

Role of Science and Technology in the Sequence of Social Change

Dr. Ashutosh Tripathi¹, Prof. Ashok Kumar Rai²

¹Associate Professor, Department of Chemistry, KS Saket PG College, Ayodhya, Uttar Pradesh, India

²Department of Law, KS Saket PG College, Ayodhya, Uttar Pradesh, India

ABSTRACT

Science, technology and innovation each represent a successively larger category of activities which are highly interdependent but distinct. Science contributes to technology in at least six ways: (1) new knowledge which serves as a direct source of ideas for new technological possibilities; (2) source of tools and techniques for more efficient engineering design and a knowledge base for evaluation of feasibility of designs; (3) research instrumentation, laboratory techniques and analytical methods used in research that eventually find their way into design or industrial practices, often through intermediate disciplines; (4) practice of research as a source for development and assimilation of new human skills and capabilities eventually useful for technology; (5) creation of a knowledge base that becomes increasingly important in the assessment of technology in terms of its wider social and environmental impacts; (6) knowledge base that enables more efficient strategies of applied research, development, and refinement of new technologies. The converse impact of technology on science is of at least equal importance: (1) through providing a fertile source of novel scientific questions and thereby also helping to justify the allocation of resources needed to address these questions in an efficient and timely manner, extending the agenda of science; (2) as a source of otherwise unavailable instrumentation and techniques needed to address novel and more difficult scientific questions more efficiently.

Specific examples of each of these two-way interactions are discussed. Because of many indirect as well as direct connections between science and technology, the research portfolio of potential social benefit is much broader and more diverse than would be suggested by looking only at the direct connections between science and technology.

KEYWORDS: science, technology, social, change, sequence, relation, novel, knowledge, development

INTRODUCTION

No one can step into the same river twice, because everything in the world is in perpetual motion which helps the universe to be made up. Our society is an organic and complex synthetic, facing inevitable change and it is influenced by culture, politics, economics, technologies and other aspects with time. Social change has been defined in different theoretical orientations and concisely can be viewed as the changes in the social mechanisms, which can be embodied as the alteration of cultural symbols, rules of conduct, social organizations or value

systems. Two of the most important aspects of social changes are specified to the change of social structure and the change of social relationship. Also, it cannot be denied that technology has played a significant role in social change. Social revolutions are tied together with technology, rather than technological tools, the original cause is that technology has changed the way people work and think. The social system is an open system that exchanges material, energy and information with the outside world all the time. Meanwhile, it adjusts its original institutions to

How to cite this paper: Dr. Ashutosh Tripathi | Prof. Ashok Kumar Rai "Role of Science and Technology in the Sequence of Social Change" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-6 | Issue-5, August 2022, pp.265-269, URL: www.ijtsrd.com/papers/ijtsrd50458.pdf



IJTSRD50458

Copyright © 2022 by author(s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



adapt to the new environment, and then social changes have formed. In the primitive society, the low-level productivity was just to meet the need for survival of human beings.[1] During that time, strictly, people did not have the concept of technology. Marked by the invention of microchips, modern technologies, including internet computer nuclear technology and new energy technology, have greatly improved the level of world productivity and completely subverted the mode of human production and the way of interaction between people, and strengthened the intelligent industry which speeded up the process of social change and brought globalization. When it came to horticultural and pastoral societies, people relied on farming and raising livestock. Governed by the chiefs or kings, the population of society began to grow and social stratification appeared. In non-industrial civilized society, word and printing were used widely, the development of art and science becoming unprecedented prosperity. Ruled by a king or an emperor, the balance of wealth and power suffering a huge tilt. Generally, in the history of mankind, technological innovation has played a decisive role in social change. If these tools had never been invented, people might have lived on hunting and gathering. Technology has not only become an internal independent factor in the modern productivity system, but also become a decisive factor and become the driving force behind the development of modern productive forces. The development of science and technology, through the transformation of productivity as an intermediary, and through the profound impact on the socio-economic structure, ultimately led to changes in the entire society.[2,3]

Discussion

Modern technology not only helps people to make more products, but also creates objects that were never produced by hand in any way. Industrialization broke up the feudal society and gave birth to a new economic operating model called capitalism, of which power and wealth were monopolized by capitalists. In modern society, the impact of technology on social change is becoming more and more direct and significant. Represented by computers, the third technological revolution has completely changed all aspects of people's lives as well as determining the political and military economy of a country, having accelerated the recovery and development after the Second World War. However, the acceptance of industrialization and the gap in technology have made great differences in the development of different countries. For example, the technology varies greatly across European countries and the differences are in expansion, which has brought about a significant gap

in labor productivity. Over the long process of human history, technology is one of the cores of social change, but as we can witness, the inequality of wealth, power and resources brought by the development of technology can never be ignored. There are many ways to connect with the external world, whether at home or at work in a society with highly developed telecommunications infrastructure, such as telephone, digital television, satellite television, email and Internet. Including the popularity of information technology, these technologies promote the compression of time and space, which has helped worldwide instant messaging become a reality. The way people communicate has changed, if they want to chat with their families or friends across the Atlantic what they have to do is just turning on their smartphone.[4,5]

