ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 12| December 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

INTERPRETATION AND UNDERSTANDING OF MARX'S THOUGHT ON THE DIVISION OF LABOR IN THE ARTIFICIAL INTELLIGENCE ERA

Ye Luyang, Chen Junjie
School of Marxism, Shenzhen University, Shenzhen, Guangdong, China

Article DOI: https://doi.org/10.36713/epra19312
DOI No: 10.36713/epra19312

ABSTRACT

Marx's thought on the division of labor in the era of artificial intelligence requires new interpretation and understanding. The development of artificial intelligence technology has profoundly changed the mode and nature of the division of labor, leading to the disappearance of traditional labor methods and the lowering of occupational barriers, providing a realistic path for the "elimination of division of labor" proposed by Marx. Through the analysis of the concept and historical evolution of the division of labor, drawing on Marx's thought on the division of labor, this article explores in depth the refinement and transformation of the division of labor in the era of artificial intelligence. The article argues that the development of artificial intelligence technology helps to solve the problems brought about by the division of labor in the industrial era, promote the reform of the social division of labor, and promote the free and comprehensive development of human beings.

KEYWORDS: *Artificial Intelligence, Marx; Division of Labor, Labor Force, Productivity*

1. INTRODUCTION

The development of artificial intelligence technology has given a new perspective on the interpretation and understanding of Marx's thought on the division of labor. In works such as *Capital*, Marx elaborated on the impact of the division of labor on social production and the labor process, arguing that the division of labor leads to the specialization of labor, which in turn leads to restrictions and alienation of people. With the rapid development of artificial intelligence technology, the mode and nature of the division of labor is undergoing profound changes. The gradual disappearance of traditional labor methods and the continuous lowering of occupational barriers will make the division of labor present a new situation. Artificial intelligence is changing the labor process in various industries, not only greatly improving productivity and production efficiency, but also providing a realistic path for the "elimination of division of labor" proposed by Marx. Marx's thought on the division of labor should be given new understanding and interpretation in the era of artificial intelligence.

2. THE CONCEPT AND HISTORICAL EVOLUTION OF DIVISION OF LABOR

The division of labor has been a key factor in shaping human societies and economies, adapting over time to changes in productivity and social needs. To understand its significance, it is essential to explore its conceptual roots and historical evolution.

2.1 The Concept of Division of Labor

Division of labor refers to the division and allocation of labor. "In a sense, division of labor is simply the coexistence of labor, that is, the coexistence of different kinds of labor expressed in different kinds of products (or, more precisely, commodities)" (Marx & Engels, 2013, p. 245). The English term "division of labour" is directly translated as the division of labor. "Division" is derived from the Latin "divisionem", meaning the act of dividing things into parts or shares, the part separated or distinguished from the rest. The word "labour" is derived from the Latin "labor", meaning "toil, effort; fatigue; a work, the product of labor". And starting from 1839, "labour" also refers to "the working class as a group of laborers". In the English context, the term "division of labour" first appeared in the work *The Wealth of Nations* published by the classical economist Adam Smith in 1776. Smith emphasized the importance of specialized division of labor in improving production efficiency and promoting economic development at the beginning of the book, and since then, the division of labor has become a clear concept in economics.

The development of human society depends on the continuous development of material production activities. When the scale of production activities is large enough to require more and more people to participate, the labor process cannot be separated from the socialized combination mode. Division of labor is a socialized combination mode that improves production efficiency through specialization, that is, "the cooperation of many workers engaged in different parts of the production of the same commodity under the command of one capital" (Marx & Engels, 1998, p. 301). The

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 12| December 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

division of labor is reflected in the division of different types of labor and work. It was initially manifested as different groups or individuals undertaking specific work tasks, that is, the division of labor at the individual level. As the scale of labor continues to expand, the division of labor is also manifested as the differentiation of work areas between different industries and departments, such as agriculture, industry and other different industrial fields. The division of labor is an important phenomenon in social and economic activities, and it also presents different forms of expression in different historical periods and social environments.

