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Interview with Patricia Lewis

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Summary:

In this interview, Patricia Lewis shares insights from her extensive career in nuclear policy and disarmament, highlighting her transition from nuclear physics to think tank and research work. She explains the risks nuclear weapons pose, not only as physical entities but also as symbols of power that disrupt global politics. Lewis advocates for a focus on risk reduction over immediate disarmament, emphasizing that reducing the chance of nuclear weapon use is the most urgent priority. She discusses the need for broader public awareness and cooperation among governments, think tanks, and civil society to address nuclear issues through a humanitarian lens.This document summary was generated by an artificial intelligence language model and was reviewed by a Wilson Center staff member.

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Michal Onderco: Yes, thank you very much for joining this interview and for contributing to this project. I want to start with a very general question which is: how did you get to the position to where you are at the moment?

Patricia Lewis: Well, that's a long story, I am very old.

Michal Onderco: Well, you can try to compress it in three, four, five minutes.

Patricia Lewis: Three to four minutes? So I began my professional career in nuclear physics. So I did my PhD in Nuclear Physics, in the UK. And I then went to work in Calcutta, in India, with disabled children, nothing to do with my PhD. And then I got a job in the University of Auckland in the physics department there, teaching, research, as a lecturer, and doing my research both in New Zealand and in Australia. So then, when I was in New Zealand, this would have been, sort of the mid 1980s, there was all the issue about nuclear weapons that was… you know, the Reagan Star Wars speech, you know, the whole evil empire thing, there was still the SS 20s and the cruise missiles were being put into Europe. And I was living a long, long, long, long, long way from home and felt very isolated, and ended up setting up with two of my colleagues, Bob White, and Peter Wells *The scientists against nuclear arms New Zealand*, which was connected to Scientists against nuclear arms in the UK, which has now become *Scientists for global responsibility*, and was first established by Professor Michael Pence, who was the first Dean of Science at the [unclear] University. So I started working on that, and I got more and more interested in that, I got more and more disenfranchised from physics for various reasons, and after three years, I came back to the UK, wanting to change my career, and I thought I wanted to go into science journalism. So what I really loved is communicating science. And so at exactly the same time, however, they were setting up this new center from Imperial College, this Verification Information Center, it was called, VERTIC. And so I applied for that job and I took it. And started working, I worked for there 12 years, I was director for quite a lot at that time. The first director was Jeremy Nuggets from Imperial College London, and then myself. And then I went to work. And I've got directorship at UNIDIR, at the UN Institute for Disarmament Research in Geneva, in the UN. And I was there for 11 years working on. So basically at VERTIC, I worked in on verification across the board. So conventional forces, nuclear forces, we did a lot in an environment as well. And on peacebuilding, peacekeeping conflict issues. And that's been kind of the arc of my career ever since. So then UNIDIR, it was much the same. Not verification, but negotiation, politics. Lots of weapons, small arms, so I haven't only done nuclear, I've done chem-bio-nuclear, conventional weaponry, space, peacekeeping, all sorts of things like that. And I wouldn't say I have the same depth of expertise in each of them, but a good understanding and I think it's really important to understand the connections across all of these things, and not many of my contemporaries do. And it's partly important because my contemporaries in the diplomacy world have to work across them, right? So you have to understand the relationships within each to understand why that will impact the relationships with another. And then, after working at UNIDIR for 11 years, I then decided to jump out of the UN system, and go to Monterey in California to join as the Center for Nonproliferation Studies. And I was deputy director there for three and a half years. And then I came back to the UK and took up this position at Chatham House, where I'm Research Director for international security. And I'm currently also acting deputy director but don't intend to stay in that. So I did my career in reverse, right? I was director of two organizations then deputy, and then research director. So it's like, I was… I did like the senior jobs when I was young. And then the less senior jobs when I'm older. And there's a reason for that.

Michal Onderco: Which is?

Patricia Lewis: It's a great way because I think when you're young, you've got a lot of energy and activity, and you can do all sorts of things and run lots of parallel track things. I think when you're older, you want to kind of go in depth more, and understand things more, and you kind of have more to offer in terms of substance than you had when you were younger.

Michal Onderco: Okay, so that's an interesting insight. [small chat off-record] I want to ask a very broad question, which is: how do you view the role of nuclear weapons in the world today?

Patricia Lewis: Yes, it's a really good question. So I view them in many different ways. So I view them in terms of their physical entity, [it] is very dangerous. I understand the physics of it, and I understand the engineering of it, and the mathematics of it. I understand what will happen in different circumstances when they get exploded. And I think they are very dangerous in their physical manifestation. I understand also, because the research that I've done over recent years has looked at the number of times we've nearly used them, so I understand that in times of crisis, the chances of using them increases dramatically. So if you look at risks times equals a risky because probability times impact. When it comes to nuclear weapons, impacts always high. Even if it's a low yield one, even if it's in a rural area, even if it's a sea-based one. One, whatever impacts political impact, the physical impacts on was high. And often, I would say most times, the probability is quite low. The risk are always high, though, because of the impact. But when you get into a time of crisis, the probability starts to change. And it increases dramatically, particularly because you get misinformation, you get misunderstanding, or misinterpretation, as a miss signaling and then you get mistakes. And the problem with nuclear weapons is there's no small mistake. That's the kind of physical, and if you like, risk picture. I think there's another set of aspects to nuclear weapons, which are political. And [have] to do with status to do with power, to do with the way we represent power, and the way we think about our world, so this sort of huge weapons, so the physicality really matters, but then it becomes a representation, a symbol of power. And that has caused all sorts of distortion, if you like, in our political world, and that countries that perhaps may not otherwise have had power in the world, in terms of economics, in terms of influence, can get such power by acquiring nuclear weapons. So North Korea would be an example of that. But one could also argue Pakistan, for example, to a degree India as well. And so I think this is one of the things that we don't talk enough about, and that makes nuclear weapons quite attractive to some types of states, or at least association with nuclear weapons.

And then it has another symbolism, too, which is a sort of also connected to the power, but the political power, which is the, you know, the alliance, sort of. So there's a sense that you can safely take NATO as an alliance, and before that the Warsaw Pact. That if you're in these military alliances, you're also afforded this sort of nuclear defense or nuclear protection. Some people call it an umbrella. I don't like to use that term. But it also gives you a different type of power, symbolic power too. And it also provides kind of a glue in the sense that if you agree to this, there's an agreement, which is almost a cultural agreement, that you have accepted that these weapons are part of your defense structure, even if they're not, you don't own them. But they're sort of, if you'd like, you're blessed with them or cursed with them you might want to put it. And we see that not only in NATO, but we see it in other relationships, too. Obviously, with Taiwan and the United States. Japan, there is an agreement, but you know, Japan's an awkward one given what happened in 1945. South Korea. Obviously Australia, but obviously not New Zealand, even though you have ANZUS. If you look at other places, China doesn't do

this, yet. Russia used to. And if you'd like, maybe now perhaps with Belarus it would be would but other countries no. It might want to extend that, again, as part of its largesse, it's imagine itself going into a different sort of empire. But that's the symbolic power.

