REMAPPING SONGDO: A GENEALOGY OF A SMART CITY
IN SOUTH KOREA

BY

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ABSTRACT

This dissertation addresses the relationship between history, culture, technology, and urban governance in South Korea. It focuses on the technologies and techniques of making and governing a smart city and argues that they have been shaped by the long-term concerns for security, future, development, and globalization. This is not only evident in national economic policies and public discussions of the smart city and the new media technologies, but also in the spatial-material arrangement of urban environment and individual daily practices interacting with the digital environment.

My examination of the New Songdo City in South Korea, one of the first smart cities in the world that is technically run by codes and data, provides a historically informed and locally specific account of what sociopolitical concerns, such as national security, public safety, climate change, and economic development, have guided the digitalization of urban governance. For instance, Songdo has deployed numerous sensors and cameras to monitor the urban infrastructures and public space. Contrary to the common public response to surveillance in the West, Koreans have rapidly adapted to the digital media environment and even perceived the monitoring technologies to be safely 'watching over' them. This dissertation explores how Korea's unique cultural sensibilities to security, privacy, and development have driven the country's status as one of the most cutting-edge, high-tech nations in the world. At the same time, the ongoing proposals for the 'K-Smart City' extend the tradition of the export-oriented industrial model formulated during the 1960s. This dissertation serves as a counterpoint to the proliferating narratives that ascribe a universal value to the smart city, by offering a historical

and cultural account of the technology and the developmental mentality that characterize Korea's unique path toward digitalization and globalization.

The field of communication and media studies is approached in two differing ways throughout the dissertation. First, I take a socio-material and contextual approach to the smart city and offer a 'pluralized' way of thinking about the relationship between media and space. Based on participatory observations, I offer an expanded account of mediation that include urbanization, multiply affected by the governmental rationality and ideal norms of citizenship in South Korea. Second, I take a genealogical approach to the media, cutting across multiple temporalities and scales, and provide a critique in a form of history of the present, by accounting for the problem of power and its relation to the knowledge production and subject formation. Through this genealogy, I trace the history of developmentalism and militarism in South Korean modernization and post-war formation of urban science and technology, by bringing together history of technologies, mentalities, militarism, and developmental government.

Following chapters in the dissertation highlight different but interrelated dimensions of the smart city. After briefly reviewing the South Korea's history of urban planning and its relation to the military government in Chapter 1, I address different dimensions of the smart city in separate chapters – Mobility (Chapter 2), Security (Chapter 3), Environment (Chapter 4), and Futurity (Chapter 5) – and connect them to specific genealogies. I analyze the significance of the smart city with respect to the earlier models of national and urban governance in South Korea and discuss how the complex history embodied and congealed in today's smart city, as a discourse and a material reality, guides how a desirable future is envisioned and imagined in South Korea.

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INTRODUCTION

In 1980, Korean mainstream media, public administrators, businessmen, and general public were fascinated by a book just came out from the US. Even if one had not read the book, it was hard to miss the book title, "The Third Wave," cited at least several times by the newspapers and broadcast news. New terms such as 'prosumer', 'telecommunity', and 'intelligent environment' often entered public discussions about the future of the nation and of the world. The idea of future society organized around the electronic industry and information and the seemingly inevitable transition of mass society into a more decentralized one instigated hopes about more open and democratic society.

It was in the same year that Korea experienced a second military coup in the nation's history by Jeon Doo-Hwan, who succeeded late Park Chung-Hee's authoritarian regime and became the president of South Korea. Extending late Park's presidential legacy, Jeon's regime established the economic growth and anticommunist national security policy as the prior policy agenda. In 1983, Jeon's regime expanded the previous Supporting Committee for Semi-conductor and launched the Supporting Committee for Information Industry, to take the lead in building the nation-wide electronic and computer networks. Jeon continued the support for scientific research and development activities at the universities and companies like Samsung, a company that had started its electronics production business in the 1960s. Samsung, like many other chaebols (family-owned large corporations), maintained a close relationship with the government to jumpstart and scale its business in a highly rapid fashion. In 1986, Samsung demonstrated its first Home Automation technology design called the 'HA101'. In an article published in the Donga Science magazine in 1987, Choi Suk-Gyu, a researcher from Samsung Electronics introduced the notion of 3A, which consisted of FA (Factory Automation), OA (Office Automation), and HA (Home Automation), which was again divided into Home Security System, Home Control System, and Home Information System. Different systems were going to be connected by magnetic contacts, infrared, or microwaves. The automation of home, if realized by 2000 and reach the consumer market, it was said, was going to revolutionize our life.

It is often said that smart city is going to alter our lives in the future urban world. Technically, a smart city is defined as a city that collects and utilizes data gathered from distributed sensors and video cameras that connect everything from trash bins to streetlights. Smart city is the ultimate dream of urban scientists who want to do away with the 'human factor' in urban management, in order to maximize efficiency and functionality, pass the drudgery on to the machines, and even to create new revenue streams for the private businesses. Many corporate and professional narratives, produced and reproduced by technology corporations, consultancy firms, bureaucrats, and urban scholars as of late, have saturated our public discussions about the future and cast

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smart city as an intriguing new urban imaginary and an ongoing frontier of technological innovation.

Yet, we hear very few stories that tell how any particular smart city actually came into being – the stories that gauge the influences of different histories of different cities and nations, the governmental and institutional settings, and the affective charge associated with futurity, globalization, technological advancement, the aspirations for a quality of life that are inextricably bound and entangled with the information and communication technologies (ICT), as seen in the epigraph above. Instead, we are often times stuck with the 'corporate storytelling of smart cities' (Soderstrom, Paasche, Kaluser, 2014) that take technological changes associated with smart city for granted and limit our task to modify, moderate, and improve their *effects*.

But what kind of a story could we tell about a smart city, if we take the epigraph above as a point of departure, charting the broad range of sociotechnical, material, and cultural transitions that conditioned the emergence of a smart city in a non-Western context of South Korea?

Before I describe the plan for this dissertation, a brief sketch of different narratives about the smart city is necessary to establish the ground for this work. Many stories about the smart city that I summarize below are versions of the stories we have heard before, about the 'old' technologies when they were all once 'new'. The steam engine, the radio, the television, the Internet, and the smartphone had their own versions of these narratives that marked each technology as the crucial conjuncture in a linear progress of history. We live in a technological society, but the stories we often hear about it follow similar repertoire. One such repertoire frames the history as consisting of 'waves' of changes, which are instigated by the main protagonist(s) who invented technology. Changes are seen as self-generative, if not inevitable. Many current attempts to understand the smart city and its potential impact on our society

habitually reproduce this kind of narrative – although some of the recent projects recognized the criticisms and instead now claim that "cities always have been smart" (Toronto Sidewalk Lab).

Defined as a popular urban planning strategy, development model, technical infrastructure, or a form of urban intelligence, smart city is often seen as an outcome of an invention or a series of inventions that benefit our lives in the cities. A softer version of this extremism posits the smart city as an optimal solution to the problems that arise from the accelerating pace of urbanization: traffic congestions, deteriorating air quality, rising energy consumption, crime rates and so on. As the argument goes, smart city is distinct from other top-down planning strategies, in that it responds to the citizen demand for increased mobility, safety, and cleaner environment.

The narratives like the above assume the instrumentalist and positivist view of technology, which sees technology as a value-neutral means to serve human ends (see Christians, 2014, for the three traditions in the philosophy of technology). Hence the proponents of the smart city overwhelmingly focus on the internal computational logic of the smart city and the intended *impact* on mobility, sustainability, resilience, governance, and society (Gershenson, Santi, & Ratti, 2016). Smart city in and of itself is not thought of as having any meaning or intention, since it is abstracted from the given society's character or histories – instead, its meaning is to be found in the impact it has on the society. The "new urban science" that the smart city promotes stands on this tradition that renders technology as tools to improve efficiency, speed, ubiquity, and adaptability of urban systems.

However, insofar as the means and ends of technology are separated, "pleading for more concern about ends is futile" (Christians, 2014, p. 518). If the smart city's claim to be open, democratic, sustainable model of urban governance in and of itself is still confronted by

skepticism, one of the reasons for this is that its concerns for the societal ends only come up in an afterthought. In other words, smart city as a form (e.g., computational capacities of sensors) preceded the particulars of the content and the values (e.g., sustainability, civic participation), which not only separated the means from the ends but also limited the parameters of applicable contents that could be rendered through the form. While urban policy analysts attempt to address the split between the means and the ends, they always work within the assumption that technological progress is a given fact and only ask how to make it operate more effectively and with less repercussion. They never address the fundamental questions of social relations and institutional arrangements that underlie the problems in and of the city. To get out of this futile loophole, perhaps a different approach is necessary.

Critical scholars of the city and technology on the other hand, have offered different responses to the smart city. Approaching the smart city as a correspondence to the new form of social control and wealth accumulation (Holland, 2008, 2015; Greenfield, 2013; Wiig, 2015; Sennett, 2012; Sadowski & Pasquale, 2015; Soderstrom, Paasche, Kaluser, 2014; Morozov & Bria, 2018), the studies within this approach largely focused on analyzing the corporate narratives and strategies and the governmental initiatives of the smart city. They have made valid points about the perils of the dominant spatial logic inherent in the smart city, problematizing the techno-optimistic and generic caricatures of the city and the urban infrastructures that are configured to serve the profit motives of a few giant tech companies such as IBM and Cisco. For instance, in an early polemic against the smart city as a 'self-congratulatory' urban labeling, Hollands (2008) argued how the supposedly liberating potential of digital technology has in fact polarized the smart and creative workers and the unskilled and relatively poor populations. His argument goes along with previous critiques on other problematic urban labeling such as

'creative cities', which he sees as falling short of addressing the real problems of the city (i.e. inequality, poverty, uneven development). Without addressing these structural issues, smart city reproduces and exacerbates the problems that already exist in the cities, by serving the corporate end of anchoring wealth in land and infrastructures.

In these analyses, smart city is largely seen as symptomatic of macro-social *structure*: a lens to read off and critique the underlying politico-economic logic such as the expansion of neoliberalism, the corporate control over the city and business model that profits from the pervasive surveillance. In this view, technology is often conflated as the capitalist system itself, attributed as the main source of the problems including differential access and mobility, privacy invasion, limitation of civil right and freedom, and people's entitled 'right to the city'.

While these critical accounts of the smart city bring enlightening facts about the dominant corporate influence that generates utopian, homogeneous, and soulless "stupefying smart cities" (Sennett, 2012) and demonstrate that a provider's good 'intention' alone is inadequate to fulfill the technology's egalitarian promise, they tended to under-theorize the local specificities of these problems. Smart city was reduced to the matter of dominant corporate narratives and the urban developmental policies, not reflective of the "wider socio-technical assemblage within which it is embedded" (Kitchin, 2016).[1]

As a result, the critical approaches to the smart cities undertaken by the scholars from the Global North produced sweeping statements about the smart city's overwhelming potential to exacerbate the corporate structure of control, surveillance, and exclusivity, while not taking a cautious approach to the differing cultural norms, political systems, countries in other parts of the

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[1] What Kitchin intends to explain through the notion of 'socio-technical assemblage' extends from his earlier writings on *code/space*, a concept he used to emphasize a co-constitutive relationship between code and space. By reframing his concept as socio-technical assemblage, Kitchin attempts to extend his view by calling attention to the situated-ness of the code in the discursive, economic, and material practices rooted in particular locales.

world. While the structuralist approach can serve as a corrective to the instrumentalist approach to the smart city, its macro-view of society underestimates the mattering of culture in deployment of technologies. When a new type of technology emerges, it is not deployed across a flat and homogeneous terrain; it is overlaid on a heterogeneous domain that has developed in response to preceding technologies and cultures that are not reducible to any overarching 'structure'.

Alternatively, a third approach to the smart city can offer a more close-up view of technology in *actions*, including the human practices of manufacturing, designing, fabricating, and using the technological products as well as the cultural and historical conditions that frame those actions. This approach largely informed by the 'co-determinist view' of technology and culture frequents terms like 'networks' and 'assemblages'. In Heideggerian sense, the emphasis is placed on the 'existence', rather than the 'essence', of technology that reveals its truthfulness in a given situation, as it goes through the processes of 'translation' (Callon, 1986) and 'friction' (Tsing, 2005).

This third approach does not necessarily attempt to grasp technology in its full totality through structural or phenomenological dimension but instead, attends to the localized process in which technology reveals through human discursive and physical practices in an 'actually existing smart city' (Shelton, Zook, & Wiig, 20015). Writing in the context of Italy, for instance, Alberto Vanolo (2014) observes how the concept of the smart city, which had been transferred from the US to the EU, and from Brussels to Italy, implies a disciplinary mechanism through the new urban imaginary of the smart city as a 'good' city. He especially notices how technology and environment have become main ways of framing urban problems in smart city discourse, which can reduce and contain the political conflict and insurgence to the realm of a 'disciplined'

city. While cities are called out and made responsible for its reinvention and for the achievement of 'smartness', any different paths of development, he argues, are framed as being deviant.

Beside the above work, there has been a steady increase in the smart city research undertaken beyond the context of the global North, such as in South Korea (Shwayri, 2013; Shin, H. B., 2017; Sonn, Shin, & Park, 2017), India (Datta, 2016; 2018, Mertia, 2017), Turkey (Hoyng, 2016), and Singapore (Tay, 2019). As an illustrative example, consider Ayona Datta (2018)'s study of the India's national '100 Smart Cities Mission' and her interpretation of intersecting popular myths (e.g., myth of speed, myth of moral nation-state) and the underlying power relations of postcolonial urbanism that are articulated in the scale of the smart city. Datta ably shows how smart cities in India break the universal mold of the smart city that is primarily data-driven and instead are situated in the range of intersecting narratives and temporalities including the postcolonial futurism, the conflation of urbanism and nationalism, and the myth of speed and technology. Through multiple strategies, smart city becomes an instrument of power and a stage for the paternalist nation state's performance of moral governance where multiple modalities of time (past, present, and future) and scales of entities crisscross and converge.

The topic of this dissertation shares the philosophy and goal with the above studies taking a localized and cultural approach to the smart city, in order to decentralize and pluralize the account of smart city – which is one of the defining goals that guides this research. Contesting the unilateral, deterministic, and totalizing narratives about the smart city, this dissertation highlights the *multifaceted* nature of the smart city, which consists of a combination of seemingly distant and unrelated moments of decision making, planning, and preparations, by radically contextualizing its context and articulating the *interconnections* among those multiple facets. In the context of South Korea, there are four distinct but interconnected plane of socio-

cultural contexts that I bring together with the smart city: *globalization and digitalization, securitization and surveillance, sustainability and environment, and techno-futurity and creative economy*. As it will be shown, smart city manifests differently in these arenas of social problems. I aim to illustrate how the emergence of a smart city brings together multiple strings of history and problematizations that are contingently interweaved at a given time and space.

Thus, the task of 'radically contextualizing the current conjuncture' (Grossberg, 2010) of smart city in this dissertation first involves capturing the instances in which smart city exists in multiple, diffused, and decentralized forms. However, the challenge then arises, in terms of how to bring the knowledge to the question of technology itself, to make visible the relationship between a knowledge produced in one context with another (and to even produce a consistently written dissertation about it!).

Although this dissertation borrows a great deal of insights from urban ethnographies of technological infrastructures (Dourish & Bell, 2007), and for that matter, from cultural geography (Amin & Thrift, 2002), this dissertation not entirely about the everyday life 'experience' of technology. What is instead, distinct about this dissertation and its contribution to the field of smart city research is that it foregrounds the fourth, another crucial dimension that has to be added in our 'cultural approach' to the smart city, as a 'technology and a cultural form', which is about the *cultural and historical continuity of technology*. Raymond Williams (1974)'s useful insight into the place of television in the post-War capitalist societies, for instance, was concerned with the ways in which television, as a new technology, resolved the contradictory social pressures of mobility and privatized homes (decentralization) and the demand for a new means of social integration and control (centralization). Broadcasting technology functioned as a powerful new form of social integration and control, which effectively accommodated the

transformed practices of dwelling, work, and family life, as well as large scale political and economic processes that presented an imperative need for new kinds of communication and social contact. Television, which remediated and combined earlier forms of media, such as radio and cinema in particular, became a specialized means for the emerging social needs, cultural expectations, and a new model of communication, which led to the development of this new technology.

How can one apply Williams' insight in the study of smart city, as a technology and a cultural form? How does the smart city resolve the dual social pressure of decentralization (individualization, ubiquity, automation) and centralization (standardization, synchronization, governance)? What kind of social needs, cultural expectations and broader transformation in political and economic processes are accommodated by the smart city? In establishing the ground for what I will call, 'a cultural history of the smart city', this dissertation offers a genealogical and diagrammatic analysis of the smart city and its articulation in the South Korean city of Songdo, taking into account the various social needs and large scale transformative social processes that intensified in the 21st century, such as globalization, security and safety, demand for clean environment, quality of life, cultural institutions, and creative economy. By placing the technology in question within the 'continuities and shifts' of cultural forms, this dissertation strategically modifies the instrumentalist, one-dimensional, and deterministic account of smart city. The genealogy of the smart city that I offer here is neither a linear nor a comprehensive 'history of smart city', but a series of interweaved histories and urban 'diagrams', which multiply construct the smart city within varying scales and dimensions.

In the next section, I will explain in more detail, my plan for this dissertation. I rearticulate and summarize my questions about the smart city in three categories: space, history,

and culture. These questions will be followed by a summary of the theories and analytical tools that I will use to answer those questions.

Plan for the Present Work

This dissertation addresses the technological, spatial, historical, and cultural forces that have variously given shape to the smart city, especially as they manifest in the context of South Korean city of Songdo. Through the above introduction, I reviewed some of the existing studies on the smart city, discussed their approaches and philosophies of technology, and positioned my project as a cultural (as relating to the specific local context in which technology is articulated) and historical (as focusing on the continuity and rupture of technological changes) inquiry of the smart city in South Korea.

This dissertation primarily addresses the questions formed within three main categories:

- Space: *How does the smart city the resolve the need for a new spatial ordering and a spatial mode of governance? How do the emerging concerns for the 'environment' articulate in the smart city's urban governance? Is smart city visually, spatially, materially different from any other kind of cities? What are some spatial features that stand out about the given smart city's representational and spatial practices within and around it?*

- History: *What are the related histories of the smart city? Are there any historical precedents of smart city (i.e. cybernetic city, information city, ubiquitous city)? How does South Korea's unique historical trajectory (i.e., colonialism, militarism, developmental state) influence the cultural expectations and approaches to the smart cities in South Korea? Does smart city signal a qualitative shift in history? What were the social pressures of that change?*

- Culture: *Are there intentions or values inherent in the smart city? What were the specific needs and social demands that smart city was supposed to address? And how were the 'needs' defined*

and posed as problems (made problematic)? What are the ways in which the smart city functions

as a new form of governmentality (mode of rule)?

To even begin this kind of interdisciplinary inquiry, one has to draw from a broad range of different theoretical resources. In the following paragraphs, I will summarize the main theories and concepts (e.g., technological zones, urban laboratory, diagram, media genealogy, governmentality, environmentality, governmobility, sociotechnical imaginaries) that I will primarily use to address the above questions. They offer useful insights that make connections between technology and government, the past and the present, discursive and non-discursive dimensions of the smart city. As it will be shown, by combining the perspectives from these keywords, my approach to the smart city will offer a comprehensive understanding of the relationship between technology, culture, and history and of the dynamic between the social demand for decentralization (i.e., freedom, speed, flow, mobility) and the political rationalities for centralized urban governance (i.e., control, security).

Space

To address the issues of 'space' in this research, I draw from theories, methods, and research from urban studies, cultural geography, and media studies. Within the Korean communication studies field, although the issues of space have been only marginally dealt with, there recently has emerged a group of scholars who engaged with anthropology and geography to address the grittiness of everyday life and locality (Lee, 2002, 2007; Kim, 2007). This intellectual movement reflects the influence of the 'spatial turn' in cultural studies in the 1990s (particularly inspired by the writings of Soja, 1989, 1996; Harvey, 1989; Lefebvre, 1991).[2]

The proponents of the cultural approach to the issues of space pitted themselves against

[2] As an early example, consider Jeon Gyu-Chan (2010)'s reading of modern urban landscape such as metro subway and his attempt to theorize the metro as the mass media and Lee Kihyeung (2007)'s ethnographic account of Indie music scene and club culture in Seoul.

those concerned with macro-economic process of urbanization, which found the logic of capitalistic accumulation as the predominant underlying cause of the transition. Lee Keehyeung (2002) counters the so-called 'flexibilization thesis', which treated culture merely as a metanarrative, by focusing on productive forces, technology, and information and by neglecting the micro-worlds of the every day. He contends that while "a monocausal use of the state-driven capitalism as the all-enveloping 'colonizer of everyday life'" is pervasive in many critical literatures of geography and urban studies in Korea (p. 107), it is mandatory that cultural studies practitioners who 'read' these cultural zones should be cautious not to make sweeping statements with regard to the character and mediating role of these spaces as either 'commodified', or liberating (see pp. 106-109 for the Critique of Critical Urban Studies in Korea).

Apropos the tension between 'the cultural' versus 'the critical' approach to space and the challenge of articulating the spatiality of the smart city, to start off, we may benefit from Williams' (1974) attempt to capture the dual pressure of centralization and decentralization, which he theorized through his thesis of 'mobile privatization'. In a similar vein, Antoine Picon (2015) defines the smart city as a 'spatialized intelligence' that internalizes mechanism of learning, understanding, and reasoning, which has become intrinsic to the city itself. The new spatial intelligence of the smart city addresses the two competing kinds of social pressure: the intensification of the individualized relationship with the city and the ubiquity of computational ability on the one hand and the return of the utopian and 'neocybernetic temptation' on the other. Smart city exhibits a complex form of intelligence, which, unlike the Big Brother-type centralized governance imagined in the 1960s and 1970s, is envisaged as a cooperation between machines and humans and is generative of events and adaptive situations, rather than a predetermined planning scenario.

