

# “SYSTEMIC RISKS”

– A Conversation on Nuclear Technology and Deterrence with Dr. Vipin Narang

Interviewed by Dylan Land, January 2021



A B-52H Stratofortress assigned to the 419th Flight Test Squadron undergoes pre-flight procedures at Edwards Air Force Base, Calif., Aug. 8, 2020. The aircraft conducted a captive-carry flight test of the AGM-183A Air-Launched Rapid Response Weapon Instrumented Measurement Vehicle 2 at the Point Mugu Sea Range off the Southern California coast. (U.S. Air Force photo by Giancarlo Casem)

*This interview has been edited for length and clarity.*

**Fletcher Security Review (FSR):** What do you perceive as the greatest threat to global nuclear security? Where do you see the greatest potential for the outbreak of nuclear war?

**Vipin Narang (VN):** Rather than focusing on regions, I see three trends which I think we should be concerned about. One is the return of a great power arms race, and a lot of this was exacerbated in the Trump administration. Even as we head into the Biden administration—which extended the New START Treaty with Russia for five years—Russia and China are modernizing their nuclear forces at breakneck speed. They are worried primarily about U.S. missile defenses, which at this point are unconstrained. The United States has a variety of missile defense systems at the regional level which work pretty well, as well as the national missile defense system, which doesn’t...yet. You will often hear that the national missile defense system does not work very well and that is true—the success rate is around 60 percent in simulated tests. It may be difficult to ever get it to work perfectly or even well, but it is the prospect that the United States might get it to work that really drives modernization efforts in Russia and China. Both are working on forces that would be more survivable against U.S. conventional or nuclear attacks and more penetrable against U.S. missile defenses. Those modernization programs are only going to pick up speed in the coming years because China is playing catch up with a smaller [nuclear] force, and Russia is playing catch up after decades of woeful economic reforms. Now

Russia has the impetus and the resources to invest in their modernization programs and the United States is also modernizing all three legs of its triad. The United States has to re-capitalize forces that are now decades old, but the renewed modernization program has the possibility to disrupt great power nuclear stability. Russia and China are developing capabilities that may be destabilizing to the United States, and U.S. missile defense can be destabilizing to Russia and China. What we have enjoyed since the end of the Cold War has resembled great power arms stability and that has the potential to be disrupted in the future. This is the first trend we should be wary of.

The second trend is the prospect of future proliferation by regimes or states that, for lack of better words, we really do not want to have nuclear weapons. For example, countries led by unstable, personalist dictators who are mostly rational but may have tendencies and pathologies that lead to rash decision making. These countries may also have bad information, which can force leaders into making decisions under uncertainty because they do not have all the early warning systems that major powers do. Take North Korea, for example. I do not think Kim Jong-Un is irrational, but North Korea does not have an early warning system that rivals the great powers. How would Kim Jong-Un know that a routine exercise for the United States is not actually the beginning of a first strike that forces him into making destabilizing decisions and posture choices? So North Korea is one example of a type of regime that is not irrational but the possession of nuclear weapons, especially a force that is asymmetrically small,

causes them to worry about survivability and first strikes. These dynamics can put North Korea into use-or-lose situations, which forces bad decision making. New nuclear powers, especially those whose primary adversary is the United States, tend to have itchy trigger fingers.

The United States is also going to have to address Iran's nuclear program, whether it reenters the JCPOA [Joint Comprehensive Plan of Action] or tries to negotiate for a "longer and stronger" JCPOA. However, I think the United States is going to be living with the damage from the Trump administration for a long time. Trump represented what can happen when the United States does not have a treaty in place, which it cannot get because the structure of the Senate almost makes it impossible to get a treaty ratified anymore. So the question is, how are other countries, like Iran, going to protect against future Trumps in these agreements? Nevertheless, the United States will have to deal with Iran's nuclear program one way or another and, as a result, will also have to deal with states such as Turkey and Saudi Arabia as potential proliferators which hedge against the possibility of a future nuclear Iran. A further legacy of the Trump administration may be that allies, not just adversaries, fear American abandonment. It would not be unreasonable if South Korea, Japan, or Germany start thinking about a day down the road where they may have to develop independent nuclear arsenals. So, there is a risk of more states going nuclear, and not just allies—which we have not had since France—but adversaries like Iran, and "frenemies" like Turkey and Saudi Arabia who the United States would not want getting nuclear weapons. The question then is how does the United States keep all these different categories of states—friends, foes, and "frenemies"—from getting nuclear weapons down the road? There is a risk of new proliferators at a regional level that could pose challenges to global security.

