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Discussion (Izumi Nakamitsu, Marie-Louise Nosch, Giorgio Parisi and Wolfango Plastino)

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Global Security and Disarmament Agenda at Crossroads

*A Fragmented World or a
Cohesive Future?*

Carlo Lo Cascio
Izumi Nakamitsu
Marie-Louise Nosch
Giorgio Parisi
and Wolfango Plastino

Introduction

Carlo Lo Cascio

The international security architecture is undergoing a pivotal challenge these days – one that puts a strain on the values of the liberal systems we have preserved and promoted so far, and questions the resilience of the world order in the near future.

The unexpected scenario that unfolded in the aftermath of the unprovoked and unjustified aggression against Ukraine compels us to adapt our thinking to the new circumstances, and renew, if not redouble, our efforts.

This is a multi-faceted crisis, as the aggression against Ukraine has brought key security and disarmament issues to the fore. We have read credible reports of extensive, indiscriminate use of explosive weapons and cluster munitions in populated areas, resulting in a huge number of civilian deaths and casualties, key infrastructure damaged, and human rights infringed.

We see the concrete risk that the prosecution of this war can pose to non-proliferation. First, we must uphold the viability of the multilateral architecture built on the Treaty on the Non-Proliferation of Nuclear Weapons we firmly believe that the road to a cohesive future within the global security and disarmament architecture passes through the full-scale implementation of this cornerstone Treaty, along with its three mutually reinforcing pillars. We see in a constructive outcome of the Tenth Review Conference of the Parties in August 2022 an unmissable chance to sustain and advance global efforts to counter Weapons of Mass Destruction (WMDs) proliferation.

Furthermore, the ongoing talks on the Joint Comprehensive Plan of Action (JCPOA) track, as well as the increased missile activities by the Democratic People's Republic of Korea (DPRK), mark a very delicate time in the global non-proliferation agenda. Italy is well aware of Tehran's possible role in addressing the manifold regional challenges, but in parallel deems it crucial to offset Iran's worrying nuclear trajectory, while ensuring full-scale and transparent cooperation with the International Atomic Energy Agency (IAEA).

We also express deep concern that Pyongyang has ramped up its weapons testing activities, with a repeated series of missile launches since the beginning of 2022, and stand united with our partners in calling for a constructive engagement of the DPRK towards a complete, verifiable, and irreversible disarmament.

The Lincei have a longstanding tradition of promoting and defending science diplomacy, and indeed, we believe that a renewed synergy between science, technology and foreign affairs can lead to advances also in the fields of disarmament and non-proliferation.

Let me remind you, for instance, that at the end of this year, Italy will chair the Ninth Review Conference of the Biological Weapons Convention, which is the first multilateral treaty to ban an entire category of WMDs. Since its entry into force in 1975, the Convention has been grounded on science-based evidence, development of technical capacities, and multilevel and multisector cooperation. By encouraging the peaceful uses of biological science and technology and by enhancing our preparedness for disease outbreaks, this Convention is an example of how far this synergy can take us toward a cohesive future.

Similarly, new challenges are emerging in the field of autonomous weapons, whose responsible use in compliance with International Humanitarian Law can significantly take advantage of research activities at the intersection of security and technology.

If the global security and disarmament architecture stands at a crossroads, then we must place greater trust in multilateralism – an inclusive and effective multilateralism, aimed at engaging all relevant actors and delivering tangible results. We must be able to strengthen the international non-proliferation regime; to ensure an early entry into force of the Comprehensive Nuclear-Test-Ban Treaty; to call for the early commencement of negotiations on a treaty banning the production of fissile materials; and to work constructively toward consensus at the incoming Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons. We must encourage the broad and active participation of civil society in multilateral processes. It is a re-engagement in, and not a disengagement from, multilateral fora that can give momentum to the global security and disarmament agenda. Italy is ready to play its part.

Maybe it is right here, at a crossroads, that we can forge a more cohesive future.

Lectio Magistralis

Izumi Nakamitsu

When Russia invaded Ukraine on February 24, 2022, the world witnessed an act that undermined international peace and security, with negative reverberations felt across the globe and on many sectors. The war claimed a terrible human toll: thousands of lives have been lost, millions have been displaced and the destruction has been devastating. Today, 15.7 million people in Ukraine are in urgent need of protection and humanitarian assistance – and we know these numbers will only continue to rise as the war rages on.

And it is not only the people in Ukraine who are affected, although they are of course the most directly impacted. A three-dimensional global crisis affecting food security, energy and finance is threatening the world's most vulnerable people. Food prices are at near-record highs, while fertilizer and oil prices have doubled. Tens of millions of people could be pushed into a crisis that could last for years. With the latest World Bank predication that weak growth and rising prices could lead to further economic stagnation and inflation, we are looking at a toxic combination that will hit particularly hard in developing countries. As a result, economic inequalities are deepening, exacerbating trends of social and political insecurity. We have already seen the rising cost of food spark protests.