The co-constitutive spatiality of the smart city then, operates through the dialectic tensions between rule and freedom, between the forces of centralization and decentralization, and between stasis and movement. And these relations play out through different spatial planes, including the political, techno-scientific, and discursive domain. The three keywords that I summarize below correspond to the 'zonal', 'laboratorial', and 'diagrammatic' spatiality of the smart city, which I extensively utilize throughout this research.

(1) Technological zones

Technological zones, as contemporary forms of space that intersect with various techniques and technologies, appropriately capture the various technological characteristics of the smart city, including its material, legal, and institutional practices and protocols. Zoning has been integral to the history of modern urban planning, which divided the city space and partitioned specific activities (e.g., residential, commercial, industrial, etc.) into tightly programmed zones.

Many studies have pointed out how the zoning for the smart city now acquired financial and logistical practices, such as in Songdo's Free Economic Zone (FEZ) where IT and business-related practices are given selective 'freedom' from the government (Park, 2005; Easterling, 2014; Halpern, Mitchell, Geoghegan, 2017). Ostensibly, Songdo's master plan replicates the formal order of a midsize American city of the mid-twentieth century, by segregating work space (to take place in the Central Business District) from residential clusters and designated cultural complex (Greenfield, 2013). More broadly, zoning technique is also an integral strategy of the government (Ong, 2006) for a city such as Songdo, especially as it disperses and realigns market strategies and resources, leading to the differential distribution of freedom to differentiated population.

In a similar vein, through the term 'technological zones', Andrew Barry (2001) expands the notion of zoning in urban planning sense and emphasizes how the zones have centrally functioned as the space of the government. Barry explains how various forms of zones cut across territorial boundaries (i.e., nation-state) and how they are constantly being contested, maintained and securitized by political actions associated with their boundaries. Technology is a formative part of how a zone is governed, in the sense that it is an integral component of the material construction of space and that it figures as the primary criterion for assessing the performativity of that given space.

Barry's notion of 'technological zones' is helpful for analyzing a space that is shaped by multiple techniques and technologies of the government such as the smart cities, which are marked by a significant level of differentiation and variations, as they overlap with or contain other zones (e.g., clouds, wifi zones, data platforms, infrastructures, financial and logistical zones, residential zones, commercial zones, industrial zones, etc.). As a result, smart city does not exist as a singular zone but as multiple zones that are fractured and contested. While openness, flexibility, flows and circulations are the main criteria of success of these zones, the inevitable instability that comes along with it requires a frequent security effort. Technological zones are secured and governed by boundaries, standards and protocols that regulate and synchronize the activities within the zones. The shift toward the data-driven governance of technological zones intensify the depoliticized appearance of these zones, as they relegate important decisions to the technological devices (e.g., using passwords, encryptions, RFID card access for 'security' purposes) and the social problems are mainly addressed through deployment of technical expertise and designs (e.g., smart cars for smart mobility, LEED rating systems for

sustainability, CPTED system for security). Through generating these automated decisions, the technological zones of the smart city become what Barry calls, the 'political machine'.

(2) Laboratory

Laboratory has been a recurring spatial theme in the smart city literature, where the cities are portrayed as sites to demonstrate, beta-test, and simulate an array of technologies such as the Internet of Things (IoT), smart CCTV, self-driving cars, and automated homes. Since as early as the days of Chicago School urban sociologists, city has been thought of as a laboratory, a stage for urban planning, and a liberal government's demonstrative site of exercising its power (Joyce, 2003). I benefit from the view of smart city as an urban laboratory, a platform for the 'new spatial science' (Shelton, 2017) and the 'test-bed urbanism' (Halpern, LeCavalier, Calvillo, & Pietsch, 2013), which has become a breeding ground for a culture of 'smartness', perceived to be bound within the space demarcated as the smart city.

Etymologically, the word 'laboratory' originates from the medieval Latin word *laboratorium*, meaning a "place for labor or work." In modern science, laboratory has been an integral component of its new form of knowledge production, which involved the purified and sanitized laboratory setting itself, as well as the group of experts who collectively witnessed the process of testing and proving the validity of the knowledge. According to Shapin & Shaffer (1985), the empirical science in a modern sense democratized the work of natural philosophy that previously had been contained within the minds of a few geniuses, and instead gave authority to the scientific facts that were generated from literary texts, data, and experiments conducted in a controlled laboratory setting.

Articulating smart city an urban laboratory, the proponents of 'smartness' continue to hold on to the belief about the laboratory as an open yet purified spatial arrangement that is

productive of useful knowledge for the society. However, the laboratorial disposition, entrenched in the myth of 'purification' (Latour, 1991), de-differentiates the contingent local contexts and suspends any concern about histories, for the sake of establishing a universal truth. Smart city proponents apparently extend the laboratorial thinking, especially when they aim to make the city into an 'exportable' model and to replicate its results elsewhere (e.g., South Korean Ministry of Future Planning's 'K-Smart City' project). Despite its claim to resolve the problems of the 'real world' (e.g., traffic, energy, security), the smart city's technocratic approach to the 'reality' assumes an abstract and controlled spatiality and defines the 'problem' as in need of intervention by a specific kind of smart people who befit the value and visions of the smart city industry.

Reading the smart city as an urban laboratory helps me to identify another important dimension about the space, regarding its relations to the process of knowledge production and its relations to the issues of power. Smart city is neither a single invention nor a finished product – it is always in a process of becoming, updating, and anticipating (Halpern & Günel, 2017). Besides, both the zonal and laboratorial spatialities of the smart city are pervaded by cultural, normative, and governmental dimension of space, through which power is distributed, realigned, and exercised. I turn to my next keyword 'diagram' to elaborate this dimension.

 (3) Diagrams

Through the notion of 'diagrams', Osborne & Rose (1999) offered a useful insight for analyzing how the city has become an instrument for the government's 'laboratory of conduct'. The diagrammatic approach to the city identifies the ideas, techniques, practices, and operations that construct certain ethical relationship between the city and the self, which involves a close reading into the broad discursive formation of a 'good city' (i.e. 'smart', 'creative', 'innovative', 'green') and its dispersion through public psyche. What is distinct about the diagrammatic

approach to space is that it emphasizes the normative ways in which the city is imagined, constructed, and governed and the ways in which the whole process of normalization is enacted through the voluntary participation of the ideally forged personhood.

As previously stated, smart city is neither a single technological invention nor an entirely social construction. Rather, it becomes a smart city "only by association with the idea of the smart city and the narratives, logics, practices, and symbolism of which it is constituted" (Sadowski & Bendor, 2018, p. 2). In diagrammatic terms, it is through the relations between different urban diagrams that the smart city weaves itself into the various dimensions of urban life including health, security, culture, and economy. In this way, smart city becomes more than just a geographically demarcated space or a technical infrastructure, but a necessary instrument for the 'good' urban governance that is mutually constructed by the stylization of 'good' civic virtue and conduct.

Osborne & Rose (1999) borrows the concept of 'diagram' from Deleuze's interpretation of Foucault's notion of *dispositif,* which is defined as "a map of dispersed social relations through which power is exercised" (Deleuze, 1988). While a diagram can literally refer to the schemes, policies, and programs of actions, it can also include the "mundane techniques of gathering, organization, classification, and publication of information" (Osborne & Rose, 1999, p.739). Diagram is a way of 'mapping' the assemblage of multiple social forces that constitute power that is not reducible to a single logic of economic structure or a technological infrastructure. Consisting of spatio-temporal multiplicity, diagram shows how power is realized and exercised through relations that are distributed in space and how in that process, diagram itself changes and evolves through combinations and recombinations with different diagrams.

More crucially, these diagrams map constant forces that claim certain 'truths' about the city, in as much as an exercise of power is inseparable from the process of knowledge production. These forces do not necessarily originate from a central power source alone (e.g., technological infrastructure, economic activities, neoliberal logic) but rather flow through the dispersed practices, techniques, and narratives.

In this way, 'urban diagram' that denotes both the discursive and non-discursive ways in which government has been territorialized in an urban form, becomes a useful framework for this research to bridge the zonal and laboratorial concerns about space (primarily concerned with technoscientific, institutional, and rational dimensions of space) and the normative, ethical, aspirational, and affective dimensions of space. For instance, smart city's diagram of urban security involves an array of surveillance technologies, techniques of policing and risk reduction, as well as the scientific knowledge about urban crimes and disasters, the image of the city portrayed as a potentially dangerous place, and the idea of self understood as a field of responsibility to prioritize the safety and health of itself and the others.

Thus, to think of smart city as consisting of multiple urban diagrams is to suggest attending to the technical as well as cognitive, not merely ideological or ideal but functional dimension of its spatiality. Bringing the three keywords 'zones', laboratory' and 'diagram' together and applying these insights into my research on the smart city, I articulate the operative rationality of four distinct but interrelated urban diagrams – 'global city', 'secure city', green city', and 'creative city' – which respectively correspond to the topic of my chapters. In articulating these diagrams in separate chapters, I offer a long historical context pertaining to each of these related planes, tracing the continuities and shifts in the techniques, practices, and

narratives about globalization, security and safety, quality of life and environment, culture and economy in South Korea.

History

Besides a few exceptions (Halpern, 2014), there currently is a significant paucity in the strand of research that focuses on the 'long history of smart city'. While there are a number of ways that this history can be charted, a thorough version might trace the evolution of the diversity of concept from the 'architecture machine' (Negroponte, 1970), 'city of bits' (Mitchell, 1995), 'cyber city' (Graham, 2004), 'cyborg city' (Gandy, 2005), 'digital city' (Aurigi, 2005), 'smart homes' (Allon, 2004; Kember & Zylinska, 2012), 'smart communities' (Eger, 2005), as well as many other related models including the 'intelligent city', 'knowledge city', and 'information city'.

The key internal logic of computational urbanism that undergirds today's smart city idea is rooted in the cybernetics. According to Halpern (2014), architectural engineers have been working since the 1950s to apply cybernetic approaches to human habitation. Norbert Weiner coined the term 'cybernetics' from the Greek word meaning a 'governor', which posited an analogous relationship between a city government and a control device in a large feedback control loop. For instance, E. S. Savas (1970)' essay "Cybernetics in the City Hall" suggests concrete ways in which an analogy can be drawn between cybernetics and the city government, which can be understood as an organized and adaptive system. If that relation can be understood properly, it could improve the inefficient bureaucratic system. Because the problems of the city are often complex and contingent, Savas suggests designing multiple minor-feedback loops instead of a large, all-encompassing one, meaning, the government could merit from opting for a more decentralized system in the hope of responding more quickly to the matters of the city. In

this scheme, city government becomes one of the agents acting upon the system of the city, along with many complex factors and interest groups that affect the city life – corporations, banks, unions, medical societies and so on. In this way, Savas even saw the potential of participatory democracy through cybernetic principle, by viewing the city as an information system and citizens as part of that information feedback, an idea that is reincarnated in many of today's smart city proposals (Goodspeed, 2015).[3]

With that being said, as I previously stated at the beginning of this introduction, this dissertation charts a history of a smart city from a different point of departure from South Korea in the 1980s. To trace the broad range of sociotechnical, material, and cultural transitions that conditioned the emergence of a smart city in South Korea today, in the city of Songdo in particular, the chapters in dissertation each take a form of 'genealogy'. Through these specific genealogies, this dissertation traces the multiplicity of the ruptures and continuities that manifest in the scale of different urban diagrams that correlate to the topics of globalization, security and safety, environment, and culture and economy in South Korea. To repeat, this dissertation situates Songdo and its current smart city scheme within a broader context of South Korean modern history and explores the multiplicity of the sciences of the city (including urban planning, data-driven urban governance), the privileged place of science and technology in the state-led industrialization, public administration of culture, science, and technology, and normalization of surveillance in militarized modernization in South Korea. Although my research focuses on the case of Songdo as a prime example of South Korean smart city, through

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[3] The contemporary sense of 'smartness' in the smart city denotes dense instrumentation of software and digital technologies that distribute computational function into objects and spaces, altering conditions through which the space and time of everyday activities are produced (Kitchin & Dodge, 2011). These 'intelligent' and networked objects and spaces then constitute the minor-feedback loops in the city that is in turn, organized as a large complex system that operates and controls the relationships among these technical objects: ubiquitous computing, wifi, ambient screens, radio frequency identification technology (RFID), closed-circuit television (CCTV), software and codes.

this genealogy, I demonstrate how the current initiatives for the smart city in South Korea co-evolved with multiple urban diagrams and a series of techniques and practices.

(1) 'Media genealogy'

In conjunction with the diagrammatic orientation of this dissertation that charts the multiplicity of techniques, discourses, and knowledges that make up the smart city in the present, I deploy the concept of 'media genealogy' (Monea & Packer, 2016) as a guide to trace a long history of a smart city. Foregrounded as a response to the recent interest in 'media archaeology' (Parikka, 2012) as a prominent method of media history, 'media genealogy' problematizes the former's lack of interest or inability to address the issues of power and contends that it needs to be more systematically politicized. Instead, Monea & Packer (2016) suggest that we recognize the distinction between archaeology and genealogy and synthesize both as analytical tools for the historical critique of the present.

As a way of exploring genealogy as a useful method in media studies, Packer (2013) gives an overview of the intellectual history of Foucault's work in particular and investigates possible ways of using his approach to guide our examination of the current media technology and institutions. The apparent distinction between archaeology and genealogy is that the former best describes Foucault's work from the 1960s whereas the latter describes the one he began in the early 1970s. Whereas archaeology, most extensively elaborated in *Archaeology of Knowledge,* is about investigating the historical constitution of a specific field of knowledge (such as psychology, medicine, human sciences, economics, biology, linguistics), genealogy more holistically investigates how power has been historically constituted and resisted through governmental rationalities, forms of knowledge, and practices of the self. The genealogical approach is reflected in Foucault's intellectual trajectory in the 1970s through his lectures and

works on governmentality and biopolitics. A significant difference between archaeology and genealogy seems to be the extent to which they foreground the relation of power and its concurrent rendering on the institutions, knowledge, and technologies of the self. One could say that genealogy incorporates archaeological approach but extends it by putting into perspective the power relations and the questions of subjectivity. In Foucault's own words, archaeology is "an analysis of local discursivities" and genealogy is "tactics on the basis of the descriptions of these local discursivities" through which "the subjected knowledges [sic] which were thus released would be brought into play" (Foucault, 1980, p.85).

Foucault's turn to genealogy reflects his attempt to counter the positivistic and totalizing account of history, especially as he says the goal of writing history is to construct a 'historical knowledge of struggle'. The primary objective of his struggle would be the scientific forms of knowledge that hierarchize and centralize power, which is then linked to the organization and function of a society dependent on the scientific discourse – so much so that Foucault goes on to declare that "genealogies are precisely anti-sciences" (p.83).

Although Foucault was not directly concerned with media and communication technology in his analysis, Packer (2013) makes a case that it is apparently possible to draw significant insights from his work which will help us to understand the "centrality of communication technologies in the reformulation of governance" which is a defining feature of media histories (p.4). Bringing genealogical and archaeological approach together can be useful for "understanding how subjects come into being through mediation, entwined within technological and governmental relations of power, whose existence depends upon scientific and vernacular knowledge productive of and produced by media technologies, institutions, and forms." (p.3). If utilized properly, media genealogy can be useful tool for us to broaden our

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understanding of media technologies, institutions, and forms and to achieve a historical and politically engaged media studies scholarship, which gets out of the division between the textual analysis versus political economy analysis of media, or historical versus ethnographic approach to media.

In order to more substantially utilize media genealogy as an analytical tool for this project, I will briefly explain below another critical notion of Foucault that I will frequently use throughout the dissertation.

(2) Problematization

In *Genealogy as Critique*, Koopman (2013) states the goal of genealogy is to articulate the 'submerged' problems that are neither readily apparent nor come with supposed solutions. It is a "critique in the form of the historical problematization of the present" (p.2), which involves identifying a network of multiple strategies of power and a various thread of thought and practices that are woven together to shape the present. In this way, problematization, as a mode of critique, makes intelligible the complexity and contingency of the problems that we face in the present, and in so doing, uses history as a means to intervene in the present as we know it, which has been contingently made up.

Following this problematization approach, this dissertation articulates the intersections of power, knowledge, and subjectivity within a given problematic field and traces the emergence of the present where the smart city is becoming stabilized as a solution to the problems. In other words, if the smart city is offered as a solution, we have to ask what the supposed problems actually are that it proposes to solve, and what the historical and social conditions were that made the problem saliently problematic. For instance, while the smart city is perceived as a panacea for urban problems including security, employment, mobility, sustainability, how each

of the problems came to matter in the present and how technology is supposed to address those problems are not carefully thought about. Therefore, the genealogy I offer in this dissertation will investigate the problems that are at stake in the smart city, explore the sociocultural and historical conditions that have shaped those problems in the present, and ask in what ways, the smart city came to assume a privileged position to solve those problems.

Culture

Lastly, this dissertation brings forth the question of 'culture' of the smart city. More specifically, I ask how the smart city has become a crucial motif and a popular imagery of the future city and a form of governmentality that enrolls certain type of personhood and a practice of the self. To address these questions, I draw from cultural studies and governmentality studies to contextualize the broader domain of culture of the smart city within which power is exercised in specific ways and with multiple technologies.

As I stated previously, of a particular interest in this dissertation is the technological as well as cultural organization of smart city that involves complex technological, historical forces and flows through which the infrastructures, information, and meanings, take shape. To think of smart city as a 'cultural technology', I echo Dourish & Bell (2007; 2011)'s view of the mutual relationship between technical infrastructure and culture and their claim that a landscape is not simply a physical topology, but also a cultural and historical one (Dourish & Bell, 2007, p.422). But extending this view more significantly, this dissertation benefits from a particular group of cultural studies scholars (Bennett, 1998; Hay, 2006, 2012; Ouellette & Hay, 2008; McRobbie, 2016) whose concerns about the culture involved more than a textual analysis of symbolic representations and misrepresentations and recognized the broad range of spatiality, history, and techniques of the government that collectively gave emergence to the new kinds of citizen-

subject and the practice of the self. Building on their insight, one crucial issue this dissertation explores is the link between the smart city's automated form of intelligence that grants autonomy to the machines and the sociological discourse about the individualized responsibility to 'autonomously' manage and maintain personal safety, mobility, and self-care. Through this investigation, this dissertation traces the linkages between the practical and technical activities related to the smart city and the ways of constructing the material and 'affective' landscape of the smart city. In this vein, I deploy following concepts (governmentality, environmentality, governmobility, sociotechnical imaginaries) to explore the cultural dimension of a smart city, relating to the normative, intimate, and indirect ways in which the technologies of the government permeate and stabilize in the everyday life world.

(1) Governmentality

Foucault's concept of governmentality is the central framework for this research as it aims to understand how power infiltrates into an intimate sphere of individual life, such as in one's relation to itself and to others and its management of conduct. This is another way of examining the operation of power the in-direct realm of 'culture' and in the non-state actions including the personal 'conduct of conduct'. In a simple term, "governmentality refers to the arts and rationalities of governing, where the conduct of conduct is the key activity" (Bratich, Packer, & McCarthy, 2003). Thinking through governmentality directs our attention to the ways in which the relations between persons and culture are organized within the context of particular governing technologies and programs of social management, to observe how "culture works in the service of power or better yet, how culture works as the power" (Bennett, 1998, p.62).

Governmentality perspective opens up a primary line of inquiry in this research, which bridges the analysis of smart city policies, techniques, and institutions and the analysis of culture.

The investigation involves the question of how the power operates 'at a distance' in a non-coercive fashion, in a way that supposedly invigorates and empowers the lives of the individual citizen. For instance, the collective aspiration to prosper and 'live well' during the rapid modernization period of South Korea relied upon the process of particular subjective formation of 'the dutiful-nationals', which effectively aligned the goal of the citizen-subjects and the goal of the government to resurrect the national economy and procure national security. In smart city, there are various governmental strategies and techniques through which this subjectification processes occur. This dissertation particularly focuses on how that process has continued and evolved in the real and imagined domains of environment, mobility, and futurity.

(2) Environmentality

As Jennifer Gabrys (2016) ably elaborated through the Foucauldian notion of 'environmentality', the smart city functions as a mediated environment that deploys multiply distributed computational agencies in the background of daily activities in the city and spatializes the governmental aim to 'govern through milieu'. The growing trend of contemporary governance adds a more sophisticated and holistic layer to the previous ways of governing through direct intervention in the policy realm and in the life world of the population, by organizing the environment as the new subject of governmentality. Although the goal may be the same (i.e., to change the behavior) the environmental mode of governance indirectly pursues that goal for instance, by embedding and distributing the ubiquitous computing in the city that functions at a fine-grained micro-level. Environmentality implies a changing perception of the nature as a quantifiable, programmable, and thus manageable realm (i.e., IBM Smarter Planet initiative), to which both human and nonhuman agents are invariably enrolled. This conceptualization of environment (as the ultimate goal of the government and as the realm to be computationally

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acted upon) plays a crucial role in the discursive formation of the smart city that is articulated as the green and sustainable city. This dissertation engages with this concept of environmentality particularly to observe how the computational environment of the smart city has gained legitimacy in the globalizing context of Songdo and how it served the government's problematization of sustainability.

(3) Governmobility

Extending Foucault's concept of governmentality, Baerenholdt (2013) coins the term 'governmobility' to point at how society is increasingly governed through mobility and how the regulations of mobility are internalized and operated automatically in people's mobile practices. This perspective is also very useful in analyzing how the infrastructure in Songdo's smart city is organized in such a way to manage and optimize mobility. Especially in viewing Songdo as a global city, the officials envisioned a frictionless space of flow and circulation wherein an array of techniques and technologies were deployed to ensure and expedite the smooth flow of physical and informational mobility. Mobility in this sense, is infused with power and is deployed as a political technology. The approach I take here is distinct from other mobility studies that focus on the micro dimensions of personal movements and the politics of access and border-crossing such as migration and tourism, in that I attend to the fundamental and macro dimension of how mobility organizes and governs societies. I take this approach most explicitly in my discussion of globalization and informationalization in Chapter 2, wherein governmobility encapsulates the mechanism of the government that is not only about defending borders but is also about enabling flows, by which power percolates through the dialectics of freedom and rule.

