

Marxism and role of technology in the development of society

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Man is a conscious animal. He engages in labour to bear out his material necessities. The use of human knowledge, skill, and tools as a whole in social practice is labour. Marxism believes that the basis of the development of society is labour, and it makes man different from animals. Human needs are incremental; as a result, he must develop his knowledge, skill, and tools as well to help meet his new necessities. All he does this is through social practice. In the language of political economy, human labour, and the tools he utilizes in production as a whole is the productive force. Marxism regards that this very productive force is the motive force of the given society.

At the beginning of savagery, man used to live a natural life, and his body organs were his instruments of labour. In the course of his struggle for survival, his body organs turned insufficient to meet his needs. First of all, man started using hand-projectiles, developed bows and arrows, discovered fire and forged iron by smelting iron ores in due course to fulfil his necessities. Had not the man developed the tools of his labour i.e. technology, perhaps he would have been wandering in jungles and eating roots even today or would have extinct long before. With the growing necessities of mankind and the development of society, the tools and technology too developed further. This very process of development exists today and will do so in the days to come as well. It is, in fact, the manifestation of dialectical unity between the necessity and freedom i.e. the matter and consciousness.

What do knowledge and tools mean? Mao says, "Man's cognition stems from practice. We use the axe and machinery to transform the world, and our cognition, is thus deepened. Tools are extensions of human organs. The axe is an extension of our arms while the telescope is an extension of our eyes. The human body and its organs can all be extended."¹ This is the Marxist outlook as regards cognition and the instruments of labour. Thus, the development of instruments of labour i.e. technology is the development of productive forces. Precisely in this context, Lenin writes, "The development of these natural resources by methods of modern technology will provide the basis for the unprecedented progress of the productive forces."² Hence, Marxism regards that the basis of the development of human society is the development of productive force, which advances with the infinite process of development of man's cognition, and science and technology. Nevertheless, the man's role is decisive in it.

In his famous work, 'The origin of the family, private property and the state power', Engels has stated that the main reason behind the change of ages is related to the development of instruments of labour. He said that bows and arrows that men developed during their natural life of savagery was a milestone marking the entrance into barbarous age. Likewise, the invention of the iron by smelting iron ores had opened the door for humanity to enter into the civilized age from the primitive one. This is the historical materialist view as regards the interrelation between technology and the development of human society.

Over time, the productive forces developed further, and it resulted in considerable growth in production. It not only generated growth but also raised a question of ownership that who is to possess the excess production i.e. the surplus. It was, of course, the manifestation of contradiction between productive forces and the relations of production. Marxism believes that this contradiction is the motive force of human society. Once this contradiction culminates to the level of antagonism, then the old relations of production change and, as a result, it elevates society to a new height. This is how society develops. Right on this question, Marx writes, "At a certain stage of development, the material productive forces of society come into conflict with the existing relations of production or – this merely expresses the same thing in legal terms – with the property relations within the framework of which they have operated hitherto. From forms of development of the productive forces, these relations turn into their fetters. Then begins an era of social revolution. The changes in the economic foundation lead sooner or later to the transformation of the whole immense superstructure."³ What Marxism says about the development of society is this.

In the long course of history, human society has undergone developments in many stages. In the past, the slave-owning society gestated in the womb of primitive society, the feudal society in the womb slave-owning society, and the capitalist society in the womb of feudal society, right from this process. This is the very objective process through which communism, via scientific socialism, will gestate in the womb of capitalism itself. The dialectical and historical materialism teaches us this.

Though the invention of bows and arrows and the iron was not less significant relative to the development that took place in the then primitive society, however, the counting of industrial revolutions in the modern world has begun from the invention of the steam engine. The development of the steam engine had brought about the first industrial revolution. The invention of electricity and steel, the discovery of computer technology, and later the development of robotics and artificial intelligence were respectively the foundations upon which the second, third, and fourth industrial revolutions rested. It is not that the past revolutions had not created any debate at the outset. But, the domain of that discourse was narrow as compared to that of today. The robotics i.e. automation and artificial intelligence, the bases of the fourth industrial revolution, have qualitatively widened the field of this debate. The things that were impossible a few years before have become an objective reality now.

The development of science and technology is not limited to a particular domain. It is multi-dimensional. It extends to a wide range of 3D-Printing, Artificial Intelligence, Robotics, Nano Technology, Automatic Drones and Vehicles, Biotechnology, Neuro-technology, etc. All this has brought about a profound effect on human society today. Some of them are as follows.

