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Transcript

What Should Be Done in the Near Term to Strengthen the Nonproliferation Regime?

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FERGUSON: Good morning. Those of you here yesterday evening and those of you who already know me know that I'm Charles Ferguson. I work here at the DC office of CFR on nuclear issues. And it's my pleasure to welcome you to the second panel for this workshop on the nonproliferation regime and mention some housekeeping items right off the bat.

Number one, please turn off any cell phones, any electronic device that may interfere with this recording equipment, because we are recording this. It's going to be transcribed. The speakers' remarks are going to be up on the website. So that's on the record. So this is not just a resource for the participants in this workshop, but we hope to have this be a resource for all sorts of people--educators, policymakers, even the general public interested in these issues. And it's going to be placed on the International Institutions and Global Governance part of the CFR.org website.

And that gives me an opportunity to thank the Robina Foundation for their generous support in sponsoring the International Institutions and Global Governance Project and this nonproliferation work in particular. And a first focus area of the IIGG project is on nuclear nonproliferation, and it's great we have the deputy director of the program, Kaysie Brown, with us this morning, and Stewart Patrick is director of the program. He's a senior fellow here at CFR as well.

So with that, let me just quickly recap what we did yesterday evening, for those of you who weren't here or those of you who were here who want a quick summary of what we've done so far.

So I tried to channel, maybe somewhat tongue in cheek, two other Charleses, Charles Dickens and Charles Darwin. So I said

that we have three panels, and the way I think of it is we're haunted by three spirits or ghosts. So maybe think of this as Charles Ferguson's *A Nonproliferation Carol*. (Laughs.)

So last evening we had Joe Cirincione and Scott Sagan play the role of the ghost of proliferation past, and also present as well. So I had them take stock of where we are now in terms of the current health of the nonproliferation regime, with an eye to what's taken place in the past, because the past, we know, is a pretty heavy burden with us in anything political, but certainly in dealing with nonproliferation.

And Scott did an expert job at laying out or looking at the issues of Articles 2, 4 and 6 of the NPT and arguing, I think quite effectively, of a shared responsibility that all states should be working toward nuclear disarmament and general complete disarmament, and all states have a shared responsibility in maintaining the Article 2 prohibition against the spread of nuclear weapons, the non-nuclear-weapon states, and the Article 4 access to peaceful nuclear energy.

Joe Cirincione did a superb job as well, looking at where we are now. He was very optimistic. He laid out a 10-point prognosis. He was like Dr. Joe. He said, we've had this sort of proliferation patient kind of on a stretcher, and I won't say life support, but kind of beaten up, but now he says the trend is looking good and he said we have, in effect, a six-lane highway of opportunities before us over the next 12 months to, say, four years in the new administration, and also international partners feeling re-energized on the road to the review conference next May in New York, 2010.

So then I also channeled Charles Darwin in the sense of historical contingencies and the evolution of the nonproliferation regime and thinking about the overarching theme of the Global Governance Project is the search for the application of universal rules. Ideally we like universality, all states adhering to the same set of rules, sort of country-neutral formulation. But in reality we've had this historical contingency upon us because of the way--you know, the United States was the first to develop the bomb and how other states responded to that in terms of proliferation.

And so, we had this--I was talking to Jonathan Granoff before we got started--this kind of weird kind of hybrid treaty. You have two classes of states to find under that, whereas we don't have that in other weapons-of-mass-destruction type treaties.

So that was a very quick recap, some of the themes from last night. And so this morning's panel, we're going to look at the ghost of proliferation near term--next year, next four years. What can be done to keep improving the nonproliferation regime? What are the other challenges before us?

And we have four expert speakers on this panel. So since we have four speakers, we've extended this session a little bit longer than last night's session to give us plenty of time to talk. But I've told the speakers that I want them to keep their remarks within 10 minutes, and so we have plenty of time for the rest of you to ask questions, because I said this is a workshop.

The difference between a workshop and a conference is you are all participants. There's no audience here. I want you to ask questions if you want to ask questions and to interrogate the speakers, to challenge them, support them. What do you think is necessary for us to develop better collective wisdom at the end of this workshop?

So with that, let me first introduce Paul Lettow, who's going to go first. And then we'll have Larry Scheinman go second, Henry Sokolski third, and at the end of the lineup, Dennis Gormley. Dennis will help us segue to the final panel.

So we have the speakers' bios in your handout, but let me introduce Paul by saying he's achieved an incredible amount for someone relatively young. He worked at the Bush administration at a fairly senior level. He's written a book on Ronald Reagan and nuclear weapons. He's studied at Oxford. He's a lawyer. He's writing a report for the Council on strengthening the nonproliferation regime. Hopefully that report will come out in the next month or so. And he's a very smart guy and he has a lot of creative thoughts about how to improve the nonproliferation regime.

And with that, without further ado, let me turn it over to Paul. Thanks.

LETTOW: Well, Charles, thank you very much for that. It's great to be here, and especially great to see in some cases very old

and long-time friends, and in some cases to be with people whose own writings I have read and benefited from very much over the years. So thank you, Charles.

I think our purpose here on this panel is to look at near-term efforts to strengthen the nonproliferation regime. To do that, I do think it's helpful to take a short trip back in time to look at how we ended up where we are at this moment in the nonproliferation world.

A lot of the pre-history of the Nonproliferation Treaty, as many people in this room know well, goes back to the late 1950s and Frank Aiken, who was then the Irish foreign minister, who, before the UN General Assembly and elsewhere, gave a series of speeches and pushed for resolutions, the purpose of which was not to have a bargain qua bargain, but on the principle that nonproliferation was a benefit for all states, whether they then had nuclear weapons or not.

The negotiations got underway in what was then the 18-nation disarmament conference. And the way that the NPT kind of evolved is itself a cautionary tale in treaty-making. The United States and Soviet Union went into the negotiations in a way on the same page; that is, they both wanted a treaty more or less along the lines of Aiken's idea, but they ended up squabbling for about four or five years, first over the notion of general and complete disarmament, which the negotiators now acknowledge was essentially a propaganda tactic, and then, second, over a more serious proposal on the U.S. side, which is the multilateral nuclear force. Now, some people in this room undoubtedly remember it. That was a terrible idea whose time took too long. But the negotiators fought over that for years.

Anyway, in the meantime, several of the non-nuclear-weapon states, and particularly some of the non-aligned states, started to organize and first pushed for a disarmament clause in the treaty, which, of course, became Article 6, and then eventually for peaceful uses of nuclear energy, which, of course, became Article 4. And there was lots of contention during the late stages of the negotiating process, roughly 1966-67, through the signing in 1968, over exactly what Article 4 would entail and what it wouldn't.

And several states pushed to have enrichment and reprocessing explicitly included in the terms of Article 4, and several states pushed to keep it excluded. Others, such as Sweden and actually India and Romania, said, "Well, this is a very tough issue and we should give it the attention that it deserves," but the conference never did. And we ended up with what became Article 4 out of a series of compromises in what was a tough negotiating climate.

Well, I raise this because, in a lot of ways, the chickens have come home to roost from Article 4; that is, it was known at the time that Article 4 posed a potentially very dangerous problem in that it was possible, through enrichment reprocessing--which, as we all know, are the technologies to produce the material for nuclear power reactors, are also essentially the same technologies as those that produce the fissile material for a nuclear bomb--and it was certainly known at the time, although probably not appreciated fully, that this would cause a problem eventually because it would be possible for a country to claim that it was developing nuclear energy peacefully, and thereby arrive really at the doorstep of a nuclear weapon.

I also want to raise very quickly a few points about solutions to this problem that were posed over time. And I raise it, as you'll see, because many of these ideas have now returned that, in fact, are correct. In 1953, so 15 years before the Nonproliferation Treaty, State Policy Planning staff, of which we have a representative here today, recommended that all enrichment and reprocessing should be done only in regional facilities and parks.

Italy, during the NPT negotiations, proposed that all fissile material--that fissile material should be essentially given to non-nuclear weapon states at below-market rates and that the money that the nuclear weapon states took in from it should then be put into a bank for developing countries.

And then William Foster, immediately after the treaty was signed but before its ratification, suggested that essentially non-compliance would be judged on a case-by-case basis. But he said something interesting, which is, "If the facts indicate the purpose of a program is a weapon, that would tend to show non-compliance," which sounds a lot like what is now a kind of criteria-based system.

In 1970, RAND said that the nuclear suppliers should band together and cease supply--that is, ban supply--when it's not justified on economic grounds.

In 1975, the Arms Control Association and Carnegie, of which we also have representatives here today, stated that the nuclear suppliers should restrict enrichment and reprocessing, and again, that enrichment and reprocessing where it doesn't exist should only be conducted in regional fuel parks. And then, ever a source of surprise, the Reagan administration, in one of its classified National Security Decision Directives on nonproliferation, urged serious consideration of multilateral enrichment and reprocessing arrangements.

Now, this is all back today. Why? I think, as I mentioned before, that we now have arrived at the point where, as I said, that those chickens have come home to roost from Article 4. If Iran developed a nuclear weapon capability, it would mean that two states that joined the NPT as non-nuclear weapon states would have developed a capability for nuclear weapons, and essentially through the same route--that is, enrichment reprocessing--on their own soil.

I think that could well broadcast that the NPT regime is weak and possibly even unenforceable, and at least some would perceive that nuclear weapons certainly bestow status and prestige. We discussed that last night extensively. So we may see the weakening of the NPT as an effective barrier to proliferation. And I think as many people, Joe Cirincione in *Bomb Scare* and the Graham-Talent commission and a number of books and articles have recently suggested, that we may see what is essentially a slow-motion proliferation cascade, particularly in the Middle East, where countries try to stay about a step or two behind Iran, but ostensibly within their NPT requirements.

So what do we do about it? I think yesterday we had an excellent overview. And Scott Sagan's presentation, I think, very, very effectively and comprehensively captured some of the ideas. Let me expand on them just a little bit to show that I think there is the beginning of a bipartisan consensus here in the U.S. as to some of the mechanisms that we can strengthen the regime by, and also potentially that we can build international support for those, particularly on the heels of Obama's speech in Prague, which I think, by any account, has generated enthusiasm and support abroad.

So let me start with the problem of enrichment and reprocessing. The Bush administration, as I think people here know, pushed for a year-on-year moratorium on technology transfer and supply to countries that did not have enrichment and reprocessing. That moratorium consensus started falling apart really late two years ago, but late last year the administration decided to somewhat change gears and to back a criteria-based system, which had been proposed by the French to the Nuclear Suppliers Group.

And the basic outlines of that are that the nuclear suppliers would, in fact, or could, in fact, supply countries that do not have enrichment and reprocessing technologies with those technologies under certain conditions, and those are fairly well-known--an additional protocol; essentially a good nonproliferation bill of health; some kind of economic justification. And then some of the ideas actually that came out last night would be helpful and have been discussed in this context, such as a bilateral agreement for effective safeguards in perpetuity, and also provisions for retransfer in cases of violation.

