

## Chairperson's Summary

On December 6, 2023, the National Institute for Defense Studies held the International Symposium on Security Affairs on the theme of “The New Horizon of the Nuclear Era.” This symposium had the objective of contributing to security dialogues, and also enhancing the quality of research, revitalizing human exchanges, encouraging mutual understanding internationally, and contributing to security policies.

The symposium was divided into two parts. Session 1 examined Nuclear Deterrence and Arms Control, and Session 2 examined Theories of Nuclear Deterrence and Compellence. Each session was implemented in the order of (i) presentations by panelists, and (ii) discussion (discussion with panelists and Q&As). Below is a summary of the symposium's Session 1 and Session 2, in that order.

In Session 1, Dr. Daryl G. Press (Director, Institute for Global Security, Dartmouth University), Dr. ARIE Koichi (Lieutenant Colonel, Government and Law Division, National Institute for Defense Studies), and Dr. James M. Acton (Co-Director, Nuclear Policy Program, Carnegie Endowment for International Peace) gave presentations on Nuclear Deterrence and Arms Control, and Dr. ICHIMASA Sukeyuki (Head, Cyber Security Division, National Institute for Defense Studies) conducted the discussion with the panelists.

At the beginning of the session, Dr. Press gave a presentation titled “Deterrence and Arms Control in an Era of Rapid Technological Change.” He pointed out that currently we are in an era of unprecedented rapid technological change and that this uncertainty would have critical implications for deterrence today, and then he discussed his major suggestions with respect to arms control going forward.

Dr. Press began by listing hardening, concealment, and redundancy as three strategies related to enhancing the survivability of nuclear forces, explained that trends in accuracy had implications for hardening, trends in sensing had implications for concealment, and trends in arms cuts had implications for redundancy, and pointed out that the vulnerability of nuclear forces is increasing due to long-term technological trends, namely the leaps in the accuracy of weapons, remote sensing, data processing, and communication.

Next, he discussed the implications of technological change for nuclear deterrence,

using the examples of accuracy and remote sensing. He stated regarding accuracy that due to the enhanced accuracy of missiles and reduction in the number of warheads necessary to destroy targets, the targets will be destroyed reliably, and explained that due to the increased role of conventional weapons and reduction in the fallout due to low-yield weapons/airburst, collateral damage was declining and the threshold for the use of the weapons was falling. Furthermore, regarding remote sensing, he explained that due to the diversification of platforms, the broadening of communication, enhanced sustainability, enhanced analytical capabilities, and information integration through processing technologies, machine learning and artificial intelligence (AI), the detection and tracking of mobile ground missiles and submarines has become easier compared to the Cold War era.

Finally, taking into account the point that the vulnerability of the nuclear forces is increasing due to technological change, he presented his perception that stable nuclear deterrence is still possible, and then concluded his presentation by pointing out major suggestions for arms control going forward: firstly, discussions oriented toward nuclear arms cuts are not necessarily constructive in the context that the elements with implications for the stability of nuclear deterrence are diversifying; secondly, attempts at mutual deterrence/stability between the United States and the Soviet Union centered on submarines since the Cold War era are no longer the only option; and thirdly, forces should be designed based on the principles of (i) maintaining the diversity of delivery systems, (ii) destruction of hardened and concealed targets, and (iii) maintenance of flexibility (survivability, alert level, and swiftness).

Next, Dr. ARIE Koichi gave a presentation titled “Nuclear Deterrence and Arms Control: From the Perspective of New Combat Domains.” He made the point that in recent years these new combat domains and emerging technologies are also beginning to impact the nuclear domain, and then he examined the implications of the new combat domains and emerging technologies for nuclear weapon systems, and discussed the implications in nuclear deterrence and arms control.

