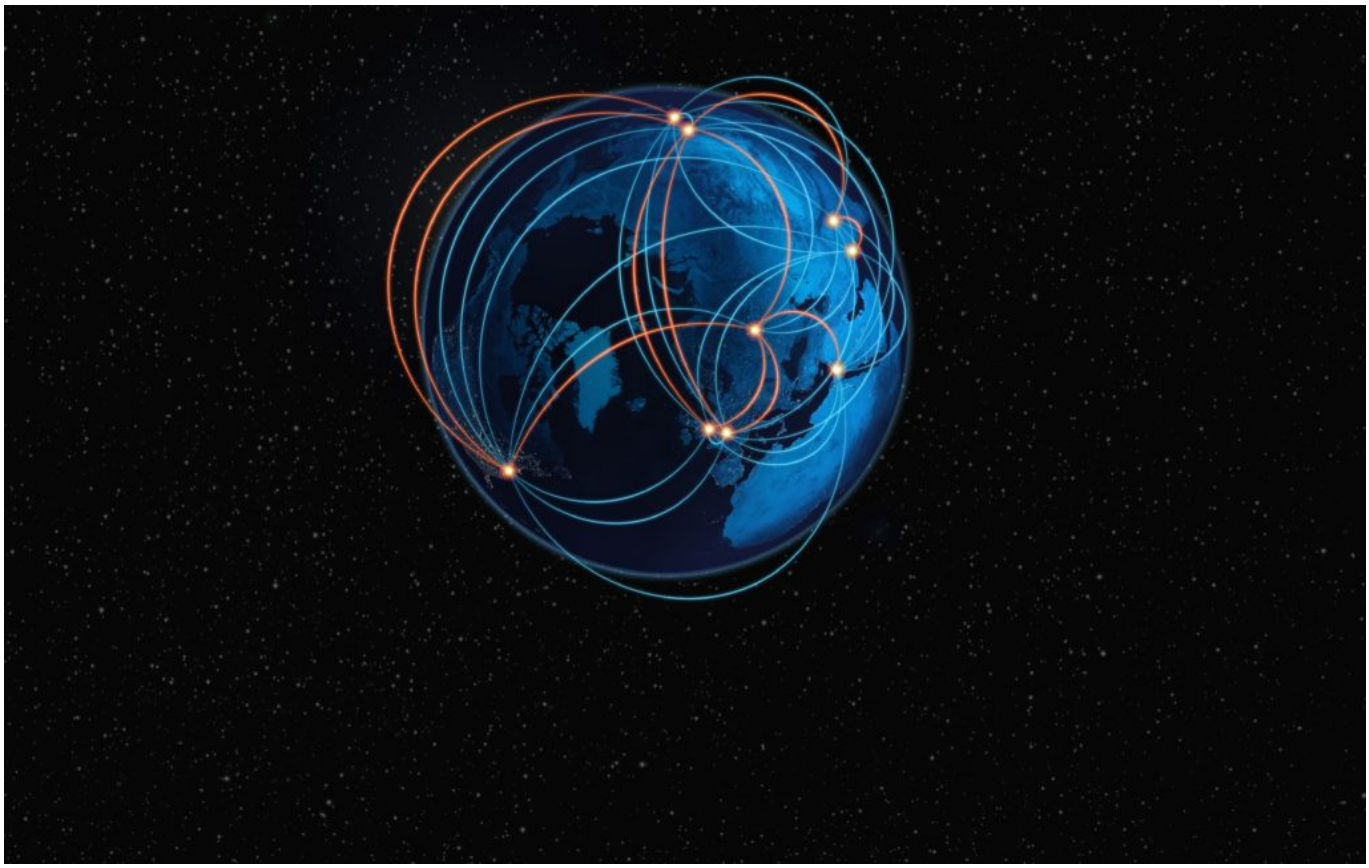
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# BUILDING COMMUNICATIONS NORMS ACROSS NUCLEAR C2



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**SALMA SHAHEEN**
**NOVEMBER 24, 2020**

# I. INTRODUCTION

In this essay, Salma Shaheen warns: "The pandemic has revealed a gross lack of preparedness and a weak response of nuclear-armed states to a global crisis that has implications far beyond health security."

