the wrong-est decision" by the Vajpayee government in 2001 when having mobilised the military, it refrained from going to war. Pakistan learned from that episode and quickly "plugged all the holes" in terms of sensor placements and surveillance gaps along the rest of the border, leaving the approaches to Rahim Yar Khan invitingly open. Should the Indian Army be tempted to force the issue, it will find Pakistani armour quickly "closing the trap". In any case, he believes, the Pakistan Army has so fortified the entire front that the Indian strike forces will make "little headway" and, in the event, that Cold Start is infructuous.<sup>29</sup>

In 2002, I had detailed a more doable, alternate strategy designed to gain valuable assets inside Pakistan as a negotiating card while zeroing out the possibility of that country initiating nuclear weapon use and dubbed it the "Sialkot Grab" strategy. It involves land forces, including armoured and mechanized elements, investing heartland cities, such as Sialkot, adjoining the border in strength and pressing an advance into the city to precipitate hysteria and pandemonium. Such an advance, I had suggested, was to be maintained in lockstep with the Pakistani civilian population and forward-deployed Pakistani Army units retreating to the hinterland, making impossible defensive actions by the Pakistan Army, and also rendering infeasible the use of tactical nuclear weapons for fear of vaporising their own people and urban areas. Pakistani first use, I had argued, would, thus, be obviated by the civilian population of the city intent on escaping it. This would also make orderly withdrawal for the Pakistan Army units from the besieged city's environs difficult, and with the advancing Indian forces at close quarter, there would be no space for the use in this urban milieu of Pakistan's tactical nuclear weapons – the first step in the escalatory ladder planned for by the Pakistan Strategic Plans Division (SPD). The idea behind such a border city-grab strategy is not to offer Pakistan the open terrain in which to exercise its first-use pledge, but rather to physically gain a prized city as a card to negotiate a final delineation of the Line of Control (LC) as the settled international border, and otherwise to present the Pakistan Army with impossibly difficult choices at every turn, compelling Islamabad to sue for peace.<sup>30</sup> In addition, the Indian Special Forces (SF) would be tasked, in this scenario, with destroying the Pakistani nuclear command and control hubs and fighting assets, which the Indian Air Force (IAF) Chief Air Chief Marshal BS Dhanoa has said he can do with aerial strikes.<sup>31</sup> For the strikes to be successful, the Indian armed services, including the SF, would have to be primed by high-order real-time intelligence about targets via a 24/7 "watch and track" regime encompassing seamless intelligence cooperation and coordination between the Research and Analysis Wing (RAW), military intelligence, and aerial and satellite-based surveillance and target-tracking information. Leaked news reports about such activity will act as a real dampener of nuclear adventurism by Pakistan and be an active psy-ops means of dissuasion.

Considering how easily the Pakistani threat of first use can, in fact, be thwarted, it is something of a mystery why the Indian government and military continue to give credence to Pakistan as a nuclear threat, or support the Cold Start strategy which the General Headquarters (GHQ), Rawalpindi, considers a nuclear tripwire.<sup>32</sup> And further, it reveals also the institutional habit of mind of the Indian government and armed services of gearing up to tackle the lesser Pakistani threat the old-fashioned way rather than preparing for the more difficult job of nuclear war-fighting. This, in turn, indicates that, perhaps, 'Cold Start' is persisted with as justification for a wasteful and outdated force structure featuring armour and mechanised forces that would have fared well in World War II, and even the 1965 "war" with Pakistan. It reflects the lack of familiarity of Indian policy-makers and senior military personnel with the nuclear deterrence dynamic, whence the stock statements emanating from these sources that nuclear weapons are meant for deterrence not war-fighting, and their touching belief that the threat of "massive retaliation" (per the nuclear doctrine), is the answer for all strategic contingencies. The sheer disproportionality of such reaction and its lack of credibility led the 1999 draft nuclear doctrine to talk of "punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor".<sup>33</sup> After all, in response to a tactical nuclear strike on an Indian tank squadron inside Pakistan, would Delhi really order the nuclear bombing of Karachi or Lahore? The rigidity and predictability of the "massive retaliation" response that was inserted instead in the official doctrine, courtesy the Brajesh Mishra-run Prime Ministers' Office (PMO), is a liability and confounds the country's nuclear response calculus. This was early pointed out, and has been the grist for such public debate as has taken place on the subject since.<sup>34</sup> As also the fact that should push ever come to nuclear shove, Pakistan is in no position to prevent its own extinction. The really skewed "exchange ratio" is the main motivation, I have argued for Islamabad doing whatever is necessary to avoid getting into a situation where it has to make good its 'first use' threat.<sup>35</sup> In short, Pakistan has no "least bad" nuclear option to nurse; all its options are equally bad.