And then I think there's another role that nuclear weapons are playing, which is certainly in this country anyway, there's a sort of role that they play in a collective psyche, which is a belief system that doesn't get challenged. A belief that they provide this deterrence effect, they prevent conflict, they prevent war, they prevent anyone, the ultimate weapon to use in the event of…And to the point where in this country in the UK, nuclear weapons are actually called the deterrent, with T at the end, as if it were a noun, and rather than a function, and "the", with not even the word nuclear anymore. As if no other weapons deterred. And if it was, that was only one, right? And this has been a brilliant stroke of linguistic genius by those who want to connect, and because you know, who's going to argue against "the deterrent."

So, this has become, I would say, an item of deep belief in political circles, but also deep acceptance, and to a large degree belief in in society. So there's no challenge really any more in the UK. I think that's not so true in the United States. But I think it's quite strong there, too. I think it's probably quite strong in Russia, less so probably in China. It is very strong in Israel, whether or not they've got nuclear weapons. And I think that this kind of belief communicates across. So this is where, you know, North Korea has a strong belief system in believing that this works. And Iran, also I suspect those who want nuclear weapons in Iran, and have this belief system, I think Pakistan has this belief system as well as part of its own thinking. India is different, but maybe a little bit there in India, too. So this sort of belief system have the role of nuclear weapons and the belief system within society, and therefore the more than acceptance, I would say, it's, there's perhaps an acceptance by those who would otherwise feel uncomfortable, but also an almost passion for it, because of that belief that exists.

Michal Onderco: Do you see nuclear weapons as a stabilizing or destabilizing factor in global politics?

Patricia Lewis: I don't think that it's static. So I think it changes over time. During the Cold War, you could argue that they were both stabilizing and destabilizing. They were stabilizing in the sense of, you know, which of the two big powers, Soviet Union and the United States had these weapons, they could destroy each other. And that kind of created a seriousness, which meant that they didn't, in the end, go to an all-out war. However, it also created a destabilizing situation in that there was so much nervousness, any maneuvers, any changes, any small thing could trigger such a thing. They kind of walked the relationship, if you like.

I think over recent years, they've become a bit of a sideshow. They've mattered a lot for countries like North Korea, Pakistan, India. We've worried a lot about Iran and North Korea. We've also worried about non-state armed groups getting them, we collectively, the policy community, for reasons that I never really understood. And I think we've diverted a lot of attention away from trying to solve this as a political problem. And trying to address these weapons head-on by subverting that attempt into this sort of so-called nuclear security community. So I'm quite controversial in that way. I really, really dislike that whole framing, and I think it's been detrimental to what we've been trying to achieve.

Michal Onderco: So this actually is a very good segway to the question that they wanted to ask, which was…

Patricia Lewis: can I just say right now, though, that they're very destabilizing. They're making everyone extremely nervous, they are influencing decisions in a way that probably isn't to our benefit. Russia is using them to instill fear. And we are nervous they might use them. So, it is they're having a huge impact in the way that we didn't intend, from the NATO perspective. So, I think they're extremely destabilizing at the moment. And there's a game of bluff going on. “This is not a bluff”, says Putin. But we're seeing it is. And so it's very, very dangerous right now. So that… I think there are pockets. So nuclear weapons as a backdrop, you could argue, have had little impact. And then at times, they've either had a stabilizing or destabilizing in… I don't know if that equal measure, but certainly strong effects throughout history.

Michal Onderco: So the question where I wanted to go, because you already [that] said this focus on nuclear security was sort of a diversion from where the focus should have gotten. And so, this was my question, where do you think the focus *should be* in the policy community, but also for civil society in general? Should it be to focus on elimination? Should it be focus on what some call these practical steps? Should it be on normative pressure on the government? Where should the focus be on?

Patricia Lewis: I would put it on whether they deter or not. Nuclear weapons sort of grew up at the end of the World War Two, and then they created a situation during the Cold War, and they kind of came of age during the Cold War. So, all of the thinking about them, the doctrinal, the military, the way in which we thought about them was in the context of the Cold War. When the Cold War ended, it was understood, I think, by everybody who had anything to do with this, that that change the context, therefore change the need.

And you could see that, you could see the number of arms control agreements, you could see the extension of the Non-Proliferation Treaty, you could see the commitment to the elimination. And then… so we've got, let’s say, we put aside, which I know is a big aside, we put aside all the stuff in storage, either waiting, dismantling, or just sitting there, aging. We’ve gone down from 30,000, almost on each side to 2000. It's a huge drop, right. So the salience, the significance of nuclear weapons dropped dramatically.

And then, at some point, around the Putin-Bush era, there was a sense, and I remember being really upset about this, that we no longer needed to do this because we were no longer enemies, therefore, we can take our time. And this, in my view, is a huge mistake. Because, for one thing, those things are always temporary. It wasn't necessarily that saw…I didn't see that Russia would necessarily become an enemy again, it wasn't that I had that kind of vision, it’s more that…. it's several things… once you decide that they're kind of forever, because of the idea that they have this ultimate deterrent, etc. Or it's okay to have them at that number, which is still a very large number in terms of their impact, then it becomes actually more interesting, in a way, for other states, in terms of proliferation. Because, you know, if the two big states that used to be at each other's throats, decide that they need them in perpetuity - didn’t want to say that, I'm so bad with words, I'm sorry - but you know, forever, that they therefore… if they think that they weren't [doing that], and they're no longer at war, right? Given their circumstances, and I think, by the way, I think France and the UK keeping theirs. In some ways we've enjoyed, until very recently, you know, the most stable security environment that we could ever have wished for. And so, I think if you're in an unstable security environment, they start to look more attractive. If you see that the powers that happened that don't want to give them up, when the context changes.

Michal Onderco: So do you do think that the failure to do more on disarmament… the question that I want to ask, that I ask everyone, is what do they see as the biggest failure in this field since the end of the Cold War? And if I understand correctly, your answer would be its failure to do more on disarmament in the early 2000s.