At the beginning of his presentation, he raised the question of whether the impact of new combat domains and emerging technologies on nuclear systems will have a stabilizing or destabilizing effect on nuclear deterrence. The thinking behind the view that it will stabilize nuclear deterrence is that, firstly, the nuclear command, control and communications (NC3) systems of nuclear powers are vulnerable to a variety of attacks in the new combat domains, but if the source of the attack is identified, there

is a high risk of severe retaliation, including with nuclear weapons, so there may be an incentive between nuclear powers to mutually refrain from attacks on NC3. Secondly, he argued that if emerging technologies such as AI are introduced into NC3, enhancing the intelligence, surveillance and reconnaissance (ISR) capabilities against the adversary's nuclear weapon systems and also enabling more appropriate decision-making concerning the use of nuclear weapons, there is a possibility that this could lead to the stabilization of nuclear deterrence. He added that in this case, there is a risk that nuclear deterrence may conversely be destabilized in the case that the (threat of) retaliation against attacks in new combat domains is judged to be lacking credibility or in the case that the adversary also introduces emerging technologies in NC3.

He pointed out that there is also an opposing view that nuclear deterrence will be destabilized. This view argues that, firstly, if an attack in new combat domains degrades the capabilities of NC3, it will become difficult to retaliate with nuclear weapons, making second-strike capabilities vulnerable and destabilizing nuclear deterrence. Secondly, in the case that emerging technologies are introduced into NC3 and ISR capabilities against an adversary's nuclear weapon systems are enhanced, the adversary will become increasingly concerned that its own nuclear weapon systems will be subject to a preemptive strike, increasing the risk of destabilizing nuclear deterrence. Thirdly, attacks in new combat domains increase the risk of unintended use of nuclear weapons based on misunderstandings or misperceptions.

Next, he discussed the policy issues for enhancing the stability of nuclear deterrence from the two perspectives of direct deterrence and extended deterrence. He pointed out that the major policy issues from the perspective of direct deterrence were (i) a shared understanding concerning escalation among the nuclear powers regarding deterrence in new combat domains, (ii) strengthening of surveillance systems for new combat domains, and (iii) enhancement of the resilience of NC3. Furthermore, he pointed out that the major policy issues from the perspective of extended deterrence were (i) responses to situations where attacks in new combat domains are directed at countries under the U.S. nuclear umbrella, (ii) a shared understanding about the introduction of emerging technologies to NC3, and (iii) proposing an agenda for extended nuclear deterrence in the context of new combat domains and emerging technologies from the perspective of nuclear umbrella states. Moreover, regarding arms control going forward, he proposed a normative approach regulating "behavior and actions," for example, an attack on NC3, rather than "weapons." He also added that among emerging technologies, it is the regulation of hypersonic weapons that presents the possibility of applying traditional

approaches to arms control.

In conclusion, Dr. ARIE predicted that in the near future activities in new combat domains will evolve further in line with the rapid development of emerging technologies, placing a heavy burden on the nuclear weapon systems of nuclear powers, and based on this prediction, he presented the summary that in order to increase the stability of nuclear deterrence in new combat domains going forward, the derivation of policy prescriptions, including arms control, will be required.

Finally, Dr. Acton gave a presentation titled “Deterrence and Arms Control.” In this presentation, he firstly introduced the example of the Korean War, and took up the military intervention caused by the different understandings of the United States and China regarding the 38th parallel and the resulting intensification of the war as a typical example of “unintended escalation.” He then stated that a useful and plausible role for arms control is to reinforce deterrence and reduce the likelihood of unintended escalations leading to a nuclear war.

He noted that the “reduction” of the likelihood of nuclear war he referred to above does not mean “eliminating” it as a possibility. Even if arms control could succeed perfectly and entirely prevent unintended escalation, deliberate escalation would still be possible. He concludes, however, that given the potential consequences of a nuclear war, reducing the likelihood of such a war seems like a useful endeavor.

In today’s world, in which great power competition is beginning, the approach of Cold War-style arms control is being questioned. For that reason, Dr. Acton continues, we should return to the broader definition proposed by Thomas C. Schelling and Morton H. Halperin in *Strategy and Arms Control*: “all the forms of military cooperation between potential adversaries.” In this view, arms control includes legally binding and politically binding measures to improve communication, enhance transparency, build confidence, and regulate behavior, as well as to limit force size.