2.2 The Origin of the Concept of Division of Labor

The use of the concept of division of labor has a long history. As early as ancient Greece, Democritus (Demokritos) recognized the inherent connection between the division of labor and the distribution of resources, and was the first scholar to point out that resource allocation can bring superior efficiency. He believed that the division of labor and resource allocation can provide stronger incentives for productive activities (Gordon, 1975). Xenophon similarly believed that the more refined and specialized the division of labor, the higher the efficiency of production and the better the quality of products. He pointed out: "Spending all one's time and energy doing a small thing, one must be able to do it best" (Xenophon, 2007, p. 421). Plato was a representative figure of the division of labor thought in ancient Greece. He believed that in order to meet people's different needs, people had to engage in specialized industries to produce things, clothes, build shelters, etc., and in order to facilitate their mutual assistance, people gathered together, forming the embryonic form of the city. Moreover, Plato combined people's talents with the division of labor, believing that people are born with different talents and are good at doing different jobs. He proposed: "As long as each person does the work suitable for his character at the appropriate time and gives up other things, specializing in one line, then everything will be produced in large quantities and well" (Plato, 2023, p. 60). Therefore, in Plato's view, the division of labor originated from the different needs and talents of individuals, emphasizing the positive role of the division of labor in improving production efficiency and urbanization. Plato's discussion of the division of labor had a significant influence on later scholars. Marx once pointed out: "Plato's exposition in the *Republic* was the direct basis and starting point for some British writers who wrote on the issue of division of labor after Petty but before Adam Smith" (Marx & Engels, 1998, p. 321).

At the same time in China, philosophers also recognized the phenomenon of division of labor improving production efficiency. In the early Spring and Autumn period, Guan Zhong, a famous politician and philosopher of the Qi state, proposed in a dialogue with Duke Huan of Qi: "The scholars, farmers, artisans, and merchants are the four pillars of the country", "Therefore, the ancient kings enabled the four groups of farmers, scholars, artisans, and merchants to exchange their abilities and work, and the benefits of the whole year had no way to surpass each other" (Jiang, 2009, p. 178), dividing the people into four groups: scholars, farmers, artisans and merchants, and emphasizing the exchange between the four groups, so that each industry is relatively stable and the country can be prosperous and the people at peace. This shows that Guan Zhong had already recognized the role of the division of labor in promoting the social economy and the importance of exchange between different divisions of labor. The famous philosopher Mencius of the Warring States period once proposed: "There are affairs of great men, and there are affairs of small men. Moreover, the needs of one person's body are provided by the work of a hundred craftsmen. If one must make things for oneself before using them, it is to lead the world on the road" (Meng & Meng, 2021, p. 101). That is to say, the needs of one person are provided by the work of a hundred craftsmen, and one person cannot be self-sufficient for his own needs. If one forces oneself to do so, one must be exhausted. From this, the concept of division of labor of "those who labor with their minds govern others, those who labor with their strength are governed by others" is derived.

The classical political economist Adam Smith was the first scholar to systematically analyze the systematic logic, causes and modes of operation of the division of labor, and the first scholar to discuss the division of labor in the category of political economy. He formally established the division of labor as a basic category of political economy. First, Smith believed that the reason for the division of labor was exchange, and believed that exchange was a basic characteristic of human beings, and that this basic characteristic was not possessed by any other animal. The division of labor was generated precisely because of the need for exchange. However, Smith did not give a clear answer to the reason for the emergence of exchange, but only regarded it as a unique nature of human beings. In this regard, Smith's thought on the division of labor had an obvious idealistic color. Second, Adam Smith formally proposed that the division of labor is an important way to promote the progress of social productivity, and pointed out three reasons why the division of labor improves labor productivity. Moreover, Smith's discussion of certain aspects of the division of labor was essentially different from that of Plato. Unlike Plato's view that the diversity of people's talents leads to the division of labor, Smith believed that the differences in people's talents are much smaller than we realize, and it is precisely the division of labor that leads to the differentiation of talents and abilities among individuals. This also led Smith to further propose the negative effects of the division of labor. While affirming that the division of labor improves labor productivity, he also pointed out: "Almost every kind of craftsman, in their special business, often develops special diseases due to overwork" (Smith, 1972, p. 35). Because most of human intelligence is formed from daily occupations, and the division of labor limits people to fixed positions, making it difficult for them to exert their talents, they will eventually become "the most stupid and ignorant people" (Smith, 1972, p. 362).

2.3 The Evolutionary Logic of Division of Labor

Human civilization is essentially built on the continuous development of production activities (Lü, Liu, & Song, 2017, p.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 12| December 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

1), and material production practice is also the most basic practice of human beings. With the expansion and development of the scale of social production, the importance of the division of labor began to gradually emerge. The division of labor changes with the development and changes of the times and the innovation of technology, and human history develops in the continuous evolution of the division of labor.