(4) Sociotechnical imaginaries

An STS scholar Sheila Jasanoff (2015) proposes the term 'sociotechnical imaginaries' to denote the "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of social life and social order attainable through, and supportive of, advances in science and technology" (p.4). The term highlights the discursive and imaginative dimensions of science and technology and its linkages with desires and aspirations that guide the visions of future. Sociotechnical imaginaries as a theoretical concept opens up the less frequently encountered area of research in STS, which is the cultural landscape of desires and fears that contextualize the matter-of-factness of science and technology – including the desire for well-being, recognition, upward mobility, social anxiety, and insecurity. In the context of South Korea, the collective desire for well-being was mobilized by the authoritarian government to drive the highly rapid industrialization since the 1960s and the developmental mentalité formulated in this period continues to shape the present and the privileged position of science and technology in society. Chapter 5 of this dissertation explores how the sociotechnical imaginaries of the smart city are manifested in various forms of representations in Korea and analyzes how the intersecting temporalities are projected onto the imagined sociotechnical future articulated in the scale of the smart city.

Thinking through the above concepts, following chapters will illustrate how making Songdo as an exemplary smart city in South Korea entailed techniques and technologies that pursued managing multiple problems of the city – transportation and communication, global reputation, sustainable development, security and safety, and economic growth. 'Governmentality', 'environmentality', and 'governmobility' are the concepts that explain the

relationship between history and space, as well as how the dispersed mechanism of power drives forward and enacts techniques and technologies of governing time-space.

Research Site: Songdo

At the time of the writing in 2019, Songdo has already long passed its novelty stage as many other municipalities in South Korea (including Busan, Sejong, Yongin, Goyang) actively jumped into the smart city competition. Although different cities have different definitions and emphasis (i.e., work, transportation, energy and water management), they are invariably onboard with the national government's economic agenda of the "Fourth Industrial Revolution," a new model of job creation and regional revenue stream generation through innovation in the ICT, such as the Big Data, Internet of Things (IoT), and the Artificial Intelligence (AI).

In 2013, when I first visited Songdo, the term 'smart city' was just starting to gain tractions among urban planners, business consultants, and municipalities in South Korea and around the world. Songdo was frequently cited as one of the early case studies discussed along with the Masdar City (United Arab Emirates) and the PlanIT Valley (Portugal). A surge of Anglo-European academic and journalistic accounts laid hopes for their future city on Songdo, while many others were skeptical of the project's success, due to its narrow technocratic ambition and the top-down approach to the city design. Songdo have been depicted as a "failed project" (Greenfield, 2013), a "stupefying smart city" (Sennett, 2012), a "no man's city" (Korean Exposé, 2016), a "ghetto for the affluent" (Le Monde, 2017), and even a "Chernobyl-like ghost town" (Daily Mail, 2018). Often glanced at as a 'case study', Songdo was ostensibly read as just another failed project that deprived the city of an organic liveliness of the neighborhood and the messiness of the good old community life that Jane Jacobs reminisced in the 1960s. The hopes and aspirations (and desperations) for the tomorrow city that drove Songdo

into existence were reduced to a hype and vanity for exclusivity, or a mere ideological cover for the endless greed of real-estate businesses and IT corporations that exploited the taxpayers money and public right for privacy, equal access, and freedom of mobility.

There are a number of limitations to the above kind of critique, while we see the repertoire of critique applied to many other smart city development projects that are occurring around the world. First of all, they overlook the internal point of view of the city, including the fact that the population has steadily grown over the course of years in Songdo and that many Korean families still fantasize and aspire to live in a place like Songdo. From a critical point of view, one should ask then, what that aspiration consists of, how the elements of that aspiration reflect the deep historical grid, cultural drives, and the 'structure of feeling' that pertain to Korea in the 21st century, and how these cultural forces persist and traverse the different domains of public concerns about economy, safety, environment, and the way of desirable life. In other words, a deep critical understanding of Songdo and its smart city should look beyond the immediate decisions and activities that attempt to build or modify the technical infrastructures, but instead, uncover the historical and cultural conditions of its emergence as a smart city, as a complex, multiple, and non-individual formation, which are not subjected to the present only.

Upon this realization, it became the primary aim of my project to address these omission and misunderstandings about Songdo – and about the smart cities in general. It seemed insufficient to say that the smart city is an effect of the neoliberal logic, or the structure of domination and control behind the governments and corporations, as many critics had suggested. To effectively confront and analyze the workings of political power, it was deemed necessary to track the little-known points of activities, places, and forms where the power was exercised. As a result, I collected as diverse sources of data as possible throughout my research during my

multiple visits to Songdo spanning from 2013 and 2017. During this period, I visited Korean smart city expos and conventions, K-smart city forum hosted by the National Assembly, IFEZA smart city control center, Incheon history museum and gallery, techno parks, smart apartment complexes in Songdo, where I talked with the smart city center managers, a smart mobility startup associate, a managerial assistant for the public fund supporting small and medium sized enterprises, a university lecturer, and a former construction site manager who worked in Songdo. I also talked to the residents of Songdo and families who live in the neighboring districts of Songdo, both face to face and through an online community called the "Songdo Moms Café." For secondary sources, various Korean archives have been examined: including the IFEZ monthly journal, *Donga Science* magazine, *SPACE* monthly journal, *Culture City-Culture Welfare* monthly journal, and *Naver* old newspaper archive, *Big Kinds* news data archive, IFEZ and Incheon Metropolitan City policy document archive, IFEZ promotional brochures and online shorts published on the YouTube, music videos and television shows shot in Songdo, autobiographies written by the former mayors and urban planners of Incheon, and the official websites of the Cisco, IBM, and Gale International, the Ministry of Future Planning, Incheon Development Institute, Korean Center for Creative Economy, UNESCO Creative Cities Network, the US Green Building Council's Leadership in Energy and Environmental Design (LEED), and the Association Crime Prevention Through Environmental Design (CPTED).

These eclectic source materials were gathered to provide as broad coverage as possible, as I cast a wide net to diagrammatically and genealogically understand the *constellations of interrelations* that surround the emergence of Songdo.

Outline of the Dissertation

Chapters of this dissertation correspond to the different but interlocking urban diagrams that are co-articulated in Songdo. Therefore, each chapter focuses on specific problems and genealogies – mobility, security, environment, and futurity – that constitute different aspects of the current formation of Songdo.

The pre-history of Songdo charted in Chapter 1 sets the stage for the other following chapters that are more or less directly related to Songdo. This chapter draws upon existing literature on South Korea's urban history (e.g., the professionalization of urban planner and state-led urbanization since the 1960s), media history (e.g., the early history of newspaper, television, and electronic media), history of militarized modernization (e.g., authoritarian state and the formation of 'dutiful nationals'), and the history of engineers (e.g., authoritarian state's strategic support and investment in science and technology). The goal here is to illustrate different perspectives of viewing Korea's modern history and to enact some interplay at the linkages among these different perspectives. Seen in parallel, the seemingly distant historical moments interact with one another, collectively giving emergence to the present.

Chapter 2 traces how Songdo has been diagrammed as a global city and shows how its transition can be understood as a part of the long history of mobility (perceived as a problem of the government and a mode of rule) in South Korea. This chapter primarily focuses on how the government of mobility was exercised through the pairing of communication and transportation infrastructure (e.g., highway-microwave network, airport-Internet) and how the smart city is the latest example that systematically merges communication and transportation (e.g., the 'smart' mobility features that cater to the personalized and automated forms of mobility). The chapter also demonstrates how the art of governing mobility requires adjusting the dialectic between

freedom and regulation of mobility as well as responding to the social pressures and emerging

cultural sensibilities and demands for a new model of communication and physical movements.

From the mobility perspective, articulating Songdo as a global city involved synthesizing the

new transportation infrastructure for the global mobility (through the airport), the new model of

global communication (through the Internet), and institutional arrangement for the global

financial mobility (through the Free Economic Zone).

Chapter 3 presents a different, if not a paradoxical, dimension of the same mobility

regime charted in Chapter 2, which is concerned with the problematization of security and risk

management. Ostensibly, the language of national security tension was gradually replaced by a

less-overtly militant program of personal safety and self-care in the 21st century. While fissures

and disagreements persist among different groups and generations with regard to the issues of

security and safety in today's South Korea, there exists an enduring, yet constantly evolving,

form and function of the government that constructs and problematizes various forms of risks.

Chapter 3 illustrates how the techniques and technologies of the smart city's security and risk

management rely on and draw resources not only from technical advancement in data

visualization and analysis but also from South Korea's long history of militarism, the geopolitics

of national security, and the culture of defensive self which organized individuals as the primary

locus of self-defense and the city as the spatial frontier of crime prevention. Read in parallel,

Chapter 2 (on freedom and mobility) and Chapter 3 (on security and risk) contextualize the

contradictory dimension of the mobility regime, in which the global aspirations to achieve open,

flexible, and transparent urban governance have depended on a program of highly disciplining

and centralizing tendencies. Both the centrifugal and centripetal relations of media and space are

intertwined into the dual architecture of the smart city system, which distributes and disperses

*an*d regulates and synchronizes media in space at the same time.

Chapter 4 interrogates how the environment became an emerging objective of and

problem for the government in the 2000s. The topic of this chapter extends the problematization

of risk in Chapter 3 (on urban crimes and personal safety) and recognition of how risk was

increasingly understood in situational terms of time and space. Following this line of inquiry, I

ask how, the risk, which has seemingly evolved into spatial forms of the city, is rearticulated in

the smart city's management and governance of the 'environment'. While chapter 3 focused on

the criminal aspect of urban risk, this chapter investigates how the risk has been also envisioned

and understood at a global scale since the late 20th century, especially within the discursive

context of the sustainable development and the growing civic demand for a better quality of life.

This chapter discusses how the techniques and technologies of environmental mode of urban

governance (e.g., LEED certification, which is used to rate the building and the cities'

environmental performativity) relegate the governmental accountability to the protocols and

standards and at the same time, mobilize the moral responsibility of the citizens and their

demand for a better quality of life to distribute and settle the shifting mode of governance in the

everyday life world.

Lastly, Chapter 5 charts how the problem of 'development' and 'futurity' articulated in

the regime of smart city in Songdo and how the idea of 'smartness' has been kinesthetically,

visually, and governmentally communicated through the smart city's norm of mobility and

progress. This chapter explores the inter-textual flows of these norms that traverse the K-pop

music videos, festivals, architectures, and the nationalist mythologies of techno-futurism, which

bear upon the mutual construction of Songdo and South Korea's relationship with its future,

which in turn, normalize the constant mobility and progress in the present. The chapter also demonstrates how this futurity is conditioned by multiple modalities of temporalities and spatialities – the historical trajectory of South Korean industrialization and urbanization, the techno-nationalist approach to development, the global imperatives for creativity, innovation, and entrepreneurialism, and the affective charge associated with the kinesthetic and visual norm of smartness – which are co-articulated in the initiatives to commoditize and export South Korean cultural technology, the 'K-Smart City'. This chapter concludes that the smart city, as a form of governmentality, forges a particular disposition for life and future, which gains momentum from the city and the citizens' passion for self-improvement, prosperity, and a better life as well as from their desperation for survival and relevance in the present.

CHAPTER 1. A PRE-HISTORY OF SMART CITY IN SONGDO

> "We can turn the tragic war into our advantage through a new city plan for Seoul. (...) The first aim of our plan is to provide equal opportunities so that people can maximize their capacity. The second is to achieve and maintain a balanced cultural economy that will fully expand in due course of time."
>
> (Yoon Jung-Sub, *Gyeonghyang Shinmun*, 1955.03.11).

Yoon Jung-Sub was the first master student to graduate from the Department of Architectural Engineering at Seoul National University in 1953. Immediately after his graduation, he took up a position as a researcher in Urban Planning Committee for Seoul, taking charge of drawing a new comprehensive plan for the city that had been devastated by the three-year-long Korean War. During the formative years of South Korean urban planning, Yoon actively participated in the establishment of the Korean Association of Land Planning (*Taehan gukt'o gyehoek' ak'oe*) in 1959, followed by a new legislation of Urban Planning Act in 1962. As Yoon writes in the above newspaper column in 1955, the city planners of Seoul in post-War Korea envisioned the future of the new city that posited 'people' as the primary aim of the government. The plan also envisaged the city as enabling ground of maximizing individual capacity, where opportunities were equally distributed to everyone and economy prospered in balance with culture.

Planning, as the *art and technic of government* that consists of interplay of rule and freedom (and of stasis and movement), has always drawn upon the vision of the foreseeable future and consisted of various techniques and resources to address the gap between the present and the imagined future. Planning, as an inherently optimistic, future-oriented, and yet a regulatory endeavor, has always problematized the present in need of reparation and normalization. In the 1950s in South Korea, the new city plan for Seoul manifested the vision and hope for the future of South Korea, while many Koreans were still grappling with the painful reality of the divided nation and the growing tension of Cold War. In the following years, Korean

cities became an internally harmonious and orderly space that is governed in such a way as to be mobilized and connected to the exterior world. Techniques of urban planning and scientific thinking were deployed to enact and enable efficient mobility of people, goods, and information throughout the city, while the nation was precipitated into science and technology-driven future.

The reason why I bring up the long history of urban planning and the modern history of South Korea is to support one of the main themes of this dissertation: which is that the historical formation of the culture of speed and mobility buttress the current preoccupation with the smart city in South Korea. How then, does one start composing the genealogy of the smart city in South Korea? I began this dissertation by acknowledging the socially embedded nature of the planning techniques and practices, which involves techniques, technologies, visions, and problems that are entangled with the given historical and geographical context. I also hinted that the history of planning is not (and should not be) only about the story of experts and visionaries whose ideas and solutions were successfully or unsuccessfully carried out.

As I introduced this dissertation in the previous chapter, this dissertation as a whole situates the history of planning the city of Songdo in a broader perspective concerned with the institutional arrangements of urban planning, cultural memorialization, public discussions of security and safety, as well as parallel societal shifts such as industrialization, globalization, and informationalization. While tracing the divergent and overlapping histories that multiply influenced Songdo, I seek the interconnections between multiple genealogies that have co-shaped today's Songdo and its manifestation as a smart city of future. That is, the genealogy of smart city in Songdo I offer in this chapter attend to the interrelations between the changes that occurred within the field of cities, media, technology, and culture, each of which in turn, has its own genealogy.

To repeat, the narrative advanced in this chapter charts the discursive and material formation of the city and its planning practice that preceded the 'birth of Songdo'. The aim for this chapter is to demonstrate the long process through which the city became a central motif of the government as well as its field where different imaginaries of future have been tested and played out. This chapter also illustrates the processes in which the city was produced as an assemblage of material, imagined, and lived space *and* was productive of social relations and identities that pertain to Korean urban culture.

In order to achieve this aim, I draw upon a broad array of existing literature on the Korean history of urbanization and industrialization, history of media and government, public discussions of security and safety, and social history of technology and engineering. By bringing these histories together, I demonstrate that the account of smart city in Korea has to factor in the history of the state, its militarism and strategies of ordering and unifying population. It is through these strategies that the cities in Korea have become a field in which power is spatialized and embedded. The statist power relations mediated through the city persists in today's strategies and practices of governing the city, even as the surrounding economic conditions are seemingly changing into a more open, transnational, and flexible ones. To be sure, governing strategy shaped the cities, but the cities were the fundamental instrument for the government's exertion of authority.

The historical narratives presented in this chapter also demonstrate how culture and technology were primary instruments with which the city became a field of government. On the one hand, the privilege accorded to the science and engineering profession, the availability and speed of technological advancement, and scientific administrative techniques (such as the statistical methods of evaluation) mobilized the city and the citizens and aligned their goals with

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the government's aim to achieve rapid industrialization since the 1960s. On the other hand, the technological advancement and the growing emphasis on the effective urban and national governance reflected a particular understanding of a nation that has been always on the move, insecure, and under threat, surrounded by the hostile and competitive reality of Cold War and globalization. As the culture of the insecurity, anxiety, and aspiration associated with the technological development still resonates in today's South Korea, this chapter will trace the historical precedents of such affective formation, in order to draw comparison between the past and the present and in so doing, pursue a deep historical understanding of the present.

Colonial History and Techniques of Urban Planning

In the first decade since Japan's annexation of Korea in 1910, the then capital city Kyŏngsŏng (K)/Keijo (J) (now known as Seoul) underwent gradual respatialization that involved street straightening and widening, mostly concentrated in the area that would improve the living spaces of Japanese settlers (Henry, 2014). It was within this colonial context the modern urban planning practices were applied in early twentieth-century South Korea (1910-1945). The effect of modernization was most visible in the cities, as widening roads, rising buildings, and expanding streetcar and bus networks were transforming the urban environment and downtown area in Seoul. In parallel with the transformation in the city center, slums were coalescing around the periphery of the city where the immigrant and impoverished peasants were becoming new factory workers. By contrast, the colonial state extensively surveyed the land and confiscated privately owned lands, which were met with resistance by colonized Koreans; however, a series of ordinances coerced the population into accepting the collective goal of constructing a rationalized urban form.[4] The prevailing logic was that the efficient circulation of goods and

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[4] According to Todd Henry (2014), in enforcing the urban reform, the colonial government invoked the language of civic morality that deployed a racialized dichotomy of civilized Japanese settlers in contrast

people through widened roads would benefit commercial activities in the city center, which would in turn benefit the nation.

From the 1920s on, the transnational city planning movement gained prominence as the colonial state experimented with the strategies of 'cultural governance', wherein the provision of educational institutions and public amenities such as parks, schools, and theaters was perceived to help 'enlighten' and 'civilize' the colonized Korean population. Keijo (Seoul) City Planning Research Association (KCPRA) established in 1921, modeled upon Urban Planning Research Association of Tokyo, functioned as a semi-governmental advisory board comprising of colonial planners who frequently met with the officials from Tokyo and sought to superimpose a unified structure on the city as a harmonious organic body (p.44-45).

But it was not until the implementation of Chosŏn Urban Planning Order (*Shigaji gyehoengnyŏng (K)/ Shigaichi keikaku rei (J)*) in 1934 that the expanded capital city area integrated diverse communities as well as new public facilities such as the city hall, railroad stations, and commercial districts as parts of the unified whole. By implementing the 1934 order, the Government General attempted to solve the emerging problem of the cities with a rationalized design, by redrawing the boundary of the capital beyond the city wall to triple the area to accommodate the massive influx of population and by rolling out roads and railways (Poole, 2014, p.119-120). The 1934 order was exemplary colonial governance that relocated authority over urban planning from other towns and cities to the central Government General located in Seoul (p.120). It adopted a zoning strategy by demarcating urban areas as residential, commercial or industrial, which became the starting point for the modern urban planning in

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to the selfish and 'uncivilized' Koreans. In this logic, those who refused to relinquish their land were said to be disrupting the order necessary for achieving the collective good, such as having a safe and clean living space. This racialized characterization of Korean population further reinforced the colonial government's imperative to enlighten and modernize them.

Korea.

Liberation from colonial Japan in 1945 did not bring a full political independence for Korea, as it was subsequently occupied by two foreign powers, under the United Nations trusteeship administered by the US in the southern half of Korea and the Soviet Union in the northern half of Korea. The US supervised the general elections in the southern part of Korea in 1948, establishing Republic of Korea (South Korea) with Rhee Syngman as its first president, while the Democratic People's Republic of Korea (North Korea) elected Kim Il-Sung as the Premier, ascertaining the permanent division of two Koreas ever since. Arbitrarily partitioned two Koreas flared into an all-out war, which lasted for three years only to end up with an armistice without a peace treaty. After the Korean War, ruling elites of South Korea gradually sought to consolidate power and suppress social disorderliness through whatever means possible.

Yet, from the US perspective, Koreans were perceived to be premature to enact the 'art of self-government' taught under the US trusteeship (Lee, J. 2006). The US Army Forces in Korea, due to the lack of knowledge about Korea, had largely retained the existing Japanese colonial government apparatus and even the Japanese Government General (p.46). Occupation of US military also utilized the Japanese collaborationists who were trained either in Japan and the US, fluent in English, staunchly anticommunist, such as Rhee Syngman, who was an exemplary case. The US military found the Korean leader such as Rhee to be an indispensable ally to lead the future of Korea and to share common strategy to contain Soviet influence in Korea and thus conferred official support for him (p.50).

At the same time, Korean War changed the course of the US security policy toward declaring the struggle against communism as a global proposition (Edward, 1996). Throughout the Cold War, American weapons of warfare quickly evolved so much so that from as early as in

the 1960s, components of "smart" weapons were developed such as guided missiles, cruise missiles, and advanced jet aircraft (p.15). US military presence in Korea supported the president Park Chung-Hee (1961-1979) whose rise to power through military coup was staged amid the anxieties that captivated Korea. Park made himself the head of the Supreme Council for National Reconstruction, which then created the Economic Planning Board to serve as its main agency for highly centralized planning for economic development. The board initiated comprehensive plans to rebuild a nation and to centralize government operations on the nationalized economy, such as the Five Year Plan for Economic Development. Park's program was in line with the US government's new approach to fighting communism, which was to foster economic development in countries that were deemed at risk, by building the industrial capacity and by initiating export-led growth. It was because only then, could democracy flourish to resist the perils of communism (Han & Downey, 2014). The board relied on extensive borrowing of funds from banks in Japan and Europe as well as significant amount of aids from the US, in order to build infrastructures of transportation and communication. In turn, the borrowed funds were used to massively purchase communication equipment and facilities from the US companies.