Dr. Acton then argued that the United States needs to clarify and share “redlines” with China to prevent unintended escalation. For example, an attack on the NC3 equipment for nuclear weapons could be a redline. In this context, he particularly focused on command and control assets in space. In space activities in high-altitude orbits (geosynchronous orbits and Molniya orbits), there are cases in which attacks on satellites are similar to the maneuver of satellites used for normal space activities. In addition, many satellites, even satellites for NC3, have dual-use capabilities. For that reason, in a crisis situation, there is a possibility that unintended escalation will occur

due to space activities.

Therefore, he proposed two points: (i) China, Russia, and the United States could establish “safety zones” around one another’s satellites in high-altitude orbits and (ii) that there could be a spacecraft launch notification agreement. In other words, each country could commit not to move any of its satellites to within an agreed distance of the satellites in high-altitude orbits of the other participants.

Arms control in this new era of great power competition is expected to be more difficult to negotiate than it would be effective, due to U.S. congressional politics and China’s refusal to sit at the arms control table, among other factors. However, Dr. Acton stated that there is reason to hope that in the long term, Beijing and Washington may find a common interest in reducing the risk of unintended escalation. He said this is because after all, if a crisis goes badly, we will have bigger challenges afterwards than negotiating a risk-reduction agreement. Therefore, he concluded that Beijing and Washington can and should start preparing today for future arms control opportunities.

Session 1’s discussion began with comments and questions from Dr. ICHIMASA regarding the three presentations.

A comment was made to Dr. Press that his presentation was very thought-provoking with regard to the major implications of the hardening, concealment, and redundancy of nuclear armaments, NC3, the diversity of strategies, and innovative technologies for deterrence strategies, force posture, and arms control. He was then asked whether the “accuracy revolution” and “sensing revolution” would further lower the threshold for using nuclear weapons if other nations such as China and Russia were to take similar measures, and asked regarding the implications of technological change whether there would be any difference in its impact on the two U.S. competitors with different nuclear use policies, namely Russia, which has discussed “escalate to de-escalate,” and China, which has adopted a “No-First Use” policy.

In response to this, Dr. Press said that changes which can be seen in China today include attempts to build up its nuclear weapons and reduce its vulnerability; and noted that China aims to realize these goals by, for example, improving its sensing capabilities, and efforts in this area are not being made solely by the United States.

Furthermore, Dr. ARIE received the comment that the point he had made with regards to the destabilization of nuclear deterrence as a consequence of the rise of new domains — that the possession of new technologies by our side stabilizes nuclear deterrence while the possession of new technologies by the other side brings about

destabilization — was thought-provoking. Furthermore, he was given support for his point that it is valid to argue that the best way to deal with “unseen weapons” such as cyberweapons and AI is to regulate behavior and actions, rather than regulate quantity. Then he was asked the following questions: (i) Traditional normative code of conduct-based arms control, for example as seen in export control regimes, has often had the character of a “gentleman’s agreement,” but what kinds of implications do you think there are for actions in violation of an agreement under that kind of agreement? (ii) Going forward, how should arms control be implemented with respect to “innovative technologies” that are assumed to have already been widely adopted and introduced?

(i) Dr. ARIE stated regarding unseen weapons and arms control that regulating “actions suspected of being attacks” is conceivable, but that since the close-range maneuvers in orbit mentioned by Dr. Acton are also essentially used for satellite repair, it is conceivable that pre-launch notifications would be given regarding such easily-confused actions. (ii) He also responded regarding new technologies that have already been implemented that nuclear powers should confirm and establish with each other an understanding of which technologies undermine nuclear strategies and crisis stability, and reflect this in their policies.

Finally, in his presentation on what can be done in arms control in space Dr. Acton proposed presenting the points “on which agreement is possible” because we are not at a stage in which measures such as numerical reductions and verification can be taken as in the Cold War era, so it was indicated to Dr. Acton that we can conclude that it is acceptable to see this as the common theme of the discussions in this session. Dr. Acton was asked the questions: (i) Regarding verification measures typified by the provisions in the New START treaty, how should the relevant countries maintain this way of thinking (verification culture) going forward? (ii) As one of the arms control issues going forward, some research has been seen recently discussing arms control frameworks such as a mutual no-first-use agreement between the United States and China limited to a Taiwan Strait emergency. What is your opinion on this?