Patricia Lewis: The late 90s, early 2000s. Yes, I think a lot was done in the 90s. I think, if we had made the real decision to go down that track, but several things happened. One is the lack of ratification of the Test Ban, which I think had a huge impact.

Michal Onderco: In the US Senate, you mean?

Patricia Lewis: Yes, in the US Senate. So it had an impact in several ways. One is the lack of ratification for test ban, which meant that although Russia, UK and France had ratified it, China's still hasn't either. But more significant, I think is it signaled what was clearly a trend that the United States was not a reliable negotiating partner. And in a way, it was worse than what happened afterwards, with Bush, because you had Clinton, right? He really believed in this stuff, and he put France under huge pressure, you know, all that history. You know, the UK MoD wanted all sorts of caveats and so on, but put them under huge pressure. The Russians went along with that, Chinese went along with it as well. Kind of corral them as it is, you know, that out front, leading. And then they couldn't deliver in the Senate. And so even with the best will in the world, and I don't think anyone doubted Clinton's desire, but even then, they couldn't deliver. And so, what everyone saw was the United States as a whole that was no longer the sort of partner that you could be certain of to negotiate at that level.

And I was in Geneva straight after. Well, just at that time, it was in the Senate. So I arrived in Geneva in 97, for the year after the test ban was negotiated. And I saw what happened in the Conference on Disarmament. And everybody had reasons, and so no one would actually say what they really knew. And that was sad, there was going to be no more engaging with the United States, on the grounds that they couldn't sell to their own policy community, their own parliamentarians anymore, because that had happened. And they weren't going to be idiots and go down that road again. So you know, there was a huge amount of energy put into things like small arms and light weapons, the arms trade, cluster munitions, conventional weapons, landmines, etc, which is all fantastic, really important. Because it didn't matter then, so much, if the United States didn't join. And in fact, in a way they factored that in. Except with the Arms Trade Treaty, where they, the UK believed that in involving the United States, and insisting therefore on consensus that the United States will join.

Michal Onderco: So who do you think is to blame for this failure?

Patricia Lewis: Humanity? Collectively? I don't know. I mean, where do you start with that? I don't know. Is it useful to think about that? I don't know.

Michal Onderco: Can I reframe that question? Do you think civil society or think tankers or academics could have done something different?

Patricia Lewis: Oh, yes. Well, probably. Well, I definitely think in the United States. I remember saying it, really upsetting people when I was at a meeting the United States after the decision not to ratify. But I really felt that there was a sense of complacency, is that the wrong word? That there was a sense that they would… that this would get ratified, you know, because, you know, Clinton was in charge of it was so obvious, it was such a good thing, etc, etc. But that's not to blame them. I mean you could

understand that and it's not their fault. It wasn't ratified because the people who decided not to ratify were the ones to take responsibility. Would it have made a difference? Maybe, I think. I thought so at the time. I think I thought that it was possible, to rally, you know, people's public opinion. But I think we also have to see this in a different context too. How many days have you got to talk? [both laugh]

I think we have to think about the different contexts. Because I don't think it's just in this field that civil society has been struggling to get political traction. You know, if I look, for example, at the huge demonstrations against the war in Iraq in 2003, no impact, none. It is that perhaps, you know, a false promise of a second vote in the Security Council. I look at the huge numbers that were on the street against Brexit, no impact. Public opinion is having large numbers, people feel really angry, really upset, having increasingly diminishing impact, to the point where I don't know if I would bother to show up for a demonstration, because I wouldn't see the point. And so, I can criticize civil society in that sense, and I can partly criticize civil society because there was a lot of the…here's what I did get really upset with some people. And that is not think tanks in in Washington. Because I think they were complacent. But I think we all were. But some of these NGOs, who talked against the CTBT, on the grounds that there was still the possibility to do modeling of tests on computers. And that purism… I get really annoyed with purists generally, in every walk of life, right? So that I found really annoying, and they played into the hands, it would have happened anyway, but they played into the hands of the Indian debate, which wanted to demonstrate that, you know, the CTBT was, you know, not worth the paper it was written on. If they joined it, it was… it would stop everything they wanted to do, it was you know, a racist treaty, just like the NPT, it was part of the NPT. And they played right into those hands. I don't think they would have affected anything. In the end, I think India would have done what it did in 98. But I was really annoyed with them. And that sort of purist, holier than thou, it's got to be 100% perfect. And I see that all the time with NGOs.

And it's so easy, isn't it? You know, you can there isn't a perfect treaty, because it's all treaties are negotiated, all treaties are a compromise. The question is, does it do…does it make the world better is better? Better is good. And I know that annoys people, but you've seen things get worse, you long for better.

Michal Onderco: We're going to go and talk about some of the more concrete examples a little later. But when you for example, say that the TPNW is a treaty that makes world better?

Patricia Lewis: The TPNW? Yes, I think it does, definitely. And I think we'll see that, as time goes on. Can I say the CTBT… so I did a lot of work on the CTBT. As I started my work at VERTIC on this, and we VERTIC wrote a big verification study, which the Swedish government presented in the CD, we had quite a big impact on the way verification was running. Luckily, we had the, you know, we had the verification scientific group, the scientific experts group, which had been doing all of the work, with, in this country Peter Marshall, and people like that, who were superb. And, you know we were very aware of what happened with the Article 14 and the conditionality and Annex two countries. And we held a meeting here to discuss what to do about that. Big meeting, but we were too late. We were too late. By this time, those that really didn't want the test ban had picked up the power of this. And we're really pushing it on the grounds that, you know, it made the treaty more perfect. You get all of these countries to join, you force them to join and, therefore, the treaty will be better. And of course, it was a gift. It was a veto. And at the end, you get North Korea to join, and I think NGOs were too slow to pick up on that at the beginning. And we certainly picked it up but we were too late. So that… and whether

we would have made a difference, I don't know, but by the time that went down, and the time that, you know, the UK was in favor of it and Russia really liked it, then it became too late. And, of course, it was the lesson for lots of other treaties, which has been good. But it was an example I think where timing is so important, getting the timing right. So you can have, you know, the best ideas in the world. You may be too early, or you may be too late. Better be too early because you can always pick it up again. But even too early can be difficult, because sometimes you can put something in that's too early. And maybe the TPNW falls into this a bit, where it's coming so early, and then everyone's against it. And then later on, they'll realize how important it is, but then they'll have to kind of roll back all of the statements that they made against it. I saw this with the test ban a lot, you know, people became very wedded to things and then had to roll back and it's been… it was always a source of great amusement to me to be sitting in meetings with people in the sort of mid 00s, having heard them in the mid 90s, talk against the test ban to then have them say about how they'd always supported the test ban. [both chuckle] And I would be just looking at them and saying nothing because it wouldn't be helpful to say…

Michal Onderco: I want to move on to something else. Imagine the interview with you is read by a student in a few years. What would you want them to know about Chatham House and how the nuclear portfolio fits in the Chatham House mission?

