Industry-Based Society Definitions: Society 5.0

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Article Info	ABSTRACT
Article History *Received: 07.10.2024* *Accepted: 14.11.2024* *Published: 30.06.2025* **Keywords:** Society 5.0, Industry 4.0, Social Revolutions.	This study has been written in order to create a general framework of the social debates that started with the developments in industry 4.0 and occurred on the axis of the concept of society 5.0 and to evaluate them in a sociological context. The article is based on literature review and theoretical discussions from a critical perspective, centering on the Japanese model, which used the concept of society 5.0 for the first time. In this axis, the study presents the concept of industry 4.0 in general terms, followed by the emergence, characteristics and definitions of society 5.0. After the relationship between data and capitalism of the concept of society 5.0, which is the ultimate point of the current society debates, is revealed, it is evaluated on the axis of the concepts of panopticon and alienation. As a result, the concept of society 5.0 is interpreted as an area where capitalism reproduces its own internal contradictions despite the ideals it offers.

Endüstri Temelli Toplum Tanımları: Toplum 5.0

Makale Bilgisi	ÖZET
Makale Geçmişi *Geliş Tarihi: 07.10.2024* *Kabul Tarihi: 14.11.2024* *Yayın Tarihi: 30.06.2025* **Anahtar Kelimeler:** Toplum 5.0, Endüstri 4.0, Toplumsal Devrimler.	Bu çalışma endüstri 4.0 gelişmeleri ile başlayan ve toplum 5.0 kavramı ekseninde meydana gelen toplumsal tartışmaların genel bir çerçevesini oluşturmak ve sosyolojik bağlamda değerlendirmek amacıyla kaleme alınmıştır. Makale toplum 5.0 kavramını ilk defa kullanan Japonya modeli merkeze alınarak eleştirel bir bakış açısıyla literatür taramasına ve teorik tartışmalara dayanmaktadır. Bu eksende çalışma endüstri 4.0 kavramını genel hatlarıyla sunduktan sonra toplum 5.0'ın ortaya çıkışı, özellikleri ve tanımları ele alınmıştır. Güncel toplum tartışmalarının nihai noktası olan toplum 5.0 kavramının veri ve kapitalizm ilişkisi ortaya konulduktan sonra panoptikon ve yabancılaşma kavramları ekseninde değerlendirilmiştir. Sonuç olarak ulaşılan nokta toplum 5.0 kavramı sunduğu ideallere rağmen kapitalizmin kendi iç çelişkilerini yeniden ürettiği bir alan olarak yorumlanmıştır.

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INTRODUCTION

Despite all the criticisms and transformations, the Enlightenment, the Political Revolutions, and modernity are practical today. These processes have bequeathed the influence of science on worldview, the dominance of rationality in the public and private spheres, and secularisation. In addition, the constant qualities of capitalism, such as the search for innovation, profit, capital accumulation, slippery and uncertain economic ground, etc., have enabled the development of Industry 4.0. In other words, rapid changes in the tense economic and social order created by capitalism have forced production organizations to renew and change. At the same time, discussions such as the rise of the information society and post-modernity have made information and culture valuable, individuals have come to the fore, the internet has become widespread and pluralistic, and different approaches have been adopted. Industry 4.0, given its sociological context, should be defined by the industry rising on the fixed foundation of science, secularisation, and rationality. This refers to today's capitalist economic system. The stratagem of capitalism to continue innovation and the search for markets to increase the search for profit and capital in slippery and uncertain economic conditions is vitally important for Industry 4.0. In this context, industry 4.0, which characterizes today's economic system, can be defined as a system that can include knowledge, culture, and individuality in production.

It is possible to first evaluate Industry 4.0 in terms of changing economic organization. While Industry 4.0 includes more cultures, tastes, and habits in production than ever before, it also removes people from the production system. Just as Freyer stated, the essence of labour changed with the invention of the steam engine, and the essence of labour will change once again with the inclusion of robots in production today. One of the main objectives of Industry 4.0 is to implement the production process with smart factories from the beginning to the end with software and automation. This process covers the process from the supply of raw materials to the end of the product life. This process, which has become planned and controllable, aims to reduce resource consumption and energy use. This system called the dark factory, eliminates the human factor, minimizes human errors, and reduces production costs. Thus, human labour will no longer be needed in routine or heavy work. The withdrawal of human beings from the production area also leads to a change in the labour structure. According to Kagermann (2013), this situation can be interpreted as ensuring work-life balance. In other words, he argues that working conditions can become flexible and flexible from business life, where working conditions are determined by sharp boundaries, where people can develop themselves, turn to different fields, and become flexible. Considering that robots and people who do routine and heavy work move away from the factory organization, it is likely to have a work-life balance (Demir et al. 2019).

On the other hand, it should not be forgotten that the capitalist economic system is at the basis of this process because it is expected that labour based on mind power rather than muscle power is expected to be put into production. This situation can even be considered as the exploitation of creative productivity, a unique feature of human beings. On the other hand, Levi-Strauss, like Kangermann, thinks that the inclusion of robots in production will ensure work-life balance.

"The day will come when it will be possible to move from a civilization that once embarked on the path of historical evolution, but in doing so reduced human beings to machines, to a more competent society that will succeed in transforming machines into human beings - as is being done by means of robots. In this way, since culture will have taken over the entire task of producing progress, society will be freed from the curse that obliges it to enslave human beings in order to achieve progress. Then history will become unique, and society, having gone outside and above history, will be able to attain the transparency and internal equilibrium exhibited by the lowest, so-called primitive societies, so that history and society will cease to be incompatible with the human condition" (Strauss, 2018).

