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Transcript

## **WHY IS CHINA MODERNIZING ITS NUCLEAR ARSENAL?**

Li Bin, Carnegie Endowment for International  
Peace

Sun Xiangli, China Academy of Engineering  
Physics

Sugio Takahashi, National Institute for  
Defense Studies, Japan

Christopher Twomey, U.S. Naval  
Postgraduate School

Wu Riqiang, Renmin University of China

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## **LI BIN**

Good Morning. Welcome to the panel session. My name is Li Bin. I'm with the Carnegie Endowment for International Peace. Today we will discuss a very important topic. That is the nature of China's nuclear weapon modernization.

We have a combination of good speakers from important countries related to this issue. We have two speakers from China, one from Japan and one from the United States. They are all very influential in their countries' nuclear issues, so we are happy to have them to have the discussion.

In the last couple of decades, China's economic capacity has grown significantly, so that's the problem of... That is the source of more problems, because China is rich, China has money to do this and that, China could buy a lot of weapons, China could produce a lot of military [unclear]. So, many people are watching the Chinese military policy, including its nuclear policy.

So, today we will discuss what is the trend of the Chinese nuclear policy. How will China modernize its nuclear arsenal? Today, you know, I would first like to invite Dr Sun Xiangli to first give her observation about Chinese nuclear modernization. Dr Sun Xiangli directs an arms control division at CAEP's Centre for Strategic Studies. This centre offers strategic recommendations for CAEP. CAEP is the Chinese national laboratory, the Chinese counterpart of Los Alamos. Based on the nature of her organisation and the nature of her work, I think she's a perfect speaker for the panel to explain what the Chinese are doing on its nuclear weapon modernization.

So my question to Xiangli is, based on your experience and your observation, what is China doing in its nuclear weapon modernization? Please, Xiangli.

## **SUN XIANGLI**

Thank you, Dr Li. It's a great pleasure [?] to be here. Nuclear weapon modernization is a common issue for all nuclear weapon states and I think all the nuclear weapon states are modernizing their nuclear forces. So, what China is doing now, according to my observation China's nuclear modernization includes... mainly includes three aspects.

First, maintaining and [unclear] the safety, security and reliability of its nuclear stockpile. The means to... The means includes some advanced computing and numerical simulation and some experimental research. Actually, all nuclear weapons states are facing a similar problem and using similar means in this regard.

Second, upgrading nuclear delivery systems, developing new generation delivery systems with better survivability, with a focus on increasing the mobility of nuclear forces.

Third, developing penetration capability. Of course, its response to the [unclear 00:04:59] challenge. The option [? 00:05:01] for penetration – there are many options in this regard and each option has its advantage and disadvantage. What kind of option or options have been chosen by the policy makers? It's not clear, but it's clear that a balanced assessment is needed, different options, before a decision is made. So I'll just briefly talk about my observation on what we are doing now.

## **LI BIN**

Very good. Thank you. So, this is a Chinese description about what China is doing. Our experts from other countries may have some different observations. Now I would like to invite Dr Sugio Takahashi to comment on the same issue. Dr Takahashi is a senior fellow at the Japanese National Institute for Defense Studies and he is currently deputy director of the Office of Strategic Planning in the Japanese Ministry of Defence as a strategic planner in Japan. His view about China's nuclear modernization can [unclear] the Japanese defense policy, so we want very much to know Dr Takahashi's view about the same issue, that is, what China is doing in its nuclear modernization. Please, Sugio.

## **SUGIO TAKAHASHI**

Thank you, Dr Li, and first I need to say I failed to get doctor, so don't say Dr Takahashi. You know, about the – how to say – Chinese nuclear modernization [unclear 00:06:58], I am not a China specialist, neither Chinese nor a China specialist, so I'd like to talk about my observation [?] as a Japanese strategic thinker.

And at the centre, you know, one of the big challenges for an outside observer to look at China, especially Chinese military strategy, is of course a lack of transparency. So it's not so easy to figure out why China continues to... nuclear modernization, especially looking at a specific system-wide question that's really very [unclear].

Regional specialists [unclear] Asia or China [unclear] United States regard why China develops [unclear] of nuclear deterrent, and, you know, regional specialists' observation is that it's for... to secure the invulnerable [unclear ] capabilities, but from the nuclear specialists like me and, you know, other... my friends in the States who work for the nuclear issue [?], we think China already has invulnerable [unclear 00:08:16] capabilities, but more mobile [?] [unclear].

So, developing the [unclear] is a kind of waste of money, just additional things, not... add no value. So, why China is doing such a thing is a very, very big question. So, you know, people like me think this suggests that there is the existence of... or there is a kind of [unknown unknown] in Chinese nuclear strategy, you know. They have some thought [?] by which I cannot, or we cannot understand. So I think we should be humble to do that.

And setting [unclear] kind of specific system, looking at the overall nuclear modernization issue, I think, you know, it is said that China is going after the, kind of, counter-intervention capabilities against the United States, and that is not just nuclear, you know. It's combined with conventional military forces, and in the case of the nuclear modernization, that is to cancel out US nuclear [unclear]. Especially, the US has world [?]-based operational advantage of nuclear force with keeping high readiness and, you know, much [unclear], much [unclear].

But, you know, I think, you know, China wants to cancel out such kind of US operations as pretty much its priority. But, you know, the uniqueness [?] is they don't go after that by their counterforce capabilities [unclear phrase] destruction capability against the United States. That's not. But retain [unclear] to develop counter-city capabilities against a certain number of US cities – not, you know, 70%, not 80% – but a certain number of cities.

