The Weakness

of the Nuclear Believers’ Case
The work you are engaged in is serious, important, and urgent. But there is real hope.
Sometimes people think that the fight against nuclear weapons is unwinnable, that the other side is invulnerable, and that we can only win if we make an extraordinary effort, play our best game, do the nearly impossible. [pause] But I say: be kind and courteous to nuclear believers. Because they are going to lose. Their position is extraordinarily weak.
If you graph the pros and cons of nuclear weapons . . .

<table>
<thead>
<tr>
<th>Nuclear weapons</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>

If you graph the pros and cons of nuclear weapons . . .
Nuclear weapons

... the cons are substantial. Nuclear weapons are dangerous. A single bomb dropped on a city can kill hundreds of thousands of people.
And because nuclear war seems likely to spiral out of control, any use could lead to unimaginable, worldwide destruction.
But nuclear believers say nuclear weapons are the ultimate guarantee of security, they provide leverage in a dangerous world, they are the backbone of the world's alliances, and they confer greatness. [click] The pros, they say, are greater than the cons.
So I’d like to examine with you the foundations of this belief in the value of nuclear weapons.
Nuclear believers--the people with a fervent faith in nuclear weapons--are confident; they are sure that the people who have doubts about the value of nuclear weapons are foolish.
But the fact is the nuclear believers’ position is surprisingly weak: there is very little evidence, what evidence there is is doubtful, . . .
and the meaning of one of the key events is now being questioned. On top of all that, nuclear believers have a troubling track record: they have been wrong again and again.
Let’s start with the evidence.
The first problem is the *psychological* nature of nuclear deterrence.
You may think that what’s important about nuclear weapons is that they make big explosions.
Psychological

- Nuclear deterrence

But nuclear believers say it is *nuclear deterrence* that matters.
Psychological

- Nuclear deterrence
- Threats

Deterrence is using threats to prevent an action.
And threats operate inside the mind.

**Psychological**

- Nuclear deterrence
- Threats
- Inside the mind
The difficulty is that it’s hard to measure inside someone’s head. Science is about measuring.
Truth isn’t objective unless you can measure it, test it, and other people can reproduce the results.
But you can’t measure psychological states of mind.
Nuclear-armed states have tested nuclear weapons more than two thousand times in deserts and remote parts of the world.
The *physics* of nuclear weapons is very well understood. But the physics is largely beside the point.
Psychological

The important question is not “what does the explosion do on the ground?” The important question is . . .
Psychological

...“what does the explosion do in the minds of leaders?”
When I blow up your city, does that make you surrender? When I threaten to blow up your cities, does that make you back down?
We have good evidence about what nuclear weapons do to buildings and cars and factories and people’s bodies.
We don’t have good evidence about what they do in the minds of leaders. You can’t measure inside a mind.
Almost all claims about nuclear deterrence can’t be proved. [Pause.]
The second problem is that not only is the evidence weak, we also have very little of it.
Very little data

- Hiroshima and Nagasaki 1945
- Berlin crisis 1948
- Korean war 1950-53
- Asian crises 1954-55
- Taiwan Straits 1958
- Berlin 1961
- Cuban Missile Crisis 1962
- Arab/Israel war 1973
- Gulf War 1990-91

We have the two explosions at Hiroshima and Nagasaki, and we have various Cold War crises. Really only ten or twelve pieces of data.
Nuclear believers have constructed their theory about nuclear deterrence, therefore, from a tiny dataset.
Well, so what? Does a tiny dataset really matter? To understand the dangers of having very little data, think about . . .
Very little data

. . . medieval cosmology. For thousands of years people had only the background pattern of the stars and seven moving points of light: the sun, moon, and five visible planets. Seven pieces of data.
Around the time of Christ, astronomers constructed the Ptolemaic model of the universe.
A perfectly sound model that fit the existing data, it had the earth at the center and the sun, moon, planets and stars revolving around it.
The Ptolemaic model was the reigning orthodoxy for more than a thousand years.
Very little data