The third trend I think we should be concerned about is that existing nuclear weapons powers are getting frustrated by the constraints of the so-called "nuclear revolution." For example, after getting a nuclear weapon, India may have thought it had solved most of its security challenges, but today it finds itself in a position where Pakistan is using terrorism to attack its big cities like Bombay and Delhi—a scenario it may not have envisioned. The inability to deter these types of threats is frustrating and you are seeing that frustration boil over in places like South Asia. The problem is that states are facing aggression from other nuclear states—Pakistan uses its nuclear weapons as a shield to poke and attack India—and are now starting to say enough is enough. In 2019, India decided to push the envelope a little bit. It stopped saying that it would not retaliate after a terrorist attack and decided to hit back and see what happens. Pushing the line at the regional level is very dangerous. Similarly, if there were a Baltic scenario where either Russia or the United States tried to push the line, it could be catastrophic. So, I think we have a situation where existing nuclear weapons states—which previously had been trying to avoid crisis escalation—are now looking for it because they believe they can control it. These states have not had their Cuban Missile Crisis moment where they are

chastened and sobered by the prospect of what might come. They are instead pushing the line and may stumble into a war. The 2019 crisis between India and Pakistan in Balakot was a hop, skip, and a throw away from escalating into war. If the captured Indian Air Force pilot had died and India retaliated with surface-to-surface missiles as they threatened to, we would be in a different world. Both India and Pakistan tell themselves that they walked away from that crisis due to skill and not luck. That means that they are willing to rerun it in the future, and I think if you rerun that crisis six or seven times then you get a serious escalation. However, if you believe you walked away from it because you were good and not because you were lucky, your temptation is to roll the dice again. Eventually your luck is going to run out.

So, those three trends put us on the brink of a more dangerous nuclear world in general. We will see flashpoints in various places. One day it could be North Korea, one day it could be South Asia, and the next day it could be Russia and the Baltics, or China and Taiwan. I do not think there is a single geographic area at the top of the list for nuclear instability, because these general trends make the entire system vulnerable.

**FSR:** The United States is currently developing and deploying novel weapons systems like the W76-2 low-yield warhead as well as hypersonic missiles. Will these modernization trends create more or less stability? The United States has to do upkeep on its nuclear arsenal, but does upkeep necessarily entail the development of novel weapons systems?

**VN:** The United States has to have a safe, secure, and effective arsenal if it is going to have one at all. We can litigate whether the United States should have a [nuclear] triad—some people say we should get rid of the ICBM leg—but even leaving that argument aside, whatever force composition the United States has, it does need to be updated and recapitalized. Even though nuclear weapons technology is 75 years old, we cannot have components that have expired because that creates risks at home. That is why I think the modernization program to recapitalize the force structure we have—to make it safe, secure, and effective—was bipartisan; there is a lot of widespread support for it even given the price tag, which is not insubstantial but if you amortize over 30 years it is still a small fraction of our overall defense budget.

Then you get into the question about new capabilities, and you mentioned the W76-2, a low-yield SLBM [submarine-launched ballistic missile] warhead which was new and is now deployed, as well as hypersonic glide vehicles. For the hypersonic glide vehicles, we should distinguish them from maneuverable ICBM [intercontinental ballistic missiles] warheads, which are faster and more maneuverable than hypersonic glide vehicles. But hypersonic glide vehicles are worrisome because even if they are slower than our existing ICBM reentry vehicles and Russia's ICBM reentry vehicles, they fly at the edge of the atmosphere, making them difficult to intercept. These hypersonic glide vehicles can maneuver at different altitudes and different trajectories,

which makes it hard for missile defense. So, the United States is worried about it because it can defeat our missile defenses, but we are pursuing them for the same reason—because everyone else is. The United States has long had an interesting position of “what is good for me is not good for thee,” and it is very hard for us to say that another country should not be developing hypersonic glide vehicles even though we have developed them. I understand that if you are an American planner, you want all these systems and no one else to have them. That makes sense, but it makes it difficult to not sound hypocritical when you say that. The United States has missile defenses which drive hypersonic glide vehicle developments in Russia, China, and elsewhere, but they do not have comparable missile defenses that really threaten our penetrability. I think a lot of these developments are also destabilizing.

As for the W76-2, why does the United States really need it? The W76-2 is not usable. If you wanted a low-yield, long range ballistic missile capability, one alternative is to put some low-yield warheads on ICBMs and communicate which silos they are in. That way, Russia, for example, would know that if something were coming out of those silos, it would be a low-yield warhead. We would be banking on them being able to distinguish that and track it—which is not a foregone conclusion but at least they would know the designated silo is a low-yield warhead. From a single SSBN [ballistic missile submarine] out of the ocean, Russia would have no idea what was coming and would have to assume the worst. If the United States thinks it is going to deliver a Trident warhead on Moscow—even if it is “just one or two,” as proponents say—that could be half a megaton of yield and Russia is not going to wait to see what hits.