It was in this sociopolitical context – Japanese colonial legacy, US military, Cold War, anticommunist authoritarian state – that the Korean Association of Land Planning was founded in 1959, which is now known as Korea Planning Association, followed by the legislation of Urban Planning Act in 1962. Urban elite such as Yoon Jung-Sub was an active member of the association. The Urban General Plan they announced in 1966 anticipated the population in Seoul to grow to 6.3 million by 1981, although the number was surpassed already in 1972. Rapidly changing urban ecology demanded constant revision of the plans, resulting in a series of short-term ordinances that replaced the long-term plans. The developmental drive of the authoritative

state under Park Chung-Hee regime (1961-1979) enacted rational and scientific urban planning that focused on efficiency, control, and speed. State-led urbanization process was unusually fast – especially from 1960 to 1990, population growth in urban areas grew from 40 percent to nearly 70%, and about 25 percent of the nation's population lived in Seoul. The total population of Seoul in 1960 was about 2.5 million, while the number increased to 10 million in 1990 (Kim, S. C., 2007).[5]

Still, the unmanageable speed with which the cities grew became a major concern for Park's regime, not only because the inefficient use of space was causing costly maintenance of overloaded urban facilities of transportation and communication, but because the exacerbating condition of life in the cities was deemed to be crippling the nation's overall productivity. Especially for a country that has a steep mountainous landscape with little space to be utilized for a living and working, it was imperative to maximize the economical use of the given space.

Rational urban planning became more and more of a vital necessity for the government, especially as it was integral to the continued economic development and national security. Urban planning practice was gradually professionalized and institutionalized throughout the 60s. In 1968, the Graduate school of Public Administration in Seoul National University introduced a new curriculum for urban and regional planning and produced ten master degree recipients in 1970. At that time, urban planners and architects who were mostly trained in Japan and the US and returned to Korea played a central role in solving what was perceived as a national crisis. Architects influenced by the modernist works of Le Corbusier and Mies van der Rowe envisioned a new plan for the city and the nation that would optimize the space and resource and

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[5] During the 1960s and 70s, South Korea experienced highly rapid urban transition. In spatial terms, in this period, the government built export-oriented industrial complexes in selected industrial sites in Seoul and the southeastern part of Korea. Dominant manufacturing firms relocated to nearby Incheon and Suwon in the 1970s and early 1980s due to rising land price and active government policies to disperse the population beyond the capital city Seoul.

alleviate the overcrowding in the city that resulted in a profound unevenness across the country.

The early modern history of Korean urban planning I charted above shows that the urban planning was an integral method for the government to address the problems: problems of the cities were problems for the economy and for the national security. The disorderly settlements in makeshift housing in fringe areas such as Moon Village were seen as the seeding grounds for poor hygiene, traffic congestion, pollution, and crime. Besides, overpopulation was perceived to be counter-productive for the long-sustained economic growth. In other words, the problem for the government was then to figure out how to sustain growth and movement, while containing that growth in an orderly manner.

The Urban Planning Act of 1976 and the Housing Construction Act in 1977 facilitated the speedy construction of high-rise apartment complexes. Through these acts, the government could even decide where and how to build an apartment and who was allowed to build them. As the government-subsidized housing projects were the instrument to tackle the urban problems, high-rise apartment complexes in Seoul became a dominant form of residence in the 1970s and the distinct landscape and architectural style in Korea.

The growing 'need' of the government to disperse and integrate population was seemingly resolved by the new communication technologies. Throughout the mid-1990s and early 2000s, information and communication technology (ICT) firms clustered in Seoul, especially in the "Teheran valley" located in the River South region of Seoul (Lee, 2002). Tofflerian 'information utopianism' became the critical constitutive discursive element in the 1990s and the national level information policy took shape. High-tech focused satellite cities in Pangyo, Bundang, and Songdo (Incheon) sprang up to absorb the talents from ICT sector and disperse the economic growth beyond the capital city.

Due to such a highly rapid manner in which urban economic transitions have been carried out, Cho (1997) assesses Seoul and cities in South Korea as exhibiting features of 'urban schizophrenia', or 'urban bipolarity', where modern and pre-modern aspects co-exist.[6] It could be restated that the emergent and residual forms of spatial arrangement co-inhabit in today's South Korea.

In relation to the rapidly changing urban living conditions and government's developmental drive, there emerged what one could call the new urban culture. After all, the goal of planning was not merely a matter of providing a space for dwelling but instead a broader goal of creating a harmonious and orderly urban space. It is evident in the ways in which the apartment complexes built in the 1970s were portrayed as "an ideal instrument for increasing contact among the family or neighborhood groups based on association and cooperation belonging to humanity and improving their ability, creativity, and conducts" (Seoul City Government, 1974, quoted in Kim, 2007, p.54). Consumerist desire and pursuit of 'urbanity' (*dosidaum* in Korean), a mentality as well as a category of cultural distinction, correlated with the emerging urban middle class in the 1970s and their lifestyle.

To link the urban-material transition with the urban-cultural formation and to trace the genealogy of 'urban mentality', it is necessary to briefly chart the genealogy of modern Korean subjectivity that has been produced and reproduced by the Korean media during the same period.

Cultural Governance and the Formation of the Dutiful Nationals

Rapid transformation of urban landscape charted above was coeval with the 'cultural' strategy of government. As many historians of Korean mass media (i.e., newspapers and broadcast television) tell us, media served the pedagogic function for the masses and formation

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[6] Even when the politico-economic system and institution acquire the modern appearance, the pre-modern Confucian ideology still ruled society, as the state was able to keep its paternal status in society and lead the social development process (Park, Kim, & Sohn, 2000).

of their subjectivity. Park, Kim, & Sohn (2000) analyzes why the state power had such

overwhelming presence in Korean media history, especially since the Korean War. South

Korea's traditionally strong authoritarian-state that has its roots in Confucianism and colonialism

was established in 1948, inherited the oppressive ruling system of the Japanese colonial

government. The power of the state was further reinforced by a military regime, which came to

power through a coup d'état in 1961. The division of the Korean Peninsula between South and

North Korea also provided the underlying conditions for nurturing the superior position of the

state as it made possible to organize society for wartime mobilization and justified dictatorial

rule by the state and enlarged the military sector (p.98). Based on these conditions, the state

enjoyed enormous power, repressing and controlling not only the political and economic forces

but also the daily lives of people and their culture.

As media historians of Japanese colonial period, Lee, Jae-jin and Lee, Min-ju (2006)

describes the strategies of Japanese colonial 'cultural governance' [*Shingminji Munhwajŏngch'i*]

in the 1920s. Japanese colonial authorities relieved somewhat of the harsh measures of direct

military rule for the first decade of colonialism. It was shortly after the Independence Movement

on March 1st, 1919, Japanese alleviated direct and violent method of control and instead

permitted publication of three indigenous newspapers, *Chosun-Ilbo, Donga-Ilbo,* and *Sisa-*

Shinmun, as a gesture to mitigate the local resistance. Lee and Lee (2006) argue that Japanese

cultural governance was a means of reinforcing its oppression, instead of weakening it. The

undergirding logic was that it was difficult to maintain the oppressive system through physical

violence and it was more effective through governing through 'culture' (*Munhwajŏngch'i*), by

utilizing cultural institutions as a way of reinforcing the colonial power. They were indirectly

seeking cooperation and assimilation through education and mass media (Lee & Lee, 2006,

pp.229-231).

Scholars noted that it was this period that saw the 'birth of the dutiful nationals [*kungmin*]', the discourse and subjectivity adopted by the colonial government that mobilized every individual into a so-called article of empire (Jeon, G. C. 2005). 'Kungmin' as a terminology applied the concept of 'nation' imported from the West and called into being non-individuated collectivity seen from the colonial eye. Translated as 'the nation' or 'the national', the 'dutiful nationals' refers to the multitude of people incorporated as a member of the Japanese empire as a whole. Discursive formation of kungmin as a colonial subject from the late Japanese colonial period continued to the present. In this conception, the individual is not allowed to exist, but only as a dutiful subject that acquires meaning in relation to the family and the nation. Japanese empire inculcated the kungmin ideology that equated the obligation for one's parents with the obligation to the nation, where the superiority lied in the power of the nation. Voluntary conscription, for instance, was seen as exercising one's duty and a way of becoming the proper kungmin.

According to Jeon Gyu-Chan (2005), as colonialism changed its form to nationalism, the predominant discursive formation of kungmin persisted through the later years of successive military regimes and its exclusive character was reinforced through anti-communism as the military government's major governing strategy. An exclusive and unitary sense of identity that precludes otherness (i.e., women, foreign, queer, illegal) constitutes the collective sense of 'we' in today's South Korea.

In a similar vein, Lim Jong-Soo (2011) analyzes television program of KBS, the first state-run national broadcasting service in South Korea since 1961. The military regime of Park Chung-Hee had direct control over programming of contents in KBS and instrumentalized the

broadcasting to promote the government's policies. Notably, since the declaration of the state of emergency from 1972 to 1979, Central Intelligence Agency of Korea (KCIA) collaborated in scripting the 'Real Story Theater [*Shirhwa Gŭkchang*]', the so-called 'purposive drama' that had an anti-communist message.

The programming of television synchronized with Korea's modernization project during the authoritarian regime, carrying out the task of preaching the value of family and modern nation-state both in times when the state directly intervened its programs and when the broadcasting had relative autonomy over its contents. Establishing the 'we-feeling' through the formation of the family and the nation with the ideal personhood as 'kungmin' at its center. Television in the 1970s was "the modernizing machine that tied together development, anti-communism, and the nation-state" (Lim, 2011, p.117).

While the 60s and 70s are considered a dark period of Korean media through the long history of militancy and authoritarianism, the democratic constitutional reform in 1987 marked a significant social transition into democratic society. The absolute power of the state started to weaken in the 1980s and globalization became a buzzword. Kwak, Ki-Sung (2012) assesses the Democratic Movement of 1987 that resulted in a constitutional reform as the watershed of the political history of South Korea that reshaped the relationship between the media, the state, and civil society.

The new constitution saw the government censorship over media contents as unconstitutional, and people were given the right to vote for the president through direct election. In this period, the Korean press developed from a 'voluntary servant' to 'equal contender' (Youm, 1996 cited in Yang, 2004, p.62). During the period of partial democratization, Korean society dynamically transitioned from the authoritarian regime, although that transition did not

entail a fundamental shift in the authoritarian nature of political leadership (p.3).

All the above references provide useful insight into the discursive formation of the Korean nationhood and 'the dutiful nationals' (kungmin) and various disciplinary technologies that were deployed through culture and media, which are still significantly shaping today's Korean political-economic policies and media policies. Long after the globalization has become the national agenda in the 1980s, the imperatives for the national economic growth and national security have not abated and the nationalist sentiment is a significant part of Korean structure of feeling. While mainstream media have largely conformed to the dominant national policy throughout the authoritarian period and to the present, some meaningful resistances have been made, which led to the democratic transition since 1987. Scholars like Kwak (2012) pin their hopes on the rise of online media and citizen journalism for the promise of more democratic and participatory mode of communication. Still, it is necessary to expand our scholarly focus beyond just looking at the content of the media, attending to various ways in which the rationality of the government is mediated and contested. Given the rapidly evolving trend of media that is becoming ubiquitous, operative, and environmental, it is crucial to incorporate the spatial context of discursive formation within our frame of analysis.

Militarized Modernity and the Birth of Defensible Subject

In examining the formation of Korean subjectivity of the dutiful nationals and its manifestations in the life-world of everyday life, one can notice that the political climate of the Cold War and anti-communism in the late 20th century Korea plays a decisive role in problematizing security and safety as the central agenda of the nation and molding the idea of self as bearing the responsibility to protect oneself.

"Militarized modernity" refers to how the legacy of Japanese colonial rule lent various

techniques for disciplining and physically violating its population. Authoritarian regime of Park

Chung-Hee, who served in Japanese colonial army, purged the administration of elite scholar-

officials trained in law, philosophy, and other areas of humanities and social sciences and instead

recruited senior advisors and personnel who were trained in military schools. During the first

decade of Park's rule, nearly 70% of senior administrations had a background in the military

(Han & Downey, p.55). In extreme historical circumstances of the Korean War that resulted in

the division of two Koreas, the birth of militarized modernity was directly conditioned by the

anti-communist strategies of the Korean nation-state and the Cold War strategies of the US.

In a broader scope, the militarized modernity formed the national identity of South

Korea, which was founded by differentiating itself with the other, North Korea. Moon (2005)

understands the interpretation of modernity by the military regime as a nation-building project.

Her conceived period of militarized modernity (1963-1987) consists of three interrelated

sociopolitical and economic processes: construction of modern nation as an anticommunist

polity, making of its members as duty-bound 'nationals', and the integration of the institution of

male conscription into the organization of the industrializing economy (p. 2).

In 1962, the Park government institutionalized the 'resident registration system' as a way

of exercising surveillance on population and as a crucial step to mobilize the population as a

whole. Under the system, every individual was assigned a unique identification number at birth,

which was used to monitor the population's movements for a variety of purposes, including

military service, taxation and criminal investigation (p.28). Through this system, the state was

able to keep a comprehensive record of the population in order to issue the notice of enlistment.

Every individual was required to carry his/her own fingerprinted card, on the base of

strengthening national security, so that any North Korean spies could be readily distinguished.

Moreover, in the 1970s, Park's regime strengthened its ideology of national security under the motto of 'total national security' and 'total unity'. It involved various disciplinary technics of reinforcing anticommunism such as displaying anticommunist mottoes in public spaces, schools and on television. People were instructed to actively report any 'suspicious individuals' who were considered to be spreading 'groundless rumors' about the government. They were mobilized to participate in monthly civil defense training and were required to pay defense surtax. Those who failed to conform to the norm were violently punished.

Surveillance was normalized in everyday life in the 1970s after a Lesser Crime Punishment Law was executed in 1973. Police officers commonly patrolled the streets and regulated men's unacceptably long hair (that covered ears and touched the shirt collar), women's unacceptably short skirts (seventeen centimeters above knees), and color of clothes, in the name of maintaining public orderliness. When caught, the police would cut men's hair on the street as a punishment.

What is especially insightful about Moon's analysis is that the military aspect of modernity was integrated into other spheres of life. The labor market was one of those spheres, as the government established the connection between the military service and employability – the completion of military service was becoming an essential criterion for applying for jobs. This automatically meant that women, who were technically exempted from the service, were less eligible. Also, as the military service was recognized as work experience, conscripted men were guaranteed higher pay and faster promotion after the employment. While such compensations elevated morale of those who served in the military, it constructed and maintained a strictly gendered notion of citizenship where women were considered as a second-class citizen. Not to mention that the corporate culture of Korea was increasingly imbued with military values

characterized by rigid hierarchy, one-way command mode of communication, and collective ethos that justify individual sacrifices.

Moon's analysis of militarized modernity lends a useful insight regarding the technologies of the modern Korean government that disciplined and surveyed population at an excessive degree. Pervasive messages of anticommunism and national security justified and normalized the experience of surveillance in everyday life and mobilization of dutiful nationals (kungmin) in military service entailed prioritizing duty to the nation above the right of individuals. This mentality still undergirds the general attitude toward surveillance technology in today's South Korea, where the urgencies of maintaining public safety and preventing crimes defeat the necessity of protecting individual privacy. This may be presented as one of the reasons why the pervasive use of surveillance technologies in Korea has lesser repercussions than in the Western countries where there is a different notion of individualism and human rights.

The confluence of transitions – rapid urbanization, the formation of dutiful nationals, and militarized modernity – that collectively drove South Korea's historical path toward modernization functioned as the plane on which the country's unique disposition toward technology – understood as the driver of progress and development and as the source of national pride and survival – was formed. In the next section, I delineate the specific genealogy of how technology became not only the government's instrument of population management but also the people's aspirational category of self-improvement and survival.

Technology and National Development

There existed an earlier imperative to modernize Korea in the late nineteenth century Chosŏn Dynasty (1392-1910), by a group of Confucian scholars known as *kaehwap'a* (enlightenment faction)*,* who advocated the acceptance of Western technology (p.20). Kim Yun-sik, one of the

bureaucrats made a case for the principle of *tongdosŏgi* (Eastern way, Western technology)

which was based on a separated notion of the mental sphere from the material sphere. The notion

was conceived as a way to preserve Confucian social order while adopting technologies from the

West to strengthen the military system. Shortly before the Japanese colonial invasion, rulers of

the Chosŏn Dynasty quickly imported Western technologies to build the railway, telephone lines,

streetcars, and a telegraph system.

Han & Downey (2014)'s work illustrates the historical formation of engineers in Korea

from the late nineteenth century to the present. The period in question largely overlaps with

Moon (2005)'s period of militarized modernity, as they focus on the rapid industrialization and

modernization process under Park, Chung-hee's regime (1961-1979), which offered a concrete

guideline for establishing the concept of scientist-engineer and science-technology. Techno-

nationalist initiatives during Park's regime elevated the social status of the scientist-engineers to

that of scholar-officials, who were traditionally considered at the highest rank in Confucian

social order. Park's vision for the modernization with Korean characteristics prioritized the

economic development above anything else and national security as the natural outcome of the

wealthy nation with the strong military.

By the time Park seized power in the Blue House, the presidential residence, the US and

the United Nations were pouring aids to war-torn Korea, so that it recovers industrial facility and

infrastructure in order to build capacity for further economic development. South Korea being

the frontier of the Cold War between the US and the Soviet Union, not only did the US provide

funds for training South Korean military, even support for a Korean Office of Atomic Energy in

1959, they aided building infrastructures in transportation and communications: railroads,

highways, harbors, communication facilities, and electric power generation.

Park jointly shared the views with the US military in antagonizing communism. Especially recognizing that the new Kim Il-sung University in the north supported the Soviet Union's plan for rapid industrialization with emphasis on engineering and medicine (p.40), Park also helped found Korea Institute of Science and Technology (KIST, now known as Korea Advanced Institute of Science and Technology, KAIST) in 1966, in the hopes that it would encourage students to pursue degrees in science and technology. Park government also encouraged students to study abroad seeking degrees in engineering and sciences. Park offered scientist-engineers the opportunities to become national icons of industrialization.[7] Many held prestigious positions in the ministry or lucrative positions in the growing number of private conglomerates. This was a crucial strategy to contest the communist regime in the North, by upbringing 'technical soldiers' of Korea.

Under the Cold War circumstance of regime competition, Park's advocacy of science-technology had an explicit goal of achieving national reconstruction through economic development. The emphasis was less on conducting basic research than on applying the knowledge to solve problems, to develop and improve the quality of products for export. When techno-national experts trained mostly in Japan and the US returned to Korea and found their way into the dominant projects of industrialization,[8] they were given the task of performing research that would benefit the country, by expanding industrial production and exports. Science was understood as scientific research directed to benefit industry, increase exports, and create a new Korea free from external dependence. This is the beginning of the formation of government-

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[7] Between 1972 and 1978, the total number of mostly men students entering engineering each year increased from 19,300 to 33,035. This increase exceeded the increases of men and women in the humanities and social sciences from 13,020 to 20,915 and in education from 5,010 to 11,835 (Han & Downey, 2014, p.90).

[8] Between 1953 and 1967, nearly 8,000 Korean students studied abroad, nearly all male. About 86% of them went to the US (Han & Downey, 2014, p. 91).

academy-industry complex, with the government as the headquarter or the chief of staff, the academy as the think-tank, and the industry as the executive officer, that is shaping R&D and industrial policies in today's South Korea.

During Park's regime, the purpose of education was to prepare populace with nationally oriented mindset. It belonged to what he called the 'second economy', meaning the economy of mentality or spirit. Through campaigns including the New Village Movement, Movement to Promote Science to the Whole Nation, initiated in the early 1970s, the government called on all populace to acquire at least one skill or technique so that they could improve their own lives and contribute to the country's development (p.96). Scientific living and thinking were considered the key to personal advancement as well as national development.

Such interest in scientific thinking is reflected in Park's government's extensive use of statistics and quantification, including the deadlines, budgets, and growth rate. Quantification increased the government's control over the rate of implementation and delivery of results. Once the government set goals, it had to be achieved no matter what. Quantified economic goals pervaded private realms, including personal saving, literacy, family planning, foods, and consumer behavior (p.93). A longtime senior advisor for economic policy during Park's era recounted: "When expressed in numbers, people easily recognized and understood the goal. It was not difficult to compare the current status at the point of planning and the expected status at completion. It was also easy to assess how far the process had come along the way." (p.59 O, 2010, cited in Han & Downey, 2014)

Han & Downey (2014)'s work is a useful reference that shows the centrality of science-technology in the military government's goal and techniques of power. This aspect of militarized modernity in Korea has evolved into the approaches taken by the governments in the following

decades, including the ones that have driven rapid development of electronics industry and information and communication technology industry. This reference is particularly useful for analyzing "Creative economy" policy in Korea proposed by the president Park Geun-Hye (2013-2017), the daughter of Park Chung-Hee. There are many resemblances between two periods, including the nationalistic initiative that drove innovation and creativity (ex. K-pop, K-drama, K-Smart City) as well as the government's active role in intervening and promoting the export of Korea-made cultural contents and technical products.

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The intersecting histories I have charted so far in this chapter will set the stage for the chapters that follow. Urban history 'mobility' in chapter 2, security and safety and defensible selfhood in chapter 3 as I discuss the surveillance aspect of the smart city, cultural governance in chapter 4 on green city and chapter 5 on creative city. Mythologization of technology and statist power relations will be especially addressed in chapter 5.

**CHAPTER 2. FROM A TRANSIT CITY TO A GLOBAL CITY:
HISTORIES AND TECHNOLOGIES OF GOVERNING THROUGH MOBILITY**

In this chapter, I examine the history of mobility in Songdo, and see how it has been driven and problematized by South Korea's developments in relation to global networks. Through this history, I investigate how the urban forms in South Korea were organized and managed to serve social activities that were increasingly becoming mobile throughout the 20th century. This chapter outlines a brief history of Songdo's regional and global mobility transformations in the 20th-century. In tracing these transformations, I pay a particular attention to the process of building the infrastructures of transportation and telecommunications (highway and microwave) in South Korea's modernizing period, leading to my analysis of the period in which the global imperatives started to target South Korean cities from the mid-1980s. I will illustrate how the city of Incheon conceived the birth of Songdo, as part of its aspiration to reinvent itself from a peripheral 'transit city' to a northeastern Asian mobility hub of 'global city'.

