International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

An In-depth Study on Nuclear Weapons and Their Role in Global Politics

Parnika Kataria

Shiv Nadar School

DOI: 10.46609/IJSSER.2024.v09i08.030 URL: https://doi.org/10.46609/IJSSER.2024.v09i08.030

Received: 18 August 2024 / Accepted: 27 August 2024 / Published: 30 August 2024

ABSTRACT

Nuclear weapons' continued existence has led to rising concerns across the world. They have gained importance in global politics across time and space. The Cuban Missile Crisis, Nuclear Proliferation Treaty, and Nuclear Deterrence have indicated that nuclear weaponry will stay relevant with their continued existence and that G-7 countries must restrict their use to ensure a peaceful future. Recent events in the world have increased the danger of nuclear weapons; Concerted efforts have to be made by all countries to reach a peaceful solution.

Nuclear weaponry should be buried forever if humanity is to progress and prosper.

Key Words: Cuban Missile Crisis, Nuclear Proliferation Treaty, Nuclear Deterrence

Research Questions: Globally, how do governments handle the conception and growth of nuclear armaments? How has this growth impacted alliances and non- alliances between countries? For countries who advocate "peace," is this situation something that can be addressed through dialogue? To what extent have super- powers been able to prevent the usage of this lethal weapon? What process have they followed? Has the global community created a universal procedure to prevent threats of this stature? How has the threat of nuclear war increased in recent years?

Introduction

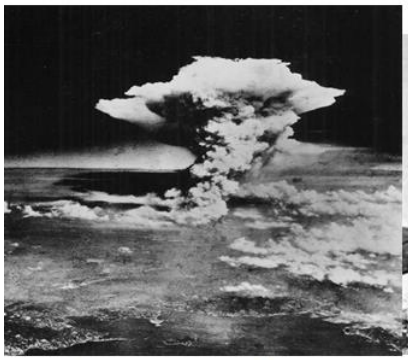
The world's first nuclear weapon explosion was on July 16th, 1945, in New Mexico when the United States tested its first nuclear bomb. Three weeks later, on August 6th, 1945, the United States dropped an atomic bomb on the Japanese city of Hiroshima. Following that, a second plutonium-based bomb was dropped on Nagasaki three days later, leading to a total of over two hundred thousand casualties from both cities. The bomb used was nuclear and in contrast to conventional warfare, it produced destruction in a much shorter time on a much larger scale while leaving long-lasting radiological effects. The secondary effects are;

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

Figure 1: Nuclear Explosion in Hiroshima



Source: Noguera, 2020

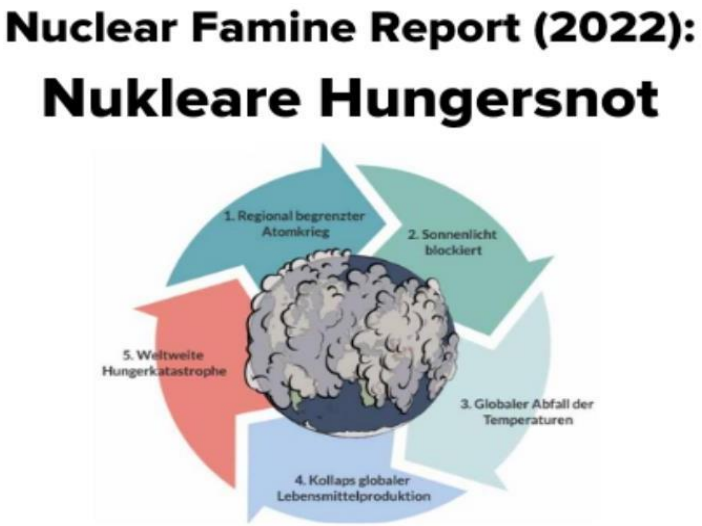
Figure 2: Aftermath

Source: Gaulkin, 2024

- Nuclear winter – The immediate consequence of a nuclear war is to block the sunlight, resulting in temperatures dropping by 10 – 20 degrees Celsius. Secondly, smoke from the fire started by nuclear weapons, especially the black, sooty smoke usually seen in cities and industrial sectors would be heated up by the sun, entering the upper Stratosphere and spreading globally. As a result, it would take years to dissipate.