So, the W76-2 is destabilizing because it creates room for misperception. I actually think it is not a discrimination problem as I have called it—it is not that Russia cannot tell what is coming, although they could not—but it’s a deterrence problem. The United States cannot use the W76-2 because an adversary would have to assume it is a high-yield warhead and react as such. This means you cannot fire anything out of an SSBN without it being a high-yield weapon. Its usability is therefore completely undercut, and if there is no credibility of use then it has no deterrence purpose. I think the W76-2 is unwise, not because it creates a discrimination problem, but because the discrimination problem creates a deterrence problem. I imagine the Biden administration may re-litigate some of this, but the problem is that it is very hard to get rid of weapons once they are already deployed in the military. That said, I am adamant in my position that the W76-2 is a bad idea, and that the United States should get rid of it. If the United States really wants this capability, there are ways to do it with an ICBM that could actually be stabilizing. If the United States wants a low-yield warhead on a long-range missile, pick some silo fields that can be easily identified and mark them as low-yield silos so our adversaries would know what is coming—that would solve at least some of the problem.

**FSR:** Continuing our discussion of low-yield nuclear weapons, the 2018 Nuclear Posture Review highlights the importance of “flexible response” for the U.S. nuclear defense strategy. While the term has been used for decades, its strong emphasis in the 2018 report led some to interpret the document as a signal of increased willingness to use nuclear weapons. However, abandoning a “flexible response” may limit U.S. options in crises short of all-out war. What do you think about “flexible response” and an increased willingness to use low-yield nuclear weapons?

**VN:** I am somewhat in the middle, but I lean towards the idea that if you *only* have high-yield thermonuclear warheads like China, all you are really left with are all-or-nothing responses. Given the United States’ extended deterrence commitments, the United States does need to have more flexibility in its force. The argument against the W76-2 is not that it is more usable, but that it is a low-yield capability that is unusable because of what I just laid out. But the United States has other low-yield capabilities like the B61 gravity bomb and potentially cruise missile warheads that are low-yield as well, so what added advantage are you getting by introducing another low-yield capability? My argument against W76-2 specifically is not because it makes nuclear war more likely—I actually think having low-yield capabilities can deter a certain range of conflicts and nuclear use—it is that it is so unusable that it does not buy you anything and it creates more problems than it solves. I am not in favor of what some arms control proponents say, which is “get rid of all low-yield, or tactical, nuclear capabilities,” because that would leave the United States with a terrible choice. For example, if the United States finds itself in a Baltic scenario where it is winning a conventional fight, Russia might use a tactical nuclear weapon. If the United States does not have anything in its inventory that is at least proportional, Russia may be more likely to use a tactical nuclear weapon because they may think the United States is not going to nuke Moscow and start an all-out nuclear war over a conflict in the Baltics. So, the idea again is that the United States possesses these capabilities with hope that it never has to use them. I do believe that possessing a range of options actually does increase our deterrent capability in low-end and high-end conflicts.

**FSR:** On the campaign trail, President Biden floated the idea of a “sole purpose” doctrine for nuclear weapons. Do you think this is a reasonable position? Disregarding political calculations, do you think the United States could maintain a credible deterrent by adopting such a doctrine or declaring a no-first-use policy?

**VN:** This is a long-standing debate in the United States. The United States has never had a no-first-use policy, it has an explicitly ambiguous policy, and it reserves the right to use nuclear weapons first, primarily to deter conventional conflict or other major non-nuclear strategic attacks in Europe and Asia. This policy was developed because the United States might have had to use battlefield nuclear weapons to deter a Warsaw Pact invasion. The idea of a no-first-use doctrine started gaining traction at the end of the Cold War. There are

exceptionally few realistic scenarios in which the United States might have to use nuclear weapons first, but because of our extended deterrence commitments, our allies have always feared that a no-first-use policy would mean we would not use theater nuclear weapons in the event of a conventional attack. So the problem with a declared no-first-use policy is that the United States can say it, but Russia and China will never believe it—if we do not change our force posture or anything about how we manage our forces, nothing stops us from actually using nuclear weapons. The fear is that our adversaries would not believe it and our allies would, which would undercut the reliability of U.S. extended deterrence. What is the point of a no-first-use policy if our adversaries do not believe the reassurance and our allies get scared and start talking about developing their own nuclear weapons? This has been the Pentagon's argument against no-first-use. Within the Obama administration, however, and especially Vice President Biden, there was a push towards wanting to set an example where the language said that the fundamental role of nuclear weapons will be to deter nuclear weapons use against the United States and its allies. Now, that does not mean the *sole* use or *sole* purpose, it is just "fundamental," which still leaves open the possibility of first use. The allies were okay with this policy, but not happy. One step further would be "sole purpose."

