From Data to Big Data: A Study from the Perspective of Subject-object Dialectics in Labor Structure

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Abstract: Big data is a new factor in the development of labor structure. From the ontological point of view, the definition of data is to examine the data as the basis of material, energy, and information and to deduce the essence of data. From the perspective of the path, this paper concludes that big data is the path to explain the internal relationship between big data and labor structure and to clarify the relationship between big data and labor objects, the relationship between big data and labor tools, and the relationship between big data and laborers. Then the conclusion is that the essence of using big data by workers is to create workers in reverse with the labor behavior of big data as the object and tool of labor. First, truth in terms of value means that the source of big data is truth based on objective reality. Second, the advantage refers to the benefits of big data for practice. Third, it is proposed that the soul of beauty is a bridge between subject and object, communicating subject and object through human practice. In short, a close combination of big data and human labor is needed for people to achieve freedom.

Keywords: Data; Big Data; Labor structure; Practice

Schelling reflected on his own philosophy, including contemporary philosophy (such as Hegel) in the "world age." At the same time, he pointed out a different direction of thinking. He believed that the past is known, the present is recognized, and the future is envisioned. In addition, "what is known is narrated, what is recognized is presented, and what is expected is predicted." [1]

Therefore, this paper will elaborate on the three stages of time-based data, labor factors, and human self-improvement.

1. The Past: Data and Its Essence

Actually, the final answer to this series of questions will be clarified during the investigation. "When the flower is open, the flower bud disappears, and people will say that the flower negates the flower bud. Similarly, flowers are interpreted as a false form of plants when the fruits are obtained, and fruits are used as the natural form of plants to replace flowers. These forms are different from each other and mutually exclusive and incompatible. However, their mobility makes them an organic unity. They do not conflict with each other in the organic unity and are both necessary. It is this necessity that constitutes the whole life. " [2]

1.1 Data

Data, in the most general sense, is a concept that coexists with human survival and development. "Data refers to the representation of the objective material world by human beings; that is, the subject generates data to explain the objective material entity." [3] Using stones, knot ropes, and wood carvings in primitive people's lives is the initial form of data; in repeated experience and observation, the concept of quantity was gradually born. Multiple and repeated human activities have contributed to the formation of the concept of data. Therefore, data is accompanied by the beginning and end of human development, manifested in various forms in different periods of history.

The objectivity of data is reflected in the objectivity of material form and energy form and the unity of subject and object in the information form.

1.2 Data Is the Basis of Scientific Theory System

The ancient Greek philosopher Pythagoras believes that quantitative relations can explain everything. "The Pythagorean school believes that number is the world's origin, and the harmonious universe is composed of numbers. The harmony of nature is the harmony of numbers, and the order of nature is the order of numbers." [4] The category proposed by Aristotle is to take the objective existence into the category table, divided into ten categories; it is also an indirect recognition of a specific quantitative relationship. In addition, when Kant analyzed the category of 'quantity' in the first critique, he mentioned that the pattern of quantity is number: "The pure schema of quantity (quantitatis) as an intellectual concept is number, which is the representation generalizing the successive addition of one after another (similar things)." [5]

So how did data become the basis for a system of scientific theories? The answer is that it is generated by correlating material, energy, and information.

First, data is the manifestation of material.

The objectivity of the data is the abstraction of the matter in terms of time. In other words, it is another way of presenting objective reality. Data is embodied in human beings' cognition of material or objective reality. Human beings recognize the existence of a specific material entity and then analyze the composition of each part. Molecules are obtained from parts, from molecules to atoms, nuclei, and extranuclear electrons, and then to protons, neutrons, and quarks. "The purpose of studying elementary particles is to study the microscopic structure of matter. In this way, from atoms to nuclei and electrons, and then from nuclei to nucleons, many particles were later discovered...… It is the deepening of human understanding of the structure of matter. "The cognitive processes reflect the progress of human cognition and are also the process of becoming precise and scientific. It is a process of continuous accumulation of data [6].

Second, data is a form of energy.

Data is a secondary manifestation of energy. The establishment of a scientific theory system relies on data. Although the object of scientific investigation is the objective substances, data can be obtained from objective substances; the energy is expressed through data. Intangible, physical entities are studied by examining the energy forms in which they exist. The display and accuracy of energy are observed and calculated by obtaining data. People use data to convert energy into energy usage.

