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THE MEANING OF 'SMART' IN SMART CITIES AND ETHICAL DEBATES ON SMART CITY

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The discussion on smart city has been actively discussed in Korea since the event of AlphaGo, and the establishment of a smart city is contemplated worldwide. However, there are relatively few discussions about the meaning or value of smart cities. The term 'smart' is used indiscriminately in various fields without a clearly defined concept. What exactly is a smart city? In the smart city being discussed today, it is necessary to discuss what it means to be a smart city and what the smart city we envision is aiming for. In this paper, the meaning of smart in smart city and social and ethical issues that will arise when smart city is established are discussed. First, smart cities, which utilize a large amount of information, deepen the "privacy issue" raised by M. Foucault (1926–1984). Second, there is a problem that 'intelligence', which is important in smart cities, is defined in a very narrow sense. Third, smart cities that try to connect everything can give rise to 'totalitarianism'. The value that smart cities are aiming for does not just mean technological intelligence. Also, the idea of why to make a smart city should take precedence in the smart city discussion rather than the idea of which city to envision. What is important in the smart city discussion is the 'city', not the meaning of smart.

1. Introduction

The discussion on smart city has been actively discussed in Korea since the advent of AlphaGo, and the establishment of a smart city is contemplated worldwide. However, there are relatively few discussions about the meaning or value of smart cities. The term 'smart' is used indiscriminately in various fields without a clearly defined concept. What exactly is a smart city? In the smart city being discussed today, it is necessary to discuss what it means to be a smart city and what the smart city we envision is aiming for. In this paper, the meaning of smart in smart city and social and ethical issues that will arise when smart city is established are discussed. First, smart cities, which utilize a large amount of information, deepen the "privacy issue" raised by M. Foucault (1926–1984). Second, there is a problem that 'intelligence', which is important in smart cities, is defined in a very narrow sense. Third, smart cities that try to connect everything can give rise to 'totalitarianism'. The value that smart cities are aiming for does not just mean technological intelligence. Also, the idea of why to make a smart city should take precedence in the smart city discussion rather than the idea of which city to envision.

2. The Meaning of 'Smart' in Smart Cities

The dictionary definition of the term 'smart' is when used along with software or hardware, that it has an ability to process information that it could not be expected so far. Also, the potential value of Smart Products is introduced as elements that are based on the use of information and can provide better functionality or service that can increase the value of relationship-based services. But the term 'smart' is being use much indiscriminately, in the sense that almost all

home appliances are being launched with the prefix ‘smart’ and the term is being used as a new paradigm in cities and spaces.

For the ‘smart’ devices such as smart phones, smart bomb, smart card, and smart air conditioner, the term is commonly used with the aim of delivering the concept of intelligent and advanced. The term ‘smart’ used with cities and spaces such as smart grid and smart house tries to show that cities or spaces are eco-friendly and be built with advanced technology.

However, while definitions for some ‘smart’ products exist, it is impossible to find generally accepted and agreed upon definition of smart products in the literature due to its indiscriminate usage of the term in the short term. McFarlane et al.’s definition states that intelligent product should be uniquely identified, and can communicate effectively with its environment, storing and retaining data about itself, deploying a language to display its features and requirements, and finally capable of participating in or making decision relevant to its own destiny[1]. However, majority of the literatures does not provide a definition, demonstrating the need for a consensus definition.

Several problems arise from this conceptual confusion. Without a common base, it would be difficult to build a theory specifically for this system, and any discussion may end with lack of mutual understanding due to the confused use of the term, making the establishment of definition of ‘smart’ products a priority. Without the lack of common definition, smart products could end up as another example of disappearing buzzword.

Especially for the term ‘smart cities,’ governments and research since the 1990s used the term as a fashion label in the hope for certain cities to be distinguished with other existing cities and promoted as innovative without long term plans for achieving the purpose, making the definition of the term ambiguous and making it a challenge for others that are facing the process for developing plans for the aspiration of smart cities.