And so, this is... definitely relates [unclear] destruction capabilities, but still significant capabilities. And so, in that sense, you know, China doesn't go after the quantitative [unclear] of the United States, but quality [?] inference [?]. You know, if you have, you know, some – how to say – capability to disrupt some of the US cities, then US needs to think about, you know, whether or how to intervene in the regional conflict.

So, in such a way, I think that China is to develop modernizing of their force to neutralize the US nuclear shadow over the convention [?] domain in the region.

## **LI BIN**

Thank you, Sugio. Now I would like to invite Professor Chris Twomey to add his view on the same issue – that is, his observation about what China is doing in its nuclear modernization. Please, Chris.

## **CHRIS TWOMEY**

Thank you. You began with a comment that this was a very important topic. I think we should also recognize the implication of Admiral Blair's comment that there is between a zero and nil chance of US-Chinese nuclear war, which means this is a very unimportant topic, but it's one that I spend a lot of time working on and thinking about, so I'll share my thoughts on the question nonetheless.

I guess I would build on Sun Xiangli's comments and add a fourth element that I think needs to be emphasized to our Chinese colleagues as something that is an important part of our perceptions, which is a quantitative build-up. I would agree with the three points of emphasis that she highlighted, but I think it's also when the US looks at both the last ten years of Chinese modernization efforts and extrapolates forward, that that's a core element.

The deployment of survivable road [?] mobile systems that both Sugio and Xiangli referred to hasn't been met with, as best we can understand, a reduction in the traditional silo-based liquid fuel systems. In fact, the most recent two Pentagon reports speak to enhancements of the older DF5 system, suggesting that they're going to be around for a while.

There is also discussion of a follow on heavier DF41 system and, elsewhere in the report, discussions of MIRV [?] capabilities. If you put those all together, that suggests a future quantitative increase that is part of that question that I think Sugio is referring to, some ambiguity about the answers for...

So, if I think back ten years, the United States, not the region but the United States, was facing a Chinese ICBM force that might be able to deliver a few dozen. The numbers were usually 18 to 24 DF5As. You go from ten years ago of a force of a few dozen to today where DIA talks about 50 weapons being deliverable – that was actually two years ago or three years ago now, so maybe call is 70 today – then add in over the next five to ten years a force of the gym [?] class SSBMs, each carrying 12 or so... How large is that fleet going to be? I don't know. We imagine it might be six, we being the Office of Naval Intelligence. On what basis they make that assessment is a little unclear, but I think you're very quickly heading to an arsenal size that is over 100. If you add in MIRVs, maybe it's 200 or 300.

I think these are understandable, although I'd certainly welcome additional transparency on what is driving the Chinese thinking on these. These are relatively modest arsenal sizes by the scale of the United States, right. These are... If you got to 300 – maybe if you get to 200, more realistically – that compares to a US arsenal size of under 5,000. As everybody in the room recognizes, the operational size of the Chinese force under New START counting rules is zero, so it's a much, much smaller force and I think it's understandable why you might get there, but I think it's important for our Chinese friends to recognise that we see this as a fairly substantial change going from a few dozen to 50 to 70 to perhaps in the low hundreds over a 20 year period, and I think that's something that we would welcome further opportunities to explore.

## **LI BIN**

Thank you. Thank you, Chris. Now I would like to invite Professor Wu Riqiang to add his comment on the same issue. Professor Wu is associate professor of the School of International Relations, Renmin University in Beijing, and currently he's visiting [unclear] College. Most importantly, he was peripherally [unclear].

So, maybe he could add his technical assessment what China is doing in its nuclear weapon modernization. So, please, Riqiang.

### **WU RIQIANG**

Thank you. First I want to respond to Sugio's element about China has already had invulnerable mobile missiles. I would not be so optimistic. You know, from my perspective, I would say our [unclear] based mobile missile has... to some extent has some survivability, but I would not call it invulnerable because if you look at China's nuclear [unclear], the missile are kept in tunnels and in peacetime the warheads separated with the boosters. It could be destroyed totally.

So, I just want to add... emphasize one point. That is about the difference between the technology development and weapon deployment. So my point is China is developing one technology. This effect [?] doesn't necessarily mean China will develop... will deploy this type... this weapon. So a typical case example is a neutron bomb. So, China developed neutron bomb technology in the 1980s, but they didn't deploy this weapon.

So, when you see... I know you, Western scholars, when you see evidence that China is developing some technology and you argue that, yes, China will deploy this weapon, but I would argue [unclear] China will deploy this weapon, you need more evidence. So, what are we deploying? I mean weapons, deploying weapons. So we have... We are deploying [unclear], the land based mobile solid propellant missile, and we are also deploying the submarines, [unclear] submarines.

So the other side – what are we developing? I mean technologies. Up to now we just say evidence that China is doing this technology. We have no evidence about its deployment. So this part about the MIRV [?], there are some reports about MIRV. China has never confirmed this but [unclear] America about the MIRV and also missile defense. China declared this test, so we are doing missile defense, but how and whether to deploy missile defense we do not pay [?].

### **LI BIN**

Thank you, Riqiang. Riqiang just raised a very important point. That is, China may work on some nuclear weapon technologies in its nuclear modernization, but that does not suggest China will deploy that technology. So I have a follow-up question. That is, why such kind effort have China's national security, and what is the calculation behind the Chinese effort? How... You know, how do the Chinese decision makers choose what to do on technology and deployment? So, could you explain your observation about that?

### **WU RIQIANG**

Okay, thank you. To my understanding, there are two drivers of China's nuclear modernization. The first one is to improve China's... the survivability of China's nuclear weapons. [Unclear]. The second one is just to follow up technology development. These are two drivers. So let's talk survivability first.

