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SCIENCE AND TECHNOLOGY AS THE PILLARS OF PEACE- A STUDY

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ABSTRACT

Science and technology have crucial role to play in promoting peace, conflict resolution and progress. Peace is not just absence of war but it also involves promotion of many activities to ensure growth, consciousness and satisfaction between countries, within the country, in the immediate society and in the families. Public health, utilization and conservation of natural resources, food security, sanitation, climate change, and disarmament and disaster preparedness are all different areas within the realm of science which will have efficacy in the establishment of peace in the world. Implementation of this technology offers a cost-effective, scientifically validated means of achieving and sustaining a stable state of peace in the international arena.

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INTRODUCTION

The past few hundred years of human history have witnessed remarkable developments in science and technology. Man's profound scientific understanding and his techniques have expanded very rapidly. Medical diagnostics and treatments, pharmaceuticals, appliances, transportation and communications facilities are examples of the ongoing revolution that greatly affects individual lives on a daily basis. The advances in health, comfort, convenience and personal well-being are most evident. Despite these inspiring accomplishments, the future is more and more threatened with a deterioration of the quality of life and the proliferation of social inequities. The objective is to identify major factors that contribute to or generate the conditions that threaten us and maintain peace on our planet.

Definition of Peace

Peace in our perception is not just absence of war or armed conflict, although war and such conflicts are antagonistic to peace. Peace is not a passive but an active concept that involves promotion of many activities that create an environment in which peace is sustained and conflict that may disturb peace is prevented.

Factors that Disturb Peace

- **Racism and Casteism**

The feeling of superiority based, for example, entirely on circumstances of birth and not on merit or accomplishment, has led to innumerable wars and conflicts through history. Another outstanding example would be the World War II which was started by Hitler on the assumption that the race to which the Germans belonged - the Aryan race - was superior to all other races.

- **Monopoly over knowledge:**

Knowledge imperialism, which is a consequence of having monopoly over knowledge, has been one of the major tools of exploitation today. Such exploitation eventually leads to revolt on the part of those who are exploited.

- **Technological disparities:**

It was the tremendous technological disparity in regard to the war machinery between the United States and Vietnam that led to the emergence of guerrilla warfare. The cold war between the West and the East before disintegration of the Soviet Union a few years ago was a consequence of perceived technological disparities between the two sides.

- **Disparities between countries in regard to natural resources:**

Such disparities lead to an obligatory dependence on other countries which contributes to neo-colonialism on the one hand and arm-twisting on the other. The long standing conflict between Japan and China in the past was partly on account of the fact that China had enormous natural resources which Japan did not have but needed.

- **Poor conditions for living and the existence of disparities, exploitation and discrimination within a society:**

When the basic requirements of an individual, such as food, housing, health, education, employment, transport, social justice and communication, are not met in contemporary society, there is always dissatisfaction in the population that is affected. Similarly, large disparities in regard to money, position and power among individuals that are based on factors other than individual merit and accomplishment lead to frustration and/or sense of injustice that, in turn, leads to conflict.

- **Availability and promotion of arms:**

The fact that the economy of several countries of the world in the post-World-War-II-era examples being the USA, the UK, France and the USSR - has been significantly dependant on the manufacture and sale of arms, has been responsible for many, otherwise avoidable, conflicts around the world, in which arms supplied by these powers, directly or indirectly, to both the warring parties. One wonders if the Iran-Iraq-war, the Iraq-Kuwait-conflict, and the long-standing Arab-Israel conflict

- **Territorial disputes:**

Disputes over territory - genuine or created - have been a source of major war and conflicts all through history. Examples from this half-century would be the India-China-war, the UK-Argentina-war, the Israel-Arab-conflict, the UK-Egypt-war over Suez, and the current dispute between India and Pakistan over Kashmir.

- **Corruption and crime going unchecked and unpunished:**

Such situation always breeds legitimate unrest amongst people on a large scale, which has in it the needs of an uncontrolled escalation into a major conflict.

- **Environmental considerations:**

The last two decades have seen growing confrontation between those whose primary concern is environment and those whose primary concern is development and/or defence. Such confrontations have often led to disruption of peace as, for example, has been the case with the Green-Peace-movement in Germany and the movement to stop the Narmada project in our country.

- **Role of science and technology help to resolve or prevent conflicts**

- **Racism and Casteism;** Science has already played an important role in containing racism, casteism and other modes of discrimination by providing genetical proofs; for example, the strongest argument against apartheid has been the fact that, in a sufficiently large outbred population, all traits are randomised. This means that no race is intellectually or otherwise superior to any other race on our planet today. The same would be true of caste.

- **Knowledge;** Science and scientists are against any monopoly of knowledge. The commitment of the scientific community against such monopoly is exemplified by the fact that all respectable scientists publish their observations, results and theories in scientific journals which are, in principle, accessible to everyone around the world.

- **Technological disparities;** can be removed only by technological development based on a sound, country-specific technology-policy that will take into account the strengths of the country in regard to men, material and resources.

- **Natural resources;** Science and technology provide avenues to counter disparities between countries in regard to nature resources by developing ways and means of optimally utilising the country's internal assets. Tissue culture of important medicinal plants, management of land, water and energy resources through various bio techniques are done through path breaking developments in Science and technology. The scientific communities are working on a variety of themes in freshwater science: groundwater, urban water, water quality. The ocean covers over 71% of the Earth, is vital in the regulation of our climate, and provides an extensive range of useful products and services to humanity including food, transport and recreational activities. Only 1% of marine ecosystems are protected compared to 10% of protected areas on land.