"Division of labor" plays a very critical role in the development of economic systems and organizations. Friedrich Engels stated in *The Origin of the Family, Private Property and the State* that three major social divisions of labor have occurred in human history. The first major social division of labor occurred in the late primitive society, when nomadic tribes separated from savage groups, resulting in the separation of animal husbandry and agriculture. The second major social division of labor was marked by the separation of handicrafts from agriculture, with handicrafts becoming an independent production sector. The third major social division of labor refers to the first appearance in society of a class that does not engage in production but only in the exchange of products - merchants. After three major social divisions of labor, the division of labor model in the economic and social fields of human civilization was basically formed (Zhang, 2024). Before the first major social division of labor, human society mainly relied on activities such as hunting and gathering to maintain survival, and there was almost no surplus labor. Later, humans began to domesticate and breed livestock, enabling nomadic tribes to break away from savage groups and give rise to specialized animal husbandry. At the same time, agricultural technology began to develop. The invention of an agricultural production method centered on planting greatly improved agricultural production efficiency. With the use of metal tools, especially bronze and iron tools, human labor methods were enriched, the objects of labor were expanded, and the production efficiency of handicrafts was improved. Moreover, the use of iron tools promoted the development of agriculture and laid the material foundation for the prosperity of handicrafts, leading to the separation of handicrafts from agriculture, and the second major social division of labor was thus formed. After the separation of handicrafts and agriculture, laborers had to exchange their products with each other and exchange what they needed. The development of transportation and navigation technology at the same time greatly increased the transportation range and speed of commodities, and merchants began to appear as an independent class. It can be seen that the division of labor and the stages of the division of labor depend on the level of development of productivity at that time (Marx & Engels, 2009, p. 587). Looking at the three major social divisions of labor, the changes in the basic division of labor model in society are all based on the contradictions between social productivity and relations of production caused by the improvement of technical means. "The driving force for the evolution of the division of labor is the development of new material resources, the birth and death of new and old market scales, and the oscillation of structural transformation under external shocks caused by scientific and technological inventions" (Chen, 2004, p. 2).

First, the improvement of technical means most intuitively improves production technology and production tools, making human labor methods, labor scope and labor efficiency all improved, and social productivity greatly improved. The improvement of production technology and production tools promotes the improvement of production efficiency and increases the time that humans can freely dispose of. At the same time, technological progress deepens the degree of human practice in the unknown world. Previously undeveloped material resources are utilized, the scope of labor is expanded, the objects of labor are increased, and the division of labor model also changes accordingly. Second, the development of social productivity puts forward new requirements for social relations of production, and in turn requires changes in the division of labor model. Productivity determines the relations of production and institutional structure through the division of labor organization within society (Xie & Cheng, 2016). Third, changes in social relations of production in turn react to productivity. The result of the movement of this basic contradiction between productivity and relations of production is the generation of new relations of production to adapt to new productivity. And new relations of production will also have a certain impact on the division of labor model. After the completion of the three major social divisions of labor, human society transitioned from the public ownership of primitive society to a private ownership society, generating new social classes and new social modes of production to adapt to the development of productivity. In ancient Sumerian culture, the concept and implementation of the division of labor, along with the rise of trade and economic interdependence, promoted the growth of total output. The rise of agriculture and animal husbandry brought about by the Neolithic Revolution provided a more reliable and abundant food supply, which in turn promoted population growth and labor specialization, giving rise to new classes of artisans, warriors and elites.

Therefore, from the perspective of the basic contradiction between productivity and relations of production, exploring the basic logic and laws of the evolution of the division of labor, it can be seen that the revolution of human production technology is often accompanied by a substantial increase in social productivity. The improvement of social productivity will inevitably put forward new requirements for relations of production, and the division of labor model of human society will inevitably change accordingly. In general, whether it is technological innovation or social institutional change, they all stem from the pursuit of improving productivity and production efficiency in human society, and from the basic contradiction between productivity and relations of production. As the driving force of economic interdependence and trade, the division of labor promotes the development of specialization, improves productivity, and promotes social and economic progress. Its evolutionary logic reflects the continuous pursuit of efficiency and coordination in human society, and also demonstrates the importance and universality of the division of labor in multiple fields.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 12| December 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

3. THE TIMELINESS AND CRITICALITY OF MARX'S THOUGHT ON THE DIVISION OF LABOR

Marx's critique of the division of labor reflects both its contributions to productivity and its role in human alienation. This duality highlights the need to examine its development during the industrial era and its broader societal impact.

