

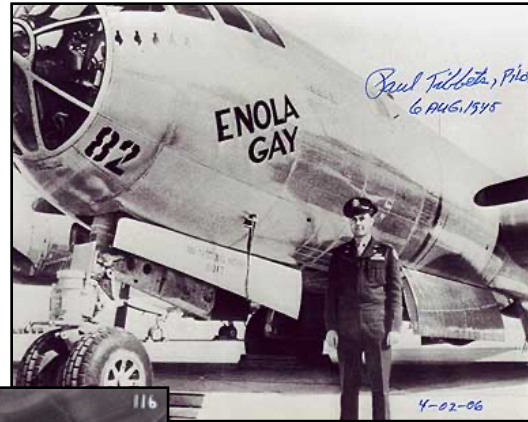
**A comparative look at four nuclear hot spots:
India, Pakistan, North Korea and Iran**

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**Santa Fe Council on International Relations
Santa Fe, NM
March 20, 2014**

Horrific destruction of nuclear weapons



Hiroshima, August 1945

1 B-29

4.7 sq. miles destroyed

140,000 – 150,000 dead

Nuclear Risk Reduction Project

WHAT

- Fewer bombs
- Fewer fingers on the nuclear trigger
- Keep them out of the hands of terrorists

Nuclear Risk Reduction Project

- **Russia**

WHERE

- Central Asia
- Semipalatinsk Test Site

- **China**

WHAT

- **Pakistan**

- **Fewer bombs**

- **North Korea**

- South Korea

- **Fewer fingers on the nuclear trigger**

- **India**

- **Keep them out of the hands of terrorists**

- **Iran**

Russia

HOW



Formal nuclear diplomacy



Science diplomacy



Countries that have considered the bomb

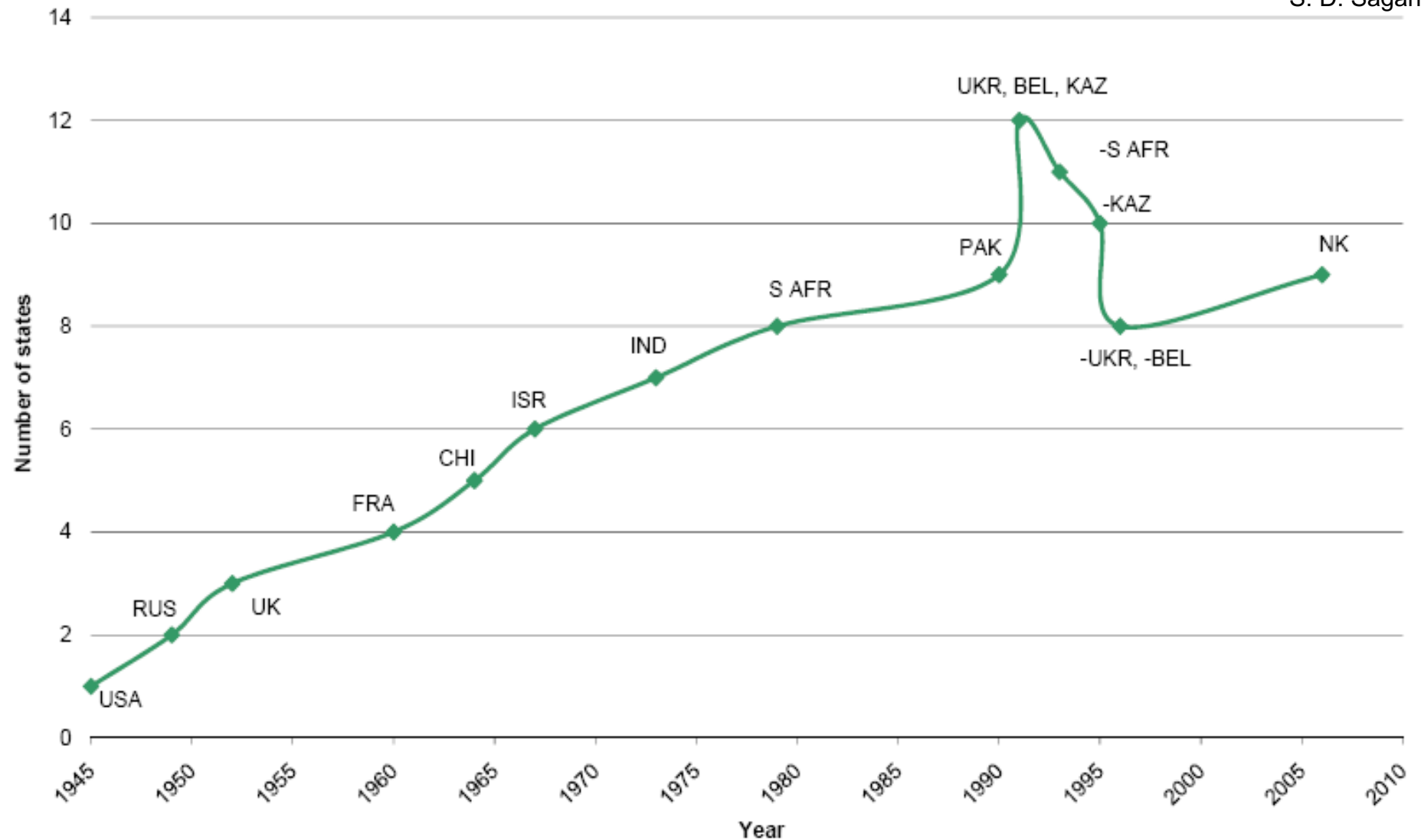
- Sweden
- Switzerland
- Israel
- Yugoslavia
- India
- Pakistan
- South Korea
- North Korea
- Taiwan
- Argentina
- Brazil
- South Africa
- Iraq
- Libya
- Iran