I think that kind of what is, of course, essentially a cartel mechanism could be reinforced by bilateral agreements. Brad Sherman has written a letter to the Obama administration about how to improve or strengthen the U.S.-UAE nuclear deal, and Henry may talk more about that. But that, I think, would be a smart way to kind of back up and support the cartel idea.

And finally, the flip side of this coin--and these efforts, of course, are restrictive--are that we do need to ensure that countries that do not end up pursuing enrichment or reprocessing are able to acquire fuel under reasonable terms or market-based terms or whatever else. And on this side, the ideas are well known. And Carnegie has done extensive work on this; probably start with commercial contracts, back it by consortium guarantees, blind fuel auctions, fuel banks, and potentially regional fuel mechanisms.

The next step would be--and we discussed this again yesterday--potentially having the Nuclear Suppliers Group as a cartel

decide that no trade will be conducted--no nuclear trade will be conducted with any country that hasn't signed an additional protocol. We'll run into stiff resistance on that with Brazil and Argentina and others, potentially.

Finally, another basket of these reforms or strengthening efforts would be the withdrawal of the Article 10 mechanisms. And here Pierre Goldschmidt has done some pioneering work. And certainly a generic resolution about freeze and return of outside technology would be useful potentially as an actual enforcement mechanism, but hopefully as a deterrence mechanism, to withdraw under circumstances of violation.

And then, finally, we face, with all of these provisions and proposals, clearly an enforcement problem. And here again, Pierre Goldschmidt has proposed a series of kind of rolling steps through generic resolutions through the UN Security Council that would say, you know, in the first--if the secretariat and board find a country in violation, then there is expanded access, then there is no nuclear trade, and so on and so forth; so a generic set of resolutions to prevent the kind of country-by-country steps. And essentially we've been forced into now a situation where we try and negotiate countries out of technologies they already have. And I think what Pierre is trying to do is to prevent that through this series of resolutions up front.

There are also a set of issues which we can talk about later--I don't want to get into in detail now--on strengthening the IAEA, and then on PSI and 1540, making sure that those are fully implemented and useful.

I'd like to end just with two points. One is the good news. I think President Obama's speech has energized people both here and abroad and has focused attention on these issues in ways that are useful. And I think certainly through using the arms control story, which is actually a remarkable story of cuts in our arsenal since 1987, and hopefully a further series of cuts with a START follow-on treaty and then ensuing treaty, that we can generate some leverage to actually move forward on some of these more restrictive proposals.

There is one word of caution, or the bad news, which is Iran. The National Intelligence Council has judged that if Iran actually develops a nuclear weapons capability or even a latent capability, that it's more likely than not that a few countries in the region will seek offsetting capabilities. And again, Joe Cirincione has stated the problem eloquently in *Bomb Scare*, and the Graham-Talent commission did as well. I think we have a real problem with Iran, and the timing is fairly short.

The good news to the bad news is that this is an area where obviously the United States can't do it alone and shouldn't do it alone, and where our European partners will be key, especially in the case of Europe--sorry, of Iran. But also, this is an area--nonproliferation is an area where we have had a policy of the, quote-unquote, "global stakeholder" approach to China in particular, but also Russia, and this is an area where Russia and China can demonstrate that and can be a global stakeholder and help solve the Iranian and North Korean crises.

So I'll stop there. Thanks.

FERGUSON: Thank you very much, Paul. That was great, setting the stage for this panel.

Next we turn to Dr. Larry Scheinman, a distinguished professor at the James Martin Center for Nonproliferation Studies at the Monterey Institute. He's based in their Washington, DC office. And I've had the pleasure of working with Larry over the last several years on some projects. And I'm sure he's thinking this is kind of déjà vu all over again. You know, if you go back 30 or so years ago, Larry was writing some of the seminal papers on this subject, some of the very issues Paul was just talking about.

So one reason why I invited Larry here is because he has that long track record, the institutional memory of what we've been struggling with for decades. And secondly, most importantly, he still has a lot of fresh ideas that need to be heard. And I think he's a great follow-on to Paul.

Larry's going to focus on the fuel cycle issues. And you can read his bio, but I just want to highlight that he's written a history of the IAEA and he's done a lot of consulting work for the agency. He used to be a senior official with the Arms Control and

Disarmament Agency, ACDA. And he's also been a professor at Cornell, at the University of Michigan.

So it's a great pleasure to listen to Larry's remarks.

SCHEINMAN: Thank you. My voice--there must be a lot of pollen in the air, so I'm going to sound a little bit hoarse. But hopefully I'll get across.

A lot of what I have to say has already been introduced by Paul's remarks. So if you hear a little bit of overlap, please forgive it.

I find it unnecessarily provocative and counterproductive to debate the meaning of inalienable right in Article 4 of the NPT. The language is as it is, and the meaning is not more precise, because consensus on anything more exact could not have been reached when the NPT was being negotiated. It's a political and not a semantic issue.

If national fuel cycle activities had been explicitly excluded at the time of negotiation, it's more than problematic that we would not have gotten an NPT.

We should also bear in mind that many of the issues that arose with respect to the Nonproliferation Treaty and the ensuing Comprehensive Safeguards Agreement, INFCIRC/153, were raised not by developing countries but by our allies, our friends, our partners.

If you think about the provisions of INFCIRC/153, it was the Germans who insisted on several key provisions, which put some constraints around how that system operated, limiting routine inspections to pre-agreed strategic points, limiting the frequency of inspections, using containment and surveillance in lieu of human inspection, where feasible, and ensuring that proprietary and commercially sensitive information and similar concerns would be more than amply protected.

The same is true in the negotiation of the additional protocol just a decade ago. Germany, Japan, Australia, Canada were the key players at the table who helped to shape the limitations as well as the opportunities that the additional protocol provided.

So I don't believe that the way forward is to look back to different interpretations of what was intended, but rather to take the situation as it is today. If we are to succeed in achieving a consensus on nuclear fuel cycle policy and practice, which is important to the strengthening and consolidation of the nonproliferation regime, we cannot hope to achieve that objective on the basis of legal interpretation and principle, but rather on the basis of pragmatic, incentive-based approaches that avoid creating categories of states, those who are entitled and those who are not to certain things, because to do so disregards the fierce sense of sovereign states regarding equality of rights, for better or worse.

It's better to focus on how to satisfy states' sense of equality through incentives and opportunity, avoid a discriminatory approach, and seek to find common ground regarding the risks associated with various technologies and the importance for all of us that we take appropriate steps to avoid risk becoming reality; herein, then, the pursuit of structural arrangements, along the lines of multilateralism.

How multilateralism is defined and characterized is open to discussion, but the principle that fewer is better than more in a realm critical to nonproliferation and security should not be in question for any of us.

I take as a given the premise of the Acheson-Lilienthal report that inspections alone of peaceful nuclear activities, particularly uranium enrichment and spent fuel reprocessing, could not unequivocally prevent their misuse to make weapons if the control of such facilities were in national hands.

Their recommendation, that an international agency be established with the dual tasks of promoting access to and preventing misuse of atomic energy, and that this meant ownership and managerial control of dangerous activities--that is to say, enrichment and reprocessing--best vested in an international atomic development authority, which was then incorporated in

the Baruch plan, proved to be a bridge too far.

Nuclear energy is a challenge, technologically and politically. The political challenge cannot be met by imposing discriminatory rules on sovereign states, but only by the willingness of all law-abiding states to agree to a mutually acceptable approach. A return to the Acheson-Lilienthal conclusion, that safeguards alone would be insufficient, has to be taken seriously, very seriously.

But now, as then, the idea of a single international entity to own and operate all sensitive nuclear activities is still a bridge too far. However, alternative structural arrangements are not beyond the pale. Establishing centers of excellence and economies of scale for various technologies--that is to say, a limited number of technologically state-of-the-art multinational enterprises, in which there is a single technology-holder--and I would use Eurodif as a model for that--and where the partners are co-owners, sit on the board of directors, participate in decisions on terms, conditions, pricing of product, share in the profits, and have a priority right to product for their own verified civil nuclear programs, subject to an undertaking not to compete against themselves by pursuing independent enrichment activities, can be an attractive alternative to more problematic development of a national facility that would not be nearly as cost-effective and efficient.

In nonproliferation terms, wide acceptance of such arrangements contributes to nonproliferation and security and puts the international spotlight on those who eschew the opportunity of participating in such ventures; furthermore, to the extent that multinational enterprises adhere not only to comprehensive safeguards and to the additional protocol, but also incorporate such improvements as safeguards that might transpire, even the radical concept of the adoption of Article 12(a)(6) of the IAEA statute, that inspectors shall have access at all times to all places, all data and all persons. They would establish a standard for universal application that would make it politically difficult for a state subject to safeguards operating a relevant facility to ignore.

Taking this a step further, advanced industrial states with full fuel cycle capabilities can potentially have an impact on how others think about the nuclear fuel cycle. For example, as was mentioned, the United States has agreed to import Urenco centrifuges for a new facility in New Mexico without having access to the technology. That's an interesting concept. To that could be coupled the inviting of inward investment by other states willing to partner in a fuel cycle facility in which an ownership status would bring not only assurance of supply for domestic requirements but, as well, a foot in the door of the international market, thus satisfying one or more interests of the state.

Whether a multi-national strategy can be acceptable is a question on which the jury is still out. We see a large number of proposals on the table that purport to offer solutions ranging from fuel banks, to enrichment bonds, to back-up assurances, to multi-national enterprises such as the Russian-Angarsk proposal and the German proposal for an extraterritorial location for a facility in which countries could invest.

In this regard, it's instructive to see how the Article 4 discussions went just a week ago at the PrepCom in New York. On behalf of the European Union, the Czech Republic stated that multilateral schemes may offer a credible alternative to the development of national enrichment and reprocessing capabilities without prejudice to Article 4 rights.

Brazil, Egypt and other non-nuclear weapons states took the position that the inalienable right to peaceful nuclear uses preexists the NPT, and nothing in the treaty can, or should, restrict that right. Brazil restated that point and added that a multilateral approach to the fuel cycle should not, quote, "hamper peaceful programs developed under IAEA comprehensive agreements, an allusion to its Resende facility, obviously.

These are clear warnings that not all states view multi-national arrangements through the same lens and may be determined to pursue independent capabilities subject to safeguards requirements, which takes us back to a problem that we still need to very seriously confront and resolve. So, I come back to my earlier point. The problem is political, and to achieve a desirable outcome the remedy must be found on politically acceptable grounds.

In this regard, one point that cannot be overlooked is that related to a--is that related to a division of the world into classes of

states: those with, and those without, nuclear weapons. I do not see achieving consensual solutions to be possible without addressing the weapons state problem. The political agendas of many sovereign states simply will not permit it. It is not a matter of achieving the goal of nuclear disarmament, but it's a matter of being on a track to eventually get there, and "eventually" can be a very long time.