An online media published from Hong Kong had publicized news with a heading "12 Chinese robots taking over our everyday jobs"⁴. The news goes one, "Chinese firm halves worker costs by hiring an army of robots to sort out 200,000 packages a day". Two, "Chinese court named as Qiaoxi has introduced robot guides, who can guide where you need to go based on the services you are looking for, have knowledge about court proceedings and litigation, and also are able to provide legal consultation services to visitors". Three, "Roughly a quarter of China's ammunition factories have replaced workers with robots". Four, "A robot named Aidam scored 134 out of 150 in the maths paper for Gaokao, China's college entrance exam, in less than 10 minutes". Five, a "Chinese robot dentist is first to fit implants in patient's mouth without any human involvement". Six, "Xiaoyi, became the first artificial intelligence robot to pass China's medical licensing exam". Seven, "A dumpling factory in China is unstaffed and the robots do all the work 24 hours a day but those dumplings are not as tasty as those prepared by man" etc. All these things were beyond imagination before. They have become an objective reality before our eyes now.

Apart from this, many machines like Hadrian X that can lay 1000 bricks an hour to erect a building wall and Transplanter that can sow paddy seedlings in one Hectare of farmland only in three hours have turned up in daily use. The drones without pilots and vehicles without drivers have been successfully tested, and the developed nations are preparing to work with them soon. Many people are aware that the Government of Saudi Arabia has awarded citizenship to a 'female' robot named Sophia. She can spontaneously and instantaneously reply to questions asked by any person. It is the reality today created by the development of science and technology.

Marx did not have any opportunity to see these developments, but he has dealt with the relation between workers and the automation of machines. He writes, "Once adopted into the production process of capital, the means of labour passes through different metamorphoses, whose culmination is the..... automatic system of machinery... set in motion by an automaton, a moving power that moves itself; this automaton consisting of numerous mechanical and intellectual organs, so that the workers themselves are cast merely as its conscious linkages."⁵ Even in the initial stage of technological development, Marx had correctly anticipated that the development of technology could reach to automatic machines and said it is human consciousness that controls the machine, not the machine that controls man.

The point that draws attention is that the first and the second industrial revolutions had, in due course, created a wide field of employment, although some questions were raised in the beginning. But now, the

robotics and artificial intelligence, on which the fourth industrial revolution rests, have started replacing man by robots from those jobs, the first and the second industrial revolutions had created. And all this has placed man at such a role that he establishes only a conscious linkage with the machines. It has affected not only the manufacturing field but the service sector as well. It is a new phenomenon very different from that of the first and second industrial revolutions.

This phenomenon has created an alarming contradiction. When the robots, which engage in commodity production, do not purchase but the people, who consume, have lost the purchasing power caused by job losses, then what is to do with that commodity? The result it leads to is not only the collapse of capitalism but also the complete dissolution of the human civilization as a whole. This is the principal aspect of the challenge posed by the development of science and technology at present. Also, the bourgeois ecologists have raised fingers that the uncontrolled use of technology to earn profit has been pushing the entire humanity towards destruction. In this context, David Attenborough says, "The collapse of civilization and the natural world is on the horizon"⁶. He said it in the UN Climate Summit organised in Poland among delegates from more than 200 countries, the last October.

In this context, Peter Frase, a left sociologist and a senior journalist, has written a valuable book in 2016. It is – **Four Futures: Life after Capitalism**. Right in the first sentence of the introduction of that book, he inscribes, "Two spectres are haunting Earth in the twenty-first century: the spectres of ecological catastrophe and automation." He concludes the end of capitalism is at close because of these two spectres.

Not only he says the end of capitalism is imminent, but also has anticipated four possible social systems depending upon the then level of commodity production and the policy of its distribution in the post-capitalist society. One, when the production is abundant and the distribution is egalitarian, then the social system will be **Communism**. Two, when the policy of distribution is egalitarian but the production is not abundant, then the social system will be **Socialism**. Three, when production is abundant but the social hierarchy does not change, then social system will be **Rentism**. Four, when the commodity production is scarce and the class hierarchy also does not change, then a tiny section of the privileged elite class will resort to exterminate the entire jobless and 'useless' people to make their future unopposed forever. He has termed it **Exterminism**. The four possibilities he has anticipated in the post-capitalist era are not merely the outcome of his subjective assumption, there is an objective basis to arrive at this conclusion.

The effects of the development of science and technology are rampantly visible everywhere. It has come with a sharp debate in the world. The angles of deliberation are different, yet the discourse is piercing and expressive. This debate as a whole has divided people into two main streams. They are – the status quo bourgeois stream and the pro-change proletarian stream. They are as follows.

