Design 4.0 and Digital Empathy

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Abstract

As a discipline, design expands its scope day by day and it deepens its interaction with other disciplines in parallel with it. It can be seen that design has increased its connection with especially digitalization and visual culture since the beginning of the 21st century. Thanks to digitalization, the virtual world, technology-based globalization and the transformation of visual culture, it seems that there is almost no space left that hasn't contacted with design. The fact that the industry 4.0 process has intensely influenced all disciplines particularly since the year 2011 can be shown as a reason why digitalization influences human life socially, culturally, and economically. It can also be said that design increased its power of influence and emerged as an interdisciplinary concept at this point of the Industry 4.0 process.

Throughout the history, the contact points of industrial revolutions with technology can be seen as important turning points in the history of civilization of human beings. Nowadays, the ability of humankind has reached a level that pushes the limits of the imagination in controlling the world thanks to the influence of technology. Thanks to the Internet revolution, the unlimited gates opened by the virtual world to humankind bring many transformations from economy, health, social life to art. In all these processes and transformations, design transforms together with technology and plays an important role in the management of information. Along with digitization, the field of design receives its share from the transformation of business models in daily life. This is where design steps in especially in the construction of visual culture and the visualization of the digital world. In this article, it is tried to explain the position of design in digitalization processes and the way it interacts and what kind of position it takes in Industry 4.0 process. In particular, the relationship between the concept of Digital Empathy, a new concept, and design is examined and a new perspective is tried to be introduced.

***Keywords*:** Design 4.0, Industry 4.0, Digitization, Digital Empathy

1. INTRODUCTION

Today, all areas which the concept of design interacts with can be thought of as human-centred and visualization-based processes. In parallel with this situation, it is seen that new concepts such as Digitalization, Semiotics, Digital Economy, Global Digital Culture, Digital Visual Culture, Virtual Capital, Smart Factory, Artificial Intelligence, Internet of Things and etc. have emerged. In this respect, it is important to define and re-interpret the concept of design together with the Industry 4.0 process. Especially with the global digital culture, the rapid consumption of information and the inflation of information

complicates the management of difficult processes. In this case, it can also be said that the design acts as a lever in the management of visual culture. The Mozota's slogan; "Design is a tool for globalization advertising: Think in general, act locally " and the approach "For example, a wider European market has multiplied mergers and has also created new strategic marketing programs that create demand for European brand design " define the position of design in nowadays.(Mozota,2006: 73).

When we look at the historical development of industrial revolutions, it can be said that there is a transformation in the models of information management together with technology. It is seen that Industry 1.0 takes mechanics as a reference, Industry 2.0 takes serial production based on electrical energy as a reference, and Industry 3.0 takes electronic automation as a reference. It is seen that Industry 4.0, which started to take place as of the beginning of 21st century, accepts digitalization as a reference. When these references are examined, it is also seen that digitalization is shaped especially by Semiology and Visual Culture. In this respect, the digitalization and transformation of communication in the Industry 4.0 process includes the area of influence of design in the production-consumption balance formula. Here, design contributes directly or indirectly to the management of information. The advantages provided by digitalization in production and the unlimited possibilities offered to people by means of virtualization in consumption become meaningful thanks to the design and trigger cultural changes based on visuality. At this point, it can be said that the concept of Digital Empathy steps in and contributes to the controlled management of the processes.

2. DESCRIPTION AND DEVELOPMENT OF DESIGN, INDUSTRY 4.0 AND DIGITAL EMPATY CONCEPTS

Breakdowns in national economies along with digitalization necessitate transformation and this situation leads to the redefinition of concepts or the emergence of new concepts and terms.

The relationship between art and industry is shaped by the way people perceive and manage the world. From the cave paintings to the artificial intelligence of the present day, the way people express themselves has differentiated with a very rapid acceleration in the last century. Nowadays, people try to exist in the virtual world, which is a parallel life, and benefit from the fruits of technology all the way. In this respect, it is also important to determine the current depths of influence of Design, Industry 4.0 and Digital Empathy concepts.

2.1. Definition of Concept of Design

The concept of design is a concept that should be considered together with Art History. Discussions over the problem "Is design an art or craft? still continue. Since it is a concept that nourishes people's aesthetic perception, it can be said that design is closely related with art. What is important here is how much design transforms the conceptual aspect of art with the influence of technology. Art has developed itself in parallel with civilization developed societies in the historical process. Berger's approach on this subject can be enlightening. Berger draws attention to the fact that especially visual arts were in a holy position throughout the history of society and they took possession of the ruling class of the society over time thanks to their position. (Berger, 2003: 32).

There are different approaches in defining the concept of design. According to Heskett, "Design can be defined as a human-specific ability to shape and create our environment in the ways that are absent in the nature, to serve our needs and add meaning to our lives (Heskett, 2002, 15). According to this definition, design can be called as a communication model of human with environment. It is a fact that the sub-components of design have a wide range of dynamics about human life. Here, the areas in which design relates to the dynamics of today's digital culture are particularly important. It is also possible to see design as a set of actions within the scope of art that contribute to human life. Design can also be thought of as a concept that enables people to conceptualize the world of thought and idea and to develop objects, communication models and regular activities (Barnard, 2010: 79).

