

A World Free of Nuclear Weapons: Desirable? Feasible?

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Summary

Firstly, the *special* character of nuclear weapons will be underlined. Secondly, the desirability and the feasibility of a nuclear-weapon-free world will be discussed. Thirdly, some past activities promoting nuclear disarmament and the transition to a nuclear-weapon-free world will be reviewed. Fourthly, the significant development initiated (January 2007) by the Wall Street Journal op-ed co-authored by Shultz, Perry, Kissinger and Nunn and culminated in the Prague speech (April 2009) by President Obama will be reported. Finally, recent developments and future steps towards a nuclear-weapon-free world will be outlined.

1. The *special* character of nuclear weaponry

Just three indications

1. The yield of nuclear (“A bombs”) and especially thermonuclear (“H bombs”) explosions is many orders of magnitudes larger than that of conventional explosions: for instance the largest thermonuclear test explosion, detonated (October 30, 1961) in the high atmosphere by the Soviet Union, released in a fraction of a second an energy well over *50 megatons*, i. e. more than the energy released by the explosion of *50 million tons=50 billion kilograms* of conventional explosive, such as TNT: more than 10 times larger than the estimated total of *all* previous explosions in war throughout history, including the two World Wars with all their carpet bombings (London, Hamburg, Dresden, Tokyo,...), Hiroshima, Nagasaki...

2. Nuclear weapons have never been used in war after their use in Hiroshima and Nagasaki (6 and 9 August, 1945): not even when nuclear-weapon countries were defeated by a non-nuclear-weapon opponent, as the USA in Vietnam and Russia in Afghanistan.

3. All countries of the world except a few (USA, United Kingdom, Russia, France, China; India, Pakistan, Israel; North Korea) have *voluntarily* renounced the acquisition of nuclear weaponry, by becoming non-nuclear-weapon parties of the Non Proliferation Treaty and --- many of them, enough to cover more than half of the Earth, including the entire Southern Hemisphere --- of a Nuclear-Weapon-Free Zone: including many countries having the technological capability to manufacture nuclear weapons.

2. Desirability and feasibility of the transition to a nuclear-weapon-free world

The **desirability** is far from obvious. In a world of nation states in which only very few of them possess nuclear weapons, it seems clear that it is preferable for them to keep these capabilities. In a world in which some states have a “pariah” connotation (possibly for very good reasons; for instance, because of a dismal “human rights” record), their rulers might feel that the possession of a nuclear-weapon capability provides an essential insurance against external interventions. A country that faces an enemy having superior conventional forces may feel that the possession of a nuclear capability is an “equalizer”. A country encircled by several hostile neighbors that challenge its very right to exist may feel that the possession of a nuclear-weapon capability is the ultimate guarantor of survival. And some thinkers argue that the existence of nuclear weapons, by making war exceedingly destructive, provides an indispensable ingredient to avoid wars, hence a guarantor of peace.

On the other hand it is obvious that the spread of nuclear weaponry to many countries and possibly even to subnational “terrorist” groups entails, sooner or later, their actual use, with devastating consequences for our civilization, possibly even the disappearance of *homo sapiens*. And it is indeed well known from world-wide opinion polls --- to the extent these tests are reliable --- that a significant majority of the inhabitants of this planet favor the total elimination of nuclear weaponry; including significant majorities in most, perhaps all, the countries now possessing nuclear weapons. It is also remarkable that so many States have so far voluntarily renounced the acquisition of nuclear weapons; including quite a few States having the technical capability to do so. But this regime of “nuclear-weapon nonproliferation” cannot last indefinitely; indeed it is now in danger of crumbling.

The **feasibility** is, in my opinion, instead rather clear. Nuclear weapons have not been used in war after August 9, 1945; *there probably is no person in this room who was an adult at that time* (I was 10). The total elimination of *chemical* weaponry has now been achieved: note that these weapons were used much more often in war than nuclear weapons, and that the verification of the universal respect of their abolition is much more cumbersome than it shall be for nuclear weapons, due to the much more extended and pervasive character of chemical, rather than nuclear, peaceful activities. Moreover all countries of the world except 8 have *voluntarily* renounced nuclear weapons, by having become full parties to the Non Proliferation Treaty (NPT) and in addition --- many of them --- having become full parties to Nuclear-Weapon-Free Zones (which cover a large part of our planet, including the totality of its Southern hemisphere).

3. Past activities promoting nuclear disarmament and the transition to a nuclear-weapon-free world

A somewhat parochial selection

* F. Calogero, M. Goldberger, S. P. Kapitza (editors), *Verification: monitoring disarmament*, a Pugwash Monograph, Westview Press, Boulder, Co, USA, 1990, [Russian version: Mir, Moscow, 1991]. This was the first book on such a sensitive topic *all* chapters of which were co-signed by authors on opposite sides of the iron curtain.

* *A Nuclear Weapon-Free World: Desirable? Feasible?*, A Pugwash Monograph, edited by J. Rotblat, J. Steinberger and B. Udgaonkar, Westview Press, Boulder, Co, USA, 1993. [My contribution: F. Calogero, "An asymptotic approach to a nuclear-weapon-free world"].

* “The Norwegian Nobel Committee has decided to award the Nobel Peace Prize for 1995, in two equal parts, to **Joseph Rotblat** and to the **Pugwash Conferences on Science and World Affairs**, for their efforts to diminish the part played by nuclear arms in international politics *and in the longer run to eliminate such arms.*” (emphasis added).



