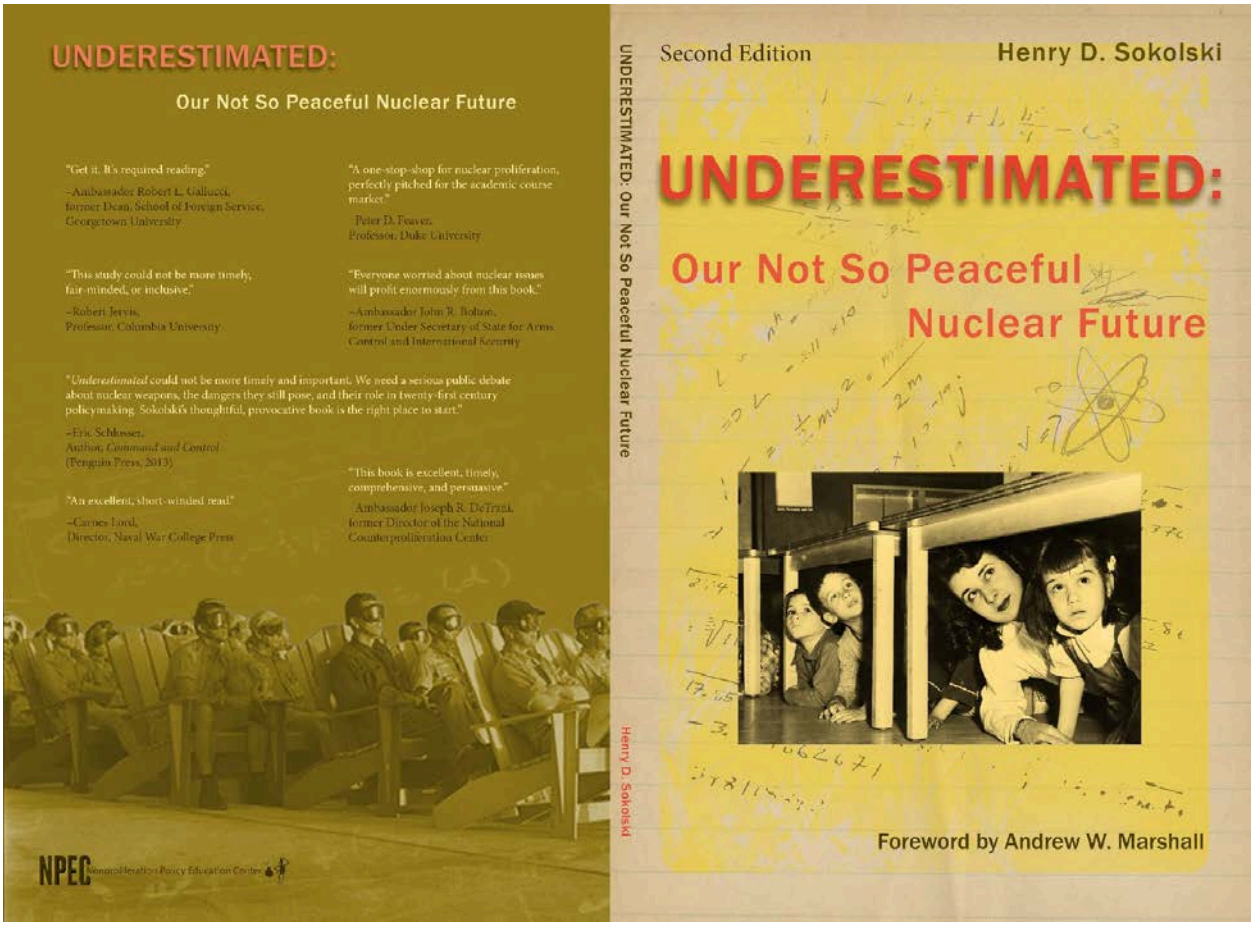
Lecture 10: Thinking about the Next Arms Race

QUESTIONS TO BE ADDRESSED:

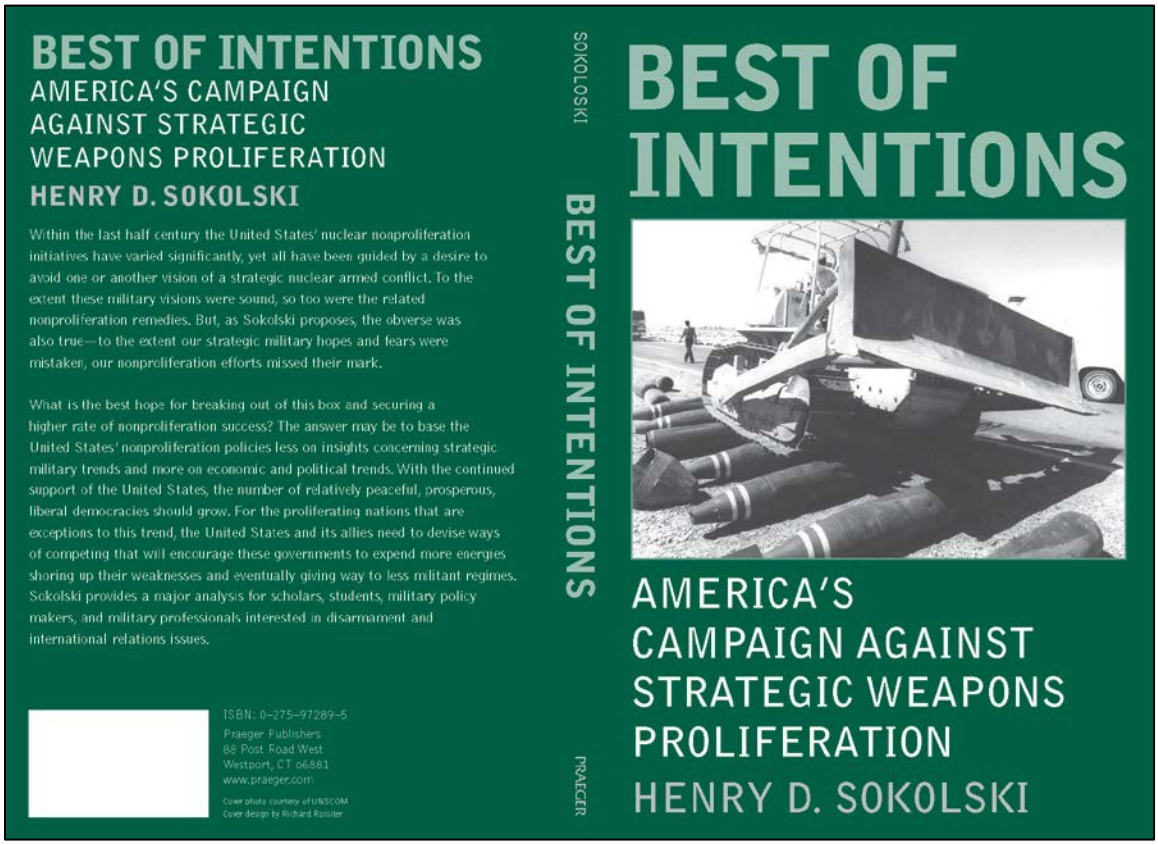
I. **Where are we now and where are we headed with regard to nuclear weapons proliferation?**