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# II. NAPSNET SPECIAL REPORT BY SALMA SHAHEEN

# BUILDING COMMUNICATON NORMS ACROSS NUCLEAR C2

# NOVEMBER 24, 2020

### Pandemic Prologue

The COVID-19 pandemic might not change the global status quo in a fundamental way, but it has raised the urgency of demonstrating a constructive approach towards reducing risks to international security by nuclear-armed states. For the first time, all countries in the world are being tested simultaneously for their preparedness and management of an unprecedented crisis. At the national level, states appear to be struggling on multiple fronts ranging from medical treatments to urgent resource mobilization, to providing prompt and synchronized decision-making. Adding to the difficulties of the crisis, Britain faced a leadership dilemma when Prime Minister Boris Johnson's bout with the coronavirus raised concerns about who has authority over the UK nuclear button. [1] The reality of the infection of key nuclear and national security personnel as well as the risks to military combat readiness in many states,[2] raises questions about the ability of nuclear armed states

to maintain communications with their own forces as well as maintain their broader mission, as people are forced to change their behavior to suppress the spread of the virus. Fundamental constitutional issues, such as the division of responsibilities between central and sub-national governments at state or provincial levels, have come to the forefront in states such as the United States and Pakistan.[3] Many governments are struggling with widening trust deficits as they try to communicate with and provide their public information on the pandemic and its fallout.[4] This impact of the pandemic compounds the problem created by social media of how nuclear weapons states can communicate effectively and efficiently in the absence of common knowledge—especially as the remnants of arms control such as the Open Skies Treaty are destroyed by American unilateralism.

At the international level, the pandemic has generated a debate about a post-COVID-19 world order. Many countervailing trends and contested issues are in play, including the reliance of the international system of states on threats and military force while neglecting non-traditional security threats, China's increasing influence in international politics, the relations of major powers with China, a global shift in power resources from West to East, and even the viability of democracies and liberal institutions.[5]

These struggles and debates are relevant to nuclear command, control and communication (NC3). The pandemic has revealed a gross lack of preparedness and a weak response of nuclear-armed states to a global crisis that has implications far beyond health security. Over the decades that nuclear-armed states have built the world's deadliest weapons and associated safety and security systems, they, their allies, and even their enemies assumed that they had skilled crisis management infrastructure and capabilities. Yet, they failed in their pandemic early warning assessments, demonstrated inaccurate threat perception, neglected timely and efficient planning, and failed to synchronize political and expert advice —leading to an almost complete lack of preparedness and a fragmented, often counterproductive response.

The COVID-19 pandemic emerged at a time when global security was already rendered fragile by the nine nuclear-armed states that are either power competitors or adversaries. Their bankrupt failure to deal with the pandemic suggests that claims that they will perform well in managing future nuclear crises are dubious at best and that major adjustments in their nuclear doctrines, force postures, and reliance on greater cooperation is now imperative.

## 2. Introduction

Thus far, nuclear-armed states have failed to create a global security framework that could sufficiently ameliorate the insecurity of non-nuclear states as well as reduce the role of nuclear threats in relations between nuclear-armed states. All nine nuclear-armed states are engaged in nuclear weapons development and modernization aiming at diversity, precision, rapid mobilization and survivability, thereby increasing the probability of swift crisis escalation between nuclear-armed adversaries endangering the security of the entire international community. To make the situation worse, the nuclear-armed states are exploring military applications of emerging technologies such as artificial intelligence (AI) and machine learning that exacerbate the risk of actual nuclear conflict. For instance, intelligent and autonomous machine systems such as advanced drone technology, killer robots, and unmanned underwater vehicles are changing the contemporary strategic/nuclear balance in ways that make it more susceptible to the risks of proliferation and unwanted escalation by creating new and urgent incentives to counter attacks by autonomous weapons.[6] Also, the lack of, and weak lines of, communication between nuclear-armed adversaries during crises bring the world perilously close to sailing directly into the headwinds of nuclear war.