- Nuclear famine – This is the famine that results from a nuclear explosion in the agricultural sector of a nation. Harmful chemicals from the blast permeate the soil in farmlands, contaminating crops and impacting production, leading to paucity of food and an increase in diseases amongst civilians.

Figure 3: Nuclear Famine



Source: Loretz, 2024

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

- Societal collapse – This is the breakdown of a society's political, economic and social systems, resulting in chaos and destruction. War always leads to a breakdown in the social fabric of a country.

These were the incidences that set in motion the nuclear arms race, giving birth to humanity's greatest threat to survival. In the wake of this calamity, various nuclear physicists and other such specialised experts created in 1947 what is known today as the "Doomsday Clock." It is a visualization of how close the world is to a nuclear war. This clock is reevaluated by a variety of qualified people every year. In 2023, it reached the lowest ever-recorded time, that being 90 seconds to midnight. This was largely due to the Russian invasion of Ukraine.

Background in Nuclear Weapon Manufacturing:

After World War II, nuclear weapons were developed by the Soviet Union (1949), the United Kingdom (1952), France (1960), People's Republic of China (1964), India (1974) and Pakistan (1998). Israel (1960) and North Korea (2006) are also thought to have developed stocks of nuclear weapons, though it is not known how many. Neither of these two countries have admitted nor denied being in possession of nuclear weapons. South Africa did manufacture several complete nuclear weapons in the 1980s but subsequently became the first country to voluntarily destroy their domestically constructed weapons stock and abandon further production (1990).

The *Cuban Missile Crisis* (October 1962) was a confrontation between the United States and the Soviet Union due to the presence of Soviet nuclear armed missiles in Cuba. The construction and subsequent installation of these missiles allowed the USSR to hit eastern United States within a few minutes if launched. The presence of Soviet technicians in Cuba was reported by US planes. President John Kennedy decided to impose a blockade on Cuba to prevent further Soviet shipments of missiles to the island. Eventually, on October 28th, Khrushchev (Soviet president) capitulated and informed Kennedy that work on the missile sites would be halted indefinitely and those which were there would be returned to the Soviet Union. Both superpowers began fulfilling their promises. This crisis marked the closest point that the world had ever come to a global nuclear war.

After the dissolution of the Soviet Union in 1991 and the resultant end of the "Cold War," the threat of a major nuclear war between the two nuclear superpowers (US and USSR) was thought to have declined. The concern for the world then became "nuclear terrorism." However, the threat of nuclear war seems to have resurfaced in the past two years.

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

Figure 4: Newspaper Headlines During Cuban Missile Crisis

Source: Whisperer & Whisperer, 2022

Nuclear Terrorism -

This act is conducted by non-state organizations and even individuals. It is a largely unknown and understudied factor in nuclear deterrence planning. States and countries possessing nuclear weapons are susceptible to retaliation in the same way. However, non-state organizations are less likely to face retaliation. The collapse of the Soviet Union has given rise to the possibility that former Soviet nuclear weapons might become available in the black market. These are also known as "loose nukes." Besides this section of people, there is a tangible fear of less stable governments such as Pakistan and North Korea where these weapons could be utilised by terrorists. What has also emerged with a lack of a perceived threat from nuclear weaponry is a relative decrease in the security of nuclear weapons.

Dirty Bombs -

Dirty bombs are a "radiological dispersal device," that combines a conventional explosive such as dynamite with radio-active material. This cannot create a nuclear explosion but is utilised to injure people and spread radio-active material which threatens the health of more people in a larger area as compared to the explosive blast. This material can fall onto people, streets, buildings, parks and any surfaces within a certain range. The main purpose of dirty bombs is to frighten people and contaminate buildings and land. The highest grade of radio-active material is

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

present in nuclear power plants and nuclear weapon sites. There is speculation, however, that terrorists could attain this radio-active material though it's unlikely due to increased security at all nuclear weapon sites.