But in 1543 Copernicus used new and more accurate measurements to develop a new model.
He put the sun at the center, and this new model fit the data so well that the former orthodoxy was swept into the dustbin of history.
What cosmology shows us is that when you build a model from a tiny dataset, your model can fit the data, . . .
Very little data

. . . it can be accepted truth for a thousand years, and it can still be fundamentally wrong.
Nuclear believers have also created a model of the universe . . .
Very little data

... the security universe. Their model has nuclear weapons at the center.
But if Copernicus were here, he might warn them that models built on little evidence can turn out to be radically wrong.
Security may not revolve around nuclear weapons at all.
The evidence that nuclear believers rely on is weak, there’s very little of it, and that could lead to mistakes.
But perhaps the most troubling evidentiary problem comes from new doubts about a famous and pivotal event: the bombing of Hiroshima and Nagasaki.
For sixty years no one questioned that nuclear weapons miraculously forced Japan to surrender.
But over the last ten years, new facts have come to light, and historians have found a number of troubling discrepancies between the traditional story and the facts.
The most important thing they’ve realized is that—to Japan’s leaders—Hiroshima didn’t have much strategic significance. Why would Japan surrender over something that wasn’t strategically important?
People often imagine that if something is horrible it is also strategically important. But let’s look at the facts. The United States bombed 68 cities in the summer of 1945.
If you graph the number of people immediately killed in those 68 attacks . . .
Hiroshima

you might imagine that Hiroshima would be here, off the charts. Because that’s the way it’s often presented.
In fact, Hiroshima is second. Tokyo, a conventional attack, killed more people.
Hiroshima

Square miles destroyed

If you graph the number of square miles destroyed . . .
Hiroshima is sixth.
If you graph the percentage of the city destroyed . . .
Hiroshima is seventeenth.
Hiroshima was a terrible, destructive attack that killed 90,000 people in a day.
But to Japan’s military leaders, Hiroshima was not important. It hardly changed the strategic situation at all.
Think about the soldiers dug in on the beaches waiting for the U.S. to invade.
After Hiroshima they could still fight. They were ready to fight.
Hiroshima

There was one fewer city behind them, . . .
Hiroshima

... but they’d been losing cities all summer long at the rate of one every other day, on average.
| Hiroshima |

And we know Japan’s military men were largely unmoved by the bombing because they said so.
Hiroshima

Kawabe Toroshiro, Army Deputy Chief of Staff, wrote in his diary that when he heard it was an atomic bomb it gave him “a serious jolt.”
Hiroshima

. . . a serious jolt . . .

. . . we must be tenacious
and fight on . . .

—Kawabe Toroshiro
Deputy Chief of Staff, Army

But he continued, “we must be tenacious and fight on.”
Minister of War Anami Korechika said that the atomic bombings were no more menacing than the firebombings Japan had endured all summer.
There was an event, however—that occurred at about the same time--that was militarily important. The Soviet entry into the war, at midnight on August 8th, had profound strategic implications.
Japan’s forces might be able to inflict heavy losses against one great power attacking from one direction.
But anyone could see that it couldn’t defend against two great powers attacking from two different directions at the same time.
The importance of the Soviet entry into the war was immediately apparent to Japan’s military.
On the morning that the Soviets declared war, senior Army officers held an emergency meeting to discuss what to do.
No such meeting was held the morning Hiroshima was bombed.
At that meeting they discussed staging a coup.
No such extreme measures were discussed the morning Hiroshima was bombed.
Within hours of the Soviet entry into the war, Japan’s leaders were in an emergency meeting to discuss surrender.
No emergency meeting of the Supreme Council was called the morning Hiroshima was bombed. Or the next day. Or the next.
The Soviet entry mattered to them; Hiroshima didn’t.
When the emperor said the Bomb forced Japan to surrender, he did it for domestic political reasons.
The Bomb was the perfect face-saving excuse for losing the war.
No one could blame the military for losing--if they lost to a miracle weapon. The atomic bombings helped the emperor maneuver the military into surrendering.
So back to our question about the psychological effects of nuclear weapons: what effect did the bombings of Hiroshima and Nagasaki have on the minds of Japan’s leaders?
Remember, nuclear believers claim Hiroshima demonstrates the unique psychological capability of nuclear weapons to shock, coerce, and deter opponents.
But this new evidence seems to show that nuclear weapons had hardly any impact at all.
In a field with very little data, the most important piece of evidence has completely reversed its meaning.
Instead of buttressing the case for nuclear weapons, it now appears to be damning evidence against.
Repeatedly wrong