But Pakistan has one huge advantage: It holds its nerves better in a crisis. India, on the other hand, is rarely other than flustered. Cases in point: The 2002 Operation Parakram and the aftermath of the 2008 (26/11) attack on Mumbai. Delhi did not, in the first instance, order instantaneous retaliation by air strikes after the terrorist attack on Parliament, but a general mobilisation for war and then stopped short of waging it. In the latter episode, again, there was no instant retribution but a whole lot of frenzied activity amounting to nothing. Pakistan has learned not to be intimidated, highlighting in the process that the country's success in making much out of what realistically is militarily little. India, in contrast, routinely fluffs it when it comes to exercising hard power.<sup>36</sup> The only consequential threat India faces is China, but Delhi seems too squeamish to take it on, or even to seriously prepare for it. Would the "deep state" in Pakistan not be emboldened by the almost comical Indian reactions to the ISI-managed terrorist incidents to arrange a strike on an Indian metropolis with a radiation diffusion device or "dirty bomb"?

And, with respect to modernisation of the "nuclear" component of the Indian strategic forces, how will it be managed without the necessary wherewithal? With the resumption of underground testing ruled out for the foreseeable future, has the Indian government done the next best thing and ensured that there is advanced "sub-critical testing" paraphernalia available to the weapons-design unit in the Bhabha Atomic Research Centre, Trombay? It turns out that in the 20 years after the announcement of the voluntary moratorium on testing, the government has yet to invest in a Dual Axis Radiographic Hydrodynamic Test (DARHT) facility to generate computer codes for nuclear weapons, and to refine implosion triggers for them. Worse, the small Inertial Confinement Fusion (ICF) chamber at the Centre for Advanced Technology (CAT) in Indore used for creating miniaturised thermonuclear explosions by concentrating powerful laser beams on nuggets of fissile material, to refine and upgrade thermonuclear weapons designs, according to a senior scientist who worked there, suffers from utter neglect and is in a state of disrepair. The air conditioning systems to cryogenically maintain the lasers at extremely low temperatures that have broken down, have not been replaced for years.<sup>37</sup> When asked about it, all that R. Chidambaram, the recently retired scientific adviser to the Prime Minister, could do was ask "How do you know? Who told you that?"<sup>38</sup> Meanwhile, China, may have gifted the Pakistan a DARHT system that has been put up at the Special Weapons Facility in Khushab, the site of the four military-dedicated 50MW weapon-grade plutonium producing reactors built with Chinese help.<sup>39</sup>

# Aggressively Blunting the China Threat

If Delhi and the Indian armed services paid as much attention to the longstanding and comprehensive threat posed by China as they do the minimal danger from Pakistan (which can be effectively neutralised

with the appropriate means, such as use of Special Forces for sustained counter-subconventional warfare, for instance), India would not dissipate its military resources the way it has been doing for the last fifty years.<sup>40</sup> Indeed, the Indian government and armed services need to learn from the Pakistan SPD, which has been ahead of the curve in terms of emphasizing, not total war that massive retaliation envisages, but tactical exchanges involving the first use of low-yield nuclear weapons (tacnukes) to negate an adversary's conventional military punch. The US, for instance, has lately re-discovered the political and military utility of such armaments in the wake of Russia's new nuclear strategy of "escalating to de-escalate".<sup>41</sup> The logic in this latter strategy is inherent in Pakistan's tactical first use notions. Except, unlike in the US-Russia context, tacnukes cannot, where India is concerned, help Pakistan escape its existential dilemma. But tacnukes and the "escalate to de-escalate" strategy can assist India credibly to deter China.

In 1979, China and India were at the same economic level, with their militaries too qualitatively on par. Since then, like its economy that has grown five times as large, the Chinese military, fuelled by a hyperactive defence industry, has leapfrogged to become a peer competitor to the United States, even conceiving novel armaments to meet specific needs, such as the anti-ship ballistic missile system. There's not a genus of weaponry used by the PLA forces that China has not designed and developed itself, or reverse engineered from foreign technology that it has bought, stolen, or otherwise contrived to lay its hands on.<sup>42</sup> To the extent that any country has potentially the mettle to rival China in Asia, it is India. But India has, over the decades, consistently marginalised itself. It hasn't helped that its military is still mostly industrial age, with no institutional capacity for transformative change, and totally dependent on imported weaponry and, hence, can be brought to a grinding halt in war by vendor states, in furthering their interests, closing off or tightening to a trickle the spares supply spigot.<sup>43</sup>

Denied the easy option of buying strategic wherewithal from abroad owing to technology sanctions imposed on the country after the 1974 nuclear test, India successfully designed, developed and indigenously met its top strategic needs, including the nuclear-powered ballistic missile-firing submarine, advanced and accurate missiles so far limited by government diktat to intermediate range, and nuclear weapons/warheads of proven 20 KT yield.<sup>44</sup> For obvious reasons, this is the only military capability that India has whose use cannot be restricted for want of spares and service support. But can this strategic military capability by itself dull the sharp edges of China's comprehensive military prowess? It can and here is how: China's manifest superiority in the conventional military field and in allied cyber warfare and militarised space systems, driven by a nearly self-sufficient national defence industry, leaves India with no other alternative than to opt for a nuclear "first use" policy. The revision of the operational doctrine can