In tandem with the challenges of recovery from the Covid-19 pandemic and emerging threats such as climate change, these developments mean that our rules-based international order is facing an inflection point and that the Sustainable Development Goals are slipping out of reach.

The actions of Members of the UN Security Council have highlighted the Council's limitations to effectively deal with such threats to peace, and have further exposed growing divisions. Taken together, we find ourselves at a crossroads for international peace and security, one which Secretary-General António Guterres defines as a "make or break moment".

Though the outlook remains grim, I am not here to give the message that we are helpless. As the United Nations, we are not

shying away from these dire circumstances – in fact, the opposite. I would like to use my address today to talk about three things: what the UN is doing in and for Ukraine; what the UN is doing to mitigate the impact of Ukraine at the global level; and finally, how we can reinvigorate disarmament and arms control efforts as a means to support the restoration of a rules-based international order.

First, from the early days of the war, the UN has supported the people of Ukraine to deal with the humanitarian impact of the conflict, while drawing global attention to the long-term risks of continued fighting and escalation, both for the region and the world.

The entire UN system has mobilized in response to the crisis, to support the people of Ukraine. There are more than 1,300 UN staff working inside Ukraine, operating out of 8 hubs. Our humanitarian and development agencies are providing critical assistance and basic services to Ukrainians, even in the hardest-to-reach areas of the country, while the High Commissioner for Human Rights is working to document and report on the brutal violations of human rights that have taken place. The UN Development Programme is working with government authorities to address the contamination of vast swathes of Ukraine with unexploded ordnance. The International Atomic Energy Agency (IAEA) has been relentless in its endeavors to ensure the safety and security of Ukraine's nuclear facilities to make sure that the people who suffered through the catastrophe of Chernobyl do not have to do so again. The potential consequences are stark: any safety risk of nuclear power plants in Ukraine could endanger the security of the entire continent.

In the meantime, the UN has repeatedly called for an urgent ceasefire to protect civilians and to facilitate a political dialogue to reach a solution. During his trip to Ukraine and Russia, the UN Secretary-General proposed the establishment of a Humanitarian Contact Group, bringing together the Russian Federation, Ukraine and the UN to look for opportunities to open safe corridors, with local cessation of hostilities, working with the International Committee of the Red Cross (ICRC). These efforts proved fruitful with the evacuation of hundreds of civilians from Mariupol, and efforts continue.

As I mentioned, the consequences of the war in Ukraine are far-reaching and pose a humanitarian crisis for populations around the world. In response, the UN is working on a strategy to support millions of people. The Secretary-General's announcement of a Global Crisis Response Group on Food, Energy and

Finance is intended to address the broader impact of the war.¹ We are on the brink of the most severe global cost-of-living crisis in a generation. The Response Group's latest report demonstrates the interconnected nature of the three dimensions of the crisis: food, energy, and finance. It emphasizes that tackling just one aspect will not solve the global crisis we are in. We should avoid a cycle of social unrest that might lead to political instability as a result of the weakened ability of countries, communities and families to cope with yet another global crisis, on top of Covid-19 and the climate crisis. We must formulate coherent approaches to these global challenges, devise concrete and actionable solutions, and build partnerships that rely on data and analysis.

In addition to the things we can see, let me also say that there are intense but confidential and behind-the-scene negotiations led by the UN regarding the possibility of releasing to the world market wheat and other food commodities from Ukraine despite the war, and fertilizer from Russia and Belarus despite the sanctions. The United Nations also recognizes that good-faith negotiations and dialogue are the only way to resolve this crisis.

I now come to my third area of today's talk, related to my direct area of responsibilities in disarmament and international security. What we are witnessing today in Ukraine is not only a serious challenge to the international order, but also the culmination of a decade-long trend of increased polarization among "great" powers, a decline of trust within and among nations, and the withering away of multilateralism. These have already been placing extreme stress on our multilateral peace and security architecture. The world is a less peaceful place today even compared to a decade ago.

We have seen these trends in disarmament and arms control and have seen them accelerate, in part because of this war. According to a recent report by the Stockholm International Peace Research Institute (SIPRI), global military expenditures continued to increase in 2021 and surpassed 2 trillion US dollars for the first time in history, in spite of the Secretary-General's call – at the start of the Covid-19 pandemic – for the opposite to occur. We have seen the repeated violation of the taboo against chemical weapon use and the use of increasingly heavy and sophisticated weapons against urban populations. But there are two issues specifically I want to raise, given their recent prominence with respect to Ukraine: nuclear weapons and cyberspace.

¹ Global Crisis Response Group on Food, Energy and Finance, <https://news.un.org/pages/global-crisis-response-group/>.

The actions and rhetoric in Ukraine have laid bare the prominence of threats we thought we had closed the door on more than thirty years ago, including the threat of nuclear weapon use in war. This is coupled with the trends we've seen over the last decade: a shift to a multipolar nuclear order; growing competition between nuclear-armed states combined with declining levels of dialogue and transparency; a return to prominence of nuclear weapons; regional crises with nuclear overtones; and the emergence of new weapons and technologies that may lower the barriers to nuclear weapons being used.