Joseph Rotblat (left) and Francesco Calogero (right) receiving the Nobel Peace Prize in 1995.



4. The transition to a nuclear-weapon-free world: from desirable utopia to political reality

Wall Street Journal (January 4, 2007), op-ed entitled *A world without nuclear weapons: the “coming out” in favor of the transition to a Nuclear-Weapon-Free World*, by a *bipartisan* quartet of *eminent* American statesmen: George Shultz, Bob Perry, Henry Kissinger, Sam Nunn.

QUOTE (final sentence):

“We endorse setting the goal of a world free of nuclear weapons and working energetically on the actions required to achieve that goal, beginning with the measures outlined above.”

*Mr. **Shultz** was **secretary of state** from 1982 to 1989.*

*Mr. **Perry** was **secretary of defense** from 1994 to 1997.*

*Mr. **Kissinger** was **secretary of state** from 1973 to 1977.*

*Mr. **Nunn** is former **chairman** (for many years) of the **U. S. Senate Armed Services Committee**.*

This bipartisan op-ed is very significant because of its authors, and even more so because of the avalanche of subsequent endorsements: for instance, in the USA, by the *majority* of the living Americans having served as Secretaries of State, Secretaries of Defense and Special Assistants for International Security to the President; and in the rest of the world by an impressive array of eminent personalities (too many to be reported).

In Italy: Corriere della Sera, 24/07/2008, p. 36 (see also p. 1).

Per un mondo senza armi nucleari

Caro Direttore, un articolo sul Wall Street Journal, intitolato «Un mondo senza armi nucleari», firmato da George Shultz e Henry Kissinger, già segretari di Stato dei presidenti repubblicani Reagan e Nixon, e da Bill Perry e Sam Nunn, il primo già ministro della Difesa con il presidente Clinton, il secondo presidente democratico della Commissione Difesa del Senato statunitense, ha aperto, nel gennaio 2007, una discussione di enorme importanza per il futuro dell' umanità.

In quell' articolo i quattro statisti americani proponevano la totale eliminazione delle armi nucleari. L' argomento, successivamente ripreso in un secondo intervento nel gennaio 2008, è che, se i Paesi che dispongono di armi nucleari - che sono ormai 8 - e soprattutto i due principali, Stati Uniti e Russia, non prendono l' iniziativa di avviare un processo tendente alla loro eliminazione, diventerà sempre più difficile impedirne l' acquisizione da parte di altri Paesi, con il rischio che prima o poi queste armi vengano usate con esiti catastrofici per il mondo.

L' importanza dell' articolo sta nel fatto che, per la prima volta, il tema della completa eliminazione delle armi nucleari veniva affrontato, negli Stati Uniti, da uomini politici che rappresentano il baricentro del pensiero politico-strategico americano e ambedue le forze politiche a sottolineare che si tratta di un obiettivo da perseguire nell' interesse nazionale e del mondo.

A quell' articolo hanno fatto seguito una serie di prese di posizione importanti. I due candidati alla presidenza degli Stati Uniti hanno sostanzialmente convenuto sull' obiettivo e così la maggioranza di coloro che nel passato hanno occupato le massime responsabilità istituzionali negli Stati Uniti in questo campo. In Russia vi è stata una reazione positiva di Gorbaciov e un atteggiamento più cauto, ma non negativo, del Governo. In Inghilterra Gordon Brown si è espresso favorevolmente; il ministro della Difesa ha proposto di ospitare esperti di Stati Uniti, Russia, Inghilterra, Francia e Cina nei laboratori nucleari inglesi, per mettere a punto le metodologie di verifica dell' eliminazione di armi nucleari; nei giorni scorsi sul Times un altro quartetto bipartisan comprendente tre ex ministri degli Esteri ed un ex segretario generale della Nato ha preso posizione a favore. In Francia il Libro bianco della Difesa indica come obiettivo da perseguire l' eliminazione delle armi nucleari. In Australia il governo ha istituito una nuova Commissione internazionale di esperti per tracciare un percorso che conduca all' eliminazione delle armi nucleari. Vi sono state infine innumerevoli prese di posizione favorevoli di gruppi non governativi. Riteniamo importante che anche dall' Italia venga un' indicazione in questo senso e che, come in altri Paesi, le nostre firme testimonino che, in ambedue i principali schieramenti politici e nella comunità scientifica, vi è piena condivisione dell' importanza di questo tema e di questo obiettivo.

Desideriamo indicare i passi principali per muovere in questa direzione. Il primo è l' entrata in vigore del Trattato che mette al bando ogni tipo di esplosioni nucleari sperimentali, comprese quelle sotterranee, sancendo la moratoria di fatto ora vigente. Il secondo è sbloccare la trattativa, nella Conferenza sul disarmo di Ginevra, sull' accordo Fmct (*Fissile material cut-off treaty*) che vieta la produzione dell' uranio