There were number of studies attempting to define the concept of the Smart City, but due to its multidisciplinary concept and the ambiguity of the term ‘smart,’ the agreed-upon concept of the term does not yet exist.

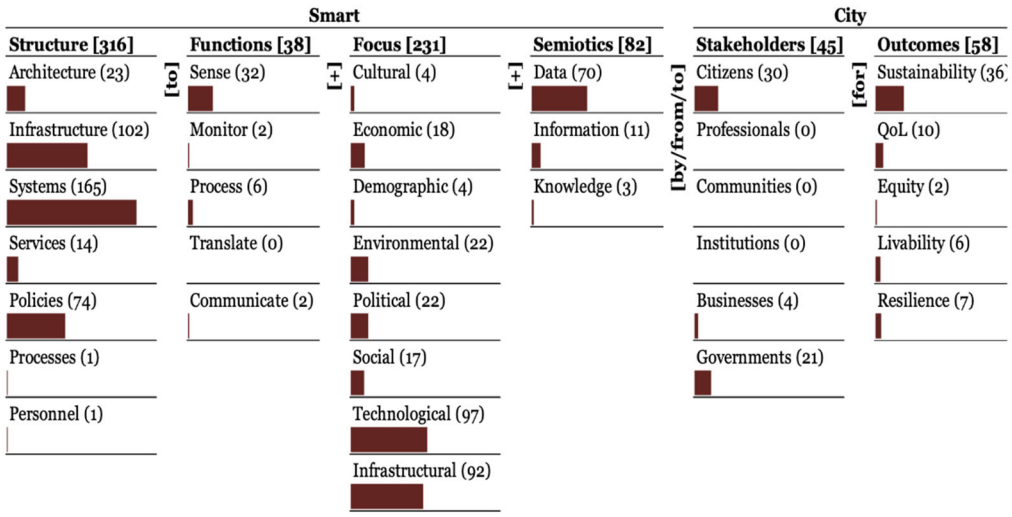

Figure 1. The ontological Map of Monads of Smart City Research.
(Citation: Ontological Review of Smart City Research, A Ramaprasad, AD Sanchez, Thant Syn, 2017)

As in the ontological map above which analyzed 373 articles with the theme of smart city, most of the articles in the corpus mainly focused on ‘smart’ aspect of smart city mostly focuses on technological and infrastructural aspects of smart city management systems, whereas environmental and social aspects receive less focus. In addition, literatures mainly focused on ‘city’ aspect of smart city mainly deals with stakeholders and outcome, focusing sustainability and quality of life, showing the gap of the definition used by various field of research.

The early attempts to define the term were focused on the smartness provided by IT (Information Technology) for managing functions of the city, represented by the concept that IBM has used in 2010: instrumented, interconnected, and intelligent city. Later, the studies have widened their scope to include the outcome of the various concepts such as sustainability and quality of life. Despite of these attempts to describe the term, there are more than thirty-six definitions of smart cities.

3. Ethical discussion about ‘Smart city’

The term 'smart' is used indiscriminately in various areas without the concept clearly defined. Thus, the term, when used to express a new paradigm of a particular space called 'city', does not give a clear indication of what it means. For example, the term 'smart city', which is a commonly used term in urban construction policy and industry at home and abroad, implies the character and vision of future city that we can pursue. However, according to an investigation by the International Telecommunication Union (ITU), there are about 116 definitions of 'smart city'[2] . Different countries (or institutions, companies) use the term in different ways. For this reason, there is a certain difficulty in clearly understanding the nature and direction of the city, which is alluded to as 'smart city'.