So, my understanding is the turning point of China's nuclear modernization, or we can say the whole military modernization, in the bombing of the Chinese embassy in Belgrade in 1999. So,

you know, I think you all know... heard yesterday about the 1999 is a turning point for Russia also, but China's story... the story for China is in the 1980s China and the US were allies, and the 1990s is, how you say, a Chinese [unclear].

So, after the bombing, after the bombing, China realized that we need a nuclear deterrent against America. So what do we have at...? What did we have at that time? DL5. We just DL5, the silo-based liquid propellant [unclear] to target continental United States. So, that's very easy to understand why we needed to modernize our nuclear weapons.

So, actually, after the bombing China set out a project named the 995, Project 995. The name of the project comes from the date of the bombing. The area... Maybe we can say area. Almost all weapons we see today, all surprising [?] weapon we see today comes from that project, including the nuclear one and the conventional one.

So, now we have... We have something like eight [?], as I said, not invulnerable but has some survivability, so I believe China-US strategic relations [?] are stable now, and in the future there are two challenges to the China-US strategic stability. One is missile defense. The US could build better and bigger missile defense. And the second one is technology to locate mobile missiles. So I don't know how to do that. It could be space radar [?], it could be jaws [?]. I don't know. But if you have a... If America has a breakthrough on this technology to locate a mobile missile, that would be a big concern for China.

And I also want to add one point about China's submarine, [unclear] submarines. You know we are developing ballistic missile [?] submarines, but my point is our current ballistic missile submarines, the type 94, is noisy, is very noisy according to America and [unclear]. So the current one is far from being operational. So [unclear]. It's far from... I think China needs ten or 20 years to build [unclear] quiet ballistic missile submarines.

And... Okay, this is about survivability, about the technology follow-up. The logic is very simple. Whatever you have - by you I mean other countries - whatever you have, we have. It's simple. But please note, at ISA [?] we have this technology. It doesn't mean we will deploy the weapon. This is a totally different thing. So, about technology development, we are developing MIRV. So, personally, I don't like MIRV, so from my perspective MIRV is a kind of... something like you put many eggs in one basket and the basket itself is vulnerable, so why would they do that?

But I support to develop MIRV technology. It's a... If you just want to know the technology, it's good [unclear 00:23:23], but if you... I hate to deploy MIRV as [unclear]. I will be very disappointed if China really did that.

The other is for missile defense. As I said, I don't know how and whether China would deploy that, but I... my view is I don't like a national missile defense. I mean missile defense protecting the whole territory and population. This is just not doable, technically not doable. So it's not good for... not a good choice for China, but the terminal missile defense to protect... terminal missile defense protecting some vulnerable [?] targets like the Three Gorges Dam and like [unclear] silos, it could be useful.

## **LI BIN**

Thank you. It's interesting that Riqiang suggests the Chinese government... that it could work on the technologies or move on the technology of missile defense, but he does not suggest that the Chinese government to deploy national missile defense. This is a very interesting suggestion.

Now, I have a question for Chris. Chris just mentioned the dimension of nuclear modernization but nobody else echoed that. That is the quality of good [unclear], the possibility of quality of

[unclear] of nuclear weapons in China. So, my question to you is how do you believe some quantitative build-up in China would change, for example, the probability of nuclear use between China and the United States, or the probability [?] of nuclear weapon use is zero? Then how does the quantitative build-up in China would change the strategic calculations in China and the United States and in some other countries?

So, which part of nuclear modernization is acceptable by the United States, and which part is worrisome? Chris.

### **CHRIS TWOMEY**

Well, so I think there are elements of a quantitative build-up that are less problematic for the officials that I speak to, and I'm just a professor in Monterey and this is my own view. But some of the concerns are focused on a couple of areas. One, I think, the submarine area in particular is very worrisome from a strategic stability perspective, or others. Riqiang's use of the term operational, you know, is maybe more... Effectiveness might be more accurate.

I think there seems to be, you know, a lot of attention in... even in the Chinese media on touting the achievements with regard to the Chinese ballistic missile launching submarines, which is a rare incidence of transparency on strategic issues that came out, I guess, late last year. I think this is an area that's very worrisome, in part because of the point the Riqiang made, which is according to, you know, at least one chart provided by the Office of Naval Intelligence, the quietness of the Chinese boomers is relatively low, but I think it's also related to grave concerns about command and control. One of the issues that many of us have taken solace in with regard to the Chinese arsenal is exactly this point of vulnerability that Riqiang and others have mentioned with regard to the separation of the warheads from the missiles in most time periods or most of the units.

That won't be the case for an SSBN, so not only do you have to develop new command and control arrangements to ensure positive control for a submarine whose very nature of communication back to a base exposes it to some vulnerability, but for the first time you have to engage in a personnel reliability program that you haven't had to go through because of this very conservative approach to security on the basis of your land force.

You've got to do both of those at the same time while also managing, you know, a new kind of submarine that has traditionally proven problematic for the Chinese, the previous Xia-class [?]. You know, maybe patrol... try and patrol once, and so I think that raises a range of concerns. So that would be, kind of, one area I would highlight.

Second area I would highlight as disconcerting to many in the West would be the expansion of the arsenal more in theatre [?] missiles that may lead to some co-location, and there are some concerns that, in particular, the intermediate range DF21 system that includes an anti-carrier variant, anti-ship ballistic missile, you know, might also be located at the same base facility that a nuclear armed DF21 might be, and this begins to be a pathway to escalation from a low level conventional war, or maybe an intense conventional war, to a nuclear war. I need to entirely align myself with Admiral Blair's comments. I think he's in broad swathes correct, but I think there's enough of a chance to make it worth our while to try to find ways to mitigate that. So those are two areas.