It is also possible to see design as a way of perceiving and managing perception. The way people perceive nature enables them to achieve an output by becoming disciplined in design. This output can be a work of art, goods or an organized activity (Günay and Parsa, 2012: 30). The effort of the person to seek what is beautiful and beauty finds its place in the field of design. A design object put forward with aesthetic concern can also be defined as a way of expressing beauty. Here, Baudelaire's statement "Memory is the great criterion in art; art is a memory development technique about beauty" summarizes the subject (Foster, 2012: 90).

2.2. Process of Industry 4,0 and Design

When we look at the historical process of the concept of industry, it is possible to say that it started to be used with the French revolution. The concept of industry can be thought of as a concept that enables the development of society with art and science and also shapes production by improving it. Tunalı, who approaches the definition of industry from the field of design, defines the concept of industry through the Bauhaus example. Tunalı explains the basic principle of the Bauhaus school, which has become a symbol of art, design and industrial cooperation, "to stimulate human consciousness not to surrender to the machine and to present the first reconciliation model between man and machine in this way". With this approach, it is possible to reposition the industrial product in the balance between production and consumption by shaping it with design in line with the needs of the society. At this point, the association of art and industry is moved to another dimension. In this respect, we can see the obtained industrial product as a tool that serves to meet the demands of the society (Tunalı, 2004: 67-100-110).

When the industrial revolutions are studied, it is seen that the first breakdown occurred in England in the middle of the 19th century. England made various expansions to improve its industry by adding aesthetics to its products. The Arts and Crafts Movement is important at this point. This movement, which thinks that mass production of industrial products should be made more aesthetic and art (design) should be included, prepared the ground of the first industrial revolution (Turan, 2009: 15). These developments in the industry in England affected the USA and other countries in Europe and opened the way for art (art) to be added to the industry and the number of art schools based on industrial design increased rapidly (Dilmaç, 2015: 12).

It is possible to examine the periods of industrial revolutions in four stages. It is seen that the First Industrial Revolution based on steam power caused a transformation in the industry as of the second half of the 19th century. In the following period, the transition of Ford to mass production with electric energy in automobile production is

known as the Second Industrial Revolution. With the introduction of electronic-computer technology into the industry after the 1950s, it can be said that the period of the Third Industrial Revolution started. In 2011, the Fourth Industrial Revolution, which was declared by Germany to the world and based on digitalization, continues rapidly today. The Fourth Industrial Revolution, also referred to as Industry 4.0, has brought along the access to information through the Internet, and many uncontrollable transformations in the consumption of information. The parameters in technology, economy, industry and social life have changed rapidly and reached a level that pushes the limits of human dreams (Macit, 2017: 52).

2.3. Definition of Concept of Digital Empathy

It can be said that digitalization processes touch human life from many points. This interaction takes place directly or indirectly. The key point here is the transformative power of technology, especially on the economy and industry. Today's economic systems, also called Digital Economy, necessitate the emergence of a new perspective with its influence in design (Önday, 2017: 26). It can be said that many fields that fill human life socially, culturally and economically have changed through visuality with this new economic model. The concept of Digital Empathy gets involved at this point and enables human being to take control in these new processes. The concept of Digital Empathy plays an important role, especially in the establishment of the Digital Interpretation ground. In this respect, the concept of Digital Empathy can be defined as a skill that contributes to the perception and perception production of human in the digital age. The emergence of new types of literacy, such as Visual Literacy and Digital Literacy, along with the Industry 4.0 process, have led to the emergence of new concepts and terms such as e-readers, e-writers, e-texts, virtual twins, digital assets (Günay and Parsa, 2012: 8-154-155-170). In order to make sense of these new concepts and terms in human life, it is possible to define the concept of Digital Empathy as a whole of digital perception and digital perception production processes.

The population of the society that will have Digital Empathy skill is the new generation that is defined as Digital Native. It can be said that this generation, which was born in the digital age, also shapes digital culture (Palfrey & Gasser, 2017: 5). The important issue here is the question "how digital perception management standards will be formed". In the predictions about the future, it is seen that there are many questions about how to control the destructive effect of digitalization on human life. The research conducted shows that models of governing society through visualization go towards more complex processes with digitalization.

3. POSITIONING DESIGN IN INDUSTRY 4.0 PROCESS

As the impact of design on industry and production increases in line with the demands of visual culture, transformations take place in the sub-dynamics of the Industry 4.0 process. When the main headings of Industry 4.0 are examined, it is seen that it has an active field of activity in terms of design. The areas constituting the Industry 4.0 process can be grouped under nine main headings. The relationship between these areas and design take place directly and indirectly.

3.1. Subcomponents of Industry 4.0 and its Relation with Design

➢ Topics Directly Affected by Design in the Industry 4.0 Process

- Design and 3D printers
- Design and Augmented Reality
- Design and Simulation
- Design and Internet of Things

➢ Topics Indirectly Affected by Design in the Industry 4.0 Process

- Design and Big Data
- Design and Cloud Computing
- Design and Artificial Intelligence
- Design and Autonomous Robots
- Design and Cyber Security

When the above topics are examined; It is seen that the internal dynamics, such as problem solving, discovery, research and creating aesthetic value coincide with the subheadings of Industry 4.0. In this respect, it can be said that design emerged as a fundamental element in the process of digitization (Şahin, 2014: 30-31).