3.1 The Division of Labor in the Industrial Era

The transition of human society from primitive society and agricultural society to industrial civilization society is related to the social conditions and era conditions at that time, and is a historical process with complex influencing factors. Before the advent of the industrial era, the division of labor model dominated by agriculture experienced a relatively long historical stage in the long history of mankind. From the slash-and-burn cultivation of primitive society to the men plowing and women weaving of agricultural society, although the labor tools and social structure of the division of labor model may be different, fundamentally, they are all labor allocations based on natural factors such as gender, age and geography. The result of this division of labor is the formation of a self-sufficient production model based on the family unit. Although this production model still drove the progress of productivity, it is undeniable that this production model has natural disadvantages. It cannot meet the expanded reproduction of the commodity economy, nor can it meet the requirements of productivity development to expand the market scope. At the same time, due to the underdeveloped technological means and practical conditions at that time, social production and exchange always remained within a relatively small scope. Therefore, agricultural production was unable to achieve a qualitative breakthrough for a relatively long historical stage, and its division of labor model also remained at a relatively simple stage.

In the 18th century, the outbreak of the Industrial Revolution sounded the horn for human society to enter the industrial era, and the invention of the steam engine made social productivity grow exponentially. Factories sprang up like bamboo shoots after a spring rain, and large-scale mechanized production replaced traditional manual labor. The agricultural production model originally based on the family unit was quickly broken, and a large number of farmers poured into cities, becoming factory workers, and a new division of labor model emerged. On the one hand, due to the large-scale use of machines, social productivity was greatly improved, the scale of production was unprecedented, meeting the growing market demand, and the different production sectors of the whole society exchanged what they needed and complemented each other, promoting the improvement of social production efficiency. On the other hand, the division of labor within the factory was no longer based solely on natural factors for labor allocation, but was finely divided according to production processes and professional skills. A complex production line could be broken down into dozens or even hundreds of different processes, with each worker only needing to focus on one specific link, thus greatly improving production efficiency and promoting the development of productivity.

Marx believed that the social division of labor is inextricably linked to social productivity. "The level of development of a nation's productivity is most clearly manifested in the degree of development of that nation's division of labor" (Marx & Engels, 1960, p. 24). The division of labor has the attribute of productivity. From primitive society to agricultural society and then to industrial civilization society, the change of social division of labor originates from the need to improve productivity and labor efficiency. In the opening chapter of *The Wealth of Nations*, Adam Smith proposed that "the greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied, seem to have been the effects of the division of labour" (Smith, 1972, p. 2), fully affirming the role of the division of labor in promoting labor efficiency. Marx believed that the division of labor is not only an economic and ethical phenomenon that improves labor productivity and promotes the development of social communities, but also more profoundly reflects the power relations between people in capitalist society. Marx pointed out that in capitalist society, the productivity brought about by the division of labor actually belongs to the capitalists rather than the laborers, leading to the coexistence of wealth accumulation and poverty. In addition, the division of labor also leads to the alienation of labor. The labor results of the workers are occupied by the capitalists, and the workers themselves are reduced to slaves of capital. Marx emphasized that the division of labor in capitalist society cannot achieve the organic unity of individual special interests and universal interests of society, but instead intensifies social contradictions and class opposition. Starting from the power domination relations behind the real connections between people and materials, he revealed the domination of labor by capital and the domination of the propertied by the proletariat in capitalist society (Zhang, 2019).

3.2 Critique of the Division of Labor

In the *Economic and Philosophical Manuscripts of 1844*, Marx discussed the duality of the division of labor, proposing that "the division of labor increases the productive power of labour, the wealth of society, and the many-sided development of society, but at the same time it makes the worker fall into poverty until he becomes a machine" (Marx & Engels, 1998, p. 305). On the one hand, Marx fully affirmed the role of the division of labor in improving social productivity and promotion. He believed that when society is in a state of wealth growth, two situations must occur: one is the accumulation of a large amount of labor, and the other is the mutual promotion of capital and the division of labor. On the other hand, with the accumulation of capital and the expansion of the division of labor, workers become more and more dependent on mechanized and one-sided labor, engaging in fixed and subdivided work, which directly leads to the workers becoming "machines" in both spirit and body, intensifying the confrontation between workers and even the confrontation between machines and people. In the *Manuscripts*, Marx's most

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 12| December 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

important discussion is undoubtedly the issue of alienation, and it was when exploring the root causes of alienated labor that "division of labor" gradually entered Marx's research scope. Moreover, Marx also analyzed the externalization of the two human activities and essential powers of division of labor and exchange. He linked the division of labor with private ownership and private property, proposing that economists inadvertently spoke of scientific contradictions while boasting of their own scientificity. Although Marx did not elaborate on the logical relationship between division of labor and exchange in the *Manuscripts*, he also clearly pointed out that "the division of labor and exchange are the forms of private property, a situation that precisely contains a double proof: on the one hand, human life once needed private property for its own realization; on the other hand, human life now needs to abolish private property" (Marx & Engels, 2002). From this argument, it can be seen that Marx's research focus on political economy still lies in people, laying the foundation for Marx's proposal to "abolish the division of labor" in order to realize the free and comprehensive development of people in his later works.