II. **What do we think about nuclear weapons and their proliferation?**

III. **What might help?**



This book, *Underestimated: Our Not So Peaceful Nuclear Future,* is the second of two books that I have written. I would like to believe that both of these books are efforts to make the field of nuclear nonproliferation a more serious field. The first book was called the *Best of Intentions: America's Campaign against Strategic Weapons Proliferation*. It was published in 2001. The reason I wrote that was because when I taught I couldn't find any critical history of nuclear nonproliferation and because the course was on nuclear nonproliferation it was a bit embarrassing. Every other serious field—including diplomatic history, economics, military science, even political science-- all had critical histories where you would evaluate the merits of various actors and efforts on history but there was nothing like that on nuclear nonproliferation. Instead, you would have descriptions about how a treaty was negotiated, like the NPT, or the Statue for the International Atomic Energy Agency or how the Baruch Plan was formulated or how Eisenhower's Atoms for Peace was implemented. There simply was no comparative effort to assess how good these initiatives were. This didn't just make teaching the course seem dull, it also didn't seem right. If you really don't have any critical history to read about a topic, your topic isn't exactly serious. I set out to write the critical history and since I had no competition. I thought, I couldn't fail.



As soon as I started writing, though, I discovered why nobody had ever bothered to do this before. How do you write a history about things that didn't happen? After all, but nonproliferation is supposed to prevent countries from getting nuclear weapons. OK, but how would you ever be able to rate the quality of efforts to prevent things from happening if the things never occurred? It seemed like a speculation on a speculation.

Initially, I was stuck and, then, I hit upon a fix. Instead of detailing what did or didn't happen because of one or another nonproliferation initiative, I decided to go and assess the assumptions, the premises, or the intentions of each one of these programs. Each one of them had a vision, a pretty horrific vision, of what the next war would be like with nuclear weapons. Very little attention has been paid to these, which is a mistake. In fact, if you look at what each of the control efforts assumed and what they thought the next nuclear war would look like, in more than a few cases they didn't quite get it right. What happens if you get a problem wrong and you try to solve the wrong problem is that the solution could either be irrelevant or compound the problem. This is exactly what happened in at least one or two instances. The best example, which I focus on in the book, is Eisenhower's Atoms for Peace program. What the authors of this initiative worried about was the Russians knocking out 100 large American cities with hundreds and then eventually thousands of weapons. Because the program was so focused on this massive and unlikely event it overlooked what could happen if the Russians used a small number of nuclear weapons to knock out our strategic air command. There were only 15 US strategic air bases at the time. It didn't take that many Soviet nuclear weapons to knock them out. Also, they couldn't quite get their heads around what would happen if one weapon was used accidentally or illicitly and how that might actually prompt a major exchange between the United States and Russia.

As a result, the authors of Atoms for Peace didn't look enough at the question of preventing a diversion of small amounts of nuclear materials, enough to make a few weapons, but instead only focused on how to prevent diversions of literally scores of weapons worth of material. Not only that, but they came up with the rather kooky idea of creating an international fuel bank to prevent nuclear power globally and encouraging the Russians to contribute so they would draw down their ability to make enough weapons to knock us out. All of this was very sophisticated but pretty wrongheaded. The Atoms for Peace program actually spread plutonium making technology and materials worldwide a lot sooner than otherwise would be the case.

This book is different. It tries to do the other thing that you need to do to have a serious field and that is to look at long-term trends and get a big picture to project what the future might be.

Again, when I taught, I couldn't find any book that did this. Instead, what I found is discussions of different crises--Iran, North Korea, India, Pakistan--what's happening now, what should we do next? What you didn't get was any serious attempt to generalize from past trends to get a big picture of what's going on and what might go on in the future.

Any dignified economist, political scientist, diplomatic historian, or military scientist knows that this is the lifeblood of their field. They write book upon book upon about this. But there wasn't anything I could find that really tackled this seriously in the field of nonproliferation. So once again I thought, "Well since nobody's written one, I can't fail."

My approach was quite simple, I tried to make a projection of how bad things could get. My aim here was not so much as to be proven right as it was to make reasonable warnings, which, if heeded, would assure that the scenarios presented would never be realized. Many of you have actually heard how John F. Kennedy predicted in 1963 that by 1970 there would be 10 to 25 countries that would have nuclear weapons.[1] And every speaker who raises this historical point quickly points out, "Well that didn't happen." It's as if they wanted to show that he had made a mistake; that they were smarter than him. I think all of this gets it wrong. Kennedy wasn't trying to predict so much as to warn and he was saying all of this would happen ***unless*** the United States and other countries tackled the problem, which fortunately in 1964 it sort of did. We negotiated a limited test ban treaty and in 1968, we completed negotiation of the NPT. His prediction didn't come true and I don't think he should be faulted.

With this in mind, I did my best, again, to paint as black a picture as I could without being kooky.