Ukraine has exemplified two major problems with nuclear deterrence: first, that nuclear weapons do not prevent war, but instead enable possessors to act with impunity while raising the risk of catastrophe; and second, the circulation of an inaccurate narrative that if Ukraine had kept the Soviet weapons stationed on its territory, it would have deterred invasion. This is a longstanding, but false and dangerous, message for non-proliferation. Equally false is the idea that nuclear disarmament and security are incompatible – to the contrary, decades of arms control successes have proven that disarmament measures have boosted both national and collective security. When it comes to the existential threat of nuclear weapons, we need to take urgent action and step back from the brink before such a weapon is used, either intentionally, by accident or through miscalculation. The catastrophe of the use of nuclear weapons could not be justified by any rationale.

In addition to nuclear risks, we are contending with the opportunities and risks of new and emerging technologies within this fraught geopolitical environment. Cyber-related risks, tensions and competition are undermining the shared character of the digital space. Over the last decades, the malicious use of Information and Communications Technologies (ICTs) has dramatically increased in scale, scope and severity by both state and non-state actors.

In connection with the current conflict in Ukraine, we are witnessing widespread distributed denial-of-service incidents and destructive malware attacks alongside the mobilization of cyber defenses. The risk of rapid and uncontrolled escalation is increasing and the fear of conflict spillover into the digital space is real.

Of specific concern is malicious ICT activity affecting critical infrastructure, such as that providing essential services to the public like health sector entities. The Secretary-General has drawn specific attention to cyberattacks on healthcare facilities during the pandemic, calling on the international community to do more to prevent and end these activities causing further harm to civilians.

Clearly, there is no dearth of risks that we face. But we should not forget the opportunities that we can capitalize on and the tools we can better utilize. The Tenth Review Conference of Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, better known as the NPT, is one such venue, where we can call on all states to reaffirm their commitments to the norm against the use of nuclear weapons and to the goal of a world free of nuclear weapons, as well as the norms against proliferation and testing. Progress in the elimination of nuclear weapons is in everyone's best interest, and while the nuclear-weapon states must lead, it is the responsibility of all states.

We at the United Nations recognize the changing geostrategic context and understand that we must adapt the international system, and our responses to it, accordingly. With this in mind, in 2021 Secretary-General António Guterres announced his intention to deliver a New Agenda for Peace with disarmament at the core. This will require, among other things, an updated vision for disarmament – one that takes into account, and has the flexibility to adapt to, a rapidly evolving international context. It should seek to guarantee human, national and collective security, including through stronger commitments to the non-use of nuclear weapons and a timeframe for their elimination, the regulation of new weapons of technology, commitments to reduce excessive military budgets and ensure adequate social spending, tailored development assistance to address the root causes of conflict and uphold human rights, and a stronger link between disarmament and development opportunities. It should help us move away from the reliance on weapons and towards an investment in diplomacy and dialogue.

Through this new vision, we must reinvest in the unfinished business of disarmament, such as the entry into force of the Comprehensive Nuclear-Test-Ban Treaty, the adoption of a Middle East Zone free of WMDs, and the negotiation of a treaty prohibiting fissile material for nuclear weapons. We can also build guardrails for the ungoverned spaces of nuclear weapons – missile defense, non-strategic nuclear weapons, and delivery vehicles, especially missiles – while examining the potential new risks and vulnerabilities in cyberspace and outer space. And we can address the danger that cyberspace is becoming a new domain of conflict. This is a serious concern. To this end, there are two priority issues that deserve particular attention and that I hope will be taken up in support of the New Agenda for Peace.

The first is ensuring the protection of critical infrastructure, including in the healthcare sector. In the context of the Covid-19 pandemic, the Secretary-General has called for stronger protections of

the healthcare sector from malicious cyber incidents. Further work is needed on identifying what constitutes critical infrastructure. Consideration should also be given to specific measures to protect critical infrastructure, including through enhanced common understanding of the applicability of international law to protect civilians from cyber operations undertaken in the context of armed conflict.

Second, there is a continuing need for a permanent platform to support capacity-building and the practical implementation of the existing normative framework in the cyber context. Such a platform could serve as a hub for national reporting, peer-to-peer reviews, matching needs with resources and coordination among national points of contact. These practical efforts would go a long way in supporting a reduction of cyber-related risks and tensions through greater transparency and accountability.

The conflict in Ukraine is a critical reminder of why we need disarmament, arms control, and non-proliferation. These are not abstract utopian concepts. They are instruments for security – human, national and collective security. And they are essential to conflict prevention, mitigation and resolution. Without disarmament, arms control, and non-proliferation, we cannot hope to prevent the use of inhumane weapons, reduce the risk of nuclear conflict, or protect civilians from harm. By shifting our resources from arms to social investment, we can also help stave off the worst of the global economic and social crisis.