Third, data is the philosophical foundation of information.

The logic presented by the basis of scientific theories is essentially numerical. Leibniz advocated the establishment of symbolic mathematical logic. However, the modern information technology revolution has re-discovered the original basis. Data is the basis of establishing the scientific theoretical system and scientific systems. From complex to simple, analysis to synthesis is the process of data. The results of recording, calculating, and reasoning in experiment and observation embody data. Science systematizes and theorizes this data-based performance and becomes a scientific theory. Technology benefits from the discovery of scientific theory, and scientific theory will promote the realization of technology. "Technology is the materialized means of scientific knowledge based on human knowledge of the natural world. The level of technology often depends on the level of scientific knowledge, and the development of technology often depends on the development of science. " [7]

2. Present: The Relationship between Big Data and Labor Structure

The basic unit of big data is data, and it is accumulated, superimposed, and sorted by massive data. Big data is a collection of large amounts of data, which is significant in scale and broad in scope. Big data reflects the progress of data acquisition technology. Excessive data stock causes a change in data storage and data dissemination technology, which most scholars also support. [8]

Marx said: "First of all, Human labor is a process between man and nature. It is a process in which man causes, adjusts, and controls the material exchange between man and nature through his activities." [9] The combination of labor and big data is a new form of expression given to people's practical activities. It is a new form of expression based on big data that recreates the original form of matter, energy, and information in a limited time and space.

The emergence of big data has brought vitality to social production. Big data has significantly changed the material data. Human communication and exchange are no longer limited to having material

or physical things but to information. The three elements mentioned by Marx are not the elements of social productivity as human production capacity but the elements of the systemic labor process [10]. Marx said that the simple elements of labor include purposeful activities or labor, labor objects, and labor materials [11]. Therefore, this part of the study is about the relationship between labor objects, labor tools, laborers, and big data, in other words, the relationship between labor structure and big data.

2.1 The Connection between Big Data and Labor Objects

In fact, the transformation of labor objects into big data is the effect of big data empowerment on objective labor objects, transforming objects into ideas in people's minds. In other words, the object of labor has become the internal concept of the subject. Therefore, this is the form of innovation of labor objects.

"Material intercourse is at first the intercourse of men in the production process and is the basis of any other intercourse." [12] Material is the condition for forming all societies and the axis of fundamental social contradictions. The primary premise of labor is using natural objects by human beings. Marx said: The universality of man manifests itself in the transformation of the whole of nature-first, as the direct means of man's subsistence, and second, as the material, object, and tool of his life activities into his inorganic body. To the extent that it is not the human body itself, nature is man's inorganic body. Man lives through nature; that is, nature is the human body with which man must constantly interact in order not to die. The so-called link between man's physical and spiritual life and the natural world is equivalent to the link between the natural world and nature because man is a part of nature [13].

Big data has transformed the material basis and energy form into information. The previous labor object has gone beyond the pure objective material existence. Therefore, the object of labor is both objective and subjective. It represents both material basis and information. Such an "object subjectification" behavior is the result of integrating data and labor objects, which makes them enter the human mind in a new form and become the concept in the brain. Therefore, the object of labor is the objective reality itself and the concept of objective reality; this concept refers to information, forming the characteristics of informatization and data-based labor objects.

2.2 The Connection between Big Data and Labor Tools

In essence, transforming labor tools into big data is a formal innovation of technical means. In other words, big data gives freedom to labor tools. In practice, workers use labor tools to create labor products. Because it breaks away from the original material basis, labor products and tools become data.

Labor is a process between man and nature. It is a process of material transformation between man and nature caused, adjusted, and controlled by man's activities [14]. The change in labor tools represents the change in human society and improved thinking ability. The replacement of labor tools indicates that the utilization rate and labor efficiency of human beings will change accordingly. Human beings use labor tools to act on labor objects, emphasizing the improvement of efficiency, which in turn promotes human beings to update technological means to create more advanced labor tools.