In *The German Ideology*, Marx answered the question of the root causes of alienated labor, shifting his research focus from the concept of labor alienation to the division of labor, shifting the analysis of the relationship between workers and labor to the changes in social forms in the entire process of social development. "The mark of this shift is to elevate the economic concept of 'division of labor' to the first place, elevating it to the position originally occupied by the philosophical concept of 'labor alienation'" (Han & Qin, 1987). Starting from the division of labor, Marx further revealed the relationship between the division of labor and private ownership. He believed that different stages of the division of labor are different forms of ownership. On this basis, he further clarified a series of historical materialist views such as the contradictory relationship between productivity and relations of production. Étienne Balibar believed that Marx developed the model of the division of labor to the greatest extent in *The German Ideology*, "finding another path" (Balibar, 2007, p. 46). Secondly, Marx examined the relationship between mental production and the division of labor. He proposed that it is precisely due to the emergence of a real division of labor, that is, the separation of mental labor and material labor, that consciousness begins to have relative independence, but its origin is still material production activities. Moreover, Marx further refined the study of "division of labor", starting from analyzing the activities and product distribution of the division of labor, concluding that the result produced by the activities of the division of labor is alienated labor, and the result produced by the distribution of products of the division of labor is private property. Therefore, the issue of eliminating private property and alienated labor turns into the issue of eliminating the division of labor. "The above three factors, namely productive forces, social conditions and consciousness, may and will necessarily come into contradiction with each other, because the division of labor not only makes it possible for material activity and mental activity, enjoyment and labor, production and consumption to be undertaken by various different individuals, but also makes it a reality, and to prevent these three factors from contradicting each other, division of labor must be abolished" (Marx & Engels, 1960, p. 36).

However, although Marx clearly proposed the argument of abolishing the division of labor, he did not explain what kind of division of labor should be abolished and how to abolish the division of labor in *The German Ideology*, or in other words, Marx did not further distinguish the division of labor at this time. This problem was not solved until *Capital*. "A. Smith did not distinguish between two meanings of the division of labor. Therefore, the latter type of division of labor does not seem to be something unique to capitalist production in his view" (Marx & Engels, 1998, p. 305). In *Capital*, Marx clearly distinguished the division of labor into "two types of division of labor", namely "division of labor within society" and "division of labor within the workshop". He believed that "the first type of division of labor is the division of social labor into different labor sectors; the second type of division of labor is the division of labor that occurs in the production of a commodity, and is therefore not the division of labor within society, but the social division of labor within the same factory" (Marx & Engels, 1998, p. 305). In Marx's view, these two types of division of labor are completely different. The division of labor within society and the division of labor within the factory are significantly different in various aspects such as the nature of the products produced and the relations of production. In general, "the division of labor within the whole society, whether mediated by commodity exchange or not, is common to various socio-economic formations, while the division of labor in the workshop is a unique creation of the capitalist mode of production". The first type of division of labor, that is, the division of labor within society, is an inevitable phenomenon in the development process of human society, and it develops continuously with the improvement of social production efficiency and the degree of socialization. It is a spontaneous and free form of division of labor within the whole society. The second type of division of labor, that is, the division of labor within the factory, is a division of labor unique to the conditions of capitalist private ownership, and is a "division of labor within the factory that characterizes capitalist production, completely eliminates the independence of the workers, and makes the workers a part of a social institution under the command of capital" (Marx & Engels, 1998, p. 309). It is precisely because of this form of division of labor that people are limited to fixed jobs, hindering the free and comprehensive development of people. It can be seen that the essence of Marx's proposal to abolish the division of labor is to abolish the second type of division of labor, that is, the division of labor within the factory under the conditions of capitalist private ownership, and to abolish the division of labor that hinders the free and comprehensive development of people.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 12| December 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

4. FURTHER REFINEMENT AND TRANSFORMATION OF THE DIVISION OF LABOR IN THE ERA OF ARTIFICIAL INTELLIGENCE

Artificial intelligence is transforming the division of labor, reshaping traditional roles and creating new opportunities. This shift requires a closer look at how labor structures adapt to these technological advancements.

4.1 Reconstruction of the Division of Labor Model

Since the Industrial Revolution opened the precedent of machines replacing human labor, the impact of artificial intelligence on human labor patterns and division of labor methods has always been a hot topic. Against the background of the rapid development of artificial intelligence technology, artificial intelligence can replace almost all necessary physical labor and the vast majority of mental labor. As the subject of labor, humans' material labor and mental labor exhibit characteristics different from any time in the past. Artificial intelligence breaks the limitations of traditional division of labor on laborers, reconstructs material labor and mental labor, and changes the behavioral patterns of labor, providing a realistic path for the elimination of the old division of labor and the promotion of free and comprehensive human development.