The frustration of non-nuclear-armed states and civil society in the face of prevailing nuclear risks

manifested in their signatures of the Treaty on the Prohibition of Nuclear Weapons (the Ban Treaty hereafter).[7] The Ban Treaty--regardless of the pros and cons of its content and the manner in which it was negotiated--reminded the NPT nuclear-armed states (the P5) of their commitments under Article 6 of the NPT. The P5 states have been forced to respond to this pressure by agreeing to "explore the possibility of explaining respective nuclear policy and doctrine" for the first time during NPT Review Conference 2020.[8] This interaction between nuclear and non-nuclear weapons states in the NPT context is important and positive, but it is far more urgent to address factors that have a direct impact on escalation control and nuclear risk reduction, and to demonstrate doctrine in operational practice. One critically urgent way to do this is to build a reliable, modern communication link among nuclear command and control (C2) nodes of nuclear-armed states in bilateral and multilateral ways. However, this important and urgent interaction between two groups of states within the NPT has been put on hold as the 2020 Review Conference is being postponed until April 2021 due to COVID-19 outbreak.

To this end, this paper puts forth three key arguments. First, nuclear-armed states continue to develop and modernize their weapon systems and nuclear strategies/doctrines based on a self-interested deterrence-based security discourse. This has limited possessor states' ability to fulfill their Article 6 commitments. Hence, active engagement among nuclear-armed states is required to develop a shared understanding about nuclear risk reduction as a step towards global security.[9] Currently, the trend is the opposite of this approach due to dissolution of existing nuclear arms control treaties and other negative developments at the global and regional level that serve to increase the risk of nuclear war. With COVID-19 outbreak, this engagement has become more important than ever because adverse impacts of pandemic heightened tensions among nuclear armed states.[10]

Second, nuclear-armed states have been loath to share knowledge about their nuclear operations. This sensitivity primarily emanates from their realist view that the distribution of power-capacities determines the behavior of states, which has increased their reliance on nuclear weapons. This reluctance to share knowledge must be overcome so that, at minimum, nuclear weapons states adopt a norm of best practice by building and internalizing the need for a nuclear communication link - at a minimum - among supreme national nuclear commanders.

Third, the importance of building and maintaining communication between nuclear-armed states during crises is indisputable. Yet such an arrangement is also susceptible to adverse political will.[11] Under these circumstances, building an information flow via a backup hotline among supreme nuclear commanders could develop agreed standard operating procedures (SOPs) for its operation that would serve to reduce nuclear risk should they ever be needed. This hotline will socialize nuclear commanders and national leaders to be ready to: 1) disentangle communication during crises from domestic political pressures by practicing agreed SOPs of hotline before a crisis occurs, 2) build confidence among nuclear-armed states - and the international system in general - that the means to control escalation exists, even if the political will is lagging, and 3) open opportunities for nuclear-armed states to broaden their discussion from the specifics of a nuclear hotline to the need to develop new norms that cover the entire nuclear command-and-control system. The management of the COVID-19 pandemic indicates that states struggled to sustain communication with their respective societies to achieve lockdown, self-isolation and social distancing. Nonetheless, states adopted surveillance measures such as using mobile phone operators records along with law enforcement agencies to trace people's movement,[12] to foster behavioural changes at mass level. This experience can be a useful real-time exercise the lessons from which can be learnt to apply in case of maintaining communication during nuclear crisis in future.

Given these arguments, this paper addresses the following questions: 1) why is it important to build

communication norms for nuclear command and control organizations and their leadership? And 2) How can such norms be built? To answer these questions, this paper is divided into three sections followed by conclusions. Section one builds the rationale for why nuclear-armed states should engage in norms-building for nuclear command and control. The next section explores Martha Finnemore and Kathryn Sikkink's norms lifecycle taxonomy as it applies in the nuclear command and control context and also discusses key terms related to the norms debate. The final section explains the three information flows in nuclear command and control systems and presents the strengths and limitations of building a new communication link among nuclear commanders at the international level.