The object of labor is the objectification of human life: people not only make themselves dual in spirit as in consciousness but also make them dual dynamically and realistically to visualize themselves as the world he creates [15]. Labor tools have become big data, breaking material constraints and liberating them. To sum up, big data is the tool itself. The object of labor is big data, and the tool of labor is also big data. Therefore, this is the phenomenon of mutual flow and integration between big data, which is the same as labor tools and objects.

2.3 The Connection between Big Data and Laborer

The relationship between laborers and labor objects is equal to the relationship between laborers and big data, which is fundamentally the relationship between subject and object.

Marx said: "Whatever the form of productive society, the laborer and the means of production are always factors of production. But both are factors of production only in possibility, separated from each other. Where production is to take place, they must be combined. "[16] Therefore, the laborer must be non-data and non-information; he is a human being, which guarantees the legal status of subjectivity in the labor structure.

In the labor process, subjectivity has always been subjective. Therefore, the laborer is aware of the

difference between himself and the object so that he can complete a primitive action to distinguish the self-subject from the external object, indicating that the laborer can never be alienated into 'non-ego.' Therefore, he can only be subjective.

Therefore, the dialectical relationship between big data and laborers is still laborers themselves, laborers' labor and their objects (including labor objects and tools), and labor in themselves because laborers are also labor objects, and laborers work and carry out their actions.

Engels said: "Productive labor is the primary condition of the whole human life, and to such an extent that we have to say in a sense: labor creates man himself." [17]

3. Future: Big Data and Human Practice

The complete person refers to Schiller's soul of beauty and the organic unity of subject and object. However, there is a binary opposition between the subjective person and the objective big data now. So, what exactly is a "complete person" in the true sense? First, people's recognition and knowledge: people can think, which is a significant characteristic because it is people's dynamic reflection of the objective world. Second, human beings develop practices and activities. Only human beings have practice, which is another remarkable characteristic of human beings who can actively transform the objective world. Finally, the whole closed practice process is the way through the subject and object to become a complete person in the true sense.

3.1 Truth and Knowledge

The truth of big data comes from objective reality. Human cognition of big data is essentially a cognition of the objective world and a dynamic reflection of the material. Since the basis of big data is an objective reality, big data first has its own truth. "Big data, as a mapping of real human life, provides a process synchronized with real life." [18] Practice does not come out of nowhere; it is based on the human knowledge system, which has its own characteristics because practice realizes the inner concept. Therefore, the first step is for people to have a knowledge system. In addition, in today's era, information technology and big data provide practical technical support to break the predicament by replacing individual decisions based on intuition with data decisions [19].

3.2 The Ethicality of Practice

Only through practice can people transform their inner ideas into reality." Marx said: "All social life, in essence, is practical. "Practice is a bridge built at the gap between the eternal separation of subject and object. Big data transforms labor objects and tools into virtual forms, thus separating them from labor subjects. However, people's practical activities through big data have bridged the gap between the subject and the object. "The virtual world and the real world are integrated based on the material carrier of big data technology, and together they constitute the social life of human beings. "[20]

The practice based on big data is that people make full use of big data in the process of labor so as to liberate their hands and realize the transition from the realm of necessity to the realm of freedom. Marx said: "The realm of freedom begins only where the labor prescribed by necessity and external purpose ends. Therefore, according to the nature of things, it exists on the other side of the material production field. On the other side of this realm of necessity begins the exercise of human faculty as an end in itself, the true realm of freedom. But this realm of freedom can flourish only if it is founded on the realm of necessity. " [21]

3.3 The Soul of Beauty

Schiller said: "...always be a harmonious whole, acting with his harmonious and complete humanity." [22] The soul of beauty is the presentation of the concept of Complete Man and the comprehensive unity of subject and object. It is the comprehensive unity of subjective initiative and practice. A complete person should include a subject, object, and intermediary. A subject is a person with knowledge, the laborer; the object is the objective reality, the big data itself, and the labor tool and labor object. The intermediary is practice, the path, and the bridge between the subject and object. The person's integrity means that the person is the subject of practice. At the same time, the subject reaches the object with practice so as to understand and transform the object, which is a complete practice process. In this complete process, we can create a 'complete person'.