I. Where are we now and where are we headed with regard to nuclear weapons proliferation?

To do this, I looked back 50 years, which, at the time, took me back to the Cuban Missile Crisis. I think it is a nice event to start things off; we and the Russians nearly used our weapons then. From 1962, I looked at the trends that were most important. There were five I could identify relating to nuclear weapons deployments, the production and stockpiling of nuclear explosive

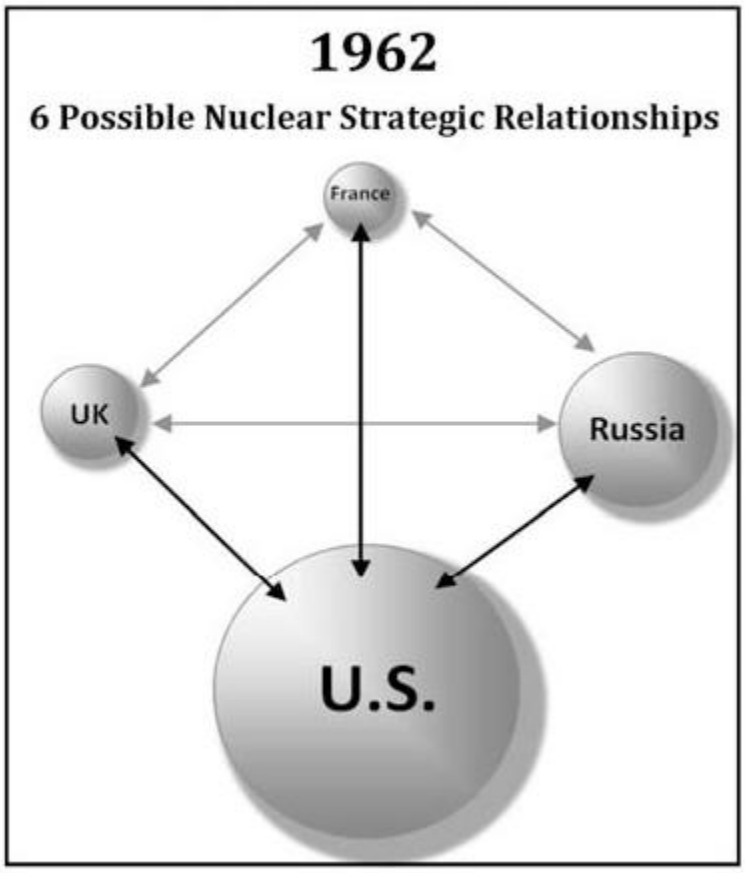
1. John F. Kennedy, News Conference at the State Department Auditorium, Washington D.C., March 21, 1963, transcript available at https://www.jfklibrary.org/Research/Research-Aids/Ready-Reference/Press-Conferences/News-Conference-52.aspx.

material, the spread of nuclear reactor and fissile production technologies, the spread of nuclear weapons-capable delivery systems, and the evolution of nuclear weapons use policy.

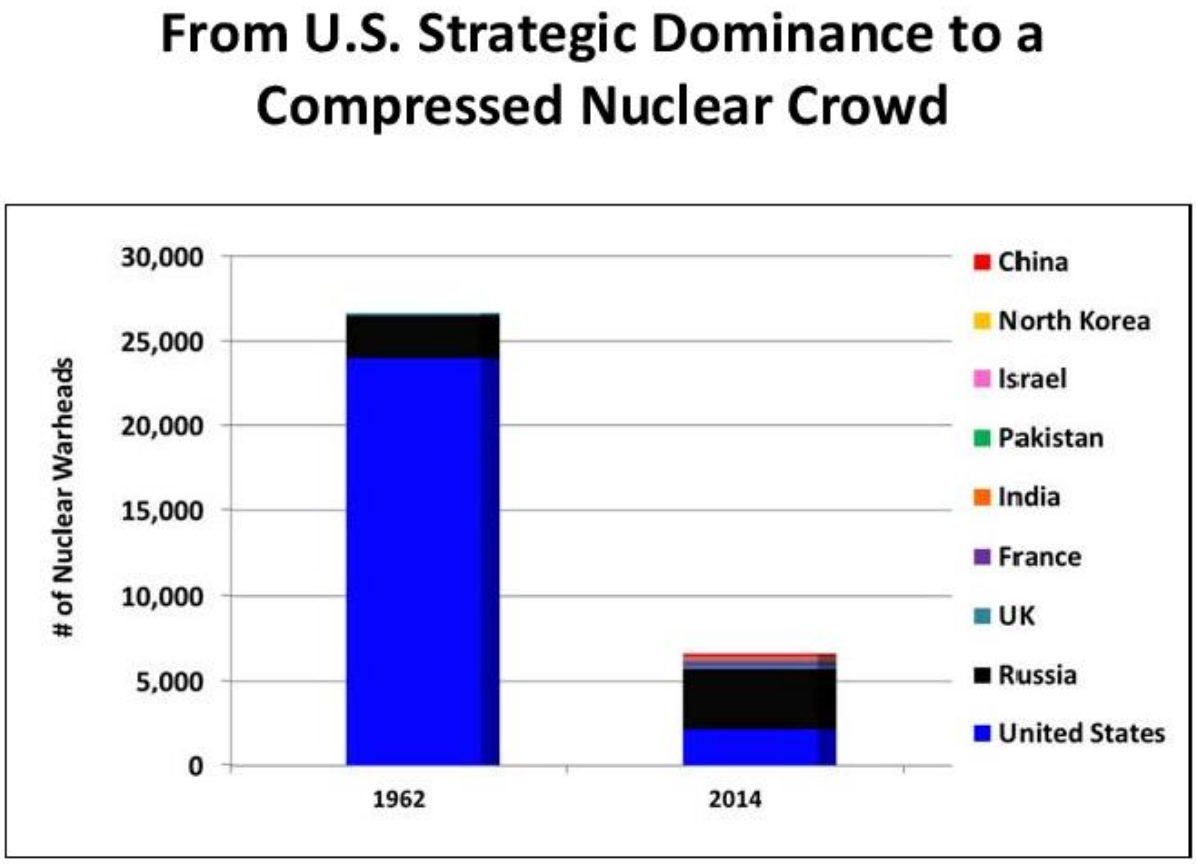
I'm not going to go over the particulars of each one of these but only two that I think are of particular interest. The first is what I describe as nuclear “compaction” and the other is what arms control experts in the 1960s referred to as “Damoclean Overhang.”

Together these two trends describe a problem that an increasing number of countries have nuclear weapons or are being able to ramp up from zero or whatever they currently have to much larger numbers more quickly than ever before. So let's talk about the first of the trends contributing to this problem--nuclear compaction.