This is not something that will be solved over night, clearly, or perhaps even over decades, but the question is, what road are we on--perpetuation of the current situation, or progress toward an ultimately weapon-free world? The benchmarks along the way are well known--bringing the CTBT into force; negotiating a fissile material cutoff convention; reduction in numbers; and refinement in doctrine with respect to the existence of nuclear weapons. The road is long and we have miles and miles to go, but unless we put a foot on that path our prospects for resolving the proliferation risk issue will continue to stare us in the face, and perhaps stare us down.

So, to conclude, the focus should be on opportunity, not on denial; a positivistic approach, creating the opportunity for states interested in doing so to participate, as above, in multi-national facilities. That is not to say that there's not a lot of work to be done to bring such a situation about but, given the stakes and the alternative, it would surely be something worth the effort.

This would have been--this would have positive effects with regard to limiting the number of cases in which a state acquires sensitive technologies under the banner of civil use and subsequently withdraws from the NPT, and positions itself to acquire nuclear weapons--and we all think of Iran when we think if that option. Thank you.

FERGUSON: Thank you very much, Larry, that was excellent. And I appreciated the allusions and the historical perspective, and bringing us up to date, where we are now in the road ahead--the next few years.

With that, we turn to Henry Sokolski, who has also been involved in nonproliferation work for many years. And he served in the George H.W. Bush administration as deputy for nonproliferation policy in the Department of Defense; earned a Distinguished Service Award there for his excellent service. And he's also served for Senate Gordon Humphrey and Senator Dan Quayle.

Since 1994 he's been the executive director of the Nonproliferation Policy Education Center. He's done a tremendous amount of great work. Henry has authored or edited numerous reports, volumes, and articles on nonproliferation and national security. And it's a great pleasure to have him speak before this audience. And I'd asked Henry to, you know, be his contrarian self and to really talk about the challenges ahead.

There's--as we've heard a lot of the enthusiasm about moving toward potentially zero nuclear weapons, Henry has briefed the Congressional Strategic Posture Commission about those challenges we face on that road, so I asked him to talk to that; and also talk about nuclear energy challenges ahead of us; and to reflect on some of the things that Paul and Larry just raised. Thanks, Henry.

SOKOLSKI: Well, it's an honor to be here with so many people, at such a high level, interested in this topic, which is a lot of topics.

I suppose the mandate is to look at the near-term. And normally you look in the past and you try to project slightly forward. I think what I'd like to do is something I learned from a friend of mine at San Diego University. I once asked him, I said, well what are you doing this summer? And he said, "Well, I'm going on sabbatical at the University of Tahiti."

And since I knew he surfed a lot, I said, wait a minute, you know, how'd you pull that off? He said, "Well, first I did an analysis of the best beaches of where to surf; then I discovered it was Tahiti; then I tailored my studies to focus on French nuclear weapons testing; and I then applied." (Laughter.) And he's been going to Tahiti now, I think, every two years. That's strategic planning.

(Laughter.)

And it seems to me what we need to think about--and, by the way, I wrote an essay about 15 years ago, the CIA was very taken with it and they created an office to do this, which is to imagine futures you don't want, and futures you do, and then work backwards to develop the indicators. The office is an abysmal failure, but the idea is kind of clever.

In any case, I'd like to look forward 10 years, roughly, at some trends; and then make some comments about our current highly-praised efforts to deal with the problem set; and then discuss briefly what I think might be helpful to those efforts, or maybe even alternatives to them.

I think there are four basic trends we have to think about happening in the next decade or so:

The first trend is I think we really will continue to come down. And the apprehension of, at least the Perry-Schlesinger Commission, that we have to worry about whether the Russians will come down with us, is probably misplaced. I think they'll come down, at least with respect to the strategic weapons--extracting, undoubtedly, all sorts of concessions on non-nuclear deployments that the U.S. might otherwise engage in, and maintaining all of their theater of weapons. And we want it--we want these reductions so bad I think we will make these concessions, probably, to get them to come down in the strategic deployments.

So, we will probably be coming down even further, which is quite remarkable because, you know, since the height of the Cold War we've come down on both sides about an order of magnitude in deployments. And they've been consistent. They've even continued whether there were arms control agreements or not, which suggests there are militarily scientific reasons for why these reductions are going on that have nothing to do with diplomacy--which I'm sure Dennis could fill us in on, having to do with precision and substitution of large weapons for smaller weapons, and non-nuclear systems for nuclear systems.

In any case, that's arguably the good news. The bad news is, others are coming up. Now, if you do some rough calculations on the back of an envelope, based on things that are publicly known, you can conclude that Pakistan, certainly within the next decade, will have at least as many weapons as, let's say, Great Britain. Conceivably, India will have more weapons than France; and China will continue to creep out.

I was really quite, you know, impressed by the report that Bruce MacDonald had so much to do with it. They say the number of weapons the Chinese have is 400. I'm sure there are others that think it's lower, or whatever. But, if that's so, it's generally been argued that the amount of material that they--the Chinese have on hand now would enable them to double or triple that number without any additional production.

That suggests where they may be headed, such that within about a decade or two you may see a world in which all nuclear weapons states that are medium-sized or larger are going to be separated by several hundred weapons at most, not several thousand, or not tens of thousands, as it used to be the case even 15 years ago. I think that's important, and we'll get back to why that may be important.

Second, I think you're going to see--well, I guess, the first is: we're coming down; the second is: some are coming up. By the way, I didn't mention Israel. I should. Undoubtedly, I mean, they act as though they're still producing. I mean, they claim Dimona is still operating, and so they'll continue to produce.

I guess the third trend is that the amount of plutonium in civil and military stockpiles will increase, and the amount of highly enriched uranium in our stockpiles won't decline much more than it has. That means that the amount of material--that countries that have nuclear weapons to ramp up, beyond their current numbers, will be very great; and that some countries, like Japan, could break out very quickly.

This then brings us to the last trend, which is, there are--there's a lot of talk about the spread of nuclear energy programs. Now, it's hard to know how much to buy into this "boosterism," but I think ElBaradei, and the NIE that was just mentioned by Paul Lettow, gets it about right. Some states that don't currently have large nuclear reactors will.

And large nuclear reactors, I like to refer to them as, I think, Amory Lovins does, they're bomb starter-kits. They're not just another way to boil water. They bring you quite a ways down the road to a weapons option. And it's one of the reasons why we inspect large power reactors and why we try to safeguard them against military diversion. But, several countries--and probably countries in the Middle East will go ahead.

Also, I think, for all the reasons Larry Scheinman pointed out, nuclear fuel making will likely spread. Despite all of the reasoning, and efforts to appeal to people's higher self interest, that's probably not going to work out. I don't know whether it'll happen in a decade--it may take more time, but it's going to happen.

Now, I suppose one of the things--the implications of this set of four trends needs to be spelled out. I guess I've already talked about the spread of nuclear energy programs and what that might mean. It means more nuclear weapons-ready states are going to be in the wings.

I've talked about the mounting plutonium stockpiles, civil and military, and the implications for breaking out and ramping up. I guess I didn't really spell out what the implications were of having a nuclear crowd that is packed, or close to one another. I think there--I recently had a chance to do some exercises with--I guess I have to be careful here, let's not talk about that.

The implications, it seems to me, for a packed crowd would be that you're going to hear a lot more rhetoric about MAD again. MAD will come back--kind of like a chronic disease. Taking out cities will seem reasonable--if you have not so many weapons, and you have to threaten someone, you will go for the easy targets again. You won't go weapon-against-weapon. I think those days are going to be behind us, perhaps--at least in the public rhetoric, and maybe even in the military planning.

I think, in addition, there's going to be a lot of talk--as there already is, about using nuclear weapons in new ways, high altitude EMP attacks, and neutron weapons. You can see a little of this in the way the Russians and Chinese plan for the future, and what kind of weapons they're getting. And you can hear it in our own discussion, of our weapons experts--not so much the arms controllers, but the people that, you know, think about nuclear war. That is something that is different.

Now, against these trends we have a set of current policies--I'm not sure how appropriate they are. One is a fissile material cutoff treaty. Putting aside all the debates about verification--and they're real, in my mind, particularly for civil programs; and the question of whether you're setting a standard that's loose for weapons states, since they don't have an incentive to cheat because they can still get back at their weapons material. And non-weapons states, like Iran, who would say, well, if that loose standard is good for weapons states, why can't it be applied to us, with our nuclear fuel-making. It's a big problem.

But, I think the bigger problem with FMCT is what about the materials that already exist? It doesn't really address that problem very well, and it certainly doesn't do much to address the civil build-up at all. Most of it is formulations.

Then there is the Comprehensive Test Ban Treaty. And people argue about the verification of it, and whether it'll come into force. All these things, I think, are real. And, in fact, the commission that Bruce served on, they struggled with this. And it was a big part of their report--you know, one side says this, the other side says that. It's like, I don't know, 10, 20 pages of your report

GORMLEY: Not quite that bad.

(Laughter.)

SOKOLSKI: Well, but "gray boxes"--they say, we say, you know. I mean, it's one of the reasons people read the report.

I think that's, you know, an interesting and important set of issues. But, I think the bigger set is, do you really need to test to get a crude weapon? Or if you have advanced weapons, do you really need to test if you can over-engineer and just add metal to have reliability? It may not be as important, practically, as we impugn it to be.

Then there is my favorite: strengthening the NPT. As we've just heard, the NPT impugns all sorts of countries with rights, some of which bring them right to the brink of making bombs. And whether it's a good idea to point this out, or to say, you know, that's kind of kooky, that we need to re-read how we think about those rights--by the way, I think we should--whatever, the point here is that unless you have clarity about what you're strengthening, you could make things worse.

Also, the IAEA, we talk about strengthening the IAEA, the laws of physics are not friendly to the IAEA being able to do some of the things we claim it can do, like find covert nuclear fuel making facilities; or monitor, with any accuracy, the amounts of materials being made in fuel making plants; or, for that matter, even having continuity of inspections over fuel rods.

So, you know, strengthening it could make people think that it can do those things. In addition, it also has a nuclear promotion role. And, in some areas, nuclear technology being spread is a good thing and is safe. In other areas, it's not so clear.

Now, in light of that, a couple of recommendations--four basic ones: By the way, these track roughly the recommendations of the commission that still exists, that I serve on, called the Commission on the Prevention of WMD Proliferation and Terrorism.

The first recommendation is it's very important, that we know what we can safeguard against military diversion, and what we can't. And we've been kidding ourselves about this. Actually, there's a legal requirement in the Nuclear Nonproliferation Act of 1978 that all nuclear exports of a dangerous character be sent out only if timely warning of a diversion can be shown to be achievable. No one has asked what that timely warning requirement entails, to my knowledge, and quantitatively. We need to, perhaps, enforce that law with an eye to getting those answers.

In addition, the whole are of space and missile technology--and what is peaceful and what isn't, and what can be, you know, verified as being peaceful and not, I'm a skeptic that you can do this, but I need, we need to get clarity on that because that's coming back, as if you could make distinctions.