And then finally, you know, just the larger quantitative increase in a Chinese arsenal feeds into concerns from the United States as we imagine a future post-Putin Russia that engages in some arms control discussions there. We would need to have some reassurance from the Chinese side that a next round that reduces to what the president has said he thinks is viable of around a thousand wouldn't be met with a similar increase, if you're already at two to three hundred for

the Chinese, leaping up to a thousand themselves [unclear] parity would be a complicating factor in, sort of, the broader global arms control community.

**LI BIN**

Thank you. Sugio, he just raised a similar concept, having Chinese development of submarine launch [unclear] resource. So, besides that, what else in the Chinese nuclear modernization do you worry most, you know, beside nuclear submarines? So, what part of Chinese nuclear modernization do you worry most, and what part do you feel is okay that does not change Japan's security?

**RUGIO TAKAHASHI**

At first I think, you know, I cannot find any okay [unclear]. Nothing is okay. One of the reasons, of course, you know, [unclear] Article Six license, and then [unclear] from the strategic perspective, you know, my thought is Chinese modernization, Chinese nuclear modernization, develops both in conventional and nuclear things.

And, you know, we discussed [unclear] US-China strategic [unclear] and, you know, actually, US strategic stability is not just a [unclear], you know, mutual vulnerability, but also it must include then arms race stability, and the current situation is, you know, arms race stability is very terrible. There could be some kind of [unclear].

And that is nuclear strategic [unclear] domain, strategic nuclear [unclear] strategic stability. But if you look at conventional regional strategic situation, the [unclear] between China and Japan... I mean Japan, not as, you know, a state but as, you know, geographic. Japan is, you know, Japan islands, which has [unclear] defence force [unclear] in Japan. You know, the [unclear] between China and Japan is not so good.

You know, Japan, the US side, has only a limited number [unclear]. In Japan that's the conventional [unclear] capabilities. So, Chinese side has huge – how to say – incentive or benefit of the fast strike, and the US-Japan side doesn't have retaliation, conventional retaliation capability within the theatre [?]. So, concerning this unstable situation, you know, only looking at the strategic [unclear] does not... necessarily good, you know.

If you have strategic mutual partner with [unclear] and, you know, if you know China could cancel out a US nuclear shadow into the testing [unclear] regional [unclear], then regional military balance doesn't matter. And looking at that, the US-Japan side is very vulnerable and the Chinese side is very invulnerable, looking at the geographic [unclear], given strategic [unclear].

So, for that reason, anything in the nuclear domain, as long as it develops with conventional [unclear 00:33:31] modernization, that is a serious concern for Japan.

**LI BIN**

So you are suggesting [unclear] is not to have strategic [unclear] with China.

**RUGIO TAKAHASHI**

Strategic stability based on mutual vulnerability.

**LI BIN**

So you do not suggest... yes.

**CHRIS TWOMEY**

Can I just jump in? I mean, I agree with the concerns that he... that Sugio just raised. I guess I see it a little bit worse. I don't think there's arms race stability either. I think there is not a nuclear arms race between the US and China, of course, but there is strategic arms stroll, to swipe a term that I think has been used by others for the last 20 or so years, an interaction between the US development of missile defense capabilities and then a range of Chinese strategic delivery system capabilities that are developed in response to that to include some justifications for the SSBN force.

And so I think there is an interaction between strategic systems that is competitive and interactive in a worrisome way that we shouldn't neglect.

**LI BIN**

So now I would like Xiangli to add her observation about why China needs to modernize its nuclear force. Please.

**SUN XIANGLI**

I think the Chinese policy makers are very clear about the goal of nuclear modernization. So, objectives include to make the nuclear stockpile safer and more secure and to enhance the survivability and penetration for... in order to keep [unclear] its minimum deterrence. So, the objectives are very clear.

If you look at the [unclear] nuclear modernization, you can see that all these nuclear modernization efforts are guided by China's very unique self defense nuclear doctrine, and also responds to the new challenge. So it's some kind of doctrine driving and also challenge responsive [?].

I think, in order to understand the [unclear] China's nuclear modernization and China's approach to nuclear deterrence, it's very important to understand first about China's nuclear doctrine. China's nuclear doctrine and its main principle for its nuclear strategies was shaped in the late 1950s and early 1960s when the policy makers defined the social... the only purpose of nuclear weapons as to deter nuclear attack, and defined retaliation capability as the major requirement for its nuclear force for its nuclear deterrent.

So... Which means China doesn't need to build up a large nuclear arsenal [unclear] to have more fighting capability. Only a limited nuclear force, a small nuclear arsenal with survivability, that's enough.

So, under the [unclear] of this kind of nuclear doctrine, China's developed a very limited nuclear force and exercised self restraint for a long time because its nuclear force... This kind of approach has its own advantage because it's only a small nuclear arsenal, so it can save money and it's easier to control, manage the nuclear arsenal. And also, you can keep China low profile and beneficial to their strategic stability. But because its nuclear arsenal is relatively small, so survivability is very critical. That's why China policy makers paid lots of attention to survivability. In the early stage the survivability efforts majorly included measures like hiding [?] the missiles in mountains and in some [unclear] any measurements, and trying to enhance mobility.

But later, when other countries' intelligence detection capability increased, and especially when other countries' [unclear 00:38:37] capability increased, the survivability of China's small nuclear arsenal was facing a big challenge. So, more [unclear 00:38:50] to enhance the mobility of nuclear forces. That's why this particularly explains why the current modernization put priority on the mobility enhance... increasing, including land based and sea based.