The nation-state understanding of modernity, the penetration of rationality into every field, and

the desire to supervise, control and uniformize people have been criticized in post-modernity, and new answers have been produced. In other words, as Levi-Strauss emphasized, Industry 4.0 can be considered a way of salvation from the principles of modernity that turn people into machines. However, it is impossible to evaluate Industry 4.0 separately from the basic principles of capitalism. Looking at the changes in industrial revolutions, the primary purpose of the prominent element of each revolution has been to ensure that capitalism can continue to be loyal to its principles (Freyer, 2018). Industry 4.0 should also be considered as a production stage arising from the internal dynamics of capitalism. This article aims to discuss 'Industry 4.0' from a sociological perspective and aims to open the conceptualization of 'Society 5.0' for discussion. The article, which evaluates Industry 4.0 and its social reflection, Society 5.0, in terms of the social consequences of capitalism, is based on literature review and theoretical discussions from a critical perspective. In the article, the Japanese model, which is accepted as the centre of the society 5.0 discussions, is taken as the centre. The industrial breakthrough of Japan, which has its unique course of modernization that transcends Eurocentrism, and the ground for discussion on new models of society have been chosen as the starting point in this respect. In the article, industry 4.0, which enabled the emergence of Society 5.0, was expressed in general terms, and then Society 5.0 discussions were analyzed. Finally, it presents a sociological trajectory on how society 5.0 can be evaluated from a sociological point of view.

Society 5.0 in the Reflection of Industry 4.0

Developments in technical, cultural and social fields can trigger social transformation. Although social change is continuous, developments affecting the speed and direction of change can be decisive in the direction of social change. Therefore, inventions such as the steam engine, electricity, the internet, etc., have been able to determine the course of social transformation in the historical process. The application of these developments in the industrial field, their widespread use, and their role as part of daily routine have contributed to forming new habits. Thus, societies have ensured the continuation of the social system by adapting to new developments or developing new strategies. In this sense, industrial revolutions have been very effective in social structure. Three social revolutions have been mentioned in the last two centuries (Eren, 2020). All three social revolutions are related to the industrial revolution.

With the development of capitalism, the ability of societies to catch up with the pace of technical progress and to adapt to technical progress has visibly increased. Following the developments, the market and the market moment by moment, adapting the social structure to rapid developments and taking action towards changes have ensured the continued existence of societies. While this situation has increased the power of societies, it has also enabled them to compete with other societies and to exist in the market. Therefore, competitive advantage in the capitalist economic system, the ability to dominate the market and follow innovation instantly, has become a prerequisite for today's societies.

From this point of view, social transformations are shaped in parallel with the changes occurring in other fields or line with the needs. The increase in urbanization with the industrial revolution, the emergence of the concept of leisure time and thus the development of culture industries and the formation of a consumer society are the reflections of the developments in the field of industry on society. Likewise, the widespread use of the Internet, information communication technologies, instant communication and information flow, the development of social platforms and the creation of digital identities show the reflection of information communication technologies and practices on society. The adaptation of society to the developments in the field of industry has also enabled it to gain the power to compete with other societies in the capitalist economic structure. However, in addition to these developments, industrial revolutions have seriously adverse effects on humans and the environment. Today, problems such as income inequality, unfair use of natural resources, genocides, forced migrations, climate crisis, environmental pollution, food security, tense competition between countries,

and changing demographics prevent societies from living in a self-sufficient and fair manner. In this respect, what distinguishes Society 5.0 from other social revolutions is that it deepens the focus on social problems and adapts to technical development.

Society 5.0 is dominated by the view that societies and national economies cannot progress unless problems such as natural disasters, ecological crises and depression, which adversely affect the health and resilience of society, are solved. Keidanren, the Japan Economic Organisation, has conducted various studies on society 5.0 over the years, described this period as the 'Great Reform Era' and explained what they expect from the concept of society 5.0. According to the summary report published for the first time in 2016, the technological background of Society 5.0 is the integration of information communication technologies with cyber-physical systems. The basis of this integration is the use of machines and robots, data collection by sensors and devices, data collection as big data, and analyses by artificial intelligence. These technologies are generally used in the manufacturing industry, driverless vehicles, wearable technologies, health management and financial technologies. Based on these technologies and developments, reforms and solutions to social issues are aimed at individuals and companies in the new economic and social order (Holroyd, 2022). According to these objectives, it is aimed to empower individuals, enable disadvantaged groups to realize themselves, globalize companies with new models and innovation, and create new business models. At the same time, it also aims to use innovative services and services to solve the social problems faced by countries. Japan has started to consider population decline, an increase in population growth rate, disasters, terrorism, and environmental problems as social problems. Japan aims to solve these problems on a national scale with Society 5.0. In order to achieve this, it is considered necessary to develop new models in the fields of technology, law, human resources, and social cohesion, as well as determine national strategies and organize the management system accordingly (Keidanren, 2016).