Figure 5: Dirty Bomb

Source: Publishers & Publishers, 2024

Subsequent Global Reactions on its Usage:

The immediate reaction after it was used in Japan led to the horrific impact that it had on people, places and generations. At first, this resulted in an arms race where a number of countries, to safeguard their interests, decided to adopt and test nuclear weapons. This was especially true due to the Cold War. This war further increased nuclear weapon proliferation. The atomic bomb changed the global power equation significantly. US became a military superpower alongside USSR.

During the Cold War, there was an arms race to collect as many nuclear weapons as possible. The number of these weapons grew exponentially at the peak of the Cold War Era but started declining from the 1980s and as of March 2024, the world possessed a combine total of about 12,100 nuclear warheads. The US and Russian nuclear stockpiles constitute more than 90% of the total. The adoption of the treaty on the prohibition of nuclear weapons has increased the momentum towards the abolition of nuclear weapons.

The Nuclear Proliferation Treaty (NPT) -

This is also known as the treaty on the non-proliferation of nuclear weapons. It is an international treaty whose objective is to prevent the spread of nuclear weapons and weapons technology in-order to promote co-operation in the peaceful use of nuclear energy and to further the goal of

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

achieving nuclear disarmament along with general and complete disarmament.

Between 1965 and 1968, the treaty was negotiated by the 18-nation committee on disarmament under the umbrella of the United Nations. The treaty came into force in 1970. Initially, it was meant to last 25 years, but in 1995, it was extended indefinitely. 191 states have become a party of this treaty as of August 2016. The treaty defines that the states will never acquire nuclear weapons, they will share benefits of peaceful nuclear technology and would pursue nuclear disarmament till the elimination of nuclear arsenals. The treaty is reviewed every 5 years in meetings termed 'review conferences.' Several additional measures have been added since its inception to strengthen the NPT and make it difficult for countries to get a hold of the capability to produce nuclear weapons. This organization has enhanced verification measures in the form of *International atomic energy agency (IAEA)* Additional Protocol.

Inspite of this treaty being in existence, several high-ranking officials within the United Nations have stated that they can do little to stop states using nuclear reactors to produce nuclear weapons.

The treaty was a major success for advocates of arms-control because it set a precedent for international co-operation. The first wave of ratification came after the treaty was opened for signing in 1968. Countries such as Canada and Sweden who joined had the capability of acquiring nuclear weapons but decided not to do so. The second wave occurred from '73 to '77 when Australia, South Korea, West Germany, Belgium, Netherlands, Japan and Switzerland were offered nuclear security assurance by the United States. This is termed a "nuclear umbrella." Japan, due to the strong anti-nuclear segment, decided not to allow the introduction of nuclear weapons into the country and at the same time confirmed protection by the US from time-to-time. Nuclear Proliferation was prevented not only due to the legal obligation of the NPT, but also due to the diplomatic pressure and persuasion employed by the United States.

By the end of the Cold War in 1989, 138 states had become a party to the NPT. The third wave of ratification came at the end of the cold war. Countries such as South Africa, France, China, Argentina and Brazil joined it. The security council affirmed that the proliferation of nuclear weapons and other weapons of mass destruction (WMD) constitutes a threat to international peace and security. The council condemned the Indian and Pakistani nuclear tests (1998) and called upon them to stop their nuclear programs. It decided that North Korea should abandon its nuclear weapon program (2006).

A big failure of the NPT is its inability to achieve nuclear disarmament. With the rapid improvement of the Chinese military capability, the United States has proposed to include China in three-way nuclear arms control talks i.e. United States, Russia and China. There were

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

suggestions that countries like India, Pakistan, Israel, and North Korea should be approached in a different manner as each case is unique from the other. The aim should be to start negotiations without any preconditions. The NPT has also failed to achieve its principal purpose of preventing the proliferation of nuclear weapons in a number of countries. The United States have attempted to stop these countries but have failed. The most important truant countries are North Korea, Iran and Israel.

