Chapter 16

Introduction

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In April 1961 the Bulletin of the Atomic Scientists published the following cartoon¹:

At that time in the club there were three Nuclear Weapons States with the indicated number of weapons (USA 22229, URSS 2492, UK 155) and it was estimated that in few decades there would be about twenty since in the Arab World and South America there would be more than one state going nuclear and there would also be proliferation in other parts of Asia.

Today there are nine Nuclear Weapons States: USA (1945) 4000, Russia (1949) 4300, UK (1952) 215, France (1960) 300, China (1964) 270, Israel (1967–73) 80, India (1974) 130, Pakistan (1998) 140, and North Korea (2006) 8. The numbers in parentheses indicate the year of their first nuclear explosion and the other numbers indicate the best estimate of the weapons available to each country in 2017.

¹ Vilny, 4 April 1961, Bulletin of the Atomic Scientists, XVII—4, pg. 148 https://books.google.it/books?id=OQkAAAAAMBAJ&lpg=PA119&pg=PA121&redir_esc=y&hl=it#v=onepage&q&f=false.

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The USA developed nuclear weapons fearing that Nazi Germany, where fission had been discovered in 1938, could get them first. Fear continuously reinforced by the insistent Nazi propaganda on the imminent deployment of a secret new superweapon that would turn in its favor the outcome of the war. In the end the bombs were used to terminate the war in the Pacific with the expectation, otherwise, of a tremendous human cost for the conquest of the Japanese islands.

The USSR developed them as a response to their successful American military use in a time of increasing rivalry between the two aspiring superpowers.

The UK decided to build its own nuclear arsenal after it was excluded from the American project, to which it had initially collaborated, as a demonstration of autonomous capacity, to have an independent deterrent and to boost its international prestige at the time of the dissolution of its Empire.

France followed to maintain big power status after the humiliations during the war, the loss of its Empire and as a possible national defense against Russia and deterrence against an economically resurgent Germany.

The Chinese nuclear deterrence was motivated by difficulties in Chinese-Russian relations and continuing American non-recognition of the Communist Regime.

The other countries did it because they felt threatened by a hostile country or military alliance which could destroy their country or impose a regime change.

The fact that the first five Nuclear Weapons States were the only one to hold a permanent seat with veto power in the UN Security Council contributed to the opinion that the possession of nuclear weapons provided a special prestige and a status useful in the international power games among nations.

The Treaty on the Non-Proliferation of Nuclear Weapon, NPT, was negotiated between 1965 and 1968 when France and China had already tested nuclear weapons, only experts had heard of Israeli nuclear developments and the Indian nuclear weapons program was in its infancy. It entered into force in March 1970.

Israel probably acquired its first nuclear devices in the years between the two major Arab-Israeli wars: The Six-Day War of 1967, and the Kippur War of 1973. The motivations were its geostrategic inferiority in territory, population, natural resources and military personnel versus the hostile encircling Arab World and the rising prestige, military build-up and threatening politics of President Gamal Abd el-Nasser of Egypt. Israel has consistently refused to admit or deny the existence of its nuclear deterrent but most experts believe that they possess around 100 weapons. Moreover, it is now widely believed that the double flash detected on September 22, 1979 by the Vela satellite in the South Atlantic was a test nuclear explosion conducted jointly by South Africa and Israel.

At the beginning the motivation of the Indian bomb was more the rivalry with China than the problems with Pakistan. In 1962 China had inflicted India a humiliating defeat during their short war on the Himalayan border and in 1964 exploded a nuclear device. The first nuclear weapon was exploded by India in 1974 and was called by Prime Minister Indira Gandhi a "peaceful nuclear explosion." India, like China, has declared to adhere to a "no first use policy."

The development of the Pakistani nuclear bomb is a clear consequence of its continuous conflict with India over Kashmir, the four conventional wars that they

fought, its smaller dimensions and economic and conventional military inferiority with respect to India and the difficulty of defending its territory in the event of an Indian conventional ground attack on their common border. Lahore, one of Pakistan's most important cities is about 20 km away from the Indian-Pakistani border and there are no natural barriers between them. In these conditions it is widely believed that Pakistan might turn to nuclear weapons in an early stage of a full-scale armed conflict with India.