There are two main arguments regarding sole purpose, one is that sole purpose is just a different formulation of no-first-use. The other argument, which is where I fall, is that there is daylight between sole purpose and no-first-use. If the United States wanted a no-first-use declaration, it would say "no first use," meaning that the United States will not be the first to use nuclear weapons in a conflict. No-first-use is an employment constraint—you are committing yourself to not using nuclear weapons first in any sort of conflict down the road. Sole purpose is a philosophy. If the sole purpose of American nuclear weapons is to deter nuclear use against the United States and its allies, you are saying that we have these nuclear weapons for the sole purpose of deterring nuclear weapons use, but if and when the time comes, the United States may find another purpose. It leaves open just a crack that I think could help square the circle. So, I think sole purpose is as close as the United States can get to no-first-use without saying no-first-use—but there is daylight, and that daylight may be important.

Adversaries are not going to believe it either way, but if the United States can convince its allies that sole purpose is not the same thing as no-first-use, it could be feasible. I think there is enough room to make the argument that one is an employment constraint and one is a philosophy, and the philosophy is not an employment constraint. If the circumstances ever arose where the United States needed to use nuclear weapons in an existential scenario that we had not thought of, or was extremely unlikely to occur, it might still leave open the possibility of first use. However, it really depends on the language. If the language of a sole purpose doctrine is, "if necessary, retaliate," that gets a little closer to no-first-use, but there is still enough of a difference to distinguish it from a no-first-use policy.

Some no-first-use policy could be seriously proposed in the future, but I still think there will be pushback from the Pentagon over concerns for allies. Calculated ambiguity has been U.S. declared policy for a long time and we may just want to leave open the possibility of first use so as not to constrain ourselves. However, even if a sole purpose doctrine is adopted, it is not the same thing as a no-first-use policy. If that were to happen, the United States would have to convince its allies that extended deterrence would not be weakened. I think the distinction between sole purpose and no-first-use is very important. Either way, if the United States does not change its nuclear posture, the declared policy may not matter because the United States is still postured to use nuclear weapons quickly.

**FSR:** There are only a few months until Iranian elections, and Joe Biden might want to rejoin the JCPOA before a new president is elected. Iranians have made it clear that they want to reenter the deal as it was negotiated in 2015. However, there are some concerns about the sunset clauses expiring soon, as well as Iran's regional activities. How do you analyze the situation, and how should the United States navigate these negotiations?

**VN:** I think it is possible to get "compliance" back into the JCPOA as is, but there will be a lot of pressure to negotiate a follow-on agreement. Jen Psaki [White House press secretary] has said that the administration will be looking to "lengthen and strengthen" the JCPOA, and I think that will be the approach because the sunset clauses will be expiring quickly. It may be that the Iranian regime will not negotiate a follow-on agreement until after the elections. We will have to see what the domestic political configuration looks like after June. But even President Rouhani and foreign minister Javad Zarif could reasonably question the assurances of the United States since the JCPOA is only an executive agreement, meaning there is no guarantee that the United States will not withdraw again after the 2024 elections. Therefore, follow-on agreements could get very complicated. The easy part would be getting compliance-for-compliance—a mutual reentry into the JCPOA. Even a follow-on agreement is not going to get rid of Iran's latent nuclear capability. Iran has the technical and industrial base that can produce fissile material—even if it does so slowly—and it has the scientific knowledge about the nuclear fuel cycle to maintain a latent nuclear capability. So, I think the Iranian challenge is something the United States is going to be dealing with for a long time, absent a reorientation of the countries' fundamental relationship. It is possible that a fundamental reorientation occurs, but it is more likely that Iran will maintain a hedge with their nuclear program and that the international community will continue to play a cat and mouse game to ensure Iran is not acting on that hedge. The JCPOA was a way to incentivize Iran not to act on any intent to weaponize its nuclear program and it provided access to the international community to detect and monitor its compliance in exchange for sanctions relief. But the whole agreement was ripped up. Hard-liners in Iran say that the United States can never be trusted, and those sentiments were amplified and legitimized under the Trump administration, which makes getting a

future deal very difficult. For some hardliners in the Trump White House, Iranian distrust was simply a feature of the relationship, not a problem, because for them the ultimate solution is basically an American flag in Tehran. For them, one theory was to rip up the JCPOA, bait Iran into doing something that justifies a military strike and end the problem once and for all. In reality, the United States cannot get rid of Iran's nuclear infrastructure and scientific know-how without either a fundamental change in the relationship or an occupation of Iran, neither of which are likely nor possible. So, I suspect the United States will be dealing with the Iranian nuclear challenge for a long time.