In the report by Keidanren in 2017, the understanding of Society 5.0 deepened, and its boundaries were determined. The report emphasised the need to realise public and private projects. In order to realise this, studies in different areas such as cities, regions, products and services, infrastructure and cyberspace are envisaged. The reason for choosing these areas is to focus more on complex social problems and improve the quality of life by ensuring competitiveness and cooperation between the public and private sectors. In addition to technological advances and R&D, it is also important to consider social applications and to create a foundation for the new society (Shiroishi, Uchiyama, & Suzuki, 2022). Thus, population decline will not affect the smart society, and all members of society, including women and the elderly, will be able to participate actively. At the same time, community security will be ensured in the cyber and physical domains. Society will become interconnected at the scale of cities and regions, and life will be possible everywhere. Thus, a sustainable society that balances the economy and the environment will be produced. The data produced in social life, such as work, learning, and leisure time, will be integrated into cyber areas to ensure daily life flow (Hitachi-UTokyo Laboratory, 2020). In the report published by the Japan Economic Organisation in 2018, the purpose of society 5.0 was defined as 'creating a society where everyone can create value anytime, anywhere, in safety and harmony in nature, free from various existing restrictions' (Keidanren, 2018). According to this report, problem-solving and value creation, diversity, resilience, sustainability, and decentralisation are the characteristics of Society 5.0.

It is emphasised that Society 5.0 will contribute to the Sustainable Development Goals [1]through

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[1] United Nations member states adopted the Sustainable Development Goals within the 2030 Sustainable Development Plans framework. Seventeen goals have been set as an urgent call to action that all countries must comply with for the future of people and the planet. The goals are to end poverty, end hunger, healthy and quality life, quality education, gender equality, clean water and sanitation, accessible and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities,

innovative approaches in cities and regions, energy, disaster prevention, health services, agriculture and food, logistics, production and services, finance and public services. Society 5.0, which covers a wide area, operates in many areas, such as cities and regions, energy use, disaster prevention and mitigation, and public services. Society 5.0 is a comprehensive transformation process that uses different features in different areas. Especially in cities and regions, decentralised communities will be created by providing continuous data flow, and a social structure where differences are supported will be built (Carayannis & Morawska-Jancelewicz, 2021). On the other hand, decentralised micro-systems will be developed in rural areas by creating clean and sustainable energy systems.

Disasters have become critical issues as they have reached a profound impact today. Studies are carried out to ensure the system's effective operation during the disaster, especially by supporting disaster prevention and mitigation developments. Studies are carried out in health services to detect diseases early, diagnose them, and apply appropriate treatments. In addition, individuals can manage their data in this process. For Society 5.0 systems to work more optimally, new solutions are being produced by using advanced technologies for customers' needs. Thus, personalised products will be obtained. In addition, studies are planned to provide timely and appropriate public services by connecting different systems and sharing data among various actors (Keidanren, 2018).

This situation points to a strategic change in social and industrial revolutions. Developments and technologies in the industrial field have moved away from the role of the purpose of social transformation and gained the quality of a tool. Therefore, society 5.0 uses advanced technologies and designs the future in a data-driven way to produce sustainable solutions to social problems and realise a positive transformation. In other words, the new technological revolution, which expresses the internal contradictions of the capitalist economic system, produces a "data society".

Logical Foundations of Society 5.0 and Japanese Model

Discussions on multiple modernisations have revealed that modernisation is not only Europe-centred and that societies outside Europe can also produce innovations at a level that will affect the world. The main reason for this process is that each society meets the modernisation process based on its own experience. Undoubtedly, one of the societies outside Europe that has been able to reveal its unique modernisation course is the Japanese society.[2]

 "Japan made up for the few obvious missing ingredients of the industrial revolution through state direction, transforming previous habits such as group solidarity into valuable industrial qualities and fostering an active export sector. Inevitably, the same breakthrough also brought tensions and fragility to Japanese society. Rapid industrialisation had many familiar consequences, but it also had a number of special qualities arising from the speed and emphasis on precision that characterised Japan's breakthrough" (Stearns, 2021).

In the case of Japan, the industrialisation process that started in the 1870s led to the rapid rise of economic and industrial areas. Small workplaces started to turn into large enterprises; investments were made in heavy industry and textile, and railway networks and logistics were rapidly developed. At the same time, education was expanded within a few years (Dede, 2021). On the other hand, when we look at the modernisation process that came with industrialisation, the rapid modernisation of a society firmly attached to traditional life within a few decades caused some fractures and problems. This process was usually sharper than the process in the West.

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responsible production and consumption, climate action, aquatic life, terrestrial life, peace, justice and strong institutions and partnerships for the cause (United Nations, 2022).
[2] For details on Japanese modernisation, see Dede (2021). 19th Century Comparative Analysis of the Modernisation Policies of the Ottoman and Japanese Empires. Political Economic Theory, 349-359.

In this process, which is called Society 5.0 and in which the social structure is reshaped, it is more relevant to states that started modernisation later and are in rapid competition. Because the effects of modernisation in these countries are much more profound, and the consequences are still ongoing. In other words, society 5.0 seeks solutions to the problems of industrialisation and the accompanying modernisation processes. This point constitutes the importance of Society 5.0. The subtext of Society 5.0 states that a world where technological development or superiority comes to the fore, where exports, imports and trade dominate and a world ruled by corporations is actually not enough for a developed country (Serta, 2019). From a different perspective, it refers to the inclusion of society in all aspects of this process for countries to continue their existence in capitalism, increase their competitive advantage, and anderate further.