First of all, let us talk about the status quo bourgeois stream. Mainly the working-class people who stand by this stream think that the robotics and artificial intelligence may put at risk the opportunity of jobs and, as a consequence, may bring about an existential threat to humanity itself. Tom Watson, a columnist has published an article headed "When robots do all the work, how will people live?"⁷ Likewise, a report prepared by McKinsey and Company writes, the "Robot automation will take 800 million jobs by 2030."⁸ Wall Street Journal writes, "Half of Japan's working population could be replaced by robots or artificial-intelligence programs within the next 10 to 20 years, Nomura Research Institute said in a report released Wednesday."⁹ In the same way, Dr. Yuval Noah Harari, a famous historian, and professor of the Hebrew University Israel states the "Artificial intelligence and automation will create a 'global useless class'."¹⁰ The working-class people that side with this stream seem to be more apprehensive because they see their jobs are lost to robots but don't see any alternative to get rid of this problem.

The capitalists and their institutions also have their say on the role of automation and AI as well. They seem happy with this. Tom Watson writes, "The Bank of America has recently claimed that automated systems will be doing nearly half of all manufacturing jobs within a generation – saving an astonishing \$9 trillion in labour costs"¹¹. Likewise, the PwC report proudly writes, "AI will contribute \$15.7 trillion to the global economy in 2030, more than the current output of China and India combined"¹². All this shows

the severity of the upcoming situation, the fourth industrial revolution is leading to. One must not take it casually as before.

In contrast, responding to a question – how can we solve the problems of unemployment that automation has caused – Bill Gates, one of the wealthiest persons of the world, says, "The robot that takes your job should pay taxes."¹³ Besides this, he signalled that the tax should compensate those persons, who lose their jobs to robots, and those who need it. The capitalist class, who extracts extra surplus-value by using technology, is very much content with the development of AI and robotics.

Now let us talk about the pro-change proletarian stream. Those, who call themselves a communist, claim to represent this stream. However, all the wings under this stream do not have a common position vis-à-vis the possibilities and challenges caused by the development of technology. They have different trends, as follows.

First, it is a trend that claims to be proletarian but represents the bourgeois trend. It is the right revisionist trend. They seem anxious about the challenges created by robotics and AI, but they neither have a clear idea of nor have any program to solving the problems correctly. In essence, this trend does not have any fundamental difference with the bourgeois stream, but trails behind them.

Second, it is a conservative trend that claims to be revolutionary. The followers of this trend agree that technology comes with new possibilities and challenges. They do not think necessary to go deep into the problem. They recall the precedent of the past that the Luddite rebels, in the beginning, had broken machine-run handlooms for their jobs were at risk. But, when the machines helped to create more jobs later, they were happy. They take it casually as if it does not have much to do with revolution. They do not see any role of technological development in deciding ideological and political line, strategy, and the tactic of the communist party. They believe what they understood yesterday is correct today. Thus, they fall prey to subjectivism in analysing the objective condition of the country and in sorting out party policy. In essence, this trend grips revolution dogmatically and cannot develop it dialectically.

Third, it is a trend that places technology at the fore and pushes Marxism-Leninism-Maoism aside in the pretext of creatively analysing the specific objective condition created by technological development. The apologists of this trend believe that man's role in production has been plummeting because technology has become the main productive force in society. According to them, anyone can make use of science and technology as per his necessity because it is a non-class thing like nature. They add, regardless of the classes he comes from, everyone can entertain equal rights with science and technology as the man did with nature in the early days of primitive society. They argue no capitalist state power can control science and technology because it is the knowledge any person can use it. By so saying, they say that class struggle is no more principal aspect in the present-day society.

Right in this context, a left intellectual Ramesh Sunuwar writes, "As a result of the revolutionary change, the revolution, which the science-technology has brought in the field of production, it is possible that the entire problems and conflicts that emerge from the lack of necessary means in the social life are going to end."¹⁴ It is a ridiculous argument. The concept that the development of science and technology solves the problem of class conflict is related to postmodernism and post-Marxism, not Marxism. The fact is that the class antagonism between the 'global useless class' along with the entire working-class people that are waiting to lose their jobs to automation, at one pole, and the capitalist ruling class that entertains monopoly in science and technology, at the other, is sure to sharpen further in the days ahead. Despite this fact, why does he make such a ridiculous logic? It is a severe deviation from Marxism in the pretext of creative development.

Their reasoning that the development of science and technology has increased the scope of economic production is correct. It paves the way for building abundant collective wealth, which is a necessary prerequisite to build communism. But, their doctrine that "The productive force of the present epoch is science-technology and so the upcoming socialism will base on science-technology"¹⁵ does not have any

relation with Marxism. It is technologism. In the pretext of creatively developing Marxism, this way of thinking is pushing the working-class people away from Marxism and proletarian revolutionary stance. Unsurprisingly, this trend has thus become an honest apologist of the bourgeoisie.