be done in-house by the Special Programme Staff (SPS) under the National Security Adviser (NSA) in the PMO established during Manmohan Singh's prime ministership with the brief to calibrate strategy, and flesh out tactics in a nuclear battlefield, and relay these to the Strategic Forces Command for implementation. It will avoid the very public revision of the nuclear doctrine that the ruling Bharatiya Janata Party (BJP) promised in its 2014 election manifesto, which can bring in its train external attention and pressure. The SPS, styled in the manner of the Pakistani SPD has, however, failed so far to do even the basic stuff that a nuclear secretariat does, namely, work out the protocol for mating the warheads to the missiles involving three stakeholders: Strategic Forces Command (SFC), Bhabha Atomic Research Centre (BARC), and Defence Research and Development Organisation (DRDO); and research and write in consultation with BARC's nuclear weapon designers qualitative requirements for miniaturised nuclear warheads. This is necessary because the Strategic Forces Command won't do it – its approach to nuclear weapons being that of the armed services to conventional armaments, which a senior rocket scientist, summarised as: "Give us the weapons, tell us what you want done, what to hit, we'll do the rest."<sup>45</sup>

The Himalayas are not impenetrable, but the high mountain ranges separating Tibet and the western Chinese provinces from India do constitute a formidable logistics barrier to the People's Liberation Army (PLA) undertaking free-flowing military operations across it. It is an obstacle Beijing wants desperately to get around, whence the latest Chinese offer of border settlement of Arunachal Pradesh minus the Tawang division.<sup>46</sup> A Chinese Tawang would be the proverbial foot in the door. Once militarily ensconced on this side of the McMahon Line, the PLA, backed by pre-positioned stores continually replenished by the Qinghai-Lhasa railway, with its new spur line to Shigatze, would expose the Indian mountain defences west of Tawang to attacks from the flank, and enable concerted Chinese conventional forays to the Brahmaputra at will. But absent such lodgement in strength in Tawang, the PLA cannot force the issue, not with the three-odd Indian Army divisions emplaced in that sector.

The localised conventional military stalemate in Arunachal Pradesh and generally along the Line of Actual Control (LAC), however, hides a disturbing reality of a strategically out-manoeuvred India. By relentlessly competing with the US for dominance in Asia, China [with its Belt and Road Initiative (BRI), the Asian Infrastructure Investment Bank (AIIB), and cultivation of naval basing options in the Indian Ocean Region (IOR) in Kyakpau, Myanmar, Humbantota, Sri Lanka, Gwadar, Pakistan, Mombassa, Kenya, in Djibouti on the Horn of Africa, and, possibly, Maldives] has put itself in a geostrategically advantageous position. It joins the United States as the other nodal international power, long ago surpassing India in regional, Asian and global power politics. However, none of these ports and potential replenishment

stations, other than Gwadar and, perhaps, Djibouti, will be available to China in a war, because the other small states cannot afford to alienate India, even though they may get close to China to increase leverage with Delhi.

Further, China's versatile mainly thermonuclear fighting arm, the Second Artillery Strategic Forces (SASF), considered a match for the once superior American and Russian nuclear arsenals, can overwhelm the understrength Indian Strategic Forces Command (SFC) equipped with just one type of weapon – the performance-certified 20 KT fission variety, and a host of untested, unproven, unreliable and unsafe higher yield thermonuclear armaments. Even as China is progressing menacingly in the field, a strategically unsure India struggles with managing the ceasefire line in Kashmir with a lowly Pakistan – China's premier client in the region. All Delhi has done so far is talk and then talk some more about security cooperation with littoral countries on the Chinese periphery and Japan, doing precious little in reality to achieve this goal. The bureaucratic hold-up of decisions that Modi promised, such as those to buy the Japanese US-2 amphibious aircraft, along with its production technology, to transfer the Brahmos supersonic cruise missiles to Vietnam and the Southeast Asian nations, and to activate a billion dollar credit line to Mongolia, has reinforced the impression of an India as a slow, terminally indecisive, country that is "all mouth and no trousers."<sup>47</sup>

Worse, Delhi does its reputation no good when it bends over backwards to accommodate Beijing when standing up to it would serve the national interests better. Whatever Delhi's reason for cold-shouldering Canberra, the fact that it disallowed an eager Australian Navy, for example, from participating in the July 2017 annual Malabar naval exercise with the US and Japan in the Bay of Bengal for fear of upsetting China, told its own story.<sup>48</sup> In the absence of vision and political will, what has prevented India's strategic deportment from being reduced to nullity is the Agni-5 Intermediate Range Ballistic Missile (IRBM) featuring composite rocket motors, guidance on chip, and high accuracy at extreme range, and the Arihant-class nuclear submarines. Deemed by China as an ICBM (Intercontinental Ballistic Missile), the Agni-5 has single-handedly, induced wariness in Beijing.<sup>49</sup> Jitters are also no doubt being induced in Chinese strategic circles by the accelerated schedule of injecting into precise orbits multiple satellites from single Space Launch Vehicles (SLVs) inherent in which is the capability for Multiple Independently-Targeted Reentry Vehicles (MIRV) missiles that will enable single missiles to carry a number of nuclear warheads to hit widely dispersed targets.<sup>50</sup> The Indian mastery of MIRV technology will have a nuclear multiplier effect but only if it is operationalised. It also showcases the underway Indian capability to put up a constellation of indigenous Global Positioning System (GPS) satellites and, in the future, space-based

weapon platforms.<sup>51</sup> China's apprehensions about these Indian missile and space capabilities have to be kept stoked in order to temper that country's belligerence and strengthen India's strategic deterrence.