The peaceful use of nuclear energy was a major success in the beginning but has slowed down whenever the world has experienced major nuclear accidents e.g. Three Mile Islands in 1979, Chernobyl in 1986 and Fukushima in 2011. People around the world have become fearful of such horrific accidents and have demanded the strengthening of safety measures, but, invariably, nuclear energy has found a different loophole. To reduce global warming, nuclear energy is a viable alternative but in reality, the ratio of nuclear energy in power generation remains flat or even in decline.

The NPT will remain in force however its relevance will decline for years to come if its shortcomings are not addressed appropriately. It may be reduced to a, 'weak treaty.'

Figure 5: Status of NPT as of 2021

Source: McCarthy, 2021

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

The Impact of Owning Nuclear Weapons on International Relations:

International relations by itself are an important aspect of globalization referring to the study of interaction between nations, states and other actors on the global stage. It involves analysing interactions between sovereign entities, inter-governmental organizations, non-state actors and multinational co-operations. It is concerned with understanding the dynamics of *power, cooperations,* and *conflict* amongst them.

There are different theories that offer a unique perspective on the nature of international relations which include;

- Realism – Here, the balance of power is the central determinant of international relations.
- Liberalism- Here, international relations is based on cooperation and mutual benefit rather than competition and conflict. This also puts emphasis on the importance of economic interdependence, global institutions and norms.
- Constructivism – This theory focuses on the role of ideas, norms and identity in shaping international relations. It's how reality is perceived and constructed that reality influences behaviour and interactions.
- Marxism – The theory argues that the pursuit of profit and resources drives countries to dominate and exploit one another.

International relations are important in;

- Understanding global issues such as Climate change, Terrorism, Pandemic and Economic crises.
- Promoting peace and security.
- Advancing cooperation, leading to better outcomes in trade, human rights and sustainable development.
- Addressing emerging challenges such as cyber threat and theft, Nuclear Proliferation alongside the rise of new global powers.

Americans dominated the field of international relations by the 1950s (Hoffmann 1977). The rise of new analytical approaches to international relations made the USA prosper. American dominants were reflected throughout the world through US publication, journals and academic

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

establishment respectively.

International relations changed significantly at the end of World War II with the construction of the UN alongside various new international structures. This occurred in the areas of Economics, security, and Human Rights.

It began with The Great Depression in 1929 which became one of the major factors for World War II. After the Japanese bombing of Pearl Harbour, the states came together to create Economic Insecurity Organization to reduce the possibility of future Economic collapse/ World War. It is after this that the IMF developed in 1944, GATT in 1947 and NPT in 1970. The Charter came into force on 24th October, 1945 where all member states declare the maintenance of international peace and security to be a central purpose of the organization and collective security alongside peaceful settlement to be the methods to accomplish this. Any member state of the UN must also be a member of the International Court of Justice (ICJ). Human rights became important after World War II. The emergence of Europe as a major player in the international system was aided in the wake of the second world war by reconstruction assistance through the MARSHALL plan from the United States.

Security continued to be a major concern after World War II. *States agreed that they would jointly put forth rules against aggression and the violation of these rules would result in punitive action by all members of the organisation against the violator.*

Nuclear deterrence played a central role in the security threat from superpowers during the Cold War, and reliance on nuclear deterrence made the achievement of Nuclear Weapons capability attractive to other states. Initial reliance on 'massive retaliation,' led eventually to the notion of graduated nuclear responses and to the advocacy of limited nuclear war fighting by the Reagan in the early 80s.

Nuclear deterrence has relied on a "shock and awe" strategy; threatening to devastate enemy cities in-order to coerce. At the heart of the theory is the faith that the prospect of city destruction creates decisive leverage. No exchange is likely between adversaries with nuclear weapons (so the argument goes) because a fight in which numerous cities are destroyed is unacceptable. In a conflict between a nation with nuclear weapons and one without, the nation without would immediately surrender. However, history has indicated that attacks against cities have little impact on the course of wars and utilising these types of superfluous attacks as threats is at best problematic.