Four Nuclear Weapons States in 1962



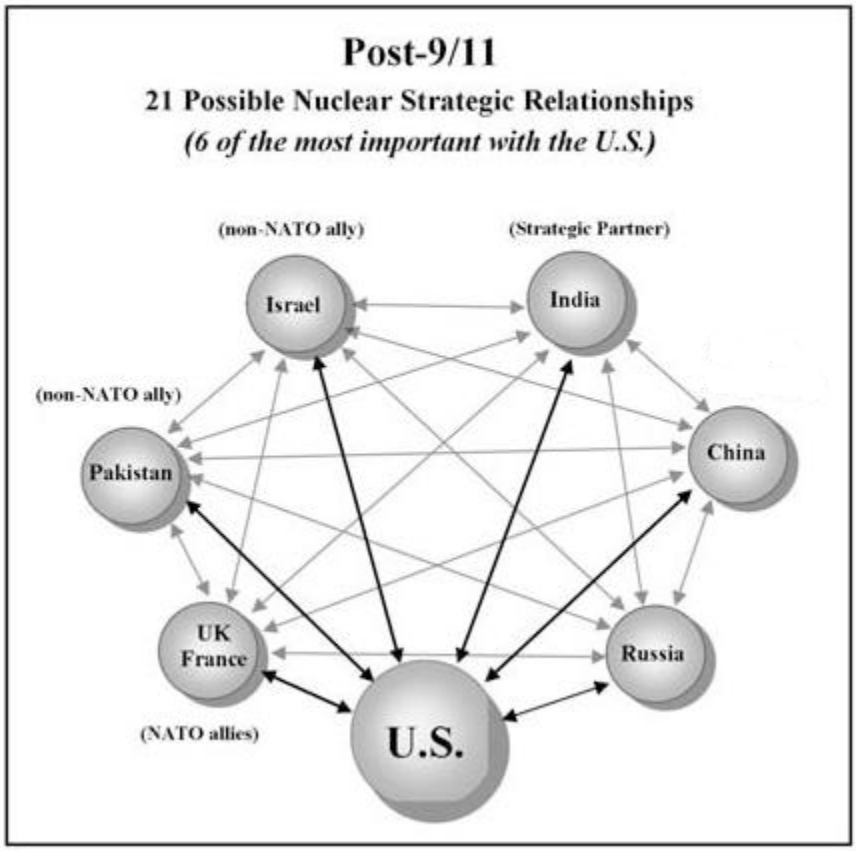
In 1962 the United States had 24,000 nuclear weapons operationally deployed. The UK had 50. Russia had 2,500. France would explode a weapon in a test and then automatically the number of weapons it had went down to zero so they did not really have an operational force until a few years later. In 1962, they were the North Korea of the 1960s: They didn't really have much of an arsenal.



Now let's portray that in a bar graph. It's worth understanding the difference between the smallest operational force, which was Great Britain with about 50, and the largest which was the United States with about 24,000. Roughly, that is a thousand-fold difference or three orders of magnitude if you're into the hard sciences. When you get to 2014, the picture is quite different. The largest deployed operational force is Russia with roughly 2,000. The United States has a little less than 2,000.

As for North Korea, we don't really know how many they have but it's not quite an operational force yet. The operational forces that are of interest are about the same--Israel, India, Pakistan-- they're at about 100-200 weapons depending on who you listen to. The difference between their numbers and the largest numbers isn't a 1000-fold difference, it is about a 10-fold difference. It's one order of magnitude, so you've lost two levels of magnitude since 1962. While you have this compression, you also you notice there also are more countries with nuclear weapons—nine versus only four in 1962.

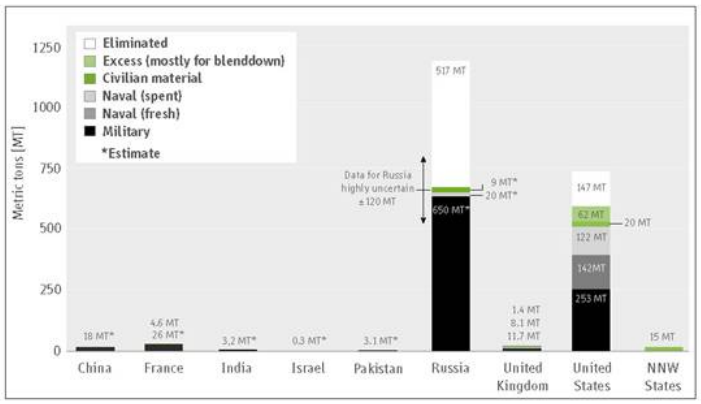
Proliferation Present: An Official View



In and of itself, I don't think this a particularly worrisome phenomenon. You could even rationalize it as being acceptable. In the early 2000s, some at the State Department argued that since the United States was militarily capable of invading small countries far better than anyone else, relations between the nuclear powers was still pretty stable. Essentially, it was argued that these other nuclear armed states revolved around us. In this world, the UK and France become NATO, nuclear armed allies and everybody else was either a NATO ally or a non-NATO ally or a strategic partner. China and Russia are no longer strategic partners or stake

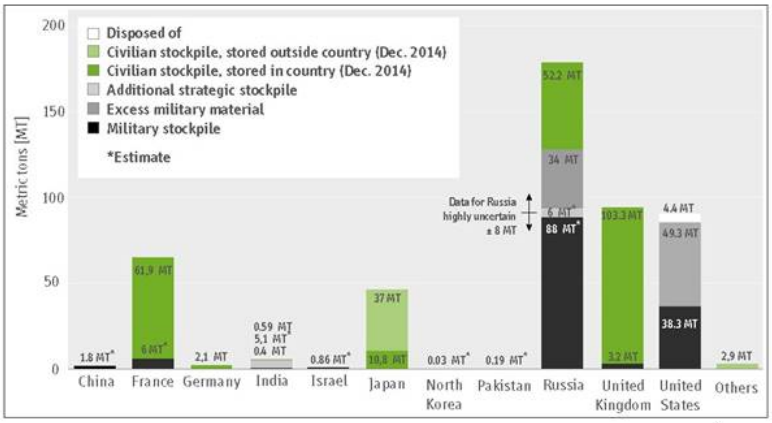
holders but they are not quite yet over enemies either. In any case, it is a world that the United States and others can live with.

However, when you look at this compaction phenomena and cast it in the light of two other developments--what countries are stockpiling in the way of nuclear explosive uranium and plutonium, and what their current and planned capacity is to produce these materials--things look very different. It's not so benign. In 1962 if you asked how much surplus uranium and plutonium for weapons purposes were out there, the answer would be simple—none. Why? Well every gram of plutonium and uranium was used almost immediately to make nuclear warheads or to fuel naval reactors. There was no surplus. You didn't have the luxury of storing it and thinking about using it at some later point. That, however, is not the case today.