The booming development of information and communication technologies has promoted globalization. However for less-developed countries, the unequal distribution of economies and sources has been aggravated by the information gap. From the perspective of techno-pessimists, the development of technology has triggered the disappearance of species, the lack of resources, the explosion of population, the nuclear terrorism, and the polarization of the rich and the poor, threatening the survival of mankind. The enormous energy consumption of modern industrial society has brought great confusion to the world. The faster the social development is, the more the energy is consumed, which has increased the degree of environmental chaos, so 'the world is always falling'. For the Millennial Generation, the convenience of internet helped them communicate in an international social networking, but their dependence on technological connectivity might lead to the collapse of the expressive skills for the young.

The development of technology has brought about great changes, not only the transformation of the relationship between human beings and nature, but also changing the way people interact with each other. Represented by computers and the Internet, modern technology has established a direct channel which helps people to communicate and feedback their information.

Scientists use the conception of 'common symbiosis' of biology to describe a new relationship between human beings and technology. He emphasizes that the computer is an important 'community partner' in human society, in which the relationship between people and machines becomes an indispensable condition in social life. Furthermore, human beings and networks form a new relationship 'group symbiosis' in this social ecosystem. In the future,

with the development of computer technology, people can experience social life with computers that can simulate human emotions and activities. This means computers and networks will become a unique species in human society that can establish symbiotic relationships with people and influence the social relationships of people in reality, which is amazing but also scary: the machine has human emotions of human beings, but the machine is always just a machine. In this sense, technology has become an independent element of the modern productive system.[6] On the basis of transforming productivity, technology has changed the social division of labor and further changed the industrial structure, occupational structure and social stratum structure of the society, thus causing changes in the entire social structure.

Results

From individuals to countries, the available resources are enriched, and communicative mode has become more and more diversified, technology having been the engine to drive the change of society including the revolution from primitive society to information society, the appearance of industrialization capitalism and globalization. The impact on society from technology is largely determined by economic factors, but it also extends beyond the economic field. Technology affects politics and culture and itself is affected by both also. Although modern society is only a small part of human history, it has undergone rapid and major changes due to the promotion of technology. The development of technology has brought about the changes in social structure and social relations. But technology has also brought excessive consumption of energy, and even environmental problems, and it also increased inequality between developed countries and undeveloped countries.[7,8]

Science and technology are essential ingredients of modern life. They transcend local boundaries and touches lives of everyone. Evolution of mankind can be seen in terms of technological evolution as well. Invention of fire and wheel changed the face of mankind. Various historical epochs - hunter-gatherers, agrarian society and industrialist society are distinguished from each other in term of technological advancement.

The technological factors represent the conditions created by men that have a profound influence on his life. Technology is product of civilization. According to Karl Marx even the formation of social relations and mental conceptions and attitudes are dependent upon technology.

Veblen has regarded technology as the sole explanation of social change. W. F Ogburn says technology changes society by changing our environments to which we in turn adapt. This change is usually in the material environment and the adjustment that we make with these changes often modifies customs and social institutions.

Technology has contributed to the growth of industries or to the process of industrialization. Industrialization is a term covering in general terms the growth in a society hitherto mainly agrarian of modern industry with all its circumstances and problems, economic and social.

It describes in general term the growth of a society in which a major role is played by manufacturing industry. The Industrial Revolution of 18th century led to the unprecedented growth of industries. Industrialization is associated with the factory system of production. The family has lost its economic importance. The factories have brought down the prices of commodities, improved their quality and maximized their output. The whole process of production is mechanized. Consequently the traditional skills have declined and good number of artisans has lost their work. Huge factories could provide employment opportunities to thousands of people. Hence men have become workers in a very large number. The process of industrialization has affected the nature, character and the growth of economy. It has contributed to the growth of cities or to the process of urbanization.[9]

In many countries the growth of industries has contributed to the growth of cities. Urbanization denotes a diffusion of the influence of urban centers to a rural hinterland. Urbanization can be described as a process of becoming urban moving to cities changing from agriculture to other pursuits common to cities and corresponding change of behavior patterns. Hence only when a large proportion of inhabitants in an area come to cities urbanization is said to occur. Urbanization has become a world phenomenon today. An unprecedented growth has taken place not only in the number of great cities but also in their size. As a result of industrialization people have started moving towards the industrial areas in search of employment. Due to this the industrial areas developed into towns and cities.