Patricia Lewis: Oh, Chatham House?. So Chatham House, I've been here 10 years. So a lot of the work I've done on this was way before Chatham House. But Chatham House was established in 1920, after the Great War. So right at the heart of Chatham House, right from the beginning, its mandate has been to try to help prevent conflict. The idea was that civil society, probably wasn't called that then, but certainly non-governmental entities should be able to gather together officials and non-officials to talk about really important matters and help prevent conflict and that's how the Chatham House rule was developed, and that's been right at the heart.

So, Chatham House has been involved with the nuclear issue, right, from 1945. So, I should say, very importantly, the Chatham House doesn't have a line, right? There is no Chatham House view on anything. So, I have my views, I have my analysis, and I will publish under Chatham House, I'll be challenged, etc, but it goes into my name or my colleagues name. That doesn't mean that anyone else in Chatham House agrees with me. They're perfectly entitled to publish something completely contradictory, and have done that and other people don't understand that. I think people outside they seem to think that Chatham House is an entity with a brain, a single brain, which we're not.

Michal Onderco: How do you evaluate the relative position of this organization within the broader field?

Patricia Lewis: Broader field of nuclear?

Michal Onderco: Of nuclear, yes.

Patricia Lewis: I think Chatham House has done some important research work on things like near misses, near accidents, decision-making. We've been working with Imperial College over the last few years to develop a model, a complex model, based on artificial intelligence. You know, looking at complexity in decision making and nuclear policy, looking at ways in which decisions get made, and we're in a process now developing a game that will reflect that. We want people to understand that this is a wicked problem, that it isn't… there isn't a solution. I think this is where researchers come to, certain this is where my understanding has come to.

Part of our difficulties is that each of us has very strong views about “the solution”. And it's clear to me that there isn't “a solution”, that there are many pathways to a set of solutions. And we're never sure which ones will be the pathways, which ones will be the best solutions, etc. So if we can experiment with those and see, and look at the different pathways… So I saw this in Geneva a lot. So, you have, after the test ban, you had then the fissile material negotiation, which never got anywhere, but they were the next thing, right? They were the step two, and because they call them step two, and because they call them the next negotiation, it meant a whole load of other things didn't get done. And that didn't get anywhere. But my question was, why does it have to be step two? Why does fissile materials have to be the next step? It doesn't, at all. I don't understand the fixation on fissile materials, to be honest. Of course, you know, you put fissile materials in a bomb is yes, that's, that's my fixation, but anywhere else. You need security. Yes. But hey, we have that. You need safety? Yes. But on the whole have that. This kind of cut-off treaty is important, or the ban treaty, the fissile material ban treaty is important. But it doesn't have to be the next step. It could have been later.

Michal Onderco: But there were discussions about the FMCT ever since 60s, I mean, yeah. And…

Patricia Lewis: then we listen, there were discussions about landmines in the 50s. Yeah, that's what I mean by timing is everything. Right? You know, there's been discussions about complete disarmament since… I don't know, centuries. That's not the point. The point is, if you, if you kind of block everything else, in order to focus on that, that's the mistake. In negotiations, I often think you need to see where the chips fall and wait to see where to pick up, and see where we can go. And what we've learned in our complexity modeling is that quite often a small thing will have a large impact. And a large thing will have no impact at all. It’s really interesting to see that.

Michal Onderco: If you look at the nuclear field, can you name a few organizations that you would consider to be your most common or most frequent partners, and a few organizations that you would see as maybe competitors, or someone who's on the other side of the barricade?

Patricia Lewis: So, I don't think like that.

Michal Onderco: Okay. So, whom do you think about as most likely as most frequent partners?

Patricia Lewis: I think… you see, I just don't think like that. I think we're all trying to get to the same point, with one or two exceptions, in the form of certain world leaders that, you know, causing mayhem at the moment. But in our fields, I think that we are all trying to get to the point where nuclear weapons would not be used. We are all also trying to prevent war. So I think I take those as a given.

And then it's a question of which you think works best, right? Even the people who liked nuclear weapons and think they deter, I think that's where they're coming from. So, I will work with anyone. I've worked with different governments. I've worked with different nongovernmental organizations. I don't want to work with people who are being diverted. But I'm happy for them to be diverted.

Michal Onderco: What does it mean?

Patricia Lewis: Go down nuclear security, fissile materials, this and that? This is political, right? I did a load of work on verification technologies, which at the time was highly political. It's no longer political, really. And people have to do it. I think it's really good that people are doing it, but I'm not going to

spend my time on that. But I'm not going to stop anyone else from doing it. I don't know if I have the answers.

Michal Onderco: But do you think that for example, the work on… so for example, one of the big topics today is risk reduction. Do you think that's a diversion?

Patricia Lewis: No, I think risk reduction is important, because I think it puts it at the heart of what this really means. What are the risks? And I would put, in here my would be controversial, again with some of our disarmament colleagues, I would put the non-use of nuclear weapons right at the centre. That matters more to me than nuclear disarmament.

Michal Onderco: So if…

Patricia Lewis: if there were a way in which you could prevent the use… that would matter more

Michal Onderco: Will I be wrong If I interpret this sentence that you just said, as meaning that risk reduction is, at the moment, more important than disarmament?

Patricia Lewis: I don't think I'd want to characterize it that way. What I would say is that I think that eliminating the risk of nuclear weapons… so there's one way to do that, and that's to get rid of nuclear weapons, and that's true. So I wouldn't say it's an either or situation, in that sense. But in terms of what matters most, in terms of, the way in which we're putting our energy, getting nuclear weapon states to understand the risks and acknowledge the risks seems to me like a fundamental thing that we have to do before we can get to the point of complete elimination.

But I would say that more important than anything is to have no more nuclear weapons explosions. And I would just put that right at the heart. So it's a humanitarian issue for me. So I've worked on the humanitarian impacts of nuclear weapons, really, that's been my driver the whole way through. And I started to work on developing this approach when I was in Geneva ,with the ICRC with Quaker UN office. Looking at all of the historic ways in which this has been characterized by the ICRC and others, and putting together a way of thinking about it, taking ideas, we called it "disarmament as humanitarian action". It was UNIDIR's 10th anniversary, we did this big seminar in New York called "disarmament as humanitarian action", we got people to start thinking this way about how we put humans at the centre of our decision-making and the impact on humans. And by humans, I mean, all of our lives, our whole ecosystem, the animals we live with, the plants we live with everything. The world we inhabit, put this at the centre of our decision-making. So it's a humanitarian issue, and I saw how important that was on landmines and cluster munitions, and how it transforms the discussion away from security, military, and politics. It becomes a different discussion. And so that's where I started to put my focus. And I worked… I wrote a paper then for the ICNND on this in which I proposed…

Michal Onderco: That was the 2009 paper, right?

