

**Commission on Security & Cooperation in Europe:  
U.S. Helsinki Commission**

**“AI, UAVs, Hypersonics, and Autonomous Systems: Emerging Technologies  
and Euro-Atlantic Security”**

**Commission Members Present:  
Representative Marc Veasey (D-TX), Commissioner**

**Other Members Present:  
Representative Colin Allred (D-TX);  
Representative Ron Wright (R-TX)**

**Witnesses:  
William Inboden, Executive Director at the Clements Center for National  
Security and Associate Professor at the LBJ School, University of Texas-  
Austin;  
Kelley M. Sayler, Analyst in Advanced Technology and Global Security, U.S.  
Congressional Research Service;  
Chris Jenks, Director of the Criminal Clinic and Associate Professor of Law,  
Southern Methodist University**

**The Field Hearing Was Held From 9:15 a.m. To 10:32 a.m. in Nedderman  
Hall, University of Texas at Arlington, Arlington, Texas, Representative Marc  
Veasey (D-TX), Commissioner, Commission for Security and Cooperation in  
Europe, presiding**

**Date: Wednesday, January 22, 2020**

VEASEY: Good morning. It's my distinct pleasure to welcome everyone to this field hearing on the Commission on Security and Cooperation in Europe, which is informally referred to as the U.S. Helsinki Commission. I have the honor of serving as a commissioner. And the chairman of the committee is Alcee Hastings of Florida. And I want to thank Congressman Hastings for asking me to convene this hearing today at UTA. Some of you may be less familiar with Helsinki Commission than our usual audience in Washington, D.C. And I'd like to start off by telling you a little bit about the Commission.

Forty-four years ago President Gerald Ford joined 35 other heads of state – including long-standing American adversaries – to sign one of the most significant international agreements of the 20th century, the final act of the Conference on Security and Cooperation in Europe, better known as the Helsinki Accords. The accords committed the United States, Europe, and the Soviet Union to respect human rights, to manage the spread of dangerous weapons, to foster economic opportunity, and to ending the territorial disputes in Europe that had already twice plunged the world into war.

Our Commission was created to uphold exactly these commitments and since its inception it has provided a crucial voice for defending freedom, opportunity, and human rights throughout the United States and the Organization for Security and Cooperation in Europe, also known as the OSCE, where these commitments are negotiated to this day. Composed of members of Congress from both parties and chosen from the House and Senate, the Helsinki Commission represents our democracy's commitment to preserving and advancing the peace, freedom, and prosperity across the world that previous generations of Americans sacrificed so much to be able to achieve. That is why I'm honored to have been appointed to serve on the Helsinki Commission, because the world has changed dramatically since it was established. But the need to defend the principles of peace and security and freedom and opportunity and human rights is greater than ever.

Ladies and gentlemen let me now offer a few thoughts on the purpose of the event and why we're actually having the event here in Texas. The subject matter for today's hearing relates to the impact of emerging technologies on Euro-Atlantic security. And I'm looking forward to learning a great deal from our witnesses today on this subject. New threats that we are concerned with range from hypersonic weapons, to drones, to autonomous weapon platforms, artificial intelligence, directed energy, and others. These technologies have the potential to unlock some very important capabilities to ensure the defense of our homeland and support our allies and friend abroad. However, these same technologies are under development by some of our strategic competitors – Russia chief among them – and so I'll look forward to hearing from our experts and their views on how potential adversaries are looking to use some of these same technologies to threaten us and our allies around the world.

Finally, I will also look forward to our witnesses' views on how we should approach our international engagement on these technologies, including through diplomatic efforts and understanding what national and legal regimes apply or are under consideration. In particular, today's discussion should help us better consider whether the OSCE and its affiliated security

institutions can offer a space to establish norms for emerging technologies. So that's what we want to get out of today's hearing.

But why are we having it here at UTA rather than D.C., where the Helsinki Commission and other committees normally meet? The answer to that question could not be more clear to those of us that are here in this room. But for the benefit of those who may be watching this on livestream or reading the transcript, I asked Chairman Hastings for the privilege of convening this hearing here precisely because of the unique confluence of technical know-how and academic expertise, and defense industrial presence we have right here in north Texas.

The spirit of innovation and expertise alongside cutting-edge industry and an innovative private sector is why the Army decided to establish the headquarters of its Futures Command in Austin in 2018. In fact, after this hearing we're going to be spending some time over in Fort Worth at Lockheed Martin Aeronautics to be briefed on the capabilities and technological advances provided by the F-35 Lightning II aircraft, and how well it provides increased opportunities for interservice and international cooperation. I'll also be visiting the production line where the F-35 is assembled and getting a firsthand look at our fifth gen fighters.

And so we are here because of all the expertise available to us. But we're also here away from Washington because of how essential it is that Americans throughout our nation have an opportunity to engage in policy discussions paramount to our shared values in the transatlantic space. This hearing offers a connection outside the Beltway to America's international commitments as a participating state of the OSCE. We should all have a stake in meeting commitments to our local and international communities.

And with that – with all of that being said, I now want to turn to my fellow Texans. To my right here we have Colin Allred, who represents the 32nd Congressional District in Dallas County. And to my left we have Congressman Ron Wright of the 6th Congressional District. We're actually in his district, so thank you for hosting us. And he represents the 6th Congressional District, that represents Ellis counties and Tarrant counties. And I now want to yield to them so they can make some opening remarks.

Colin.

ALLRED: Well, thank you, Mark and Ron, for being here. And to our panel, thank you for taking your time out. I'd like to also thank the Helsinki Commission for holding this hearing here in North Texas.

The emerging technologies discussed in this forum can both enhance our security and further endanger our future. Although there are positive aspects to some of these technologies that could reduce the number of lives lost in armed conflict, there are, of course, ethical and legal dilemmas that they also present. And as we look to develop these technologies, I think the United States must balance both security readiness and maintaining our values as a nation. That's why I'm looking forward to hearing from our witnesses today on these important topics.

I'm a member of the Foreign Affairs Committee and can say that obviously we are in a moment in which there is conflict popping up around the world, and in which we have a complicated threat stream that we're trying to look to. But as we turn to the great power competition that we've seen emerging now as the focus of our own foreign policy and of our strategic opponents', I think it's important that we look at this emerging technologies and how this is going to impact it.

I think as was said in some of the testimony that I read and that may be presented today, you know, advancing technology is as old as humankind, especially in warfare. This is something that we have done from the very beginning, finding better and more efficient ways to conduct warfare. And it has always presented ethical dilemmas. Maybe never so much so as now, though. And I think that's something that we should consider, and that this is an area where the United States has to lead in. We're the only country that can lead in this regard. And we are, of course, I think, going to have to take the dual approach of pursuing our own technology advances while also pursuing international agreements to find a way forward.

So thank you all for being here. Appreciate you. And I look forward to getting into the testimony and having a lively discussion.

VEASY: Thank you. Thank you very much, Representative Allred.

And now I'm going to pass the mic to Representative Wright.

WRIGHT: Thank you. And I want to thank Congressman Veasey for having this hearing here and inviting me. I want to thank the panel for coming today.