altamente arricchito e del plutonio con opportuna composizione isotopica, necessari per la produzione delle armi nucleari. Anche qui vige già una moratoria di fatto senza però un accordo formale e alcuna verifica. L' entrata in vigore di questi due trattati sarebbe assai apprezzata dai Paesi militarmente non nucleari e faciliterebbe il buon esito della Conferenza periodica prevista per il 2010 dal Trattato di non-proliferazione nucleare, rafforzando il regime mondiale di non proliferazione, compreso il monitoraggio dell' effettivo rispetto - nella lettera e nello spirito - degli impegni previsti nel trattato. Ci rendiamo ben conto che la strada che condurrà all' eliminazione delle armi nucleari è lunga. Essa richiede alcune condizioni politiche. La prima è un miglioramento effettivo dei rapporti fra le superpotenze nucleari, Stati Uniti e Russia, che detengono tuttora - nonostante le recenti riduzioni - oltre i nove decimi di tutte le armi nucleari nel mondo. Questo aiuterebbe gli altri tre Paesi nucleari riconosciuti dal Trattato di non-proliferazione - Inghilterra, Francia e Cina - a fare la loro parte. È necessario inoltre che si allentino le tensioni nelle aree del mondo nelle quali è più forte il rischio che possano essere utilizzate armi o ordigni nucleari, magari a opera di gruppi terroristici. Ci riferiamo al Sud-Est asiatico (India e Pakistan) e al problema israelo-palestinese-arabo in Medio Oriente. In ambedue questi contesti, l' indicazione di una volontà da parte delle potenze nucleari di muovere nella direzione di un mondo libero dalle armi nucleari sicuramente avrebbe una positiva influenza. L' Italia e l' Europa possono e debbono fare la loro parte per favorire il cammino verso la completa eliminazione delle armi nucleari. È chiaro che a tale esito si potrà pervenire

solo con un impegno dei principali protagonisti, in primo luogo Stati Uniti e Russia, e degli altri Paesi militarmente nucleari. **Ma la diffusione di un nuovo modo di pensare - di una nuova «saggezza condivisa» - è un passo fondamentale in questa direzione, cui anche l' Italia deve contribuire. Occorre che su questi temi, fondamentali per la stessa sopravvivenza dell' umanità, nonostante le legittime anzi necessarie contrapposizioni politiche, si riconosca un superiore, comune interesse.**

Massimo D'Alema, former Prime Minister (1998-2000) and Minister of Foreign Affairs (2006-2008) (center-left);
Gianfranco Fini, former Minister of Foreign Affairs (2004-2006) and former Chairman of Parliament (until December 2012) (center-right);
Giorgio La Malfa, former Minister of European Affairs (2005-2006) (center-right);
Arturo Parisi, former Minister of Defense (2006-2008) (center-left);
Francesco Calogero, physicist, from 1989 to 1997 Secretary General of Pugwash (1995 Nobel Peace Prize)

The Prague speech by President Obama (5 April 2009)

QUOTE

Today, the Cold War has disappeared but thousands of those weapons have not. In a strange turn of history, the threat of global nuclear war has gone down, but the risk of a nuclear attack has gone up. More nations have acquired these weapons. Testing has continued. Black market trade in nuclear secrets and nuclear materials abound. The technology to build a bomb has spread. Terrorists are determined to buy, build or steal one. Our efforts to contain these dangers are centered on a global non-proliferation regime, but as more people and nations break the rules, we could reach the point where the center cannot hold.

Now, understand, this matters to people everywhere. One nuclear weapon exploded in one city — be it New York or Moscow, Islamabad or Mumbai, Tokyo or Tel Aviv, Paris or Prague — could kill hundreds of thousands of people. And no matter where it happens, there is no end to what the consequences might be — for our global safety, our security, our society, our economy, to our ultimate survival.

Some argue that the spread of these weapons cannot be stopped, cannot be checked — that we are destined to live in a world where more nations and more people possess the ultimate tools of destruction. Such fatalism is a deadly adversary, for if we believe that the spread of nuclear weapons is inevitable, then in some way we are admitting to ourselves that the use of nuclear weapons is inevitable.

Just as we stood for freedom in the 20th century, we must stand together for the right of people everywhere to live free from fear in the 21st century. (Applause.) And as a nuclear power — as the only nuclear power to have used a nuclear weapon — the United States has a moral responsibility to act. We cannot succeed in this endeavor alone, but we can lead it, we can start it.

So today, I state clearly and with conviction America's commitment to seek the peace and security of a world without nuclear weapons. (Applause.) I'm not naive. This goal will not be reached quickly -- perhaps not in my lifetime. It will take patience and persistence. But now we, too, must ignore the voices who tell us that the world cannot change. We have to insist, "Yes, we can." (Applause.)

UNQUOTE

All this advocacy is mainly based on four arguments: (i) the end of the Cold War; (ii) the intrinsic risk of the existence of nuclear weapons --- the actual use of which has been avoided so far due to responsible caution but also thanks to “good luck”; (iii) the risk of a breakdown of the worldwide nuclear-weapon nonproliferation regime, leading to the actual use of nuclear weapons, with horrendous consequences; (iv) the need of a common approach to fight (i. e., to prevent) terrorism (including, I would like to emphasize, nuclear terrorism).

The risk of nuclear terrorism: the possibility that a sub-state group acquire the capability to engineer a nuclear explosion

- The explosion of a primitive (“Hiroshima type”) nuclear device in a major city would be a sudden catastrophe comparable, perhaps worse, than any tragic event in human history.
- There exist terroristic groups who would cause such a disaster if they could.
- A primitive nuclear explosive device could be easily manufactured clandestinely in a target city by a small terrorist commando if they could get hold of a sufficient quantity of weapon-grade Highly Enriched Uranium (HEU).

- ONE HUNDRED kilograms would be more than enough.