Patricia Lewis: Yeah, what I proposed what became the beginnings of the negotiations with TPNW, and I think the thinking of it as a civil society movement, ICAN presumably identified. And I think that the other was the work I did with Ward Wilson and Benoit Pelopidas on deterrence. And really, trying to think that through?

You know, deterrence is a really important thing for us to be talking about. So I guess I would put the emphasis of our work at the moment on humanitarian complexity and deterrence, and try and understand that that's what I think contribution that a place like Chatham House can make.

I am not… I think that campaign is a young person's game. I have a saying that no one over 40 should be involved in campaigns, which I know makes me very controversial. But I do think it's a young person's game. I think that in the end, it's up to governments to negotiate. We can come up with studies, we can help them understand things, we can help frame, we can bring things to attention, we can look at, you know, previous routes, etc. But you don't have to … one of the problems I have with some NGOs, you don't have to get involved in everything. And that kind of frees you up as well. So, governments negotiate. So, they're going to negotiate, they're going to compromise. The fact that they compromise, the fact that they come up with something that's less than you would have done, is okay, it's not your job, your job is to do the other things, right. We've all got roles to play, and they're important roles.

Michal Onderco: I'm going to go further. But you touched a little bit on this work that was done UNIDIR in 2009. And I had…

Patricia Lewis: No, this is this is stuff I did at ICNND in 2009.

Michal Onderco: Oh, yes. Sorry. You were based at UNIDIR ?

Patricia Lewis: No, by then I was in Monterey. At UNIDIR I was in 1990s, and we started the "disarmament as humanitarian action". And that took on a life of its own as well with John Borrie and everyone. And they did, you know, amazing job with that. So there were several strands going on. But that was the kind of its roots if so, I'm sure someone else will tell you that the roots was somewhere else, right? Because they would see it from a different perspective. So, we all stand on the shoulders of giants.

Michal Onderco: I had I did an interview with another interviewee who basically told me that time in early 2000s There was almost a symbiotic relationship between some think tanks, including for example UNIDIR, and some of the campaigners in sort of trying to reframe nuclear disarmament in humanitarian terms, and that this was sort of a relationship between those who had provided intellectual firepower and those who were really doing the activism on the ground. Would you agree with that characterization?

Patricia Lewis: Don't think I'd call it symbiotic, symbiotic is a strange word. I would say that, you know, researchers do the research, they come up with these framings, ideas, historic approaches, new ways of thinking, new evidence. And campaigners either take that over or don't. I think that's important.

I think one of the problems that we've had perhaps a bit in any sort of more, I see it more in America than I see elsewhere, where we have a divorce between researchers and campaigners. So the researchers, the sort of the think-tanks became kind of campaigners but pretending they were researchers only. And then they started to exclude some of the grassroots campaigners, instead of assisting them with their knowledge base. So, I think it's important that you know, that we don't divorce completely, we're all doing research, in a way, we're all producing knowledge. And we have different roles. So, I think it's important that researchers are not campaigners as such, you know, researchers and think tanks and universities. But their interaction with campaigners or their interactions with governments is very important. We are a policy institute. So, we're trying to influence policy, whether that's policy that's been taken up by campaigner or policy that's taken up by a government official, for sure. It doesn't matter to me terribly, it depends whether it has impact or not.

Michal Onderco: Okay. So I want to ask you, you work at a think tank and you worked with different Institute's for a big part of your career. How do you view for example, contemporary academic work on nuclear weapons. Do you see it as something that is useful or do you see it as something like, you know, chasing something that is not terribly useful?

Patricia Lewis: Oh, I think it was useful, I think. I see academia, in a way, as the originator of most of these things. So, if I look at not just a nuclear, but you know, other weapon systems, you know, the some of the early ideas that came from academia, I think there's a kind of sequencing. You know, it starts in academia, and it's usually very theoretical, right? And it heavily uses words, nobody outside academia can understand and all of that.

And then the think tanks kind of go "oh, this is interesting" because some of the think tankies are a bit, you know, acting academic, and they've got, you know, they've sort of, they've been academics, they go in and out of academia. And they go, "oh, this is interesting." How do we, what would that mean for policy? So then they can take some of that stuff with academics and put them on a platform get me to write in a different way, get them to start to think about, "well, what would this mean for policy, what would come out of that policy"?

And then from there, they see it going either directly into governments that are minded to do that, or into, you know, more campaigning, non-governmental organizations to start to become something. And this takes a long time this process. And I would say, but I have a thing that I call the rule of 10. By the time it gets into a think tank, it takes about 10 years to start to say that it's kind of cemented into negotiation, or policy. That's kind of a, it seems to be a rule of thumb as a 10-year process. If it's going to take off, it'll be 10 years. There's quite a long timeframe. And before that is academia, and academia is often, you wouldn't even recognize the bit of some kind of theoretical construct, which is started there.

Michal Onderco: And so we talked about academia. And you also very briefly mentioned think tanks. How do you view civil society organizations, the campaigners?

Patricia Lewis: The campaigners? Yes, we're all civil society organizations, Right? University…

Michal Onderco: That's true. How do you view campaigners?

Patricia Lewis: Yeah, I mean, I think they're really important. You know, they're the ones I think public opinion really matters. I think in the end, politicians, in democracies, have to be voted in. So what the public thinks really matters, should really matter to them.

I think in other countries where there aren't democracies, public opinion still matters in that the government may have more control, but in the end, you can't really control a population forever if it doesn't give you that license. So public opinion matters more than anything. And it seems to me that a large feature of campaigning organizations is to represent public opinion, to communicate with, you know, people who are not experts, you know.

If we keep on only keeping this as an expert community, well, what does it mean? It means nothing, we may as well be academics, right? And there's nothing wrong with that. It's just that, we're doing policy work, it matters to people, this is real people's lives this is, we see it now. In Ukraine, we see the possibility of nuclear use is real. So, we need to keep it real for people who are making decisions, who are just ordinary people. And I feel there's something I feel really passionate about that a large part of

our work is so that ordinary people can just live ordinary lives and in peace, without war and conflict, that is what we should be doing, that is putting the human at the centre of our discussion.