As I mentioned at the start of my remarks, we are at a crossroads. If we do not act, the fabric that has held together international peace and security will fray beyond repair. We will see more arms races, more spending on weapons and conflict, more poverty and inequality, less investment in peace and development, and more human suffering. The world will descend into further fragmentation.

However, if we course-correct and bring Member States and all major stakeholders together, we can trigger urgent action to prevent and mitigate conflicts, leading us to a more peaceful and prosperous future. But the United Nations cannot do this on its own. We need dedicated support from all Member States and the involvement of civil society, academia, and industry. This would help build the strong and networked multilateral system that can uphold universal values and address the dramatic challenges we face that we so desperately need.

Pulling together for a cohesive future will not be easy, but it will be worth it. I hope you will join me in that effort.

Discussion *

Izumi Nakamitsu, Marie-Louise Nosch,
Giorgio Parisi and Wolfgang Plastino

Wolfgang Plastino: *Does the international community have the right tools to address the current challenges posed by nuclear weapons? How has the war in Ukraine affected prospects for nuclear disarmament?*

Izumi Nakamitsu: I think, as I mentioned, that so many things have changed in our world, so business as usual is no longer possible. I think we need to collectively come out with a new approach and new vision that is based on science, data, evidence, but also on the flexibility of our minds, if you will. We also need to look at the intersection of various weapon systems. It's no longer just nuclear weapons that pose a threat to us, but this is also combined now with capabilities in outer space, the cyber domain, etc. So, we definitely do need new approaches and a new vision.

Crafting a new vision in this kind of a close-to-impossible environment is difficult, but I think we need to make sure we have a really serious and substantive conversation about what it is that we need to actually do, and what might be the new approach, which is not a traditional approach to disarmament – amounting to just looking at the categories of weapons and the arsenals, counting the numbers of nuclear arsenals – but something that will also weigh the intersections of various weapon systems, something that will also assess not just military capabilities in weapons, but also responsible behaviour.

So, these are some of the ideas that we will be developing, as I said, in the context of a new agenda for peace. We want to discuss these issues, and then come out with a new vision for disarmament,

* The text below is the full transcript of the roundtable that followed the *Lectio Magistralis* by H.E. Izumi Nakamitsu, Under-Secretary-General of the United Nations and High Representative for Disarmament Affairs.

which will then be included in a New Agenda for Peace from the Secretary-General.

Marie-Louise Nosch: I have to say first that I am humbled to be in the presence of the amount of expertise that we have here.

You are asking for new approaches, and also science-based approaches, and I think this shows very clearly the relevance of our being right here, in the Accademia dei Lincei. I will speak as president of the Danish Academy of Sciences. I believe that our academies have a new role to play in the current situation: the role of trying to find new approaches and perhaps even solutions. We are often considered old-fashioned, but it appears that, given the terrible refugee situation, the academies have been a place where refugee scholars have sought to rally and to find shelter. Especially in Warsaw, in Poland, where I visited last week, many Ukrainian scholars have now found host institutions where they can continue their work. And with the presidents of the Academy of Sciences of the United States, the UK, Germany, Ukraine and Poland, we've signed a ten-point action plan to help Ukrainian scientists. Madame Izumi Nakamitsu spoke of inflation, and I believe we can say that the opposite of inflation would be education and research. And one of the new approaches would be to invest very much in education and research for the future.

So, the complex question that you're posing is whether we have the right tools to address the current challenges posed by nuclear weapons, and how the war in Ukraine has affected the prospect for nuclear disarmament. I have started to study this situation with the help of my colleagues in international law and history, and I find what is going to happen in Vienna in the next days² to be very interesting. You spoke about the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), and the NPT was founded the same year I was born, so it's already old, and was perhaps very shaped by the Cold War. Now we have a new initiative, and speaking in the metaphor of security architecture, I would be very curious to see whether the new Treaty on the Prohibition of Nuclear Weapons will be a roof, or an additional building? And how can the two treaties actually work together? They both have something interesting to offer, I believe. With all the developments that we have in the nuclear area, both for dual-use,

² Ms. Nakamitsu refers to the first meeting of State parties to the Treaty on the prohibition of nuclear weapons, which took place in Vienna from 21 to 23 June 2022.

also for nuclear energy, I believe we need to put security first, and therefore this architecture will be crucial.

I would also like to add, in terms of tools, that we see clearly that this war is also a media war, a war fought on the media platforms; and again science and science-based information becomes crucial to fight the fake news that we see spreading. I believe that the sciences and education again offer an approach that we need to use more. It's not a new approach, but we need to use it more.

Giorgio Parisi: I think that there are two things that have to be done. The first one is to try to conclude the existing treaties; and then we need treaties written with a different time in mind.