# **Incorporating Nuclear First Use Against China**

A China that has risen speedily and spectacularly to prominence is unlikely to be easily diverted from its goal of showing up its notional Asian rival, India, as weak and spineless and as likely to fold at the first hint of trouble. It is something Indian policy-makers and war planners need to focus on, a task that will be helped by clarifying certain basic trends in Chinese strategic thinking, relevant in the Sino-Indian context.

Chinese military planners believe, for instance, that coercion and compellance are synonymous with strategic deterrence; that to coerce or compel an adversary state is necessarily to also deter it, albeit preemptively. So when the PLA forces stage intrusions or demolish Indian border posts and camera systems and other sensors, as happened in the Demchok area of Ladakh in 2014, it is a show of force to warn India that they can, at any time, do a lot worse. In the Chinese strategic lexicon, moreover, "challenge" and "threat" are interchangeable. This is not the case with the Indian foreign and military policy mindset which is imitative of US and Western policy notions rather than seeking inspiration from Russia or even Pakistan. The Ministry for External Affairs (MEA) and Ministry of Defence (MoD) view China as a challenge, and Pakistan as a threat and, strangely, channel more national security attention, resources, and effort to dealing with the latter. Also, importantly, China perceives deterrence as the outcome of restraining nuclear weapons use by enemy-states - which may be another way of restating the mutually assured destruction principle central to the Western and now universal, idea of nuclear deterrence. But it takes on a more dynamic meaning when juxtaposed against two other tenets of the new Chinese strategic thought, namely, that "small wars become big" and, because escalation can be deliberate or accidental, that states may be able to control one without being able wholly to control the other.<sup>52</sup> In this respect, senior PLA General Staff officers are increasingly vocal about using the DF-21 missile for "theatre precision strike", campaigning with low yield weapons, and about the utility of missiles with "special warheads", presumably neutron warheads, to kill off the local population without harming the physical structures, and with electromagnetic pulse warheads to knock off communications and power grids if these cannot be preemptively knocked off by cyber means.53

All these points suggest how China may utilise nuclear weapons. But an understanding about what circumstances would push Beijing into actually using nuclear weapons in an armed conflict may be a better pointer of the Chinese nuclear threshold, and indicate how best to shape and leverage a manifestly

inferior Indian nuclear weapons position against China. After studying internal debates within the PLA and Chinese deterrence literature, Western analysts have concluded that the US is in a position to, if not completely nuclear disarm China with a conventional counter-force strategy using its superior capabilities, including advanced remote-controlled drones, sensors, and cyber wherewithal, then to hugely damage SASF assets. In this situation, its espousal of 'no first use' notwithstanding, Beijing would risk limited nuclear escalation with low-yield precision weapons.<sup>54</sup>

India is facing a China with marked edge in conventional military edge, nuclear forces, offensive cyber warfare capability, and military infrastructure on its side of the disputed border and, hence, in terms of its logistics set-up in a position to conduct a decisive conventional military conflict. What is India to do? Its present policy of mobile warfare in the mountains to maintain a defensive posture around a prepared line in the Himalayas has limitations. It can meet hostile Chinese action with localised counter-offensives but, in the prevailing conditions of deficient rail, road, and communications systems and border infrastructure, and with inter-valley connectivity in the east missing – gaps that won't be made up until 2025 at the earliest – the Indian presence along the LAC can be overwhelmed by massed PLA actions. Here the value of Atomic Demolition Munitions (ADMs) is self-evident, as I have argued, because these are passive nuclear weapons that can be triggered only after the PLA has advanced in strength well inside Indian territory. The onus for triggering them will then rest squarely with the aggressor, China. ADMs, moreover, mesh with India's passive-defensive thinking and force alignment on the LAC.<sup>55</sup>

But ADMs bringing down whole mountain sides with minimum venting of radioactivity on deeply intruding PLA units, will work best in the east where there are only so many ingress routes that the PLA can take. The central sector of the LAC features high-altitude mountain passes that are not easy for large military units and elaborate logistics trains to negotiate. The difficult terrain inherently inhibits sustained military activity across it. In the Ladakh-Aksai Chin sector in the west, however, the ground favours easier transgression by the PLA supported by extensive high-quality road and communications networks. Here, ADMs are not a practicable solution, but area weapons, such as the potentially 1-2KT nuclear tipped, 60km range, road-mobile Prahar tactical cruise missile, can prove an ample deterrent. In a situation where Pakistan and China act in concert – which is probable considering there is an Army division worth PLA troops already present in Baltistan in Pakistan-occupied Kashmir – the Indian Army will be hard put conventionally to resist a determined PLA push into Ladakh and/or its lunge towards Tawang, unless the first use of ADMs and the nuclearised Prahar missile is speedily incorporated into India's nuclear

battlefield concepts and practised by the SFC in coordination with the Leh-based 14 Corps in the west, and the Sukna-based XXXIII Corps in the east.