The 'idea' of making a global city was materialized through building infrastructures such as airports and electronic networks (telecommunication ports) to mediate mobility on a global scale. This process entailed a different conceptualization and application of zoning practices in urban planning, which had to address the problems associated with financial, logistical, informational, and physical mobility. In exploring the long history of modernization in South Korea, this chapter draws attention to two parallel periods; one in which the techniques of managing unified connectivity was an essential aspect of the authoritarian government's nation-building project, and another when the when the techniques of financial and informational mobility came to matter in different way, giving rise to the emergence of Songdo as the 'global city'.

This chapter attempts to illuminate the interdependency between the infrastructure technology and the discursive formation of globalization that shaped the affective landscape of progress and development in South Korea. I pursue three specific aims in this chapter. First, I emphasize the significance of infrastructure and discuss the broader spatial and material concerns for transportation and communication infrastructures, as a productive ground for studying media technology (Parks & Starosielski, 2015).[9] Second, I draw on South Korea's urbanization and industrial history to understand how Songdo transformed itself into a global city. Finally, I focus on mobility as the government's primary rationale that cut across the territorial scale of the city, the nation state, and the network of global entities.

I also offer a genealogy of political rationality and governmental technologies, targeting the freedoms and regulations of mobility, emphasizing how this genealogy has been a critical aspect of organizing social relations and of governing population in the 21st century. In this genealogy, I examine the technology of the transportation and communication infrastructures as well as techniques for constructing, managing, and regulating them. Both technology and techniques constitute the technological zone of mobility that is deployed by the discourse of the global city. As the main thematic thread of this chapter, mobility here is theorized as a critical instrument and objective of the government. Mobility has been a crucial principle that guided how society was to be organized and has been a "reason of and for the government," so much so

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[9] Media infrastructures theorized by Parks & Starosielski (2015) refer to "situated sociotechnical systems that are designed and configured to support the distribution of audiovisual signal traffic (p.4)." Recognizing the multiscalar dimensions of infrastructures that cut across the micro level of bits and protocols to the macro level of fiber-optic networks and cables, they emphasize the layering of distinct systems and interconnections between the environment, infrastructures, and users. Further, Shannon Mattern (2015) in the same volume offers a counterpoint argument for making a historiographic intervention in critical infrastructure studies, maintaining that cities carry in them "residue" of all media technologies past and that much can be learned from the past embodied in the present media forms. Excavating the layering of an emergent system upon the existing ones, hence echoing Zielinski, "deep time of media infrastructure." Recognizing the relationality of infrastructure involves conceptualizing it as material forms as well as discursive constructions that are interwoven with political-economic agendas.

that government itself is governed by mobility. "Governmobility" (Baerenholdt, 2013) is a term used to draw attention to how society is increasingly governed by mobility, and how regulations of mobilities, in turn, are internalized and followed intuitively by people.

In idealizing mobility, Songdo's scheme for becoming a global hub envisions a frictionless space of flow and circulation wherein an array of techniques and technologies are deployed to ensure and expedite the smooth flow of physical and informational mobility.

History of Governing Mobility in South Korea

By outlining the history of the present in Songdo, I recognize that the government has not necessarily been unified and coherent in its plans and strategies. The post-war South Korean government's primary objectives were economic development and national security. The city was a means to spatialize those aims by providing spaces for industrial production and military training. At lower administrative and private levels, however, there existed a long-held frustration regarding Incheon's historically marginalized status as the "transit city," where roads and railways were built to transport resources and goods to Seoul but not to attract people's attention to the city itself. City planners involved in the Songdo's project shared this concern and took Incheon's peripheral and transactional status as an advantage to turn the city into a trans-northeastern Asian mobility node.

However, Songdo's fascination with the global city idea stemmed from many anxieties that other cities were experiencing, regarding the transitory sense of time and space that rapid urbanization was bringing in. In order to understand this insecurity, it is necessary to examine in detail, how different motives and problems were brought together and inscribed in the long history of governing mobility in South Korea.

Before elaborating on this history, I offer an overview of how mobility has been instrumental to the government's program of unifying the population and creating a sense of space that transcended individual's immediate physical surroundings. If highways were the main arteries of the nation, microwave networks connected the nation through telephone lines, and radio and television broadcasting programs, which helped cultivating a united sense of family-like nation.

(1) National Governmobility: Highways and Microwave Networks

A political void in post-war South Korea and the subsequent insertion of the country at the frontier of Cold War brought about a sense of anxiety deepened by the looming threat from the outside world. While communist North Korea represented a demonic enemy, anticipating South Korea's demise, poverty and lack of infrastructures were viewed as major domestic ills. It was imperative to restore the order and defend the nation at all costs. It was believed that only through rapid construction of vital transportation and industrial infrastructures could the nation be saved.

The volatile and harsh reality of the Cold War inspired the nationalistic idea of the "modernization of fatherland [*joguk geundaehwa*]" by means of a "rich nation and strong military [*buguk gangbyeong*]." In 1967, as part of Park Chung-Hee's Second Five-Year Plan for National Reconstruction, a project was proposed to install a new microwave network that would connect the whole country through radio transmission lines, long-distance telephone calls, and television broadcasting. The Ministry of Communications [*Chesinbu*], supported by the International Telecommunication Union (ITU), proposed a project that would bring the nation closer, by reducing Seoul-Busan telephone connection time from 30 minutes to just 3 minutes only.

A total of 15 cities were enrolled in the microwave network, divided into three separate routes, and connected Seoul to the southeast, southwest, and the northeast parts of the Korean peninsula (Kyunghyang Shinmun, 1967.12.10). This new infrastructure – in the form of intercity telephone lines and television programs – consolidated a sense of nationhood, reconfigured affective geography of unified nation-state, and allowed different regions and populations to coalesce. The use of advanced technology for mobilizing the populace toward unified nation embodied the post-war collective Korean mentality that "unified we live, divided we die."

The primary aim of this infrastructural development was to pursue the nation's goal of centralized governance. Technologically advanced futurity, symbolized by the microwave network, served the political purpose of the authoritarian government, which sought to spatialize its highly centralized governance. The microwave network was perceived as a pedagogic tool of transmitting the government's vision of a united nation state. Park's military regime since the mid-1960s well understood television as a symbol of modernization and was keen to exploit its symbolism to promote its policy and achievements. The government's central role in the formation of television contents and formats, especially during the 1960s and 1970s, resulted in the opening of Korean Broadcasting System (KBS) (1961), TBC (1964), and MBC (1969). KBS's opening on December 31, 1961 was propagated as "the government's Christmas gift to the nation," and its programs pursued the government's thematic focus on the family and the nation state (see Lim, 2011).

While the microwave network was expected to unite the country toward a singular national identity through the dispersion of telephone and television sets, it was also seen as addressing the demands from the middle- and upper-class households that desired to acquire and domesticate modern technology at home. This period coincided with the formation of the urban

consumerist culture whereby "salarymen were already setting up monthly installment plans to purchase a television" (Dong-a Ilbo, 1968.01.01).

Microwave network was closely tied to the dual purpose of materializing the military government's political purpose by promoting its vision of a unified nation state and of laying the ground for the middle-class urban consumer goods market. More importantly, however, the military government's infrastructure development project was aligned with the liberalist goal of the international organizations such as UNESCO and ITU (International Telecommunication Union). ITU, in particular, which had been forming its structure by coordinating and regulating radio frequencies among different countries, shifted its focus in the mid to late 20th century toward assisting developing countries to advance their telecommunication infrastructures. On the recommendations of the international organizations, such as ITU and the US military, the South Korean government began to take out a series of loans in 1969 from foreign banks to purchase radio equipment from the US company Collins Radio. The radio company, based in Cedar Rapids, Iowa, initially designed and produced the equipment for short wave. It was through the common narrative of "development," shared by both ITU and South Korea, albeit for different interests, that the new communication infrastructure – the microwave network – emerged. Military government's consideration for national sovereignty converged with ITU's view of international communication as a pacifying way of balancing power among different nations.

The project of virtually uniting the nation correlated with the efforts to physically bring the nation together by connecting the capital city of Seoul and the southeastern port city of Busan. Since the relay stations for microwaves involved building roads to the high altitude points (e.g. the mountains), the subsequent road construction projects facilitated easier access and development in rural areas alongside the network routes (Mae-il Gyeongje, 1967.12.21). Jeon

Chihyung's (2010) original study of Gyeongbu Highway details Park's strategies for mobilizing materials and 'spiritual resources' needed to construct the "road to modernization and unification." As post-war Korea's first mega-infrastructure project that linked Seoul and Busan, Gyeongbu Highway was given the metaphor of the "main artery of the nation's economy." When completed, it was expected to become material evidence of the strength and perseverance of a country that managed to 'win the battle' without substantial foreign aid or guidance. The 416 kilometer-long highway was completed within just two and a half years, causing 77 deaths among workers who were forced to expedite construction. Confronted by critics who condemned the oppressive and harsh way the project was being carried out, Park roused massive anti-communist sentiments, encouraging workers and the whole nation to "fight as we construct," and extolled the construction workers as the crusaders of freedom. Dual aim of facilitating faster economic growth and stabilizing a rigorous system of military to compete against the communist regime afforded the government sufficient legitimacy to move with this project and many others. For Park, who had declared the absolute commitment to protecting freedom, freedom was viewed as a desperate matter of self-preservation.

The involvement of the military personnel and facilities in the organization of industrializing economy buttressed mega-construction projects, such as Gyeongbu Highway. Soldiers whose sweat and blood were necessary to achieve higher goals were praised for their sacrifices, expected of worthy and deserving nationals. In the process of militarized modernization, the identity of a dutiful-national was politically framed as an ideal personhood, a patriot and a productive worker. Male workers in heavy and chemical industries had been recruited and trained in lieu of mandatory military service since 1973 (Moon, 2005).

(2) Global Governmobility: Airports and the Internet

The government increasingly viewed globalization as a major problem in the 1980s. Airports and the Internet gained new significance as material foundations that enable mobility across the national borders and as the spatial technologies that reorganized the management of distance and time.

In 1986, Park Yeon-Su, Incheon's urban planning chief, drew a plan for the "northeast Asian international business center city project." The ambitious mega-urban construction development sought to reorganize the city's territorial relations with the other successful cities/countries in East Asia, such as Hong Kong, Shanghai, and Singapore. Having been directly and indirectly involved in Songdo's project for over two decades, Park was able to make valuable contributions about how the concept of international business hub had been envisioned and executed through Songdo's "New Information City" plan. The plan consisted of "applying cutting-edge technology into real life to maintain the environment, transportation, and security so that one can communicate knowledge, information, and culture anytime, anywhere." It also involved designing an "urban environment that possesses ample green space, water, and architectural aesthetics." Ultimately, the plan envisioned a city that pursues "a multicultural society through deregulated and global business activities" (Park, p.100). Materializing this vision involved expanding the frontier of the city by reclaiming the tidal flats on the west coast, building a city literally from the ground up. The plan also consisted of constructing a built environment equipped with high-tech urban information infrastructures and linked to a new international airport on Yeongjong Island and an international leisure district for tourists.

In the mid-1980s, when Park was drawing the plan for the city, Incheon was "shut out from its future," as "everything went away to Seoul, except factories, pollution, and regulations"

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(Park, 2008, p.21) By regulation, he meant the national government's effort to suppress the sprawl from Seoul Metropolitan Area and to distribute resources to the rest of the country. Incheon's proximity to Seoul in this sense was regarded as burden rather than a benefit, which overshadowed the city's earlier industrial development. Incheon's proximity to North Korea was seen as a security vulnerability that further discouraged public and private investments in the regional development. The growing manufacture industry in China further fueled added insecurity for the city that had mainly relied on the heavy and chemical industries, with a majority (77.2%) of its workforce involved in the manufacturing industry (p.22). The abundance of cheap labor in China, opened up to the international markets, was going to make Incheon and South Korea's relative advantage of skilled labor increasingly untenable (p.26).

The vision behind the government-initiated Incheon Public Development Center managed to secure Incheon and South Korea a strategic position in the rapidly changing East Asia region. Park referred to Songdo's project as part of the city of Incheon's "Post-Hong Kong Strategy," meaning that Songdo was designed to replicate Hong Kong's successful template in South Korea's west coast. With the intensifying intercity competition in East Asia and Shanghai's rise (Chen, 2009), a systematic transformation of Incheon was deemed inevitable, although the transformation in this case mainly involved putting in place the technologically advanced mobility and urban service infrastructures.

Thanks to the government's support and South Korea's competitive high-tech industry, Songdo New Information City scheme anticipated a synergistic effect of combining the transportation infrastructure of Incheon International Airport (opened in 2001) with the new telecommunication infrastructure. The expected mutual benefit was that the airport would bring in new businesses and tourists to the city, and that the cutting-edge living environment would

add permanent value to the city so much so that corporate executives and professional knowledge workers would direct their investments toward Songdo. The plan also included hosting scientific and knowledge-intensive facilities such as corporate R&D (research and development) centers that would focus on information and biotech industry.

However, one of the many challenges facing the committee was the national government's regulation that sought to suppress further expansion of the Seoul Metropolitan Area. The city planning board in the post-war Seoul was formed to deal with issues such as overpopulation and rising property prices. The board emphasized the necessity to distribute the population away from the metropolitan area. On the other hand, as the project drew public attention, influential stakeholders such as the regional delegates to the national assembly, real-estate developers, and homeowners clamored for opportunities to obtain short-term profits by building more residential apartment complexes than what was originally planned by the committee. Both the legal-institutional constraints and the demand from local power holders were weakening the committee's long-term vision for constructing the international business hub, which would require costly investments and significant political support.

At the same time, the suburban new towns such as Bundang or Ilsan were becoming bed towns for commuters who worked in Seoul. The committee initially had a vision that distinguished Songdo from those residential suburban towns that represented the town's dependence on Seoul. To resolve these challenges, the committee decided on a strategy that involved reiterating the value and the imperative of proactively addressing the demands of globalization, by putting in place infrastructural and institutional frameworks that would accommodate the increasing level of mobility and flexibility of the world's economy. If successful, Songdo would become a useful model for the South Korean government to solidify

its position in the network of global markets and create profound opportunities for business, tourism, and economic growth. In other words, between the two different accumulation strategies – business hub strategy and residential development strategy (Sonn, Shin, & Park, 2017) – the long-term strategy had a winning position at the early stage of Songdo's development.

This long-term strategy seemed to be especially convincing at a time when the seemingly borderless space of telecommunications was introduced alongside the national government's aim in the 1990s to go global. In this decade, the South Korean government systematically increased its support to nurture IT industry, and in 1994, the Ministry of Information and Communication was established to take charge of the national information and communication technology (ICT) policy, pursuing the goal of achieving the whole nation's "informationalization" [*Jeongbohwa*] (Ko, 2013). This shift toward the information and knowledge-based economy was almost the inevitable call of the millennium for many economic experts and government officials, who religiously cited the quotes from Alvin Toffler's book *The Third Wave* since its introduction to Korea in the early 1980s.

The rationale for informationalization was further consolidated in the 1990s by the term "globalization" [*Segyehwa*], which was largely perceived as another significant and impending transition ahead of the country (Kim, 2007). Abundant evidence suggests that the government perceived these two goals – informationalization and globalization – as the essential components of the same process. Continuing the export-oriented tendency of the industrial economy since the 1960s, South Korean government was actively imagining and engaging with the time-space of the global developments through its investments in the ICT sector and new urban infrastructures. These were regarded as a new source of national economic growth and a means to extend the favorable international environment to export the country's products.

As the national government was readily accepting the challenges of globalization through informationalization, the boundary of the nation-state that had hitherto shielded the local municipalities was increasingly seemed permeable. The changing sense of global time-space put pressure on the cities to face the challenges of having to "govern themselves." This new challenge, on the surface, seemed to emanate from the initiation of the new national policy of local self-rule or self-government [*Jibang jachi*]. This new policy that was implemented in 1995 gave citizens the right to directly elect their local representatives for the first time in history, rather than having them appointed by the national government. As such, the city officials took on the dual challenge of having their governing practice conform to the national policy *and* addressing the citizens' demands and expectations. Amid the changing political climate of the 1990s that witnessed the declining national sovereignty vis-à-vis the seemingly formidable forces of globalization, the cities found themselves in a position to compete with one another within and beyond the national border.

It is against this backdrop that technologies of governing mobility through communication and transportation began to play a key role in South Korea's major cities' strategies to respond to the new challenges of globalization. Songdo project team in the Incheon's development committees actively sought the national government's support and funding for the new ICT infrastructures and the opportunities to develop the city's logistical networks. In 1996, the committee proposed the "Tri-Port Strategy," supported by the then mayor Choi Ki-Sun, which suggested creating an intermodal logistics hub that combined seaport, airport, and telecommunication port (Dong-a Ilbo, 1996.07.01, Choi, 2016). In this plan, Songdo was designated as the central zone for IT-related research facilities, such as the Techno Parks, as well as for the international businesses and trade facilities. The plan articulated the committee's

vision to foster mobility across multiple infrastructural forms, which would constitute the material foundation for Songdo's efforts to claim the global and innovative city status.

Following this strategy, the transportation and logistics designs in Songdo considered not only the efficient and optimal flow of movement within the city but also the city's temporal and territorial relations with the other cities in East Asia and beyond, the prime example of which is Incheon Bridge. The Incheon Bridge, one of the world's longest bridges, stretches for twelve miles across the Yellow Sea, connecting Songdo and Incheon international airport on Yeongjong Island. The bridge became the symbol of Songdo's proximity with the outside world, supported by the fact that the airport gave people access to megacities in East Asia (e.g. Shanghai (accessible within 1 hour flying time), Tokyo (1.5 hours), Hong Kong (2.5 hours), and Singapore (5.5 hours)), rendering Songdo "a gateway to more than a third of the world's population in just 3.5 hours of flying time (Songdo International Business District (IBD) official website)."

The calculative rationality that converts the distance in temporal terms assesses the value of the city by the extent of its speed and access beyond its territorial border. In the new economic geography of the global city, as discussed by Sassen (2000, 2005), Songdo was imagined as a neutralized and frictionless utopia where technologies of managing distance and mobility were indispensable for extending its frontier beyond the borders of the nation state.

When globalization and informationalization were established as the government's main concern of the mid-1980s to the 1990s, the new logistical space of the airport and the Internet provided reliable material grounds for resolving those concerns. It is significant to note that until the mid-1980s, air travelling outside of South Korean territory was strictly regulated and was allowed for business related, official or academic purposes only. Since 1983, the government

gradually eased the restrictions regarding passport issuance and even allowed the overseas

tourism for the first time, on the condition that one provides a financial affidavit by a close

family member or relatives who is already staying overseas and that one is over 50 years old

(Lee, 1981.06.17). When the age restriction for overseas tourism was lifted in 1989, overseas

tourism became rapidly popularized, with increasing numbers of air travels that grew by 16.7%

annually in the 1980s and by 8.6% in the 1990s (Hankyoreh, 1995.05.17).

Such rapidly increasing popularity and aspirations toward the airplane and the airport

reflected how the tropes of new global time-space had already permeated South Korea's

imagined community, which was perceived as approaching and approached by the spaces

beyond the boundaries of national border. The new mobility infrastructure of the airport was not

only seen as a distinct sign of affluence and freedom but a material means of bringing the world

closer. Incheon planning committee's vision for Songdo channeled these aspirations and tropes

to develop a new urban form accommodating the increased demands of mobility. Their vision

was also concomitant with those of urban planners and architects in the other parts of the world.

John Kasarda, a professor of business at the University of North Carolina, who advised the

developers in Incheon airport with his widely preached urban development model "aerotropolis,"

referred to the airport as "the physical Internet." Kasarda viewed the airport as central for the

cities seeking to become the hub of the global business networks. He declared that the "airports

will be in 21st-century cities, what train stations were in the 20th-century cities"

(Kasarda&Lindsey, 2013).

The nature of the new global economy that relied on the constant exchange of

knowledge and trade accorded a new prominence to the airport, although previously the areas

near the airport had not typically been idealized as a place where people wanted to live, primarily

due to noise and traffic. However, the real-timeness of the Internet that was already accelerating and reconfiguring people's everyday mobile practices (e.g. purchasing bus and flight tickets, making hotel reservations, coordinating work at a distance, growing number of international travelers, and so on), corresponded with the demand for increased physical mobility that transcended the borders of the cities and the nation state.

To repeat, the mutually dependent relationship between the airport and the Internet in shaping Songdo was firmly related to the feelings of anxiety and fascination that surrounded the impending reality of globalization and informationalization, which were the government's critical problems since the 1980s. While the mobility through airspace was conceived as reconfiguring the urban geographical landscape in relation to the new economic reality of globalization, the emerging significance of information and knowledge-based economy pressed the cities to reinvent themselves as the "milieu of innovation," or "technopoles," so as to solidify their presence and position to the network of global cities.

(3) Networked Governmobility: Smart City

Recalling Songdo's historical and geographical contextualization, the infrastructures and technologies of governing mobility in the smart cities can be understood as a combination of *both residual and emergent forms* of the urban governance through mobility. This phase of development was beginning to take shape in the 2000s, long since the physical foundation of infrastructures had more or less been completed. Until the 1990s, the schemes for building IT infrastructures in Songdo were limited to providing office space and model production factory space for IT companies and research centers. This was mainly the case because IT companies and research centers affiliated to universities were focused on innovation in electronic and computer engineering. Despite this, there were uncertainties about how information technology

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intended to make a difference in the way buildings and roads were designed, or urban public services were offered. Knowledge and Information Industry Complex in today's Songdo retains the facilities and institutional arrangements that were to nurture cutting-edge research and development in information technology, biotechnology, and sustainable energy. It was in the mid to late 2000s that Songdo became a laboratory for enterprises and research centers, seeking to experiment with the then-new ubiquitous technology in an actual urban environment. "U-City (Ubiquitous City)" initiative in Songdo, in particular, was programed in line with the national government's policy orientation that aimed to build the "First u-Society on the Best u-Infrastructure" (Ko, 2013, p.60).