Michal Onderco: But I mean, most of countries, the…

Patricia Lewis: I am an ordinary person, by the way, I just want to live my life.

Michal Onderco: In, most of the countries, like people care about, you know, what they put on the table and the quality of life. And they don't necessarily pay so much attention to issues like nuclear weapons.

Patricia Lewis: They do, though. They do. They just don't dedicate their lives to it, but they do. You know, you, you talk to one of your family, you talk to people, you touch the checkout people, I'm always talking to everyone, right? I've talked to people on the bus, I've talked to people in the supermarket. Everyone's talking about this stuff. You get on the pub, everyone's talking about it. You know, you're chatting with someone…

Michal Onderco: Was that the case two years ago? Before the war.

Patricia Lewis: Yes, yes. They've always got views and ideas. And most of them here will tell you, "we've got to keep nukes". Because you know, in the end… But now, they're going "oh, should we have it?" Everyone has an idea. Everyone has a view. They're not experts, but they, they care, they care about all this stuff. They may not vote that way. Right? They're gonna vote with their pockets, right? Because in the end, as you say, you've got to put food on the table. But they really… I think everybody has ideas and really cares about it. And they have a right to have the range of views and range of knowledge presented to them in a way that they can make sense of it. You know, that in the end, taxpayers are funding what I do, right? Whether it comes from the UK Government, the Norwegian government, Swedes, whatever, a large part, or foundations in the end, you know, it's the ordinary public who are putting up money.

And I remember when I was at university, and I was a physicist, and I had to write my first paper. And I submitted it, and I got quite a low grade. Because it wasn't written well. And I remember saying to the marker, you know, this particular so "I'm a physicist, it doesn't matter" about, you know, whether my grammar is right, or whatever. And he said, "Yes, it does. It really matters. Because if you want to communicate to the public, and the public need to understand what you're doing, because they are funding you. And if you did, if you ignore the public, and you don't realize that your whole work depends on them giving you that license, then you will fail at what you're doing." Because you know, it's really important. And that stuck with me all the way through my career. So I think it is I'm really passionate about that. Sorry, going on for too long.

Michal Onderco: How do you view ICAN?

Patricia Lewis: The ICAN as in the nuclear organization, not the naming of the internet organization.

Michal Onderco: Yeah.

Patricia Lewis: Because I worked with both.

Michal Onderco: Okay.

Patricia Lewis: It's made my life very tricky. Double N ICANN or the single N ICAN?

Michal Onderco: Single N ICAN.

Patricia Lewis: Yeah, no, I think the good I think. I mean, I think they've done a hugely good job at connecting across the world with young people, and getting information into governments. And there are a number of other organizations. So they're a bit like ICBL in that way. They were campaigning against ban landmines. And, and so they're abroad church in that sense. I would say, though, where I mean, in this country in the UK, there's an absence of ICAN. There's there are people in ICAN and their organizations are part of ICAN. But I don't think ICAN has any impact in this country. It's not part of a discussion. It's not part of the debate. And I was talking with people from ICAN when I was over in New York and the NPT where I think, in the nuclear weapon states they need to start thinking about how they're going to deal with that. How they're going to change the public debate here, because it's not happening. It's not, you know… most people don't know that the TPNW exists. In policy circles, and I mentioned TPNW, I have to spell it out still for people. It's not part of their normal discussion. And of course, you know, ICAN is thinking, breathing, eating TPNW and when they're talking about it with governments, they all know what they're talking about. But I would say in even in the think-tank world, it doesn't exist here. There's a vague notion somewhere that there was some treaty, but you know, the nuclear weapons states are not part of it, it doesn't do anything. So I think if ICAN wants to do an education campaign, now would be a good time, with the nuclear weapon states, because obviously, the issue of nuclear weapons is higher up on the agenda now than it used to be.

Michal Onderco: Can you give me an example of a project, for example, that you have done that you would say was impactful?

Patricia Lewis: How long have you got? So in the nuclear field? I have got lots of others.

Michal Onderco: Nuclear. Tell me about one.

Patricia Lewis: I would say the paper that I did for the ICNND but I am not sure I can talk about that easily. So, I, you know, at the time, I was talking with a number of governments. So, the idea of approaching it from the humanitarian impact perspective then led to the humanitarian impact meeting in Oslo. So, I'm not saying that ….because you see, the problem we're talking about impact is the it unless you're some kind of egomaniac, it's never just you, right? It's not just me, I know it had *some* impact. I know it influenced *some* people. Maybe you had some authority, some legitimacy to then take it to other people to do something. So that would be the way.

Also, although I wrote that paper, obviously, I was talking to people in the UN, in different governments about how it could work. So the idea of having an international campaign came from that, which then got funded by some of those governments. So did I have an impact? Probably. Was it only me? No, they could have ignored me. But I had some impact there. And, yeah, so I can see the roots there. From what I proposed to… you can read that paper, and you can see the proposal is more or less, kind of what happened. It was quite interesting.

Michal Onderco: You would also consider that to be a successful project?

Patricia Lewis: Project? Paper. In the sense that it led to something? I think so. Yeah. But I don't see, here's the thing… I don't ever think that it's one person or one paper, ever. I think it's a combination. And you've heard my rule of 10, I now have a rule of three. I think research does back this up, that

people need to hear the same thing from three different sources, or at least perceive it from three different sources to start to form beliefs.

Michal Onderco: Okay. So, do you think if you wrote that paper 10 years earlier, would it have had the same kind of impact?

Patricia Lewis: No. So that paper couldn't have been written 10 years earlier either, because it was drawing on what we'd learned from the landmines campaign, and what we'd learned from the cluster munitions campaign.

Michal Onderco: If you had written it five years earlier?

Patricia Lewis: Possibly, possibly. [quiet] Yeah, possibly. Very hard to know. It's a good question. I mean, you could argue as well, that might have more impact if it was written today. And people are desperately searching for solutions to the nuclear conundrum. Timing is a tricky thing. You know, you can… if I look at landmines, for example, you know, you sort of track the discussion from the 1950s through to, obviously, the Cold War where they were seen as non-offensive defence weapons, and then, you know, through to the whole humanitarian impact approach. Could they have been banned from the beginning? Yeah, maybe. Maybe. But it didn't gel, not at the time. So that's the timing and the politics, it is so tricky, isn't it? So tricky. And the trouble is that once you put it out there, it's much harder, later on, to kind of dust off and say, here's one I prepared earlier.

Michal Onderco: I have two final questions.

Patricia Lewis: I feel I haven't said anything near enough yet.