The Democratic People's Republic of Korea, DPRK, was the result of the division of the Korean Peninsula between the Russian and the USA zones of control at the end of WW II. The successive attempt of the North to annex the South produced the bloody Korean War (1950–53) which ended in an armistice that never became a peace and the two Korean states developed in completely different ways.²

After 1974 the South started to develop much faster than the North which stagnated and after the demise of the Soviet Block suffered also a serious famine. Today the GDP Per Capita of the North is less than one tenth of that of South Korea. In these conditions the regime is afraid of being toppled by popular unrest supported by external forces and considers nuclear weapons a deterrent against this possibility.

As its critics correctly point out the NPT is a discriminatory treaty that divides the nations of the world into haves and have-nots. Five nations (USA, Russia, UK, France and China) have the right to possess nuclear weapons while the other nations

²https://www.reddit.com/r/dataisbeautiful/comments/20ptd2/gdp_per_capita_of_north_korea_south_korea_japan/.

should not. In exchange they should be supported in the development of peaceful nuclear energy under strict international guarantees. Today four nations have not signed the treaty and not respected its provisions: Israel, India, Pakistan and the DPRK. 190 countries have signed the treaty: all other countries except South Sudan recently independent. This incomplete but substantial success of the treaty is due to the realization by many nations that the military use of even a fraction of the existing nuclear stockpiles will imply the destruction of human civilization, the immediate death of an appreciable part of mankind and an unpredictable fate for the survivors.

In the opening remarks of his acceptance Lecture for the Nobel Prize in Economic Sciences, on December 8, 2005, Thomas C. Schelling said: "The most spectacular event of the past half century is one that did not occur. We have enjoyed sixty years without nuclear weapons exploded in anger. What a stunning achievement—or, if not achievement, what stunning good fortune. In 1960 the British novelist C. P. Snow said on the front page of the *New York Times* that unless the nuclear powers drastically reduced their nuclear armaments thermonuclear warfare within the decade was a "mathematical certainty." Nobody appeared to think Snow's statement extravagant. We now have that mathematical certainty compounded more than four times, and no nuclear war. Can we make it through another half dozen decades?"

After the traumatic events of Hiroshima and Nagasaki a taboo emerged against the use of nuclear weapons in war. President Truman resisted the pressure of Gen. Douglas MacArthur to use nuclear weapons in Korea and accepted a final ceasefire that confirmed the "status quo ante". The USA suffered also a humiliating defeat in Vietnam but did not resort to the use of nuclear weapons. Similarly, the Soviet Union accepted a defeat in Afghanistan but did not use nuclear weapons. Obviously in both cases it is not clear if the use of nuclear weapons might have changed the outcome of the war.

However, mankind lives with the risk that a minor local conflict might get out of control and escalate to an all-out nuclear war or that a nuclear exchange might be initiated by a mechanical failure or a human error more likely in a time of international tension. As Thomas Schelling points out this is a very real risk and there is now a copious literature on events when the world arrived very close to a nuclear catastrophe which was avoided by sheer luck or the exceptional wisdom of individuals who disregarded prescribed rules of engagements and saved mankind.

The NPT has been accepted by the 190 discriminated countries on the realization that the risk of accidental nuclear war increases with the number of nuclear weapons states and the total number of weapons on earth. Each national nuclear arsenal contributes to increase the probability of a war by accident due to the insecurity of its Command, Control, Communication and Intelligence system (C3I) while the probability that its weapons might explode, be stolen or lost due to mishandling or poor safety increases with the number of weapons under its command. Each nuclear weapon state contributes to the risk of war by accident in proportion to the size of its arsenal and depending on the robustness of its technological and military organization, the reliability of its political system and the tensions in its international relations. All these parameters vary with time and are very difficult to estimate especially in times of political transitions or rapid technological developments.

After the demise of the Soviet Union, the dissolution of the Russian Empire and the following economic crises, there were serious concerns in the West about the safety of its nuclear stockpiles, weapons and fissile materials, and the dispersion of its scientific and technological nuclear-military knowhow.