But such deployment and 'first use' of ADMs and nuclearised Prahar missiles will require prior public hints by the Indian government about the "red lines" that China better respect lest it find itself in a situation where its actions automatically trigger the use of ADMs and the nuclearised Prahar weapon. Such a position, because it enhances deterrence by shrouding one's own response in uncertainty is, as Thomas Schelling seminally argued, a strategy that "leave[s] something to chance".<sup>56</sup> A policy of deliberate escalation to the nuclear level then has to be included in the menu of options available to the Indian strategic forces in-theatre. This innovation would have to be part of the process to rethink deterrence as applicable specifically to India's confrontation with China and, more generally, to ways of beefing up the country's nuclear security. This process has to include the revision of the existing nuclear doctrine, by jettisoning the outdated "massive retaliation" concept.<sup>57</sup>

The possibility of tactical nuclear weapon use initiation on the LAC will require as prerequisite a more aggressive military stance. There is need to show firm resolve, especially when dealing with even "minor" incidents involving the PLA/People's Armed Police (PAP) units to continually inject credibility into India's threat of first use. The problem here is the reluctance of the Indian government to be clear-headed on nuclear security issues and unambiguous about the nuclear tripwire. But this clarity within the government, the Strategic Forces Command and the military at-large has to be complemented by utter opacity attending on the Indian nuclear stance and its nuclear reaction to enemy action other than the certainty of tacnuke use should China cross Delhi's publicly heralded but undefined red lines. This is absolutely necessary to befuddle adversaries, and keep their war plans unsettled. The Special Programmes Staff-qua-nuclear secretariat within the Prime Ministers' Office, moreover, will have to work out in great detail the nuclear contingencies, the tripwires, and the slate of precise tactical and strategic nuclear actions and reactions. Time and again, the country has been blind-sided by China doing what Delhi didn't expect it to do. To revert to the 1962 War, Nehru believed that his "forward policy" of establishing as many posts on the disputed Indo-Tibetan border as possible, never mind the difficulty of adequately supplying them, was a master stroke. By, thus, unilaterally demarcating the border, Delhi believed it had in effect solved the border problem by confronting the Chinese with a *fait accompli*. Far from deterring Beijing, it tripped the PLA into action, which Nehru, advised by the BM Mullick-led Intelligence Bureau, had not anticipated.

To think that China will not at any time in the future press its growing nuclear advantage, may be, to court precisely the situation Delhi seeks to avoid, i.e, to be pushed into a corner with an "all or nothing"/"use or lose" proposition, and generally being unprepared in terms of neither possessing specifically-designed nuclear armaments for particular contingencies, such as the nuclearised Prahar missile, nor a host of fully fleshed-out tacnuke and strategic nuclear weapons use options. Tactical nuclear technology was tested in 1998 with the sub-kiloton tests, but there's a need to field small yield battlefield weapons with different configurations and warheads to fit different missiles. Further, priority requires to be accorded to the canisterisation of a goodly portion of the land-based Agni-1s, 2s, 3s, 4s and 5s to support a tactically active nuclear posture, with a Launch On Warning (LOW) capability. The policy of keeping the canisterised Agni systems de-mated defeats the very purpose of obtaining a LOW capability in the first place. But to hold out a credible threat of first use, a part of the Agni missiles in canisters needs to be deployed with their warheads attached and primed for launch, which fact should be "leaked" to the media and thus indirectly communicated to Beijing. It will signal to China that India's tactical use threat is real and can be easily ratcheted up to the strategic level, should it not pay attention to the forwardemplaced Prahars and ADMs. There's also the urgent need for the IAF to be more vocal about its priority targeting of the Qinghai-Lhasa railway tracks constructed on infirm permafrost that would buckle under with the first Indian bombing runs against it at various points, to effectively cut Tibet off from the mainland, and the nuclear destruction of the gigantic Three Gorges dam that will flood the land all the way downstream to Nanjing, pretty much writing finis to China's hard won status as an economic superpower.<sup>58</sup> This is the sort of targeting plan the SPS has hopefully passed on to the SFC for designated IAF squadrons to practice. Indian military bosses should talk more pointedly about the China threat, publicly mention these high-value targets as the Indian armed services' focus, to generate healthy respect in Beijing for India's nuclear deterrent, and even its conventional strike forces that can be tasked for strategic impact. The incorporation of ADMs, nuclearised Prahar cruise missiles, and other tactical ordnance formally delineating red lines and the Indian nuclear order-of-battle will negate, to some extent, the psychological overhang of China's megaton-yield thermonuclear weaponry. What will help India's nuclear strategy generally is if the Indian government discards its minimum deterrence thinking. In practical terms, this has resulted in the capping of the country's Intermediate Range Ballistic Missile (IRBM) strength at 30-40 Agni-5s, and in not prioritising the Agni-6 – the MIRV-ed version of the Agni-5, which would make up for small numbers of delivery systems with large numbers of deliverable warheads. But such decisions have to be taken by Prime Minister Modi, which he hasn't done. In fact, a leading missileer notes, that there have been "no top-down decisions and direction from the PM/NSA/ PMO, or anybody else, on anything related to the nuclear deterrent and the country's strategic forces. Everything is done by inertia."<sup>59</sup>