Following the enactment of the Basic Law on Science and Technology in 1995, the Basic Plan on Science and Technology was published for the first time in 1996. This law aims to ensure the highest possible growth by developing well-integrated and planned policies to promote science and technology. Research and development were emphasised in the first three basic plans, and the state made significant investments. In this process, a strategic growth approach was adopted. Since the 4th Science, Technology and Innovation Basic Plan, the perception of development and technological progress has changed. In this plan, despite technological progress, the weakening of Japan's competitiveness was emphasised, and the reason for the obstacle to progress was identified as social problems (Council for Science and Technology Cabinet Office, Government of Japan, 2010).

Society 5.0 was first used by the Japanese government in the 5th Science and Technology Plan in 2016. This published Plan addresses Japan's lagging in competition between countries and various fields as an important problem. The importance of the 5th and 6th Science, Technology and Innovation Plans has changed regarding the problems addressed by Japan and the disciplines that will produce solutions. In the 5th Plan, it was emphasised that studies should be carried out to seek solutions to problems such as ageing, climate change, labour force and quality of life. In solving social problems, it was determined that technology and engineering should work together with social disciplines. In this sense, it was emphasised that research areas should be determined and new policies should be established. The problems stated in the report of the Science Council (2015) are the use of renewable energy sources for sustainable social development, the ageing of society, and ensuring both public and cyber security. It is stated in the report that these problems caused Japan to decline and lose its competitive advantage. Therefore, the main issue is to help Japan regain its competitive advantage. In order to achieve effective social development, these problems should be solved through technology and innovation. Another critical issue is the poor management of human resources. Japan's R&D activities are affected by the decrease in doctoral-level researchers, the fact that women are weaker in the academic field, and that fast-rising countries such as China are ahead of Japan. When all these problems are evaluated, the Japanese government has argued that Society 5.0 can solve these problems in a technology-centred way through information communication technologies and cyber-physical systems. Technological developments, especially in information communication technologies and cyber-physical systems, constitute the basis of Society 5.0. Here, the data-oriented approach is mainly at the centre. As stated in the report, it is aimed to use data obtained in many areas such as web data, human activities, geographical data, transport data, production and agricultural data and to produce services accordingly (Council for Science, Technology and Innovation Cabinet Office, Government of Japan, 2015).

Looking at the 6th Science, Technology and Innovation Basic Plan published in 2021, the concept of Society 5.0 has been developed and has become a state policy. In this report, Japan aims to build a society that is 'sustainable, resilient to threats, unpredictable and uncertain situations, ensuring the security of individuals and increasing their welfare'. Another goal of Japan with Society 5.0 is to create a new paradigm by building a new future (Council for Science, Technology and Innovation Cabinet

Office, Government of Japan, 2021). Thus, a resilient society will be built. These goals can also be a sign of a new modernisation process. The rules and structure of the world that have been in place since the Industrial Revolution are undergoing serious breakdowns. This situation brings about the formation of new rules and a culture change. In other words, the game is being re-established. The factors that constitute the path of culture change are climate change, natural disasters, new capitalism, destructive technologies and social problems. Each of these factors necessitates the reconstruction of human life and shows that it is necessary to gain new habits. This multifaceted and rapid change in the social field shows that society 5.0 is a new era and revolution.

The plan states that a dynamic area where cyber-physical spaces interact should be designed in response to the question, 'How should a resilient society where people's safety is ensured?'. On the other hand, sustainable societies should be built by designing a carbon-neutral system. The basis of sustainable societies is to reduce the risks, such as natural disasters and epidemics, that will affect society. In order to solve regional and global problems, sustainable smart cities and regions should be built worldwide and across the country. Institutions such as public and private sectors and universities should cooperate. For this process to function and sustain, efforts towards innovation should be supported (Council for Science, Technology and Innovation Cabinet Office, Government of Japan, 2021). Considering these features, it is seen that a holistic social renewal is taking place. The fact that the physical and cyberspace interact and reflect each other constitutes one of the building blocks of society 5.0. The structure that connects cyberspace and physical space is social life. Thus, cyber-physical-social systems are developing. "...on the basis of a technology consisting of a physical system, a social system including people, and a cyber system that connects both, it is ensured that these systems can understand each other, improve each other through gradual interactions, and work together in an effective, controlled, reliable and efficient manner" (Büyükbingöl, 2021). From this point of view, not only the transfer of existing data is important in connecting and interacting with the physical and cyberspace. Here, how people perceive the current situation is decisive. The fact that people are constantly connected to the internet, especially with mobile devices, and interact with applications feeds this process. Therefore, as Büyükbingöl states, human beings fulfil the role of both the user and the feeder of the cyber-physical-social system. This situation enables the construction of social systems according to human needs and usage areas. Cyber-Physical Social Systems (CPSS) is a chaotic/mixed control mechanism. This system knows the physical and cyberspace human knowledge, cognitive state and sociocultural elements. Physical structure, information, cognitive state and cultural factors are also elements of military control and command systems. From this point of view, CPSS can control complex and dynamic structures and ensure that organisations are robust, resilient, responsive, flexible, innovative and adaptable (Liu et al., 2011). Therefore, a new methodology is used here, integrating and extending the basic theory of the Society 5.0 paradigm, artificial intelligence studies, with cyber-physical social systems. The difference between cyber-physical and social systems stems from including human and social factors in the model. When complex human thoughts are added to the data obtained from the social field, this will affect the outputs. From this point of view, descriptive modelling and predictive experiments of cyber-physical social systems will enable the formation of new systems integrated into cyber and real space (Wang, Yuan, Wang, & Qin, 2018). Thus, Cyber-Physical Social Systems constitute one of the most important areas in developing Society 5.0. The more effective and synchronised cyber-physical social systems can be used in the studies to be carried out in this field, the more benefits the system will offer. Therefore, the instant and rapid transfer of the data obtained from the physical and social field to the cyber field and making decisions according to the data obtained from here constitute the basis of the process.