Dr. Acton (i) presented the viewpoint that he was optimistic about the future situation inside the United States because inspection technicians were being trained continuously at U.S. national research institutes and the inspection measures in the New START treaty use simple technologies. (ii) On the other hand, he presented the thought that the idea of turning the Taiwan Strait into what might be called a “nuclear safety zone” was difficult. He stated that the reason for this was that there is no guarantee that what happens in the Taiwan Strait will not spill over to other regions such as the Spratly

Islands, and vice versa. Then he concluded his response by asserting that it is important for the governments of both of the parties to make preparations in advance for risk and conflict management at a high level, deepen their understanding of the results of escalation, and make progress in discussions on rational methods for reducing the risk of escalation.

From the audience, questions were asked about the prevention of a new arms race brought about by technological change, the risk of unintended escalation brought about by an attack from a non-nuclear weapons power against a nuclear weapons power, and the implications of pre-launch notifications for the Japan-U.S.-South Korea framework of integrated deterrence, and a lively question and answer session was held with the three presenters.

In Session 2, Dr. Zafar Khan (Professor, Department of International Relations, Balochistan University of Information Technology, Engineering and Management Sciences), Dr. OHNISHI Ken (Senior Fellow, Global Security Division, National Institute for Defense Studies), and Dr. Charles L. Glaser (Senior Fellow in the Security Studies Program, Massachusetts Institute of Technology) gave presentations on Theories of Nuclear Deterrence and Compellence, and Dr. KURITA Masahiro (Senior Fellow, Policy Simulation Division, National Institute for Defense Studies) conducted the discussion with the panelists.

Dr. Khan gave a presentation titled “The Return of Cold War Nuclear Deterrence Theories in South Asia.” Regarding the view which argues the applicability of the theories on nuclear deterrence developed during the Cold War era to South Asia, he pointed out that there are differences between the U.S.-Soviet rivalry and the Pakistan-India rivalry. One is the risk of crisis escalation. Unlike the U.S. and the Soviet Union, Pakistan and India had three military conflicts before acquiring nuclear weapons, and border skirmishes occurred even after acquiring them, and also they are geographically adjacent. The risk of escalation is therefore higher.

Another difference he pointed out was that the U.S. and the Soviet Union built a state of balance by maximizing the number of nuclear forces they had, but Pakistan and India have pursued “credible minimum deterrence.” Furthermore, he touched on the fact that it is sometimes argued that the “minimum deterrence” concept is being changed and that Pakistan’s “full spectrum deterrence” concept has been mentioned in that context. He said that such a view is based on the mistaken understanding that this concept means

a numerical augmentation of deterrence. Then he expressed the view that the purpose of the concept is to take effective countermeasures to eliminate the deterrence gap, thereby increasing the credibility of nuclear deterrence.

He also pointed out that India has begun to place more importance on a compellence strategy than on nuclear deterrence, and noted that there is a view within India that “the policy should be changed from ‘no-first use’ to ‘first use’.” He also touched on India’s counterforce targeting strategy and the enhancement of its capabilities to achieve this, mentioning that India is developing various missiles and mentioning the possibility of advancing the development of technologies for enhancing precision and remote sensing technologies.

Then he pointed out that a very dangerous and complex situation has emerged in South Asia that could lead to the mutual assured destruction (MAD) scenario discussed during the Cold War. He went on to say that although there are differences between the U.S.-Soviet relationship and the current situation in South Asia, the broad outline of the Cold War era concept of nuclear deterrence also applies to South Asia. In other words, he said that there is no rationality in adopting compellence or a counterforce targeting strategy, and that the significance of the nuclear revolution is that the fear of mutual assured destruction will lead to mutual restraint and the realization of nuclear peace.