Clearly, we need to force the IAEA to come to terms with whether it can even meet its own timely detection--timeliness detection goals; and we need, as a nation--and other likeminded nations, to determine whether or not those goals are aggressive enough. I don't think they are. But, all of that should be in play. And that costs nothing and can be done right away.

By the way one reason, you may want to focus on the space issue is coming up. There's going to be a space launch in South Korea, and one probably in Iran. And all of these are receiving Russian help. And it'll be back in the news, so there's a reason to think about that in current events.

The second effort should be something our commission backed, which is to discourage the use of financial incentives to promote large nuclear reactor projects and other fuel-making projects. We need to at least count the costs and compare them against non-nuclear alternatives.

Here there is a law--that's the Nuclear Nonproliferation Act of '78, Title 5, that has not yet been implemented; that calls for just such cost comparisons to be made; it calls for the creation of an "Alternative Energy Peace Corps"--never been implemented. This would be ideal for the Obama administration. I mean, it's Kennedyesque. It's perfect. And they're already funding people in the sciences to do public service. Here's a vector they could go into.

Paul Lettow mentioned the UAE agreement. Clearly, our promotion of "Atoms for Peace in the Middle East" deserves a program review. It's not getting it. We're rushing to get things wrong in a hurry with this UAE deal. It isn't so much that the UAE is a threat--that it's going to go nuclear, I don't think that's the case. They may never make a reactor for all I know.

But, we're using this thing as a model for others that have had weapons ambitions in the past, such as Algeria, Libya and Saudi Arabia, and I think it will not meet the tests and challenges those countries will pose. We need to talk to the Russians and French about a general approach if we're going to make sales in that region. They have much looser criteria. That is for sure.

More generally, as we go towards carbon controls, and maybe even a convention on carbon controls, it would be useful to reinforce existing legal requirements under the Charter Energy Treaty and the Global Charter on Sustainable Energy Development--I think I've got that right, I keep getting the words mixed around. But, those agreements--the U.S. claims it supports the principles of, basically say you should compete all large energy projects and make all of the costs internalized, including the subsidies, in the price of what you're competing.

We need to get on to that, certainly, if we're interested in reducing carbon in the cheapest, quickest way. It won't do just to let everyone do it helter-skelter.

The third thing we need to do is place more pressure on China, and, therefore, indirectly, India and Pakistan, to back down. They're climbing up. They need to be focused on. And I would recommend some initiative, if it isn't already created, "China and Arms Control." That should be the new topic.

Mr. Obama has rightly pointed out that this should be the focus after working with Russia. So, it would make sense for think-tanks, and other people interested in these topics, to focus on China and how to get them restrained.

Finally, in pursuit of whatever strategic reductions we make, I think it's very important that we try to get everyone to come down in non-strategic areas as well, and that we not give away too much in the non-nuclear realm as a quid pro quo for going ahead with nuclear reductions.

I noticed this paper that you wrote, Dennis. It's very long. (Laughter.) It has lots of footnotes. But, I scanned through it. There are some sensible things in this, and it has to do with what you, you know, will be talking about, and that is, what can be done in the area of substitution. We should be careful not to trade too much of that away--I would hope nothing, but at least we need to be aware.

And I think I'd be cautious about trading too much away in the space area. The Chinese are really frightened of what we can do in space. Good. That should be leverage. Don't give it away. Get something for it, if you do, for god's sakes, and a lot. And I think, in general, we need to rethink our security alliance relations--do they have any life or future in them?

It's terribly important that they do, because if they don't, we know where we're headed. And it's a world that Herman Kahn described as kind of "helter-skelter"--everybody's going to be, on their own, basically, threatening really severe forms of war. We don't want that, I don't think.

FERGUSON: Thank you very much, Henry.

And I guess that's very--and you channeled another Charles--the Charles Manson helter-skelter type of world. (Laughter.) You've been a very provocative speaker and thinker, as I promised the audience. So, you put a lot out there for us to talk about after we get to, last, but not least, Dennis Gormley. And I think that was a great--Henry gave a great segue to Dennis' work.

Dennis has been doing a lot of--seminal thinking on a variety of topics over the decades. He was an Army intelligence officer during the Vietnam War. He worked at the Harry Diamond Laboratories for a period of time. He was a senior vice president of Pacific Sierra Research many decades.

Currently, he's a senior fellow at the James Martin Center, the Monterey Institute; and he's on the faculty of the grad school of Public and International Affairs, University of Pittsburgh. And it's been my pleasure to go up there and work with the students on a couple of occasions. And, Dennis, many of you know, if you track the missile proliferation field, he's done a lot of important writing on the topic of missile proliferation and missile defense.

And for today I've asked him to mainly focus on the issue of the tension between conventional militaries' nuclear weapons, and to really look at--one of the challenges ahead, if we're serious about this road to zero nuclear weapons, we have to figure out to deal with conventional militaries as well how much of a roadblock would that present to this vision of a nuclear weapon-free world.

Dennis, as Henry mentioned, has written some long but very thought-provoking articles on this subject. One of them is securing nuclear obsolescence. And I know he's working on a current follow-on study to that as well. So, without further ado, I give you Dennis Gormley.

GORMLEY: Thank you, Charles, and thank you for the opportunity to come and speak today.

There's a double dubious distinction in trying to deal with this complex subject in such a short amount of time. But also, to follow Henry, who, during the course of the other talks, read my paper, notwithstanding its length, and critiqued it already, so--

(Laughter.)

SOKOLSKI: Scanned it--scanned it.

GORMLEY: (Laughs.) So, what I would like to do is address the obvious issue that a number of people have raised, and that is, you know, what has permitted us to think about a world in which we could eliminate nuclear weapons is the very conventional superiority that gives us confidence we can meet our national security requirements.

That same reality makes Russia--and, indeed, I would add China, concerned about living in a world in which they depend, must depend less on what they believe is their asymmetric way of dealing with U.S. conventional superiority.

Of course the challenge is, what can we do to bring Russia together? And here I'm talking about the immediate challenge of dealing with the 2010 NPT conference and making progress in it, which hinges on a number of things, most importantly making progress in START I by this December, a difficult challenge.

And so what can we do to incentivize Russia, to engender a degree of confidence that's necessary without giving away the store, basically. Because no U.S. president would wish to deny us--while we wean ourselves from our dependence on nuclear weapons, would wish to deny the capacity to maintain superior conventional military forces.

Let me touch on three things in the brief amount of time I have. First, the Russian perception of U.S. conventional superiority, and say a few things about separating what I would argue is some factual things about that perception, and some less-than-factual things; and then suggest a brief set of cooperative options, without benefit of having time to say much about them.

First, the Russian perceptions. It's rather clear that the major issue, post-May, 2002, with Russia, and in May, 2002 there was that joint presidential statement saying that we would--we and Russia would work seriously together on bringing Russia into a NATO missile defense system via the Russian--the NATO-Russia Council.

Since then we've seen a bypassing of even dealing with NATO by the U.S. and going, unilaterally, directly to the Czech Republic and Poland to negotiate the so-called "Third Site" for Ground Based Interceptors, which has engendered a whole wrath of distrust between the U.S. and Russia, particularly in regard to this issue of deep reductions.

It's not difficult, in my view, to imagine Russia seeing these efforts as a backhanded way of essentially edging them out of opportunities to participate in any serious fashion in a NATO-wide missile defense system.

The other factors that bother Russia are the open-ended nature of the way we've transformed the missile defense program in the U.S. in the aftermath of leaving the ABM Treaty, and that is the absence of any declared architecture of where we intend

to go with respect to our missile defense systems.

It's based on this nebulous capability-based planning which essentially says, 'threats aren't important, capabilities are important,' and therefore we need to essentially take what results from a block approach to investments in missile defense and employ--deploy what those blocks produce, roughly, every two years.

To a Russian this is seen as essentially an open-ended system that, while we declare it's only intended for a hand-full of RVs, has the potential at least to break out.

And there are a variety of different systems that the Russians call out, most importantly the X-Band and SBIRS-Low, as providing the kind of detection wherewithal to enable a potential break-out, particularly if we go to Space-Based Kinetic Kill Interceptors.

The other dimension is the offensive one, and that is Prompt Global Strike. And here they draw attention to the decision to conventionalize the Trident program, and also to conventionalize the submarines--four of the 18 Trident submarines that have been outfitted as entirely conventional-only systems now, with 154--each boat carrying 154 Tomahawks, many of them the advanced version of the Tomahawk that has loitering capability.

And this frightens the Russians from the standpoint of thinking about the capacity of these kinds of systems actually detecting and targeting their mobile missile force. They look at our R&D programs and they see the DARPA Air Force application and launch from the continental United States producing a variety of different hypersonic vehicles, including the, you know, the longstanding quest to develop an aerospace plane that could take off from an air field; go into space; return in roughly a two-hour time frame, and carry huge payloads--5,500 kilograms of payload over a distance of roughly 15,000 kilometers in a matter of two hours, and reusable.

So, what can I say about separating fact from fiction in these regards? Well, it's important to note--Henry mentioned what's allowed us is, you know, Paul Nitze's quest for strategic conventional weapons. Well, the truth is we don't have much in the area of strategic conventional weapons. In 2004, Hans Kristensen's work in this regard is critical.

We implemented an approved operational plan for Prompt Global Strike, and it very much mirrored the Bush administration's 2001 Nuclear Posture Review in its conflation of nuclear and conventional capability. What we had in the conventional area, it was essentially B1s, B2s, and some fighters to knock down the doors, so to speak, but, otherwise, a marrying of inchoate Prompt Global conventional capabilities in nuclear systems.

If you talked to people on Capitol Hill today, the Trident--the conventional Trident program, for reasons of, primarily its ambiguity, but if you look closely at conventional Trident there is--you know, the National Research Council looks at it and it said, you know, "we agree with the requirement for a hand-full"--and they talked about one to four Prompt Global Strike systems using Trident; not the secondary requirement for a greater number of those systems to be used as a true complement to the requirement to have a conventional strategic system that would operate in major regional contingencies against, you know, regional powers.

So, what exists today? Very little. The Trident program is essentially dead. There are no plans for doing anything with Minuteman, were it their desire to conventionalize it. There is continued funding for the Hypersonic programs, both the Glide vehicle and the Hypersonic Cruise Vehicle that I mentioned before, but not deployment decisions are anticipated in the near term. I had a conversation in Honolulu in late March with a senior officer from STRATCOM, and essentially he said Global Strike has been throttled back.

So, that's essentially where we stand today. What does that do for Russia? Russia looks at it and says, well, it may have been throttled back now, but there's nothing governing, you know, permanent constraints with respect to these systems.

I might say that the Congress, it seems to me, has, in effect--whether they know it or not, made a choice with respect to the

future of these Global Strike systems. And it strikes me that they've really identified the Hypersonic areas as the program of--that they desire to see. And that may be because it's so far off. I mean, if you look at the Hypersonic Cruise Vehicle, it's been around since the dinosaur program in the--the Air Force program in the 50s.