National Stockpiles of Highly-Enriched Uranium

Existing Fissile Stockpiles: Grist for Nuclear Ramp-ups and Breakouts

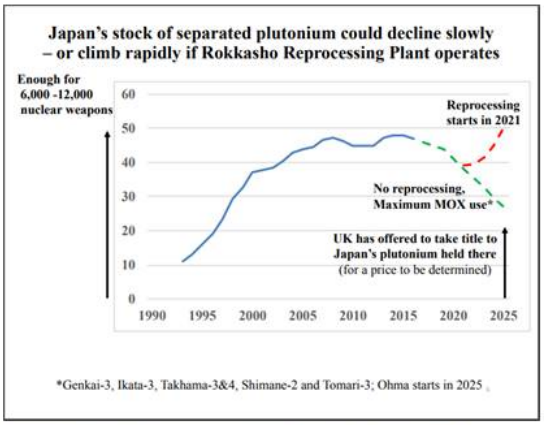


National Stockpiles of Separated Plutonium[4]

These charts are taken from Frank von Hippel's work at Princeton. He runs something called the International Panel on Fissile Materials and all of his material is open sourced on the web. China, if you look carefully, has enough surplus in terms of weapons uranium and weapons

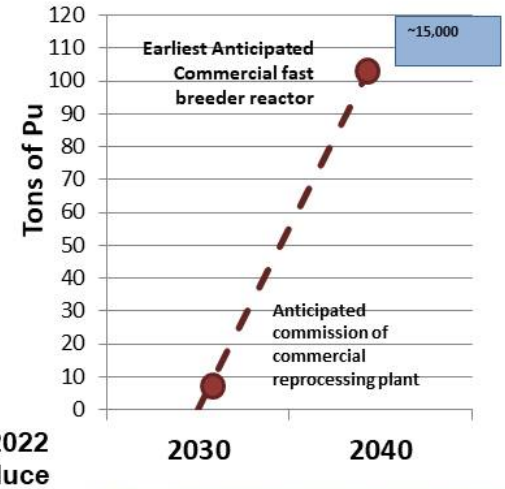
explosive plutonium to fashion 500-1000 additional nuclear weapons. Japan has 11 tons of weapons explosive plutonium on its soil--enough to make 2,000 nuclear weapons. India has roughly 1,000 pounds worth of weapons explosive plutonium. The United Kingdom and France, meanwhile, have a few thousands of bombs worth of civil and nuclear plutonium and uranium. Finally, the United States and Russia have tens of thousands of bombs worth of surplus nuclear weapons explosive plutonium and uranium that they can relatively quickly refashion into nuclear weapons (i.e., in 12 to 36 months).

E. Asian Plutonium Production Potential: 1000s of Bombs Per Year



Rokkasho Uranium Enrichment Plant

Japan by 2022 could produce up to ~6,400 kg HEU/year or *more than 500 bombs worth per year*



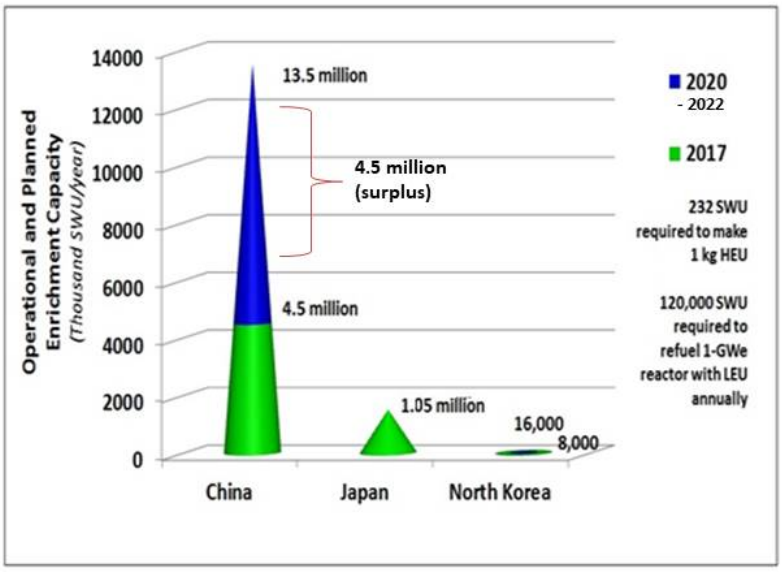
ROK pyro-reprocessing plant

As for production capacity there is also another worry. Japan plans to operate this plant at Rokkasho. They've been building it for decades. But in 2018, they intend to open it up to take spent fuel from their power reactors and strip out the plutonium. How much? Well each year when it runs to capacity it will strip out 8,000 kilograms or 8 tons of plutonium a year. 8,000 divided by what the Department of Energy thinks you need to make nuclear weapons is 8,000 divided by four. Perhaps it is a bit more because the material is not optimized for weapons worth. So divide by five. So it's somewhere between 1500-2000 weapons worth a year

depending on how you look at it. That is a large number. It is essentially as many weapons worth a year as the entire number of weapons the United States has deployed. Japan does not have the ability to use this material for quite some time. Japan intends to stockpile most of it. You can take a look at the chart and it will show you how that stockpile will grow. And that will just pile up. That is sort of that Damocles overhang we are talking about.

This brings us to what China is thinking of doing. China wants to buy an exact copy of this plant from France. They're in negotiations. If they proceed with their plans they intend to stock pile material from 2030 to 2040, roughly piling up 15,000 or more weapons worth of material. Of course, this will all be for "peaceful purposes" to fuel a planned fast breeder reactor unless or until China decides to change its mind. How many weapons worth of plutonium do the Russians and the United States have? The same 10s of thousands the Chinese might secure going this "peaceful" route. Well, I said tens of thousands. This might threaten them joining us at the same level very or reasonably quickly.

Uranium Enrichment for Peace?