## 3. Need for Norm Building

Emerging technologies such as AI and machine learning are capable of strengthening as well as undermining nuclear command and control support systems, notably communications.[13] The United States, Russia and China currently lead the development of AI-based technologies for military purposes. Britain's Industrial Strategy White Paper 2017 identifies "AI and data as one of four grand challenges" and aims to put the UK at forefront of the AI and data revolution,[14] both of which could have a significant impact on its deterrent strategy and posture. India has recently increased its funding and human resource focused on AI,[15] and Pakistan is also working in this domain – recently Pakistan's President announced an initiative in AI for capacity building.[16] These new weapon systems, which are likely to be kept opaque, add insecurity and uncertainty to global nuclear order.[17]

At the same time, the global security calculus of major and minor powers has become complicated due to resurgent strategic competition, unresolved disputes and conflicts, and close geographical proximity among nuclear-armed states. For instance, the United States plans to develop new strategic weapons to support its expanded military roles and missions,[18] and is reluctant to extend New START with Russia beyond 2021.[19] Another challenging situation for global security is the close geographical proximity between three nuclear-armed states – China, India and Pakistan, each with different threat perceptions. India and Pakistan share a history of intense rivalry characterized by three major wars and recurrent crises--even after nuclearisation. Currently regional stability is deteriorating. Conversely, the China-India dyad is relatively stable with one major war fought between these states long ago, in 1962. After India's overt nuclearisation in 1998, both states have refrained from active military confrontation except for Doklam standoff 2017. The border issue between the two is still unresolved but the major irritant between India and China is their growing strategic competition in Indian Ocean Region alongside other maritime powers.

Increasing global insecurity, especially in the nuclear dimension, is primarily due to the reliance of the national security leaders on neorealist and neoliberal assumptions to explain their choices and behavior instead of using a constructivist approach. The realists emphasize that decision/policy-making in states is driven by the economic and military resource distribution in international systems. Hence, they rely more on material cost-benefit analysis to rationalize decision-making instead of engaging with ideational factors that point to the explanatory power of norms.[20] Comparatively, liberal theorists engage with normative structures but more in terms of institutions that can foster cooperation among states. However, neo-liberalists do not consider the state's relationship with its domestic institutional power structure; nor do they pay much attention to international society as a critical factor that determines and conditions a state's behavior.[21] In short, neorealist and neoliberal theories also do not adequately recognize the influence of ideas, beliefs, norms and values on state's identity interests and behavior—whereas this is the primary focus of constructivist theories.[22] As an alternative paradigm, constructivism puts the idea of norms center-stage in explaining international politics. Constructivist scholars study the ways agents (such as the

individuals and organizations that constitute the national security leadership in states) construct their reality through normative and ideational structures.[23] Through a constructivist lens, we are able to understand the social environment that helps define an actor's identity based on ideational factors such as beliefs, ideas, norms, values and discourses instead of solely through material factors.[24]

A security discourse solely based on material competence and power distribution fails to contribute positively to international security. Rather, by informing decision-makers to act on realist and neo-liberal assumptions, it has led to critical discrepancies resulting from competitive modernization of weapon systems by nuclear-armed states, especially vis-à-vis the P5 states' commitments to reduce nuclear risk and disarmament. This competitive modernization neither adds to the security of nuclear-armed states nor nurtures an image as of states responsible for building a world free of nuclear threat and terror. The shortcomings of existing security discourse became obvious when faced with COVID-19 because it is unable to explain global pandemic outbreak as a threat to national security within its theoretical postulates, and provides no guidance on how to overcome impediments to realizing the requisite global cooperation to defeat a viral existence threat[25]

In light of this conceptual cul-de-sac, how might nuclear-armed states help to construct a less dangerous and more secure world, especially with regard to the risk of nuclear war? I suggest that the key is to start working collectively on cooperative nuclear risk reduction based on shared understanding of the threat on one hand, and common risk reduction measures that serve shared security interests of all nuclear weapons and non-nuclear weapons states on the other. Since norms have already affected nuclear decision-making,[26] it is thus important for nuclear-armed states to work towards norm building in nuclear risk reduction.