And, you know, Henry Cooper--I found this, I'm sure some of you have heard this before, in 2001, testifying on Ronald Reagan's ample funding to the Transoceanic vehicle program, he was quoted as saying that, for a \$4 billion investment between the early '70s and 2001, what they had was, quote "one crash vehicle, a Hangar Queen, some drop-test articles, and static displays." (Laughter.) By the way, the Boeing X-51, which is a drop test vehicle is supposed to be tested in the next month, I believe, if it hasn't already been.

There are difficult, if not insurmountable technological challenges leading to success in this area, not the least, lightweight, durable, high temperature materials and several management techniques that would enable this. The original expectation was these systems would mature along--in the period, by 2025. It remains to be seen if that's occurred.

So, what's left? It's basically the 600-plus Tomahawks on four Ohio-class subs. And the Russians create scenarios in which those four submarines alone can take out 70 to 80 percent of their fixed and mobile missile capability. And I would simply say that we fall prey to the fallacy of division if we liken the notable improvements in counterforce capability--particularly in the Air Force, from, say, Desert Storm in 1991, to the present, operating against third-world countries, to operating against a strategic competitor and trying to take out both fixed, hardened facilities and a capacity to make their mobile missiles operate in the field.

So, let's separate fact from fiction. I think with these in hand one is left with dealing with Russia in the near-term. And it seems that opportunities for a cooperative engagement in the missile defense area have already begun. The Obama administration had talked about changing the criteria for deployment of missile defense systems. They've talked about elevating transparency, which, I would argue, is absolutely essential.

The Council here, in its report on the future of nuclear weapons has pointed out the need to sit down with Russia and seek consensus on missile threats and the perception of threats. Having done work over the years in the so-called "lesser included case of cruise missile proliferation," I would encourage them to look equally at those developments, which, over the long term, are going to come to haunt NATO.

So, I would encourage elevating transparency to the level of what we used it for during the Cold War, and that is to moderate behavior and to seek consensus on a variety of different issues.

The second thing I'd encourage consideration of is expanding the little-known Cooperative Airspace Initiative, which is essentially to establish cooperation in air traffic control information exchange on air threats. And, post-9/11, this has become tied up in a concern about terrorists' use of airplanes and small UAVs.

There are sites in Russia at Murmansk; in Norway at Bodo; Ankara in Turkey; and also Rostov-on-Don in Russia, and the command-and-control sites are in Poland and in Moscow--in Warsaw and in Moscow.

This, together with the U.S. investment beginning in 1997, in so-called "Air Superiority--Air Sovereignty Operations Centers" in the former Warsaw Pact states, which, in addition to simply monitoring, have actually developed some capacity to develop high-quality surveillance and tracking information on air threats.

To think about expanding this nascent capability into an effort to also look at the cruise missile issue I think would be a valuable endeavor in engaging Moscow in this regard.

Thirdly, I would suggest that significant engagement has to occur in the ballistic missile defense area to achieve any near-term success. We've also--the U.S. has signaled its interest in taking another look at the Gabala radar in Azerbaijan, and Armavir in Russia, to see what kind of marriage between low-frequency systems and the high-frequency X-Band radars--might provide

some additional modest increase in warning time.

Of course, the purest form of reassurance would be to consider formal constraints on missile defense deployments. And that could be in the area of numbers, it could also be types. And in types, the critical issue becomes kinetic or high-energy systems deployed in space.

The U.S. might well consider, and might also look for what it's going to get in return for taking a leading position on agreeing to an international code of conduct promoting peaceful uses of outer space.

And, finally, on assuaging Russian concerns about advanced conventional systems, I think this truly falls into to what Linton Brooks recently called "fanciful threats." And he used it in the context of an anecdote he told about, during his experience in negotiating with the Soviet Union. When a senior official from the Soviet Union came to him and said, "What is the U.S. going to do about its Special Forces threats to blowing up our ICBM silos?" And he characterizes this as an example of "fanciful systems."

Well, if you look at the threat of the Ohio-class submarines--more serious than the Special Operations Force challenge that he drew attention to, but it's pretty close to, in my view, the notion of a fanciful threat, particularly with a conventional warhead on it, having about 400 kilograms, after you take away the things around it.

So, what might we do to allay Russia's concern in this regard? I think it's worthy to look at some "keep-out zones" for where these submarines might operate, and look at what the downside risks of those might be. I did a quick calculation--the beauty of Google Maps is you can do these things today and compare it to what it was like 20 years ago.

And you do lay-downs, and from a 200 nautical mile economic zone line, compared to where these Ohio subs--very quiet and stealthy, could conceivably go, and you, essentially, by operating outside of this 200 nautical mile arc, essentially eliminate about 80 percent of the 14 fields that exist--and these are the combination of the silo fields and the submarine--fixed submarine bases too, and the Topol mobile missile garrisons. So, you could essentially eliminate that threat by operating outside. Have some kind of constraint on where they could and couldn't operate.

And the last thing I'll end on is the issue of looking out to the future of what we do with missiles after nuclear weapon delivery becomes passé. And I must admit that I was never a strong proponent of the "zero ballistic missile" notion, but I'm beginning to believe that it merits another fresh look as we proceed down this path, if we make it through. This is not the near-term, this is the longer-term challenge.

I've always worried about it from the standpoint of, you know, making the world free for advanced cruise missile proliferation to occur. And you might simply raise the issue of hypersonic cruise missiles and hypersonic vehicles as the next kinds of systems. These systems, I'm afraid, may well end up in the counting rules basket. Hypersonic systems are indeed dual capable systems, and one can deliver a nuclear weapon on a hypersonic cruise vehicle, and many nuclear weapons can be delivered on a hypersonic cruise vehicle.

Linton Brooks has argued that they may well fall prey to counting rules, and that has, I think, one, that I would favor grandfathering in the four Ohio-class submarines with Tomahawks, to say that they are not nuclear capable and will, for hereafter, be nuclear capable. But, the others may well fall prey to being counted as nuclear delivery systems. So, I'll end it there.

FERGUSON: Thank you very much, Dennis. And I can't remember if you mentioned, but it was Ronald Reagan who advocated a zero ballistic missiles approach.

LETTOW: Charles, it was actually--it was Cap Weinberger who proposed that--(inaudible)--

FERGUSON: Oh, okay. Yes, well--yeah, he wrote the book, so he knows, yeah. (Laughs.) Thank you.

We have just a little under an hour for Q & A. And I thank you for your patience--four speakers, as you can tell are very knowledgeable. They put a lot of issues on the table. We could talk all day on these. And so I think, roughly, we have kind of a number of issues to talk about concerning nuclear fuel cycle and the rules of nonproliferation regime.

Henry put out--about the trend lines, a very provocative look at where we may be headed; and little cautionary tales that also, I think, are good recommendations for us to chomp on.

And then Dennis also, a cautionary look at where we're going with conventional capabilities, and separating fact from fiction; and also reminding us that often, you know, perception of, I won't say "the enemy" in the case of Russia, but at least a rival, they're our counterpart in the Brown nuclear arms reductions, is going to feel threatened by some of these conventional capabilities, whether a perception or reality.

So, with that, I've got to turn to Jonathan Granoff first. He's been anxious to ask a couple points.

And then if you want to ask a question, put your name placard up like this, and I'll try to get you roughly in order.

So, with Jonathan first.

GRANOFF: Yes. I want to address this to Dennis, because I found his "reality check" extremely important.

President Gorbachev, at the recent conference in Rome--that NTI, the Italian foreign ministry and the World Political Forum convened, at which Sam Nunn, and Schultz, and the foreign ministry of, and foreign minister of Italy were there preparing the G-8--said that "Unless we discuss demilitarization of international politics, the reduction of military budgets, preventing weaponization of outer space, talking about a nuclear world will be just rhetorical." And that was how he concluded his analysis of his concern of America's hegemonic aspirations.

And Reykjavik, as you know, it was the issue of missile defense and space weaponization that scuttled the progress toward the abolition of nuclear weapons. So, in that regard, after your presentation of the relatively low military value of Global Strike systems, in light of the high diplomatic cost of putting them forward, I wondered if you could talk about whether there's been a real debate as to an interagency debate as to the diplomatic costs versus the military value.

And the second--and it goes hand-in-hand with this, the issue of weaponization of outer space. Each year in the General Assembly there's a resolution on advancing cooperative security in space, and through the rule of law, and preventing the weaponization of space. And, remember over the last several years the U.S. has been the only country voting against it.

And it just seems, you know, that our country is so based on the rule of law we put forward the Outer Space Treaty. And given that these--that is aspiration is of so little military value, how can we move forward to promote the rule of law?

GORMLEY: Yeah, those are great issues. Demilitarization is going to be a tough--that would be giving away the store--(laughs)--so to speak.

So, the issue becomes, as we embark upon going down this path, what we can--are willing to give away, without unleashing a set of incentives, with respect to the guarantees we provide to our close allies, that might well cause them to consider going nuclear. So, that's one of the challenges.

I, frankly, am of the belief that there has been no serious interagency. You know, I haven't--I haven't done interviews to find out any details. But, I certainly drew meaning from the senior officer at STRATCOM telling me that Global Strike had been throttled back. So, the message has gone down--(laughs)--to that organization, which is the principal organization responsible for executing the operational plans that would entail those forces.

But, of course, you know, the key issue is the one I raised. These are near-term decisions that can be--that can change in an

administration. So, the next administration--without any formal constraints on these areas, they will become of greater concern in the future.

And, of course, establishing counting rules for these systems, in and of itself, is a constraint. So, that would impose a degree of constraint on hypersonic systems, for example, or the conventionalization of Trident in the future.

In regard to your concern about the weaponization of outer space, I share that concern. I would also say that, you know, Henry is right with respect to some kind of quid pro quo. It's got to be a level playing field, with respect to the kinds of rules that we embark upon and how we will operate in space.

But, certainly the reality is that many of these, from the perception of China and Russia, placing certain capabilities in space, that we declare relate to ground warfare, is idiotic. Of course they relate to both. And so going down that path we ought to be consciously aware of the game that we will inevitably get into.

And, you know, the longstanding issue has been, you know, who depends on space more? And, boy, when you just calculate bandwidth increases over the last two decades, and our dependence on, you know, gaining that access to information--which is the dominant feature of the conventional superiority that I've talked about, in any way threatening that capacity is I think a dubious process to engage in.

GRANOFF: Our bank, as I understand it, depends largely on global trade. So, there's another way of looking at it, which is that the global trading system depends on it; we depend on the global trading system; but we depend on the Bank of China. So, it's sort of an odd--it's an odd situation where we're spending so much money to develop--addressing inchoate threats, with an inchoate enemy, but paying a present cost diplomatically.