Modernization is a process that indicates the adoption of the modern ways of life and values. It refers to an attempt on the part of the people particularly those who are custom-bound to adapt themselves to the present-time, conditions, needs, styles and ways in general. It indicates a change in people's food habits, dress habits, speaking styles, tastes, choices,

preferences, ideas, values, recreational activities and so on. People in the process of getting modernized give more importance to science and technology. The scientific and technological inventions have modernized societies in various countries. They have brought about remarkable changes in the whole system of social relationship and installed new ideologies in the place of traditional ones.

Development of transport and communication has led to the national and international trade on a large scale. The road transport, the train service, the ships and the airplanes have eased the movement of men and material goods. Post and telegraph, radio and television, newspapers and magazines, telephone and wireless and the like have developed a great deal. The space research and the launching of the satellites for communication purposes have further added to these developments. They have helped the people belonging to different corners of the nation or the world to have regular contacts.

The introduction of the factory system of production has turned the agricultural economy into industrial economy. The industrial or the capitalist economy has divided the social organization into two predominant classes-the capitalist class and the working class. These two classes are always at conflict due to mutually opposite interest. In the course of time an intermediary class called the middle class has evolved. The problem of unemployment is a concomitant feature of the rapid technological advancement. Machines not only provide employment opportunities for men but they also take away the jobs of men through labor saving devices. This results in technological unemployment. The dangerous effect of technology is evident through the modern mode of warfare. The weaponry has brought fears and anxieties to the mankind. They can easily destroy the entire human race reveal how technology could be misused. Thus greater the technological advancement the more risk for the mankind.[10,11]

Conclusions

Technology has profoundly altered our modes of life. Technology has not spared the social institutions of its effects. The institutions of family, religion, morality, marriage, state, property have been altered. Modern technology in taking away industry from the household has radically changed the family organization. Many functions of the family have been taken away by other agencies. Marriage is losing its sanctity. It is treated as a civil contract than a sacred bond. Marriages are becoming more and more unstable. Instances of divorce, desertion and separation are increasing. Technology has elevated the status of women but it has also contributed to the

stresses and strains in the relations between men and women at home. Religion is losing hold over the members. People are becoming more secular, rational and scientific but less religious in their outlook. Inventions and discoveries in science have shaken the foundations of religion. The function of the state or the field of state activity has been widened. Modern technology has made the states to perform such functions as -the protection of the aged, the weaker section and the minorities making provision for education, health care etc. Transportation and communication inventions are leading to a shift of functions from local government to the central government of the whole state. The modern inventions have also strengthened nationalism. The modern governments that rule through the bureaucracy have further impersonalized the human relations. The most striking change in modern times is the change in economic organization. Industry has been taken away from the household and new type of economic organizations have been set up such as factories, stores, banks, corporations etc.[12]

References

- [1] Ahmad, A. (2014). Globalization of Science and Technology through Research and Development. *Open Journal of Social Sciences*, 2, 283-287. doi: 10.4236/jss.2014.24031
- [2] Giddens, A. (2013). Globalization and Social Change. In W. Philip (Ed.). *Sociology* (7th ed., pp. 108-151). Cambridge: Polity Press.
- [3] Donella, M. (2004). *The limits to growth: the 30-year update*. Chelsea Green Publishing Company.
- [4] Edmore, M. (2012). The impact of technology on social change: a sociological perspective. *Journal of Research in Peace, Gender and Development*, 2(11), 226-238.
- [5] Filippetti, A. and Peyrache, A. (2015). Labour Productivity and Technology Gap in European Regions: A Conditional Frontier Approach. *Regional Studies*, 49(4), 532-554. doi: 10.1080/00343404.2013.799768
- [6] Judy, W. (2008). Life in the fast lane? Towards a sociology of technology and time. *The British Journal of Sociology*, 59(1), 59-77.
- [7] Paul, A. (2018). Internet of Things – Will Humans be Replaced or Augmented?. *Marketing Intelligence Review*, 10(2), 42-47. doi: <https://doi.org/10.2478/gfkmir-2018-0017>
- [8] Phillip, K. and Karim, G. (2012). *Technology, Culture, and Society. Emerging Digital Spaces*

- in Contemporary Society (pp.254-276). Palgrave Macmillan Limited.
- [9] Rifkin, J. (1996). A New Social Contract. The Annals of the American Academy of Political and Social Science, 544(3), 16-26. Retrieved from <http://www.jstor.org/sheffield.idm.oclc.org/stable/1047960>
- [10] Rifkin, J. (2010). Are Millennials Cursed?. In These Times, 34(2), 30-31.
- [11] Raiu, S. (2011). Structure and function in primitive society. Revista Romana de Sociologie, 22(3), 392-395.
- [12] Tomory, L. (2016). Technology in the British Industrial Revolution. History Compass, 14(4), 152–167. doi: 10.1111/hic3.12306