Nevertheless, if we look at the urbanization policies of the countries that are currently under construction of 'Smart City', we can roughly examine the nature and direction of future city that is suggested as 'Smart City'. Smart city, as its name suggests, can be summarized as a 'smart city'. The question then might be, "What is a smart city?" Or "How is a city smart?" The answer is the use of cutting-edge technologies such as big data, artificial intelligence, sensors, the Internet of Things (IoT), and computer cloud that enable 'excellent intelligence', 'the vastness of information' and 'interconnect between information and intelligence'. Is in. The technologies mentioned are in the spotlight as key technologies that will lead the Fourth Industrial Revolution. By constructing smart cities, countries and corporations combine urban public functions and infrastructure with these advanced technologies to minimize the social side effects and costs such as energy shortages and environmental pollution, while minimizing the power, convenience, and efficiency of information processing. We want to increase speed and achieve sustainable economic growth. It is hoped that the lives of citizens living in the city will naturally be improved in quality. Smart City is a smart city in that it is a space where work can be done quickly, conveniently, and efficiently.

However, the characteristics of such 'smart city' are in line with the main characteristics (modernity) of modern culture, and thus share some of the same problems. As explained above, the key to the current smart city is the use of advanced technologies related to the vastness of information, the excellence of intelligence, and the interconnection between information and intelligence. In this sense, 'intelligence', 'information', and 'connection' are key keywords that characterize smart cities. So, let's talk about the problems with keywords.

First, smart cities, which utilize a large amount of information, deepen the “privacy issue” raised by M. Foucault (1926–1984). Big data refers to the “voluminous amounts of data created

in the digital environment," that is, large amounts of information. Advances in big data technology have enhanced artificial intelligence, which evolves through deep learning. That is, the more data, the greater the learning distance of artificial intelligence, and the superiority of artificial intelligence with increased learning amount increases in direct proportion. Therefore, for a smart city to fulfill its role as a literally smart city, the more data (information) that is the learning distance of artificial intelligence, the better. However, with the development of sensors and the Internet of Things (IoT), the collection of such data has become easier. According to the latest smart city policy, sensors and artificial intelligence and information and communication technology (ICT) are installed in almost every place where citizens living in the city are trying to collect information in real time. The problem, however, is that, in the pursuit of convenience, speed and efficiency in work processing, relying heavily on advanced science and technology, citizens' personal information can be easily exposed in various parts of the city and their lives can be controlled. On the other hand, Foucault criticized the nature of modern culture, disregarding the privacy and rights of individuals, while being buried only in pursuit of 'orderliness', 'safety' and 'efficiency'. This privacy issue, however, is likely to deepen in smart cities, which aim to collect and efficiently process personal information of citizens every moment. For example, if existing CCTVs were simply storing images of our faces and movements as images, in this new city, we could analyze every taste, habit, and lifestyle that we didn't even know about ourselves. You may be hit. Let's look at specific examples regarding privacy issues. China's CCTV and UNHCR refugee data.

CCTV in China: Shenzhen, which is the first "special economic zone" in China, is equipped with more than 200,000 CCTVs for preparation for Beijing Olympics and they are installed throughout the city and are disguised as lampposts. These CCTVs are for high-tech surveillance and censorship program in China, called "Golden Shield", and the system is supplied by IBM, Honeywell, and GE in North America. In 2006, China installed security cameras connected directly to police stations for "Safe Cities" surveillance project in all restaurants and internet cafes, and these are now related to "Golden Shield," watching Chinese citizens around the clock throughout networked CCTVs, monitored by digital voice-recognition technologies, and limited internet access throughout online controls known as the "Great Firewall." Citizens' movements will be tracked through national ID systems with computer chips, and photos taken with CCTV systems are uploaded to police databases and linked to the holder's personal data, and this links all this information together in a searchable database of personal information. This system helps prevent thieves such as stealing GPS from the car as well as sudden political outbreaks, such as by identifying demonstrators and rioters during the outbreaks and posting them online to help with the manhunt [4].