Rokkasho Uranium Enrichment Plant

Hanzhong and Lanzhow

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Then, there is the enrichment of uranium. China in just the next five years will have installed so much enrichment capacity that it will be able to make enough enriched uranium to fuel all of the reactors it is planning to build and still have 3 million SWUs, or approximately 1,000 bombs per year worth, of weapons capacity in surplus. The Japanese will have enough capacity on-line to make rough 200 weapons per year. India, meanwhile, has enrichment, reprocessing, and breeder reactor plants free of international inspections that will enable it to make a significantly larger arsenal if it chooses to. It should be noted that none of this build up makes any economic sense. The use of plutonium based fuels for nuclear power loses money compared to simply using less dangerous low enriched uranium. The world's supply of enrichment capacity is about 50% higher than demands are likely to be and for some years. All of this suggests that the peaceful buildup of reprocessing and enrichment plants may be anything but peaceful.

When you view these trends, the world no longer seems to be all that peaceful. Essentially countries that don't have nuclear weapons could get hundreds of them relatively quickly and countries who have come down or have relatively few could get a much greater number relatively quickly. Those kinds of uncertainties don't enhance stability or peace.

I wrote all of this up as the central chapter of my proposed book. It currently is chapter two, "Where We're Headed." And to test the waters, I published several versions of this research in a number of respected journals. Some officials even noticed. The Commission on the U.S. Strategic Posture asked me to brief them and they even showcased this research in their latest publication of their research.

Then, one of my ideas on the dangers of nuclear breakouts got popularized by Donald Rumsfeld: Where I spoke about the possibility of a "sprint to equality," he spoke about a "sprint to parity." I can't prove that he actually read my material but I'm pretty sure he did for two reasons. First, he used to be on a board that funded my work and they actually made him read the proposals that I wrote. And second, a year or two before I got started on this book, I attended a gathering where he was speaking. I got up to ask him a question and he asked me who I was and I told him, and he said, "Oh I know who you are. I've read everything you've ever written." This was in front of about a hundred people and it was kind of embarrassing. In any case, I think he probably read it but I can't prove it.

Besides these two limited brushes with relevance, though, I'd have to say that my arguments in the book's central chapter didn't get that much play. This baffled me. At the time, everybody was interested in going to zero nuclear weapons. I thought, well gee wouldn't people be interested in making sure that these weapons didn't spread. I was mistaken. My research got

some play but not so much. Recognizing this, I did what any good academic does, I put the book project aside.

II. What do we think about nuclear weapons and their proliferation?

Then I got a phone call from my alma mater, the University of Chicago. The head of the Political Science department John Mearsheimer, wanted me to come and give a talk about something that I was writing, preferably a book chapter. Initially I didn't know what the heck I was going to talk about, but then it occurred to me that to get greater insight into why nobody was thinking very much about what I thought about nuclear weapons and their proliferation and possible use, maybe I should examine what everyone else thought on these issues. The first chapter of the book is called "What We Think," that's I wrote up.

I tried to read everything I could on the main schools of thought and I discovered something that I didn't expect to and it was quite odd.

It didn't matter what school you looked at – the school backing the elimination of nuclear weapons that was opposed to nuclear energy proliferation, hawkish supporter of nuclear arms who want do enhance or maintain nuclear forces and opposed weapons spreading to adversaries but allowed it for friends, or academics who think nuclear proliferation is either stabilizing or inconsequential. No matter which school you looked at, each insisted that the best future possible could be achieved if you only just followed their advice.

That seemed pretty cocky to me. I mean, here these folks were all saying that they had the last word on what to do. Yet, how many actual data points we have on the use of nuclear weapons? The answer is two, Hiroshima and Nagasaki. I don't care how sophisticated your regression analysis is, if that's all you've got to work with, then you are not going to get very far convincing anybody of anything about the future. Thankfully, we don't have much data. Although I think it is a mistake to place one' full faith in any one of these school's recommendations, I think it's useful to examine what each of them is saying for two reasons. First, each one of them get something really profoundly right and yet second, they have failings. If you want to figure out what we should be doing, you want to know what those are. So let's begin.

The first school is what I refer to as the zero crowd. As I mentioned before they want to get rid of nuclear weapons and oppose nuclear weapons proliferation. This is roughly the view of our government and allied governments. Now, what this school gets profoundly right is the

political power of the number zero when it comes to nuclear weapons. I think the critics, and I guess I would be included among them, really get something wrong when they go after this because although nuclear disarmament may not happen very soon, or maybe not ever, it is a powerful idea. If you put all of the leaders of countries that have nuclear weapons in a room and locked the doors and said we're not letting you out until you all can agree on a number you can live with, my hunch is they wouldn't leave until they hit upon the number zero, which they would do pretty quickly.

This doesn't say anything about whether they would actually disarm or whether they would agree on how to do it, but it does tell you that zero is a very seductive number. Certainly, if you listen to most of the world's leaders, including most our presidents, they all have given lip service to this. There's a simple reason why. We all know how we got into this game. First, we and our allies in WWII were afraid that the Nazis would get the bomb. Then the Russians were afraid we'd have the monopoly, then the British and French didn't want to be left behind and then it just kept going.

What we don't know is how this story ends but there is more than an inkling that it could end badly–think Mad Max --and so the power of zero. The other thing they do reasonably right is explain the advantages of having a world without nuclear weapons and even how to maintain zero once you get there so there's no backtracking. What they don't do very well is to explain what the risks of the transition of going from several hundred nuclear weapons down to zero might be. At that point, you have to worry about the leader of some nuclear armed state saying "why don't I get a thousand, then I could be top dog." The problem of transitioning down, in short, is something that they don't discuss.

Perhaps, even more worrisome is their disjointed discussion of nuclear deterrence. There are a few people in this school that argue that nuclear weapons are useless for military purposes but most of the people in this school take a great deal of joy in insisting that these weapons are only useful for deterring other countries from using their nuclear weapons. The reason they like arguing this is that it highlights just how absurd these weapons are. After all, why would you spend millions or billions to get a weapon if you were never going to use and it's only function was to prevent someone else from using their version of the weapon you were acquiring? Initially, it seems pretty silly–-something four-year-olds might do—that is until you think about it: If it's really true that you can deter someone else from using nuclear weapons against you by getting them yourself, wouldn't that be a pretty compelling argument for getting them? Again, the answer is obvious.

When I raise this last point with folks that make the argument that nuclear weapons are only good for deterring, they almost immediately change the subject. I never really get a whole lot of traction on the discussion on this point.