4. RELATIONSHIP OF DIGITAL EMPATHY CONCEPT WITH DESIGN 4.0

In the digital age, it is necessary for digital people to have digital empathy. The dynamics of the virtual world and the acceleration of communication through visuality make this necessary. In this sense, human beings, who suffer from information overload in the approaches put forward by the global digital culture for the future have to develop different perspectives in communication with the environment.

The self-positioning of the individual in the visual culture and the effort to establish himself / herself through new identities, especially in the virtual world, once again reveals the importance of the concept of Digital Empathy. There is now digital detection in communication. In this sense, the spreading and deepening of the level of visual literacy in visual culture becomes directly proportional to the effectiveness of digital empathy. There are various predictions presented by different perspectives in the discussions about the future.

These predictions can be specified as followings (Güney, 2014:73);

- Technology will be much stronger and more common than today.
- Computers will become smaller and molecular computers will be produced.
- Multimedia tools, in which molecular structures are used and is miniaturized will be developed.
- There will be a revolution in software.
- Three-dimensional projection applications will become prevalent.

- Creating virtual experience will become an important industry; virtual experiences will dominate our homes.

- Corporate applications to be realized in virtual media will increase.

- People will become more and more mechanical and they will adopt the silicon and steel in their bodies.

- Genetically perfect and superior human generation will be among the dangerous endeavours of the biotechnology era.

- Gene interventions will be carried out on unborn children optionally.

- The changes that will take place will be shaped by ideological considerations.

- New material luxuries will be created.

When these predictions are taken into consideration, it can be said that human beings enter a period in which individuals who think like a machine and have high level of digital perception. Here, digital empathy has to act together in almost all disciplines. The efficiency of the outputs to be achieved in an industrial product or a design process to be designed will depend on the effective use of digital empathy. To give an example, whether a furniture design is aesthetic or ergonomic may not be sufficient in today's digital age. Many questions such as how this designed furniture will exist in the e-economy, how it will add value to the life of its user (digital citizen), and how it will be presented to its target audience through the virtual world need to be answered. Digital Empathy ability is important to answer these and similar questions. In this sense, it is also essential that designers with a digital point of view grow up in the new world order where there are no limits. The necessity of digital empathy is also seen in the new approaches brought by the Industry 4.0 process.

These approaches can be specified as followings;

- The need for designers to integrate 3D printers with different disciplines,

- Differentiation in the provision of customized products or services in production,

- The emergence of digital 3D boutique workshops (in which everyone is a designer)

- Designing the digital world as human-centred,

- Evolution of visual culture and visual literacy based on design,

- The transformation of the leisure-time economy in which digital capital is intense,

- Increasing predictability in all disciplines,

- Renting / using of assets instead of ownership (goods as a service)

- The development of the design language in accordance with the sensors.

These changes to be created by Industry 4.0 also necessitate universal paradigm changes. When the aforementioned topics are examined, it can be said that Digital Empathy will be valid in all areas of design.

5. CONCLUSION

In the Industry 4.0 process, in which digitalization and visuality is dominant, it is seen that the effect of design increases. Considering the time spent in the virtual world and social media, it can be said that fundamental changes in communication models will be inevitable in the coming period. Besides the aesthetic artistic aspect of design, the interaction it enters with different disciplines has to contribute to the quality of life of today's people. Accordingly, Digital Empathy contributes to the processes by facilitating the work of design and supporting visual literacy.

The influence power of design on a global scale also changes inter-communal interaction. A product or service designed with a global perspective can contribute to the economic position of countries in the world. Considering that the borders have been lifted in international trade, it is possible that the products and services introduced into the system through e-commerce channels are organized from a digital perspective. To give an example, when looked at the global companies in the world, it can be seen that the top companies are the companies operating in the technology and digital sectors. When the founding and managing profiles of these firms are examined, it is seen that they are young people and they are futurist people who fictionalize the world grown in digital culture from a different point of view. Thus, it can be said that the values that these companies refer to as global economies are based on an approach that prioritizes digital empathy.

Considering that Industry 4.0 is a process of digital transformation, human beings' efforts to create a virtual new world using technology can be considered normal. All technology-based systems created by Industry 4.0, such as autonomous robots, augmented reality, artificial intelligence, big data and 3D printers, prove the infinity of human imagination. In the light of these developments, when examined the digital world view, it can be said that there are new cultural breakdowns in which visuality is at the forefront. It will be seen that digital natives, who are the leading actors of Digital Visual Culture, are active in all these breakdown processes and dominate in realizing digital transformation. What is important here is that the values of digital natives in changing the world are well fictionalised. Therefore, it is crucial to explain the concept of Digital Empathy towards digital natives especially through ethical values. Concentrating on scientific studies on this subject and educating this digital generation to make the world better are important topics to handle.

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