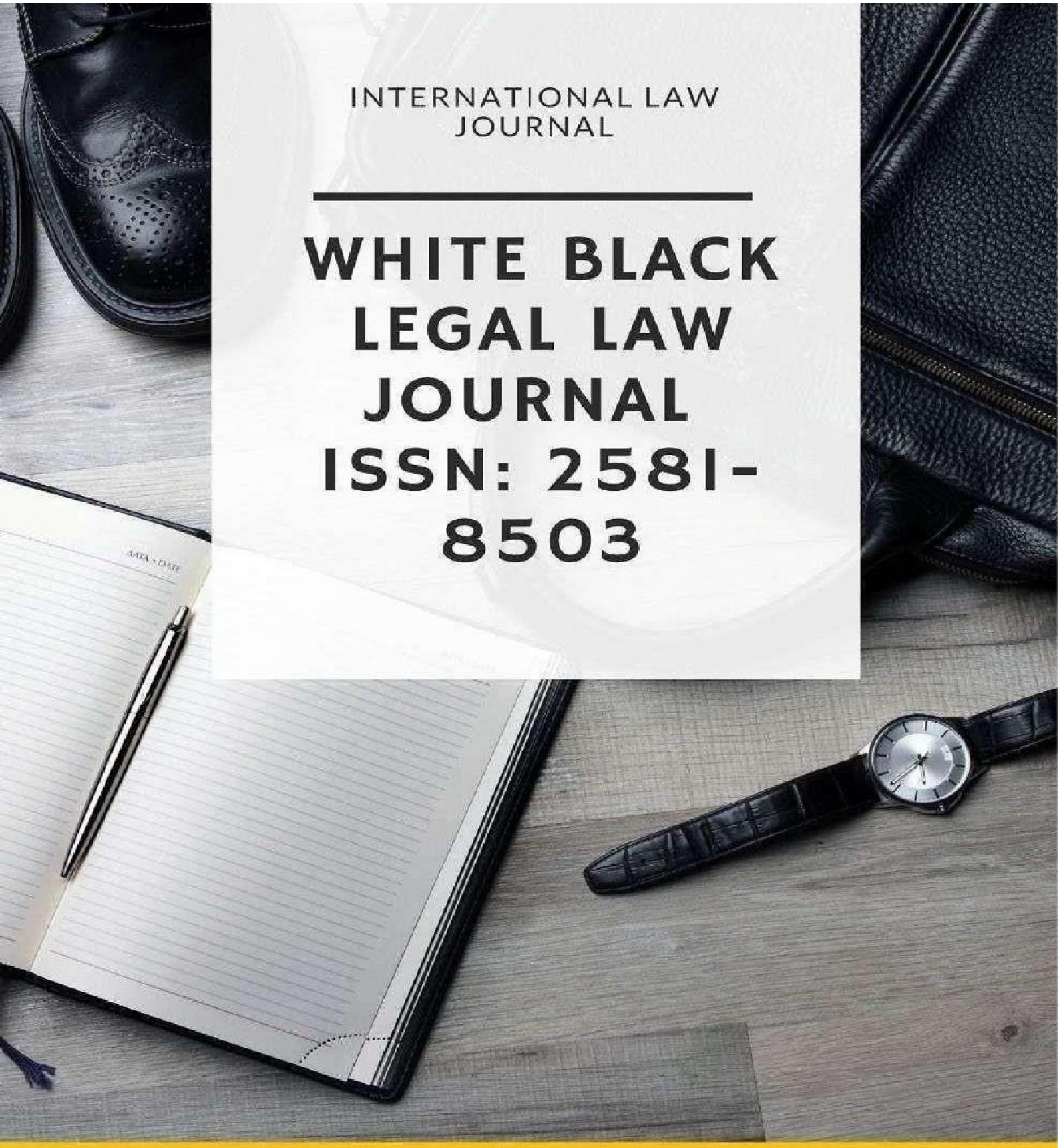

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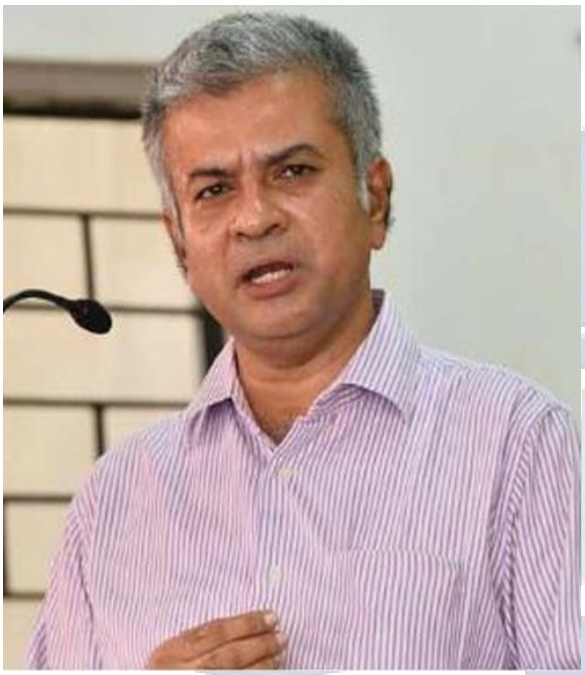

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With this thought, we hereby present to you

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THE INFLUENCE OF ADVANCES IN SCIENCE AND TECHNOLOGY ON HUMAN RIGHTS: A COMPREHENSIVE ANALYSIS

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Abstract:

The rapid progression of science and technology in contemporary society has ushered in an era marked by unprecedented innovation and transformative capabilities. This paper conducts a critical examination of the intricate relationship between scientific and technological advancements and the foundational principles of human rights. Against the backdrop of accelerating breakthroughs in fields such as Biotechnology, Information technology and surveillance systems, this research delves into the multifaceted impact on the landscape of human rights. The discussion unfolds within the context of international human rights frameworks, scrutinizing existing legal instruments and proposing avenues for reform to address the challenges posed by these advancements. The paper aims to provide a nuanced understanding of the complex interplay between science, technology, and human rights, offering insights for policymakers, legal scholars, and practitioners navigating the evolving landscape of rights and responsibilities in an era of unparalleled advancement.

Key words: Advancement, Technological, Human Rights, Surveillance, Biotechnological, Legal instruments.

INTRODUCTION

The advent of science and technology has significantly transformed the dynamics between humanity and its environment, resulting in profound upheavals. Acting as both a facilitator and a destructor, science and technology initially emerged as a response to the realization that traditional means of livelihood were insufficient to meet the burgeoning needs of a rapidly growing population. Challenges such as food shortages, droughts, and famines underscored the inadequacy of old methods. In this context, the Malthusian theory of population becomes relevant, asserting that "the power of population is so superior to the power of the earth to

produce subsistence for man." Faced with these challenges, humanity turned to science and technology as a necessary recourse to address pressing issues. Over time, as science and technology advanced exponentially, concerns arose regarding their impact on human rights.[1]