For example, consider the NPT. The NPT was signed nearly sixty years ago, and it was an extremely important treaty, because it committed the non-nuclear states to stop building nuclear bombs. However, this was expressed in an imperfect way; even though without the treaty, we might have twenty, thirty states with atomic bombs, which could bring us to the brink of a complete disaster, yet also in that document, the nuclear powers committed themselves, in good faith, to the complete elimination of the nuclear weapons in their possession. But in these fifty years, I do not see any good-faith talk internationally of the complete elimination of nuclear arms. So this promise has not been fulfilled, and I think that we should insist that the treaty be completely valid.

The other problem, for which I think we need a new treaty, is the problem of the first-use policy concerning nuclear weapons. China and India have formally declared that their policy is to not be the first to use nuclear weapons, but France, Pakistan, Russia and the United States certainly have never declared that they will not be the first to use nuclear weapons; indeed, they have explained they will engage in first use if the circumstances push in that direction. So I am not comfortable with this situation, and I would be happier in the present crisis if Russia and the United States and other countries had made a no-first-use statement.

It's clear that the Ukraine crisis does not help. Unfortunately, we know that when there is a crisis, things do not go well. For example, the SALT-II Treaty was signed in 1979, but it was never ratified because of the war in Afghanistan. I suggest that this is bad news, because at that moment when the tension increases, you most need to establish the treaty, but the strings attached to the political situation make the establishment of the treaty much more difficult.

Wolfgango Plastino: *Given the importance of considering the impact of present-day decisions on future generations, as the UN Secretary-General has repeatedly emphasized, what is the best way to create awareness among diverse groups of young people across the globe to learn about and engage in disarmament?*

Izumi Nakamitsu: Thank you for that question; I think you know how passionate I am about working with young people.

In 2018, Secretary-General António Guterres called young people the ultimate force for change; he really believes in that, and I believe in it. When the Secretary-General launched his disarmament agenda – and, by the way, this is the first UN Secretary-General to have ever come up with a comprehensive agenda for disarmament, which he launched in 2018³ – we were talking about where to launch this comprehensive agenda. And he said to me: “Izumi, if we are really serious about disarmament, then we have to speak to young people. I don’t want to launch this agenda in a UN conference room; I want to speak to young people”. So I had to look for a university, and I found one in Geneva. That’s where he launched his agenda.

This is how we are really looking to young people. We don’t say this just because youth engagement is nowadays *à la mode*, and we don’t say it just to check the box. We really mean it. It’s not just that we listen to them, that we give platforms for them to talk and engage, I think we have to also help them acquire the skills and knowledge that they need in order to think about how best they could pursue this objective of disarmament.

This is actually one of the priority areas of our work at the UN; we now also have a UN General Assembly resolution that was adopted by consensus on youth engagement in disarmament work. So this issue has been highlighted.

Now, what do we do? This is one of our priority areas, and we have many initiatives, but just to name one example: we choose young people of basically up to 22 years old, and these are really younger people, students, whose disarmament interests differ, depending on where they come from. Some young people are really focused on nuclear issues, like those who are from Hiroshima and Nagasaki, for example. Our African youth fellows are much more interested in small arms and light weapons, because those are the

³ United Nations, *Securing our Common Future. An Agenda for Disarmament* (<https://www.un.org/disarmament/sg-agenda/en/>).

weapons that are killing people on a daily basis in many of those areas and countries which are still suffering from conflict. So we bring together different, diverse backgrounds of young people, create a platform and then have a sustainable engagement throughout the year. For parts of it, they have to do online education efforts; they have to learn detailed knowledge about the subject. We provide a platform for them to meet up together; they exchange their respective experiences, and then we also give them opportunities to experience how United Nations multilateral disarmament negotiations are being done. They also have opportunities to visit places like Hiroshima.

This is just one example. We base this work on something called the Disarmament Fellowship, which is essentially a training course for young diplomats, who are actually the ones who will be negotiating these disarmament treaties, and these training courses have really helped them develop, not just their knowledge base, but, if you will, camaraderie, across borders; these are people who understand each other's positions, where they are coming from in terms of their national positions, and who then find the way to discuss these positions and to find common ground.

These are just very few examples, but all this is to say that we need, not just to listen to young people, but to empower them; they have to think for themselves what will be the best way to pursue nuclear disarmament and other areas of disarmament efforts. Then let them take the lead as well. They come up with really creative perspectives that I would have never come up with; so we need to increasingly listen to them and empower them and let them take the lead.

Marie-Louise Nosch: Well, Professor Plastino, my first reaction to your question was, "This is typical: we want to engage the young people and create awareness of the problem. Is this once again us old people asking young people to solve the problems that we were not able to? Why don't we just solve them, rather than asking the young to do it?"