In the event, even with India's first use policy, China will still have the upper hand. But an accelerated Indian nuclear build-up emphasising usable nuclear weapons and their induction into military service, revision of the nuclear doctrine to make it supple and to stress contingent, tactical and/or strategic first use exclusively with respect to China, and nuclear deterrence as a more dynamic mix of capability and intent, will induce second thoughts in Beijing about the wisdom of a strategy of militarily pushing and shoving India on the LAC, rather than speedily negotiating a final, formal, delineation of the border. It will introduce a measure of elasticity and offensive-mindedness that is currently missing in the nuclear policy deliberations about just how China can be effectively dissuaded and deterred strategically. Such developments will force Beijing to mull over the potentially cascading costs to it of crossing India's tolerance threshold that has to be set deliberately low in order to persuade Chinese leaders to be more risk-averse in strategic and nuclear situations, and to convince them that however the nuclear wire is tripped, they will not be able to control what transpires next, nor guarantee the outcome.

#### Notes

<sup>2</sup> The minute hand on the famous 'Doomsday clock' has been advanced by 30 seconds to 2 minutes to Midnight by the Bulletin of Atomic Scientists, the nearest to nuclear Armageddon since the 1950s. Refer "It is Two Minutes to Midnight", *Bulletin of Atomic Scientists*, January 26, 2018, <u>https://thebulletin.org/press-release/it-now-2-minutesmidnight11464</u>

<sup>3</sup> Peter Baker and Choe Sang-Hun, "Trump Threatens 'Fire and Fury' Against North Korea if It Endangers US", *New York Times*, August 08, 2017, https://www.nytimes.com/2017/08/08/ world/asia/north-korea-un-sanctionsnuclear-missile-united-nations.html; Krishnadev Calamur, "Why Would North Korea Want to Drop a Hydrogen Bomb in the Ocean?", *The Atlantic*, September 22, 2017,

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http://www.aljazeera.com/news/2018/01/pakistan-war-words-donald-trump-tweet180102055709366.html ; Choe Sang-hun, "North Korean Threat to Guam Tests Credibility of Kim and Trump", *New York Times*, August 10, 2017, https://www.nytimes.com/2017/08/10/world/asia/northkorea-guam-missiles-kim-trump.html

<sup>&</sup>lt;sup>1</sup> Bharat Karnad, *Nuclear Weapons and Indian Security: The Realist Foundations of Strategy*, Second edition [New Delhi: Macmillan India, 2005], pp. 452-703.

<sup>4</sup> This, according to CIA chief Mike Pompeo and General Paul Selva, Vice-Chief, US Joint Chiefs of Staff. See "North Korea May Perfect ICBM Within Months, US General Says", AFPJiji, *Japan Times*, January 31, 2018,

https://www.japantimes.co.jp/news/2018/01/31/asiapacific/not-yet-north-korea-soon-perfect-icbm-nows-spysatellites-pass-u-s-general/#.WovK6rynHIU

<sup>5</sup> Bharat Karnad, *India's Nuclear Policy* (Westport, RI, and London: Praeger International, 2008), ch. 1.

<sup>6</sup> Bharat Karnad, "Countering the Rogue Nuclear Triad of China, Pakistan and North Korea", *The Wire*, July 25, 2016, <a href="https://thewire.in/53338/countering-the-rogue-nuclear-triad-ofchina-pakistan-north-korea/">https://thewire.in/53338/countering-the-rogue-nuclear-triad-ofchina-pakistan-north-korea/</a>

<sup>7</sup> Bharat Karnad, *Why India is Not a Great Power (Yet)* (New Delhi: Oxford Global, Oxford University Press, 2015), pp.98-102.

<sup>8</sup> Ibid

<sup>9</sup> 9. Karnad, n.1, pp.540-542; Karnad, n.5, pp.30, 36-37.

<sup>10</sup> Kadayam Subramanian, "Modi is to Blame for India's Failure on Pakistan Policy", Asia Times, October 13, 2016, http://www.atimes.com/modi-blame-indias-failure-pakistan-policy/ "India's and Nilanjana Bhowmick, Embarrassing North Korean Connection". AI Jazeera, June 26, 2016. http://www.aljazeera.com/indepth/features/2016/06/india-embarrassing-northkorean-connection-

<u>160620195559208.html</u>; Manu Pubby and Dipanjan Roy Chaudhury, "No Indian Language Training for North Korean Soldiers", *Economic Times*, May 01, 2017, <u>http://timesofindia.indiatimes.com/world/rest-of-world/no-indian-language-training-fornorth-korean-soldiers/articleshow/58453668.cms</u>

<sup>11</sup> "Russia Seizes an Opportunity in North Korea", *Stratfor*, Worldview, May 05, 2017, <u>https://worldview.stratfor.com/article/russia-seizes-opportunity-north-korea</u>.