In order to explore the effect of norms of state's behavior, scholars have debated the causality and explanatory power of ideas and norms in international relations.[27] Some view norms to be the intervening variable that affects the relationship between interests and actions/outcomes.[28] Others see norms as an independent explanatory variable that constrains a given state's behavior.[29] This author considers norms to be an independent variable that affects state-level behavior by either constraining it or aligning it to social commitments and expectations of other states as well as other types of international actors. In doing so, norms tend to lend meaning to existing power capabilities and distribution in line with social expectations, separately from their role in how state level actors ascertain the interests of states in pursuing conflict or cooperation. This paper argues that the norms hold independent explanatory power, because in the contemporary world the security leaders and institutions of nuclear-armed states feel social pressure from counterparts in non-nuclear-armed states and civil society to fulfill their commitments to nuclear disarmament, regardless of their rational interests in maintaining and strengthening their deterrent postures.[30] In this argument, the power distribution still offers explanatory power in understanding state behavior; but constructivists such as Wendt hold that ideas (and norms) are equally valid and sound explanatory theories and are complementary.[31]

It must be noted that, once embedded in social structures, norms do not change quickly.[32] Nonetheless, norms evolve in the presence of actors' influence and pressure. It is evident from the emergence of the Nuclear Weapons Prohibition Treaty, for example, that the context in which nuclear-armed states have been operating is changing and now demands more proactive engagement on nuclear disarmament by nuclear-armed states to fulfill their part of non-proliferation treaty regime.

Another important construct that complements norms is identity. A nuclear-armed state has a distinct identity from that of a non-nuclear-armed state due to the possession of nuclear weapons and associated deterrent force postures. Yet, they are thereby endowed not only with a credible

capacity to annihilate their adversaries, but also confront constraints to not violate the evolving taboo against using nuclear weapons. With changing international security dynamics due to growing power competition among nuclear-armed states, increasing demand from non-nuclear weapon states for P5 to fulfill their part of bargain, and the global coronavirus pandemic that demands lowering of the magnitude of existential risks to humanity, nuclear-armed states have an urgent imperative to show their commitment to the non-proliferation regime by taking concrete and credible measures to reduce the risk of nuclear war. The P5 nuclear weapons states have a particular responsibility under the NPT for this agenda, whereas the nuclear-armed states not party to the NPT bear a lesser responsibility—but even they are affected by global norms of non-use.

Borrowing from political scientist Richard Price's taxonomy of norms,[33] this paper suggests that the study of norms in terms of nuclear command and control is useful because: 1) it helps us understand the identity of an actor and how its interests are associated with its particular identity, 2) it guides us by showing how norms affect and influence actor's decisions, and 3) it helps us to identify the conditions under which a norm can operate at the international level. Hence, the communication norms that would be invoked by a reliable backup or multilateral hotline in nuclear command-an--control context would provide nuclear-armed states with an alternative means to achieve their goals, that is, to contribute to global security by working on nuclear risk reduction in a pre-crisis or pre-war situation. Such a norm provides nuclear-armed states an opportunity to exhibit their responsibility towards global security and engage with their critics by building a widely held set of nuclear norms. But much of the benefit of constructed norms arises from the process of building the norm. Thus the immediate task addressed below is how to undertake this task of norm building. Finnemore and Sikkink's idea of norm lifecycle is pertinent.[34] Several scholars criticised Finnemore and Sikkink's norms life cycle model. Finnemore and Sikkink's proposition of 'norm entrepreneurs' does not explore origins and internal transformations of norms, and practices of norms contestation.[35] Moreover, this notion tends to empower norm entrepreneurs with power of persuasion that can be used to exploit material factors involved and make norms inherently vulnerable for communicative distortions.[36] Moreover, the model also fails to address how to determine and measure the norm tipping point – the point where about one-third of critical states agree, as well as to determine when the cascading process will start.[37] This criticism suggests that in order to build and maintain global NC3 norms it is important for norm entrepreneurs and followers to understand the context that necessitates the NC3 norms to originate along with existing norms and structures that could contest NC3 norm, the persuasion mechanism through which nuclear-armed as well as non-nuclear armed states are to be persuaded to help build NC3 norms, and the mechanism to determine and measure NC3 norm tipping point and cascading process.