That was my first reaction. But of course you're right. And I recall this excellent piece in *The Guardian* by the historian Daniel Immerwahr⁴, who writes about the fact that, of course, those who

⁴ D. Immerwahr, *Forgetting the apocalypse: why our nuclear fears faded – and why that's dangerous*, *The Guardian*, 12 May 2022 (<https://www.theguardian.com/world/2022/may/12/forgetting-the-apocalypse-why-our-nuclear-fears-faded-and-why-thats-dangerous>).

remember Hiroshima and Nagasaki are no longer with us; and we are the old generation. We remember images of the nuclear bomb tests; but the young people don't remember this anymore, so there's a kind of lack of awareness, and, as he says, we would probably need to create a kind of nuclear literacy about what the dangers of all this are, and how it relates to environment and also climate change.

So, you are right that this is important. By engaging with young people, we can respond to the Undersecretary-General's demand for new approaches, because I believe that young people can bring new approaches. And again we need to integrate this engagement in science and education: the Cold War and nuclear weapons have become a topic for history, and that's wonderful, but it should also be something that can be discussed as a current issue, and not just as a historical fact. I believe this, especially if we let the young people take the lead on how to address these things, because clearly we have not been able to find the solutions.

Giorgio Parisi: I think the most important thing regarding young people is school. School should teach a lot of things. However, the point is that, quite often, teachers do not know very much about nuclear weapons, and they also do not have any easy written texts which they can use in their courses. So I think it is very important – coming to our duties as academics – to prepare something in this direction, to prepare teachers in schools, to reflect on what should be taught to the students.

There are many, many points to touch on. For example, people do not know exactly what the consequences of a nuclear war would be, what the consequences of a localized war would be, what the consequences of a war that tried to strike only military objectives would be, or a war that really tried to inflict the maximum damage. People also don't realize that what we might call, for example, a limited nuclear war between India and Pakistan, apart from the tens or hundreds of millions of dead locally that this would entail, would also have a good chance of producing global consequences for climate, in a nuclear winter. This should be general knowledge.

I think, however, that the most important thing is to tell the story of the many nuclear treaties surrounding control and reduction, because one should understand that we have a sequence of treaties that have also been studied academically; the scientists are pushing in this direction. And these treaties form some kind of network or umbrella that protects us. We should also tell them how, during the Cold War, people agreed on nuclear armament

reduction treaties – the SALT, the START, the new START, the treaty on the decrease of intermediate-range missiles. We have to make clear that there was a season of treaties. And if we do not see any new seasons of treaties – sometimes we actually see them going backward, not going forward – this does not mean that we cannot start again. We have to pass on to our young the hope of a new season of treaties, which will go in the right direction.

Wolfgang Plastino: What are the ongoing efforts in addressing emerging technology challenges? Does current arms control architecture fit for today's emerging technology challenges? Is there hope for multilateralism in these areas?

Izumi Nakamitsu: I already mentioned some desirable areas for multilateralism. In fact, there are a few different processes, a few different areas of technology, for which multilateral discussions are already taking place. In the case of cyberspace, this has already been happening for some two decades; and recently, we have made some really good progress.

Now, if people say that it's the wild west, and there's no norm in cyberspace, this is not really accurate. The UN Charter applies to cyberspace; international law applies; international humanitarian law applies. Those issues have been actually confirmed by the entire membership of the United Nations. So it's not that we don't have any norms. The General Assembly has also agreed, by consensus – that means everyone has agreed – on the voluntary norm of responsible behaviour of states. What we need to focus on now is to make sure that those norms will actually get implemented. There is an open-ended working group of the General Assembly tackling those issues.

Our next priority is to make sure that there will be an implementation framework, or, if you will, an action plan, that will be developed and agreed upon. We also need to make sure that all states have the capacity to implement those norms. There isn't a level playing field. It's a question of understanding that the capacities of different countries are very different. So we need to make sure that these capacities are also built. And as I mentioned, two top priorities are that we come out with a very strong norm to counter cyber operations against critical infrastructure, and also that we protect civilians.

For artificial intelligence (AI), lethal autonomous weapon systems – I'm sure you've heard this – there is also an ongoing multilateral discussion. I was in Geneva, and I had some good discussions

with the current chair of that group of governmental experts, the Brazilian ambassador Flávio Soares Damico; and here again there are voluntary principles which have emerged and which have been agreed upon. If you actually look at those, it's quite good behaviour and norms that have been agreed upon.

The next phase is this: to keep to the area of AI, the critical issue is how human control is to be retained. The Secretary-General said that the very idea of a machine making a decision to take human life without human intervention, human control – that idea itself is repugnant and has to be banned. And so to that extent, the international community has agreed. The next phase is seeing exactly how we are going to translate this agreement into an operational and actionable framework. There are some interesting developments that are taking place in that multilateral discussion in Geneva.

Similar discussions have also recently started regarding the responsible behaviour of states in outer space. I am not going to go into too many of the details, because I've spoken so much already, but interestingly, despite the current context of direct confrontations between big powers, the professionals and the experts participating in these discussions so far have been able to discuss very professionally the substance of this matter. Things get really complicated when politics enters the equation, but so far on the substantive issues there have been some interesting discussions. I hope that these processes will also actually become a concrete input into the Secretary-General's future summit, which he would like to organize in 2023, demonstrating through all these things that multilateral platforms are important.