Labor is no longer a means of enlightening things or exploiting the class to oppress and alienate people but a free and conscious creative activity. Labor illuminates the human spirit, so human labor is not a means of making a living but for spiritual pleasure. As Holderlin said: people work hard but poetically live in this land. [23]

4. Conclusion

Data is replaced with the change of human labor mode. The form of data is divided into material, energy, and information. The three forms correspond to the way of labor. In ancient times, the mode of labor took the objective existence as the object of the labor and explored the data that exists in the material form. In the modern era, labor activities take energy as the labor object and then explore the existence of data in the form of energy. In the contemporary era, the mode of labor takes informatization as its object to grasp the data in information. Currently, data is transformed into big data, significantly promoting production mode transformation.

Therefore, the analysis of big data and labor structure lays a theoretical foundation for the data-based labor mode. In fact, the relationship between big data and labor structure is the unity of contradiction between subject and object, and it shows the relationship between laborers and big data. As the "pole" of this contradictory association, workers are the absolute subject. They have the same position as big data as absolute objects and are all immutable entities. Therefore, this contradiction is the separation and unity of subject and object. The relationship between big data and the structure of labor is the contradiction of subject and object. What is the significance of the analysis process? How to solve the contradiction between subject and object? First, by the connection between big data and labor structure, the analysis results' significance is confirmed, confirming the rational basis of Marxist philosophy and providing a theoretical explanation for the data age. Second, the contradiction between subject and object is bridged by human practice, with the knowledge of labor, to promote the unity of subject and object, forming the "soul of beauty".

References

[1] Xie Lin, Age of the World [M]. Peking University Press, 2018: 3.
[2] Hegel, Phenomenology of Spirit [M]. Commercial Press, 1962 (reprinted in 2017): 2, 4-5.
[3] Gao J P, Philosophy of Science: Diversification, Fragmentation, and Internal Consistency: Based on the Perspective of Historical Materialism [J]. Science of Science Research, 2012, 30 (2): 213-224.
[4] Gui Qiquan. The Origin of Scientific Thought [M]. Wuhan University Press, 1994: 14.
[5] Kant, Critique of Pure Reason [M]. The Renmin University of China Press, 2011:150.
[6] Foot C J. Atomic physics[M]. OUP Oxford, 2004.
[7] Luan Yuguang, Principle of Dialectics of Nature (3rd Edition) [M]. China University of Science and Technology Press, 2007: 157.
[8] Mayer-Schönberger V, Cukier K. Big data: A revolution that will transform how we live, work, and think[M]. Houghton Mifflin Harcourt, 2013.
[9] Selected Works of Marx and Engels (Volume 2) [M]. People's Publishing House, 1995: 201-202.
[10] Lu Pinyue, Basic Contradiction of Economic Activities and New Understanding of Historical Materialism [N]. Journal of Nanjing University, 1999(03):7.
[11] The Complete Works of Marx and Engels (Vol. 23) [M]. People's Publishing House, 1972: 202.
[12] Selected Works of Marx and Engels (Vol. 1) [M]. People's Publishing House, 1995: 58-59.
[13] Marx, Political Economy Manuscript [M]. People's Publishing House, 1985: 52.
[14] Marx, Das Kapital [M]. People's Publishing House, 1975, 201-202.
[15] Marx, Manuscripts of Economic Philosophy in 1844 [M]. People's Publishing House, 1985: 54.
[16] Collected Works of Marx and Engels (Vol. 6) [M]. People's Publishing House, 2009: 44.
[17] Engels, Dialectics of Nature [M]. People's Publishing House, 1971: 149.
[18] Qi Zhiyuan, from data to big data technology: practice transcends the traditional subject-object dichotomy [N]. Journal of Beijing Institute of Technology (Social Science Edition), 2022 (01): 181-186.
[19]McafeeA, Brynjolfsson E. Bigdata: the management revolution [J]. Harvard business review, 2012, 90(10).
[20] The Complete Works of Marx and Engels: (Volume 3) [M]. People's Publishing House, 1960:39.
[21] Marx, Das Kapital (Volume 7) [M]. Commercial Press, 1995:928.
[22] Schiller, Schiller's Theory of Classical Aesthetics [M]. Joint Publishing, 2015:165.
[23] Holderlin, Holderlin's Poems [M]. People's Literature Publishing House, 2016:514.