## 4. Norm Life Cycle

Before delving into the norm lifecycle, it is important to define norms and related concepts. There are several definitions of norms that, in a way, complicate their study. However, one theme that largely prevails in every conception is that norms are usually dependent on their context, and their social context in particular. Norms are regarded as "generalised standards of conduct that delineate the scope of a state's entitlements, the extent of its obligations, and the range of its jurisdiction."[38] In another definition, norms are "standards of appropriate behaviour among actors [nuclear-armed states in this study's context] of a given identity".[39] Here the word "standard" points to uniformity in choices and behaviour. There is also an emphasis on compliance with norms that implies coercive measures to be taken in case of norms violation. Since norms refer to standards in a social context, they often exhibit penalties in case of their violations[40] According to another definition, international norms are normal practices of states and "as a rule" guide how states engage in such practices.[41] Norms help regulate and enable actors' behaviour in their social environment.[42] An essential feature of norms is "ought", which adds a moral dimension along with the social demands of audiences to

enact a certain standard of behaviour.[43] Yet, norms are not necessarily moral or ethical in nature, as they are largely standards of behaviour that emerged out of shared understanding and intersubjectivity among actors.[44] Another important dimension of norms is the logic of appropriateness. This pertains to the prescriptive aspect of a norm that guides an actor to make certain choices and to behave in a certain manner that is considered appropriate in a given context (such as in a domestic, regional, or international environment) in which an actor operates.[45] Hence, norms constrain actors' choices and thereby render their behaviour more consistent, predictable, and appropriate to the social expectations of the norm in question. However, it is also possible that an actor influences its social environment in a way that a new norm or a revised version of existing norm could emerge.[46] The logic of appropriateness is inescapable as it emerges out of the prescriptive nature of norms.[47]

In order to construct a global communication norm among nuclear-armed states, consider Finnemore and Sikkink's idea of three-stage norm lifecycle, which includes *norm emergence*, *norm cascade* and *norm internalization,*[48] as a starting point. The first stage of "norm emergence" comes into effect when norm entrepreneurs develop "strong notions about appropriate or desirable behavior in their community."[49] These norm entrepreneurs thereby undertake a process of "strategic social construction" to carry out "detailed means-ends calculations to maximize their utilities."[50] They need to have strong convictions about "appropriate or desirable behaviour" that other actors or members of a society are expected to practice-- hence norm entrepreneurs call others' attention to an important issue, thereby crafting shared normative ideas.[51] In the context of present research, the norm entrepreneurs are nuclear-armed states , perhaps assisted by the friendly non-nuclear states willing to lend assistance to the creation of a new norm, who have an interest as well as responsibility to reduce the risk of nuclear war. The critical part of norm building in the risk reduction context, therefore, is how to bring nuclear-armed states together and help them to build a strong conviction that new and improved communication links between state-level nuclear commanders are needed.