On the one hand, intelligent technology tends to unify material labor and mental labor. Marx proposed that the division of labor only begins to be a real division of labor from the time when material labor and mental labor are separated (Marx & Engels, 1960, p. 35). Alfred Sohn-Rethel pointed out that the separation of material labor and mental labor is an alienation phenomenon, "existing throughout the entire history of class society and economic exploitation" (Sohn-Rethel, 1989). The separation of material labor and mental labor makes the laborers engaged in material labor alienated into objects, and their mental labor is not required nor can it be reflected in the entire production process, while the laborers who are completely engaged in mental labor are an extreme phenomenon in the division of labor, and mental labor in a pure sense does not exist. The widespread application of artificial intelligence technology has enabled laborers who are limited to repetitive and mechanical labor positions to be released and engage in multi-disciplinary undertakings and work that integrate material labor and mental labor. They are not only producers of products, but also creators and applicators of technology. Moreover, unlike previous technological means, artificial intelligence is able to mimic human thinking, and it can possess the attributes of human labor, becoming an integration of labor tools and laborers (Ouyang, 2019). Therefore, in the process of using artificial intelligence technology for labor, it is also a vivid embodiment of the integration of mental labor into the process of material labor.

On the other hand, artificial intelligence causes changes in the structure of the division of labor. In the history of human social development, the division of labor is a model of "specialized" work generated to pursue the improvement of productivity and production efficiency, allowing different people to specialize in fixed jobs in order to achieve the goal of improving social production efficiency. This model reached its peak in the industrial era. With the emergence of the factory system and the formation of refined division of labor, the improvement of production efficiency and the free and comprehensive development of people came into conflict. Laborers were bound in a complex social division of labor system, engaging in mechanized work. Artificial intelligence has caused changes in the structure of the entire social division of labor. With the progress of science and technology and the deepening of human practice, the complexity and diversity of problems arising in various fields have also deepened. In order to meet the multi-faceted needs of human social development, laborers in different fields need to break barriers and form a multi-field, all-round division of labor structure. Moreover, the development of artificial intelligence technology has greatly strengthened the connection between the labor process and laborers in different labor fields, subverting the linear connection of materials and information in the past production process, and turning to a more complex and diverse network connection structure. The objects, content and forms of labor all present more diversified characteristics. Each labor process and each laborer are connected to different labor processes and laborers, and even to labor processes and laborers in different production fields.

4.2 Skill Transformation of the Division of Labor

Looking at the history of each improvement in technological means, they will all cause significant changes in labor positions and changes in labor market demand. While replacing some old occupations, technological means will also give rise to new labor occupations. Artificial intelligence is fully entering and reshaping production and living spaces, stimulating the transformation of the labor market structure by rewarding with greatly improved production efficiency, putting forward new requirements for the employment market. General Secretary Xi Jinping also specifically mentioned in his congratulatory letter to the World Artificial Intelligence Conference in 2018 that we should properly handle the new issues raised by artificial intelligence in terms of employment.

The impact of artificial intelligence on the labor market is mainly reflected in the decline of old occupations and the emergence of new occupations. Artificial intelligence can use tool carriers to exert efficiency far exceeding manual labor in the production process, and its impact is particularly evident in the manufacturing industry. Industrial robots and automated production lines and other intelligent technologies have profoundly changed the production structure of the manufacturing industry. A large number of repetitive and mechanical jobs have been replaced by intelligent technologies, causing the disappearance of a large number of labor positions established since the industrial production model, and Acemoglu and Restrepo studied the impact of industrial robots on the US labor market. The study shows that for every additional robot per

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 12| December 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

thousand workers, the employment population ratio decreases by 0.2%, and it is inferred that the number of manufacturing jobs lost due to the use of industrial robots from 1990-2007 reached 360,000-670,000 (Acemoglu & Restrepo, 2020). Moreover, with the rapid development of artificial intelligence technology, the number of labor positions that it can replace will inevitably increase, and it will inevitably affect other industries. The rise of intelligent technologies such as Xiaomi's unmanned processing plants and Radish Run's unmanned vehicles has proven that more and more labor fields and labor positions are being replaced by artificial intelligence. However, while causing the decline of some old occupations, artificial intelligence will also cause increased demand in certain labor fields, such as personal care, housekeeping, catering services and other service industries. Automation and artificial intelligence technology currently still cannot replace their main work, and "manual" tasks require people to complete them with physical flexibility or communication (Qiu, Wu, & Yang, 2019). Moreover, the increase in the utilization rate of artificial intelligence will give rise to a large number of labor positions related to artificial intelligence, and the research and development, production, and use of intelligent technology all require a large number of laborers.