Smart mobility services in today's Songdo bring logistical, financial, and computational mobility in a more intricate form, although their operations have become more automated and less visible. At a micro-behavioral and logistical level, through the Internet of Things (IoT), computational agencies get embedded in the built environment of the city to observe and manage people's everyday mobile practices at a micro-level (e.g. walking, parking, driving, and shopping). Whereas previous forms of mobility governance were designed around an assumed homogeneity of the mass population, the emerging forms of smart mobility such as ride-sharing, taxi-hailing, and traffic monitoring are catering to individual users' preferences and their mobility patterns. Any smooth operation of services is predicated on high-density network infrastructure that allows unimpeded WiFi access or cellular connectivity currently at 4G LTE, which is soon expected to migrate to the next generation of cellular connectivity of 5G, an even more massive bandwidth, by the early 2020s. Smart mobility technology that monitors and manages mobile practices at such a micro-level extends the techniques of previous forms of mobility governance, in that it has become always on and more individually customized.

This progression of technology poses several implications. First, it is the mobility of data that has acquired an infinite level of freedom and accessibility to pervade and coordinate movements of human bodies, vehicles, and things. More accurately, it is the signals and not the individual humans that carry the data moves so that one no longer has to circle an entire block looking for an empty parking space or go to the bank to transfer cash. In some of Songdo's apartment complexes, they even eliminated the need to take out the garbage outside the house, thanks to an underground built-in disposal system that would transports the garbage from each household to a central disposal site. In short, personal mobility that is increasingly becoming digitally mediated minimizes, if not eliminates, the need for physical bodily movement.

To be sure, emerging features of digitally mediated forms of mobility coexist with the residual forms of mobility, including highways, microwave networks, airports, and the Internet. The emerging forms of mobility augment and repurpose the old network functions and customs of use in order to make their new features prominent. In other words, along with the government's object of unifying the nation, which rationalized the construction of highways and microwave networks in the 60s and that of globalization that supported the creation of airports and the Internet in the 90s, the smart city and the Internet of Things are endorsed by an optimized and networked urban governance that supposedly liberates the individuals from earlier constraints of mass-scale infrastructures. What remains constant in these transitions is the fact that mobility is a principle for organizing the geography of the nation and the cities. People, either collectively or individually, are governed by and through mobility, a trend that will continue as the technology continues to evolve.

There is another important point worth mentioning about the significant role of mobility in governing and organizing Songdo's space and geography. In particular, I discuss the

relationship between the financial/logistical mobility and mobility differentials among the different population groups, and further explore the ordinances that turned Songdo into a "special zone" of economic mobility. I will discuss this aspect in the following section.

Zoning as a Technology for Governing Differentiated Mobilities

The concept of zoning was first introduced in Korea (by the time Korea was called by its pre-modern name, Chosŏn) when the country was gradually coming under the influence of foreign colonial powers. Writing about the foreign settlement zones that formed around ports in Incheon around the 1880s, Harold Noble (1929) studied the early modern form of treaties signed by the Korean government, which granted an indefinite "lease" of its property rights to the foreign countries, including Japan, Britain, Germany, America, and Russia. The primary condition of these treaties required that Korean government sublet small areas to foreign powers, transferring complete legal control of the leased areas, although the sovereign title presumably remained with the Korean government. Port of Jemulpo in Incheon, was one of the key points of entry for the foreign ships.[10]

The nearly empty lowland began to gain prominence. Demands for foreign trade helped the growth of the city of Jemulpo – to be subsequently absorbed by Incheon prefecture. Treaties imposed asymmetrical power relations between the Korean government and the foreign powers, among which the Japanese government held the highest interest. After 1919, Japan monopolized trade with Korea, and its influence increasingly grew to the extent that the Japanese elites were

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[10] Noble describes the scene at the port of Incheon when a series of colonial treaties were signed: "The nearest port to Seoul was Chemulpo [sic], a squalid fishing village distant from the capital twenty-six miles by road and fifty-three miles by river, situated on a large bay having a daily tide of thirty-three feet. It was four miles from Inchun [sic], the prefectural town. Half of the day the waterfront was a long expanse of mud flats and only the smallest boats could approach the shore. Nevertheless, this place was chosen as the most convenient port for direct communication with the capital, and as early as 1880 the Japanese minister, Hanabusa, selected part of the uninviting mud flats just above tide water as a site for a Japanese settlement" (Noble, 1929, p.768).

residing in the cities and exerting control over the business, government administration, and urban planning. Japanese modeled the Korean cities on the Japanese ones, although Korean and Japanese residences were segregated, shaping a dual structure within the city.[11]

The concept of zoning reappeared in the modern planning of the cities at a time when South Korea was struggling to recover from the Korean War. Under the banner of the "growth first" economic strategy since the 1960s, the nation was geographically mobilized and reorganized into key industrial production sites, clustered in soon-to-become "developmental bubble cities" (Kang, 1998). Satellite cities surrounding Seoul conurbation area in Gyeonggi Province became the manufacturing sites for semiconductors products, automobiles, and heavy chemical industries. Smokestacks and pollution became the representative gray image of the city, while any matters of personal concerns such as health and quality of life were suppressed at the expense of achieving higher goals – the fast reconstruction of the nation. The sacrifice of a "small freedom" (individual rights and dignity), it was said, was worthwhile to achieve a "big freedom" (self-sustained nation). As a result, South Korean urban policy from this period squarely focused on the construction of infrastructures for industrial production and economic growth (Kang, 1998).

This period in the modern economic history of South Korea is critical in understanding today's national economy, which is highly dependent on the import and export industries. The military government strategically designated several "export processing zones" in the major southeastern coastal cities including Busan, Ulsan, Pohang, and Masan. With unprecedented

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[11] According to Todd Henry (2014), in enforcing the urban reform, the Japanese Governor-General invoked the language of civic morality that deployed a racialized dichotomy of civilized Japanese settlers in contrast to the selfish and 'uncivilized' Koreans. In this logic, those who refused to relinquish their land were said to be disrupting the order necessary for achieving the collective good, such as having a safe and clean living space. This racialized characterization of Korean population further reinforced the colonial government's imperative to enlighten and modernize them.

investments from the government in port facilities and highway construction projects, these

zones functioned as strategic nodes for export-oriented industrialization policies. This zoning

strategy is normally adopted by developing countries that have cheap labor and are willing to

lend their authority to foreign companies. Factories and companies within these zones were

given exceptional leverage to "freely" conduct their business-related activities, while the military

government assured that such economic liberalization was separated from political

liberalization.[12] Through export-processing zones, the government flexibly experimented with

different forms of sovereignty and governance in accordance with the status quo (Park, 2005).

In 2002, Incheon development committee received official permission from the national

assembly for the establishment of a special economic zone called "Free Economic Zone" (FEZ).

FEZ was a revival of the protocols from the export-processing zones from the 60s. Incheon Free

Economic Zone (IFEZ) followed the same strategies, which included giving income-tax

exemptions to companies, providing legal benefits (minimal regulations on land-use or labor

relations), and encouraging foreign direct investment in the zone. Due to FEZ's special legal

status, the support for the new legislation brought together city officials, lawmakers, think tank

policy researchers, and the national government officials who readily internalized the global

imperatives that had lent significance to the new FEZ:

> It is important that the government's commitments be very strong. (…) They must ensure
> the foreign investors that the regulations will work, there will be tax incentives and the

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[12] Regulatory environment within the special zones was designed to encourage export and manufacturing
activities of the companies and to minimize bureaucratic procedures that otherwise would have required
them to undergo proper oversight. The special status of the zone was exceptionally capable of organizing
a form of labor exploitation in the mostly labor-intensive manufacturing businesses (textiles, plywood,
and wigs) since the competitiveness of these zones were predicated on the availability of cheap and
disciplined labor. The military government justified the suppression of labor on the basis that South
Korea was surrounded by a peculiar political circumstance. Besides, many Korean people who challenged
the undemocratic nature of the military government nonetheless positively responded to the
developmental initiative of the same political regime (Kim, 2012).

labor-management issue will be controlled. (Huh, Chan Guk, the director of macroeconomic studies at the Korea Economic Research Institute; quoted in Brooke, 2004.09.24)

Seoul would pass the special economic zone measures on schools, hospitals, and labor relations, as a sign shown by the government of how much we welcome foreign investment, and how much the government is willing to make the environment friendly to foreigners. (Hong, Jae Hyong, a National Assembly member; quoted in Brooke, 2004.09.24)

Under the new scheme, Songdo (20.6 square miles), Yong-jong (8.42 square miles), and Chung-ra (6.87 square miles) districts in Incheon metropolitan city were designated as special zones. Songdo focused on high-tech industry and international business; Yong-jong concentrated on transportation and import/export; and Chung-ra aimed at leisure and tourism.

IFEZ's spatial strategy to become a hub of the emerging network of the global economy was mainly concerned with creating an institutional framework favorable to financial and logistical forms of mobility. IFEZ offered incentive packages to the renowned 'global' educational institutions and non-government organizations on the condition that they would relocate in Songdo. As of 2017, the United Nations Green Climate Fund (UNGCF) along with sub-regional offices for the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT), and the United Nations Commission on International Trade Law (UNCITRAL) have been sharing the same office building in the G-tower, where the main office building for the IFEZ authority is located. The space for the World Bank Group's new office in Songdo was leased for free, thanks to IFEZ's support. IFEZ also actively forged partnerships with the Anglo-American higher-education institutions, such as the State University of New York, George Mason University, Ghent University, and the University of Utah, by allowing them to launch their Asian branch campuses in Songdo. These global campuses are expected to function as a mediating ground for the Western education institutions and IFEZ,

hoping that they would foster the mobility of the highly educated and skilled students through student-exchange initiatives and university-industry partnerships. These strategies of incentivizing private corporations and global institutions were facilitated by the exceptional legal status of FEZ that relaxed the domestic regulations regarding foreign direct investments and establishment of public institutions, such as schools and hospitals. It was hoped that they would enhance IFEZ's reputation as a global epicenter of knowledge-based enterprises.

The zones that are exempt from direct-state regulation are promoted as spaces of liberalism, openness, and flexibility. Yet, these apolitical cities are not entirely absent of rule; they are instead ruled *by* and *through* freedom. Easterling (2014) describes the proliferation of zoning technologies in developing nations as a form of "extrastatecraft" – a form of complex extra-administration technique that merely replaced the previous forms of the state bureaucracy. Zoning technologies are the spatial instrument of the government that selectively liberates special zones by partially giving away its power to its proxies such as multinational corporations and non-governmental "global" organizations; they are given leverages to skew governmental programs and ordinances to their favor. These proxies possess a high level of mobility, meaning that they can simply move to other zones that offer better incentives. As a result, governments that are keen to utilize zoning technologies compete with one another to offer cheaper labor pool and tax incentives. This, in turn, results in highly uneven geography within a national territory, affecting various segments of the population. The population within these zones are governed by different rules and regulations and are conditioned to work with exceptional privileges and dis-privileges based on their expertise and nationalities.

It is important to note that the popularity of zoning technologies in this context may "stem less from economic principles, and more from irrational social and cultural desires to

conform to a global norm" (Easterling, 2014, p. 65). In South Korea, the legacy of special zoning technique is inextricably linked with the popular nostalgia for the rapid industrialization and economic growth of the 60s. Those who are critical of the undemocratic and discriminatory labor policies of the authoritarian regime, nevertheless respond positively to the developmental initiatives of the government. The same public sentiment that favors development and prosperity over equity and justice throws its support behind a mobile and global city like Songdo.

Songdo, a Global City?

Part of what is distinct about today's Songdo, often dubbed as the "Songdo International City," is the government's preferential treatment and the performative dimension of its assertions about the future. Although Songdo (and the greater Incheon metropolitan city) is situated within the long history of colonialism and militarism in South Korea, it has keenly adorned its landscape with elements of multiculturalism and globalism, believed to have been inherited from such a tumultuous history. In 2009, Incheon Development Institute, the city government's policy think tank, published an edited volume of research report entitled *New City, New Incheon* (Korean) through which it suggested a new paradigm and a value system for the next development model for Incheon. Openness to continual change and dynamism was not only the key to success but of vital matter of life and death of the city. According to this report, what was demanded for the city's new transition were strategies for a cultural economy that encourages multiculturalism and of low-carbon growth befitting the image of the new city. If successful, these strategies would help Incheon to re-establish its identity that had previously been overshadowed by Seoul. The report also emphasized the role of Incheon in becoming the node of communication across the Yellow Sea region, mediating the peaceful relationship between the Korean peninsula and China,

which had been eclipsed by the Cold War hostilities. It was only through revitalizing the space of

communication that Incheon could truly reinvent itself from a transit city to a global city.

What is involved in conjuring the new idea of the city is the new attitude that is

demanded of the citizens who are the crucial part of making the project successful:

> I want to create a high-class city where everybody wants to come to live in. In order for
> Incheon to become one of the top ten major cities in the world, we have to provide a
> certain quality of space and the infrastructure. While preserving our cultural heritage, we
> have to publicize such cultural values to the outer world. […] Incheonians should not
> reserve from opening themselves up to the world and from directly competing with
> foreign countries. It requires our citizen's willingness and active attitude.
> (Ahn, Sang-Soo, mayor of Incheon; quoted in Nae-il News, 2009.07.17)

Ahn, Sang-Soo, the "gung-ho" mayor of Incheon from 2002 to 2010, was especially keen to

display an open and competitive attitude by actively enticing foreign investments toward

Songdo.[13] He made the above remark when addressing the residents of Incheon, envisioning

entrepreneurial subjects who do not "reserve from opening themselves up to the outer world"

with a certain "willingness and active attitude," based on his understanding of the competitive

reality of the globalization that pressured the city to drive forward to the outside world. His

repeated use of expressions such as "high-class city," "top ten major cities in the world," and

"willingness to directly compete with foreigners" emphasize his recognition of the financially

successful Shanghai and Singapore, the models he tried to emulate in Songdo, inspired by

"directly competing with the foreign countries."

As the city grapples with the imperatives for change and dynamism, its effort to make

peace with its memory of aggressive and asymmetric mobility can be seen through its

narrativization and "ornamentalization" of the past (McCarthy, 2015). In the old city center of

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[13] Ahn even met with the then businessmen Donald and Ivanka Trump in New York City in 2008 to
discuss building a 120-story Trump Hotel in Songdo. The project was later scrapped after Ahn failed to
get re-elected in 2010. (Yonhap News, 2016.11.10.)

Incheon, where various historical venues including the train station, Chinatown, and history museums are located, the imperative for the city's precipitation into a global future is articulated through the city's past that is made to seem relevant in new ways. Globalization is seen not simply as an externally imposed reality but a hybridized stage of history that inherits the colonial and industrial history – a history that portends the cosmopolitan sensibilities for a global city (Incheon History Museum, 2011).

In a promotional venue of Songdo, I-vision center, a narrative connecting the past, the present, and the future of Songdo is more explicitly articulated – from Incheon's opening of the port to foreign colonial powers in the late nineteenth century and its development into a giant gateway to the international trade. The teleological narrativization of this history is completed by Songdo's current international city status as the end point, proudly representing "Another Face of Dynamic Korea."

Yet, Songdo's performative assertion about its global city status, articulated through its architectural landscape, seems to suspend that history: "Central Park," "American Town," "The First World," "Canal Walk," and "Jack Nicklaus golf course" are names of the main apartment complexes, parks, and shopping centers in Songdo, which either borrowed their names from iconic global cities in the West[14] or were brought up to denote the city's grand worldly ambition.

The fate of the "Tomorrow City," a u-technology exhibition hall that is now vacant and only frequented as a bus stop, is a painful reminder and cautionary tale for planners and strategists who are vying for costly provision of technology that will eventually fall from public

[14] Explaining the design principle for Songdo, Jonathan Thorpe, the Chief Information Officer from the American developer Gale International, refers to the exemplary design elements that the plan drew from the Western cities: "We have a performing arts center that is situated on the water out on the point, just like Sydney's Opera House. The idea was to have something iconic like that. We have a central park, with high-rise buildings surrounding the central park. Just like New York Central Park. And lastly, we have a grand canal within the central park that is so much similar to Venice's canal. Even with the water taxi, so that you can take a boat right on down through our canal." (Thorpe, quoted in Williamson, 2013.09.02).

favor. The case of the Tomorrow City that has gained notoriety of "the Ghost of Smarter City Past" (Lindsay, 2010.02.01) illustrates how the government's futurist vision alone does not induce desirable outcomes. The initial vision of U-Life (Ubiquitous Life) exhibited at the Tomorrow City was demoed by LG (the Korean conglomerate), consisting of u-shopping, u-health, u-learning, and virtually u-everything that was expected to set an example in the world. While its novelty soon drew attention from planners and strategists around, before long they also learned that one could not just push down a new technology and expect it to be taken up by consumers, and even less likely to create a city by dropping the idea on the map.

The lesson has since been shared among IFEZ officials as well as many experts on smart cities in South Korea. They have recognized and reflected on the technocratic tendency inherent in the previous application of U-City idea and understood the need to adopt a citizen-centered approach to make the smart city more successful. Government's shifting of emphasis concerning the smart city's sustainability, security and safety, employment, and the quality of life reflects its change of strategy to address the "real-life" problems of the city and citizens. Such changes in strategy will be elaborated in the following chapters, as it involves a more sophisticated technology and techniques of governing a smart city that is reinvented to be sustainable, secure, and creative. This entails a technical focus migrating from screens and texts to an environment that is more intelligent, inconspicuous, yet always-on.

This chapter traced South Korea's long history of mobility, its relation to the changing status of government's problematizations, and subsequent strategies of dealing with the given problems through mobility infrastructures. In the following chapters, I will complicate the relationship between the government and mobility by attending to the ways in which the very infrastructures that supposedly enable free flow of mobility are closely intertwined with the

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government's management of security, risk, and environment. The transition from this chapter to the following chapters will unravel the binarism of freedom and control, in a sense that the interplay of freedom and control is the key mechanism of power. In chapter 3, I will discuss how the smart management of urban crime and risk draws momentum from South Korea's long history of militarism and the formation of defensive citizenship that recast the self as the locus of self-protection and self-defense. In chapter 4, I will discuss how the smart city is supposedly designed as an alternative method to contain the planetary risk of climate change, to build the capacity of urban resilience and sustainable development. The ways in which the city manages various forms and scales of risks and keeps itself prepared for disasters and threats – by imposing codes, standards, and measurement of the urban environment – are inextricably bound with its goal to foster and support physical, informational, and financial freedom and mobilities. Mobility always predicts risks. And risks always require technologies and techniques of managing and containing them.

CHAPTER 3. SONGDO, THE SAFEST CITY IN SOUTH KOREA: HISTORIES AND TECHNOLOGIES OF GOVERNING THROUGH RISK AND SECURITY

In previous chapters, I have traced South Korea's history of communication and transportation infrastructures and observed how they materialized and spatialized the government's changing relationship with the national, global, and urban networks in the 20th century. I demonstrated how, in that history, mobility served as a significant mode of rule and administration of South Korea, even when the organization of society and individual mobile practices seemed to have acquired the means to bypass the national territorial boundary. South Korea's modern transportation and communication infrastructures (highways and microwave networks) embodied the problem and objective of the government in the 1960s, in so far as it served the nation's efficient functioning and mobilization of resources for industrialization and national unification. As the government perceived the new challenge of globalization and informationalization in the 1980s, the airport and the Internet functioned as the then newly found zones through which the nation could engage with the time-space of the global. This new time-space entailed the imagined features of openness and freedom, which seemingly brought in new opportunities as well as insecurities associated with the tropes of globalization, a punishing and competitive reality that mobilized the citizens' willingness and attitude to prepare for the new level of competition.

In explaining how mobility served as an essential instrument for the government, I also emphasized how the government associated the values of freedom with the new communication and transportation infrastructures – even when the economic freedom was separated from the political freedom. Mobility infrastructures, in this way, were perceived as enabling a pacifying

and communicative potential of the population by allowing them to overcome physical distances and to be united across the regional and national borders.

In this chapter, I present a different, if not a paradoxical, dimension of the same mobility regime, which functions as another significant aspect of the contemporary urban governance – security and risk management. While the language of national security is gradually giving away to a less-overtly militant program of personal safety and self-care in the 21st century, creating fissures between different groups and generations,[15] there exists an enduring, yet constantly evolving, form and function of the government that constructs and problematizes various forms of risks. Defining, predicting, and controlling risks are the central concern of the government that devises systems and measures to securitize the cities and the nation. As it will be shown, the techniques and technologies of the smart city's security and risk management rely on and draw resources not only from technical advancement in data visualization and analysis but also from South Korea's long history of militarism, the geopolitics of national security, and the culture of defensive self which organized individuals as the primary locus of self-defense.

Read in parallel, the previous chapter on freedom of mobility and the current chapter on risk and security demonstrate the contradictions imbricated in the liberal aspirations to achieve open, flexible, and transparent urban governance, which also rests on a program of highly disciplining and centralizing tendencies. Both the centrifugal and centripetal relations of media and space are intertwined into the dual architecture of the smart city system, which distributes and disperses, and synchronizes media in space at the same time.

My investigation of the smart city's security management involves questioning and understanding how the risk and security have become the central problem of urban governance:

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[15] The ongoing protest against the demolition of General McArthur Statue at the Freedom Park in Incheon is an illustrating example that shows the generational divide surrounding the memorialization of the Korean War and the militant national security di

what role does the risk, as a material reality, a discourse, and an 'affective fact', play in the 'smartification' of the city such as Songdo? To answer this question, I cast a wide net to view both the residual and emergent forms of perceiving and governing risk that have shaped the current technical and affective landscape of Songdo.

In the first part of this chapter, I demonstrate how the long history of South Korea's security governance has been inextricably bound with the authoritarian government's program of national security, the geopolitical reality of Cold War, and the militarized modernization. The government's initiation of mandatory conscription, civil defense training and its influence in workplace management and high school curriculum were among the array of instances that constituted the formation of militarism and defensive citizenship in South Korea. While the rhetoric and legacies of the Cold War is not entirely absent in the 21st century South Korea, this aspect of militant national security is becoming less conspicuous and substituted by personalized perception of risk and safety management. What has become more prominent in this process is the techniques of defending oneself and the demand and responsibility for safety that are more mundanely mediated in everyday life in the cities, against evolving forms of risk that is increasingly multi-scalar: from the planetary crisis of the climate change to the more immediate threat of violent street crimes, hacking, virus, food poisoning, and so on.