Besides the P-5

- U.S. - 1945
- USSR - 1949
- UK - 1952
- France 1960
- China 1964

States with Nuclear Weapons

S. D. Sagan



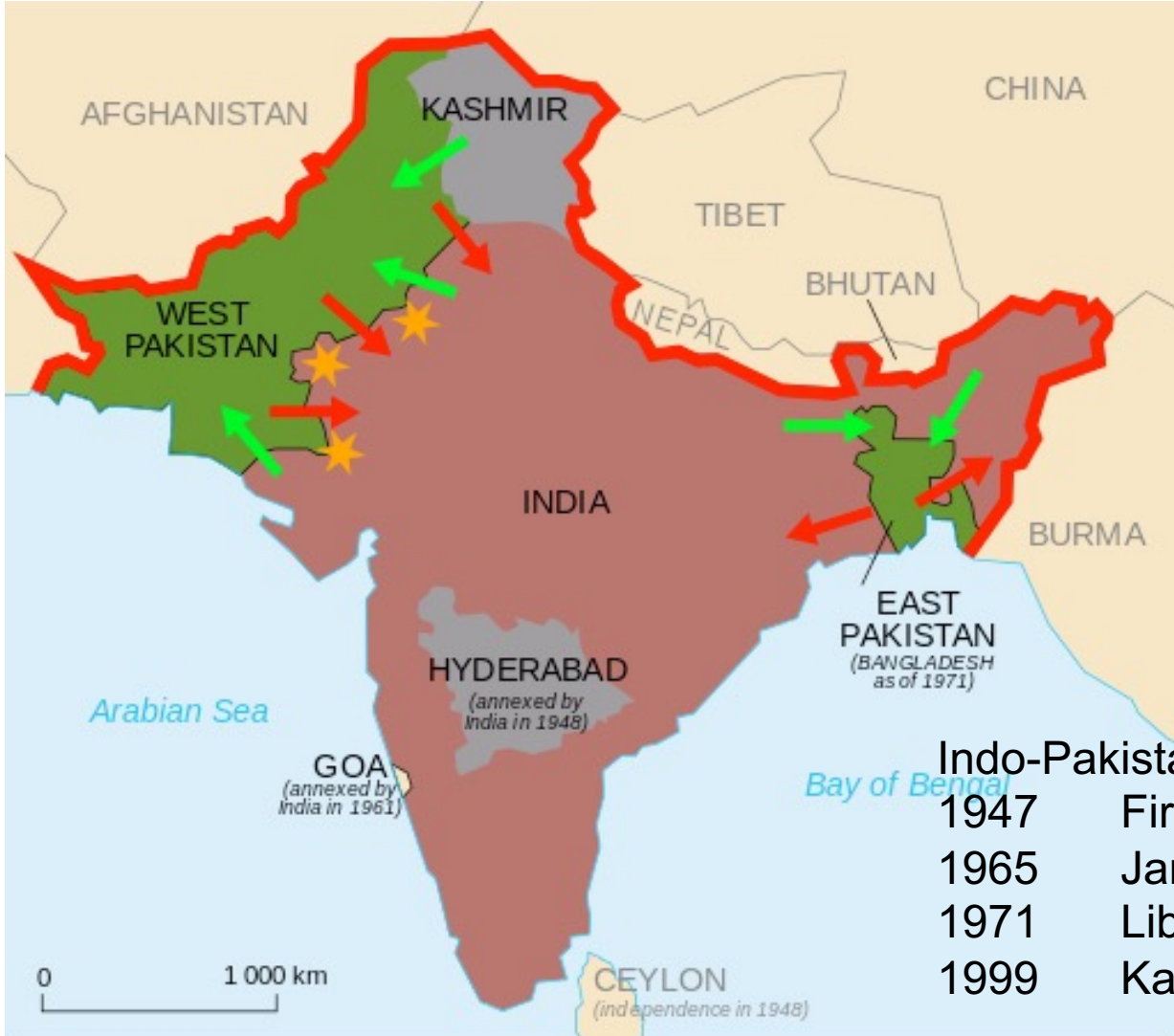
While we were focused on Russia in 1990s, the Indian subcontinent became more dangerous