One of the things that Congressman Veasey did not tell you is another reason to have it here is this is the land of the lucid, because it's not in Washington. And anytime you can have a hearing outside of Washington, it's a good thing.

Many years ago – by the way, I'm old enough that I actually remember the Helsinki Accords. Probably one of the few people in the room that do. But many years ago, it was in the 1970s, and I'll never forget this. I was with my grandfather, and we were watching TV at his house. And there was this news report about – and it was an environmental report. It was mainly about smog and how bad automobiles had become in terms of their contribution to smog in concentrated areas. That was before we really started cleaning up, you know, how – catalytic converters and all those things that we added to cars to clean them up.

And he looked at me and he said: You know, we didn't have that problem with horses. And although he was joking, his point was well-taken. And that is that technology is always a double-edged sword. And if you have a cellphone, that cellphone is a double-edged sword. Nothing has interrupted my life like a cellphone has. And technology's a wonderful thing, but there's always that downside to it. And what we're looking at here today is – you know, we have just a plethora of emerging technologies, all of which could be used to benefit mankind tremendously.

I think – you know, I would like to think that within my lifetime biotechnology will solve the problem of famine. That’s just one – medical science – I mean, I could – there’s a long list of technologies that are emerging that are going to make a tremendous difference to the quality of life of everybody on this planet. But there’s also that downside. And that is that bad characters can use that same technology and weaponize it in ways that would really hurt and possibly even destroy humanity. This is a very important hearing. Congressman Veasey, thank you for holding it.

VEASEY: Absolutely. Congressman Wright, thank you very much.

And before I finish with my remarks, I just want to share a personal story that you may find humorous. So Friday night Ron and I, Congressman Wright and I, were both here at UTA for the MLK banquet that they had on Friday night. And as members of Congress, particularly when we’re back in our district, we’re very busy. We’re always at, like, different events.

And were it not for the wonderful staff and all of our staffs represented here today that help us, from everything including keeping our schedules, we really wouldn’t know how to get from one place to the other. I usually literally look at my schedule the night before to know what I’m doing that next day to try to keep up with everything. And so it’s not unusual that you forget or don’t recall that you’ve agreed to go to a certain event. And so if you could have saw Congressman Wright’s face on Friday night at the banquet when I told him: Ron, thank you for agreeing to come to Helsinki. And he looked at me, like when did I agree to go to Finland with you? (Laughter.) And if you could have just saw his face. It was – it was –

WRIGHT: My heart stopped.

VEASEY: Yeah. It was – it was classic. So but again, I want to thank both of these gentlemen for taking time out of their busy schedule to be a part of this.

Now let me express my gratitude to the experts who have taken time out of their busy schedules to also be with us today to provide their testimony for the record. I’d like to very briefly introduce them. And I think that you’ll see that they represent a clear demonstration of the incredibly high caliber of locally sourced national security expertise we have right here in Texas.

First, we’re going to hear from Kelley Sayler, who is an analyst in advanced technology and global security at the U.S. Congressional Research Service. Kelley, thank you very much for being here. For those who may not know, the CRS is a great resource to all of us that are members of Congress. We really depend on them to provide us expertise on almost any subject matter that comes before us as members. Ms. Sayler has an extensive experience working on these issues both in and out of the government, including service in the Office of Security and Defense. And I’ll also note her strong Texas connections. She received her master’s degree from Baylor University and also took some classes here at UTA. So, Ms. Sayler, thank you very much for being here.

Our next speaker is going to be Dr. William Inboden, who serves as the executive director of the William Powers, Jr. chair at the William P. Clements, Jr. Center for National Security at the University of Texas at Austin. Among Dr. Inboden's many other roles, he serves as associate professor at the LBJ School of Public Affairs, distinguished scholar at the Robert S. Strauss Center for International Security and Law, and editor-in-chief of the Texas National Security Review. He has served as a senior director of strategic planning on the National Security Council at the White House and in the Department of State's policy planning staff, as well as serving as a staff member in both the United States Senate and the House of Representatives. Thank you very much for being here today, sir.

Our third witness will be Professor Chris Jenks, who is the director of Criminal Clinic and associate professor of law at the Dedman School of Law at SMU university in Dallas. And as you can see, Chris is even wearing his SMU colors. Thank you for representing your colors here today. As a noted expert on the Law of Armed Conflict and lethal autonomous weapons, Professor Jenks has served more than 20 years in the U.S. Army, first as an infantry officer in Germany, Kuwait, and as a NATO peacekeeper in Bosnia, and later as judge advocate. He also served details at the Department of State and at the Department of Justice and was recently called to serve as special assistant to the Department of Defense general counsel.

And as a last note before I turn the floor over to the witnesses, I'd like to offer thanks to the University of Texas at Arlington. Thank you very much, Dean, for helping us coordinate this, and being a part of this day. We really, really do appreciate that. And just really Nedderman Hall, because this being the engineering department, and so much of the technology that happens here on a daily basis. I couldn't think of a more fitting place for us to have this program today.

And let me inform witnesses that their full statements will be entered in the record. And I've asked them to summarize their testimony for the purpose of our discussion today. You now have the floor. And we'll start with Ms. Saylor.

SAYLER: Thank you to Representative Veasey, Representative Allred, Representative Wright, and the Helsinki Commission for the opportunity to provide an overview of emerging military technologies and their potential implications for international security. I will focus my remarks today on three specific emerging military technologies: Artificial intelligence, lethal autonomous weapons, and hypersonic weapons.

Although the U.S. government has no official definition of artificial intelligence, AI generally refers to a computer system capable of human-level cognition. AI is currently being incorporated into a number of military applications by both the United States and U.S. competitors including but not limited to intelligence, surveillance, and reconnaissance; logistics; cyber operations; command and control; and semi-autonomous and autonomous vehicles.

These technologies are intended to either augment or replace human operators, freeing the operators for more complex and cognitively demanding work. In addition, AI-enabled systems could both react significantly faster than systems that rely upon operator input and cope with an exponential increase in the amount of data available for analysis. AI could also enable

new concepts of operations, such as swarming, in which unmanned vehicles autonomously coordinate to achieve a task. Swarming could confer a warfighting advantage by overwhelming adversary defensive systems.

The Department of Defense reportedly maintains over 600 active AI projects and is particularly focused on developing AI applications for predictive maintenance, humanitarian aid and disaster relief, cyberspace, and robotic automation. China is the United States' most ambitious competitor in the international AI market. China has pursued language and facial recognition technologies and is developing various types of unmanned vehicles. It is also actively pursuing swarm technologies. In addition, reports indicate that the Chinese are developing a suite of AI tools for cyber operations.

Russian AI development lags behind that of the United States and China. Nonetheless, the Russian military has been researching a number of AI applications, with a heavy emphasis on semiautonomous and autonomous military vehicles. Russia is also developing swarming capabilities and is exploring innovative uses of AI for remoting sensing and electronic warfare. In the event of a conflict, these capabilities could reduce our ability to effectively communicate and navigate on the battlefield.