Following the discussion of the history, I discuss how the data-driven security programs in the smart city can be understood as an intersection between the residual and emergent forms of envisioning, managing, and controlling risk. This chapter particularly focuses on the programs of urban crime management while the next chapter investigates how the smart cities programs are devised to respond to a risk that conjures the planetary scale: environmental crisis of the climate

change. The fact that the cities are constituted as risk-managing machines informs a significant technical and ethical aspect of the smart city's governance.

Regarding the above emergent form of urban risk management exemplified in the smart city, I discuss two interlinked observations that pertain to the evolving mechanism of security and control. One is about the new urban design and technology trend toward architecting an intelligent environment. As computational agencies migrate from desktop to the environment and as the city becomes more connected and networked, the responsibility to secure the city is seemingly dispersed and distributed across the environment. This trend parallels with the emerging conceptualization of the risk as 'environmental', meaning that the risk is increasingly defined in situational terms of space and time (O'Malley, 1996). As a result, the growing ambiguities of surveillance blurs the distinctions between the private and the public sphere, making less tenable modern categories of distinction of the individual identity as the primary unit of social analysis.

The other observation is about the changing relationships between the government and individual subjects, particularly about the ways in which the population is enrolled in the program of urban securitization. As it will be shown, in everyday life level, it is not easy to distinguish people's willing submission to the government program from covert operations of 'dataveillance'. While the self is foregrounded as the central site of defensive responsibility, visible in the surge of domestic CCTV, in-car dash cameras, and mobile apps for personal safety, the very notion of the individual self seems to dissolve into a matter of actionable events and information.

Before I begin to elaborate on these observations, I start this chapter by acknowledging the relevance of the military government's initiation of a national civil defense program to the

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current regime of smart security governance. Under this program, it was understood that the completion of national security was a necessary precondition for personal safety and that it was one's national duty to fulfill mandatory military service and training to protect oneself and one's family.

National Program of Civil Defense and the Birth of Defensible Subject

South Korea's nation-wide civil defense training was initiated since 1969 under the anti-communist military regime. Along with the nation-wide conscription program that enlisted all adult males in South Korea – a constitutional mandate that continues to the present – the military regime initiated a mandatory training program that involved college students and high school students. Through this program, former officials from military schools were dispatched to each college and high school to execute regular defense drills. During the regular high school defense drills, students were taught how to assemble and disassemble guns, how to shoot, how to give emergency treatments, and how to be prepared for an actual war. The student defense training was part of a national program for mobilizing the whole population into militarized modernization in South Korea. The institution of civil defense enacted a program of self-protection that organized individuals into a patriotic, anti-communist, and defensible subject, wherein the citizens were involved in the active role of defending their own country's security. It was only by defending the nation's security could personal safety be guaranteed. Many Koreans considered the completion of military service and training as a measurement of one's civic virtues.

Since the late 1990s, curriculums at high schools gradually diminished the 'old fashioned' military training program by switching it from mandatory to selective training, until it was completely replaced with a less overtly militant self-protection program of safety and

wellness education in 2011. The new programs included fire drills, disaster prevention, self-defense, and nutritious diet.

What then, does the military defense training, the legacy of the former military regime and the Cold War, have to do with the security programs in the smart city today? I evoke this example not just because the Cold War framework is still very relevant, albeit with contestations, in South Korean politics and public discourse today.[16] The long history of militarism and security consciousness, an enduring legacy of Cold War in South Korea, both directly and indirectly, is articulated and rearticulated in the programming of the security governance of the cities and in molding the civic duty and responsibility for being prepared for emergency and external threats.

In fact, Songdo is located just a few miles south from the Incheon Naval Sector Defense Command (INSDC), which regularly patrols the Incheon international airport and offshore islands up to the Northern Limit Line (NLL) that demarcates the Yellow Sea between North and South Korea.[17] INSDC was formerly known as the Coast Defense Incheon Base established in 1946, which later joined forces with the allies of the United Nations during Korean War. The

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[16] The US and the South Korea's joint military exercise continues today, while the wartime operational control rests with the Combined Forces Command (CFC), whose head has been the commander of the US Forces in Korea. Since the early 2000s, the topic of national defense and security consciousness have often been hotly debated, especially over the US control over South Korean wartime operation and the National Security Act, which had been extensively used by the military regime to incarcerate and torture people who sympathized with communism. The democratic movement of the 1987 pressured the South Korean government to liberalize its security policy however, the National Security Act persists to this day with highly anti-communist undertones.

[17] From its earliest conception, the area of Songdo was crucial for national security reasons. Korean Navy's regular military training and operations are taking place at Wolmido, a nearby location to Songdo. In the year 1987 when the blueprint was drawn up for the New Songdo Information City, Ministry of National Defense complained about the nature of the development, concerned that any real estate development with a residential purpose would compromise the highly alert military functions in the area.

joined force fought under the command of General Douglas MacArthur from the US Army

during the Battle of Incheon, which took place quite close to where today's Songdo is located.[18]

The primary objective of militarism and national security that organized the

government's operations and social relations during the 1960s gradually dissipated and was

conjoined with the individualized programs of safety-management.[19] As discussed in the

previous chapter, by the time when the Incheon development committee was preparing plans for

Songdo in the late 1980s, South Korea was coming under pressure to meet the challenges of

globalization and knowledge-based economy. At the same time, the period was also marked by a

dramatic political and social transition and a quest for liberal democracy and the civil rights. It

was especially around the 1987 Democratic Movement that the collective desire for individual

emancipation was actively expressed against the oppressive and authoritarian state power.

In this historical context, personal safety as a matter of quality of life came to matter in

new ways, which was a concern that crossed the lines of political disposition or ideological

difference. Faced with the uncertainties of the global reality, flexibilized condition of labor

market, and growing anxieties that characterized the public mood toward the end of 20th century,

the individuals, as the primary unit of responsibility and decision-making, were instructed to

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[18] Various contemporary popular cultural texts and monuments have publicly memorialized the Korean
War. For example, the movie *Operation Chromite* (2016, Directed by Lee, Jae-han, financed by CJ E&M
Entertainment) revisited the Battle of Incheon focusing on the covert mission by South Korean squad
infiltrating the North Korean operations. Casting Liam Neeson as the General MacArthur, the master
planner behind the mission coded the Operation Chromite, making of the movie involved high production
cost. However, it generated polarized opinions between the conservative aged groups and the younger
population groups who were divided by the movie's heavy dose of patriotism, anti-communism and the
national security issues. The same division of public opinion was demonstrated in the collision that
surrounded the General MacArthur's statue in Incheon's Freedom Park. The park, located in Incheon's
old city center, was established to commemorating the victory of the Battle of Incheon in 1947. The leftist
groups have demanded the demolition of the statue since the early 2000s, which was met by resistance by
the right-wing groups (OhMyNews, 2009.09.08).
[19] In Foucauldian terms, this transition can be interpreted as reflecting the shifting conceptualization of
the government's security techniques that aim to defend national sovereignty and territory toward the
ones that focus on security of population (see Foucault 2007).

customize their own self-care regime to stay safe and healthy (Yang, 2016). In South Korea, the individualized notion of risk that constituted the technologies of the self, developed in conjunction with the expanding neoliberal economic policies following the financial crisis in 1997 (Yang, 2016; Joung, 2011). Unlike in the advanced liberal countries in the West, South Korea's neoliberal policies were brought in the vacuum of welfare state policies and institutional arrangements for minimum social safety. As a result, the responsibilities for risk management fell solely on the hands of the individuals, who sublimated the distrust and anxiety regarding the state power into an aspiration for personal survival, stability, and safety (Joung, 2011, p.278).

At the same time, the existing bureaucratic organizations were increasingly deemed incapable of managing and reducing risks that seemed to be evolving at various levels. Management of risks, except for national security, gradually transferred from the state to the non-state spheres of the market, technologies, and individuals. In the context of the modern history of South Korea, this shift also reflects the changing strategies and programs of the government. Under the previous military regime, risk was primarily conceptualized in relation to pro-North Korean activities and communism that threatened the national security. While the national government retained the executive responsibility of military operations, non-governmental actors such as international organizations, insurance and technology companies, as well as individuals were taking on the role of managing risks either at a global scale of the entire planet (i.e., environmental disaster, global warming, nuclear war, etc.) or a much smaller scale (i.e., violent street crimes, hacking, personal health, etc.). In other words, the threatening reality of communism and national security has gradually given its place to a global reality of climate change and environmental disaster and a more immediate reality of financial management, personal health and well-being (Yang, 2016) – although what remains constant in this transition

is an envisioning of citizens who willingly induct themselves as safety conscious and self-responsible inhabitants of the city (Park, 2015).

In the next section, I will discuss my observations regarding the emerging conceptualization of the risk that is becoming 'environmental', as the risk is increasingly defined in situational terms of space and time as well as the techniques of addressing the risks that are becoming more holistic, spatial, and constant.

Environmentalization of Urban Risk and Crime Prevention Through Envionmental Design (CPTED)

> Our current image of the criminogenic city governmentalises [sic] risk as a spatialisation of thought and intervention. Using techniques pioneered by the commercial demands of insurance and based on informatics and postcode mapping, this spatialisation is now at the molecular level of urban existence. The contemporary city is thus visualized as a distribution of risks (Osborne & Rose, 1999, p.753).

As Halpern & Günel (2017) notes, crisis and catastrophe are evoked as a constantly assumed reality in a city primarily preoccupied with security procurement. Security, one of the central problems of the city, serve as the governing principles of the city that is increasingly pervaded by smart devices, inducing an emergent form of monitoring and control (Andrejevic & Burdon, 2015) In a depoliticized zone such as the smart city, security is a prevailing logic for the pervasive use of sensors, chips, CCTVs, and ubiquitous computing in the city.[20]

In this section, I demonstrate how surveillance is not only stemming from the profit-driven IT companies and the government that pursue imposing asymmetric power relation that targets privacy. Instead, I offer a broader conceptual shift that is conditioning the emerging forms

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[20] There are disagreements among critics regarding whether this emergent form of monitoring and control denote a rise of different mechanism of power and thus deserve different theorization of surveillance. One of many debates, Zygmund Bauman for instance theorizes the contemporary preoccupation with surveillance through the term 'post-panopticon', whereas Haggerty & Ericson (2000) instead suggests using 'surveillance assemblage' to move away from fixated and totalizing view of surveillance.

of monitoring and control. As it will be shown, contemporary cities are now charted as the spaces of potential risks. As far as the security management in the smart cities is concerned, risks are less defined in terms of demographic traits or a place than of probabilities and environmental/situational traits.

Smart city is designed on the premise that the risk is a mundane matter of everyday life. In 2017, Songdo's Smart City Operation Center showcased its new platform service that could integrate data gathered from different districts in IFEZ, including the CCTV feeds over parks, streets, and bridges, as well as the license plate numbers captured at the city entrances. The vast amount of data were to be shared with the police and fire department, reinforcing the security as the first order of business. Employees at the Smart City Operation Center were enthusiastic about the efficiency and marketability of the new platform that would enable an automated security management of the city. At the same time, employees also seemed to generally accept that it is safer for the humans to be involved less with the work of monitoring the city. Their rationale was that, because humans have a much-limited attention span than the computers and therefore are more prone to errors, it is better for them to intervene only in the situations flagged by the system, and pass over the menial job to the machine of having to stare at the dozens and hundreds of monitors for a long time.

They did not seem to mind that the smart security program focuses on the types of risks that are only technically detectable through sensors and cameras, such as fire, earthquake, air pollution, and traffic violation. However, when it comes to the matter of security, there is never 'enough' of data. The more is always better and assuring. Excessive volumes of data gathered from widely distributed sensors and cameras are now synced and networked through an integrated platform, supposedly allowing a more precise detection and analyses of data (Yeoh,

2015). In this way, the Smart City and the Internet of Things are closely interlinked

developments (Dourish, 2016), which 'translates' the city into large sets of data.

Besides, security has been a built-in feature of many residential and official buildings.

Nearly all the buildings in Songdo had main gates that opened either with keypads or RFID

cards, as well as exclusive accesses to fitness centers, reading rooms, and even trash bins –

although in fact, these features are not exclusive in Songdo but already quite pervasive in many

other cities in South Korea.

Such developments in urban security techniques have implications on at least two levels.

First, just as the employees at Songdo's Smart Operation center testified, the primary 'work' of

watching the city is relegated to the machines, along with the accountability. More importantly,

the prevalence and accessibility of data prioritizes a machinic way of thinking, and the way we

view the cities (Mattern, 2015), in this case, the way we perceive and evaluate risks. In other

words, smart city's security technique defines risk as something that is locatable, quantifiable,

and calculatable.

The quantifiable character of smart city's urban governance model constitutes the

foundational condition of a contemporary urban space that is driven by computational

architectures and analytics (Crandall, 2010, p.76). Life in the cities becomes divided into

'actionable events' reconfiguring the problematization of urban risk governance. In this scheme

of city and security, the question of 'where' instead of 'who' becomes the prevailing concern.

Thus, the 'environmentalized notion of risk' entails proliferating forms of smart devices that

track down the potential risk in the form of environmental data (air quality, traffic movement,

street CCTV, GPS location) reinforces this changing conceptualization of risk as locatable,

quantifiable, and programmable. The environment here can be seen as the primary site of

investigation, analysis, and surveillance, in a sense that it is equipped with the computational power to locate and track potential risk and that at the same time, it is where the potential risk resides. This emerging trend of environmentalization of risk is concurrent with the contemporary urban environmental design that views the city as both the problem and the solution.

To be sure, to suggest that risk and security has become the key problem of smart city is not to assert that this kind of technically mediated surveillance did not exist before, but rather that a particular kind of surveillance mechanisms is mundanely involved in the digital urbanization. The examples presented above demonstrate a significant change in the way in which risk is conceptualized in the city. Unlike in the preceding decades when the risk was associated with specific profiles of dangerous people (communists, North Korean spies, street gangs, and so on), risk is increasingly thought in terms of probabilities, which involves the whole of the population.[21]

In fact, this environmental conceptualization of risk has been portended and regularized by the development in the field of environmental criminology. One such example is called the Crime Prevention Through Environmental Design (CPTED), a design-centered approach to crime that started in the early 1970s. The underlying logic behind this program is the assumption that the human behavior is primarily influenced by their environment, the environment is liable for criminal activity, and that we can create a kind of environment that can deter illegal behavior and encourage law-abiding behavior that promotes feelings of safety. Oscar Newman (1971)'s *Defensible Space* was one of the foundational texts for the CPTED idea, which generated guidelines to design out crimes in the cities, through strategies of territorial reinforcement,

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[21] There is a striking resemblance between this trend toward the environmentalizing notion of risk and Foucault (2007)'s discussion of the power that operates through security. Whereas the disciplinary forms of power was associated with the totalizing gaze of the panopticon, the latter conceptualization of power (operated through security) does away with a central locus of power and instead distributes the gaze through techniques and mechanism.

surveillance, access control, and legitimate activity support. These suggestions have been developed and applied to a series of urban design manuals regarding how to appropriately build walls, windows, gates, and fences. CPTED is currently adopted by the US Department of Transportation, Department of Education, Center for Disease Control and Prevention among others and is supported by the United Nations and many governments around the world.

In South Korea and Songdo, CPTED principle has been taken up since the mid-2000s. In 2010, the Korean Association of CPTED (KACPTED) was established, bringing together the group of experts including architects, criminologists, and environmental engineers. The KACPTED has been expanding its institutional networks with the police agencies, local design centers, and research institutes that focus on security policies and architectural and environmental standardization. CPTED is widely promoted as the guideline for landscaping and building constructions that maximizes visibility of space through lighting, windows, and CCTV. CPTED also offers ways of organically creating 'natural surveillance' through designing wide and open streets for vibrant outdoor commercial activities. As a result, in 2016, Incheon police agency reported that the CPTED brought about 12% decrease in theft and that 76% of citizens responded positively to the program (Ko, 2016.10.30).

Smart security solutions in Songdo can be viewed as supporting the similar conceptualization of risk that the CPTED is predicated on. These urban schemes embody the environmentalized conceptualization of risk, in which the whole of environment is implicated as an object of management and operation. Based on this understanding of risk that results more from a particular kind of situation than from particular demographics, environment becomes the object of direct correction and guidance. The concern is more with the spatial and temporal aspects of crime (O'Malley, 1996).

Besides, smart city governance embodies analytics and technologies that exert power to make the city visible in certain ways, but in doing so, programs the city space to be operational. This is the point where the smart city technologies like sensors and CCTV converge with the security aims that undergird the CPTED program. The mutual benefit of this convergence is the supposed flexibility and modularity of the platform, which can be perpetually renewed and maintained against the notion of contemporary risk that is becoming more and more uncertain and ill-defined.

In fact, the field of 'environmental criminology' is advancing through the data-based policing techniques including crime mapping techniques and the crime hotspot database. Crime mapping technique for instance, integrates the National Police Agency's Crime Information Management Systems, GIS, and land use patterns, and demographic data, and typologies urban space into various levels of crime hotspots (Do & Pyo, 2010). It is expected that the successful use of such techniques will assist local authorities to find optimal spots to install CCTV, to dispatch patrols, and to alert the potential victims. While the advanced CPTED principle was effectively built into the design of the new towns, such as Songdo, old towns and public spaces with relatively outdated infrastructures are especially deemed in need of extra security interventions through CCTV and police surveillance.

The development of environmental criminology and crime-mapping technique reflect how the digitization and codification of urban space is the basis for the emerging mode of urban security governance. However, as the CPTED proponents have emphasized, the 'mechanical surveillance' through CCTV has to be supplemented by the 'natural surveillance' by the citizens themselves, to successfully design out crimes. In other words, the security governance is only immanent and can be materialized when the citizens are enrolled as operatives of that

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surveillance mechanism and when the individuals, as the primary locus of responsibility, induct

themselves into the role of defending oneself by managing risks. How the self is articulated and

reorganized as an operative domain for enacting security regime will be explained in the next

section.

Technologies of the Defensible Self

> Risk reduction is to form part of the moral responsibility of urban citizens themselves. (Osborne & Rose, 1999, p.754).

South Korea's long history of militarism and defensive citizenship prioritized security and risk

management as the central governmental problem. The evolving techniques of smart city and

digital policing techniques constitute one axis of how the problem is to be addressed, through

distributing the computational agencies across the environment. Another crucial axis of how the

environmentalization of urban risk operates through the city relies not only on the dissemination

of technology but also on the formation of the self and individuals who are enrolled in a

particular program of actions. This requires a closer look into the way in which the city becomes

a laboratory of conduct (Osborne & Rose, 1999).

Closed circuit televisions (CCTV) and radiofrequency identification (RFID) chips track

and monitor selected activities in open space. Evolving techniques of data-mining and machine

learning are designed to analyze and extract patterns out of the large data sets, to single out

deviance from that pattern and to either exclude the outlier or bring the deviance back into a line.

Increasingly, there are many proponents for adopting pre-emptive measures to calculate and

predict the risk, which involves the nearly ubiquitous datafication of the city that renders the

contingent and unpredictable nature of the city more knowable and thus more governable. From

the user's end, the smart city's security governance rests on inducing supposedly 'willing'

participation from the security conscious citizens and on capturing and analyzing data extracted from human bodies, while the sensors and cameras become the interface between the everyday physical space of inhabitation and the virtual space of data optimization.

However, such provision of technical systems alone does not determine the efficacy of control. Surveillance is immanent in the operative rationale of the smart city, which can be made operational only when the citizens internalize and enact a template for conduct in managing their own risk and safety. Such enactment of conduct involves a particular subjective formation that draws resources from popular imaginaries and understanding of the city and its inhabitants who take on the responsibility of protecting themselves and their neighborhood. This guidance of conduct situates the self amidst the constellation of relationships among technology, risks, and proliferating imaginaries of the city, constituting an imprecise and indirect, but more successful dimension of control and power.[22]

In South Korea, the majority of public opinion has been in favor of CCTV, which is almost regarded as a stand-in for the urban security and personal safety. As stated above, there is a long history of government surveillance in South Korea, which was largely concerned with watching pro-North Korean activities. The primacy of national security afforded legitimacy for the government to regularly monitor and police the public space over the years, by enforcing

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[22] Critics of surveillance such as Zygmund Bauman and David Lyon (2013) discussed the difficulty of distinguishing 'control' and 'care' at the experiential level of surveillance, of distinguishing self-surveillance as a mode of self-care. Especially with the growing recognition of life in the city at perpetual risk, the smart, automated means of monitoring and governing risk in the city is perceived as a way that the city reduces uncertainty and ensures the safety of its people. This point demands a further exploration on the changing public mood with regard to risk and security that mutually reinforce the evolving technologies of surveillance that are becoming more invisible, continuous, and always on.

curfews after midnight (lifted in 1982), organizing civil defense militia [*minbangwi dae*] and checkpoints for neighborhood patrols.[23]

On top of the demand for stricter government regulations and policing of the public space, as of late, the sales of in-car dash cameras (black box), domestic CCTV, smart door locks, and smart home sensors have rapidly increased, reflecting how people have internalized the responsibility to protect their own safety. It is not a small coincidence that there has been a growing market size of the Smart Home industry, as the major telecommunication companies in South Korea are competing to introduce their new security services that combine human dispatch security with video security system, tailored to the needs of individual homes – while KT corporation (formerly Korea Telecom) launched the "Olleh CCTV Telecop Guard" service in 2013 and has since provided the Home Security System for all single women in exchange for a monthly fee of 9,900 won (about US 9 dollars), SK Telecom acquired the security systems company ADT to build their "IoT Caps" service in 2016, now planning to apply artificial intelligence (AI) to their next security business model.[24]

The growing demand for commercial security services one of the indicators for the changing mode of dwelling in the city: more and more people choose to live alone and one-person household accounts for 28.6% of total number of households in South Korea in 2017 (Chosun Ilbo, 2018.11.04). And the dominance of single-person housing is attributed as the

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[23] In South Korea, government's regulation of the online space of the Internet has also become commonplace, as much motivated by the national security concern as by the public health and safety concern. In 2011, the Ministry of Gender Equality and Family introduced the "Shut down policy" that blocks those under age 16 to access online gaming after midnight, on the ground that the Internet addiction poses as a threat to adolescent health and safety (Kim, 2011)

[24] According to a survey conducted by Korean Information Society Development Institute (Cho, Yang, & Lee, 2016), population from above middle age group (above 50s) were said to be more open to trying the Smart Home services than other age groups. It is not a small coincidence that the Smart Home services are developing programs targeting the under-aged and aged population, the population less mobile while the environment that is more animated and mobile.

cause and result of the anxiety associated with living in the city. For this reason, despite the apocalyptic vision often attributed to the surveillance apparatus, banal encounters with its techniques such as CCTV, exhibit a rather nonchalant attitude of indifference in South Korea. Even the full exposure of ubiquitous mechanism of monitoring does not lessen the general support for a more rigorous control of space and extensive use of CCTV like in the smart city, since the majority of South Koreans view these measures not necessarily as a form of oppression but as an effective means to protect their safety, as well as a symbolic and emotional marker to ameliorate their anxiety.