Deterrence is defined at best 'the power to dissuade.' It could also be defined as 'simply the persuasion of one's opponent that the cost and/or risk of a given course of action outweigh its benefits.'

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

The reasons for doubting as to how much this doctrine may determine the shape of an actual war are;

1. A nation's declaratory policy is likely to be different from its actual plans for nuclear war.

2. Attacks, even if they are absent at the early stages of a nuclear war scenario, loom large in the later stage. Discussion and descriptions always include the possibility of a war getting out of control. Getting out of control is defined as using nuclear weapons on the country's civilian population.

3. The choices made by the United States in its doctrine may not necessarily control the choices of other nuclear nations.

4. The word, 'no cities' is a doctrine for states of a nation with many nuclear weapons, but it is likely that nations which have smaller nuclear arsenals may not agree to the, 'no city' target policy.

Some researchers make the case for nuclear deterrence not by explaining through theory but by the track record. They claim that nuclear deterrence has prevented nuclear attacks from 1950 to 1980 and this is sufficient proof of efficacy. In contrast, there are others who say that countries are 'war-weary' and economically exhausted which is the reason for deterrence.

Nuclear weapons share many of the same characteristics as chemical and biological weapons, and these two weapons have been banned. Hence, it makes sense to begin serious work on the possibility of banning nuclear weapons.

Figure 6: Satirical Comic on *'International Relations'* and *'Nuclear Deterrence.'*

Source: Nuclear Deterrence | Cartoon Movement, 2022

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

Recent Events Underlying an Increasing Threat of Nuclear Arsenals:

Russia decided to invade Ukraine in February 2022 which had a profound implication for strategic stability and Euro-Atlantic regional security. The Russian leadership has called this conflict 'under the nuclear shadow,' raising the possibility of employing nuclear weapons. A result of this is that the United States and Russia have halted the Strategic Stability Dialogue which was aimed at reducing the risks of nuclear war. This has been a pivotal reason as to why the 'Doomsday Clock' has been inching so close to midnight.

Nuclear weapons have started looming large in international politics and a dangerous pattern has emerged. Certain regions are likely to draw the United States into conflict. These are:

- The Korean Peninsula
- The Taiwan Strait
- Eastern Europe
- Persian Gulf

US adversaries appear to be acquiring, enhancing, or threatening to use nuclear weapons. North Korea is developing inter-continental ballistic missiles that can reach the United States; China is doubling the size of its arsenal; Russia is threatening to use nuclear weapons in its war against Ukraine; and according to the US, Iran has amassed enough missile material for a confrontation.

Figure 7: Putin Threating to Utilize Nuclear Weaponry

Source: Chang, 2017

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

The G-7 leaders, under the backdrop of Russia's war against Ukraine being in the second year and tensions growing in the US-Chinese relationship, have led to nuclear weapons being back on the global political agenda. These leaders are committed to promoting "responsible nuclear behavior," that includes risk-reduction measures and greater transparency about states' nuclear arsenals.

In-spite of the danger of nuclear weapons, the steps to reduce the size of nuclear arsenals worldwide have broken down. The reason being that Washington and Moscow are competing with each other for world-supremacy.

The Role of AI in Nuclear Weaponry:

AI systems offer an opportunity to strengthen nuclear deterrence by providing a more accurate and capable defensive nuclear response. It is not only used as a deterrent but can also be used as a reinforcement. It helps in simulated fusion experiments and directing drones to their targets.

However, with the use of this technology, the development of lethal autonomous weapons is also on the rise.

There are efforts to stop AI being plugged into nuclear command and control systems because the use of this technology has increased accuracy, resilience and survivability which could also be used for conventional weaponry through the increased ability of "detection, tracking, targeting and intercepting."

It is a grim scenario for scholars that are hell-bent on "nuclear deterrence theory." The use of AI will reduce the ability to de-escalate weaponry. The other issue in this field is AI security, as AI involves crunching off data facilitated by satellites which can also be interpreted by civilians.