Michal Onderco: So where do you expect the nuclear field to go in the next five to 10 years at all?

Patricia Lewis: We haven’t talked about the NPT at all.

Michal Onderco: So, tell me something about you and impact in the NPT?

Patricia Lewis: Well, I don’t know about impact, but I mean, I've worked in NPT, I have been at every NPT meeting since 95. So you know, I think, that's significant. I think there's some kind of like, history there.

Michal Onderco: Do you think that in the NPT setting things could have been done differently in the last 30 years? In a way, that we wouldn't end up with a situation that we have today?

Patricia Lewis: Yeah, I do. I do think that. I mean, I think that certainly since 95, with the indefinite extension, there was a sense then that this was the beginning of the end of nuclear weapons, right? And that all went wrong.

And I do think that one of the problems has been trying to keep the nuclear weapons states trying to keep themselves together as a group. And I know, the idea was a good one. It came from Des Brown, which was to you know, and I was supportive of at the time is to get more understanding, you know, more connection, have them work together, collectively. But I think it was naive, in that it's just gone to the lowest common denominator and the slowest pace. That's the problem. And now, of course, with the way Russia is, it's just not happening. And the way China's going, it's not, as well, I think we've wasted a lot of time.

Michal Onderco: You know, there is a number of academics who basically blame both their fellow academics and the think thinkers. That they became too obsessed with the idea of sort of bureaucratic or “paper progress”, like new programs and resolutions and conclusions and what not, over the “real progress” in terms of real steps, for example, towards disarmament.

Patricia Lewis: Real steps being dismantlement?

Michal Onderco: Yes. Would you share that view, that it's partially something that could that the academics could be blamed for, or think tanks?

Patricia Lewis: If don’t know if it's blame, but I do think. It's much more important to get rid of nuclear weapons physically than resolutions.

Michal Onderco: But would you share this criticism of academia that they sort of, and think tank world, they sort of lost the sight of the big game?

Patricia Lewis: Possibly. But I would say that's more to do with the framing of nuclear security and nuclear terrorism than necessarily the NPT. And the NPT was about accountability and resolutions were about accountability. And that's important, because there's almost no accountability in this, except between Russia and the United States and their treaty process. So I think it's more to do with going down the track of nuclear security.

Michal Onderco: So you seem to think that the nuclear security has been like really one of the biggest diversions in the field?

Patricia Lewis: Yes, I do. Absolutely, just so much money went into it. And then everything got framed in that way, even if it was disarmament had to be framed in nuclear security, to the point where, if you ask my colleagues here at Chatham House, what they do, they would say work on nuclear security.

Michal Onderco: Well, this project is funded as nuclear security.

Patricia Lewis: There you go. There you go. So it's become a catch all approach. And then this whole nuclear terrorism nonsense. Really? Seriously?

Michal Onderco: Do you think it was a purposeful strategy to sort of divert attention from the demands for the real nuclear disarmament?

Patricia Lewis: No, I don't know. I wouldn't like to say. Possibly in the minds of some, but probably not in the minds of others. It became a trend.

Michal Onderco: Is it really is sort of post 9/11…?

Patricia Lewis: Yeah, I mean there was obviously a real concern about terrorism. And obviously, you know, the idea of WMD. But let's get a grip, really? They were getting dirty bombs, yes. Chemicals, perhaps. Bio, possibly. Nuclear, it's much harder. A nuclear bomb? Well, it's not impossible and some effort should have gone into it, I am not saying none. But to completely reframe everything and put that as the number one threat. That was ridiculous. Ridiculous. Who on earth really thought that was the number one threat? And why did we not call it out? So here I include all of us, you know, who were trying to get money, etc, who went along in a way with us in order to get funds, in order to be working on it, because that was the prevailing wind. And, you know, we subverted it for our own projects. We called it nuclear security when it was nuclear disarmament. And that's a great pity. And this is where

Benoit Pelopidas is absolutely right. You know, there is a collective dereliction of duty in academia and all of this. So if you want to blame, I don't blame others. I blame us collectively.

Michal Onderco: And by academia, you also include you as a think tanker?

Patricia Lewis: I would include all think tankers and academia. I would definitely, I would include myself. I'm a good Catholic girl, I will make my confession. I am doing penance every day.

Michal Onderco: Okay, I want to go back to these two final questions that I have. The first one is, where do you see the field to go in the next five to 50 years?

Patricia Lewis: I think it's… this is such, really grappling with this question. So much what happened, what happens now? So if Russia uses a nuclear weapon, or more than one, I mean, who knows? I think all bets are off where it will go now. Some people think because you know that this will be the beginning of nuclear disarmament, that everyone be so horrified. I fear the opposite. I fear that I think that's a possibility. But I fear that, you know, it will make others arm more, and I see both arguments, even without the actual use, but the threat of yours I see both arguments being made now, in discussions, in papers, and people writing on Twitter, etc.

So, I think this is one of those pivotal moments where we have to start really thinking about it. And part of the problem is that we all come at this from our own lens, right? So, the pro-disarmament are going to go, and I would be one of those, "you see, this doesn't work, right? Nuclear weapons did not prevent this" Allowed Putin to threaten us, etc. And then the pro-deterrence would say "you see in the end nuclear deterrence works in the end", you know. You can read now that they're saying, oh, general deterrence failed, but nuclear deterrence holds. So there's like, "hello, guys". What do you mean general deterrence failed but nuclear deterrence held? General deterrence encompasses… nuclear deterrence is inside general deterrence. It's not separate to, its inside general deterrence, it is part of it. So, it shouldn't be separated out. So if general deterrence has failed, everything's failed, right?

Michal Onderco: There are some who for example, say well, the proof that the deterrence, the nuclear deterrence works is in the fact that Putin never attacked a country in the Baltics.

Patricia Lewis: Oh the NATO countries? Yes. I mean, you know, the Baltics are really worried, right? Lithuanians are really worried right now. They don't necessarily think that they have protection. And you know, a lot will depend on, and I would see that the support for Ukraine is not only because we think how wonderful Ukraine, that it is fantastic. It's also because it's very self-interested. If Ukraine goes, Putin will go for others. And I think the Putin miscalculation has been a belief that in the end the European countries are too soft, right? And to a degree so is the United States, and that we don't in the end care that much and we will allow that encroachment. This is a similar thing that Hitler… the same thing. In the end, you know, people will just go okay, okay, if you're gonna do that, we're just gonna give him… some countries did that right. And and some countries would today if it weren't for NATO…So I'm actually I'm one of the weird people. I'm a big supporter of NATO. I just don't like nukes. And I think NATO's made a big mistake and classifying itself as a nuclear alliance. I think some military alliances and I believe in collective defense, particularly when it comes to a bully. The only way to stand up to a bully is through collective defense. But the trouble I have with nukes is I think they're not credible for democratic countries. And, I think, we're seeing this now that credible for an autocrat and credible for somebody who's crazy enough, you know this crazy despot Kim Jong Un, Vladimir Putin, not the UK.

