

How Does Science Contribute to Peace

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A friend recently asked me whether I thought science contributed to peace. I thought about this question from the perspective of a scientist and educator, and it became clear to me that both of these great enterprises can make significant contributions to peace. This may seem paradoxical because the applications of science have made modern warfare so devastating. But I want to make an important distinction – the distinction between science and technology. The goal of science is to understand nature, whereas technology applies this scientific knowledge to satisfy the needs of society. From this viewpoint, I would assert that knowledge is morally good, whereas technologies can be good or bad, depending on their intended use. I think that we should never stop trying to understand nature, but that not all possible technologies or applications should be developed. Society should carefully control what technologies are developed, and the scientific community has a special responsibility to warn the public and policy makers about the dangerous implications of destructive technologies.

Next, I would like to discuss what constitutes peace. Peace is often defined as the absence of war. But, as His Holiness, the Dalai Lama, has said, “Peace, in the sense of the absence of war, is of little value to someone who is dying of hunger or cold. It will not remove the pain of torture inflicted on a prisoner of conscience. It does not comfort those who have lost their loved ones in floods caused by senseless deforestation in a neighboring country. Peace can only last where human rights are respected, where the people are fed, and where individuals and nations are free.” This sentiment is also expressed in the comment of the Reverend Martin Luther, Jr., who said, “True peace is not merely the absence of war, it is the presence of justice.”

Clearly, peace has many dimensions. It can only really exist when people have freedom, dignity and justice and are not subject to poverty, famine, disease and an inhospitable environment. While the issues of freedom, dignity and justice fall into the domain of the political system under which a nation lives, science and technology can make positive contributions to the living conditions of people throughout the world.

At the beginning of this new century, many problems beset the world. While not all human

problems can be fixed by technology because of their political nature, many of them could be significantly alleviated by major technological innovations. I firmly believe that the mitigation of some of these problems will come from the knowledge and unexpected technologies emerging from scientific developments of the future. The challenges faced by science and technology are crucial as never before. They include the following:

- * Improving the general health of the population, and in particular controlling the spread of infectious diseases, both old and new ones.

- * Understanding ecological and environmental issues, providing guidance to policy makers in these areas and developing new technologies that abate or eliminate our environmental threats.

- * Providing sufficient food for the rapidly growing population of the world. The world's population is expected to grow to about 9 billion people by about 2050.

- * Developing alternative sources of energy and substitutes for scarce natural resources. Energy is an especially challenging issue, because improving the standard of living of developing nations will require significant increases in their use of energy.

- * Providing new technologies to enhance the quality of life of our citizens, while extending those benefits to regions and groups that have not yet shared in them.

Science has enormous promise for addressing these issues and improving the human condition. But this great promise will only be fully realized if science and technology are humanely applied and their benefits are shared across the world. Science and technology must be used by society with wisdom and humanity. The outstanding theoretical physicist and great humanitarian, Victor Weisskopf, said “ Society is based on two pillars, knowledge and compassion. Compassion without knowledge is ineffective. And knowledge without compassion is inhumane.”