A related technology is lethal autonomous weapons, also known as LAWS. Although there is no internationally agreed upon definition of LAWS, the Defense Department has identified LAWS as a class of weapon systems that is capable of independently selecting and engaging targets without manual human control of the system. This capability would enable the system to operate in communications-degraded or -denied environments where traditional systems may not be able to operate.

Some analysts have noted that LAWS could additionally allow weapons to strike military objectives more accurately and with less risk of collateral damage or civilian casualties. Others, including approximately 25 countries and 100 nongovernmental organizations, have called for a preemptive ban on LAWS due to ethical concerns such as a perceived lack of accountability for use and a perceived inability to comply with the proportionality and distinction requirements of the laws of war. The United States is not known to be currently developing LAWS, and neither China nor Russia has publicly stated that it is developing LAWS.

Hypersonic weapons, which fly at speeds of at least Mach 5 – that's five times the speed of sound – and maneuver throughout their flight, are in development in a number of countries, including in the United States, Russia, and China. Currently no defense against hypersonic weapons exists, and experts disagree on the affordability, technological feasibility, and utility of hypersonic missile defense options. The Department of Defense currently has a number of hypersonic development programs, however the United States is unlikely to field an operational hypersonic weapon before 2020.

Russia is pursuing two nuclear-capable hypersonic weapons – the Avangard and Zircon. Russia claims that Avangard became operational in December of 2019 while the Zircon could become operational as early as 2023. China has tested the DF-ZF hypersonic weapon at least nine times since 2014. Although unconfirmed by U.S. intelligence agencies, some analysts

believe the DF-ZF will be operational as early as this year. China also successfully tested Starry Sky-2, a hypersonic vehicle prototype, in August 2018. And some reports indicate that that system could be operational by 2025.

The implications of these and other emerging technologies for international security are difficult if not impossible to predict. They will be a function of many factors, including the rate of technological advancement in both the United States and competitor nations, the manner in which emerging technologies are combined and integrated into existing military forces, the interactions between various emerging technologies, and the extent to which national policies and international law enable or inhibit their development, integration, and use.

Nonetheless, many emerging technologies exhibit characteristics that could potentially impact the future character of war. For example, developments in technologies such as artificial intelligence, big data analytics, and lethal autonomous weapons could diminish or remove the need for a human operator. This could, in turn, increase combat efficiency and accelerate the pace of combat, potentially with destabilizing consequences. Emerging technologies could also potentially shift the offense-defense balance. For example, some analysts have suggested that swarms of coordinated, unmanned vehicles could overwhelm adversary defensive systems or U.S. defense systems, providing a greater advantage to the attacker, while directed-energy weapons that provide a low-cost means of neutralizing such attacks could favor the defender.

Thank you, again, for inviting me here today. And I very much look forward to your questions.

INBODEN: Congressman Veasey, Congressman Allred, Congressman Wright, Helsinki Commission, and of course our UT Arlington leadership and student hosts, thank you also for including me in today's hearing. I want to say, as a parenthetical, it's especially encouraging to see bipartisan leadership here committed on these national security issues during our time of considerable division in our country across party lines. It's a great reminder of the bipartisan commitment that some wonderful leaders in Congress have to keeping our country strong and safe. So thank you. Your very presence here today shows that.

On April 27th, 2007, Estonian citizens found their country under attack. External threats were all too familiar to this tiny Baltic state, which had been invaded and occupied for most of the 20th century by Nazi Germany and then by the Soviet Union. But this attack was different. It wasn't tanks and troops rolling across the border, or airplanes dropping bombs from the sky, but computer signals travelling at the speed of light through internet cables. In short order, the cyberattacks disrupted or shut down entirely Estonia's banking system, government, major media outlets, and political parties. These attacks continued in waves for three weeks. Though not a bomb was dropped, or shot was fired, nor did a single enemy soldier set foot in the country, the effects were crippling and brought the country to a standstill.

For Estonia, the effect was almost the same of being invaded, occupied, and controlled by an outside power. That outside power was Russia. Though 13 years after the onslaught on Estonia many operational details are still unknown – which is, of course, itself a hallmark of cyber warfare – what is not disputed is that the Kremlin was the originating, authorizing, and

orchestrating power behind the attacks. As the historian Robert Service writes, “the Kremlin’s purpose was not only to knock out the Estonian network of communications but also to show the world what it could do – as well as to allow its disruptive specialists to conduct a real-life test of what became known as hybrid warfare. Without setting foot outside the Russian capital they could do enormous harm abroad.”

In that spirit, and for purposes of this hearing, from our vantage point 13 years later, I think we should look back on Russia’s cyberattack on Estonia and see it for what it was: the first wave in what would become a cascade of Russian aggression and hybrid warfare that included weaponizing new technologies – the very technologies we’re looking at today. The Estonia attacks were followed by Russia’s invasion of Georgia in 2008, by its seizure of Crimea and invasion of Ukraine in 2014, its military intervention in Syria in 2015, and even, I would argue, its assault on our democratic processes in the 2016 election cycle – an assault which continues today.

And I begin with these observations because, though Russia isn’t mentioned by name in the title of today’s hearing, Russia is the OSCE member state most implicated in the themes and questions we’re addressing today and developing and implementing these new weapons systems.

I should also mention, parenthetically, I’m glad that Ms. Saylor’s testimony mentioned China. I was talking with Congressman Allred beforehand. We could do a whole ‘nother hearing on China. And I think China’s advances in this area are even more significant. I was focusing on Russia because they are an OSCE member state, but also because, unlike China, Russia is actually employing these on the battlefield right now. China may have every intention of doing so, and we need to watch that space carefully. But Russia’s actually operationalizing this.

So anytime we make a strategic assessment of emerging technologies, I think we should ask ourselves what is new, and what is not? I want to mention three aspects of these new weapons technologies which are not new. The first is lethality. Yeah, these can be lethal, but ever since nuclear weapons we’ve had, you know, the most totalizing form of lethality that the world has known – in addition to chemical and biological.

The second which isn’t new is range. These emerging technologies don’t necessarily have unprecedented levels of range and reach. Existing weapons systems could already project force globally, and for over a half century we’ve had reach into outer space. The third which is not new is speed. Again, these emerging technologies have varying dimensions of speed, but they don’t necessarily represent a qualitative leap in rapidity. Ballistic missiles already fly at several times the speed of sound, as hypersonics do. The internet already offered communications at the speed of light.

So what is new? I think there’s three aspects of these emerging technologies which are new, at least in a strategic sense. The first is deniability. Given various factors involving the distance of human operators, the operational complexity of cutouts and false surrogates, and the literal autonomy of some of these systems, oftentimes it’s very easy to deny who actually was the main actor behind it. You know, to put it more colloquially, a lot of time they’re not going to

have a return address. And that makes deterrence and retaliation more difficult and can be strategically destabilizing.

The second is controllability. This is the corollary of deniability. These new weapons systems can be controlled remotely with greater precision, from greater distance, with greater anonymity, and in greater safety for the operators than any previous weapons by an order of magnitude. It means that kinetic action could be taking place in an OSCE participant state, but controlled by various actors 10,000 miles away.