Michal Onderco: No, but I mean, imagine there will be …

Patricia Lewis: Possibly Trump.

Michal Onderco: Yeah, that's what I wanted to say.

Patricia Lewis: Yeah, no, no. Trump is crazy. Okay, careful, I'm gonna be on the record.

Michal Onderco: You can strike it out. [chuckle]

Patricia Lewis: you can release, the thing is that you could see someone like Trump creating where he did, he went down madman theory of nuclear deterrence with Kim Jong Un right? Now, whether he would or would not whether or not, though, we know that the United States president can do that. Yeah, it's much harder in other countries, but we know that he can.

So what I would say is that nuclear weapons might work in the way that you imagined them to work, in democracies, and between democracies, or at least between countries that have a shared understanding of what they mean, and what they might do, and a shared understanding of the rationality and a shared understanding of wanting to prevent war.

But once that breaks, and once you lose that shared understanding, and you're dealing with someone who has a completely different view of the world, and who would [say] “apres moi, la deluge”? You know, “without me there isn't a Russia; without Russia, there is no world” type of approach. And you think that they might, you might just have to believe them, you might just think that's crazy talk. Yeah, you know, maybe meant to frighten us. And that's what we're hoping is the case. But if it's true, then what I would say is nuclear weapons and autocracies are a really bad mix, really bad mix. And we need to move away because they can't make small mistakes with them.

Michal Onderco: Do you think that in 50 years, there will be nuclear weapons?

Patricia Lewis: Not if I have anything to do with it. How about that frame? I think they are useless Yeah, I think they use they are useless as a defensive weapon.

Michal Onderco: Okay. You mentioned there is a world without nuclear weapons. How does deterrence in such a world look like? Or is it a world where we do not need to deter others?

Patricia Lewis: Oh, god, yes, we would. So I don't believe in this kind of, you know, “nuclear weapons create a peaceful world”. And I don't believe that we need a peaceful world to get rid of nuclear weapons, right? I think the thing about nuclear weapons is that I think that they're not particularly militarily useful, you know, you can't take territory with them, you create a complete mess, destroy people, destroy cities, civilization, etc.

So you've got to decide that you don't care about any of that to use them. So, most of us would therefore not use them. And so, they're not particularly useful. They had a thing in Cold War, which was, you know, an existential kind of standoff between those two countries. But they're not really for the types of deterrence. The thing about deterrence, it has to be credible. So Putin is credible now, in that he's trying to get us to do things because of nuclear weapons. I don't know if that's deterrence, if he was trying to get a stop doing things that would be deterrence, right? There's compellence and he's trying to influence our actions through the threat of use.

Now, that I don't think is what we wanted them for, right? But we have no credibility because we wouldn't do that, our societies would not allow us to do that. Our societies probably wouldn't sanction, at least in the first place, retaliation with nuclear weapons. And I think we're seeing that coming out of the mouths of… and Biden's right to say that, in my view, because he's communicating to the Russian people as much as anything. So nuclear weapons are not very useful, and they're not credible.

So if you really wanted to deter, you have to understand what deters, and credibility is critical for that, will you really use them? So that's got to be there. And you'll hear you know, you heard Theresa May, and now you've heard, Liz Truss say, "Yes, I would press the button". Well, yeah, okay. Maybe it would. But under certain circumstances, in certain, you probably have a letter on board the submarine saying, "you know, if you don't hear from me, you know, probably we've all been killed. So use the nukes", right? That would be her way of pressing the button, that will be it, which is very different to actually making the decision at the time in a way that a President of the United States might have to.

So, I think that… what I think we need to think about is, is deterrence in a much broader way. And we do. General deterrence you might want to call it, modern deterrence. In that sense, a part of conflict prevention. How do you deter aggression? How do you deter countries from setting off into a violent conflict? And you have to understand a lot about those countries, you have to understand a lot about what you would do that would make them stop doing, that think twice, etc, etc.

Michal Onderco: But do you think there will be deterrence that will be provided by conventional weapons? Or will it be some new modern technologies like cyber, or isn't going to be more of, you know, economic warfare, and…

Patricia Lewis: All of the above, they're all in there, they're all in the mix of deterrence. And sanctions are in there? No, we've been using sanctions a lot, probably too lazily, but we've been using sanctions a lot as a form of deterrence, you do that your stuff will end up in sanctions. So they're all in there, they're all in there.

And nuclear weapons are in there. So separating out nukes from the rest is silly, right? So, if we were to get rid of nukes was to have all the others and possibly other weapons systems coming on track. You know, you can't, you can't sort of separate all those out. But we need to what you need to understand is what works. And that's, I think, what we're very bad at, we tell ourselves that this will deter, but we actually, have we really done the hard work and in really understanding what will work and why? We project a lot we projected loss and what we think would work for us, but not necessarily work for them.

Michal Onderco: So is there any technology that you think would be particularly important in a world without nuclear weapons?

Patricia Lewis: Oh, well, I think in the end, anything that kills people will have a big impact. So, you know, cyber is important. But if it was cyber that kills people, or explodes a nuclear power station, that kind of cyber attack, that will have more impact than say, economic interference and theft. And there's a spectrum of cyber attacks, which in that's important . But you know, they're not the big ones, the critical infrastructure ones.

So in my view, killing people is like, where you really are at the pointy part of what works and what's really important. But there's a whole load of things before you get there, right? And that, because

that's what you want, you want to prevent that from happening. Whether that be with conventional, explicit… we have failed to deter Putin from invading Ukraine. And we failed, in part because we didn't respond in 2014. We thought maybe he would end that. Well, that's a mistake, right? Could have been right. But you know, he's clearly got more to do with Hitler than we realized in the sense that the idea that somehow that he'd be happy with Crimea, because Crimea, you know, because we understand Crimea, that was a mistake. And there were people saying "this is a mistake". And we, you know, we collectively, our governments probably weren't paying close enough attention, except for governments who live near, the Poles... And we all though they're overreacting…. [makes a scream sound]. And they were…

Michal Onderco: I always in these interviews with a question. Is there anything I should have asked about and I didn't?

Patricia Lewis: Gosh, probably.

Michal Onderco: Well, thank you very much for your time and for your answers.