UNHCR refugee data: Since the digital tools such as social network services and online messaging became widely available, refugees were able to reply on digital networks to communicate with distant families and locate the resources they need, but the same tools that gave refugees freedom can easily be leverage for surveillance and control over refugees. In the recent context of the Syrian refugee crisis, the use of digital media and communication technologies got attention. With digital infrastructure such as Wi-Fi hotspots, cell phone charging stations and mobile apps, asylum seekers rely on digital devices in order to navigate the external and internal borders of the EU nations, making success of refugees in making it to safe spaces rely on not only physical but also digital infrastructure. But the very same technologies they use can be utilized by human traffickers who leverage digital media to operate efficiently. Also, governments took advantage of social media and digital biometrics to identify and control their borders, making digital platforms facilitating movement simultaneously sites of surveillance that instantiate government border policies of control[5].

Second, there is a problem that 'intelligence', which is important in smart cities, is defined in a very narrow sense. Intelligence emphasized in smart city policy is closely related to artificial intelligence technology. Artificial intelligence, which is being developed based on human intelligence (reasonable ability), is now solving the problem by calculating numerical values faster than humans or by efficiently classifying data such as text, voice, pictures, and images. Because of this, if artificial intelligence is to be exerted throughout the city in the future, it may be easier for citizens to do their jobs. However, intelligence emphasized in smart city policy cannot be said to represent all human intelligence. As C. Taylor (1931--) gives a hint, today's artificial intelligence is built from the very beginning, emulating only the "mechanical cognition, computation, and procedural reasoning" capabilities that are part of human intelligence[5]. This narrowly defined intelligence, no matter how excellent it is, will naturally improve the quality of life of citizens (in other words, lead to 'better life', 'higher life' and 'better life'.) Cannot be seen. As M. Horkheimer (1895-1973) criticized, the quality or value of human life is by no means an invaluable part of 'tool reason' of economic efficiency. Rather, the evaluation of quality of life and the orientation to quality of life can be carried out by intelligence different from mechanical intelligence — in Taylor's way, self-interpretation. However, recent smart city policies overlook this.

Third, smart cities that try to connect everything can give rise to 'totalitarianism'. In smart cities, all things and people are connected. As mentioned earlier, the smartness of a smart city (i.e. the prominence of artificial intelligence) is proportional to the amount of information. That's why scientists and policymakers are trying to bring together all information and intelligence through computer cloud technology. In other words, the information provided by citizens is stored and used in a single data center (central cloud) to facilitate information processing and to promote the city's smartness quickly. The link between information and intelligence is not always accompanied by the consent of individual citizens. This allows citizens to unknowingly expose their secret information. Even if this connection is done with agreement, there is a problem. Smart City, where everything is connected, poses the danger of “totalitarianism” that uniformizes the way of life of individual citizens. Because citizens living in smart cities will be provided with information in the same data center, they are likely to enjoy a similar way of life. In addition, there is the possibility of excluding life intentionally rejecting this connection or inevitably falling apart. That is to say, as modern culture has treated the non-mainstream life out of the mainstream, and has ruled out the whole, 'disconnected life' for any reason in a smart city—in a smart city, that is, relatively lack of information or intelligence, you will end up with a slow and inefficient life—you can be alienated or treated relatively low. But fear of such discrimination and inequality leads to forced and violent circumstances.

4. Conclusion

No one may like a city that is too smart, as criticized by sociologist R. Sennett[6]. Also, if someone really wants a smart city, someone else may want a different city. Again, with help from Taylor, we are intelligent beings who can evaluate our own lives. In the smart city, however, intelligence is a narrowly defined concept, so no matter how highly intelligent the city, it can be expected that the quality of life of citizens will increase in direct proportion. Rather, the qualitative fullness of life (the condition and condition of a good life) should be judged as an intelligence that can be defined in a broader sense, an intelligence that only humans can possess. And its appearance and conditions can be judged differently depending on how individual citizens exercise their intelligence. Therefore, even if we live in the same space, our

ways of life are bound to be colorful. Nevertheless, today's smart cities (an urbanization policy emphasized by the term “smart city”) are overlooked. Currently, the meaning of smart in smart cities is being discussed focusing on human convenience, energy efficiency and utility. But what will be discussed importantly in smart cities is what the city means and for whom it should be smart. In other words, what is the purpose of smart technology?

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