And the third is inhumanity. And I don't mean this in the melodramatic sense, but the very literal sense of removing the human actor in ways we've never before seen before. The emerging domain of AI and autonomous weapons brings us a new paradigm that may completely remove the human actor and quite literally be inhumane. A great analyst on these is Paul Scharre of the Center for New American Security. I know Kelley's worked with him before. And he put it this way in his really excellent new book, "An Army of None": "Do we control our creations or do they control us?"

So how then, on the very specifics of our hearing today, should the OSCE think about these emerging technologies? And I'll – here's my main takeaway. If you remember nothing else from today, remember this next sentence: The importance of these emerging technologies cannot be evaluated aside from the nature of the states that use them. It's not the fact of the new technologies that matters most, but who will use them and for what purposes.

To put it a little more provocatively, I doubt that many if any of us here worry too much about the United Kingdom and France possessing nuclear weapons, even though they both have for 77 years. Whereas many of us do continue to worry about Russia's nuclear arsenal. And there's a reason – there's a reason for that. And this is, I think, the core strategic insight of the original Helsinki process, the Commission that brings us here today, because it connected respect for human rights and civil liberties with European and transatlantic security. And that continues to be the animating spirit of the OSCE.

So bringing it back to Putin and Russia, his authoritarian rule squelches and silences any dissent, and empowers him to act with aggression based only on his whims or designs. Because he lacks popular legitimacy – and because he fears his own citizens – he resorts to a perverse and toxic combination of cultivating grievances, fueling paranoia, and projecting strength against adversaries, real or perceived. So such a ruler would naturally seek to acquire – and in his case to use – the most advanced, sophisticated, and lethal weapons systems that he can.

So what should be done? I think the best framework to address these emerging technologies lies in the commitments and values of the Helsinki Final Act. Again, the accords, the agreements that the CSCE continues to monitor and implement today. Open, free, and secure societies are best equipped to explore, debate, wrestle with and ultimately resolve these hard questions. In contrast, authoritarian states, by their nature, brook little dissent, encourage little transparency or debate, and concentrate power in the hands of dictators that generally make decisions on the employment of arms based on expediency and utility, rather than morality or conscience. So in practical terms, any strategy to address Russia's growing advantage in this

weaponry needs to include pressing Russia to honor its OSCE commitments on human rights and freedoms.

Finally, how might these technologies be managed and perhaps limited by international agreements? Well, I'm going to conclude with a hope, a caution, and a recommendation. The first is a hope. International agreements are possible. They have been forged at times in the past on controlling new weapons technologies, whether sawtooth bayonets, dum-dum bullets, chemical and biological weapons, blinding lasers, or even the entire class of nuclear weapons abolished by the 1987 INF Treaty, competing states have been able to come together, forge agreements, and honor and fulfill them. So that's the hope.

The caution: An arms control agreement is only as strong as its weakest signatory, and its verification regime. While Russia would need to be part of any effective arms control accords on emerging weapons technologies, Russia also historically has a bad habit of treaty violations. These include its violations in its previous incarnation as the Soviet Union or now as Russia of the ABM treaty, the Biological Weapons Convention, and the INF Treaty, not to mention its serial violations of its OSCE commitments. So we should temper our expectations or hopes of just how much can be accomplished with Russia in this realm in the near term.

And finally, the recommendation. I do think the U.S. and our like-minded OSCE participant states should take a page from the Cold War playbook and combine strength with diplomacy. Diplomatic success proceeds from military power and allied unity. To begin, the U.S. and other OSCE democracies should move forward in developing our own capabilities on emerging weapons technologies, specifically those featured today. Unilateral disarmament is not a luxury that we can indulge.

But as with the NATO dual track decision of 1979 to respond to the Soviet deployment of intermediate-range nuclear missiles in Europe by, in turn, on the one hand, deploying American intermediate-range nuclear missiles, Pershing IIs and ground-launched cruise missiles, and also pursuing diplomatic negotiations was a key decision NATO made and the Reagan administration implemented thereafter of buildup, but also negotiate at the same time. We need to build-up to negotiate. I think from a position of strength we can better encourage Russia and other potentially recalcitrant states, such as China, of the advantages of setting shared rules for the control, use, and limitation of these weapons.

Thank you for your time and I look forward to our discussion.

JENKS: Congressman Veasey, Congress Allred, Congressman Wright, I want to thank the Helsinki Commission and UTA for hosting this hearing and bringing attention to artificial intelligence, unmanned aerial vehicles, hypersonic, and autonomous systems. These topics are a problematic combination of critically important and commonly misunderstood. It is vital to transatlantic security that the United States and our allies reach consensus on how we think about these topics so we can identify where and how we wish to develop and operationalize emerging technologies, but also to identify norms and whether to limit the export of certain technologies to mitigate the risk of these capabilities ending up in the hands of bad actors.

Some of today's topics are not being meaningfully discussed in multilateral fora. And the one topic which is the subject of such discussions, autonomous weapons, is frankly validating why entities like the OSCE may want to consider adding emerging technologies as a focus area. Autonomous weapons have been the subject of several years of discussions within the United Nations. The wonderfully named Convention on Certain Conventional Weapons, or CCW, has intermittently met in Geneva beginning in 2014. There are 125 states parties to the CCW, so roughly two-thirds of the countries in the world have signed on, including the U.S., Russia, China, and all of our European allies. The purpose of the CCW is to ban or restrict the use of specific types of weapons that are considered to cause unnecessary or unjustifiable suffering to combatants, or to affect civilians indiscriminately.

But referring to autonomy and autonomous weapons is to refer to a technological descriptor, not a specific type of weapon. As a result, the international community has spent many confusing and frustrating hours in Geneva talking past each other because of the different understandings of autonomy. That is but one reason why the OSCE should consider also taking up this issue. Because we're talking about a technological descriptor, there are just as many, and frankly more, civilian applications which will leverage autonomy than there will be military. And these civilian applications will be increasingly important for economic growth and prosperity which, of course, also bears on security.

Another reason why the OSCE should take up emerging technologies is to help inform the public. Within the CCW, autonomous weapons discussions there is a small but exceedingly vocal coalition of nongovernmental organizations which seek to regulate or ban autonomous weapons. They have been effective at inciting what I call moral panic, employing evocative science-fiction imagery of uncontrollable robotic weapons indiscriminately roaming the streets and shooting at everything from a toddler to a teddy bear. I don't want you to think that I'm being hyperbolic. They literally produced images of a robotics weapons system and a child carrying a teddy bear.

While that sounds, and frankly is, absurd, one of the results of their efforts is that autonomy and artificial intelligence are now four-letter words. What do I mean? Well, some countries are avoiding acknowledging that they either already have fielded or are developing autonomous weapons systems – as if the word “autonomy” was now recognized as either politically incorrect or a profane word we were just made aware of. When I speak of autonomous weapons, similar to Ms. Saylor, I use the widely accepted definition of a system which is capable of selecting and engaging targets without human intervention. So we are talking about weapons systems which determine what to shoot at, and then shoot at that target.