- As a consequence of the enormous accumulation of weapon-grade HEU during the Cold War --- and in spite of a significant elimination of this material during the last one-two decades, by downblending it to Low Enriched Uranium (LEU) then used in nuclear reactors to produce electrical energy --- there still are approximately ONE MILLION kilograms of HEU; most of it in Russia, enormous quantities also in the USA, and smaller quantities (but still significantly larger than 100 kilograms) in several other countries. This material is *not* available for sale and is *in principle* well-protected; but not necessarily all of it *in real practice* --- although the situation has improved over the last years, especially in Russia, both due to the improvement of the economic situation there, and thanks to outside collaborative interventions, mainly by the USA.

I consider still quite immanent the risk that a city be destroyed by a nuclear explosion engineered by a terroristic commando. Hence I believe that more efforts should be made to protect all the existing HEU, to terminate all its civilian employments --- by converting all research and naval reactors still employing HEU to using instead the compact LEU now available --- and especially to eliminate (by downblending) ***as much HEU as possible as quickly as possible***. The most important step in this direction would have been an extension --- hopefully envisaging a fastest pace --- of the HEU deal among the USA and Russia whose implementation shall soon be completed (in 2013) after having eliminated 500 tons (HALF A MILLION kilograms) HEU over 20 years. **But this hope does not seem likely to materialize.**

Positive developments on the world-wide protection of nuclear materials are now an accepted priority of the international community: as for instance shown by the recent meeting convened at the highest level in Seoul last year. **But I still believe that more could and should be done.**

Let me emphasize that the complete elimination of HEU is quite compatible with a continuation of the utilization of nuclear energy.

5. Some positive developments in the progress towards a nuclear-weapon-free world

* The NEW START Agreement among USA and Russia (resuming verified nuclear arms control sanctioned by Treaties, envisaging some reductions of the arsenals of the two nuclear Superpowers; signed in April 2010, entered into force in February 2011).

* April 12-13, 2010, in Washington, Nuclear Security Summit: convened by President Obama, attended by 47 States, 38 of them represented by their heads of state or heads of government. Signature of a commitment to strengthen the global nuclear security regime. Goal set by President Obama (in Prague speech, April 2009): securing all vulnerable nuclear materials within 4 years.

* The follow-up meeting took place recently; some progress has been achieved, **much remains to be done.**

Seoul Communiqué, 2012 Seoul Nuclear Security Summit

We, the leaders, gathered in Seoul on March 26-27, 2012, renew the political commitments generated from the 2010 Washington Nuclear Security Summit to work toward strengthening nuclear security, reducing the threat of nuclear terrorism, and preventing terrorists, criminals, or other unauthorized actors from acquiring nuclear materials. Nuclear terrorism continues to be one of the most challenging threats to international security. Defeating this threat requires strong national measures and international cooperation given its potential global political, economic, social, and psychological consequences.

We reaffirm our shared goals of nuclear disarmament, nuclear nonproliferation and peaceful uses of nuclear energy.

....

* May 2010: significant progress in transparency (by the USA): complete disclosure of the USA nuclear arsenal, and of the new Nuclear Posture Review (restricting the circumstances of possible employment of nuclear weapons, stating that the *fundamental* role of nuclear weapons is to *deter* an attack performed *with nuclear weapons*).

* May 2010: the Quinquennial NPT Review Conference ends with a unanimous statement. The previous one --- May 2005 --- had ended in disarray, in my opinion largely because of the arrogant attitude of the Bush Administration: while the Non-Nuclear-Weapon States were severely requested not to proliferate, no progress in nuclear disarmament by the Nuclear-Weapon-States was envisaged.

* March 7, 2011: Another *Wall Street Journal* op-ed by Shultz, Perry, Kissinger, Nunn. *Title*: “Deterrence in the Age of Nuclear Proliferation”; *Subtitle*: “The doctrine of mutual assured destruction is obsolete in the post-Cold War era”. *Two quotes*: “Our broad conclusion is that nations should move forward together with a series of conceptual and practical steps toward deterrence that do not rely primarily on nuclear weapons or nuclear threats to maintain international peace and security.” “Ensuring that nuclear materials are protected globally in order to...prevent terrorists from acquiring the material to build a crude nuclear bomb is a top priority.”

* 7 April, 2011: *Herald Tribune* op-ed (also published in Russia by the newspaper *Kommersant*) co-signed by Margaret Albright (USA Secretary of State 1997-2001) and Igor Ivanov (Foreign Affairs Minister of Russia, 1998-2004) entitled “*Moving Ahead on Reducing Nuclear Arms*”: with several modest but concrete suggestions.

Recent hopeful developments (possibly indicating the wishful thinking of the speaker)

* Improvement of USA-Russia relations, including the prospect of *joint* development of antiballistic missile capabilities. **But this issue is quite open.**

* Postponement by the new (conservative-liberal) UK government of the decision to develop a new generation of Trident submarines (the British nuclear-weapon carriers). **But this issue is quite open.**

- * Emergence of a NATO attitude more open to collaborating with Russia, and sharing the USA tendency to restrict the role of nuclear weaponry and to pursue the goal of a Nuclear-Weapon-Free World. With some non-negative responsive signals by Russia. **But significant progress not yet achieved.**
- * Strong commitment by several governments world-wide (including key States such as Germany and Japan), and of course of the United Nations, to progress towards a Nuclear-Weapon-Free World.
- * Creation of a ***European Leadership Network for Multilateral Nuclear Disarmament and Non-Proliferation (ELN)***, mainly composed of eminent personalities (top politicians, former highest-ranking military commanders) committed to work towards a Nuclear-Weapon-Free World (see: <http://www.europeanleadershipnetwork.org>)

Future steps towards a Nuclear-Weapon-Free World (NWFW)

- * Further progress in the *reset* of relations among USA and Russia: from conflict to partnership (“common security”). Involvement of China.
- * Further progress in nuclear disarmament: bilateral USA-Russia (strategic nuclear weapons, tactical nuclear weapons; warheads besides delivery vehicles; space; conventional weapons); involvement of *all* nuclear weapon countries; a *universal* convention, with adequate verification (perhaps on the model of the Chemical Weapon Convention, perhaps backed by additional Nuclear-Weapon-Free Zones, for instance in the extended Middle East).
- * The notion of NWFW: (i) “global zero”: no nuclear weapons exist; (ii) “*asymptotic*”: a very long delay (an “*infinite*” time) is technologically required for any reconstitution of nuclear arsenals.