With respect to penetration, I think it's also a response to the challenge of... the new challenge that is the ballistic missile. Since the 1990s, and especially after 2002, when the US withdrew from the ABM Treaty, the ballistic missile challenge became a very big challenge to China. So, how to develop penetration became another [?] priority for its nuclear development because for such a small arsenal, even a limited ballistic missile can have a bigger impact on its... on the effectiveness of its minimum deterrence. So that's why the modernization, the penetration, the improvement, it's also another priority of the modernization.

But I think all the nuclear modernization efforts are good for China, and for example their efforts on their stockpile without testing, this means you needed to keep the stockpile safer and more secure without the testing. That will keep the stockpile safely a longer time, and that's also good for the world.

And the [foreseen?] penetration and survivability, I think it's very necessary for China to preserve its minimum deterrence, and these kinds of efforts, I think, it's also beneficial to strategic stability.

With respect of moving, I would add one point to [unclear], that yes, I'm not clear if China has had the moving missiles, but I would say that the US and Russia have moved their [...] ICBM, and this kind of moving, it's very dangerous. Because these ICBMs are for first strike, which are a high trigger alert, so it's very dangerous. These kinds of missiles are very destabilizing, especially for crisis stability. But it's not the case for China. All nuclear weapons in China are for second strike, or for retaliation, so moving, it's not so destabilizing.

Another point is that, just like Wu Riqiang mentioned, that moving technology is one of the major countermeasures against [unclear] challenge. But that doesn't necessarily mean it's the best or better choice, because sometimes moving a missile means you have to sacrifice some other countermeasures against the BMD, and/or sacrifice the mobility or survivability of the missile.

Moving or not, it depends on many factors. [Unclear], you needed first to have a balanced assessment of the advantage and the disadvantage. I think moving it's not necessarily the best choice for improving and survivability or penetration.

#### **LI BIN:**

I notice that the speakers from different countries have different views. For example, the Chinese speakers emphasize the importance of survivability of Chinese nuclear weapons, and according to Sugio, if China feels safe about its nuclear weapons, it would not worry about the possibility of nuclear strike. In that case, the regional stability may become a problem.

I think this is a typical security dilemma. In the further discussions I hope that the speakers could offer some solutions how to mitigate such kind of security dilemma. I also notice that the two Chinese speakers have some disagreement of, for example, [works?]. But you should know that they are Chinese, so when they express a little bit agreement, that means that they disagree with the other a lot. This is good.

I would suggest that we open the floor for the audience. We could maybe wait in a line, and my colleague will have a microphone. So before you ask your question, or making your comment, please identify yourself, and please speak slowly. Please note, four of the five panellists are not native speakers, that's not easy for us to speak your language.

I will give the first chance for Michael. Michael please.

**MICHAEL KREPON**

This has been a very helpful panel for me. A question for our Chinese colleagues: One of the drivers for MIRVs, in our country, was cost effectiveness. So we could get more warheads for less money. You know the story. Since China is so cost conscious for its defense capabilities, is this not a factor for you?

And if I may, is your nuclear posture immutable? Is there nothing, no circumstance that you could foresee changes in it?

**LI BIN**

Michael, is this a question or a comment?

**MICHAEL KREPON**

It's a question. What would change your key elements of nuclear posture? Or maybe they're unchangeable.

**WU RIQIANG**

I prefer to believe cost is not a factor, at least now. Developing MIRV is not about saving money, it's about developing the technology. But the second question, first I like current Chinese nuclear posture, I like it very much. And we maintain this nuclear posture for several decades, but you should not take it for granted that we will maintain it forever.

The factor that might influence the Chinese nuclear posture is about American view. If American missile defense, [unclear], American technology could undermine China's nuclear survivability. So China expressed concerns for missile defense many times, as recently about South Korea, it's very typical. China expressed concern, and South Korea is reluctant, but America put high pressure on South Korea to force South Korea to accept missiles.

America just ignored China's concern. As I said many times, China is not concerned with current missile defense. We are concerned with the unpredictable future of American missile defense. But America again and again said we will not accept any limits on missile defense, so that's a problem.

I am concerned mainly, as America develop very better and bigger missile defense, China might feel pressure to build more weapons. And, if you have more weapons, you have more options. And more weapons and better weapons, naturally you have more, and the flexible military options about nuclear weapons, and your military will try to reach that option, and that might change China's nuclear posture.

**SUGIO TAKAHASHI**

I'd like to jump in. I agree with Riqiang. I don't think the idea is to save money. Instead, the idea is to waste money. Because China is rich, China has money, China wants to understand different

technologies. When China realised that MIRVS may not be that useful, China would decide not to do it. That's my answer.

### **TONG ZHAO**

Tong Zhao, from Carnegie-Tsinghua Center for Global Policy. During the discussion, several speakers mentioned the problem of comingling of Chinese conventional and nuclear weapons as a potential problem for crisis stability, and some people would even argue that China does not have separate command and control systems for its conventional and nuclear forces.

No one really knows, in this room, about the situation on the ground, but let's assume that China does not currently have separate command and control systems for its conventional and nuclear forces, and let's assume China is interested in adopting the western proscription for China to develop separate command and control systems.

The question for the Chinese is how much endeavour is that, in developing separate systems, in terms of economic investment and investment of other resources. Particularly as most of us assume that United States is much more advanced in this area, so maybe the United States has completely command and control systems, and therefore maybe you have more insight about how much endeavour is that for China to follow suit? That will be very helpful for the Chinese to understand the practicality of adopting that policy.