To further analyze, the reshaping of the labor market by artificial intelligence is essentially reflected in the characteristics of human-machine cooperation in positions and the bipolarization of employment. On the one hand, changes in the social division of labor model have led to changes in labor position demand, and the labor market in the era of artificial intelligence has put forward a demand for the skill transformation of laborers. While the production and life processes of society are fully entered by artificial intelligence, there is also an urgent need for highly skilled compound talents to participate in the production process. In the mechanized division of labor model in the past, each laborer needed to master fewer production skills, and the subdivision of labor made it only necessary for laborers to meet relatively simple production skills, relying on factory integration to realize the production process. Labor positions in the era of artificial intelligence not only require laborers to have high-level production skills, but also skills that can be well integrated with intelligent technology. On the other hand, the demand for medium-skilled positions has greatly decreased, while the demand for low-skilled and high-skilled labor positions has increased, and the entire labor market shows a trend of bipolarization. Intelligent and automated technologies have largely replaced general procedural jobs, and labor has been squeezed to both ends of the labor market. The number of low-skilled labor positions that require manual completion and high-level compound skilled labor positions closely related to artificial intelligence technology is showing an increasing trend. Laborers need to adapt to the transformation of new work skills in order to better adapt to the labor transformation in the era of artificial intelligence.

5. INTERPRETATION OF MARX'S THOUGHT ON THE DIVISION OF LABOR

Historically, the addition of new disruptive technologies has led to the creation of new production structures, improving the efficiency of utilizing resources to meet new and old social needs (Pérez, 2009). With the rapid development of artificial intelligence technology, the mode and structure of the division of labor have undergone profound changes, forming a new production structure to meet the productivity and production efficiency of social needs in the intelligent era. Marx's thought on the division of labor dialectically divided the division of labor under the capitalist private ownership system into two, proposing the duality of the division of labor in the industrial era, and this contradiction is gradually being resolved under the development of artificial intelligence technology.

The division of labor is a specialized working model formed to pursue the improvement of productivity and production efficiency, and this model reached its peak in the industrial era. Marx affirmed its role in improving social production efficiency, but also pointed out that the division of labor model restricted the free and comprehensive development of human beings. As the core technology of the fourth industrial revolution, artificial intelligence breaks through the traditional division of labor model, releasing laborers from repetitive and mechanical work, enabling laborers to turn to other more creative and comprehensive work fields, while breaking professional barriers and promoting cooperation between industries. This change not only promotes the transformation of laborers from single-skilled workers to multi-skilled compound talents, but also greatly promotes industrial coordination and innovation. The barriers between different labor fields are broken, and with the use of information transmission and production connection of artificial intelligence technology, the professional limitations of the labor field itself are greatly broken through, promoting industrial intersection and coordinated development, greatly improving social productivity and production efficiency.

Furthermore, the restriction of the division of labor model in the industrial era proposed by Marx on the free and comprehensive development of human beings is also being broken, and artificial intelligence provides a realistic path for "eliminating the division of labor". Marx considered the social division of labor from the perspective of private ownership, and clearly pointed out that the division of labor is an important factor in the development of productivity, but the division of labor itself is not the direct cause of the formation of private ownership (Huadeya & Zhu, 2019). On the contrary, it is the division of labor under the factory system of private ownership that is the root cause of human alienation. In the era of artificial intelligence, whether it is its replacement of mechanical labor, or the creation of demand for compound labor, or the increase in free disposable time through greatly improving productivity, they all play a positive role in the free and comprehensive development of human beings. The form of human labor has shifted from forced labor in the past to interest-based labor, from repetitive labor to creative labor, from

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 12| December 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

specialized labor to concurrent labor, from survival labor to experiential labor, from material labor to non-material labor, and labor and leisure are gradually moving from opposition to unity (Gao, 2022).

6. CONCLUSION

The development of social productivity and production efficiency is inevitably complementary to the free and comprehensive development of people. As a working model for pursuing productivity and production efficiency in the development of human history, the division of labor will inevitably evolve with the development of science and technology. What Marx proposed to abolish the division of labor is in fact to abolish the old division of labor and replace it with a new division of labor, promoting the free and comprehensive development of human beings on the basis of developing productivity. Indeed, the application of artificial intelligence technology provides a realistic path for this, containing huge potential for promoting the reform of the social division of labor and promoting human development. However, the benign development of cutting-edge technologies must be accompanied by strict institutional norms and correct value guidance. Although artificial intelligence technology has the technical potential to promote the free and comprehensive development of the entire human society, we still need to be vigilant about the problems in its development process and avoid it becoming another tool for human alienation.