Pokhran, May 11 & 13, 1998. India declared itself a nuclear power



Pakistan followed suit at Chagai Hills, May. 28 & 30



Indo-Pakistani Wars

1947	First Kashmir War (Line of Control)
1965	Jammu and Kashmir War
1971	Liberation of Bangladesh War
1999	Kargil War

Boundary of British Indian Empire (1939)

Union of India

Pakistan (1948)

Large princely states not acceding to either country upon independence

Inter-communal conflict

Movements of Hindu and Sikh refugees

Movements of Muslim refugees

India's path to the bomb

- Aug. 1948. Homi Bhabha and the Indian Atomic Energy Commission
- Ambitious three-phase nuclear energy plan
- 1974 “Peaceful” nuclear explosion (Smiling Buddha)
- International sanctions (led by United States)
- June 9, 1988. Rajiv Gandhi's rejection of nuclear weapons
- 1998 nuclear tests (declaration of nuclear weapon status)
- Oct. 2008. U.S. – India nuclear deal (123 agreement)

The deal was highly controversial in both countries. Can it bring India inside the nonproliferation tent?

Pakistan's path to the bomb

- Began in 1972 following war with India - loss of E. Pakistan
- Contracted with Belgium and France for Pu reprocessing facility
- 1974 India test tightened export cooperation for Pakistan as well
- 1976 - A.Q. Khan returns to Pakistan to lead uranium effort
- Solicited financial help from Libya and Saudi Arabia
- U.S. imposes sanctions on and off. China aids Pakistan program
- Pakistan achieved rudimentary nuclear capability by 1987

Bomb was going to rebuild Pakistan's strength, heal its wounds, buttress its pride, and ensure better results in future wars.

Pakistan's path to the bomb (cont.)

- 1990s Pakistan lost whatever hesitation it may have had about proliferation and the spread of nuclear technologies
- Pakistan follows India with six nuclear explosions in 1998
- The A.Q. Khan proliferation ring becomes a nuclear “Walmart”
- Some analysts believe nuclear capability played large role in Pakistani Kashmir adventurism.
- Pakistan counts on nuclear weapons to repel India
- Nuclear weapons have become enormous part of national pride

There was no magical moment or action that could have been taken to cause Pakistan to abandon its nuclear program