Most AI is driven by commercial and market forces which are not under the control of governments, leading to the possibility of a security breach.

The above stated facts are deterrence to the use of AI in nuclear weaponry.

Conclusion and The Path Forward:

Nuclear weaponry has a disastrous effect on the world. This was witnessed in World War II. In spite of the destruction that emerged, countries continue to be part of the race to develop large nuclear arsenals.

This race has emerged due to inherent differences between countries, mainly as a result of imposed terrorism, ideologies, territory and religion to name a few. This has led to a dilution of the self-imposed restrictions that the world had decided upon after the Cold War. With the

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

ongoing Russia-Ukraine crisis alongside other issues such as North and South Korea, China-Taiwan, India-Pakistan, and Israel Hamas-Palestine amongst other conflicts have resulted in a re-emergence of attention toward nuclear usage.

AI technology has further enhanced the dangers of nuclear weaponry. It could dilute security with respect to how nuclear weaponry is controlled as data from satellites can be in the hands of civilians and market forces.

Given the above information, it becomes incredibly essential that the G-7 countries impose on themselves and on the rest of the world the ability of restraint and withdrawal of such known dangerous arsenal in-order to ensure the path forward is peaceful.

Figure 8: The TSAR Bomba Test (*most powerful nuclear weapon in history*)

Source: Jarus, 2022

Bibliography

Black, J. (2020). The Origins of American Strategic Bombing Theory by Craig Morris. *Technology and Culture*, *61*(3), 970–971. https://doi.org/10.1353/tech.2020.0098

Brodie, B. (n.d.). *The development of nuclear strategy*. https://muse.jhu.edu/article/446210 Chang, G. G. (2017, April 14). Putin threatens nuclear war over Ukraine. *The Daily Beast*. https://www.thedailybeast.com/putin-threatens-nuclear-war-over-ukraine?cheatsheet_morning=

Gaulkin, T. (2024, July 30). *Counting the dead at Hiroshima and Nagasaki - Bulletin of the Atomic Scientists*. Bulletin of the Atomic Scientists. https://thebulletin.org/2020/08/counting-the-dead-at-hiroshima-and-nagasaki/

Inoguchi, T. (2001). Area and international studies: International Relations. In *Elsevier eBooks* (pp. 707–711). https://doi.org/10.1016/b0-08-043076-7/03222-8

 Copyright © IJSSER 2024, All rights reserved

ISSN: 2455-8834

Volume:09, Issue:08 "August 2024"

Jarus, O. (2022, March 11). *The 9 most powerful nuclear weapon explosions*. livescience.com. https://www.livescience.com/most-powerful-nuclear-explosions

Loretz, J. (2024, June 6). *Nuclear Famine: climate effects of regional nuclear war - International Physicians for the Prevention of*. International Physicians for the Prevention of Nuclear War. https://www.ippnw.org/programs/nuclear-weapons-abolition/nuclear-famine-climate-effects-of-regional-nuclear-war

McCarthy, N. (2021, January 22). The status of the UN's treaty banning nuclear weapons. *Statista Daily Data*. https://www.statista.com/chart/23288/status-of-un-treaty-banning-nuclear-weapons/

Noguera, M. (2020, August 4). *Hiroshima Nagasaki Nuclear Truman IIWW*. ESCI-UPF News. https://www.esciupfnews.com/2020/08/06/hiroshima-75anys/

Nuclear deterrence | Cartoon Movement. (2022, April 2). https://www.cartoonmovement.com/cartoon/nuclear-deterrence-0

Publishers, P., & Publishers, P. (2022, November 2). *What are Dirty Bombs?* Politic360. https://www.politic360.com/defence/what-are-dirty-bombs/

Whisperer, W., & Whisperer, W. (2022, January 31). *Cuban missile crisis | The Woodstock Whisperer/Jim Shelley*. The Woodstock Whisperer. https://woodstockwhisperer.info/2017/10/07/cuban-missile-crisis/

 Copyright © IJSSER 2024, All rights reserved