So there are problems with the evidence from end to end. But what’s really striking is the track record of these people who believe so fervently in nuclear weapons. They have been wrong again and again.
Early estimates of the value of nuclear weapons were very high. They would be decisive in war. They would prevent attacks by other countries.
They would bring enormous prestige and make countries into great powers.
US Secretary of State James Byrnes said they “assured success” in negotiations.
And nuclear weapons were so important that history itself would be divided into the “atomic” and “pre-atomic” eras. None of these claims turned out to be true.
Negotiations with the Soviets after World War II showed that nuclear weapons did not provide unlimited diplomatic leverage.
Value

- Diplomacy
- Sanctions
- Alliances
- Conventional Military
- Nuclear
Defeats--in Vietnam for the United States and in Afghanistan for the Soviet Union--showed that nuclear weapons were no guarantee of victory.
Value

Diplomacy  Sanctions  Alliances  Conventional Military  Nuclear
The Middle East war in 1973 and the Falkland Islands war in 1982 showed that nuclear weapons didn’t prevent other countries from attacking you.
More and more countries are showing that you don’t have to have nuclear weapons to play an important role in world events.
And almost no one divides history into the “pre-atomic” and “atomic” eras.
The record of error and misjudgment is clear and unequivocal.
Of course, nuclear believers claim that *now* they've got it right. *Now* they understand the capabilities and proper role of nuclear weapons precisely. But based on their record . . . why should anyone believe them?
There are idealistic reasons to object to nuclear weapons. But not every argument against nuclear weapons is an idealistic argument. There are, in fact, pragmatic military and political objections to nuclear weapons to go hand in hand with the idealistic ones. Quite persuasive objections.
Nuclear weapons are not very good weapons. They are messy. They leave a trail of poison downwind wherever you use them.
Drop a nuclear weapon on your enemy’s troops . . .
... and the radiation can blow back on your own troops.
This is the famous 1976 study by physicists Frank von Hippel and Sidney Drell in which they tried to design a surgical Soviet attack, . . .
... carefully limited to military targets: silos, air bases, sub bases. The result? Twenty million people die.
Even when you try to use nuclear weapons in a limited way, enormous numbers of civilians die.
If you want to destroy a building in a city . . .
... you have to destroy three quarters of the city to do it. Nuclear weapons have severe limitations.
It’s not surprising they haven’t been used for sixty-nine years. The whole trend in warfare is away from big, blundering weapons.
The trend is toward more accurate, more intelligent, small weapons.
This is what the future looks like. This is a four inch drone called the Black Hornet Nano.
Clumsy