Nuclear concerns about Pakistan

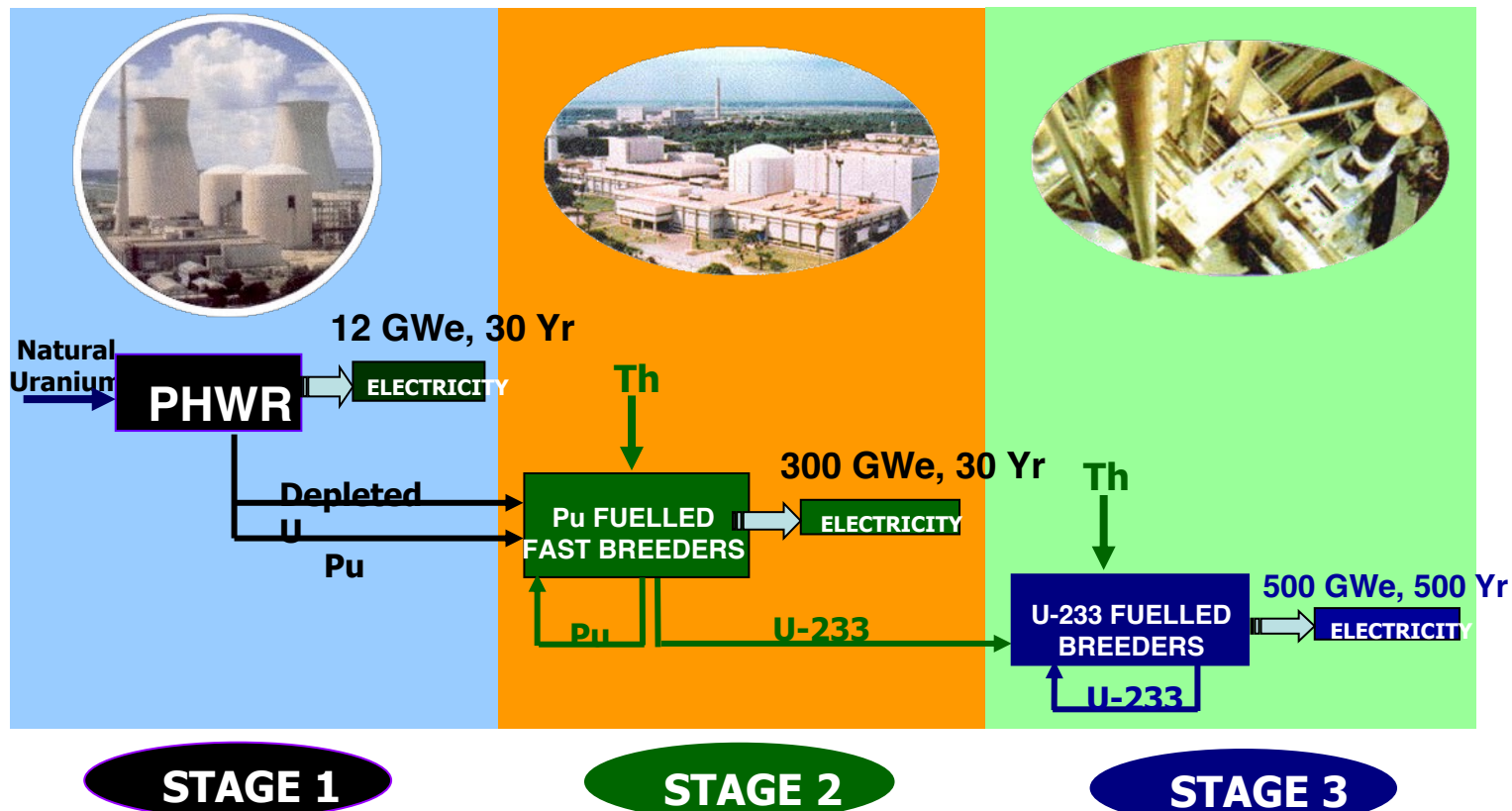
- Pakistan – Indian nuclear rivalry
 - Pakistan's development of tactical (battlefield) nuclear weapons considered very destabilizing
- Nuclear weapons and nuclear materials security
 - Especially in case of political turmoil
- Lingering concerns about nuclear exports
- Safety of nuclear reactors

Pakistan making significant progress in nuclear security.
But, general security situation is of great concern.

Pakistan



Challenges to growth of nuclear power in India



- **Safety**
- Compete economically
- Nuclear waste disposal
- People and infrastructure
- **Security - prevent loss of nuclear materials**

Can Kim Jong-un nuke the U.S.?



Has Iran crossed the red line?