The problem with multilateral platforms is that science and technology develop and move forward so rapidly, and multilateral diplomacy takes time, so we need to do a lot of catching up. We have to accelerate and speed up, and that's where I think people like yourselves – scholars, the scientific community, civil society – can really push governments.

Marie-Louise Nosch: I think it's very interesting to see what is developing with emerging technologies, and as you said, the technologies are moving much faster than the frameworks, including the legal frameworks. As a historian, I have to reveal my sources, so I have to say that this is something that I discuss very much with my daughter and her friends who study law. I believe that there is already, as you said, a very robust framework that can capture some of these new developments. In international law,

there is of course a strong focus on casualties and physical damage, whereas we live in a digital world, and things change in other ways. It's of course punishable to bomb a post office, but to destroy the social media where people exchange information somewhat evades the rules of war.

So I think there is still some catching up to do, and I can see that this is of great interest to young lawyers, who follow this question closely.

Giorgio Parisi: I think that one of the big problems is that many of the existing treaties were made in a bipolar world, and now the world is no longer bipolar, especially as far as nuclear armament is concerned. One of the sad cases was that of the Intermediate-Range Nuclear Forces Treaty; this was a treaty made between the United States and the Soviet Union, and later on automatically with Russia, that banned all land-based missiles with a range between 500 and 5,500 kilometres. This treaty was signed in 1987, but the treaty was renounced by the Trump administration in 2019, both because of some suspicions that the Russians had violated the treaty – I don't want to enter into the question of whether these suspicions were correct or not – and also because there was much concern about the development by the Chinese of intermediate-range missiles.

So, it's clear that it would not make sense to go on with this treaty as it stands – it has already been renounced – but we need a new treaty involving at least India, China, Pakistan, and – why not? – France and the United Kingdom. I think that is important, something that we really need. While we have the new START, the added treaty that puts boundaries on our strategic weapons, the only treaty on intermediate-range, is this one. But this cannot be done anymore in a bipolar world.

Wolfgang Plastino: *What is the relationship, in your view, between the disarmament agenda and sustainable global development?*

Izumi Nakamitsu: This is actually an old idea. The UN Charter talks about the maintenance of international peace and security with, and I quote, “The least diversion for armaments of the world's human and economic resources”. So when the UN was made, they obviously thought about how we should not only be investing in military, but how to make sure that there will be social and economic development.

Now more recently – fast-forward many years – in Sustainable Development Goal 16.4 we are directly mandated tasks to tackle the issue of the illicit arms trade, for example. So this has always been part of development thinking, development approaches. The reason for this is actually quite easy to see: stable, more peaceful societies in the world are the precondition for development efforts. You can come quite naturally to this conclusion: small arms and light weapons are enablers, not just of conflict, but also of gender violence and criminal activities around the world. All these challenges actually get in the way of us trying to work on sustainable development.

So I think what we need to do is to make sure that quite basic thinking is really understood by everyone. I actually worked in the development field also, in the United Nations Development Programme (UNDP); my responsibility was still related to crisis response, both in terms of natural crises like earthquakes, etc., but also conflict-related crises. We saw in our development that making sure that societies are stable through these disarmament measures and the more effective use of the instruments at our disposal would greatly benefit development efforts. The key again is to translate those principles into actionable instruments and tools, and from the UN we are trying to make that more visible. If those great agreements, the norms that the UN conferences in New York or Geneva will agree upon, can be brought down to the field-level and country-level efforts for peace-building and for sustaining peace efforts, then I think at that point we are really talking, and we will begin to see much greater impact.

So we are trying to do this, but the reality is that the communities of professionals are very siloed. Disarmament people usually look at disarmament issues, humanitarian people usually look at humanitarian issues, development people usually look at development issues; even the vocabularies are different. I had to learn all these, because I moved from humanitarian to development to peacekeeping, and now to disarmament. Every time I moved across these different communities, I had to learn everything from zero. It's not easy, but I think we have to make that kind of effort.

Marie-Louise Nosch: I think it's important that we have 17 sustainable development goals, and that they are not, and should not be, siloed. They should be interconnected, and not just number 17 in partnership, but all of them. And of course number 16 is about peace and justice, where disarmament belongs. But I would like to highlight this also: I believe it is also interwoven with num-

ber 7, on clean energy, and what we see today with the green transition offers much hope for using nuclear energy as part of this transition. This can be a difficult road to walk because there can be so much enthusiasm about it that we tend to not have literacy about the dangers and problems that are still present, despite all the new promising ideas about clean energy. From a science perspective, I believe it is very important for us not to be naive. Of course, investment in nuclear energy will also have spill-over and dual use with nuclear weapons and vice versa. So the massive investments that we might see with a green transition toward a cleaner energy – for example, nuclear energy – could also have ramifications for armaments. And again, I think that before we invest in this area, where there might also be ramifications for other, more dangerous fields, we need to have a security framework around it, as well as control, to ensure that the investments are used for the right purpose and can be monitored and controlled according to the treaties that are in place, and maybe also those that should be in place.