Possible early (unilateral/reciprocal) steps

* Ratification by the USA Senate of the Comprehensive Test Ban Treaty; and hopeful subsequent entry into force of this Treaty.

* Nuclear posture change: the *sole* role of nuclear weapons is to deter an attack *with nuclear weapons*. The transition to a NFWW becomes then a *logical* consequence.

* Nuclear strategy: *no first use* of nuclear weapons.

* Termination of the quick alert of nuclear missiles, now envisaging their launch *within minutes*: a very dangerous posture, still adopted by USA and Russia (“I believe that we avoided nuclear catastrophe as much by good luck as by good management”; Bill Perry, USA Secretary of Defence 1994-1997; Second Annual Robert McNamara Lecture on War and Peace, at Harvard, Feb. 24, 2011).

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Remarks by President Obama at Hankuk University, Seoul, Republic of Korea

PRESIDENT OBAMA: Thank you. (Applause.) Thank you so much. Thank you. (Applause.) Please, thank you very much.

To President Park, faculty, staff and students, thank you so much for this very warm welcome. It is a great honor to be here at Hankuk University of Foreign Studies. (Applause.) I want to thank Dr. Park for, a few moments ago, making me an honorary alumni of the university. (Applause.)

I know that this school has one of the world's finest foreign language programs -- which means that your English is much better than my Korean. (Laughter.) All I can say is, kamsa hamnida. (Applause.)

Now, this is my third visit to the Republic of Korea as President. I've now been to Seoul more times than any other capital -- except for Washington, D.C., of course. This reflects the extraordinary bonds between our two countries and our commitment to each other. I'm pleased that we're joined by so many leaders here today, Koreans and Americans, who help keep us free and strong and prosperous every day. That includes our first Korean-American ambassador to the Republic of Korea -- Ambassador Sung Kim. (Applause.)

I've seen the deep connections between our peoples in my own life -- among friends, colleagues. I've seen it so many patriotic Korean Americans, including a man born in this city of Seoul, who came to America and has dedicated his life to lifting up the poor and sick of the world. And last week I was proud to nominate him to lead the World Bank -- Dr. Jim Yong Kim. (Applause.)

I've also seen the bonds in our men and women in uniform, like the American and Korean troops I visited yesterday along the DMZ -- Freedom's Frontier. And we salute their service and are very grateful for them. We honor all those who have given their lives in our defense, including the 46 brave souls who perished aboard the Cheonan two years ago today. And in their memory we reaffirm the enduring promise at the core of our alliance -- we stand together, and the commitment of the United States to the defense and the security of the Republic of Korea will never waver. (Applause.)

Most of all, I see the strength of our alliance in all of you. For decades, this school has produced leaders -- public servants, diplomats, businesspeople -- who've helped propel the modern miracle that is Korea-- transforming it from crushing poverty to one of the world's most dynamic economies; from authoritarianism to a thriving democracy; from a country focused inward to a leader for security and prosperity not only in this region but also around the world -- a truly "Global Korea."

So to all the students here today, this is the Korea your generation will inherit. And I believe there's no limits to what our two nations can achieve together. For like your parents and grandparents before you, you know that the future is what we make of it. And you know that in our digital age, we can connect and innovate across borders like never before -- with your smart phones and Twitter and Me2Day and Kakao Talk. (Laughter and applause.) It's no wonder so many people around the world have caught the Korean Wave, Hallyu. (Applause.)

Or consider this: In advance of my visit, our embassy invited Koreans to send us your questions using social media. Some of you may have sent questions. And they called it, "Ask President Obama." Now, one of you -- maybe it was you, maybe it was somebody else -- this is true -- asked this question: "Have you posted, yourself, a supportive opinion on a website under a disguised name, pretending you are one of the supporters of President Obama?" (Laughter.) I hadn't thought of this. (Laughter.) But the truth is I have not done this. Maybe my daughters have. (Laughter.) But I haven't done that myself. So our shared future -- and the unprecedented opportunity to meet shared challenges together -- is what brings me to Seoul. Over the next two days, under President Lee's leadership, we'll move ahead with the urgent work of preventing nuclear terrorism by securing the world's nuclear materials. This is an important part of the broader, comprehensive agenda that I want to talk with you about today -- our vision of a world without nuclear weapons.

Three years ago, I traveled to Prague and I declared America's commitment to stopping the spread of nuclear weapons and to seeking a world without them. I said I knew that this goal would not be reached quickly, perhaps not in my lifetime, but I knew we had to begin, with concrete steps. And in your generation, I see the spirit we need in this endeavor -- an optimism that beats in the hearts of so many young people around the world. It's that refusal to accept the world as it is, the imagination to see the world as it ought to be, and the courage to turn that vision into reality. So today, with you, I want to take stock of our journey and chart our next steps.