Iran's nuclear quest

- 1950s - 60s: U.S. “Atoms for Peace”
- 1970s to 1979: Grand nuclear power plans and covert bomb ambitions (with Israel, South Africa)
- Ayatollahs abandon, then go covert in mid-1980s
- 1990s: Iran goes shopping, steps up covert program
- 2002 – 12: Program discovered and admitted. Lack of transparency and inadequate cooperation with IAEA leads to suspicion of military program
- 2013 – H. Rouhani elected. Shows new flexibility.



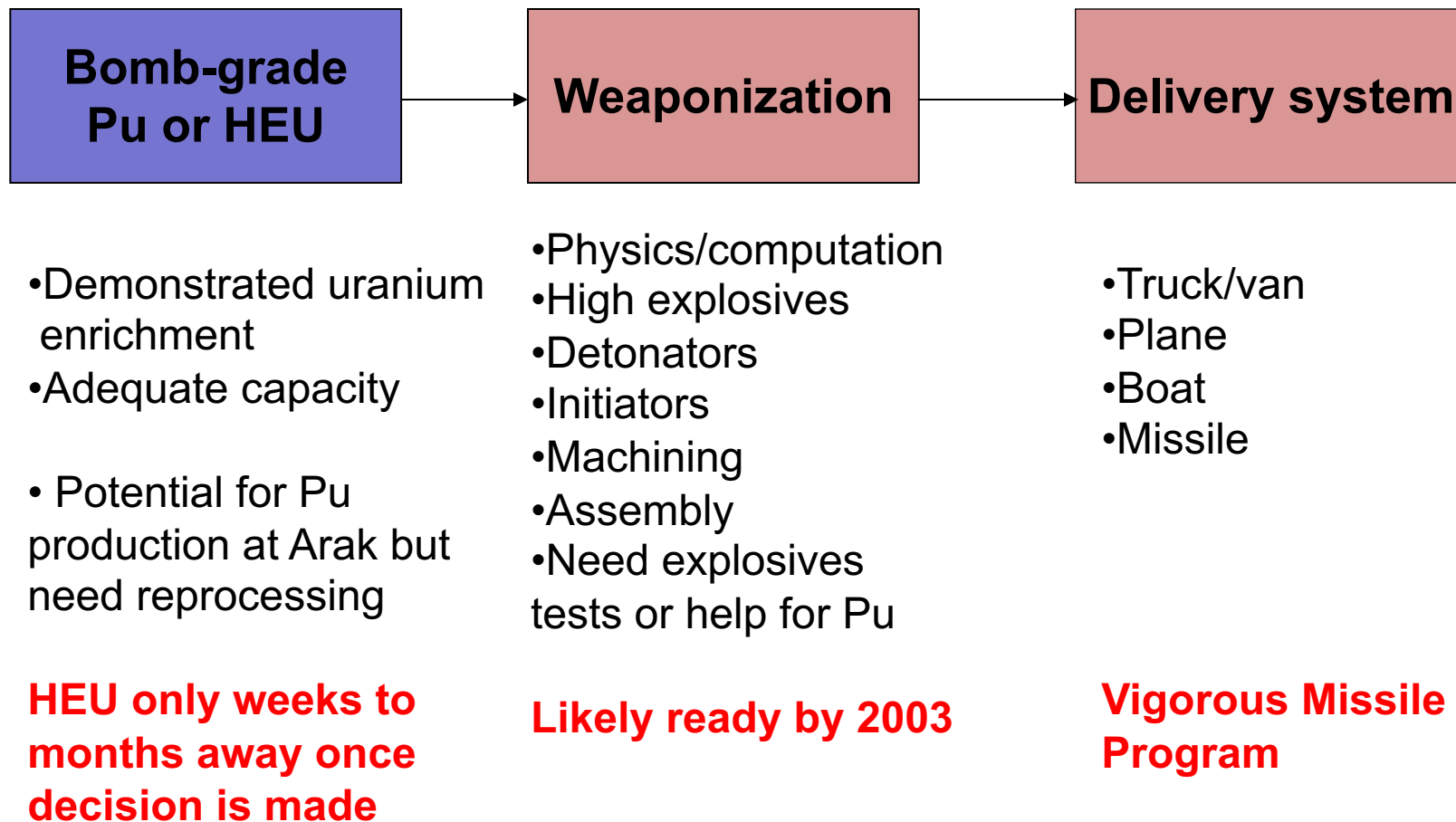
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Iran does not have the bomb or fissile materials.
But, it has made continued progress in uranium enrichment.