### **CHRIS TWOMEY**

He was asking whether the Chinese thought it would be worthwhile to do it. I guess I would merely say that I think there are areas that, although somewhat complicated by some interpretations of NDAA 2000, there are still, nevertheless, areas for potential collaboration to reduce some of the concerns. I think permissive action links would be an area that would be long over-ripe for such collaboration and discussions. Discussions is better than collaboration.

### **SUGIO TAKAHASHI**

[Unclear] around the American nuclear command control system, including a personal [unclear] program in a [unclear] communication channel, also important is different [elective?] control system. That is tremendously hard to say. A huge, complex mechanism. And you need to spend many monies to develop that.

I think the United States could do that, because they developed that in the Cold War era. I don't think US can restructure, or rebuild that system again now. So in a sense, for the Chinese, I don't think you can develop almost the same degree of complexity in a [unclear] program system as the US has. However, as I said, the Chinese nuclear [unclear], the [unclear] with Chinese nuclear force is to separate the nuclear domain from its conventional.

So in a sense, I think it's very reasonable to develop a nuclear independent command and control system.

### **WU RIQIANG**

First about the comingling, Chris use the word colocation. My point is I don't believe we collocate nuclear and ballistic missiles together, because different missiles requires different storage conditions. And the second thing is that it's not good for China, because the nuclear missile has very high priority. We want to make sure a nuclear missile will not be fired, and the conventional missile is relatively lower.

We do operate both conventional and nuclear ballistic missiles, I understand his concern, I share his concern. And for the separate command and control systems, my understanding is nobody can separate command and control systems. Nobody. Including America.

America is running both attack submarines and ballistic missile submarines, and the VFF [?] communication system is used for both of them. So you cannot separate them. It's a good idea to try to do that, but I don't think we can do that.

### **LI BIN**

I think we need some in depth discussion on this issue. There are many reasons. One reason is that China does not have nuclear missiles. China has nuclear warheads, but China does not have nuclear missiles. You cannot collocate convention and nuclear missiles. But apparently this is an issue we need to discuss.

### **SON SHARI**

My name is Son Shari [?] from Seoul, Korea. I am a journalist with broadcast news outlet SBS. And actually, Professor Wu [?] [preventively?] addressed my question, and I'd like to ask him a question about that issue, because it is a very sensitive issue in Korea, because United States, Korea and China.

General Scaparrotti, who is a commanding general in USFK, United States Forces Korea, advised the United States government administration to forward deploy United States [third?] asset to South Korea. I'd like to ask a question to you that, which is China so worried about that issue?

Because United States argue that it is only directed to North Korea, although the ANPPI [?] [unclear] is coming with that system, but it's only directed to North Korea, it's not related to China. Is it reasonable, and does that really affect the strategic balance in the region? Also will it affect China's future modernization effort of its nuclear arsenals?

### **WU RIQIANG**

I did a lot of work on side issues. First, China is not concerned with THAAD interceptors. China is concerned with THAAD reader. The reader is a SIM [?] reader America deployed in Japan. So the reader is a very good reader, this reader is used for target discrimination, to discriminate between real warheads and decoys.

This job is a most difficult job for national missile defense, and for US missile defense. So if you deploy a reader very close to China, this reader has a chance to see China's missile launches. The summary large missiles and the ICBMs. The most important thing is, this reader is so close to China, so the reader can see the decoy release process of the Chinese missiles.

The decoys are very light, and the real warhead is heavy, so if you watch this process you can know which one is real warhead and which one is decoy. This is extremely important for China. That is why China is concerned with that.

China is concerned with this issue also because the reader is not useful for South Korea. I will tell you why. THAAD is a high altitude intercept system, so THAAD cannot protect the north part of South Korea, including Seoul. THAAD can only protect the south part. THAAD is a high

altitude system, the reader is used to discriminate decoys and warheads, but for THAAD, the decoys will be filtered out by ear.

If the interceptor happens at the high level of atmosphere, atmosphere will filter out all decoys, you do not need that reader. So I cannot understand why you need such a reader in your area, and this is a big concern for China.

### **SUGIO TAKAHASHI**

Based on Riqiang's technical analysis, I could make a political recommendation, that is South Korea could deploy [unclear] with THAAD interceptors, and some more moderate radar system. In that case, China would not worry.

### **WU RIQIANG**

Yes, you have your [overtalking] reader. The reader is enough to protect South Korea. You can integrate the THAAD interceptor with your [unclear].

### **CHRIS TWOMEY**

I would just highlight, for our American friends who haven't spent a lot of time talking to Chinese interlocutors, that this exemplifies the overlap between what we consider a theatre or regional missile defense systems and national missile defense systems. When the Chinese look at the US XPAN [?] radars in Japan, potentially a third Tipitu [?] in South Korea, the [Pave Paw?] system that was sold to Taiwan, they see this as an integrated forward deployed set of radars that are systematically intertwined with the GBI interceptors based in Alaska and in Vandenberg.

And that differentiation, that we try to draw a line, we're not trying to challenge the strategic balance with China and the NPR or in the BMDR, I think falls on deaf ears for some of these technical reasons.

The way to get to the bottom of this is to have further technical exchanges between the US and China, something that China's been somewhat reluctant to do, but I think the US also needs to recognize that some of those technical exchanges are going to highlight a genuine concern by the Chinese side, as best I can tell as a non-technical person.

### **SUGIO TAKAHASHI**

I will just give you some short comments from the Japanese experience. The current pressure against China is something like the movie which I have watched. When the Japanese government decide to start joint RRD [?] or missile defence system, in 1998, and decided to deploy missile [unclear] in 2003, so between 1998 and 2003, Japan has been strongly criticised by China.