Technology's dominance across all facets of life prompted the realization that its power is vast and unbridled, granting immense authority to those in control. The consequential effects proved to be uncontrollable and beyond imagination. The rapid proliferation of sophisticated technology brought to light fundamental human rights issues. While historical human rights concerns centered on freedom of thought and expression, inheritance rights, and abuses by authorities, the technological revolution gave rise to new issues with lasting implications on the human body, mind, environment, and society at large.

The international human rights norms related to science and technology offer a corpus of texts which can be analysed in terms of the underlying conceptions of man and society that prevail in the international community at a particular moment. In as much as scientific and technological progress interferes with life and death, with different types of societies and communities (such as the family), as well as with nature and the environment, human rights problems which arise from this process are numerous and diverse. Varied discussions have developed internationally on such problems as the right to privacy, the beginning and end of life, manipulation of the mind, etc., from the human rights angle.

HUMAN RIGHTS

Rights are the fundamental standards that individuals seek or aspire to for their personal development. They constitute essential prerequisites without which people cannot lead lives of dignity. The basic rights and freedoms to which all human is entitled, often held to include right to life and liberty, freedom of thought and expression, and quality before law. These are basically few natural rights which cannot be denied, but at the same time not guaranteed by Statutory Law. It is the obligation of the state to promote and protect human rights.[2] The New Lexicon Webster's Dictionary of the English language describes the "Human Rights" expression as under, "The right to be free from Governmental violations of the integrity of the persons"

[1] Thomas Robert Malthus, An Essay on the Principle of Population (London, 1798)
[2] Khan Ferdous Rahaman, Unbundling Human Rights (Academic Press & Publisher Library, Dhaka, 1st Edition., 2008)

HISTORICAL PERSPECTIVE OF HUMAN RIGHTS

Major religions worldwide share a human-centric perspective on the rights of individuals, despite variations in their content. Greek and Roman philosophers also acknowledged the concept of natural rights, forming the foundation of human rights based on "natural law" or "natural rights."