Here in Seoul, more than 50 nations will mark our progress toward the goal we set at the summit I hosted two years ago in Washington -- securing the world's vulnerable nuclear materials in four years so that they never fall into the hands of terrorists. And since then, nations - including the United States -- have boosted security at nuclear facilities.

South Korea, Japan, Pakistan and others are building new centers to improve nuclear security and training. Nations like Kazakhstan have moved nuclear materials to more secure locations. Mexico, and just yesterday Ukraine, have joined the ranks of nations that have removed all the highly enriched uranium from their territory. All told, thousands of pounds of nuclear material have been removed from vulnerable sites around the world. This was deadly material that is now secure and can now never be used against a city like Seoul.

We're also using every tool at our disposal to break up black markets and nuclear material. Countries like Georgia and Moldova have seized highly enriched uranium from smugglers. And countries like Jordan are building their own counter-smuggling teams, and we're tying them together in a global network of intelligence and law enforcement. Nearly 20 nations have now ratified the treaties and international partnerships that are at the center of our efforts. And I should add that with the death of Osama bin Laden and the major blows that we've struck against al Qaeda, a terrorist organization that has actively sought nuclear weapons is now on the path to defeat.

So in short, the international community has made it harder than ever for terrorists to acquire nuclear weapons, and that has made us all safer. We're building an international architecture that can ensure nuclear safety. But we're under no illusions. We know that nuclear material, enough for many weapons, is still being stored without adequate protection. And we know that terrorists and criminal gangs are still trying to get their hands on it -- as well as radioactive material for a dirty bomb. We know that just the smallest amount of plutonium -- about the size of an apple -- could kill hundreds of thousands and spark a global crisis. The danger of nuclear terrorism remains one of the greatest threats to global security.

And that's why here in Seoul, we need to keep at it. And I believe we will. We're expecting dozens of nations to announce over the next several days that they've fulfilled the promises they made two years ago. And we're now expecting more commitments -- tangible, concrete action -- to secure nuclear materials and, in some cases, remove them completely. This is the serious, sustained global effort that we need, and it's an example of more nations bearing the responsibility and the costs of meeting global challenges. This is how the international community should work in the 21st century. And Korea is one of the key leaders in this process.

The United States will continue to do our part -- securing our own material and helping others protect theirs. We're moving forward with Russia to eliminate enough plutonium for about 17,000 nuclear weapons and turn it instead into electricity. I can announce today a new agreement by the United States and several European partners toward sustaining the supply of medical isotopes that are used to treat cancer and heart disease without the use of highly enriched uranium. And we will work with industry and hospitals and research centers in the United States and around the world, to recover thousands of unneeded radiological materials so that they can never do us harm.

Now, American leadership has been essential to progress in a second area -- taking concrete steps towards a world without nuclear weapons. As a party to the Nuclear Nonproliferation Treaty, this is our obligation, and it's one that I take very seriously. But I believe the United States has a unique responsibility to act -- indeed, we have a moral obligation. I say this as President of the only nation ever to use nuclear weapons. I say it as a Commander-in-Chief who knows that our nuclear codes are never far from my side. Most of all, I say it as a father, who wants my two young daughters to grow up in a world where everything they know and love can't be instantly wiped out.

Over the past three years, we've made important progress. With Russia, we're now reducing our arsenal under the New START Treaty -- the most comprehensive arms control agreement in nearly 20 years. And when we're done, we will have cut American and Russian deployed nuclear warheads to their lowest levels since the 1950s.

As President, I changed our nuclear posture to reduce the number and role of nuclear weapons in our national security strategy. I made it clear that the United States will not develop new nuclear warheads. And we will not pursue new military missions for nuclear weapons. We've narrowed the range of contingencies under which we would ever use or threaten to use nuclear weapons. At the same time, I've made it clear that so long as nuclear weapons exist, we'll work with our Congress to maintain a safe, secure and effective arsenal that guarantees the defense not only of the United States but also our allies -- including South Korea and Japan.

My administration's nuclear posture recognizes that the massive nuclear arsenal we inherited from the Cold War is poorly suited to today's threats, including nuclear terrorism. So last summer, I directed my national security team to conduct a comprehensive study of our nuclear forces. That study is still underway. But even as we have more work to do, we can already say with confidence that we have more nuclear weapons than we need. Even after New START, the United States will still have more than 1,500 deployed nuclear weapons, and some 5,000 warheads.

I firmly believe that we can ensure the security of the United States and our allies, maintain a strong deterrent against any threat, and still pursue further reductions in our nuclear arsenal.

Going forward, we'll continue to seek discussions with Russia on a step we have never taken before -- reducing not only our strategic nuclear warheads, but also tactical weapons and warheads in reserve. I look forward to discussing this agenda with President Putin when we will meet in May. Missile defense will be on the agenda, but I believe this should be an area of cooperation, not tension. And I'm confident that, working together, we can continue to make progress and reduce our nuclear stockpiles. Of course, we'll consult closely with our allies every step of the way, because the security and defense of our allies, both in Europe and Asia, is not negotiable.

Here in Asia, we've urged China -- with its growing nuclear arsenal -- to join us in a dialogue on nuclear issues. That offer remains open. And more broadly, my administration will continue to pursue ratification of the Comprehensive Test Ban Treaty. And after years of delay, it's time to find a path forward on a new treaty that verifiably ends the production of fissile materials for nuclear weapons -- ends it once and for all.