We should be clear that such systems are not far off in some vague technological timeline future. They are here, they have been here. The U.S. and many other countries, including our European allies, have fielded weapon systems with an autonomous mode. This goes back to the early '80s. The systems are largely defensive, and anti-materiel. They shoot down incoming missiles, or planes, or boats which are attacking at close range. With technological advances comes the possibility of weapons systems able to perform new and different functions than in the past.

I'm not saying this doesn't raise concerns. It does. But it also raises the prospects, as Congressman Allred alluded to, of limiting war's harmful effects, of using lethal force with greater discrimination, limiting civilian casualties but also better protecting our servicemembers. In my view, there can be no question that the U.S. and our European allies must continue to leverage emerging technology and weapons systems. We would be derelict in our duty if we didn't. But we need to halt the demonization of technology in the context of weapons.

So I'll end by expressing my hope that you continue and expand these discussions both here in the U.S. and also in and with our European allies. Thank you for your time. I look forward to your question.

VEASEY: Thank you very much. And I want to thank the panelists for those opening remarks. I'm going to open up with questions, and then I'm going to ask the members if they would like to ask the panelists questions as well. And if we have time, towards the end of the program we're going to open it up for questions from the audience. And so please be thinking about forming your own questions to ask these distinguished panelists.

The first question that I have is on these new technologies. And I wanted to ask you particularly about how these emerging technologies have reinforced our ability to protect our own security and that of our allies and partners abroad. And I want to give you a specific example. Addressing the A2/AD challenge by Russia and China. As you know, Russia – and it as talked about earlier in opening comments that you made – Russia actively threatens our NATO allies through its deployment of what are called anti-access/area denial – A2/AD – capabilities in Kaliningrad and in Crimea, among other locations. These capabilities are designed to make it impossible for the U.S. to operate freely in the Baltic and Black Sea regions in the event of a conflict. China is similarly deploying capabilities designed to impact our ability to operate in the South China Sea.

To what extent are these technologies we are discussing today relevant to addressing this particular challenge? And in particular, how could the United States' use of hypersonic weapons and/or AI to defeat the capabilities of an adversary trying to deny us access to a certain geographic area? And we'll ask Ms. Sayler to open up with comments on that.

SAYLER: So I think the National Defense Strategy actually states very explicitly – there's a callout for emerging technologies, a recognition that these will, quote, "ensure we will be able to fight and win the wars of the future." And so I think there was a recognition by the Pentagon that these would be critical in applications such as anti-access/area denial situations in Russia and China. When we're talking about emerging technologies, I think it's very important to keep in mind that the technologies are not ends in and of themselves. So they are tools in the hands of a commander. And what I mean by that is that it's not just that we get the right technologies, it's that we also ensure that they are integrated into our military forces, that our military forces are trained on how to use them, and that we have the appropriate concepts of operation to ensure that they're actually effective on the battlefield.

And so hypersonic weapons, we don't have, publicly available anyway, operational concepts. It's difficult to evaluate how they might be used in the event of a conflict. But

theoretically they offer maneuverability that you could potentially use if you have the appropriate sensor architecture to target road mobile missile launchers, that we know that both Russia and China, strategic competitors, are investing in, as well as other fleeting targets – for example, in a terrorist-type situation. With artificial intelligence you're also increasing the speed with which you can execute decision making. Again, that depends on how it's integrated into the system. But in theory that would enable you to be making decisions faster than your adversary. And that obviously gives you a distinct advantage.

VEASEY: Mr. Inboden, do you have any comments on that?

INBODEN: Just to add to that, at the strategic level a real concern I have is the growing cooperation between Russia and China in this realm. Whether it's technology sharing, joint military operations, or even shared strategic concepts on anti-access/area denial. So China started pioneering this in the South China Sea. Russia saw that and sort of took a page out of Beijing's playbook in Kaliningrad.

The other thing I'd say is this is not so much about the United States trying to poke our nose into other people's business where we don't have an interest. We have treaty allies who are very directly threatened and implicated by this. You know, Poland in the Baltics, you know, around Kaliningrad, of course, the Philippines in the South China Sea, and then our commitments – not formal treaty – but commitments to Taiwan and others. So our legally and morally bound allies want us there. And when adversaries are saying we can't be there because of these new technologies, that's a real problem.

On the plus side, I hope that for regaining access sometimes it might be a matter of just disabling their command and control and communications without even having to fire a shot. So sometimes we can leap ahead of them if they've been able to try to deny access to an area. So I'm being a little more optimistic there, but it's not all a losing proposition.

VEASEY: I wanted to talk a little bit about the U.S., and are we falling behind in hypersonics. You know, Vladimir Putin claims that Russia is now the world's leader in developing and deploying operational hypersonics. Some analysts suggest that China is also potentially ahead of the United States in this domain. To what extent is this case? And what impact could it have on international security? And I think you have to keep in mind Putin – especially with him being a former KGB guy. He's always trying to spin things. He's always, trying to see if he can win a propaganda war in saying things like that. But to what extent should we really be concerned about this?

SAYLER: So I think when we're evaluating whether or not the United States is falling behind in hypersonic weapons, it depends on the metric. So by a timeline, Russia has stated that it has already fielded a hypersonic weapon. China is likely to field on this year. The United States is not going to field one for probably two or three more years. But it's not an apples to apples comparison because we're developing different types of systems. And the systems that the United States is pursuing are actually more technologically sophisticated because, for example, we're not pursuing nuclear armed weapons. And so they need to be actually more precise than some of our strategic competitor systems.

With that said, there is a broad range of opinion sort of on what the effect will be if these systems are deployed by U.S. competitors. So on one hand some analysts believe that these could be destabilizing because they're very unpredictable in how they operate, and you could have uncertainty with regard to the object that's being targeted, and that could in turn lead to unintended escalation of a conflict or other sort of destabilizing actions. On the other hand, there are analysts that believe that these technologies will be bound by the same principles of deterrence as our already existing missiles, and that therefore they are unlikely to have a profound consequence. And those analysts also point out that the United States missile defenses already are vulnerable in particular circumstances. For example, if an adversary were to deploy a missile salvo, and therefore their ability to launch a hypersonic weapon doesn't really change things particularly. So that's sort of the range of opinion on that issue.

VEASEY: My last question before I turn it over to colleagues, is the ethical, the human rights considerations. You know, some of the things under consideration – a lot of it is very sobering, especially when you start talking about lasers that blind people, as I think Dr. Inboden mentioned in his opening comments. You know, gene-editing babies, those are things that I think should concern all of us. What are the implications of emerging technologies for ethics and human rights? And are certain technologies more concerning than others to you? And what, if anything, governs our development of our own deployment of these technologies? And I'll open it up to anyone that's on the panel.