With the reduced economic interest of nuclear energy and the limited number of new nuclear reactors on order, the main concession of the nuclear weapon states to the have-nots has been the commitment to gradually reduce their nuclear arsenal as envisioned under Art VI of the Treaty. In 1970, at the time the Treaty entered into force the USA had 26,008 nuclear warheads and Russia 11,736. In 2017 they had 4000 and 4300 respectively.³ The arsenals of the other nuclear weapons states, recognized or non-recognized, for several decades have contained 100–300 weapons each with slow changes in time.

In view of the 2020 quinquennial review conference of the NPT which are the main problems on the table?

Recent years have seen a systematic dismantlement of the Arms Control Regime that provided in the past some form of stability to international relations in the strategic domain. After President G. W. Bush withdrawal from the ABM Treaty in 2002, more recently on May 2018 President Trump announced the US withdrawal from the JCPOA and on February 2019 the US suspension of its obligations under the INF Treaty. While the USA justified these actions as violations on the Iranian and Russian side respectively the truth is probably more complicated.

The JCPOA (Joint Comprehensive Plan Of Action) envisaged a strong limitation of Iranian nuclear developments especially in the field of Uranium enrichment under strict IAEA control in exchange for the lift of the international economic sanctions that were imposed on Iran for its perceived effort to build nuclear weapons in violation of the NPT Treaty. While the IAEA inspectors have found no evidence that Iran has violated its part of the JCPOA agreement, the USA Government and its regional allies have been disturbed by three factors:

- the Iranian developments in the field of ballistic missiles that in the future could carry nuclear weapons on distant targets;
- the emerging documentation that in the past, before JCPOA, Iran was actively pushing the studies for the realization of nuclear weapons despite its ratification of the NPT and IAEA inspections;
- the active and successful participation of Iran, mostly through proxies, to the conflicts ravaging the Middle east in particular in Yemen and Syria against the interests of the USA and its regional allies.

Considering the difficult economic situation for the Iranian people probably the USA has found more promising to reinforce the economic sanctions with the hope of producing serious difficulties to the Iranian regime and be able to negotiate in the future from a stronger position and/or with a friendlier government.

It seems that the attempts of the other signatories of the JCPOA to maintain their obligations to Iran under the agreement and limit the impact of USA sanctions on

³<http://thebulletin.org/nuclear-notebook-multimedia>.

Iran are inconclusive and Iran has resumed a limited and reversible increase in its Uranium enrichment activities.

However, most experts agree that today the highest probability of a nuclear war escalating from a conventional conflict is in the traditional hostility between India and Pakistan over Kashmir.

Since independence India and Pakistan have fought four wars: First Kashmir War in 1947, second Kashmir War in 1965, Bangladesh Liberation War in 1971, limited Kargil War in 1999.

Since Pakistan acquired nuclear weapons in 1998 the absence of Indian-Pakistani wars after 1999 is considered by the supporters of nuclear deterrence as one of the effective examples of its application. However, the situation has not been calm with terrorist attacks in Kashmir and sometimes in India by elements probably secretly or indirectly supported by the Pakistani Military Secret Services and Indian sporadic retaliations and repression in Kashmir. Probably the situation did not escalate due to the fact that the side more influenced by Moslem religious nationalism was Pakistan, the weaker of the two nations, while the stronger India was trying to maintain a reasonable peace with its Muslim minority. Today the situation has changed dangerously in India. Its government has obtained a great electoral victory with a platform based on religious Hindu nationalism and looks determined to solve the Kashmir conundrum with a show of force. As we have already mentioned India is conventionally much stronger than Pakistan and an Indian ground attack on their common border could hardly be resisted by the Pakistani Army which might be tempted early on in the conflict to rely on its nuclear weapons. The result for India and Pakistan of an all-out nuclear war between them would be catastrophic but the consequences could be terrible also for the countries in the region and the rest of the world. This under the optimistic hypothesis that other nuclear armed nations will not intervene and the conflict will not escalate to a nuclear world war.

Today the main surviving components of the Arms Control Regime are the NPT, which will undergo its quinquennial review conference in 2020 and the New START that will expire in 2021.

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