This then brings us to the next school, the hawkish supporters of nuclear weapons. Their key argument is that nuclear weapons deter and keep the peace. They argue that if we fail to maintain or enhance our own nuclear weapons force, then our security allies, like Japan, Turkey, and South Korea, would be sorely tempted to pursue nuclear weapons of their own. Which would lead to further proliferation and increase the prospects for use. There's a lot to recommend in all of this. Although it's difficult to prove that nuclear weapons deterred every single claimed act of aggression, it is pretty hard to believe that it had not effect. U.S. Nuclear weapons probably deterred China from invading Taiwan. They very well may have helped us prevent the Soviets from invading Berlin. One could go on and on. The point is that all you have to do is have one of those be right and then it's a very powerful point.

In addition, the hawkish supporters of nuclear weapons' arguments do a good job explaining alliance security relations. Right now there's a debate that's going on in South Korea about whether Seoul should get nuclear weapons. Why? Well South Korea has been rattled by the latest North Korean nuclear test and Mr. Trumps ruminations about pulling support from the Republic of Korea. As a result, they're not sure they can rely on the United States to execute the nuclear assurance that it's given in the security alliance treaty with South Korea. South Korean editorial writers note that the United States did not do anything in Syria. The United States didn't do anything in regard to Russia's actions in Ukraine. Perhaps, we're next. All of this South Korean monologue makes sense if you subscribe to the hawkish supporters of nuclear weapons' arguments.

So far, so good but there are problems. As I've already noted, it's impossible to prove a negative. So as much as I'm inclined to believe the hawkish supporters of nuclear weapons about nuclear weapons preventing aggression, it's ultimately impossible to prove. There are alternative arguments to why we won the Cold War. One alternative explanation is that it was because we had alliances. Some people argue that we didn't really need nuclear weapons to win WWII because the Soviet Union was going to come in on the allied side, so we were going to win anyway. Maybe. Certainly, there's nothing you can do to vitiate the plausibility these explanations.

There's a much bigger problem though, and the bigger problem with this school is the unbounded character of its arguments. If nuclear weapons deterred during the Cold War when

we had many many more of them, then wouldn't it follow that if we had more now, then we could deter more as well? Isn't that the argument today about making sure that the United States shouldn't reduce its nuclear arms too far downward? Don't come down too far. You need a certain number of nuclear weapons, it is argued, and then there's the matter of quality. But if more nuclear weapons deter more, wouldn't it follow that better nuclear weapons deter better? Isn't this what's behind our current policy of modernizing the nuclear arsenal? We're spending a lot of money on this. Finally if nuclear weapons help us deter aggression, then shouldn't our closest allies get them as well? Wouldn't that mean that our nuclear-armed adversaries would likely share them with their close allies too?

At this point more deters more, better deters better, and more in more hands deters more still. Any thinking person looking at this line of argument might get a little nervous at this point. It's like saying everyone is going to have a gun in my class room to protect themselves. Put aside whether that's good or bad, that's not what's going on yet. Most of us feel secure enough not to arm ourselves. If it were otherwise, then it'd be a very different world, one we do not yet live (or want to live) in.

One last difficulty, hawkish supporters of nuclear weapons tend to denigrate or downplay the risk of nuclear accidents, illicit use, seizure or nuclear terrorism. They say "we've done pretty well so far; and on this front, it should be pretty much as it always been." Maybe in the short or mid-term, but in the long run that sounds like a bet against the house. We've certainly had some pretty close calls. There's a terrific book, and actually he endorsed *Underestimated*, by Eric Schlosser *Command and Control*." It's a best seller. If you read it, you won't walk away thinking that an accident might never occur. It describes some very close calls.

It should be noted that the supporters of nuclear weapons downplay these risk while the folks that want to get rid of them hype the likelihood that there will be an accident or illicit use. The president is among these people. He says that the most immediate and extreme threat that we face is nuclear terrorism.[2] This seems a bit unhinged. I served on a commission where we all had clearances and the question was asked do we have any operational or actionable specific intelligence on nuclear terrorism. The answer was no. 10% of our intelligence budget at the time was being spent trying to find such information. That's actually a lot of money and the answer was no. There are a lot of reasons why. A lot of terrorists may talk about using nuclear weapons, but actually getting them is not so easy. Not only that, but as a Senior Fellow in the Arms Control Association pointed out, wouldn't it be much more extreme or awful if there was

2. "Remarks by President Barack Obama," Hradcany Square, Prague, Czech Republic, April 5, 2009, available at http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered.

a nuclear exchange between states than if we just lost a city to a nuclear terrorist? So it's not as immediate or as extreme as portrayed. Again, this is a blind spot with the official view on these matters.

This brings us to the radical academic skeptics, my favorite, who denigrate this conventional wisdom because they write as old Sophists did. Sophists make strong arguments weak and weak arguments strong. What these academic skeptics do is take the conventional wisdom on nuclear deterrence, nuclear terrorism, nuclear proliferation, and all other topics related to these things and argue the reverse. As a result, they come up with some pretty sensible analysis more often than not. In fact, I require some of their analyses in my class since they rightly question how useful nuclear weapons are in deterring aggression. They also usefully challenge our policies, such as they are, in Iran and how we went about things in the case of Iraq and they force us to think and reexamine all of our assumptions by the arguments they make.

That said, on certain points they're silent or they go too far. For one thing, they do not think about the risk of the transition of going from zero to one. A good portion of this school says that when countries get nuclear weapons it's a good thing. Kenneth Waltz wrote an essay in *Foreign Affairs* right before he died, saying that if Iran got the bomb that would be great because it would deter the United States, Israel, and everyone else and you would have peace in the region.[3] What he didn't consider is what happens on the way to getting a bomb. In the process, you could get bombed yourself. We've seen this already in the Middle East. Israel bombed suspect reactors in Syria and Iraq. We've bombed suspect nuclear facilities Iraq. The UK did likewise. Iraq has bombed the Bushehr reactor Iran. Iran bombed the Osirak reactor in Iraq. The Russians may have encouraged the Egyptians in 1967 to knock out Dimona according to some historians. All of this bombing is hardly stabilizing, it is the risky side of any country transitioning from zero to their first nuclear weapon. Academic nuclear skeptics don't focus on these risks because they assume nuclear weapons acquisition is easy and that robust deterrence is nearly automatic once nuclear weapons are acquired.