SAYLER: So I think with regard to ethics and human rights, again, it depends specifically on the country that's developing. What measures do they have in place? What does their weapons review process look like? When we talk about lethal autonomous weapons, again full range of opinion. The U.S. government has stated publicly that it believes that a ban on such systems would be preemptive and premature at this time, because potentially they could enable us to adhere even better to the law of armed conflict, that they would be more precise, that they would not have collateral damage or civilian casualties that other weapons systems might have. There's an alternative view that suggests that these weapons would be inherently indiscriminate. And so I think it depends on how countries are evaluating their systems, and essentially ensuring that they can perform as anticipated when they're deploying them. And that's a country-by-country sort of issue.

INBODEN: A couple thoughts to add to that. I'm in agreement with everything Ms. Sayler said. The first is essentially what she said, there are some upsides to these new technologies in the realm of ethics and morality. So for example, UAVs, you know it can be very controversial, drones, but in addition to the extra protection they provide for American forces their precision really helps fulfill two of the cardinal tenets of just war theory, law of armed conflict, of discrimination and proportionality. The first, discrimination, being you don't kill civilians, you just kill the bad guys, the enemy combatants. And with its precision targeting, you know, the bad guy can be right there, and a civilian right next to him or her, and we can just take him – take him out.

The second, of course, is proportionality. Don't use any more force than you actually need. Don't use a 500-pound bomb if a bullet will do. And again, just putting a, you know, six-

or eight-pound warhead on a – on a missile from a UAV can sometimes kill just the right number of the bad people without excessive civilian casualties. So there are some positive sides of this. Another one, getting a little more into the realm of sci-fi is that sometime it might even be – we might even have the capabilities to disable an enemy weapon system without having to kill any of them. But, you know, just make it stop in its proverbial tracks there.

I come back to the principles of the Helsinki Accords, Helsinki's commitments to religious freedom, to allowing religious communities to bring voices of spirituality and conscience into these debates ensures that free societies, while doing whatever they need on the weaponry and materiel fronts, are also bringing in voices of conscience and morality to shape these debates. And that's my bigger worry with the Russias and Chinas of the world, is they're making these decisions based only on military strength and expediency, while they're squelching the different, you know, clergy and religious citizens who may be able to bring the voice of conscience in. So that's why I go back to that core Helsinki insight of all these things need to be considered together.

JENKS: In terms of the implications, I think there's certainly at least the potential for some real positive, but also some negative, implications. When I think of the potential positive implications – I mean, it's certainly an ethical or a human rights win if we're limiting civilian casualties, limiting collateral damage. I think there is a risk with some of these emerging technologies that they might lower the threshold for using force, because you're now able to use force in a way where your servicemembers are not going to be at risk. And when you add into that, as Mr. Inboden talked about, deniability, I think that's a risk.

One of the things I find interesting in the ethics discussion is increasingly people talking about human dignity and being killed by a machine. And I struggle to understand the difference in a human killing a human or a machine, frankly, killing a human. When I served in Iraq and we had a number of wounded U.S. servicemembers, I never encountered a wounded U.S. servicemember who felt better about having been shot by a person as opposed to an autonomous system. So I think we even have an ethical obligation to pursue some of these systems if we're able to use them more discriminately.

In terms of potentially worrisome technologies, I think kind of below the radar a lot of the focus is on armed forces, but domestic security services. If you think about crowd control and privacy concerns – and if I now tell you that both on the air and on the ground there are robotic systems that are able to surveil or maybe even use – take riot kind of control measures, and to do so autonomously, you can see how in the hands of different country security services that don't have the constitutional obligations and responsibilities that we do, you could see that getting very problematic from a human rights or privacy perspective.

VEASEY: And I think also too one thing that has to be taken into consideration that I would ask the audience to think about also is that once you start limiting these things for military use, what sort of impact is that going to have on civilian applications, right? I mean, a lot of the things that we rely on for everyday use today – whether it's GPS, or whether it's, you know, drones – I know that cities now want to be able to use drones and what have you to be able to monitor things like traffic and high-speed pursuits, and what have you. So there are a lot of

things that the military uses for defense purposes that we also want to be able to benefit from for everyday civilian use too. And you know, by denying some of these things what sort of impact will it – will it have on us being able to have these advances, particularly when other, you know, other countries are trying to develop them.

So with that, I'm going to turn it over to Congressman Wright.

WRIGHT: Thank you very much. I think all of you know that Alfred Nobel invented dynamite. Now, this is the same Alfred Nobel for which the Nobel Prizes are named. And the story goes that when he developed dynamite he thought he had invented the end of war because it was such a horribly destructive device. And of course, we saw that that was wrong. And the experience of the 20th century at least was that if a technology could be developed then that technology would be weaponized. And if it could be weaponized, it would be used.

Now for the last – since the 1980s, and the different arms accords and agreements that we've had, the use of nuclear weapons, at least by governments, has not been as great a factor as it was when I was growing up in the '50s and '60s. But that concern still – is still there, that if there is a technology that can be developed, it would likely, by bad actors, be weaponized and possibly used. And so you get into the ethical and moral questions y'all were just discussing. And I remember the neutron bomb, and the moral absurdity of having a bomb that would kill people but leave the buildings intact. That was a moral – and a worldwide outrage, because it was morally absurd. Why would it matter if the building survived, if all the people were dead?

So you get into those kind of questions. My first question to you, though, is all these emerging technologies that can be weaponized, what frightens you the most? And I want all three of you to answer that.

JENKS: I think I would just reiterate, for me – I mean, and different people have different fears or concerns. The idea of a kind of constant surveillance state that would be emboldened by autonomous – by autonomy, and the idea that there could be drones in the air. And you know what that drone does? It follows you everywhere. And if you turn this into microdrones and swarms of them, the idea that – I mean, I think a lot of people misunderstand that everywhere you are in Manhattan, you're on a camera. And everywhere you are in parts of London, you're under a camera. Now, just expand that level of surveillance, and I think the privacy – the privacy concerns. So that's – for me, that's the concern that comes to my mind.

WRIGHT: Makes your computer easier to use.

INBODEN: I would share all the concerns that Chris said there. I just spent a few weeks in China this summer and just, you know, the constant surveillance, the knowing that –

WRIGHT: The facial recognition.

INBODEN: Yeah, the facial recognition, that kind of stuff. You know, under a Leninist police state. The other one that does scare me though is the possibility I alluded to earlier in the inhumanity part, is the potential development of a completely autonomous weapons system

where human controls is totally out of the picture. I mean, the only time in history we've really seen something remotely close to this was the doomsday machine that the Soviet Union started building in the 1980s. Their fear was that if the U.S. were to decapitate all the Soviet leadership in a preemptive nuclear strike, the machine would then take over and ensure that all the Soviet missiles were counter-launched, even though there's no one actually giving the order. And even the Soviets decided, wait, this is a bridge too far, because, you know, what if the machine goes haywire and we're actually here, but we can't – we can't turn it off and stop it? But that concept in the 21st century is truly horrifying. And that goes back to the question of, you know, do we control our creations, or do they control us?

SAYER: I would hesitate to say that any specific technology is inherently bad. I think it really comes back to how it's being used and what regimes are in place to ensure that there is ethical use, that human rights considerations are taken into account. And that's really a question of policy. Many of these technologies do potentially pose operational risk or significant concerns for human rights and ethics. But I don't think that's an issue of something that's inherent in the technology.