By working to meet our responsibilities as a nuclear power, we've made progress in a third area -- strengthening the global regime that prevents the spread of nuclear weapons. When I came into office, the cornerstone of the world's effort -- which is the Nuclear Non-Proliferation Treaty -- was fraying. Iran had started spinning thousands of centrifuges. North Korea conducted another nuclear test. And the international community was largely divided on how to respond.

Over the past three years, we have begun to reverse that dynamic. Working with others, we've enhanced the global partnership that prevent proliferation. The International Atomic Energy Agency is now conducting the strongest inspections ever. And we've upheld the basic bargain of the NPT: Countries with nuclear weapons, like the United States and Russia, will move towards disarmament; countries without nuclear weapons will not acquire them; and all countries can have access to peaceful nuclear energy.

Because of these efforts, the international community is more united and nations that attempt to flout their obligations are more isolated. Of course, that includes North Korea.

Here in Korea, I want to speak directly to the leaders in Pyongyang. The United States has no hostile intent toward your country. We are committed to peace. And we are prepared to take steps to improve relations, which is why we have offered nutritional aid to North Korean mothers and children.

But by now it should be clear, your provocations and pursuit of nuclear weapons have not achieved the security you seek; they have undermined it. Instead of the dignity you desire, you're more isolated. Instead of earning the respect of the world, you've been met with strong sanctions and condemnation. You can continue down the road you are on, but we know where that leads. It leads to more of the same -- more broken dreams, more isolation, ever more distance between the people of North Korea and the dignity and the opportunity that they deserve.

And know this: There will be no rewards for provocations. Those days are over. To the leaders of Pyongyang I say, this is the choice before you. This is the decision that you must make. Today we say, Pyongyang, have the courage to pursue peace and give a better life to the people of North Korea. (Applause.)

This same principle applies with respect to Iran. Under the NPT, Iran has the right to peaceful nuclear energy. In fact, time and again the international community -- including the United States -- has offered to help Iran develop nuclear energy peacefully. But time and again Iran has refused, instead taking the path of denial, deceit and deception. And that is why Iran also stands alone, as the only member of the NPT unable to convince the international community that its nuclear program is for peaceful purposes -- the only member. That's why the world has imposed unprecedented sanctions, slowing Iran's nuclear program.

The international community is now poised to enter talks with Iran's leaders. Once again, there is the possibility of a diplomatic resolution that gives Iran access to peaceful nuclear energy while addressing the concerns of the international community. Today, I'll meet with the leaders of Russia and China as we work to achieve a resolution in which Iran fulfills its obligations.

There is time to solve this diplomatically. It is always my preference to solve these issues diplomatically. But time is short. Iran's leaders must understand they, too, face a choice. Iran must act with the seriousness and sense of urgency that this moment demands. Iran must meet its obligations.

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For the global response to Iran and North Korea's intransigence, a new international norm is emerging: Treaties are binding; rules will be enforced; and violations will have consequences. We refuse to consign ourselves to a future where more and more regimes possess the world's most deadly weapons.

And this brings me to the final area where we've made progress -- a renewed commitment to harnessing the power of the atom not for war, but for peaceful purposes. After the tragedy at Fukushima, it was right and appropriate that nations moved to improve the safety and security of nuclear facilities. We're doing so in the United States. It's taking place all across the world.

As we do, let's never forget the astonishing benefits that nuclear technology has brought to our lives. Nuclear technology helps make our food safe. It prevents disease in the developing world. It's the high-tech medicine that treats cancer and finds new cures. And, of course, it's the energy -- the clean energy that helps cut the carbon pollution that contributes to climate change. Here in South Korea, as you know, as a leader in nuclear energy, you've shown the progress and prosperity that can be achieved when nations embrace peaceful nuclear energy and reject the development of nuclear arms.

And with rising oil prices and a warming climate, nuclear energy will only become more important. That's why, in the United States, we've restarted our nuclear industry as part of a comprehensive strategy to develop every energy source. We supported the first new nuclear power plant in three decades. We're investing in innovative technologies so we can build the next generation of safe, clean nuclear power plants. And we're training the next generation of scientists and engineers who are going to unlock new technologies to carry us forward.

One of the great challenges they'll face and that your generation will face is the fuel cycle itself in producing nuclear energy. We all know the problem: The very process that gives us nuclear energy can also put nations and terrorists within the reach of nuclear weapons. We simply can't go on accumulating huge amounts of the very material, like separated plutonium, that we're trying to keep away from terrorists.

And that's why we're creating new fuel banks, to help countries realize the energy they seek without increasing the nuclear dangers that we fear. That's why I've called for a new framework for civil nuclear cooperation. We need an international commitment to unlocking the fuel cycle of the future. In the United States we're investing in the research and development of new fuel cycles so that dangerous materials can't be stolen or diverted. And today I urge nations to join us in seeking a future where we harness the awesome power of the atom to build and not to destroy.

In this sense, we see how the efforts I've described today reinforce each other. When we enhance nuclear security, we're in a stronger position to harness safe, clean nuclear energy. When we develop new, safer approaches to nuclear energy, we reduce the risk of nuclear terrorism and proliferation. When nations, including my own, fulfill our responsibilities, it strengthens our ability to ensure that other nations fulfill their responsibilities. And step by step, we come closer to the security and peace of a world without nuclear weapons.