The development of human rights can be categorized into ancient, medieval, and the eighteenth and nineteenth centuries, particularly in Western countries. In ancient times, a precursor to human rights emerged through agreements between princes and feudal assemblies, exemplified by the English Magna Carta granted by King John in 1215, at Runnymede. The Magna Carta served as a protection against arbitrary acts by the king, establishing principles such as the prohibition of arbitrary arrests, the recognition of laws, and the necessity for common council approval for taxes.

The Magna Carta introduced the concept of jury trials, limiting the absolute power of the king. This principle extended to all Englishmen through the English Bill of Rights in 1689. The Magna Carta was further endorsed by the Petition of Rights in 1628 and the Bill of Rights in 1689, establishing the foundation for parliamentary supremacy over the crown and the rule of law in England.

Medieval Europe faced challenges to human rights due to the prevalence of feudalism and wars for religious principles. The authority of the church dominated political affairs, leading to severe consequences for those opposing its doctrines. The introduction of child marriage and early motherhood deprived children of education, while feudal lords exploited the common people socially, politically, and economically.

MEANING AND CONCEPT: INTERPLAY BETWEEN SCIENCE, TECHNOLOGY AND HUMAN RIGHTS

Before delving into the consequences, let's initially examine the definitions of the terms science and technology. According to Webster's New Collegiate Dictionary, **"science"** refers to knowledge acquired through study or practice encompassing general truths based on the operation of universal laws, particularly as obtained and tested through the scientific method and focused on the physical world. On the other hand, **"technology"** is defined as the

systematic treatment of an art, form, or skill, or a method of accomplishing a task, especially utilizing technical processes, methods, or knowledge.

The rapid development of science and technology, particularly in the last generation, has had a tremendous impact on human rights. Many, perhaps most, human rights are adversely affected – in actuality or potentiality - by modern machines.[3] To delve deeper into the subject, it's crucial to differentiate between four distinct scenarios based on the relationship between science and technology, on one side, and human rights on the other. These relationships can be categorized under four alternative headings:

i. Science and technology may be at the root of a human rights problem and, at the same time, at the root of its solution.
ii. Science and technology may be neither at the root of a human rights problem nor at the root of its solution.
iii. Science and technology may not be at the root of a human rights problem, yet may be at the root of its solution.
iv. Science and technology may be at the root of a human rights problem without being at the root of its solution.

From this it is understood that, they are most powerful potentates which can alter the course of human life or rather challenge his existence on earth. Hence it is important to understand the interplay between human rights and science and technology.

NEED TO STUDY THE IMPACT

Studying the impact of science and technology on human rights is a complex and multifaceted task, as these fields are interconnected in various ways. The challenges posed by emerging technologies were considerable, exacerbated by the exponential growth of major corporate entities that dominate these technological landscapes. These corporations wield significant financial influence over nations, intertwining technology with wealth and yielding consequences that surpass individual expectations. Compounding this issue, these corporate giants prioritize profit-making over human values, investing immense wealth in the development of new technologies while sidelining ethical considerations.

[3] Yoram Dinstein, "Science, Technology and Human Rights", Comment, 5:1 DLJ 155 (1979).

The advent of sophisticated warfare technologies created a nexus between technology inventors and buyers, further entrenching the alliance between those who create and those who utilize such advancements. Technology permeated virtually every aspect of life, including health, the environment, reproduction, and food, resulting in more negative repercussions than positive outcomes.