**FSR:** Saudi Arabia has been pretty unambiguous about their intentions if Iran does somehow get nuclear weapons. What do you think the role of the United States should be—being the primary supplier of military equipment to the kingdom—in addressing Saudi Arabia's security threats while ensuring no further nuclear weapon proliferation?

**VN:** The thing is that it has been very difficult to stop a state that is determined, has the resources, and has the territory from getting nuclear weapons if it wants them. One type of strategy is called a "sheltered pursuit." For example, the United States essentially provided cover for the Pakistani nuclear weapons program after the Soviet invasion of Afghanistan and for the Israeli program in the 1960s. Neither country was a formal ally, but the United States decided that in pursuit of higher priority geopolitical goals, it was essentially going to turn a blind eye to their nuclear programs and weaponization. This playbook has been tried and tested before with great success. Saudi Arabia may eventually fall into that category; it is not a formal ally, it is more of a "frenemy" like Pakistan, but with very close and long-standing ties with the United States because of oil and the relationship with the House of Saud.

It is possible that the United States would look the other way, but it is also possible that the United States does not get access to the Saudi nuclear program. Say, for example, Saudi Arabia gets its civilian technology from the United States—which has the benefit of training engineers—but they get their weapons related equipment from China, which is what Pakistan did. Pakistan basically got all its weapons assistance and technology from China, but the United States knew what was going on and essentially turned a blind eye. It is possible that Saudi Arabia falls into that category. It is also possible that the United States says that Saudi Arabia cannot get a nuclear weapon and then we have a crisis with Saudi Arabia over nonproliferation sanctions, which are mandated by legislation. The problem is that there are plenty of willing suppliers out there, so it poses a difficult challenge to the United States because it does not want to push the Saudis to other nuclear suppliers, but it may not want to look the other way if they start a nuclear weapons program.

**FSR:** It appears there is a lack of understanding about the United States' nuclear war plans and force structure, both within the public consciousness and sometimes in the government. In your opinion as an academic and a professor, what can we do as a society to raise

consciousness about nuclear weapons so that politicians have to be more accountable to the opinions of average citizens?

**VN:** One big piece is education. I think it is incumbent upon our educators to show visually what a nuclear weapon does—the damage and loss of life it causes. When you see the destruction in Hiroshima and Nagasaki from nuclear weapons, it is no longer academic and sterile. Our nuclear war plans have stripped out the humanity because they are described in such sterile terms. For example, against Russia the United States has assigned 'n' number of warheads to every Russian target and all of our targeting is counterforce targeting—but counterforce targeting should not obscure that a lot of those counterforce targets are in civilian populated areas. So, if the United States were to strike one of those targets, lots of civilians are going to be killed. I think when you recall the stories of Hiroshima survivors and visually see the damage of nuclear weapons, it is impossible to forget that nuclear weapons are weapons of mass destruction. So, it is incumbent upon educators to impress upon students, whether in high school, college, or graduate school that at the end of the day, they are still weapons. They may be weapons of deterrence, but deterrence only works if there is some credibility of use. The paradox of nuclear deterrence is that the threat of use has to be credible in order for it to deter so that you do not have to use them. It is a paradox because those of us who study nuclear weapons and work in the field accept that nuclear weapons are not going to go away in our lifetime.

I actually think it is a misplaced focus to try to get rid of nuclear weapons in our lifetime—I am not even sure if it is a great idea because nuclear knowledge is not going away. You can't put the nuclear genie back in the bottle. We need to be talking about reducing risks within the system, the three risks I mentioned before. We need to reduce systemic risks to minimize the risk of use of nuclear weapons, inadvertent or advertent. We need to start talking about deterrence at low numbers instead of talking about getting rid of nuclear weapons because that does create destabilizing dynamics in crisis scenarios. If no state had any nuclear weapons and then there was a war, then the first state to get nuclear weapons would have a highly dangerous monopoly, which would create incredibly destabilizing conflict dynamics. But if we can get to a world with deterrence based upon minimal forces, we could work towards realistically mitigating the systemic risks of nuclear weapons.

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