FERGUSON: Well, I think that's a perfect segue to the next questioner, interrogator Bruce MacDonald, who I'll plug a recent report he did for CFR, a Council special report on China, U.S. Security and Space Weaponization. And in that, Bruce was challenging us, we need to think anew; we need to take a fresh look at what it means--what deterrence is in that realm.

I don't know if he's going to ask a question on that or not, but let me turn to Bruce MacDonald.

MACDONALD: Well, it was not my original intention, but that was just too big and tempting a target to completely miss. So, I might just make a quick comment on that and then to go my question.

One, I think that--I appreciate all the comments made about space. And let me say, by the way, in the study that I did for the Council, it was done under the excellent general guidance of one Charles Ferguson. And it was great working with him, and he was just a big help in the study that I did.

One quick sort of technical point on the space question, and that is that one thing that can give a little bit of assurance, I think, on the question of weaponization of space is that weapons deployed in orbit in space are tremendously vulnerable. They're not unlike ducks in a shooting gallery. You know, you could predict with fairly high precision where they're going to be several months from now.

And that is one--fortunately, one huge deterrent in putting weapons in space. That doesn't solve the problem, though, because you would have--from a purely technical military sense what would make sense is having space weapons, if you will, on the ground that would target space-related assets. And there there's a lot of discussion that needs to be done.

I for one never understood why with a huge U.S. dependence on space why we were unwilling to engage in dialogue with other countries--not that we had to instantly sign onto the Russian-Chinese proposal to just ban all weapons. That was not unlike general and complete disarmament. It's always struck me as more of a ploy, but even though that was not necessarily the best idea doesn't mean that wasn't a valuable area for the United States to want to pursue more. And then I'm glad that in the late stages of the Bush administration, they began to be open to at least talking about rules for the road and debris and

that sort of thing--debris actually even earlier than that--that that it's a wide-open field and there's a lot of room for improvement.

But we do need to be mindful of our overwhelming dependence not on space per se, but rather that space--our amazing technical capabilities/conventional capabilities we would--they would suffer a huge setback if we lost our space asset. So that has to temper the approach that we bring to it.

But moving beyond the space issue, I just want to say that I enjoyed--it was really an intellectual smorgasbord to choose from--the conversations, some very interesting. It tickled more than a few brain cells of mine and I'm grateful.

Dennis, your linking the way that ballistic missile defense relates to nonproliferation I thought was brilliant and I hadn't thought of it in quite that context. So I found that very useful.

We have--when we talk about possible approaches to dealing with the question of nonproliferation in the next few years--and some of the discussions about China come up. And I wanted to ask the panelists from their perspective, because I'm sort of groping for ideas here and I'm not as deeply marinated in this subject as a number of people in this room--but as well all know, China is a rising power. From a strategic nuclear point of view, they are modernizing and are adding to their forces. Some people say a lot, some people say, well, it's just a modest response to U.S. missile defenses. Who knows what the real answer is.

But it seems to me that as China is growing, China has a lot more skin in the game, if you will, in the nonproliferation area than it might have some years ago. It's rapidly becoming a--well, I'll say status quo power, I don't mean it quite as it sounds. But they have a vested interest in the existing system. And they also--based on their fairly recent past they have a greater almost intellectual connection with other proliferating countries and that sort of thing. It was a poor country itself not so very long ago.

The question I'd like to just throw out is: What is possible--and I love Henry's suggestion about, well, you know, it's like how you do certain puzzles: go to the end and try to work back to the beginning, back to the present--what are ways in which China can play a more conservative role in dealing with some of the thorny--very thorny nonproliferation issues that we are dealing with over the next 10 years?

I mean, they are--in the area of the fissile material cutoff treaty they were pretty strong against it. But I'll throw this very general--I admit it's very general--idea out there, because a lot of this it tends to be, well, it's Russia, EU beating up on the role of Iran and other countries.

What is--it seems to me that China--and maybe it's my ignorance more than anything else--but there's potentially a much greater role for China to play over the next few years and on into the future. Yet, I don't sense their presence as strong as much as I think that their growing economic and military security interests might warrant.

And so I throw that to all of our distinguished and excellent panelists to--what do you think--what's a stronger role in things that China can do?

GORMLEY: I'm hoping to--actually, beginning to cooperate with the Navy War College on answering this question, but some preliminary thoughts.

First, you want to encourage them to realize where they're digging a hole. They have a lot of bad investments in Iran. They can't get their money out. I don't know how you leverage that, but somehow that's a useful point to press on I think.

In addition, they've now dug a bit of a hole along with many other countries, including ourselves, in dealing with the relations between Pakistan and India. Things are not going well there--I don't care what any --

SOKOLSKI: Yes. I mean, everyone says everything's going to--soft landings, everyone's going to be rich. I don't know.

I think they're--probably it would be useful to sit down and talk with them and say, well, how do you think things are going? Is it enjoyable? Do you see a bright future for how this is going to turn out?

They offered nuclear cooperation to both countries? That suggests, you know, some awkwardness about how to deal with the competition between those two countries. That would be a useful area.

I think in addition, on North Korea--pretty hopeless. But there is one thing that we ought to press them on: How about just upholding the UN conventions that they signed dealing with human rights and the movement of people from North Korea across the border? They forcibly repatriate too many of these people.

It encourages and props up the current regime. And I'm well convinced, as long as the current crew is running North Korea, you're not going to have anything but more efforts to force us to pay something to keep things from looking like they're getting worse. But I think that regime is very, very shaky over the next 30 years. China should be somehow playing more of a role and being held to account for the things that they've claimed that they've agreed to.

I suppose--one could go on, but there are a number of areas where it would make sense to work to get the Chinese to think through what is their own interests. I think that's the first area you want to work in, rather than trying to lecture them on what makes sense.

FERGUSON: Any other panelists' thoughts?

GORMLEY: Yeah, I'll just add a note.

You know, China has for years--with respect to export controls--stood outside the various export control groups and has been allowed into the nuclear supplier group and others. The important exception is the missile technology control regime.

And if you look at what's going on in South Asia with respect to the competition in both ballistic and cruise missiles on the part of India and Pakistan, the remarkable thing is that when the huge controversy that occurred with respect to the transfer of crates with components of Chinese ballistic missiles to Pakistan--back, what--in the 90s--was enormously controversial.

In 2005, Pakistan tested its first land attack cruise missile. You know, it's a Chinese land attack cruise missile. And not a word was said! I mean, this isn't in crates. It was the complete thing. And you know, transporter, erector, launchers, brigade-size units. And then they test launch another program in 2007--not a peep is said.

In the meantime, China has changed from its total abject interest in joining the missile technology control regime to several years ago expressing an interest to become a party to it. Now, they created an export--a system of national export control laws, which is a condition for entering. And it had some interesting holes in it. And most of them had to do with the cruise missile area.

So I would argue that, you know, they've been blackballed several times--and we know who does that. And I would encourage their entry into it. It's hard to imagine that kind of--that blatant transfer occurring if they were a member of the MTCR.

Now, Henry may differ with me because I, you know, I'm not part of the strict constructionists who wish that it was only the G-7.

And I'm not suggesting you believe that. I think in many respects, we've gone too far in adding countries, but China, I think is one that's worthy.

SOKOLSKI: The underlying point--I don't even know what the allusion was--but the underlying point that needs

reinforcement is the MTCR, which is this very weak kind of nuclear suppliers' group organization, deserves the attention of this administration that's enthusiastic about multilateralism.

You mentioned in your report an attrition age should be exported. Space launch vehicle assistance expertise--the Chinese certainly qualify as exporters in all of these areas potentially. And it seems to me that the MTCR ought to get bulked up, if you will. This is the time to do it. And you know, to what extent and how it involves China is very important.

We certainly--if you want to do some lecturing, that's a good area to lecture--amongst others.

GORMLEY: And it's not just penetration aids for ballistic missiles. Terrain bounce jammers, towed decoys for advanced cruise missiles that have roughly the same signature as the reduced signature vehicle make it virtually impossible to detect things.

SOKOLSKI: Possible to hit these things, yeah.

GORMLEY: And there are no controls.

FERGUSON: Any other comments on the China front? Paul, Larry?

Larry--yeah.

SCHEINMAN: Well, the only thing I would add is that China is kind of the break on Security Council actions when you come to an issue of noncompliance or perceived noncompliance. And perhaps if they were to kind of step up more into the mainstream and indicate that they're not--let's go slow and let's reconsider, which is one of the ways that they have acted, even if they're in accord with the analysis of what may be going on. How you respond to it, I think, is an area in which they could be more in the mainstream of the P-5.

FERGUSON: Good. Next on my list is Ivan Oelrich.

OELRICH: I'd like to hear anybody's comments, but I think this might be more for Paul and Larry. And I guess the question is: How much have we made this a big deal by making this a big deal? I once was looking for a comparison and I found that the United States spends more on potato chips each year than on uranium enrichment.

And I haven't done this calculation, but I suspect we spend a larger fraction of our GDP on talking about uranium enrichment than we spend on uranium enrichment. (Laughter.)

And there are some countries, clearly, that are suspect. You know, Iran is looking to if not build a bomb, at least maintain its capability. But other countries, presumably they're not trying to build a bomb and still they are adamant about this. And Iran is a good case. They do not have enough oil refining capacity to produce enough gasoline for their own consumption. You easily could argue that that's more important for them politically, economically, from a security point of view--everything--but their adamant about their--I'm confusing that with the bomb situation.

But Urenco, for example, is adamant about protecting proprietary rights. But in fact, it's not--economically it's not that big a deal, but their governments defend them.

Have we sort of dug ourselves in a hole here, going back to '46, by making this link and how do we get ourselves out. Are people attached to this as a principle and a right outside of any kind of rational justification for it?

FERGUSON: Paul start--yes.

LETTOW: I'll briefly--I think three points.

First of all, it's an excellent question. And whenever you have a situation where there is a problem that was identified now 40,

50 years ago, the solutions that were posed at the time that are now back in vogue, one has to scratch one's head and say, you know, are we pressing or not?

And I think--and the point I tried to make in our presentation is I think it is a very live issue today--that of the spread of enrichment reprocessing--because of the route that Iran is taking. That is what seems clear that they actually are seeking a weapons capability or at least some kind of latent capability through the quote-unquote "peaceful route". And the possibilities that that opens up is exactly the negative vision that everyone from RAND to Carnegie to the Arms Control Association to the Policy Planning Staff correctly identified many years ago. Now it's actually coming to fruition.

So there's the discrete case of Iran and then there's what happens after Iran or in the wake of Iran and that's where we get into this kind of slow-motion cascade, which could talk more about, but has been written about extensively. So I think it has been a longstanding issue that is now back on the front burner for good reason.

Two, your point about countries that desire to enrich and reprocess and that we would not necessarily have proliferation concerns about--Canada and Australia come to mind immediately. This is why the Bush administration made a decision to essentially reinforce or back the French proposal on a criteria-based system that would have very strict rules that would be restrictive, but would in fact allow the technologies under some circumstances and in a black box.