The legal system's inadequacies in addressing the challenges posed by technological advancements led to myriad human rights issues. The failure to effectively regulate and safeguard against the negative impacts of these technologies exacerbated the ethical and societal implications associated with their widespread adoption.[4]

THE INITIAL IDEA OF SCIENCE AND TECHNOLOGY AS TOOLS FOR HUMAN AND SOCIAL WELFARE, FOSTERING A SCIENTIFIC TEMPER

Initially, as we advanced, the accomplishments in human resource development and technology were viewed as blessings. Human rights instruments addressed the challenges presented by progress in science and technology concerning human rights, human dignity, and integrity from an optimistic perspective. **The Universal Declaration of Human Rights (Article 27) (1)** acknowledging the advancements in scientific developments provided that everyone "has the right… to share in scientific development and its benefits". Similar language was found in **Article 15 (b) of the International Covenant on Economic Social and Cultural Rights** which confirmed, the right to enjoy the benefits of scientific progress and its applications and emphasize on full realizations of this right for development and freedom indispensable for scientific research. Even **Article 51A (h) of the Indian constitution** lays stress on developing the scientific temper, humanism and spirit of inquiry and reform.

A COMPREHENSIVE EXAMINATION ON ADVANCES IN SCIENCE AND TECHNOLOGY

Recent international conferences expressed concern regarding scientific progress in genomics, robotics, neuroscience, reproductive health technology and other fields of biomedicine and the

[4] International Research Journal of Management Science & Technology, Vol 6 Issue 5 (2015)

life sciences.[5] Current scientific advancements, including artificial inoculation, in vitro fertilization, parthenogenesis, offspring sex selection, cloning, DNA molecule manipulation and Artificial Intelligence technology pose intricate issues related to human rights. The progress in these scientific domains presents complex challenges for the contemporary world's human rights landscape, requiring collaboration between medical specialists, geneticists, cell biologists, neuroscientists, and other members of the scientific community engaged in a dialogue with human rights experts.

Meanwhile, the International legal instruments are also promoting the technologies that mitigate issues affecting humans and their rights, for example "the adverse effect of climate change-related impacts have a range of implications, both direct and indirect, for the effective enjoyment of human rights, including, inter alia, the right to life, the right to adequate food, the right to the highest attainable standard of health, the right to adequate housing, the right to self-determination and the right to safe drinking water and sanitation, and recalling that in no case may a people be deprived of its own means of subsistence"[6]

Information technology has transformed human communication patterns. Some of these developments are so natural that we take the benefits of technology for granted today. Encompassing the globe, for instance, millions of migrants stay connected with their families and transfer remittances back to home using the online tools. Technology allows people to display their distinct individualities. It further enables collective mobilizations and empowers minorities. The utilization of technologies like satellite imagery, geo-spatial systems, and geographic positioning systems represents another advancement in the present context.

The biotechnological development has opened the gates for human experimentation. This have brought about unprecedented opportunities and challenges, prompting a need for careful scrutiny to ensure that these developments align with fundamental human rights principles. Biotechnology and human rights intersect in various ways, encompassing ethical, social, and legal considerations. Some comprehensive analysis of recent advances in science and technology are:

[5] Marks & Stephen "Human Rights and the Challenges of Science and Technology." Science and Engineering Ethics. (2014)
[6] Human Rights Council, 29th Summary report of the Office of the United Nations High Commissioner for Human Rights on the outcome of the full-day discussion on specific themes relating to human rights and climate change, (May, 2015)

❖ **TECHNOLOGIES EMERGED IN REPRODUCTIVE HEALTHCARE**

Reproductive healthcare plays a pivotal role in women's health and rights, with technological advancements poised to revolutionize the industry. The evolving landscape of reproductive rights and healthcare introduces complexities, giving rise to significant ethical and security issues that warrant thorough exploration.

Example 1: **Pre-implantation genetic diagnosis (PGD)** was intended to detect birth defects and abnormalities of the foetus however the technology has been "misused to 'eliminate' girl children in early history. In response to such alarming issue the preamble of CEDAW and the Universal Declaration of Human Rights reaffirm "the principle of inadmissibility of discrimination and proclaims that all human beings are born free and equal in dignity and rights and that everyone is entitled to all the rights and freedoms set forth therein, without distinction of any kind, including distinction based on sex."[7]

Example 2: **Surrogacy** has opened new avenues for women facing reproductive challenges, with the advent of test tube babies carried by surrogate mothers. This development prompts crucial questions about maternal identity, inheritance rights, and fundamental human rights. Beyond legal complexities, the essence of surrogacy challenges traditional notions of family, particularly impacting women as affluent individuals opt for surrogates to circumvent the physical discomfort of pregnancy.