There are some academic skeptics that do deemphasize how much nuclear weapons deter, though. John Mueller is one of them who I actually think is very brilliant. I recommend his work. From the reasonable proposition that the deterrence value of nuclear weapons has been exaggerated, though, they over argue their case by arguing that these weapons have not been a major force in history. For anyone that has lived through the Berlin, Cuban, and Taiwan nuclear

3. See Kenneth Waltz, "Why Iran Should Get the Bomb," *Foreign Affairs*, Vol. 25, July-August 2013, available at https://www.foreignaffairs.com/articles/iran/2012-06-15/why-iran-should-get-bomb.

crises, that a bit hard to argue. It also is pretty hard to argue that the further spread of nuclear weapons will be of little or no consequence to maintaining peace. Try to persuade the Saudis or the South Koreans right now. Good luck.

Another one of the academic skeptics' arguments is that nonproliferation causes wars. This is my favorite. I worked in the Pentagon and John Mueller writes that the Iraq war was caused by people agitating for nonproliferation. That's not quite how I remember it and in the first war, I was called in more than once on the question. I think the causes of that war had very little actually to do with nonproliferation. There certainly are other accounts that actually make much more sense to me. The first war had a great deal to do with oil. The second had a great deal to do with finishing that first war. In any case, it seems incredible to me to argue that the nuclear rules were and are tough enough to prompt wars. They are referred to by Bill Perry as a reason why Clinton considered waging a war with North Korea. Some argue that it is why some in the Pentagon thought about bombing Iran. Others still in the Pentagon considered bombing Syria. But none of these plans ultimately were implemented. I think that is telling.

Yet, another of the other arguments Mueller makes is that nonproliferation is preventing us from enjoying the benefits of nuclear power. This again assumes that nonproliferation rules are tough enough to block profitable trade in civilian technologies and that the economic benefits of building new nuclear power plants are clearly positive when, in most cases, they are actually negative.

It's tempting to choose one of these schools or another. I'm always asked "well, what school are you?" And I always like to say none. Well, some say, "How would you mix them to get the optimal mix?" Well, I wouldn't because they each have fatal flaws. This then brings us to the most important question of the presentation--where do I stand?

A version of this question is quite popular in Washington. It's where are you now? It actually is code for why should I talk to you? How are you going to help me get my next job? If you don't want to be bothered by anybody say that you're a ward of the state and you're unemployed. They will repel from you like you have some sort of communicable disease that will cause major portions of the body to fall off.

So, what is my answer? Where I am is there to be fewer nuclear weapons in as few hands as possible but that we pay close attention at all times to what the other fellow has to make sure we don't get caught out by someone getting ahead of us as we attempt to come down. You would think this is common sense, but as I've portrayed by reviewing the literature, it's not yet

a school of thought. Nor is it a course of action when you talk to practitioners because for them any key political question turns on the binary of whether you are for or against something. So our policies do not obey common sense objectives as much as they should.

III. What might help?

What might help? I don't know for sure but this is the best set of things I can come up with.

First as the world's money and military power gravitates towards East Asia, I think our arms control policy need to be more applicable to Asia. So far, our arms control and nonproliferation policies have been centered on and created mostly for Europe. I don't think you want to keep doing that and when you go to Asia the biggest gorilla in the room is China. So, we need to worry about the Koreas, Japan, India, and Pakistan but most of all we need to make sure our policies really have something to say to China and to get China engaged in that regard.

Second, I think we've spent a lot of time worrying about the spread of nuclear warheads and the numbers in Russia and the United States, and I think we need to start looking at the missile delivery systems more. A key reason why is that the accuracy of missiles today is so great that we can do missions conventionally that used to be only possible with nuclear weapons. Also, it is almost in conceivable to launch a first-strike against a large country without missiles. Ronald Reagan may have talked about eliminating nuclear weapons, but he also talked about eliminating what he referred to as "nuclear missiles." I'm not sure exactly what that meant, but because I worked in the Senate on the ratification of the Intermediate Nuclear Forces (INF) Treaty, my guess is that it had to do with the missiles that he wanted to eliminate there and they were ground-based, long-range, nuclear capable missiles, which were critical to any first-strikes in Europe. I think you start there. And there are Russians who think likewise. It might be fun to work with them because I don't think the Chinese, who now have the most dual-capable missile systems, want to talk about this. In fact, when I talked to the Chinese in my travels to Beijing, they said they can't talk about nuclear reductions. When I asked why, they said "well, because you have the most and you have to do your work first," and then I said "well, okay then let's talk about missiles. You have the most missiles." After that they went quiet. . Well, maybe, we should talk more.

Third, we need to focus on tightening existing limits on "peaceful" nuclear technology and fissile material production. I think there should be no reprocessing. There's no economic cause or need for it. I think enrichment should be capped to what demand requires and it should not be encouraged. Other exports, say for civilian nuclear power, should be tied to such limits.

Fourth, we need to change our general approach to preventing proliferation. Right now, we wait till we have proof that someone is getting the bomb. And by the time you get that proof it's too late to do anything besides something dramatic like a military action or some concessionary diplomacy. I've had some experience in the Pentagon, fortunately of preventing programs and you can do it if you don't wait until information on the programs get wide play in the newspapers. if you don't get in the newspapers. You don't have to use overt military actions. Soft diplomacy actually works very many cases if you start early. We need to start thinking about that and thinking about overall competitive strategies to get to places that we'd like to be and avoid places that we don't want to be and to not wait for something to become headline news.

Finally, a word for international law. Since the Second World War, international law has been transformed into a weapon against us. This has occurred as international law has been interpreted to prohibit all the things that our military may want to do. At the same time, it often is interpreted in such a manner as to allow others to do things we don't want. This is a very crude critique of international law as viewed by our most hard-headed officials. As a result, we're not really working international law as to our advantage as we could and should. Elihu Root was the Secretary of War at the turn of the century. He was awarded the Nobel Peace Prize, helped create the Permanent Court of International Justice, and founded The American Society of International Law. Why? Because, as he once explained, why fight if you can get everybody to agree? What you want to do is compete to come up with rules that apply to everyone including yourself but only promote and agree to rules that you can live with. I think we need to get back to that old idea as soon as we can.

Now, you can say all of this is nice, but it looks too difficult. That may be. Still, I am pretty sure it is a lot less difficult than eliminating nuclear weapons. But, as I've argued, that may be too hard. If it pursing these more modest aims is too hard too, then what I warned about may not be a warning. It may be a prediction that few will welcome.