<sup>12</sup> Karnad, n.1, pp. 391-430.

<sup>13</sup>Michael Krepon and Toby Dalton, "Nuclear Mainstream", *Dawn*, May 20, 2016, <u>https://www.dawn.com/news/1203017/nuclear-mainstream</u>; and "Kim Jong-un: North Korea is a Responsible Nuclear State", *Al Jazeera*, May 03, 2016, <u>http://www.aljazeera.com/news/2016/05/north-korea-nuclear-weapons-160508040813994.html</u>

<sup>14</sup> David Albright and Serena Kelleher-Vergantini, "Pakistan's Chashma Plutonium Separation Plant: Possibly Operational", Institute for Science and International Security, Imagery Brief, February 20, 2015, <u>http://isis-online.org/uploads/isis-reports/documents/Chashma February 20 2015 Final.pdf</u>.; "North Korea's Nuclear Programme: How Advanced is it?", *BBC News*, January 06, 2017, <u>http://www.bbc.com/news/world-asiapacific-11813699</u>

<sup>15</sup> BBC News, Ibid.

<sup>16</sup> Michael Krepon, "Treaty and Pakistan's Nuke Arsenal", Korea Herald, February 17, 2012,

<u>http://www.koreaherald.com/view.php?ud=20120217000973</u>; Robert S. Litwak, "An Iran Style Nuclear Deal With North Korea Is the Best America Can Hope For", *The Atlantic*, May 04, 2017,

https://www.theatlantic.com/international/archive/2017/05/iran-deal-northkorea-jcpoa/525372

<sup>17</sup> See Joint Doctrine Indian Armed Forces, Headquarters Integrated Defence Staff, Ministry of Defence, April 18, 2017, 50, http://bharatshakti.in/wp-content/uploads/2015/09/Joint Doctrine Indian Armed Forces.pdf.

<sup>18</sup> Karnad, n.7, pp.165-167.

<sup>19</sup> Karnad, n.12, pp. 677-678.

<sup>20</sup> This composite view of the three scenarios has been put together by the author from informal soundings of a number of Pakistani flag-rank officers over the past 15-20 years.

<sup>21</sup> Theodore A. Postol, "Targeting" in Ashton B. Carter, John D. Steinbruner, Charles A. Zracket, eds., *Managing Nuclear Operations* (Washington, DC: Brookings Institution, 1987), Fig 11.9, pp.386, 403.

22 Ibid

<sup>23</sup> See www.io9.gizmodo.com/the-atomic-tank-survived-a-nuclear-test-then-went-to-w-1542451635

<sup>24</sup> Refer <u>https://worldbuilding.stackexchange.com/questions/12323/could-a-tank-survive-anuclear-blast</u>

<sup>25</sup> For an analysis of how armoured operations could proceed after the first tactical nuclear weapon attack on the forward units, see Karnad, n.1, ch V.

<sup>26</sup> Ibid., p.681.

<sup>27</sup> Pakistan Air Force Air Vice Marshal (Retd) Shehzad Chaudhury in a 2013 Pakistani TV panel discussion, see <a href="https://www.youtube.com/watch?v=1nLRMb4CyBM">https://www.youtube.com/watch?v=1nLRMb4CyBM</a>

<sup>28</sup> National Seminar on "Conduct of Operations in Nuclear Environment", Centre for Land Warfare Studies, Ministry of Defence, South Block, New Delhi, February 13, 2018.

<sup>29</sup> Personal communication.

<sup>30</sup> Ibid; Bharat Karnad, "'Sialkot Grab' and Capturing the 'Corridor': Objectives and Tactics in a Nuclear Battlefield", *War College Journal*, Army War College, Autumn 2005, pp.1-12.

<sup>31</sup> Rajat Pandit, "India Can handle Pakistan, China in Two-Front War, Says IAF Chief", *The Times of India*, October 06, 2017.

<sup>32</sup>Ajai Shukla, "Army Chief Says Militancy Must Prepare for Cold Start", *Business Standard*, January 14, 2017, <u>http://www.business-standard.com/article/current-affairs/army-chiefsays-military-must-prepare-for-cold-start-</u> <u>117011301174</u> <u>1.html</u>; Pandit, Ibid. <sup>33</sup>. See the section on "Objectives" in the text of the 1999 draft doctrine, available at

## http://mea.gov.in/in-focus

<sup>34</sup> Karnad, n.1, pp. 504-513. For an analysis of the public debate on the salience of massive retaliation versus flexible response between ex-Foreign Secretary, and then Convenor of the National Security Advisory Board Shyam Saran, and former Foreign Secretary and NSA Shivshankar Menon on one side, and the author on the other, see Karnad, n.7, pp.482-484.