Intergovernmental Oceanographic commission (IOC) assists governments to address their individual and collective ocean and coastal management needs, through the sharing of knowledge, information and technology and through the international co-ordination of programmes in ocean and coastal research, observations and services, and building capacity in the management of the marine environment. Through the World Network of Biosphere Reserves (WNBR), 610 biosphere reserves in 117 countries (2013), designated by national authorities, site-specific examples of how humans live with nature in a sustainable way are highlighted and promoted.

- **Basic needs;** Science and technology help provide solutions to problems relating to basic human needs at any given time. The fact that in our country many of these problems continue to exist is not because scientific solutions are not available but because of the lack of the required socio-political-economic will on part of the government, the bureaucracy and others who hold the reigns of power.

Examples would be distance-education through television, and the development of new small-scale technologies (such as biotechnology's) that would be relevant to our villages and provide additional employment to those working in the agricultural sector- e.g. Bio gas plant. Science advises on post-disaster assessment, response and recovery, supporting Post Disaster Needs Assessment exercises and implementing projects immediately after a disaster.

- **Arms production;** While it is true that science has been used by the unscrupulous and the greedy for the development of new arms and thereby the promotion of the arms industry around the world, it is science and technology that have created the awareness of the damage that the new arms can do, and provided the strongest argument against both their production and use. Thus, an awareness of the diabolically frightening potential of chemical and biological weapons has acted as an automatic deterrent to their use. An example would be Saddam Hussain's Iraq which had factories making anthrax spores (one of the deadliest of biological weapons) during the recent Iraq-Kuwait-war.
- **Territorial disputes;** Science provides a rational approach towards resolving territorial disputes. Wherever such conflicts have continued, it is because of the lack of such an approach, of which objective reasoning and taking into account all facts is an integral part.
- **Efficiency and accountability** (social, professional and financial) are an integral part of any scientific management system of today. And science has continued to provide new, accurate, unambiguous and reliable methods of crime detection, some of which have already proven to be a deterrent to the commitment of crime; example the technique of DNA fingerprinting.
- **Lack of scientific temper;** one of the major sources of inner conflict that one may experience in our society today is the apparent dichotomy between science and traditional knowledge. We believe that, in biological knowledge, India was far ahead of most of the then civilized world up to, say 1500 A.D. - that is, for some 4000 years of documented history. However, after this period, the knowledge of biology in Europe progressed by leaps and bounds while our knowledge remained static. Thus, the advantage we had of history, culture and tradition (e.g., of no ban on dissection) were lost. Investment in science, technology and innovation (STI) is an important driver of economic growth and social development. Science governance refers to the structures and policy mechanisms which ensure that scientific knowledge is advanced and taken into account at all levels of governmental decision-making.
- **Environmental considerations;** Much discussion has appeared in the literature of organizations dedicated to preserving a healthful and humane environment which concerns the many human activities that have severely degraded the environment. Polluted air, waterways and oceans, ravaged lands, erosion, desertification, deforestation, and radioactive and chemical wastes are by now either common experience or common knowledge.

Even the more esoteric threats such as the depletion of the ozone layer and the accumulation of green house gases, have been brought to our attention. The exceedingly high temperatures experienced in Europe this summer, the melting of glaciers in arctic regions are manifestation of global warming.

Science has provided means to control and prevent it. The earth sciences and the history of the Earth are essential to understanding current global change, to helping us sustain the Earth, and to giving countries the capacity to manage their mineral resources. The International Geosciences Programme (IGCP) promotes international collaboration in the geosciences with special emphasis on projects and geoscientists from developing countries. It promotes projects with a clear societal orientation for sustainable development, including natural disaster mitigation, medical geology and mineral and groundwater resource extraction. Since its inception in 1972 more than 340 international cooperation projects on the Earth's geology in about 150 countries have contributed to building knowledge on geological resources and processes and to creating networks of geoscientists.

Remote sensing and space technology are highly useful techniques to monitor environmental change. The UNESCO Climate Change Initiative federates UNESCO's work and joins it with that of other UN bodies and aims to help Member States to mitigate and adapt to climate change, to educate for sustainable development in the context of climate change, to assess the risks of natural disasters due to climate change, and to monitor the effects of climate change on World Heritage sites and biosphere reserves. Man And Biosphere (MAB) focuses on specific ecosystems in biosphere reserves including mountains, drylands, tropical forests, urban systems, wetlands, and marine, island and coastal ecosystems.

- **Economics and War;** Future economic policy must be in harmony with the finiteness of resources and population, and the requirements for a wholesome environment. Economic competition is often enhanced by limited resources and markets. In the extreme case, it leads to warfare. If and when the major players in industrialized states decide to confront economic reality by supporting and developing their human, humane and industrial capacities consistent with the broad concepts of sustainability and a large measure of self-sufficiency, they may be able to save their countries and future generations from severe economic hardship.
- **Ethics and Education;** The International Basic Sciences Programme (IBSP), an International multidisciplinary programme was established to strengthen UNESCO Member States' capacities in the basic sciences and science education. The Programme supports projects in mathematics, physics, chemistry and the life sciences and their interdisciplinary areas. Now we have to integrate ECOLOGY ECONOMY and ETHICS. 'To live as if Earth matters' for maintain peace in the world. To educate future generations by logical interpretations of scientific methods, this will lead to potential harmony of our societies.

Conclusion

The present study has focussed on the key factors involved in the role of science and technology in determining peace. The contextual framework covers not only nations but also societies, families and the individuals. Without science there can be little progress towards sustainable development. The pursuit of knowledge and understanding through science will arm us to find solutions to the increasingly acute economic, social and environmental challenges facing humanity today. In an increasingly connected world this is true for both developed and developing countries. Science, responding to the need to develop greener societies, underpins economic growth and employment, assists us in managing the environment and equips us with the knowledge to ensure equitable social progress. Science, to build peace and to respond to international development goals can visualise a dream that can be eventually true.

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