So far, Japan's primary concern is to maintain its power in the international arena. However, this report concretely shows that economy and technology are not the only elements of power. On the contrary, technological developments cause some of the problems that occur in social life. The clearest

example is that technological developments in the industry field have changed the way of working. Many technologies developed especially to make people's lives easier have captured people after a while. A working system unsuitable for human life and nature has caused all these societal problems, including the environment. The aim here is not to oppose technological progress. Technology is not used for human beings. When we look at the periods of technological progress, it is seen that research is generally carried out for military services. Another reason for this situation is the decrease in cost and the continuation of profit increase. Thus, it is natural that technologies developed only for a specific small group do not benefit all humanity.

Current Discussion Area of Sociology: Society 5.0

Social structure according to the Society 5.0 paradigm i) Hunter-Gatherer Society (Society 1.0), ii) Agricultural Society (Society 2.0), Industrial Society (Society 3.0), iii) Information Society (Society 4.0) and iv) It is divided into different periods as Super Intelligent Society (Society 5.0) (Keidanren, 2016). The hunter-gatherer society, defined as Society 1.0, is where people constantly move to access food and hunt. There was constant movement in small groups to reach available food resources. Therefore, it is also called a society with a non-productive economy (Narvaez, 2021). Fire was used as an important tool in this society. Fire, which was used in many areas, such as protection from animals, heating, lighting, and cooking, was one of the most important resources of the period. At the same time, various tools were produced and used for hunting in this period.Society 2.0 is defined by people living as hunter-gatherers, adopting agricultural activities, and settling down. With the Society 2.0 Agricultural Revolution, humanity has reached the agricultural society by moving to a more organised system and producing agricultural products (Büyükuslu, 2020). As a result of the Industrial Revolution, people's organisation of social life changed again. This change has been described as a new social revolution. With the invention of the steam engine, production and consumption relations changed and industrial society was formed. In this process, factories were established, cities developed rapidly, the transport network expanded, and intensive migration to industrial areas began. Thus, a new social revolution is characterised as an 'industrial society'. This revolution is called Society 3.0. After the Industrial Revolution, a rapid technological development process also started. Countries have supported technological investments to keep economic power and be ahead in competition with other countries. One of the most important technological developments in this process can be considered the invention of the computer and the use of the Internet. With the invention of the computer and its use by society, society 4.0, that is, the 'information society' phase, has started. Information has started to assume a decisive role in society by including computers in production processes, creating information networks and their use in the service sector.

The Japanese Government first used the concept of Society 5.0 on 22 January 2016 within the 5th Science and Technology Basic Plan framework. This concept expresses the vision of a society designed with science and technological innovations (Hitachi-UTokyo Lab., 2018). Technological developments, especially with Industry 4.0, have caused a rapid transformation in the world. Technologies such as artificial intelligence, the Internet of Things, big data, and cloud systems have revolutionised the industry. The Industrial Revolution must be closely followed for countries to maintain their power and have a global competitive advantage. In this sense, while Industry 4.0 opens the doors of a new world, the focus is entirely on production (Özsoylu, 2017). However, what is important is how new technologies will affect society. The mentioned technologies have a tremendous transformative effect, and the social structure has been redesigned with the developments in the industrial field. This is precisely the point pointed out by the Japanese Government: How should Industry 4.0 be used in society? Can a holistic system be designed with new technologies? Can Industry 4.0 technologies reduce the contradiction between human needs and the scarcity of resources? Can a new inclusive, environmentally and socially beneficial, and sustainable society be built with Industry 4.0? (Council for

Science, Technology and Innovation Cabinet Office, Government of Japan, 2015). From this point of view, the aim of society 5.0 is to ensure that the transformative effect of developments in the industrial field is realised based on social benefit. In doing so, data is seen as the most important tool.

With the development of computers, the widespread use of the Internet and the invention of new technologies, a new social revolution has begun to be mentioned. In this process, which is defined as Society 5.0, 'Super Smart Societies', it is envisaged that societies will actively use advanced technologies in their daily lives. Especially artificial intelligence, big data, and cloud technologies are among the prominent technologies in this process. Using these technologies is expected to provide fast, rational, and practical solutions to the problems and needs of societies. Thus, society 5.0 points to a new social order based on the developments in industry 4.0.