WRIGHT: My next question has to do with how we engage, entice and monitor nations that we think are bad actors and are engaged in the development of these technologies. We know that New START is about to expire. I serve on Foreign Affairs with Colin. And we had a hearing not too long ago on that very issue. And the desire for the president to open that up to China. Well, China doesn't have a whole lot of interest in any kind of arms control. But that is a vehicle by which certain things could be added if we can do it without destroying the agreement itself. And that was the chief concern that came up in the hearing, is if we start adding things it would destroy the agreement itself and we would have no START.

So my question is, how do we entice – because one of the reasons you even enter into an arms agreement is it gives you the ability – it gives us the ability – to see inside that country in ways we wouldn't be able to otherwise. So if it's not something like New START, how do we entice and get people, get nations like China and Russia – China especially. Russia is a menace, but China in the long term is a much greater threat. How do we entice them to the table and get them to agree before all of this happens, before all of this gets to a mature state? Because it's much harder to do then.

INBODEN: Great question. I'm going to answer it by going back to one of your previous questions, looking at the nuclear era. And this is where we can take some encouragement from history. In the late 1960s there were only six nuclear powers in the world – the five U.N. permanent Security Council members and Israel. And they were – that is now undeclared. But – (inaudible) – Israel has nukes, OK? And in 1968 President Johnson, the namesake of the school that I teach at, led the way in drafting and ratifying the Nonproliferation Treaty. And at the time, the widespread fear was over the next 20 years the number of nuclear powers in the world would go from about six to about 36. Every expectation was there was going to be a cascade of proliferation over the next 20 years.

And yet, here we are, over 50 years after the NPT, and there are only three more nuclear powers in the world since then – India, Pakistan, and North Korea. There's only nine now.

Now, there's concern with those, especially with North Korea. But how and why did that work? And I think there's three reasons that maybe can be applied to the other – to control of the other technologies we're worried about today. The first is the treaty monitoring and dialogue channels itself, right? I mean, even if – I was earlier skeptical of the Soviet Union/Russia's record on this. They do break a lot of them. But having those monitoring channels, having those dialogue ones, it at least limits the – and sometimes prevents the violations.

The second, though, is something that's fallen into disrepute these days, and I wish we had more respect for, America's alliance structure. Why did Taiwan and South Korea and Japan give up their aspirations for nuclear weapons? Because they had the protection of the American nuclear umbrella, because they trusted our alliance commitments to them. And so I think the United States continuing to be committed to our allies is actually a strong counterproliferation measure which is often forgotten. The third goes back to my other point about strategic strength. Maintaining our defenses, maintaining a cutting-edge military ourselves strengthens our hand at the negotiating table. That needs to be compliant with the diplomacy, especially in these arms control agreements.

VEASEY: That's interesting, two of you mentioned about being under constant surveillance earlier, because just, you know, in our everyday lives, with the issue of data privacy – something that that we deal with on the Energy and Commerce Committee – I feel like we're already kind of under constant surveillance anyway.

In addition to Dean Crouch we've also now been joined by President Karbhari that's here. I want to recognize him. Thank you, sir. Thank you, President of UTA. We really appreciate you giving us this space – the generous use of the space. It's been a great presentation so far. So thank you very much. We appreciate it sir. Thank you.

Now I'm going to turn it over to Congressman Allred.

ALLRED: Thank you, Mr. Chairman, for the day. I want to thank my colleagues for their great questions. I think we've covered a lot of ground here.

But, Dr. Inboden, I wanted to drill down on the inherent tension – and I agree with your point on this about pursuing a dual track approach. And I want to say I agree both because of the historic comparisons, and also because I think we can't unilaterally disarm, pursuing these technologies while also trying to use international agreements to place them in a –

[AUDIO BREAK]

INBODEN: (In progress following audio break) – for example. Sometimes you just want to say, we're not going to – we're not going to play in that realm. Similar to President Reagan's decisions to start reducing the nuclear arsenal as an example to the Soviets, would be another there.

And on your larger point, the strategic question that, you know, leaders almost always face when you're looking at an adversary is: Are we in an escalation spiral or a deterrence cycle

here? If it's an escalation spiral, where every step we take to get stronger they're going to take – you know, then it – then it can get into an out-of-control arms race. So the key is how can we shift that to a deterrence cycle where us taking a step to get stronger persuades them we don't want to go into that realm? And the way to do that is, you know, partly by the building up, but also by diplomacy, by talking about the importance of human rights and civil liberties commitments, as these – as these mutual strengths. So it's never one clear, only go in this direction and not the other one as well. So they're hard questions and I appreciate you bringing it up.

ALLRED: Well, I think it is going to be – the dynamic is going to be difficult because of that. But I don't think that means that we shouldn't pursue it. And I agree that we've been able to form some of these agreements at times with adversaries when – that were – in times that were more difficult than we have now in terms of our interactions with them. We're not in a cold war setting, but we were and we were able to sign these agreements. So I'm hopeful that we will continue to lead, and lead through our alliances, as you said. I think that this all has to be multilateral. None of this, in my opinion, should be bilateral. This is not just about the United States and Russia, the United States and China. This would be a worldwide issue.

And to that point, Professor Jenks, I wanted to talk about lethal autonomous weapons systems and proliferation, because I share the idea that the existence of a weapon itself is not necessarily an evil, but that it does depend on who possesses it and how it's used. I might have a few more concerns than you do about the existence of entirely autonomous weapons systems, because I think that removing that human element does take out a discretion step that I think is dangerous in terms of escalation. But – and this is for you as well, Ms. Sayler.

We've seen that Chinese weapons manufacturers such as Xi'an, I don't know if I'm pronouncing that correctly, have indicated that they might export these weapons systems to the UAE, Saudi Arabia, and Pakistan. I have in my mind, of course, concerns between Russia sharing this technology with Iran, China with North Korea. The proliferation of these systems, to me, has a real slippery slope here. And so as we look at policies such as considering a preemptive ban – which I recognize has limitations – what approach should we take, or do you think we can take, to try to prevent these weapon systems from getting out? Because the deterrence part of this is that we have equal skin in the game in terms of if you use it, we also have the ability to use it. That's not always the case with some of these rogue states, or even nonstate actors.

JENKS: No, thank you, Congressman. That's an important – it's an important question. One of the unfortunate downsides of the circular discussions that have been ongoing in Geneva is it's taken up all the time and the space. And so we're not having other important conversations. Specifically as to your question on export controls, I would tell you there's an alarming lack of any meaningful discussion about what and how export controls would look like for things like artificial intelligence, autonomy, and cyber issues. Because we're talking now about lines of code, and how are we going to regulate and control that? And no doubt very challenging, but we're not even having those conversations.

So I think we need to move past this what's autonomy, what's artificial intelligence. And that's why I wonder if discussions at a smaller level, maybe within the OSCE, than these broad forum discussions, like 125 countries that range the full spectrum including the Vatican and Costa Rica, which does not have an armed forces. So the discussions that that group is going to have are hard to kind of channel towards a productive outcome. But I think starting the discussion about export control regimes on artificial intelligence and autonomy is critically important. And it is not occurring at all.