Example 3: **Artificial Insemination** further complicates matters, allowing women to have children without a legal male partner. This raises intricate issues concerning the determination of the true heir – whether it is the genetic or natural offspring. Such practices may infringe on a child's right to a family where love and support come from both biological parents. Scenarios where a man opts for a surrogate mother instead of his wife introduce ethical quandaries, encroaching upon the fundamental human right of dignity and potentially disrupting the foundational social fabric.

❖ **NEW TORTURE TECHNOLOGIES**

Emerging torture technologies, including electric shocks, trauma-inducing drugs, and psychotropic substances, have sparked significant apprehension within the human rights community. Previously, narcoanalysis tests, brain mapping, and psychosurgery were susceptible to misuse. Presently, new tools for torture involve drugs that elicit

[7] United Nations Convention on the Elimination of All Forms of Discrimination Against Women, (Dec. 1979), Preamble. UN General Assembly, The Universal Declaration of Human Rights, GA Res 217A, (1948)., Preamble

specific psychological responses like horror, fear, or disorientation, along with precisely calibrated electrical shocks. Additionally, pharmacological torture, capable of inducing temporary paralysis, adds to the concerns surrounding the evolving landscape of abusive practices. The fundamental foundation of the legal framework upon which the criminal justice system relies, presumption of innocence until proven guilty but these techniques have shaken this very basis. Article 5 of the UDHR, Article 7 of ICCPR and Convention on the Protection of All Persons from being subjected to Torture and Other Cruel, Inhuman or Degrading Treatment of Punishment, 1984 prohibits degrading and inhuman torture.

❖ GENETICALLY MODIFIED FOOD (GMO)

Advances in science and technology have improved food production, storage, and security. The Universal Declaration on the Eradication of Hunger and Malnutrition in 1974 and the UN Millennium Development Goals in 2001, highlighted food scarcity, leading to the adoption of biotechnology in agriculture. Genetically Modified (GM) food, notably BT brinjal and BT cotton, has sparked debates. While BT cotton was widely used, recent discoveries linked it to the decline of monarch butterflies in America. The controversy surrounding GM food raises concerns about its impact on the fundamental right to life, as ongoing surveillance suggests potential repercussions. Some ethical aspects of GMOs fall within the context of the right to adequate food, which is derived from the Universal Declaration of Human Rights. At **the 1996 World Food Summit, the Rome Declaration on World Food Security and the World Food Summit Plan of Action** reaffirmed the right of everyone to adequate food. The Committee on Economic, Social and Cultural Rights considers that the core content of the right to adequate food implies:

"The availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture."

"The accessibility of such food in ways that are sustainable and that do not interfere with the enjoyment of other human rights."[8]

[8] UN Human Rights Office of the High Commission, General Comments and Recommendations, E/C.12/1999/5., General Comment No. 12 on the right to adequate food (May 12, 1999)

❖ **NEW TECHNOLOGIES AND THE MODERN BATTLEFIELD**

The human species faces an existential threat due to the formidable means and methods of warfare, including nuclear and biological weapons. The very survival of humanity is at stake, not to mention the preservation of dignity and integrity. Despite the 1975 UN Declaration on the Use of Scientific and Technological Progress for Peace and the Benefit of Mankind, the spectre of war persists. The historical events of the Hiroshima and Nagasaki bombings serve as a stark reminder of the devastating consequences of nuclear warfare. Nevertheless, nations continue to invest vast sums in the development of increasingly advanced weapon technologies.

❖ **HUMAN RIGHTS PERSPECTIVE ON INTELLECTUAL PROPERTY**

The emergence of new information technologies has bolstered the widespread sharing of information on a global scale, fostering enhanced connectivity that reaches every corner of the world. This accessibility has granted researchers worldwide access to extensive libraries. However, it has also given rise to challenges, particularly concerning the right to privacy. Intrusions no longer require physical presence; they can occur through cyberspace, impacting the lives of individuals whose rights have been compromised. Issues such as piracy and infringement of copyright further contribute to these challenges. The International Covenant on Economic, Social and Cultural Rights (ICESCR) under Article 15 specifies that States Parties to "recognize the right of everyone" both "to enjoy the benefits of scientific progress and its applications" and "to benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author."[9] It is important to protect the Intellectual Property Rights of a person as he puts in all his effort, creativity, and sweat to get his idea into existence. Protection of IPR aids in promoting the process of science and technology, arts, literature, and other creative works. Protection of IPR aids in encouraging creativity. The economic and technological development of a nation will come to a halt if no protection is given to intellectual property rights. The world's intellectual property lawmakers should strive to fulfil their obligations under the ICESCR by taking human rights as well as economics into consideration.