I know that there are those who deride our vision. There are those who say ours is an impossible goal that will be forever out of reach. But to anyone who doubts the great progress that is possible, I tell them, come to Korea. Come to this country, which rose from the ashes of war -- (applause) -- a country that rose from the ashes of war, turning rubble into gleaming cities. Stand where I stood yesterday, along a border that is the world's clearest contrast between a country committed to progress, a country committed to its people, and a country that leaves its own citizens to starve.

Come to this great university, where a new generation is taking its place in the world -- (applause) -- helping to create opportunities that your parents and grandparents could only imagine. Come and see some of the courageous individuals who join us today -- men and women, young and old, born in the North, but who left all they knew behind and risked their lives to find freedom and opportunity here in the South. In your life stories we see the truth -- Koreans are one people. And if just given the chance, if given their freedom, Koreans in the North are capable of great progress as well. (Applause.)

Looking out across the DMZ yesterday, but also looking into your eyes today, I'm reminded of another country's experience that speaks to the change that is possible in our world. After a terrible war, a proud people was divided. Across a fortified border, armies massed, ready for war. For decades, it was hard to imagine a different future. But the forces of history and hopes of man could not be denied. And today, the people of Germany are whole again -- united and free.

No two places follow the same path, but this much is true: The currents of history cannot be held back forever. The deep longing for freedom and dignity will not go away. (Applause.) So, too, on this divided peninsula. The day all Koreans yearn for will not come easily or without great sacrifice. But make no mistake, it will come. (Applause.) And when it does, change will unfold that once seemed impossible. And checkpoints will open and watchtowers will stand empty, and families long separated will finally be reunited. And the Korean people, at long last, will be whole and free.

Like our vision of a world without nuclear weapons, our vision of a Korea that stands as one may not be reached quickly. But from this day until then, and all the days that follow, we take comfort in knowing that the security we seek, the peace we want, is closer at hand because of the great alliance between the United States and the Republic of Korea -- (applause) -- and because we stand for the dignity and freedom of all Koreans. (Applause.) And no matter the test, no matter the trial, we stand together. We work together. We go together. (Applause.)
Katchi kapshida!

Thank you very much. (Applause.)

END

11:03 A.M. KST

A final personal note

It is known that public opinions worldwide favour --- by significant majorities --- the transition to a Nuclear-Weapon-Free World (NWFW). But there are some sceptics, especially among the so-called nuclear-weapon experts (especially among those with a civilian background, who make a living by pontificating on these matters). From these quarters it is often stated that “it is impossible to disinvent nuclear weapons”. But many social institutions have been “disinvented” over time: anthropophagi of enemy prisoners; slavery; in democratic countries, restrictions by social status (land property), by gender, by race, to the universal right to vote; chemical weaponry (after these weapons had been repeatedly used, during the last century; entailing verification of the world chemical industry, a more daunting task than verifying peaceful nuclear activities in a NWFW). Even war itself has now become unthinkable in certain contexts such as Western Europe where the two World Wars took place during the last century.

As previously emphasized, nuclear weapons have been employed in war only twice, 6 and 9 August 1945, Hiroshima and Nagasaki (*is there anybody in this room who was an adult when this happened?*). They have never been used afterwards, even when States possessing enormous nuclear arsenal were defeated in war by States without nuclear weapons, for instance the USA in Vietnam and the Soviet Union in Afghanistan. This is the first time in human history that something of the kind happens. It is an indication that, in some quite significant sense, we already live in a Nuclear-Weapon-Free World: a world where nuclear weapons are --- *de facto* if not yet *de iure* --- unusable. Were it not so, how to explain the fact that --- by becoming parties to the NPT and possibly in addition to a NWFZ --- almost all world States have voluntarily given up the option to acquire a nuclear-weapons arsenal; including several States for whom acquiring such a capability is technologically quite easy? But this consensus is now at risk, unless the nuclear-weapon countries (*in primis*, USA and Russia) make progress towards a NFWF.

This also shows that a political/strategic development considered unfeasible can indeed happen. After the Cuban Nuclear Missiles Crisis, that brought the world close to a nuclear catastrophe in autumn 1962, President Kennedy, and other world leaders, pushed strongly for the establishment of a world-wide nuclear-weapon nonproliferation regime. The Non Proliferation Treaty (NPT) entered into force in 1970. But --- as emphasized by those who opposed the NPT (also in Italy) --- its success was at that time quite doubtful. Many nuclear-weapon pundits predicted that within one-two decades 20-30 States would have acquired nuclear weapons. Indeed, in the 1960s many States had initiated programs aimed at developing nuclear weapons, and several of them were quite opposed to the NPT. And two of the 5 Nuclear-Weapon-States (as defined by the NPT) were strongly opposed to the NPT: the France of De Gaulle and the China of Mao. Yet the NPT turned out to be a great success. More than four decades later *all* countries of the world are full parties, except for only 3 or 4: India, Pakistan and Israel, who never signed it and acquired nuclear weapons, and North Korea, who became a party but then opted out. **But this large consensus is now at risk.**

The recent, significant surge of pronouncements --- by political leaders worldwide --- in favor of a transition to a NFWF brings to mind the famous dictum attributed to Victor Hugo: “nothing can stop an idea whose time has come”. This is why I am confident that such a transition is *in fieri*. Obama said in Prague, and again in South Korea (see above), that this goal, “perhaps”, will not be reached in his lifetime. I am much older than he is, yet I entertain the hope --- based on the evidence outlined above --- that it might, *perhaps*, be achieved in my lifetime (but **perhaps**, after a terrible catastrophe).

Might a major step towards the achievement of a Nuclear-Weapon-Free World be made during the second Obama term?