SAYLER: I think one of the challenges with lethal autonomous weapons, when we think about traditional arms control regime we often say trust but verify. And as Mr. Jenks alluded to, this is a real challenge when it comes to a weapons system in which what is making it a lethal autonomous weapon is in the software. And so you could have the same system – the same hardware of the system, that could be – that could, for example, have a semi-autonomous mode, an autonomous mode, a fully autonomous lethal mode. And it's really a question of software. And so in order to verify that, you would have to have countries exchanging software code, which then gets into propriety information, state secrets, classified information. So that's the challenge that you're facing. Not to say it's not feasible, but.

VEASEY: Now I want to open it up for questions from the audience. I want to let everyone know that we do have a hard stop at 10:30. So we won't be able to get that many questions in. I'll ask the panelists to try to keep their answers as brief as possible. But I did want everyone out there to have a chance to ask a question. Anyone in the audience have a question? Yes, sir.

Q: Hello. I'm at UT Arlington political science and journalism major.

I just recently got back from working at the Library of Congress Kluge Center, where we focused on a lot of different issues regarding China and export controls. So the U.S.-China Commission just recently published its 2019 report, alluding to the fact that several Chinese labs sponsored by the government might be sending students – posing as students to our graduate schools and our other schools, starting as, like, a history major, and then randomly switching to quantum computing. So, one, how do you foresee a future in which we defend the academic freedom of our students and the choice that they make when they come to study, but also our state secrets and our government-sponsored labs? I know there's a clearance process, of course, that goes into that, but how do we prevent those state secrets and lines of code from being whisked away to our strategic rivals?

VEASEY: You know, I'll give a couple of thoughts on that. The panelists or the other members may have some thoughts. The first one is that, you know, for our defense contractors that we have here in north Texas and across the country, you have to be a U.S. citizen to actually work at a defense contracting plant. You can't be – you can't be on a green card or H1-B. You have to be a U.S. citizen. The second thing is that everyone in the intelligence community is very well aware that the Chinese do send students over here to spy on us, and to get the expertise that they need in order to help advance the Chinese government. To the extent that even a lot of our technology companies understand that. And when they're trying to get the H1-B visas, and what have you, for people to come and work at their different companies, that they put

protections in place knowing that they were probably sent to a large tech firm, for instance, to be able to bring that technology back to China, so.

ALLRED: I just wanted to very briefly weigh in and say I was actually having this conversation with some representatives from UTD yesterday. And Congressman Veasey's absolutely right. This is a very real thing. This is not something that's been made up. It's a threat to us. But at the same time, we have to balance that with the needs of our research institutions and understand what they are good at and what they are not good at. The research institutions themselves are not going to be good at performing the functions of the FBI, or the CIA, or trying to ferret out, you know, nefarious actors. That's not what their purpose is, and I think it also hurts the goal of their research, and also the goal of the scientific community – which is to gather information, have it peer reviewed, and have it available for discussion. But there are steps that we get to which the classification levels increase, in which the scrutiny has to increase. And that's where I think we can apply some of that.

INBODEN: If I could just add, in full agreement with Congressman Allred and Congressman Veasey, this is a very big issue we're dealing with at UT Austin as well. And it's a UT systemwide issue. And this is a very difficult balance because, on the one hand, one reason why the American higher education system is the envy of the world and draws so much international talent is because of its excellence, its quality, based on principles of transparency, and openness, and free inquiry, and academic freedom. However, unfortunately the Chinese government has been exploiting that. And we've seen some, you know, significant cases of abuse and espionage. And there're more that hasn't been uncovered yet.

So I think Congressman Allred's exactly right. We need better partnerships between FBI, CIA, counterintelligence, and our universities to at least be alert to these things. But we also need to remember, I can't stress this enough, that America's rivalry and competition right now is with the Chinese government and the Chinese Communist Party, not the people of China. The people of China can be some of our best friends and allies in this. They – for the most part, they want more freedoms and better lives for themselves. They feel friendship towards America. They like our – they like our culture. They are not the enemy. But rather, they have a government with more nefarious designs. So keeping that distinction clear is really important.

Q: Hi. I'm Victoria LaBarre. I go to UTA. I'm an electrical engineer and I focus in robotics. So the AI part was actually really interesting for me.

Just because we're on ethical questions, with the part of the thing that's coming out with AI is, like, the more you make it autonomous when it goes wrong, like who do you blame? And just kind of the background with that is part of my research in machine learning is trying to make decisions when there is no base truth, because the problem with a system that you're going against one of the laws of robotic, where instead of, like, you can't injure a human now we're telling you specifically please shoot one. The problem with this is, like, how does that autonomous system make that decision based off of no input at all? And does that lead into some biases?

SAYLER: The issue of accountability is hotly debated at the U.N. CCW, which is where the discussions of autonomous weapons take place. So the nongovernmental organization advocacy community essentially believes that there cannot be accountability. The U.S. government and other delegations have essentially stated that the same accountability measures that apply to other weapons systems will apply to lethal autonomous weapons. So you have, you know, product liability, liability for defense contractors. It's incumbent on the commander who deploys the system to survey the operating environment and make sure that the weapon's use would comply with the Law of Armed Conflict.

There are issues of bias and, you know, spoofing, and all kinds of concerns with regard to deploying these weapons. And so that's sort of getting back to the weapons review process. You would need to know that the weapon would perform as anticipated in a realistic operating environment. And that's something that's actually written into the U.S. policy on lethal autonomous weapons. But many countries – in fact, most countries – do not have policies for these systems. And so the concern would be that they might not be taking some of those factors that you raised into account.

JENKS: And I think part of what you're likely to see is the development of autonomous systems in inverse relationship to the potential of if something goes awry that there will be civilian casualties. So that's why you're going to see the greatest development initially subsurface. If something goes wrong 200 meters below the surface of the water, that may go back for a whale, a friendly sub, a bad sub. High altitudes, I'd say middle of the ocean, and frankly the last domain where you're going to see autonomous weapons systems is going to be the really challenging ground, urban environment. And we may – you know, we may never get there. But we will, frankly, are already working towards those other systems – again, subsurface, surface of the water, and high altitude.

VEASEY: Well, I know we have a couple more questions, and I want to apologize, because we do have to stop at 10:30. We promised we would let the panelists and the members of Congress be able to leave at 10:30. But if you have a question and you want to ask some of the panelists on the way out, we think that they'd probably be happy to answer your questions. But I want to, again, thank Dr. Karbhari and the staff at UTA for allowing us to the space, and thank our distinguished panelists that were here. I thank my colleagues for taking time out of their schedule to come and be a part of this meeting of the U.S. Helsinki Commission on our cooperation that we have with our transatlantic partners. I think that these topics and many others that are discussed really, now probably more than ever, need to be something that the American public takes a closer look at.

So thank you very much. (Applause.)

[Whereupon, at 10:32 a.m., the field hearing ended.]