Moreover, he noted that contemporary challenges such as terrorism, chemical and biological weapons, cyber, and the development of advanced emerging technologies may undermine nuclear deterrence, and that nuclear-weapon states are required to take responsible initiatives, including addressing these challenges, to prevent problems from escalating into a nuclear exchange.

Next, Dr. OHNISHI gave a presentation titled “Compellence by Nuclear Threats: Features and Trends.” He began by saying that compellence is the strategy of demanding that the other party take a certain action and trying to get them to accept one’s demands by imposing costs or threatening to forcibly realize the demanded status if they do not comply. Compellence is a strategy for changing the status quo and can include the actual use of military force. In this respect, it differs from deterrence which is a strategy based solely on a threat that aims to maintain the status quo by demanding that the other party not do something. However, he said that even though it is a strategy for changing the status quo, compellence always aims to manipulate the other party’s cost–benefit calculations and make them choose to take the action demanded by our own side, and that in the case that the objective ends up being achieved by force, it means that



compellence has failed.

He raised the fact that one of the key points for successful compellence is ensuring the credibility of the threat, and that this is particularly problematic in the case of nuclear threats, where the seriousness of the threat tends to be doubted. He went on to explain that two methods which have been discussed for giving credibility to threats of the use of nuclear weapons are the “madman theory,” which makes the other party believe that the person making the threat is not making rational decisions, and “brinkmanship,” which increases the risk of unintentionally provoking a nuclear war.

Moreover, regarding the effectiveness of the nuclear compellence strategy, he pointed out that existing research has shown both skeptical positions and optimistic positions regarding its effect. Then he introduced one study which cited 13 clear examples of nuclear compellence but in most of the examples the nuclear compellence was assessed as having failed. He noted that nuclear compellence has not been successful in the most recent examples of nuclear compellence, the Korean Peninsula Crisis which started in 2017 and the ongoing Russo-Ukrainian War, and that it is an extremely difficult strategy to execute. On the other hand, he said that the Cuban Missile Crisis and the Sino-Soviet Border Conflict can be considered examples of successful nuclear compellence, making them the exceptions to the rule, but there is room to deepen discussions regarding the factors behind their success.

He predicted that nuclear-armed states would continue to use nuclear weapons not only for deterrence but also for compellence, and raised the need for further research into and accumulation of knowledge regarding the factors behind the success of the nuclear compellence strategy and the effectiveness of such a strategy.

Next, Dr. Glaser gave a presentation titled “The Continuing Applicability of Nuclear Deterrence Theory.” He began by emphasizing that the nuclear deterrence theories established during the Cold War era are still applicable today, when changes in the strategic environment have been indicated. In other words, according to him, the deterrence theories constructed during the Cold War era provide a general logic, not a logic only for special situations such as nuclear or bilateral rivalries. Therefore, he explained, they are also applicable to deterrence environments in which countries lacking assured destruction capabilities are involved, meaning that MAD has not been established, and to situations involving three or more countries.

Based on this premise, he mentioned the main nuclear strategic challenge facing the United States today. Namely, the expansion and modernization of China's nuclear forces

means that there is a possibility that the United States will face two major nuclear powers, China and Russia. He pointed out that the idea in the United States that it should increase its damage-limitation capability, with attacks on China's nuclear forces in mind, is based on concern about this issue. He also pointed out that that kind of argument has a logical flaw. Namely, if based on the logic of nuclear deterrence theory that is still applicable today (the logic of countervalue attacks under MAD), the United States has sufficient deterrence even without retaining its damage-limitation capability against the nuclear forces of China and Russia.

Based on this idea, he asserts that the United States should not pursue damage-limitation capability with China in mind. The maturation of China's nuclear forces is degrading the United States' damage-limitation capability, which reduces the United States' deterrence in the context of deterrence against attacks by conventional forces. However, even if damage-limitation capability is pursued to deal with this, it is possible that China will counter that capability, and the development of damage-limitation capability will entail considerable costs. Moreover, damage-limitation capability not only incurs those kinds of costs, but also entails the risk of increasing escalation pressure in serious international crises and conventional wars. Given the applicability of nuclear deterrence theory to the modern era, while acknowledging the existence of changes due to technological innovation, he argued that most of the logic of deterrence would remain unchanged, even in the modern situation where the United States faces two major nuclear powers, China and Russia.