<sup>35</sup> Karnad, n.1, pp. 557-611.

<sup>36</sup> Bharat Karnad, "Shaping the Indian Special Forces into a Strategic Asset" in Lieutenant General Vijay Oberoi, ed., *Special Forces: Doctrine, Structures and Employment Across the Spectrum of Conflict in the Indian Context* (New Delhi: Centre for Land Warfare Studies and Knowledge World, 2006), pp.235-248.

<sup>37</sup> Personal communication from a former CAT scientist.

<sup>38</sup> Chidambaram was responding to the author on the sidelines of a "closed" seminar involving senior Army officers.

<sup>39</sup> Personal communication from an Indian engineer working in China on cutting-edge quantum communications. As regards the plutonium reactors, see "Pakistan's Fourth Nuclear Reactor at Khushab Now Appears Operational", PTI, *The Times of India*, January 17, 2015, <u>https://timesofindia.indiatimes.com/world/pakistan/Pakistans-fourth-</u> <u>nuclearreactor-at-Khushab-now-appears-operational/articleshow/45919653.cms</u>

<sup>40</sup> Karnad, n.1, pp. 499-517.

<sup>41</sup> Valerie Insinna, "To deter Russia, US needs new low yield nukes, says STRATCOM head", *Defense News*, March 20, 2018, <u>https://www.defensenews.com/smr/nuclear-arsenal/2018/03/20/stratcom-head-to-deter-russia-needs-new-low-yield-nukes/</u>

<sup>42</sup> See "Beg, Borrow or Steal: How Trump says China Takes Technology", March 24, 2018 https:// www.youtube.com/watch?v=x01fvNyLdgM

<sup>43</sup> Karnad, n.7, ch. 5.

<sup>44</sup> Ibid., pp.375-378; Karnad, n.5, pp.77-83.

<sup>45</sup> Personal communication.

<sup>46</sup> "Concession on Tawang Can Resolve India-China Border Dispute, Says Former Diplomat", PTI, *Hindustan Times*, March 03, 2017, <u>http://www.hindustantimes.com/world-news/concession-on-tawang-can-resolve-india-china-border-dispute-says-former-diplomat/story-g8BRaViOpTvjKbMcA46g5I.html</u> <sup>47</sup> Bharat Karnad, *Staggering Forward: Narendra Modi and India's Global Ambition* [New Delhi: Penguin-Viking, 2018], chs 5 & 6.

<sup>48</sup>. Andrew Greene, "India to Block Australia From Naval Exercise Amid Concerns It Could Inflame Diplomatic Tensions with China", ABC Net, April 20, 2017, <u>http://www.abc.net.au/news/2017-04-21/indiatipped-to-block-australia-from-naval-exercise-china/8459896</u>

<sup>49</sup> "India's Successful Test of Nuclear-Capable Agni 5 Leaves China Worried", PTI, *Deccan Chronicle*, December 28, 2016, <a href="http://www.deccanchronicle.com/nation/currentaffairs/281216/indias-successful-test-of-nuclear-capable-agni-5-leaves-china-worried.html">http://www.deccanchronicle.com/nation/currentaffairs/281216/indias-successful-test-of-nuclear-capable-agni-5-leaves-china-worried.html</a>

<sup>50</sup> Vishaka Saxena, "From 3 Satellites in One Launch to 104: All You Need to Know About ISRO's PSLV Rocket", *IndiaToday.in*, February 15, 2017, <u>http://indiatoday.intoday.in/story/pslv-104-satellite/1/883213.html</u>; A. Raghu Raman, "Isro's 4-Decade Journey: From 40 kg to 4,000 kg", *Deccan Chronicle*, June 6, 2017, http://www.deccanchronicle.com/science/060617/isros-4-decade-journey-from-40-kg-to-4000-kg.html

<sup>51</sup> Karnad, n.5, pp. 69, 80-82, 142.

<sup>52</sup> These Chinese nuclear weapons and deterrence-related views extracted from Li Bin and Tong Zhao, eds., *Understanding Chinese Nuclear Thinking* (Washington DC: Carnegie Endowment for International Peace, 2016).

<sup>53</sup> Brandon Thomas-Noone, *Tactical Nuclear Weapons in the Modern Nuclear Era* (Lowy Institute for International Policy, September 2016), p.13.

<sup>54</sup> Ibid., p.16; Caitlin Talmadge, "Would China Go Nuclear?", *International Security*, Vol. 41, No.4, Spring 2017, pp.5092.

<sup>55</sup> Karnad, n.7, pp.388-393.

<sup>56</sup> Thomas C. Schelling, Arms and Influence (New Haven, CN: Yale University Press, 1966).

<sup>57</sup>. Karnad, n.1, pp. 512-612.

<sup>58</sup> The potentially dire economic consequences for China of destroying or, even merely threatening to destroy, the Qinghai-Lhasa Railway and, in particular, the Three Gorges Dam analysed in Karnad, n.7, pp.330-333.

<sup>59</sup> Personal communication.