How close is Iran to the bomb if it chooses to pursue it?



Iran likely has all pieces in place for the nuclear weapon option.

Nuclear diplomacy given a chance

Geneva: Nov. 24, 2013

Iran reaches “Interim Deal” with P5+1

Vienna, March 20, 2014

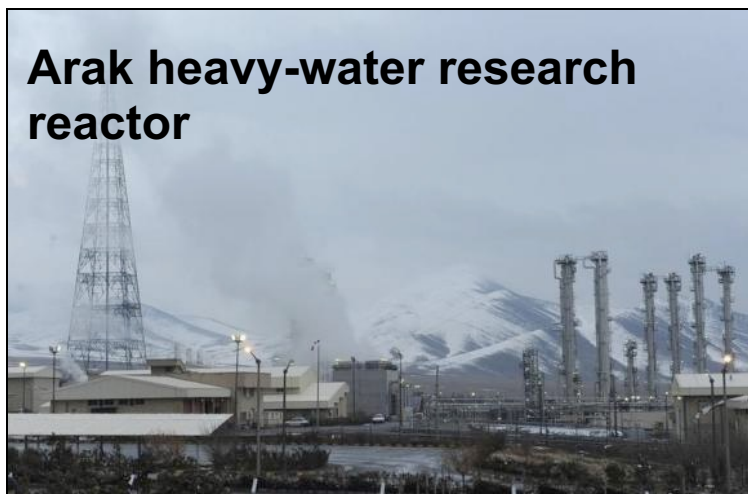
“EU sees big gaps in nuclear talks but
Iran 'commitment' to deal”



The most likely diplomatic solution



- Limit centrifuges
- Limit level of enrichment
- Limit stockpiles of LEU
- Possibly moth-ball underground facility



- Reduce reactor power level below 40 MW
- Convert to LEU fuel from natural
- Send spent fuel to Russia

North Korea's nuclear pursuit

Kim Il-sung

- Soviet Atoms for Peace
- Indigenous reactor program
- Built the option for the bomb
- Agreed to freeze program in 1994

Kim Jong-il

- Built the bomb in 2003, tested in 2006
- Signed denuclearization deal
- Continued to build the bomb

Kim Jong-un

- First successful space launch
- Third nuclear test
- Nukes in constitution, threatened to nuke US and the South



Six visits to North Korea helped us assess the program



Jan. 2004 Yongbyon



Aug. 2005 Pyongyang



Nov. 2006 Pyongyang



August 9, 2007, Yongbyon



Feb. 14, 2008, Yongbyon



Feb. 27, 2009, Pyongyang

The seventh brought the centrifuge facility surprise

North Korea's Nuclear Program

- **Nuclear reactors**
 - Plutonium production reactor
 - Experimental Light-water Reactor (LWR)
- **Uranium enrichment**
 - Centrifuge facility (likely covert facilities)
 - Fuel fabrication facility
- **Nuclear testing**
 - 3 nuclear tests (2 successful)
- **Missile program**
 - 5 long-range test (One successful)
- **Nuclear weapons**
 - 4 to 8 Pu weapons; ?? HEU weapons

What are the prospects for North Korea?



**North Korea test-fires
25 short-range rockets.
March 3, 2014**

**North Korea fires 18 short-range
rockets in apparent protest
against U.S.-South Korea military
drills.
March 16, 2014**

**'Abundant evidence' of crimes against humanity
in North Korea, UN panel says**

By Michael Pearson, Jason Hanna and Madison Park,
CNN

updated 6:50 AM EST, Tue February 18, 2014



Parliamentary elections
March 9, 2012
99.97 % turnout
100 % vote for candidate

So, what to do with North Korea?