There is no comprehensive definition of Society 5.0 due to the limited written resources and the lack of studies in this field. However, in recent years, studies in this field have increased significantly compared to other years. Considering the rate of change in the industrial and social fields, these studies are insufficient. Although the definitions for Society 5.0 are limited in the studies, some definitions form the general framework. In the Basic Plan for Science, Technology and Innovation published by the Japanese Government in 2016, society 5.0 is defined as people accessing the goods and services they need at the right time and in the right amount. Society 5.0 is generally defined as a society that can meet various social needs, where people from all walks of life can receive easy and quality services and live a comfortable life (Council for Science, Technology and Innovation Cabinet Office, Government of Japan, 2015). According to the Japan Economic Organisation, society 5.0 focuses on the economy and individuals. Especially disadvantaged groups - women, elderly, children, immigrants, etc. - can live a more prosperous and sustainable life with society 5.0. In this sense, society 5.0 aims to improve individual rights and freedoms, create a culture of innovation and solve global problems with society 5.0. In the report published by the Japan Economic Organisation in 2016, it was defined as a society where every individual feels safe, including vulnerable groups such as the elderly, children and women, offering a comfortable, healthy and sustainable life and realising the lifestyle desired by each individual (Keidanren, 2016). 2017, the definition was expanded by adding, 'It is a creative society where imagination and creativity combine to solve various social problems that people live in and create value' (Keidanren, 2017). Definitions of Society 5.0 have also developed over the years. In the definition made in 2018, society 5.0 is defined as a process with an iterative cycle in which data collected from the virtual world are analysed, meaningful results are drawn, and these data are applied back to the real world (Deguchi, 2018). Society 5.0 aims to transform people's living spaces or habits by providing integration between society and information technologies. For this, initiatives for smart cities are supported. In addition, society 5.0 should be connected with the necessary technology to develop policies to solve social problems and provide high-quality social services for people to live happy and comfortable lives (Deguchi, 2018). According to Bruno Salgues (2018), society 5.0 is the high interaction between the physical and virtual worlds. Society 5.0 is a society in which information communication technologies are used, community-centred, citizen-participated, sustainable, impressive, inclusive, high intelligence power, shared values and economic progress (Salgues, B. (2018). Cited in: Sudibjo, N. et al. 2019). According to Mayumi Fukuyama, the aim of Society 5.0 is a human-centred society where both economic developments are achieved. People live actively and comfortably, and solutions to social problems are provided' (Fukuyama, 2018). The important point in Society 5.0 is the integration of systems with each other. 'In order to understand/understand/realise a super-intelligent society, it is necessary to connect various 'things' through a network, create highly advanced systems from them, and integrate several different systems so that they can coordinate and cooperate' (Council for Science, Technology and Innovation Cabinet Office, Government of Japan, 2015).

When we look at the definitions of Society 5.0, it is revealed that an ideal social system is

designed. A society is being created to identify and prevent the problems that people are experiencing and will experience today and in the future. In this sense, society 5.0 can also be defined as a strategy for designing the future. Based on the above concepts, it is possible to evaluate society 5.0 in four items: i) digital transformation, ii) human-centred approach, iii) data and iv) cyberspace. Digital transformation has transformed people's lifestyles and played a role in the emergence of new needs and problems. However, digital transformation has also brought new opportunities. Artificial intelligence, the Internet of Things, and cloud technology shape the new social system. This contradictory process brought about by digital transformation has paved the way for developing the concept of society 5.0. Especially after the Industrial Revolution, human beings have become a tool for the goals of the capitalist system by taking back roles in work, labour and social life. Society 5.0 it is aimed to create a decent work-life balance. In order to realise this goal, the data produced at every moment in daily routine is used. Data constitutes the source of Society 5.0 and creates a fast, efficient, effective and sustainable model for achieving the goals of the Society 5.0 ideal. The area where this model is realised is cyberspace. Society 5.0 develops a bidirectional structure by building not only in the real world but also in cyberspace. The prominent feature of Society 5.0 is that it connects objects, structures and systems and carries society to the digital network. In these aspects, the feature distinguishing Society 5.0 from other social revolutions is that it develops strategies to design the social structure, tries to predict the new social revolution and takes measures to solve the problems that will arise with the social revolution by identifying them in advance. The social structure defined within the framework of these features is accepted as a new social revolution. In this sense, the concept of Society 5.0 refers to the fifth social revolution in the history of the world, which caused an effective transformation in people's lives. In these periods, it is planned to change people's living, thinking and working habits and to build a new social system. The revolutions occurring in the social field proceed in parallel with the industrial revolutions. As industrial developments became widespread and started to be used in the field of production and daily life, they started to change social life.

Society 5.0 and Data-Driven Society Understanding

Transformation in the social sphere is a process that starts with individuals but is realised in the city and society. The concrete space of Society 5.0 is unquestionably cities. Today, when the world has become a small village with globalisation, cities have a global characteristic. The development of cities in both economic and cultural fields is a triggering factor for the development of a country. In order to realise an effective transformation in Society 5.0, cities must become smart. The most important factors for this are collecting and analysing the city's data in cyberspace and developing practical solutions. Cyberspace is the twin of cities in this sense. The development of data-centred cities and their simulation will determine the threats and opportunities of the activities to be carried out for the city and society in advance. In order to realise this process, which is called cyber-physical-social systems (SFSS), artificial intelligence technologies should be used. At the same time, all systems of the city - transportation, environment, architecture, layout, production organisation, cultural characteristics, etc. - should be interconnected. Transferring the city to cyberspace will allow it to connect with other cities. For the smart city system to be sustainable, the data should be free and open to sharing. In this designed system, an instant and continuous data flow is essential. Data's cyclical interaction with people, environment, and objects makes data valuable. As a result of the data produced by people, the system is designed, and the designed system is presented to people again. Thus, the transformation defined as society 5.0 is based on data, human-object interaction and cities.