According to Finnemore and Sikkink, a norm entrepreneur may be an individual, from civil society, or even a government. Each entrepreneur has a specific role at the stage of norm emergence whereby they "attempt to convince a critical mass of states to embrace new norms."[52] In the context of nuclear command-and-control, it is important to highlight that all nine nuclear-armed states matter in terms of building an understanding around the need to build a communication link that could emerge as a new norm through their practice. There is a view that only P5 or two to three nuclear-armed states (such as the United States and Russia or the United States, Russia and China) could start with building and practising such a norm and gradually it would cascade and become internalised within other nuclear commands at an international level. This "early champion" view has a practical value because it is easier to share and build understanding among few actors on such a strategic and critical issue.  However, even if the great powers were to adopt this in practice, such a norm might not cascade and be internalised across nine nuclear-armed states because they differ so much from one another in terms of their geo-strategic environment, nuclear operations practices, and cultural and domestic setup for nuclear governance. Nonetheless, it is important to be inclusive at the outset to give the emerging norm the best chance to reflect these differences but still inform and affect all the decisions and actions of all nine nuclear weapons states, especially given the inter-dependence of their behaviors which are not well understood in today's globalized conditions.

Here, the primary motivation for nuclear weapons states to proceed in this manner is the need to address the critical push of the non-nuclear and nuclear prohibition states that they must do more to reduce the risk of nuclear war than hitherto.[53]  Also, if the P5 moves first, then they may induce the other non-NPT nuclear weapons states to follow suit, or take the lead at a regional level. In this way, the new nuclear hotline communication norm might propagate and eventually cascade until the

norm is internalized—at which time, the backup hotline norm would be universal in the community of nine nuclear-armed states. Over time, the consistent practice of such a norm lends it legitimacy and strengthens its institutionalization.

The interaction between nuclear-armed states and their respective security structures (each facing an emerging international security environment, old and new treaties, civil society's concerns, emerging technologies, etc.) affects how a particular norm evolves. This author argues that since the end of the Cold War, this interaction had been driven by self-interest and both the underlying and ongoing post-Cold War power distribution that enabled the two superpowers to contain and control crises during the Cold War. This reality has helped states like India and Pakistan to limit their confrontation to low-intensity conflict and proxy wars, and initially contained additional horizontal nuclear proliferation beyond that of the DPRK. But this realist understanding has driven nuclear-armed states like the United States, Russia and China to modernize their weapons and to embrace new technologies such as artificial intelligence for military purposes. This push has undoubtedly increased the level and intensity of insecurity at a global level. Hence there is a need to reform the interaction between nuclear-armed states and their structures by risk reduction measures such as building communication norms within the nuclear command-and-control context.

Regardless, there are some fundamental concerns that need to be taken into account before applying Finnemore and Sikkink's taxonomy of norm lifecycle: how much time is required for this cycle to be completed? How deep should the discussion among norm entrepreneurs be? What about deterrence? How to deal with or address the issue of nuclear-armed states from different regions with different social and cultural understanding of norms? The answers to these questions are beyond this paper's focus however it is important to highlight few ideas that can potentially help answer these questions. One, a constructive turn in international politics has taken place and it is evident in ways states interact over the past several years, for instance the Ban Treaty, Nuclear Security Summit process. Although nuclear-armed states hold matters pertaining to nuclear weapons operations secretive which makes it difficult for them to share and contribute to such norm buildup but at the same time those states have in place systems and procedures for management of nuclear weapons operations that share similar philosophies and practices,[54] which tend to make it less rough and less tedious for states to come together and accelerate a NC3 norms buildup. Two, with the possession of nuclear weapons all nine states share what it means to build and possess nuclear force no matter how minimal it is. It is evident from their official statements, lexicon and force buildup. This alludes to a cautious generalization that all nine states from different regions could develop a common understanding about NC3 norms. Three, the COVID-19 outbreak manifested real-time challenges and risks of building and maintaining communication among states and within states to deal with global crises. This pandemic and the 2019 hotline deadlock between India and Pakistan during Pulwama-Balakot crisis are important reminders for states to build rigorous standard operating procedures (SOPs) that could hold states responsible in their communications. Nonetheless, the current global pandemic not only presents an opportunity for states to work for togetherness but also raises urgency for a constructive approach towards building an international security system with less risks and dangers. Hence it is time for nuclear-armed states along with other non-nuclear-armed states to demonstrate leadership in working towards nuclear risk reduction.