- **Little hope of giving up nukes in the near term**
- **Must stop nuclear build up first**
- **Settle for 3 No's in return for 3 Yes's**
 - No more bombs
 - No better bombs (no nuclear or missile testing)
 - No export

In return

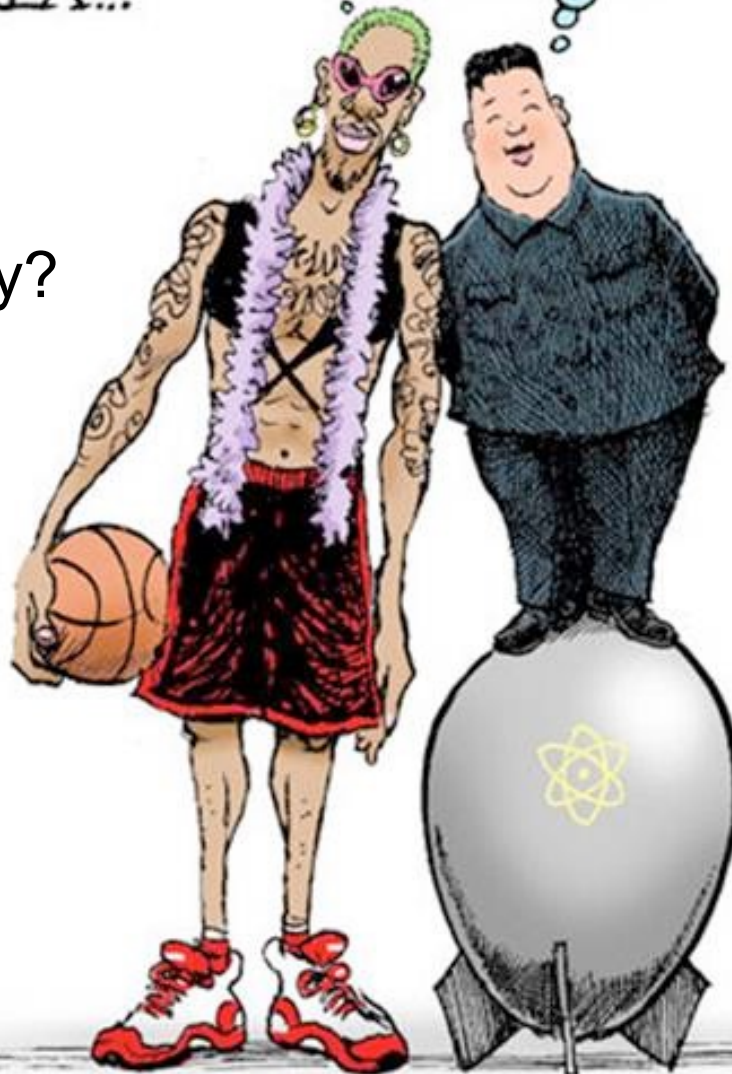
- Address the North's security concerns
- Provide energy assistance
- Provide economic assistance

Internal turmoil and politics make progress questionable.
South Korea's President Park appears ready to talk.

DENNIS RODMAN
VISITS NORTH KOREA...

STANDING NEXT TO HIM
MAKES ME APPEAR
LESS CRAZY.

Basketball diplomacy?



Russian invasion and annexation of the Crimea

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Russian culture was shaped by hardship and religion

- Especially harsh material conditions produced an unusually intense spirituality
- Soaring spirituality and sense of destiny was from the beginning tested and tempered by suffering
- Suffering was interpreted biblically as divine chastisement and a call for repentance and renewed faith for a chosen people
- Suffering and the process of suffering is a mainstay of Dostoevsky's writing