[9] UN General Assembly, International Covenant on Economic, Social and Cultural Rights, A/Res/ 2200A/21(December 16, 1966) art. 15

❖ **HUMAN RIGHTS AND THE ENVIRONMENT**

Human rights are intimately connected to a healthy environment. Beyond the basics like life and health, the full enjoyment of social, economic, cultural, political, and civil rights hinges on environmental well-being. If the environment degrades beyond a critical point, there's a risk to humanity and its civilization, including human rights. This interdependence emphasizes the crucial need for ecologically sustainable development across all fields to protect the environment and promote human rights. The World Health Organisation estimates that nearly 75-85 % of cancers are triggered by environmental agents.[10] The 1972 Stockholm Declaration, Agenda 21 Convention on Biodiversity, and the 1992 Rio World Summit emphasize the critical environmental challenges and offer solutions for the survival of the human race on Earth.

HUMAN RIGHTS INSTRUMENTS RELATING TO SCIENCE AND TECHNOLOGY

❖ **International Instruments**

The impact of scientific and technological developments on human rights was brought before the United Nations for the first time in 1968 as a result of an initiative taken by the International Conference on Human Rights held in Tehran, Iran. Following the recommendations of this conference the General Assembly of the United Nations adopted a resolution inviting the Secretary-General to undertake "continuous and interdisciplinary studies, both national and international, which might serve as a basis for drawing up appropriate standards to protect human rights and fundamental freedoms." Specific attention was to be paid to developments in science and technology in relation to:

- Respect for the privacy of individuals and the integrity and sovereignty of nations in the light of advances in recording and other techniques;
- Protection of the human personality and its physical and intellectual integrity in the light of advances in biology, medicine, and biochemistry;
- Uses of electronics that may affect the rights of the person and the limits that should be placed on such uses in a democratic society; and, more generally,
- The balance which should be established between scientific and technological progress and the intellectual, spiritual, cultural, and moral advancement of

[10] E.B. Broody, Biomedical Technology and Human Rights, 109(Darmouth Publishing, Paris, 1993)

humanity

Following the Tehran conference, The General Assembly Resolution on 19th December 1968 by Resolution 2450 (XXII), called to undertake a study of the problems in connection with human rights arising out of developments in science and technology. Based on the recommendations a further report in the nature of a draft programme was prepared by the Secretary General which was placed before the Human Rights Commission in its twenty-sixth session in 1970. It led to Resolution 10(XXVII) of 18 March 1971 in which the Commission related the problem to the needs of the Second United Nations Development Decade. That same Declaration called upon all states to cooperate in the establishment, strengthening, and development of the scientific and technological capacity of developing countries with a view to accelerating the realization of the social and economic rights of the peoples of those countries.[11]

Further development in international instruments assured positive uses of Scientific and Technological progress. For example, International Covenant on Economic, Social and Cultural Rights (ICESCR) refers vaguely to the obligation of the state to use scientific and technologic progress for welfare. Article 6 of ICESC stipulates that the state should take steps including technical and vocational guidance and training programs, policies and techniques to achieve steady economic, social and cultural development.[12]

❖ **Domestic Instruments**

Developing countries expressed significant apprehension, leading to the formulation of the **'Poona Indictment'** during a gathering of the World Order Models Projects in Pune in July 1978. This declaration, titled **"Perversion of Science and Technology: An Indictment,"** raised concerns about practices such as biological farming in Third world by pharmaceutical transnational who engaged testing on poor population, export blood from poor to rich societies and the employment of 50% of research scientists in world military R & D for developing the technology of mass destruction and repression.[13]