## 5. Information Flows in Nuclear Command and Control

It is now clear that to reduce nuclear risks, nuclear-armed states should build new norms and construct new practices and worldviews by undertaking the norm lifecycle mentioned in the previous section. To further explicate how those states could engage in a communications norm building process, this section highlights three key information flows within and across nuclear

command-and-control:

6. Vertical Information Flow: this allows command orders and information/orders related to nuclear operations to flow from top to bottom and feedback to flow from bottom to top if and when needed. This flow could require communication channels to be centralised, delegated, or pre-delegated, depending on a particular nuclear-armed state's strategic environment and weapon systems. The nuclear postures of those states, evident from their official doctrines, statements, and weapons systems, are moving towards precision, rapid reaction/quick mobilization, and survivability.[55] All nine nuclear-armed states have developed clear chains of command to communicate command orders and due to the lack of sensitive information and secrecy attached to the country's nuclear operations, one must *assume* that the secure and reliable channels needed to transmit those orders are well in place. However, the failure to conduct secure and reliable "pandemic command and control" suggests that this assumption should be either fully demonstrated as part of a future norm, or relaxed in order to examine the implications of possible failure of nuclear command and control systems under stress, including from the pandemic itself. To assess the operability of those channels during crisis is beyond the scope of this research, but we emphasize that that all nuclear-armed states are cognizant and responsive to the security and reliability of their channels rests on an assumption at this stage—and one that may be flawed or flatly wrong
7. Horizontal Information Flow: this is information that is shared within command and control authority at the national level involving different actors (politicians, military personnel and scientists – the selection of actors involved in nuclear decision-making depends on a state's domestic political setup) for carrying out decision-making regarding nuclear use or non-use. The key in this flow is to provide the nuclear commands and centres with situational awareness. For improved situational awareness command and control requires different land-, air-, naval-, and space-based Intelligence Surveillance and Reconnaissance (ISR) platforms alongside strategic early warning systems. All nuclear-armed states have deployed or are working to deploy these platforms according to their strategic requirements, and states like the United States, China and Russia are developing and deploying advanced ISR and early warning capabilities.
8. Institutional Information Flow: this information flow involves bilateral and multilateral communication links called hotlines that are primarily designed for escalation control. Currently, there are hotlines in place at the bilateral level such as between the United States and Russia (established in 1963 after the Cuban missile crisis), and between India and Pakistan (established after their 1971 war).[56] However, the increasing frequency of crises and growing tensions between different nuclear-armed states in different regions is alarming. Under such a state of affairs, a lax attitude towards using hotlines tends to further raise nuclear risks. For instance, in the tense time surrounding a recent India-Pakistan standoff, which included airstrikes and aerial dogfights in February 2019, Indian Prime Minister Modi did not answer the Pakistani Prime Minister's calls during the height of the crisis. To avoid such situations in the future, and to have better escalation control in practice, there is a serious need for nuclear-armed states to establish a communication link that will not only ensure escalation control, but also socially bind those states within a normative structure (such as agreed standard operating procedures to build an information flow) to make them responsive towards nuclear risk reduction. Over time, this information flow/communication link might be institutionalised across different nuclear command authorities around the world.

## 6. Conclusion

Since the pressure on nuclear-armed states, especially the P5, is mounting due to lack of progress in their commitments under the NPT Article 6, there is an opportunity for the P5 and other nuclear-

armed states to acknowledge the need to build a communication link that could help nuclear-armed states in escalation control, and could help show that they are striving to reduce the risk of nuclear weapons and to contribute to global security. Leaving aside this imperative, the inherent dangers in nuclear modernization and in light of emerging technologies should suffice to motivate nuclear weapons possessor states to build a shared understanding about the need for strengthening the management of nuclear operations. One way to do so is to build a back-up reliable communications link or hotline that eventually would embody another norm similar to that of the nuclear taboo.

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