IT 10/7/98

"Savior" by Andrei Rublev

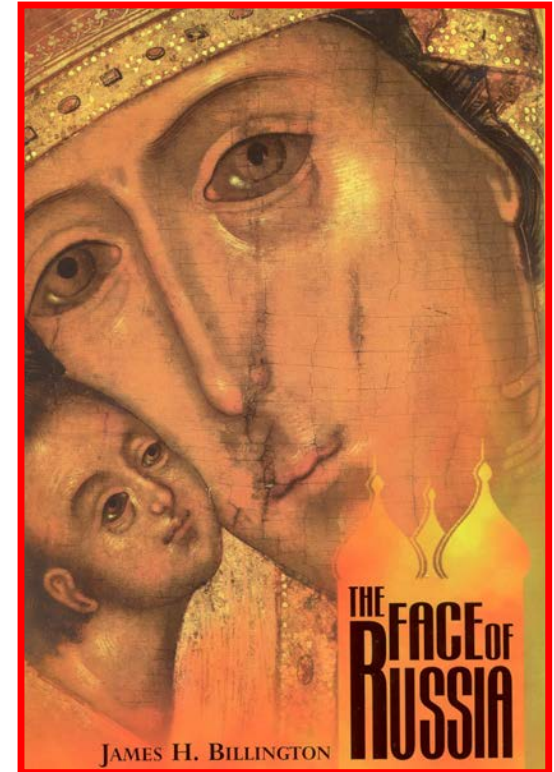


"Haulers on the Volga" by Ilya Repin

Are the three stages of art in Russia a harbinger of the future?

JWT 10/7/98

- Borrow heavily from more advanced civilizations
- Create stunningly original work - often lifting art form to higher levels
- Cast down their work and break it apart - leaving only fragments of their best creations



Will Russia be able to create a distinctive variant of democracy that can endure - or will it destroy the experiment and return to its long tradition of authoritarianism?



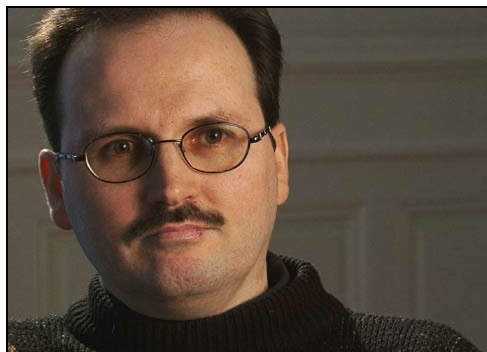
Politics



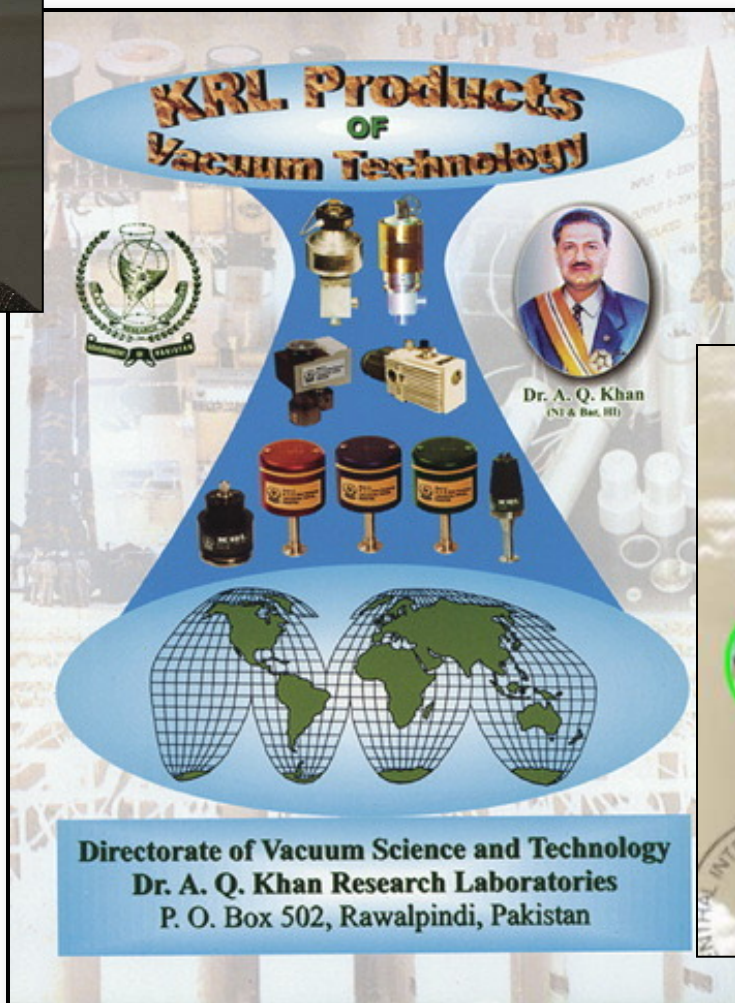
Science

Nuclear Walmart

A.Q. Khan's black market



Urs Tinner, Swiss family connection



Gotthard Lerch,
German connection