Shape 1

Organizational framework of Society 5.0 in cyberspace

Source: (Liu et al., 2011)
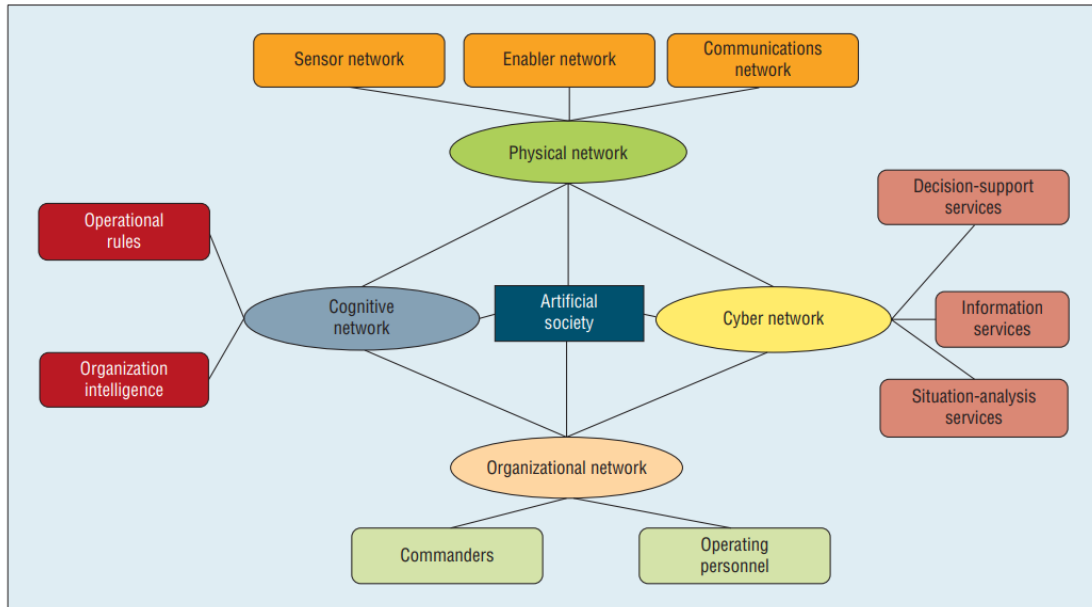
Satellites, cameras, sensors and telephones generate instant, continuous, comprehensive and analysable data. The data obtained offers the opportunity for real-time analysis and thus determines the change direction. The data generated in the real world is transformed into big data and collected in cyberspace. Cyberspace is the world inside the computer created from data (Deguchi et al., 2018). Society 5.0 is based on collecting and analysing data produced in the real and cyber worlds. Meaningful results, connections and relationships are extracted from the data analysed in cyberspace and value-oriented solutions are produced for the physical world. Thus, a cyclical process is formed between the physical and cyber worlds. The important point here is that the real world consists of a whole of interactions. More precisely, human beings, who are actors in the real world, live together without boundaries in areas we distinguish as physical, emotional, social, etc. This situation shows that the data obtained from the physical world does not come from a single source but consists of a complex whole. Therefore, the connections and relationships established with different data are important in analysing the data in cyberspace.

On the other hand, keeping people under constant surveillance is one of the natural consequences of society 5.0. Here, we come across the concept of panopticon. The concept of panopticon, first used by Bentham, refers to a central tower in the middle of a circular prison where all criminals can be observed. On the other hand, Foucault states that such a surveillance system has been established with the development of micro technologies and that the rules are obeyed with the awareness of surveillance. However, Foucault establishes a connection between knowledge, technology and power and argues that power imposes its rules through surveillance (Ritzer, Stepnisky, 2018: Turner, 2020). In a way, this view is in line with today's technology. When we consider today's technologies and application areas -internet banking, estate, HES (Hayat Eve Sığar) application or social media accounts, etc.- we can state that they have moved to a dimension that cannot be evaluated in terms of 'surveillance'. Firstly, the fact that official affairs are handled quickly and easily by moving to digital environments has made people prefer these applications. Although mandatory, this process operates through mutual interest relations between

the state and the public. From a different perspective, the widespread use of social media accounts constitutes the other side of the coin. When evaluated in general, social media accounts are an example of an enormous surveillance mechanism with the data they provide. Moreover, these accounts are used voluntarily and without coercion. Virtual environments have gained an advantage as they provide an environment for people to create discourse and express their thoughts on economic, political, current, etc. Rapidly disseminating information and gathering people around the same idea creates a practical unity of power. From this point of view, the surveillance mechanism turns into a mechanism where the people can control the government. In short, the relations with the technologies surrounding everyone today have differentiated. Therefore, technologies that can be considered as surveillance mechanisms contain different processes and interactions. In general, it has become compulsory for people to produce and share data to continue their existence in public and social spaces. This situation, which we can also refer to as data culture, provides a harmonious life without rejecting the reality of the age or becoming its slave.

Another issue related to data is the use of artificial intelligence in data analyses. One of the important features of this period is that artificial intelligence interprets data meaningfully, reaches rational and human-like results, and learns and makes decisions. An important issue in artificial intelligence is fuzzy logic, which differs from classical logic. The main change here is the possibility of expressing different, original values instead of precise expressions. Thoughts that change according to time, place and events have become expressible. This transformation in the digital world's logic field constitutes the essence of Society 5.0 with smart factories and smart cities. In this process, the production and consumption of relations will change in Society 5.0. These changes, which take place on the axis of the basic logic of capitalism, will make the social effects of capitalism visible in new forms. In this respect, society 5.0 will produce its opposing mentality as in other definitions of society. In this context, alienation, which is located in the internal logic of capitalism, will continue to be one of the practical discussions of society's 5.0 debates facing sociolog.