On the economics of nuclear energy, I actually--I defer on this question, because there are, I think, a handful of experts here who are the best in the country on this or among them. Our own Charles Ferguson and then Sharon Squassoni was here, although I think she stepped out, and Henry. So I defer to them on the economics of nuclear energy.

But they've each written on, I think, your point about being careful not to promote nuclear energy either directly through subsidies or politically through states and our own actions. But I'll defer to them on that.

FERGUSON: Larry.

SCHEINMAN: I agree that we may be making too big a deal in terms of how we approach the problem, but the problem is there. If you can produce enriched uranium, you can use it for civil or explosive purposes in the final analysis. So you want to try to construct a system in which you have a minimum number of places that are capable of doing this.

And why I promote the idea of taking an opportunistic and cooperative strategy to deal with the problem rather than to say, cannot, do not, must not kind of an approach, which inevitably kind of leads to a backlash--even among friends.

OELRICH: Okay. If I'm allowed to rephrase, my point is this is not a huge economic deal. So why are governments even--you know, Iran is an example where they want to have this weapons capability--even if they don't have a weapons capability, they dig in their heels and their willing to go to the mat for this, where they would not be willing to go to the mat for, say, the potato chip industry.

SOKOLSKI: Let me take a stab at that. First, I think we have pathologically made too little a deal of the point Larry just raised. And that is not only does this peaceful activity bring you to the brink of making bombs, but oh, by the way, we have a heck of a time monitoring this activity in a way that would allow us timely warning of a diversion--either by our inability to find a covert facility when you have an overt facility--something which is going to be coming up as we talk about how to deal with Iran. One of the hot proposals is let them have it; we'll just monitor the daylights out of it. The problem is, when you have a legitimate plan, it produces so much noise it's very hard to find a signal of a covert plan--roughly.

We've made too little of that. And in fact, it's caused some awkwardness where Iran's saying, it's safeguarded. What's the problem? And we don't have a real coherent rejoinder to that, because we've oversold how much they can safeguard it

On the other hand, I think we need to make a lot less of a deal about nuclear energy generally. If this stuff was so good, where is the private equity backing this? There's nothing! You know, up on the Hill they're desperately trying to create a clean

energy bank that basically will allow free money to the nuclear and coal industries, because they can't get anyone to invest in these things. I don't think that's as much of a problem for a natural gas plant right now. They can get private equity. This tells us something.

We need to get into the habit of disciplining our own behavior--not to be hard on ourselves, but to save money--and to set an example that makes sense for others who claim to be interested in energy. And we need to be much more forthright and candid about how dangerous these other activities, which as you point out--I think the--Alan, check me if I'm wrong. The World Nuclear Association claims that the revenue generated from enrichment per year is about--I want to say 30 or 40 billion dollars max or maybe a little less. It's not a lot! I mean, it's not a lot.

And by the way, there's a surfeit capacity for the moment, according to the World Nuclear Organization. They're not angling to get a bank. They don't think it's necessary. So this tells us something about the economic realities as well.

FERGUSON: I'll just make a brief observation.

I just was in Beijing four weeks ago. The IAEA sponsored an inter-ministerial conference. And they were hoping to get, you know, dozens of energy ministers throughout the world to come to Beijing. And the previous conference was four years ago; it's not like this is an annual event. And only 28 ministers showed up.

And so at the end of this meeting, they're trying to do lessons learned--had a session on lessons learned. And someone said, how come these energy ministers didn't show up? And I turned to a journalist colleague of mine, Mark Hibbs--you know his work--and I said, Mark, I think the problem is it's so nuclear focused.

And that's not an anti-nuclear comment, but I think if an energy minister--if he or she wants to come and get something out of this conference and just the things that Henry's been saying and Paul has been saying--we need to expand our universe here. It's not just about nuclear energy. We have to look at the whole mix and try to bring this external cost into the internal price.

Let's see--we have about 15 minutes left and I have about three or four questions still on my list.

So next, let me turn to Mary Beth Nikitin, please.

NIKITIN: Yes, thanks. This is perfect, because I wanted to hear more of your views on preventing future enrichment and reprocessing transfers, particularly, so it ends up being a follow-on.

I'd like to hear the views the Obama administration should do in the NSG. Should they continue with this approach of criteria-based? Is that weakening the regime in the attempt to strengthen it in the long term? Can that happen at the same time as a cooperative--these multilateral fuel cycle multinational arrangements are done?

How do you see that playing out and how should it?

SOKOLSKI: Geez, everybody's jumping! (Laughter.)

Well, you know, whenever you really don't know what to say, you back some official statement by some commission, right? That's the purpose of so many commissions is to have something to recommend.

Our commission recommended--(laughter)--a moratorium on commercial reprocessing. Just do it! I mean, this will drive perhaps some people crazy, but so what? It's a good way of gaining credibility in any discussion of criteria, because at least on that one--paraphrasing Dr. Von Hippel--we don't do it; you don't need to. It sounds a lot better than we're thinking of doing it; you shouldn't. So that's one area.

In the enrichment area, you know, I don't really find the bank that offensive if you make the product available at spot market prices. I don't think it does much good, but it might quiet people about the whole topic as a kind of sop. Maybe that's it.

I don't know that the NSG is going to improve things too much if you get a consensus position with countries that want to experts reprocessing and enrichment. That's my guess.

LETTOW: Well, the story in 2004 with President Bush's proposal for the year-on-year moratorium on enrichment reprocessing--I'm not--my guess is that virtually everyone in this room thinks that would be the ideal solution, and indeed it is. And I think Henry's right to point out that in the case of reprocessing, which is unique, that we should push for a year-on-year ban.

The reality is--and we're here, I mean, we're talking about U.S. proposals, but it is an international system. And the year-on-year moratorium ran into enormous difficulty. And one of the reasons the U.S. switched to--I would say a switch, but chose to fully support a criteria-based system, was out a fear that the moratorium wouldn't hold.

So the question is, do you go for a moratorium that essentially collapses and sort of ride it to the end of the cliff or do you go for a criteria-based system and go for the strongest system possible? And that is the problem the administration confronted and they went the route of the criteria-based system.

I certainly, if the Obama administration is able to push for a year-on-year ban, boy do I wish them luck! That would be ideal. I wonder about the reality of the situation in the Nuclear Suppliers Group.

One other thing: In terms of the actually criteria-based system, the restrictions are actually--in the U.S. proposal, and undoubtedly in the French proposal before that--are actually quite strong. So the question there, as in all of these issues, is who judges them and how do you enforce them? And the NSG is a voluntary group.

And so even if we go to the criteria route, which--and the criteria themselves are strong--it has to be backed up through some of the other measures I mentioned, which are complementary--so including restrictions on enrichment reprocessing in, for example, bilateral agreements--the U.S.-UAE agreement. And again, I think Congressman Sherman wrote an excellent letter to the administration on that issue--and then looking to some of these other routes through the UN Security Council with generic resolutions.

But I fear that if we don't get a criteria-based system, that the moratorium will collapse.

FERGUSON: Larry?

SCHEINMAN: Yeah. I'd just make a slightly different point, which is not withstanding bans or limitations, with respect to reprocessing.

One of the issues that has to be, I think, brought to the table again is this whole question of spent-fuel storage. Where does spent fuel go once its been discharged from a reactor?

I'll not name the country, but there's at least one country that most of us are aware of that are now confronted with the problem if what do we do with spent fuel discharged from the reactors? Shouldn't we start to reprocess it? And in some places in the world, that's not exactly a good idea to start extracting plutonium from spent fuel.

So this kind of raises the question--a number of questions. One would be whether or not there should be some kind of a lease and take-back arrangement between the supplier and the consumer of nuclear fuels. Another would be whether to revisit, reexamine regional spent fuel storage arrangements that might--might take the pressure off of a country to find a need domestically to do something with the spent fuel.

A third is--Henry just mentioned it, which is true--dry cask storage is a way to deal with the issue. But the point is, instead of looking at a one-year ban on reprocessing, to start looking at other ways and means to deal with spent nuclear fuel so that you don't have to address this problem of what happens if and when.

FERGUSON: Good point. Thank you all.

Next I have--oh, Ed Lacey put--do you have--Ed?

LACEY: Yeah. I've got a comment, but I promise to end with a question. (Laughter.)

But it's going to cover all of the panelists. And I'm looking at our topic for strengthening the nonproliferation regime.

First, I think Henry mentioned U.S. and Russian numbers are coming down and they've been coming down. In the last 20 years, these numbers have come way down. In the same 20 years, North Korea tested its first nuclear device. Iran went well down the road towards developing a nuclear weapons capability. China's increasing, India's increasing, Pakistan's increasing.

I'm not persuaded that the evidence suggests that there's a connection between halting the proliferation of nuclear weapons and the reduction of the U.S. and Russian strategic arsenals.

Dennis alluded to one allows the United States to go to nuclear weapons--to go to lower numbers. The fact is, we are the conventional top dog in the world. Everyone knows that.

The problem with this is we have the catch-22, you know? What's the best way if you're going to meet the United States on the battlefield somewhere and you know that we're the number one conventional power, how am I going to confront the United States? How am I going to beat them? Nothing like having a couple of nuclear weapons to even the score--and I don't know how we square that circle.

I don't get the connection--Bruce mentioned--he thanked Dennis for establishing the connection between missile defense and nonproliferation. I don't get it and I'd live to discuss this with you some more, Dennis. You know, unless you're perhaps suggesting--I mean, the U.S. missile defense program is so miniscule and not likely to get much bigger--unless you're envisioning a proliferation of missile defense systems that could somehow constrain people from proliferating nuclear-armed missiles, I don't really get the connection.

Paul, a moratorium would be a great idea. I think the--and Andy Semmel knows more about this than I do--but I think the reality is a moratorium's not going to happen. And a criteria-based approach is probably the best thing that we can get--certainly in the near term. And I would argue at this point, you know, better is the enemy of good enough. We need to constrain the proliferation of enrichment and reprocessing technologies. The criteria-based approach to my mind looks like a good way to go. It may not be the final step, but again, we have to start somewhere and this is something I think we can do sooner rather than later.

And Larry, your multilateral joint ownership of fuel service centers with one technology--(inaudible)--if I understood you correctly, I think that's very intriguing.

And my question--as I promised I'd have a question here--how likely is it, in your opinion, that countries would accept ownership--joint ownership, multilateral ownership--minus access to the actual technology itself?

SCHEINMAN: I guess the question is to me. I can't give you a definitive answer to that. But it would seem to me that putting up an enrichment system is pretty darned expensive and it involves a lot of high-tech capabilities.

So if you had a technology holder who really was prepared to invite in partners to join in the enterprise, who would invest in the enterprise--thereby reducing the cost to the original technology holder--but to be assured that they were getting technologically state-of-the-art access to enriched uranium, whether it's for themselves or in terms of getting into the international market and making a profit as a consequence of providing that fuel to needed recipients, that this could be an attractive alternative for some countries.