Don't deploy missile defenses, don't go with the United States, maybe sometimes they're saying Japanese missile defense systems could be deployed in Taiwan, or that system could be [unclear] with Japanese strike capability like that. So that was a very, very strong criticism.

However, after 2003, the Japanese government decide to deploy missile defense. [Unclear]. From my view, this is essentially the same as what they did between 1998 and 2003, against

Japan. If I have a comment [unclear] you should decide by yourselves. And then China will adapt to the new reality.

**LI BIN**

I like the idea [unclear]. For China there are two ways to respond to such kind of military deployment. One is a diplomatic response, the other is military response. I like diplomatic response, because in that way we could have discussions, we could make compromise, we could try to mitigate our security dilemma.

But if that possibility is gone, then we have to see some kind of military competition, that would be unfortunate.

**CHRISTINE LEAH**

My name is Christine Leah, I'm from Yale University. David Santoro and a few others have been pushing for a formal US/China nuclear dialogue, but it strikes me that nukes are just part of the overall military balance between states. I'm wondering what you think the prospects for conventional arms control are, not confidence building measures, but formal arms control, and what the areas of linkage between the two worlds are, besides ballistic missile defense, and how do you factor in US allies into that equation?

**CHRIS TWOMEY**

I think the chances are between zero and nil. And I don't mean that to be as flip as it sounds, but I think there are substantial US commitments to the region, US interests to the region. I think the Chinese security situation does face its own set of challenges, and we are extremely far away from having the simpler discussions in areas where there are some clear red lines. There are not clear red lines as you move into the naval and aerospace realms that gravely complicate any ability to start to begin that process.

There are national interests that are not perfectly aligned, and states are going to respond to that by developing military capabilities to defend them.

**SUGIO TAKAHASHI:**

My thought is very similar to Chris. Considering the different strategic environment to the United States and in Japan or other countries, that conventional [unclear] must be very [unequal?], just like [Washington never?] [unclear]. Considering the negative implication with the Washington [unclear] treaties, unequal treatment of Japan, to its implication of the Japanese domestic politics in 1920s or 1930s, I don't think that is a good idea. It would be worse off in the long term.

**WU RIQIANG**

I'd like to raise a successful case, that is our conventional arms control because China and Russia. In the Cold War, both sides deployed more than one million soldiers along the Chinese/Soviet border. Ten, 20 years ago the two countries signed a few conventional arms control agreements, and they successfully reduced the number of soldiers to one tenth of the numbers. So we should believe that there's a chance.

## **CHRIS TWOMEY**

There's certainly room for plenty of both conventional and nuclear oriented confidence and security building measures, but they're far from eliminating or greatly curtailing the stockpile of either side's weapons.

## **CHARLES FERGUSON**

Charles Ferguson, Federation of American Scientists. Li Bin and Carnegie Endowment, thank you very much for a very exciting panel of great experts. My comment is based on a paper that Li Bin wrote more than ten years ago. He set out to describe how China could deploy its nuclear arsenal in a way to emphasize its no first use policy.

And I apologize, Sun Xiangli, I missed the first part of your talk, so maybe you mentioned no first use, but I don't recall anyone, this morning, actually explicitly talking about no first use policy. My question, especially to Chinese colleagues, and others can weigh in as well, is – these things we're talking about, possible deployment, maybe a thin missile defense system in the future, there seems to be R&D going on in missile defense, R&D in MIRVs, the desire to have more ballistic missile submarines.

On the one hand, you could say more ballistic missile submarines, at least a few more, could help enhance China's survivability and no first use policy. Even if the missile defense system, as where John was talking about, the protecting Three Gorges Dam, and some missile sites, that might also enhance that policy. But if you go too far, what would be the response?

If you have too many ballistic missile submarines that are highly accurate, it can have counterforce capability, then the other side would say wait a minute, you don't have a credible no first use posture anymore. And also the flipside of that, and I'll conclude, is looking at that, maybe Chris can address this, looking at it from the US perspective, and the budget constraints running right now, the heavy pressure, news stories coming out of this conference yesterday about the \$100 billion or more to build the next generation of ballistic missile submarines to replace the Ohio class for example, we could have mutual interests here, mutual economic interests, to adopt something like the Chinese posture, move down that road.

It would save the United States a lot of money, and also emphasize that nuclear weapons are just for deterrence purposes.

## **LI BIN**

I would suggest that we collect two more questions, and then we invite the panel speakers to respond. So please make your questions and comments short.

## **HANS CHRISTENSEN**

Hans Christensen, I work with Charles, Federation of American Scientists. But he is the boss, so he can ask the long questions.

It seems there are some inherent challenges, obviously, in the US and Chinese postures, if we just talk nuclear, of course, and that's an incomplete picture, I know that. US posture is focused on counterforce, so it's driven by the need to hold forces at risk, but the Chinese is a different posture, that might become more countervalue in the future, but a different kind of objective in

terms of what you go after. There is an inherent vulnerability that is sort of embedded in that relationship.

But the United States has been hunting Russian SS25 [movals?] since the mid 1980s, a lot of experience in doing it, doesn't make it easy, doesn't mean it's necessarily a solution to holding them at risk at any given time, but there's a lot of experience there.

When China moved to focus on mobile launchers as well, ironically we haven't seen that being accompanied by a decision to dismantle the silo-based ICBMs, and that puzzles me. If the idea is, we have concluded they were so vulnerable that we need to go to mobile, so they are they not gone? What is the thinking about maintaining the silo base? Is that a different mission, is it just old love, you don't want to give up the old systems? What's the thinking about it, if you could talk a little about that.