[11] "International Research Journal of Management Science & Technology" Vol 6 Issue 5(Year 2015)
[12] 12 UN General Assembly, International Covenant on Economic, Social and Cultural Rights, A/Res/ 2200A/21(December 16, 1966), art 6
[13] "The Perversion of Science and Technology: An Indictment". Alternatives, 4(3), 413-417 (1979)., available at: https://doi.org/10.1177/030437547900400309 (last visited on 12/01/2024)

In India we have **Article 51A (h) of the Indian constitution** lays stress on developing the scientific temper, humanism and spirit of inquiry and reform. Despite legislative efforts such as the **Diagnostic Techniques Act (1994), National Organ Transplant Act (1984), and Environmental Protection Act (1986),** India faces challenges in keeping pace with rapid technological advancements. **The Human Ethics Committee at the Rajiv Gandhi Centre for Biotechnology** follows constitutional guidelines and research protocols, yet the evolving nature of technology often surpasses existing laws, posing significant human rights challenges. New legislations like the **Assisted Reproductive Technology (Regulation) Act, 2021, and Surrogacy (Regulation) Act, 2021** address medical ethics concerns. In addition, the **National Human Rights Commission (NHRC)** plays a pivotal role in ensuring alignment between scientific and technological progress and human rights principles in India.

CASE STUDY

- **T. Sarita v. T. Venkata Subaiah**[14]

  The court determined that the Amniocentesis technique, initially developed to identify genetic abnormalities in foetuses, has adversely impacted Indian motherhood. Originally intended for constructive purposes, the technique has transformed into a tool for sex-selective abortions, resulting in a skewed sex ratio. These coerced abortions represent a clear violation of women's privacy, autonomy, and individuality. The technology, originally designed for benevolent purposes, is now being misused for destructive ends, undermining the ethical fabric of society.

- ***Chhatarpur serial killings, Telgi scam, Godhra incident***, and the interrogation of terrorists like ***Ajmal Kasab***,

  The lone survivor of the Mumbai 26/11 attacks, have witnessed the application of these tools. While polygraph and brain mapping are considered non-invasive methods, narcoanalysis raises concerns as it is perceived as invasive, potentially violating the privacy of the accused. Critically, narcoanalysis has come under scrutiny, becoming a contentious shortcut in the investigative process. Interestingly, India stands as the only civilized country where investigative agencies actively utilize narcoanalysis, while other nations have abandoned it due to reasons ranging from being scientifically unreliable and unethical to outright barbaric. Legal challenges have been raised against

[14] AIR 1983 AP. 356

its use, citing violations of privacy and other fundamental human rights.

- **The Neem Tree case, The Basmati Rice case, The Avon case, The Jasmine Rice case**

  It has been recognised through these cases, that **Biopiracy** is new kind of issue reflecting the complex ethical challenges posed by the use of advanced technologies. The exploitation of such technology that affects human rights in several ways not only the theft and misappropriation of traditional knowledge and genetic resources, but also a violation of individual and collective cultural rights, which are by all means human rights.

- **Justice K. S. Puttaswamy (Retd.) V Union of India**[15]

  The progress in digital technology has introduced new challenges linked to the privacy of individuals. The right to privacy is widely considered one of the basic human rights and the same is explicitly stated under Article 12 of the 1948 Universal Declaration of Human Rights. The Supreme Court has once again risen to the occasion by protecting individual rights against the assault in the form of invasion of privacy. The judgement protects individual privacy despite the fact that a privacy law framework is still missing in the country even after gigantic technological advances which are a direct threat to the right of privacy.

CONCLUSION

It doesn't mean that technology is bad but technology is changing the way we live and changing the way we interact. They present some of the greatest possibilities available to any generation to play an active role in shaping the human future. However in order to fortify the foundation of the human rights approach, it is essential for human rights to adeptly respond to the evolving dynamics of society. The initial step is to promote regulatory processes with the introduction of digital tools as fast as possible. It will prevent the conflicts and hit the balance between human rights and scientific advancement. Science and Technology and the ideological power of the human rights concept together can embody an unprecedented force for the improvement of humanity, unlike anything witnessed in history. The solution is not found in denying the advantages of science and technology or disregarding the risks but in guiding technological progress along the illuminated path of human rights. This ensures genuine sustainable development, yielding benefits for future generations.

[15] (2017) 10 SCC 1