These are the issues I would strongly raise about the spill-over effect, positive and negative, that might come of this renewed interest in an area that has been perhaps sometimes overpromising and underperforming; but we hope that it will give better results, especially if third- or fourth-generation reactors can use waste from third-generation, and that there will be fewer problems in this area.

Giorgio Parisi: I think that there is one problem here, which has a strong connection to others, because stopping climate change is an undertaking that will engage humanity for a long, long time; it will require some monstrous efforts, and it will have a colossal cost, not only financial, but also social, as some of the required measures will affect our existence. And it's clear that this creates a problem for the governments, which must make sure that these costs are accepted by all. But it is not easy to bring rich and poor people together, to bring together people with such different interests in everyday life, and I believe that inequalities – inequalities within a country, and inequalities among countries – are the most serious obstacles to achieving a successful level of stopping climate change.

Now, it is clear that stopping climate change, if it should be successful, must be addressed from a fair and solidarity-based perspective; but I don't see how this can be accomplished in a world that is ridden with the nightmare of wars. If you don't have peace, not only do you not have all the consequences of peace, but

everything becomes difficult; it's clear that it will be very difficult for nations that are in a state of war, cold or hot, to agree on operations for global climate control. For this reason, it is extremely important to achieve disarmament, because disarmament introduces less need of war, less chance of war, since disarmament is going to protect peace.

Also, by cutting military expenses we should also produce one side effect, but a very important side effect, of disarmament: we will free up so many resources that can be used in other directions, because also the financial capacity of different countries is not infinite, but is bounded, and what is used for military purposes is not used for other projects, like enacting clean energy and so on.

Wolfgang Plastino: *How do new developments in the area of conventional weapons impact the disarmament and arms control in this regard?*

Izumi Nakamitsu: This is a very important question for many people, many countries. Developments like 3D printing, material science, modular design – those types of new technologies – will definitely make our disarmament efforts in the conventional weapons area much more challenging. Here again, I think we need new thinking. Our effort was always finding ways to trace these weapons, to prevent their illicit trade, but with the 3D-printing technologies, there are new challenges which a traditional approach will actually not be able to tackle. So we definitely need new thinking on how to tackle those challenges.

But of course, like any other areas, those technologies will also be beneficial, in a sense, in our work. For example, we do a lot of marking and recording of weapons, and those new technologies will actually help us better, more effectively do this kind of work, relating to marking, tracing, and record-keeping as well. So this is the nature of our new technologies; it's always dual-purpose. There is a positive side and there is a negative side. Unfortunately, I get to talk more often about the negative side, the dark side. They always say that I am woman from the dark side. But we need to spend more time, I think, focusing on how we can also use those technologies for our purpose of arms control and disarmament. I think there isn't enough discussion actually highlighting the beneficial side of these.

But here again, even on the conventional weapons side, we need new approaches. This is actually an everyday challenge, as I said. I think it was Secretary-General Kofi Annan who called

small arms and light weapons “weapons of mass killing”. They are killing people on a daily basis; while at the same time we look at the nuclear field and fortunately, because of the use of nuclear weapons in conflict, no casualty has happened since Nagasaki. So we need to make sure that we pay attention and we intensify our efforts with new approaches here again in the conventional area, and we have to do that again with voices actually being heard from the global South. It’s a really important agenda for all of us.

Marie-Louise Nosch: I’m sure that new technologies are already very much expanding the framework of how the development of conventional weapons is taking place, and I feel that an example of this was that there used to be a race in numbers – how many nuclear warheads there were on each side; while today, we’ve seen also in Ukraine that it’s not just a question of numbers, it’s also a question of how modernized and how optimized things are. And I think, even if we don’t see an increase in numbers, we see the modernization of old weapons being used in new ways or optimized in different ways, so there is also an expansion of the beliefs that there were before.

Giorgio Parisi: I would like to discuss one particular point that is present in the declarations of the academies of the G7 countries, which was signed by all the academies of these countries in Paris in 2019. The problem is essentially the following: artificial intelligence opens new possibilities for military application. And now we have weapons that have significant autonomy in the critical function of selecting and attacking targets. These autonomous weapons may lead to a new arms race, because they also lower the threshold of war, or they might become tools for terrorists. Some organizations have already called for a ban on autonomous weapons, similar to the convention regarding chemical or biological weapons.

Such a prohibition would require a precise definition of weapons and autonomy. However, in the absence of a ban on lethal autonomous weapons systems, it is not clear how you can show that these weapons are in compliance with international humanitarian law. The point is that these weapons should be integrated into an existing command and control structure in such a way that the responsibility and the legal accountability remain associated with specific human actors. It is clear that we are in great need of discussion on this point, which is not talked about so much in the political arena, at least in Italy.

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