FUNDING PROJECT

Ministry of Education Humanities and Social Sciences Research Project: "Research on the Hermeneutics of Artificial Intelligence Reliability" (Project Approval Number: 23YJC720020)

AUTHOR BIOGRAPHY

Ye Luyang, Ph.D. in Law, Special Associate Researcher at the School of Marxism, Shenzhen University, Master's Supervisor. Her main research areas include Marxism and contemporary technological development, and the philosophy of technology.

Chen Junjie, Master's student at the School of Marxism, Shenzhen University. His main research area is the study of Marxism and contemporary technological development.

REFERENCES

1. *Acemoglu, D., & Restrepo, P. (2020). Robots and jobs: Evidence from US labor markets. Journal of Political Economy, 128(6), 2188–2244.*
2. *Balibar, É. (2007). The philosophy of Marx. Verso.*
3. *Chen, P. (2004). Civilization bifurcation, economic chaos, and evolutionary economic dynamics. Peking University Press.*
4. *Gao, Q. (2022). The change of human labor forms in the context of the new technological revolution. Economist, 2022(2), 53–63.*
5. *Gordon, B. (1975). Economic analysis before Adam Smith: Hesiod to Lessius. Palgrave Macmillan.*
6. *Han, Q., & Qin, X. (1987). Several theoretical issues on division of labor and alienation. Academic World, 1987(6).*
7. *Huadeya, & Zhu, R. (2019). The foundation and path "selection" of the abolition of capitalist division of labor: An analysis based on artificial intelligence. Contemporary Economic Research, 2019(6), 14–19.*
8. *Jiang, T. (2009). New annotations on the book of Guanzi. Qilu Publishing House.*
9. *Lü, T., Liu, T., & Song, C. (2017). From employees to free individuals: The revolution of division of labor in the new economic model 3.0. Electronics Industry Press.*
10. *Marx, K., & Engels, F. (1960). Collected works of Marx and Engels (Vol. 3). People's Publishing House. (Original work published 1960)*
11. *Marx, K., & Engels, F. (2002). Collected works of Marx and Engels (Vol. 3). People's Publishing House. (Original work published 2002)*
12. *Marx, K., & Engels, F. (2009). Collected works of Marx and Engels (Vol. 1). People's Publishing House. (Original work published 2009)*
13. *Marx, K., & Engels, F. (2013). Collected works of Marx and Engels (Vol. 35). People's Publishing House. (Original work published 2013)*
14. *Marx, K., & Engels, F. (1998). Collected works of Marx and Engels (Vol. 32). People's Publishing House. (Original work published 1998)*
15. *Meng, J., & Meng, D. (2021). Mencius and Mencian culture. Xinhua Publishing House.*
16. *Ouyang, Y. (2019). The significance of artificial intelligence from the perspective of Marx's theory of alienation. World Philosophy, 2019(2), 5–12.*
17. *Pérez, C. (2009). Technological revolutions and techno-economic paradigms. Cambridge Journal of Economics, 34(1), 185–202.*
18. *Plato. (2023). The Republic (G. B. He & Z. Zhuming, Trans.). China Textile Publishing House. (Original work published 2023)*
19. *Qiu, Z., Wu, Q., & Yang, W. (2019). The transformation of laborer skill demands under the background of artificial intelligence: From de-skilling to re-skilling. E-Government, 2019, 23–30.*
20. *Smith, A. (1972). The wealth of nations (Vol. 1) (G. Dali & W. Yanan, Trans.). Commercial Press. (Original work published 1972)*
21. *Smith, A. (1972). The wealth of nations (Vol. 2) (G. Dali & W. Yanan, Trans.). Commercial Press. (Original work published 1972)*
22. *Sohn-Rethel, A. (1989). Mental and manual labor: Towards the epistemology of Western history (Rev. ed.). VCH, Acta Humaniora.*
23. *Xie, C., & Cheng, E. (2016). The theory of deepening division of labor: Analysis of five major social divisions and intra-departmental divisions. Marxist Studies, 2016(12), 46–58+157.*
24. *Xenophon. (2007). The education of Cyrus (S. Mo, Trans.). Huaxia Publishing House. (Original work published 2007)*
25. *Zhang, S. (2024). The logic of professional evolution in the digital age. People's Forum, 2024(08), 48–51.*
26. *Zhang, Z. (2019). Marx's critique and transcendence of the concept of "division of labor" in national economics. People's Forum, 2019, 238–239.*