It has a tiny camera, hovers over the battlefield, and peeks behind obstacles.
The direction of weapons evolution is increasingly clear. And the seventy-year-old technology of nuclear weapons is beginning to look like an evolutionary dead end [click] Nuclear weapons aren’t the ultimate weapon, they’re dodos.
Nuclear believers believe in these weapons so completely that their thinking has gotten muddled.
Take the familiar argument that “You can’t disinvent nuclear weapons,” or its more vivid version, “You can’t stuff the nuclear genie back in the bottle.”
This argument has won debates for fifty years. It gets its power from the fact that it is absolutely true. You can’t disinvent nuclear weapons. It is also completely irrelevant. No technology is ever disinvented.
Technology disappears one of two ways: 1) better technology comes along, or 2) people realize it was stupid technology to begin with and they let it slide into oblivion.
Consider the penny-farthing. These nineteenth century bicycles were difficult to get up on and dangerous to fall off of. But nobody warned, “You’ll never stuff the penny-farthing genie back in the bottle!”
When better bicycles came along—with two wheels the same size—penny-farthings simply went out of existence. No one had to sit down and disinvent this technology.
Or look at this pram from England in 1938. I don’t know if you can see here, but Mom is wearing a gas mask and junior is inside a hermetically sealed compartment with a little window so he can see the sky. He’s got his own gas mask chimney thing to breath through.
This technology didn’t have to be disinvented. It was dumb technology. Who wants to take their child for a walk during a chemical weapons attack?
Finally, there’s the Hiller VZ-1. Invented in 1953 by the U.S. Army, it was an amazing engineering achievement. A small helicopter blade allowed a single soldier to hover as much as 15 or 20 feet off the ground. Remarkable.
Of course, some people called it the “hovering ... obvious ... exposed ... defenseless ... death-platform.” Which may account for why it never caught on.
The question is not whether nuclear weapons can or cannot be disinvented. That’s muddled thinking. The question is whether they’re smart military technology. On the face of it, this seems unlikely. No one has found a situation in which they wanted to use them for almost seventy years.
The genie argument is strong evidence that nuclear believers are confused. But we shouldn’t dismiss it. It actually tells us something useful; it’s psychologically suggestive. It is, it seems to me, an accurate reflection of what nuclear believers really believe.
In their minds--and in minds of the government officials who listen to them--nuclear weapons are the genie. They are magic. Rub the lamp, wave your nuclear weapon, and people will do whatever you say. . . . [click] But we all know there's no such thing as magic.
Government officials who nonchalantly say “you can’t disinvent nuclear weapons” fundamentally misperceive those weapons. Nuclear weapons are not magic genies. They are not the ones with the power. We are in charge, not them.
Yet governments continue to insist on the comfortable illusion that the weapons are in control. That we are powerless to do what is sensible and right with them. [Pause]
So let's return to this question of value.
We know that nuclear weapons are dangerous.
Nuclear believers argue that they nevertheless have enormous value, which outweighs the dangers.
But their valuation is clearly wrong. Factually wrong. And if that is true, if nuclear weapons have very little utility, we are confronted with a powerful, practical question: why would we keep technology that is dangerous but not very useful?
Pragmatic arguments make a useful supplement to existing arguments against nuclear weapons. The strongest line of attack against nuclear weapons, it seems to me, is to use moral and pragmatic arguments together. Why fight with one hand tied behind your back?
Nuclear deterrence is psychological, which means it is inherently untested, untestable, and unprovable.
Because there is so little data, ideas about nuclear weapons could be fundamentally wrong.
The most important evidence now seems to show that at least sometimes nuclear attacks don’t shock and coerce.
The record of nuclear believers is one of repeated mistake and exaggeration.
Nuclear weapons are clumsy at a time when the trend is toward precision.
Nuclear weapons

Nuclear believers are not realists. They see that nuclear weapons are clumsy, outmoded, not-very-useful weapons.
But they insist that they have a magical capability--they call it "nuclear deterrence"--and that makes them useful.
But I don’t believe in magic. If you can’t prove nuclear deterrence works *every time*, it makes no sense to rely on it.
It is not foolishness to think about banning nuclear weapons. It is *pragmatism*. It is *prudence*.
The ones who are foolish are the ones who believe in nuclear weapons without any proof that deterrence can work without failing forever.
Is it right to risk the lives of millions of people based on beliefs that have not been satisfactorily proved and that perhaps cannot be proved?
That is the question we should be asking ourselves. And asking the governments of the nuclear-armed states, and nuclear dependent states, and all those who believe in nuclear weapons. —Asking them again and again until they provide a satisfactory answer. Is it right to risk the lives of millions of people on unproved beliefs?
The Weakness

of the Nuclear Believers’ Case

The work you are engaged in is serious, important, and urgent. And there is real hope.