Conclusion and Discussion: From Meta Fetishism to Data Fetishism

Industry 4.0 and Society 5.0 are based on a data-based approach. The position of data, which is accepted as a new stage of the Industrial Revolution and is at the centre of the reproduction of capitalism in this context, is why it functions as a raw material in the capitalist system. Therefore, data has assumed a critical role in capitalist economic production due to this position. How should we understand and interpret Society 5.0 in this relationship between data and capitalism? When we consider the production-consumption relations in the historical process, alienation and meta-fetishism, which are among the unique characteristics of capitalism, can be determined as an exemplary axis.

In order to exist in the capitalist economic system, people need to ensure the continuity of the system. In this system, human creative labour, which machines cannot do, has become necessary in production. Here, we encounter a different dimension of alienation, which is important in Marx's sociology. Marx considers labour as 'part of species existence' (Marx, 2022). The devaluation of labour for human beings and the lack of need for labour can be perceived as a threat to the species' existence of human beings. However, with the development of machines, machines have become a means of value production. What happened with the development of machines is the change like labour in the mode of production. Live and uncontrollable labour has been replaced by machines that ensure production under all conditions, are not exposed to external factors, and can be controlled and supervised consistently. In this production system, man has become an intermediary, performing simple and repetitive tasks, controlling and regulating the system with his eyes and hands. In this context, the change of the labour tool and its transfer to machines constitutes the starting point for the birth and development of big industry. Mechanisation constitutes the basic building block for the continuity of capital accumulation,

the steady and continuous increase in profit, and the protection of the production process from external factors. The perception at the time of the emergence of industry and the motive for the mechanisation of factories in the period referred to today as the Fourth Industrial Revolution can be considered the same. Today, on the other hand, the creative aspect of human beings replaces labour. 'The most fundamental injustice of capitalism is that it targets for exploitation what distinguishes humans from other animals, namely our productive creativity' (Turner, 2020). As can be understood from Turner's statement, this situation constitutes the basis of capitalism. This exploitation will be more intense with Industry 4.0.

"Since social labour is the primary source of value and profit, replacing it with machine or robot labour is political and economic nonsense. However, we can see the mechanism that brings this contradiction to the point of crisis. For individual entrepreneurs or companies, labour-saving innovations are vital to their profitability vis-à-vis their competitors. This fact completely undermines the possibility of profit-making" (Harvey, 2014).

According to Harvey, one of the fundamental crises of capitalism occurs when labour, which determines value and profit in the capitalist economic system, is replaced by robots or software. In such a situation, labour and workforce will lose value, and goods will become cheaper. However, at the same time, poverty and unemployment will increase, social welfare will deteriorate, and crises will occur regarding capital accumulation and profit continuity. At the same time, however, it is necessary to consider this process within the cultural logic of postmodernism or late capitalism. In transforming the production organisation into a new form and integrating digitalisation into the production process, a process linked to the cultural structure is progressing. Jameson (2022) states that today's technologies and machines have different capacities and dimensions. He emphasises that wheat fleets and factory chimneys, which represent industry, have been replaced by flat computers or televisions that project images. Jameson emphasises that today's machines are machines of reproduction rather than production. In this reproduction process, he emphasises that thematic representation is more prominent than production based on muscle power or physical energy (Jameson, 2022). Thus, it is emphasised that the centre where value and meaning are preserved in postmodern culture is lost. This point, emphasised by Jameson, expresses that Marx's theory of alienation has gained a new dimension. So much so that Jameson states that, at this point, the alienation of the envious is replaced by a second fragmentation. The loss of meaning and values reveals the theme of 'the death of the subject itself', that is, stress, and this situation leads to the decentralisation of the subject or the soul. The distancing of the subject from concepts such as anxiety and alienation is interpreted as a liberation of the subject from its former anomie. In this case, the absence of a subject that will produce emotion is mentioned (Jameson, 2022). Therefore, even though the capitalist production process moves from the same foundations - increasing capital through mechanisation, more efficient and intensive use of labour, etc. - it leads to the deepening of the crises caused by industrial revolutions and the growth of internal criticisms.

With the discussions on Society 5.0 and Industry 4.0, data has replaced commodities in production and consumption. Thus, a data-centred understanding of society and the city has emerged. As Jameson emphasises, the data produced by subjects devoid of producing emotion can be considered as a pile independent of meaning and value. The data produced by the subject, which is devoid of anxiety and emotion, will cause different crises of meaning. Therefore, although the data-centred understanding of the city seems to eliminate alienation and labour exploitation, it produces a new dehumanisation within the internal logic of capitalism. This dehumanisation production can also be read together with posthuman, post-truth discussions. As a result, society 5.0 is among the current definitions of society based on industry 4.0. It expresses the final point of the basic logic of industrial society today. The reproduction of the internal logic of capitalism constitutes the basic framework of society 5.0 discussions today. Today, while capitalism gives us comfort in many areas with data, it takes control with

surveillance and alienation. For this reason, if we update Marx's statement, a structure-perpetrator relationship is shaped in which data fetishism is at the centre of the establishment of daily life.

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