Whether it would be for all, I don't think that the answer would be yes to that. There would be some who would say, no, no, I

want to do this on my own. Immediately you'd begin to ask the question, why is it so important to do it on your own if you've got a better mousetrap, that you can pursue, which is to get into the most advanced technology with the most efficient and most capable resources at your disposal, unless you have some other motive, which is to kind of put in place--put yourselves in a position, if you chose to do so, to turn that uranium enrichment capacity to other purposes than civil use.

SOKOLSKI: One comment: The economics of building an enrichment plant may change, number one. New technologies may come along and make it even cheaper. It's possible. Well, I mean, there's life after centrifuges, if you think 20 years out--number one.

Number two, reprocessing is not that expensive to do if you want to do it on a small scale. So the idea that you can get a lot of traction on fuel making through multilateral understandings has probably got to be hedged with a lot of cautionary tales--given public diplomacy about the dangers associated with these things.

Finally, I don't know what AREVA thinks--maybe Al can chime in here--but a lot of private fuel suppliers are not necessarily chomping at the bit to set up additional systems under complex management arrangements. I mean, they have business plans of their own. I mean, they'd be willing to do things for the international community, but the system is working.

FERGUSON: Yeah. Right. I know what Alan is talking--briefly just to kind of explain what's going on--AREVA and Urenco have an interesting collaboration going on right now.

They're building up at the old plant in Idaho. I went to the George Besse II facility in France; how does that affect these?

LACEY: All right. That was not the purpose of my question, but I will follow up on what Larry started to say, because I think we have an example in AREVA of exactly what you mentioned.

Urenco has today the world's most efficient centrifuge technology. And as a commercial decision, it proved better to abandon developing the technology on our own and purchasing Urenco technology under a black box arrangement so that we don't actually--we purchase the equipment, but not the technology. We have no rights to the technology and we don't need.

And Charles is right. We're using that black box method in both George Besse II in France and we'll use the same thing in Eagle Rock in Idaho.

So we have an example of just what you suggested. I think it's a good start.

I would also add--you may have missed it, because it's such a small amount--but part of the equity in the George Besse II plant has been sold to a Japanese firm, and that is probably a start of a further multinational ownership. And there's no reason why the same thing could not be done in the United States if it made good commercial sense.

Now, I'd like to come back to the purpose of the discussion here and pick up on something that Larry mentioned, and more importantly, Scott mentioned it last night.

There are a lot of attractive ideas on improving the regime. And one of the ones I've heard from both of these gentlemen--and I'll use Scott's phrase, "return to sender".

This concept has a lot of promise, shall I say. It appears to be interesting, but it also is very problematic. If we're talking about export of a reactor and fuel, you're clearly not going to take the reactor back. It's a fixed installation. And yes, you could take the fuel back. And if the fuel hasn't gone into the reactor yet, this is a very easy thing to do and I don't think anybody would have a problem with that, because it's fungible.

The problem is, though, what do you do if the reactor's been used to produce used fuel already? And now you're talking about return of used fuel to the sender. And I don't have to elaborate on the difficulties that poses almost every place in the world--including where we are right now.

While the United States is taking back some used reactor fuel, at the same time, Energy Solutions has been able to ship innocuous low-level waste from Italy for disposal in the United States. And I suspect if we tried to bring back used fuel in large quantities to this country--if it was U.S. origin--we would encounter severe political problems. And that would be true in most countries in the world. So there is a real problem in implementing something like this.

There's a second problem, however, and that is who is the sender? In the case of Russia, it's relatively straightforward, because you've basically got a single government entity that's providing the technology. But let's assume that an AP-1,000 reactor was sold to Egypt or Algeria or the Emirates somewhere. And it's found out that there is a clandestine reprocessing being built, a la what Henry has suggested. So now we have a return to sender.

Well, who's the sender? Does the fuel go back to Japan, which owns most of the company? Does it go to the United States, which owns it? Or maybe better yet, it goes to Kazakhstan, which owns 10 percent of the equity in the company.

So it's not clear who the sender is. And if you don't know who the sender is, it's pretty hard to return it to that individual. And this problem is going to become more and more complex as we watch the globalization of the nuclear enterprise where there is no single national entity that is supplying technology. Everything is being supplied in a multinational framework, which has the potential to be good.

But I'd like to ask Larry how realistic it is to implement some sort of a scheme like this, given the problems I've suggested?

SCHEINMAN: Well, I take your point immediately on where we are in take back of spent fuel. That's not something that's even close to being on the table. That's not going to happen.

But if you look back historically, there've been about eight or nine different concepts that have been put on the table for spent fuel storage. Going back to the Pacific Basin Spent Fuel Storage Project, which focused on Palmyra Island. And then there was the Pangea proposal and you can go on and on and on. And you're right, every one of them kind of came to naught.

There was one proposal, which was made when I was in the Carter administration, by an Australian in a senior position. It never happened, but the proposal was the following: an island called Christmas Island, just south of Indonesia, which was under Australian control and ownership. It was a phosphate-producing island. It had deepwater port, it had a railhead and it was in a stable environment.

The proposal was we're running out of phosphates to mine, but we've got this place, which would be ideal for storage of spent nuclear fuel. Well, there was a change in government in Australia that happened shortly afterward and that thing went just completely out of sight.

I've been told that this location today is in fact short--very short of phosphate mining capabilities and the it's still sitting there and the owners are looking for some way to make use of the island. So one could say that regardless of what the sourcing was for the spent fuel--the example that you gave about the globalization problem--you could find a repository somewhere in the world, like a Christmas Island or some other location--that would take the spent fuel and let it store there for an indeterminate period of time. And you would have to worry about who owns what, but rather, you'd have this centralized location to where the spent fuel could be sent.

This is just--this is a possibility. I grant the problems that you raise, but for every problem there's a potential solution. And if you don't try, you won't know whether or not you can get from here to there. So that would be my response.

FERGUSON: In the interest of time--I want to make sure I don't cut into your break--we have two questioners on the list. Let me take them.

Tom Cochran and then--and when the speakers are responding to Tom's question, then we'll segue into the last remaining minutes for any closing remarks any of the speakers might want to add based on the question and comments we've received.

COCHRAN: Larry's enrichment proposal focuses on internationalizing the ownership and operation of the enrichment plants. And I think a--I don't think that does--first, I think it would be extremely difficult--particularly to make it universal. And secondly, the history of countries that take over corporations is fairly long. And so I don't think it would inhibit a country from nationalizing what would be an international corporate ownership of an enrichment plant.

And so I think a better proposal is the German proposal to require that the enrichment plants be sited on land that is essentially leased on a long-term lease or some other similar arrangement with an IAE--by an IAEA--newly created IAEA entity. Such that the operations of the plant would all be contained in a site that is an extraterritorial site and that would make it more difficult--and Larry and I discussed this. And I just think that has more attraction than trying to force some sort of international corporate ownership and it would be more effective.

On the spent fuel issue, you failed to mention the nonproliferation trust proposal, which is a little better than the Christmas Island proposal.

And my final comment is on the reprocessing. I'm still troubled by the fact that even though the Obama administration appears to be backing away from the GNEP proposal for immediate construction of advanced fuel cycle facilities. They're leaving in a place a large R&D program that will simply proliferate hot cells and pick up on what Henry said--you can do the reprocessing in hot cells.

So as long as you're going to create this international incentive to get in the business of R&D on advanced fuel cycle--advanced fuel cycles--advances reprocessing techniques, you simply are leaving open this huge loophole that any country, including Iran, can have its own R&D program on advanced fuel cycles--advances reprocessing.

So my question is, Larry, would you like to comment on that? (Laughter.)

SCHEINMAN: My concept did not imply--maybe it implied, but it was not intended to convey the notion that this would be a facility located where it could be quickly nationalized or retaken by the state in question. I had in the back of my mind the German concept of extra territoriality. And I think that's an added barrier to seizure, taking over, repatriating--whatever the terminology is that you want to use.

I think what's important is that you want to have a limited number of these facilities around the world--enough to meet market demand. And of course, what we've got now does meet market demand. So we're kind of postulating that there's going to be a renaissance that's going to increase demand to a point where you're going to need to more capability than currently exists. And as that arises, that's the opportunity point for trying to develop something that is new and different.

But rather than to jump in and say, hey, we've got--we're going to widen the market opportunities so that you can kind of fish around for the cheapest price to get the product that you want.

COCHRAN: You'll never need more sites, because the improvement in the efficiency of stages--in centrifuge stages will outpace the growth of the nuclear energy and you can put more efficient machines in the same buildings so you'll never need more sites than you have today.

LETTOW: Hopefully it's true.

But I think Henry raised the point of technological surprise. There is concern among some in the field about laser enrichment. And GE is looking at SILEX. I know it may not be ready for prime time yet.

COCHRAN: It's an endless process. It's been around for 20 years, 30 years.

LETTOW: You're saying it might be like fusion.

COCHRAN: No. I mean, you can do it. It's just whether it's economical or not.

LETTOW: Right. Well, but from a proliferation standpoint, even if it's not economical, if you can't detect it--I mean, it really--you know, Henry raised this point about timely warning challenges. It's more worrisome with laser technologies.

FERGUSON: Well, we have about a minute or two before break.

Other panelists, do you want any final comments--you're not required to. If you want to make any final parting remarks before we break.

GORMLEY: At the risk of despoiling Bruce's comment about my brilliant connection between missile defense and nonproliferation, I'm not quite sure I spoke of it in these terms. But Ed, you raised the issue of that linkage. And with respect to the modest nature of the U.S. selling its missile defense to friends and allies, et cetera.

I've written widely in a recent book as well about what I see as an inadvertent connection. And that is the fact that we have such an uneven approach to spending with respect to ballistic missile defense and cruise missile defense, that the significant increase in performance of ballistic missile defense systems has incentivized various countries by virtue of following their narrative about what they say when they announce a new cruise missile program, that it is intended to foil more effective ballistic missile defense systems, which also have a capacity--in theory--to deal with cruise missiles.

So inadvertently, the effort to sell ballistic missile defenses around the globe--and you can see it in each of the three major regional areas--has incentivized those countries to pursue cruise missiles to deal with--and they complement ballistic missiles and make it more difficult for missile defense systems to be effective.

FERGUSON: Thank you, Dennis.

Paul, Henry--any very brief comments?

SOKOLSKI: Yeah. The only thing I would recommend is that for folks who want to strengthen the nonproliferation regime--like anyone who wants to repair a car that hasn't been clearly diagnosed--do the simple things first.

Enforce the law. See where you can improve things by spending less. And finally, try just being more candid. I think if we did those three things, it would make us far more credible for the more ambitious things. And it might do a heck of a lot of good in a short period of time.

FERGUSON: Well, with those words of wisdom, let's thank our four wonderful panelists--Paul, Larry, Henry and Dennis--for kicking off a very thought provoking discussion this morning.

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