Fourth, it is a revolutionary trend based on Marxism. The revolutionaries with this trend believe that the development of science and technology is the outcome of comprehensive knowledge that humanity has ever achieved in the course of class struggle, the struggle for production, and scientific experiments. It is, in fact, the development of productive force, which has the strength to elevate the human civilization to a new height, never attained before. The unprecedented development of science and technology has come with great possibilities and formidable challenges. The communist revolutionaries believe that they need to develop strategies and tactics of the proletarian revolution to change the possibility into reality and get rid of the challenges. Hence, a genuine communist grasps it as mentioned below.

The development of AI and automation is, of course, the development of productive force, which is now confronting the prevailing capitalist relations of production. The capitalists always emphasize developing and using technology so that it helps them extract more surplus value from their investment. However, it causes to shrink the scope of employment, grow even extensively than before the number of unemployed and semi-employed people, the flock of 'global useless class' to paraphrase Harari, and thus, it widens the economic gap between the rich and poor further. All this sharpens further the contradiction between productive forces and the relations of production i.e. the contradiction between capital and labour.

The development of science and technology has also contributed to sharpening of other contradictions of the world as well. In the present context, when US imperialism has fallen back in global competition and neoliberalism too has failed, it is now attempting to regain world hegemony with a slogan "Make America Great Again". The superpowers, mainly Russia and China, are cautiously looking at the US. The trade war is intensifying between the US and China. It has accelerated the process of polarisation among imperialist powers, and the inter-imperialist contradiction is sharpening as well. Some people even think that this state of affairs can go up to catastrophic Third World War, fought with nuclear weapons. The contradiction between imperialism and the oppressed nations and people, the principal contradiction of the world, is also intensifying. The development of unprecedented productive force brought about by new inventions in science and technology is the root cause behind the intensification of all the fundamental contradictions of the world at present. One must not lose sight of this fact.

The contradiction between the newly developed productive forces and the existing relations of production is sure to intensify further, in the days to come. The imperialist ruling classes will attempt to mitigate this contradiction by way of introducing some cosmetic changes in their regular politico-economic policies. Any reform is not likely to alleviate this contradiction even for a brief period in the given situation. The imperialist world order, which fathered this contradiction, cannot resolve either. The imperialist system is getting entangled in such contradictions that they cannot be mitigated even temporarily by any peaceful means. The days ahead will be the days of chaos and rebellion all across the world. The signs of this are already visible on the horizon.

In this situation, there are only three possibilities before the world ahead. They are – one, the emergence of a wave of the proletarian revolution in most parts of the world two, the catastrophic Third World War, and three, the spontaneous but speedy dissolution of the human civilization itself. The first one opens the way forward to replacing the prevalent capitalist relations of production and establishing the socialist one in its place. This is the main trend today. The second one destroys the achievements humanity has ever attained. And, when both of them do not take place, then the third one comes into play. It will result in worldwide unemployment, scarcity, starvation, 'illegal' immigration, ecological disasters, communal and religious clashes, regional wars, and the likes. Eventually, all this will gradually lead the entire human civilization to an end. In whichever way capitalism collapses, it correctly justifies what Marx and Engels had meant in the Communist Manifesto by writing, "Whatever the capitalists produce are all their grave-diggers". In this way, the communist revolutionaries, the proletariat, and the entire oppressed classes all

across the world have to consciously strive hard to catch the first possibility; there is no more choice. The success of socialist revolutions will not only safeguard the human civilization but also open the door towards a prosperous and egalitarian human society, the communism.

At last, as a result of the sharpening of contradiction between the productive forces and capitalist relations of production, the world is now heading towards a great upheaval. In the given situation, the communist revolutionaries have to work for the preparation of the world proletarian revolution not only to liberate the oppressed classes from the clutches of imperialism but also to safeguard the human civilization. Science and technology do not have any class; they serve the class that leads them. After the success of proletarian revolution the vanguard of the proletariat can utilize the development of science and technology for the collective benefit of the proletariat, oppressed classes, and the masses of the people. In that situation, the science and technology will not be a curse that snatches human jobs but will be a boon that serves the human civilization, creates new jobs, prevents ecological disasters, reduces working hour of the labours, provides employment to the 'global useless class' etc. Thus, the development of science and technology is firstly, preparing an objective ground, favourable for the world proletarian revolution, and secondly, is bringing communism closer by amazingly developing productive forces, which is necessary to create abundant collective wealth, a prerequisite for world communism.

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