Session 2's discussion began with questions from Dr. KURITA regarding the three presentations.

Dr. Khan was asked how we should understand the concept of strategic stability in South Asia and whether it differs from the definition and understanding during the Cold War era. Furthermore, he was asked whether Pakistan's full spectrum deterrence is an attempt to ensure deterrence by making it possible to wage and win a limited nuclear war, and how strongly Pakistan is concerned about a preemptive strike, given that Pakistan's development of forces does not seem to be driven by strong concerns about the survivability of second-strike capabilities, despite the indication of concerns about a first strike from India.

Dr. Khan's succinct response was to express the view that strategic stability is when two nuclear powers ultimately trust each other and do not use nuclear weapons or go to war. He also presented the thought that the theories of the Cold War era are applicable

to South Asia as well. He explained that although the term “full spectrum deterrence” is used, this does not mean a change to the strategy officially called minimum deterrence. Finally, he expressed the view that Pakistan is trying to secure a certain degree of second-strike capabilities by developing sea-launched cruise missiles and other weapons, but that they are not at an assured level.

Furthermore, Dr. OHNISHI was also asked whether Schelling is still an appropriate reference point today, and whether there have been any developments in compellence theories since Schelling. It was also pointed out that empirical research on nuclear compellence faces challenges, such as how to define nuclear compellence and how to determine whether nuclear threats have caused behavioral change. Moreover, he was asked whether there are any discussions about the impact of differences in nuclear postures on effectiveness in the context of nuclear compellence, given that deterrence research has in recent years been discussing how differences in the nuclear postures of the parties affect the effectiveness of deterrence.

Dr. OHNISHI responded that while Schelling's research remains an important reference point, a variety of advances in the theory of compellence have been seen in subsequent studies, such as the interest in the effects of reputation and audience costs, and the issue of whether the threat of punishment or threat of denial is more useful. He also acknowledged the difficulty of the challenges faced by empirical research on compellence, and stated that, given the reality that the number of nuclear compellence cases is extremely small, a realistic and flexible approach would be to conduct a provisional analysis using somewhat loose criteria for what is regarded as a nuclear threat and what is regarded as successful compellence, and to hope for research in later years based on newly available evidence. He then expressed the view that nuclear postures and strategies also affect the success or failure of compellence. In other words, he pointed out that the risk of losing control of the situation, which is the focus of brinkmanship in compellence, can be manipulated by the degree of delegation of authority to field commanders, etc.

Finally, in addition to a question about the definition of strategic stability during the Cold War era, Dr. Glaser was asked to what extent it can be argued that the behavioral pattern of pursuing damage-limitation capability can be applied to nuclear powers other than the major powers, and whether damage-limitation is the kind of strategy that any nuclear power would aspire to if their resources allowed. Moreover, he was asked whether, in the case that China continues to increase its number of warheads, the purpose of this increase could go beyond securing second-strike capabilities and even potentially be the pursuit of counterforce capabilities against the United States.

Dr. Glaser expressed the view that there is still debate today over the definition of the term “strategic stability,” and that it would be wise to avoid using it. He said that it would be more constructive to use terms with more precise definitions, such as crisis stability or first-strike stability. Next, with regard to the problem of whether the argument regarding damage-limitation capability applies to small countries, he expressed the view that this is on a case-by-case basis. Finally, with regard to the purpose of China’s buildup of its nuclear forces, he expressed the view that at present its damage-limitation capability with respect to the United States is not sufficient.

From the audience, a question was asked about the security implications of the imbalance in short- and medium-range missile forces between the United States and China. Dr. Glaser presented the thought that the circumstances under which such weapons would be used would be extremely limited. On the other hand, Dr. Khan, drawing on the South Asian context, stated the thought that there was a possibility that the enhancement of precision-guided capabilities could clarify the blurry line between counterforce attacks and countervalue attacks.