### **LAURA GREGOR**

Laura Grego, from the Union of Concerned Scientists. Professor Wu, you mentioned that China, while looking at technologies, may not adopt them – and this is more of a comment. China is looking at ballistic missile defense, and my guess is, as it understands the difficulties, it may become less concerned about US missile defence capabilities. Which may be a good thing, in that sense.

Looking at that, you mentioned the forward based radars, and currently the United States missile defense system has no ability to incorporate that data in any systematic way in order to defend against counter measures. I know you've thought about missile defense quite a bit, as a challenging question, if the US froze its capabilities right now, and left its sensor structure as it is, or essentially just did incremental technical improvements, do you think China would be satisfied, at that point, that it wouldn't be a threat to its nuclear deterrent?

### **LI BIN**

Thank you all for raising very good questions. I'd like to make a very short response to Charles Ferguson's question. Xiangli, Riqiang and I, we disagree on some specific issues, but on those issues, all three of us are on the same side in China. We always want debate with others on those issues, so we should not worry about that part.

I would like to invite the four panellists to give their final remarks, very brief, right to the point. So who want to take the lead?

### **WU RIQIANG**

To answer the question why maintain silos: I don't know. It also puzzles me. My guess, just purely a guess, we want to maintain that for flight test, for technology demonstration, you have the missiles, and the silos, you can use that as a platform to test some technology or something like that.

And for Laura's question, first you said US reader currently cannot integrate the data, yes, maybe, I don't know. I'm not a reader specialist. But we are concerned with the future. If the US can stop here, I think it's a very good, it encourages China to maintain its current nuclear

posture, definitely. But we will still technically modernise the nuclear forces, but the current nuclear posture, and the number of it, will remain unchanged.

### **CHRIS TWOMEY**

Very quickly, three points. One, to build off that last one, I think it's hard to imagine the US staying in place in all the different dimensions that China would need to hear, and that's why there needs to be an official discussion on this. Staying in place would mean freezing the deployment of the SM3 block 2A rounds that are being co-developed with the Japanese, that have potentially some grounds for concern for China, and those the US feels a need for, for conventional missile defense in theatre.

Second point, on Charles' question about US moving towards sole use, again I think that's an area that the US is looking to talk to allies about, and finding ways, in particular, to reassure the Japanese in any potential future moves.

Finally on no first use writ large, we have three members from the scientific community in front of us, and unfortunately Ju Chunghu [?] was not able to be here from the military side, although he represents a particular view, but there are others in the military who would also bring something to the table on that discussion. And while no first use remains sacrosanct, the definition of what constitutes a use is worth talking about.

There are increasing references to launch on warning, or launch under attack. There also discussions in the sciences and artillery campaigns about manipulating threat levels, so there are areas where we might engage in more discussion about what are the parameters of no first use in a constructive manner. I commend our three colleagues here for their avocation of that position, and hope they continue to win those debates.

### **SUGIO TAKAHASHI**

Actually, I want to summarise my proposition, that it is not – in Sino-US relations, it's too important to be managed by your two countries. China and the US has a huge vision of global implication, and just like Japan, South Korea, other countries, will be influenced by US and China, and also, these countries can influence, or some events in these countries can influence Sino-US relations, just like South China Sea events influenced your relations in 2010. So if the US and China think about strategic stability issues, or strategic integration issues, you should not limit your view on each other. You should have more of a comprehensive view, or a holistic view about strategic issues which includes, as I said, conventional [unclear], as in the [unclear].

Without building such kind of holistic, total view, we cannot achieve any stability. Even though you have the nuclear stability, but it doesn't necessarily bring a total stability. You should have the holistic view of that.

### **SUN XIANGLI**

I wanted to end on two points. Firstly about the silo based ICBMs. I would say compared to the mobile missile, the same with the ICBM survivability, and maybe it's a very poor, but I think the survivability is [unclear]. So because I think that it's still necessary to keep the ICBM, because it still play a role in our deterrent.

Another point is about no first use. Yes, I agree with Dr Lee that, yes, in China there are some voices supporting to [unclear] or to change the no first use policy, and some people say we should enlarge our nuclear arsenal in large scale, we have money, we have technology, why not? But I think this kind of voice is the view of some very few people, a minor group, and the mainstream, the strategic community, the mainstream and most policy makers still use this to angle for [unclear] commitment.

We think this is a major [unclear] of our nuclear doctrine, and this has its advantage, and this kind of nuclear doctrine, we have a very good and cost effective nuclear approach to our nuclear deterrence. So we would like to encourage our government to continually stick to this commitment. As again, this long standing position that they advocate, it's very unlikely it will be changed.

Finally, about the dialogues, I would say that we have had some very successful [unclear] dialogues between China's strategic communities and our US counterparts, and we have benefited a lot from that, promoting mutual understanding, promoting understanding of each other's nuclear doctrine. I would suggest all the counterparts to have this kind of dialogue.

And I also have the responsibility to push the government to set up some special agency, official or [unclear], with expertise in arms control and nuclear policy, to set up some kind of sustainable trackable official dialogue between China, US, and even strategic dialogue with Japan and other neighbour countries. Through these kind of official dialogues we can promote mutual understanding of each other's nuclear doctrine in a [unclear] and professional way.

And I think we can make [unclear] to each other's counsel, especially to promote the understanding on each other's modernization.

## **LI BIN**

Thank you. Today we have had very interesting discussions, debate, at the international level, and also at national level. I think this is very new for international audience, for you to see how the Chinese disagree with each other. Even in the last minutes, I noticed that Xiangli expressed some different view with the Chinese government – that is very interesting, and I hope that we can continue such kind of discussions.

I would suggest that we thank the distinguished speakers for their wonderful discussions. So thank you all.