In 2015, an infamous case incited public outrage toward one of Songdo's infant care center. A footage was publicly circulated that captured a scene where an instructor was violently abusing a four-year-old girl for not finishing her lunch. The news drew immediate attention nation-wide and the angry public demanded a stronger system to protect children at the care facilities. Not only the instructor in question was prosecuted for an assault charge and was sentenced to two years in prison, the "Infant Care Act" was amended for compulsory installation of CCTV in all caring facilities and to allow the parents to access recorded footages. A group of daycare center instructors appealed to the constitutional court, however, it was finally ruled that the CCTV 'prevents' child abuse. Although the CCTV did not actually help with protecting the child in the said case, the reformed law in 2015 stipulated that CCTV as essential equipment to protect children from potential abuse from instructors.[25]

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[25] By January 2015, 31.6% of daycare centers were equipped with CCTV nation-wide (43,763), while public daycare centers among them had higher rates (77.1%) of CCTV installation, compared to private ones that had only 10.6%. The debate around the privacy and autonomy of teachers was silenced by anxious parents demanding of their right to protect their children. Within less than a year in 2016, 91.2% of daycare centers installed CCTV within their facility (2016.5.10 Childcare policy brief). The Smart CCTV industry is anticipated to grow more than 11% every year worldwide (Yeoh, 2015).

The increasing public demand for CCTV and the popularity of smartphone applications that combines wifi and GPS indicated the growing tendency of the individuals who were motivated to protect themselves. Telecommunication companies as well as the government offices developed and distributed apps that could be used for emergency and self-protection. For example, the Ministry of the Interior and Safety developed smart phone applications called the "Emergency Ready App," which was supposed to alert the users during emergency situation, and the "Smart Safe Return-Home App," which enabled the users to send their locations every ten minutes to a designated guardian. Using this app, users were instructed to navigate the safest route to the destination via CCTV-surveilled ways. The app also combined the analysis by the crime mapping techniques, to send the users push notifications when they were supposedly entering a dangerous zone like crime hotspots.

The buildings and urban spaces that embody securitization through deployment of smart devices are corollary to the same regime that presupposes the kind of culture of the self that readily takes up the moral responsibility to defend oneself. The responsibility entails acquiring adequate information, skills, and manuals to govern their lives. Their manuals of conduct consist of myriad of activities including organizing daily travel routes through well-lit streets, receiving mails and packages through unmanned courier, regularly updating passwords and door locks, putting a bandage on the laptop camera, sending taxi license plate numbers to trusted friends, avoiding to go out at night, and so on.

Individual responsibilities to protect oneself can even take a collective form, through community support and neighborhood safety programs. In Songdo, as with other cities in South Korea such as Seoul, the government has recently implemented programs through police-

community partnership, to cultivate a security and safety conscious citizenship.[26] The program

thus extends the rationale of defensive self and reawakens the moral virtue of the citizens to

protect their neighborhood, in order to ensure individual safety.

The examples charted above show how security has become a routinized part of every

day life. In this way, control is not accomplished in totalizing and coercive manner, but

maintained through breaking down daily lives into the matter of actionable events and

implicating anxiety-induced individual 'participation' in the network of security governance.

Besides, security is accomplished through benign forms of 'DIY-panopticon', through which

gazes and visibilities are diffused and reciprocated.

In addition to the proliferating techniques of formulating subjects who take on defensive

responsibilities, there seems to be another set of technical arrangement that is imposed upon the

population. As human-machine interface is becoming a pervasive feature of in everyday life

space, it is increasingly difficult to keep track of the amount of the data generated about the self.

In fact, individuals are becoming 'divisible data-bodies' that 'generate' more than 'participate'

(Andrejevic). While the covert mechanism that constantly generates data about one's movement

is vital for the smart cities' operation, the mechanism itself does not necessarily go through one's

conscious decisions or awareness.

Smart City as an Urban Interface and Datafication of Everything

> If, once upon a time, the mobilization of the promise of interactivity was characterized by
> the enthusiastic portrayal of heightened forms of active participation on the part of users,
> the automated collection of data "passive-izes" this interactivity. These days, we *generate*
> more than we participate – and even our participation generates further and increasingly
> comprehensive "meta"-data about itself. (Andrejevic & Burdon, 2015, p.20)

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[26] While conducting my fieldwork in Songdo, I could observe several old men walking in groups wearing
yellow vests, who were recruited to escort the elementary school kids back home after school. These
publicly funded activities offer part-time jobs to retired senior citizens who do not generally benefit from
social welfare programs. These programs are also propagated as opportunities for the retired citizens to be
continuously productive citizens who contribute to the program of urban security and safety.

The smart city's security governance that adopts advanced policing technologies heavily relies on collection and visualization of data. While the citizens' 'participation' into the security program is a crucial element for its success, in fact, the citizens contribute more by generating data about themselves. As the mechanism of surveillance is increasingly dissolving into the fabric of the city, the 'individuals' are seemingly being broken down to the matter of actions and series of events that can be tracked, located and analyzed.[27] Recent shift toward the data-driven urban security governance is predicated on the system wherein the humans are 'routed around' and become secondary to the operational logic of the machines (Dourish, 2016).

The smart city, as an 'algorithmic assemblage', consists of an endless array of mobile and fluid interfaces that mediates total visibility (Mattern, 2016). The city as an urban interface functions as a zone of mediation between the physical, social reality of the city and the virtual reality of the data and software. Through this interface, information about the city is translated, exchanged, and acted on, while the life in the city is increasingly read through the lens of machinic logic that renders the city quantifiable and measurable.

On discussing radiofrequency identification (RFID) technology, N. Katherine Hayles (2009) argues that "(w)hile surveillance issues are primarily epistemological (who knows what about whom), the political stakes of an animate environment involve the changed perceptions of human subjectivity in relation to a world of objects that are no longer passive and inert. In this

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[27] However, while the data is touted as the central aspect of the Smart Home/City security solution, the problem that the data can solve is reconfigured and articulated in a way that can be visualized by data. What is implied in prioritizing data and quantification of a matter as complicated as urban risk and security, despite its supposed transparency and omnipotence, is that it occludes the various aspects of risk that may not be visible or quantifiable by data. The measurement of carbon footprints and detection of infrastructural abnormality at home can only do so much to visualize the multiple aspects of risk that may not be translated or represented thoroughly through data. While risk is context-specific that has to be evaluated based on the historically and culturally specific situations, the Smart City's much-promoted security service runs the hazard of reducing urban complexity to a two-dimensional visualization.

sense, RFID is not confined only to epistemological concerns but extends to ontological issues as well" (Hayles, 2009, p. 48). The question of surveillance then moves beyond the level of recording information but further towards the level of ontology, which generates new relations between human bodies, things, and the environment. That is, the new technological landscape of data-driven urbanism is not only making available a new means of visibility and knowledge about the city in unforeseen ways, but is generating a new condition of possibilities for politics, sociality, and participation in the city.

What then, does it mean that our environments become self-aware? That our walls and ceilings are not a passive background of our daily activities but that they listen to us and understand our mood? Through becoming environmental, technology may disappear from our immediate awareness, but it envelops our activities and moods in a quite intimate level.

The critical element of programming the smart city as an urban interface is a 'translation' (cf. representation) of space and human bodies into data, allowing the translation to crisscross human bodies and things to enable universal 'interoperability'.[28] The critical aspect of automated surveillance of the smart city is the interoperability based on universal protocol and standardization, which purify and align human bodies and actions according to standardizable units. In a cyborgized city such as smart city, now the translation happens both ways: the city tries to resemble a computer/machine (Leach, informational city, City as adaptive system reference), while the machine tries to resemble human and nature (AI, robotics). Now that the matter of communication is not exclusively addressed to humans, but includes machines and

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[28] The etymology of translation comes from "to remove from one place to another," also "to turn from one language to another," carrying over and bringing over. In translating the city and human bodies into data, the movement between two separate universes of virtual and real becomes automatic and instant, so much so that the two universes interpenetrate each other. The work of translation mediated by the Smart City's urban interface evokes a sense of transcendence, a dematerialized (dehumanized) field of rational governance that can ultimately dispense with human intervention.

things, a new ontological relation between things, humans, and the environment demand a new analytical lens to inquire as to who or what is observing, toward one regarding the practice, the nature of the program at work (Crandall, 2010). The human-centric and modernist notion of individual privacy no longer serves as an appropriate parameter for critique. What is lost may not just be privacy, but a lack of communicability between machine and humans, if not equipped with a proper literacy to translate each other's language.

Another point worth mentioning here is that the translative act is occurring between the two increasingly asymmetrical worlds. Bodies and environments are already datafied and important decisions in our daily lives are already relegated to the machines – if in the power structure between the original and the translation, the original used to hold a significance, in the age of massive datafication, the original (i.e., human bodies and environments) gives away its 'aura' to the exploding volume and velocity of data. Especially as the contemporary risk acquires uncertainty and ubiquity as its principal feature, the humans become more dependent on the machinic capabilities to predict and manage risk.

What then are the roles and responsibilities left for the humans? In Songdo and other smart cities in South Korea, people generating a sheer amount of data, through swiping RFID keycard to access buildings or through using apps to find a parking space and the shortest route to the destination. The point is that it is not so much useful to distinguish control and participation anymore. What may be more interesting is to inquire how the interface of the smart city is becoming the field through which the new kind of epistemology (the way we see the city) and ontology (the way we behave) play out and is charged with the new discursive formation of risk and security. It is through this complex network of technology, affect, and discourse that a specific way of life unfolds within the smart city.

Technologies of self-tracking for instance, mobilize the form of datafied body and 'quantified self', raising questions such as where does the control end and the self-care begin in the caring forms of digital surveillance? In a similar vein, when the Smart and Secure city proponents purports to execute a more transparent governance, engaging with the citizen participation, where does the boundary between the active participation and subordination exist?). Although current debates surrounding automated surveillance focus on personal information, the object of surveillance is being dispersed across and beyond individual human being as the target point. The surveillance assemblage incorporates events and patterns, including non-human entities, such as water, waste, and electricity flows. Everything is about pattern recognition. The power is not owned by any central authority but is dispersed and mediated through regulations and myriad technologies.

A Paradoxical Landscape?

This chapter charted the history of South Korea's security governance and the defensible self, in relation to the discourse of national security. Following the history, the chapter discussed how the mechanism of control is increasingly embedded in the city, accompanied by a changing conceptualization of risk defined in environmental terms. The chapter investigated how the proliferating technologies of self-protection is amplified by a kind of culture that prepares individuals to be perpetually vigilant and at the same time, how the population is constantly made to generate data, as part of smart city's efficient operation. It was assessed that the prominence of contemporary surveillance is not solely achieved through the advancement of technologies but through enrolling the individuals and population to the network of control and enacting moral obligation to take on the defensive responsibilities.

Following the similar line of critique, in the next chapter, I observe how the city and citizens are *responsibilized* to respond to a risk (and a crisis) that is imagined at a global scale: the problem of environment and nature.

On a closing note for this chapter, I want to point out that we are witnessing the rising trend that demands citizens of risk-taking, passionate, and daring attitude of an entrepreneurial subject. In making Smart city in Songdo, investors and urban planners themselves, when initially proposing the project, were perceived as taking on an enormous risk. How do we navigate the contradictory landscape of risk-averse and risk-taking society?

CHAPTER 4. SMART AND SUSTAINABLE CITY:
HISTORIES AND TECHNOLOGIES OF GOVERNING THROUGH ENVIRONMENT

In previous chapters, I have charted a genealogy of smart city in terms of how mobility has been a primary concern for South Korea's infrastructure construction (which depended on the development of transportation and communication technologies), which served the government's objective of nation-building and globalization (Chapter 2) and how in these efforts, the problem of security has been integral the same regime that fostered the 'freedom' of mobility (Chapter 3). In this chapter, I continue to investigate the techniques and practices of governing the city, with a particular focus on the ways in which the environment has been defined, rationalized, operationalized, and problematized in new ways in governing a smart city. The narrative advanced in this chapter departs from the point where I left off in chapter 2, when the South Korean national government was responding to the challenges of globalization and digitalization in the 1990s, embracing the need to diversify the national economy through investment in information and telecommunication industry. In the 2000s, as South Korea was becoming the country with the fastest internet speed in the world, a new sociotechnical ordering of the city and the environment emerged, reflecting the government's increasing concern with productivity, health, transportation, and overall quality of life of the population. In this chapter, I discuss how this concern was materialized in the shifting techniques and modes of the 'environmental' governance, which was less about an abandonment of its older objectives of economic development and national unification than about broadening and deepening of what those objectives entailed in the modernizing South Korea.

Taking a cue from this reflection, this chapter interrogates how the environment became an emerging objective of and problem for the government in the 2000s. This focus on

'problematization' continues from my discussion in chapter 3 about the changing conception of risk that was increasingly understood in situational terms of time and space. Following this line of inquiry, I ask how, the risk, which has seemingly evolved into spatial forms of the city, is rearticulated in the smart city's management and governance of the 'environment'. While chapter 3 focused on the criminal aspect of urban risk, this chapter investigates how the risk, on a different level, was also increasingly understood at a global scale in the early 21st century.

Since the 1970s, Korean critics have raised issues with the detrimental effects of rapid industrialization and urbanization on the environment. However, it was in the 1990s that government officially recognized the mattering of the environment in a different way. On the one hand, there had been a universal consensus (i.e., 1994 Kyoto Protocol by the United Nations) regarding the necessity to seek an alternative framework of development that would mitigate the environmental impact of industrial economy. The framework was predicated on the willingness of each nation to cooperate in the face of climate change, which was presented as a planetary crisis. In this context, various international organizations, institutes for standardizations, IT corporations, construction and real estate agencies implicated themselves in designing technologies, regulations, and practices that would alleviate the environmental impact of rapid industrialization and urbanization and set the sustainable development as the new global agenda.

As has been discussed in previous chapters, this period in South Korea was marked by an escalating pressure by the economic imperative of globalization. Sustainability was brought in as one of the means for the government to claim membership in the network of global cities that recognized the environment as the central problem. Besides, the government also responded to the growing demand from civil society to take the environmental issues more seriously and to take a better care of people's quality of life. Songdo was an exemplary case in South Korea that

the government experimented with a new landscape design and town planning to showcase the city of the 21st century. In Songdo, sustainability discourse, rearticulated in the green initiatives of high-tech centered development paradigm, found expressions in urban design scheme, as the issues of environment, health, and well-being became the new objectives of the government.

The first part of this chapter charts Songdo's reinvention from a global hub city to a green city, which enrolled multiple actors including the United Nations, real estate and construction company Gale International, IT corporation Cisco, and South Korean national government. It will be observed how the global agenda of sustainable development was articulated in South Korean government's strategies for the green growth in the mid-2000s, which was seemingly in conflict with previous development strategy. Songdo was an exemplary case that reflected the continuity and rupture of government strategy that adapted to the changing relationship between the global and the local, as South Korea sought to establish ties with the network of global cities.

The second part of the chapter explores how the environment was increasingly recognized as the problem of the government and how the mode of governance was re-ordered through environment. The discussion is distinct from other approaches to the 'environment' that only focuses on the government's 'green initiatives' and bring our focuses to the broader range of the modes of governance that operate *environmentally*. In this vein, this chapter explores the utility of Foucault's concept of 'governmentality', which was later developed by Gabrys (2014, 2016) with the term 'environmentality', expanding Foucault's earlier concept to conjoin the discussion of smart city and sustainability. Foucault's writing about governmentality discussed the concurrency of the modern Western liberalism as the practice of acting on (governing through) non-state actors, as a governmental reason/rationality (hence "governmentality"), as the proliferation but specificity of technical, administrative agencies and actors for knowing

(calculating, measuring, rationalizing) the life and health of the social, and in that way of putting life into order (exercising power in that way). What then, following that, is environmentality? I address this question in analyzing the new modes of governance emerging in Songdo. The examples in this chapter include the new urban design schemes, programs of standardization and ratings, and energy consumption meter, which demonstrate how the operative logic for the smart city involves government of urban life through technological objects and digitalized environment. After all, the value of smart city lies more on its ability to integrate data than to distribute data, although the more complex and distributed the data is, the higher value as an information. These examples demonstrate the shifting mechanisms of the government that disperses its modes of governance through the environment in the smart city, as the city is rendered more and more knowable, governable, and intervene-able (Shelton, 2017).

Before I elaborate on my observations in Songdo, I take a slight detour and trace how the discourse of sustainable development gained global traction in the latter part of the twentieth century and observe how it communicated the universal and ethical imperative to problematize the environment. It is crucial to note the concurrency and relationship between the two governing strategy and discourses – of sustainable development and smart city – to comprehend how the proponents of the smart city responded to the broad social demand to resolve the problem and how urban life in the smart city as a whole became a site for technological intervention.

Sustainable Development and Smart City

It is crucial to understand the historical development of 'sustainable development' if we are to understand the general assumptions and motives that drive the development of smart cities today. It is because in many smart cities in South Korea and beyond, sustainability figures as the primary motive and rationale for developing the technologies to regulate the 'environmental

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performativity' of the cities. The term sustainable development was first officially used in the World Commission on Environment and Development and its report, also known as the Brundtland Commissions Report, "Our Common Future" published in 1987. The report mandated multilateral co-operation of all countries to commit themselves to an alternative pathway of development, to meet the basic needs of all, and to extend the opportunity to all to fulfill their aspirations for a better quality of life. Sustainable development herein defined as the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," (The United Nations, 1987) culminated in the first Earth Summit in Rio de Janeiro in 1992. With everyone from every country unilaterally enrolled in the challenge to offset the anticipated crisis of the future, the political will of the developing countries was regarded as especially important to improve their inadequate infrastructure. To compensate for the lack of resource and expertise in the developing countries, the World Bank and the International Monetary Fund (IMF) were appointed as the conduits to help finance the project and implement policies in those regions, so that the need for quality of life for everyone can be accommodated without compromising the global economic system geared toward growth.

At the backdrop of this emerging paradigm of development were the intersections of the developing nations' aspirations to become global, the practice of 'good' government, and rearticulation of the politics into a matter of technological advancement and environmental intervention. First, one of the crucial aspects of this discourse is the prevailing notion of the 'global commons', constituted by the argument that everything is interrelated, that the problem of developing countries are indeed the problem for the developed countries, that the nature and economy is inseparable and that it is now necessary to conjure up a single universal system to

prevent the ecological and economic disaster.[29] It is casually assumed that the idea of sustainability is unquestioningly good and everyone's stakes are involved in it, all the countries (and cities) have to contribute to tackling this imminent challenge of the global scale (for the depoliticizing effect of sustainability discourse see Swyngedouw, 2010). National delegates were mobilized to engage with the global forums such as the UN Sustainable Development Solutions Network (SDSN), creating networks to promote and transfer advanced technology, standards, and expertise from the developed countries to the rest of the world.

Secondly, the global imperative of the problem lent moral responsibilities to the local governments (as well as their populations), to practice 'good' governance. The problem that was conjured in global scale reinforced the urgency and ethical command to come up with fast resolutions. What is more, the "climate change as a scientific fact" discouraged the individuals and the local governments from challenging the authority and universality of the sustainable development discourse. Contemporary approach to the climate change and sustainable development comes down to regulation based on a universal standard, such as the carbon emission, which prevail as an objective and value-free criterion, to which countries and cities were supposed to submit voluntarily. Herein the role of the cities and their government are redefined through engagement with the technologically advanced, sustainable and efficient ways of managing and governing the cities (and environment by extension).

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[29] This absorption of politics and social relations to the wholeness of the earth and nature, however, is untenable for at least two interrelated reasons. First of all, the wholeness of the global commons transcends the scale of ordinary citizens, cities, and countries and yet the privilege is given to the specialists, who do not belong to the politically demarcated territories (Latour, 1998). On the one hand, ecology integrates itself into everyday life and on the other, it becomes "inflated to the point of assuming responsibility for the agendas of all" while giving advantages to the group of specialists who speak on behalf of "a global unity which no longer has the political domain as its horizon (p. 3)." For instance, whose 'needs' are exactly being addressed in the sustainable development imperatives and who exactly is going to benefit from the next development path is uncertain.

Smart city, as a discourse and as a technical artifact, is situated in this intersection of science, technology, the ethics, and governing strategies. Cities and the population, bearing the globally imposed responsibility of sustainable development, are pressed to innovate their ways into developing and utilizing communication technologies to manage and monitor their activities to regulate their impact on the environment. Smart city has promoted its green benefits over the past few years, through numerous venues including expos, conferences, and corporate whitepapers that have sported the prefixes of 'Smart', 'Sustainable', 'Green', and 'Eco' (or a combination of two: Smart Eco, Smart Sustainable, etc.), which substantiates the argument that the "implementation to achieve sustainability directives under the guise of smart cities is a more recent tactic for promoting digital technologies" (Gabrys, 2016, p.185). Municipalities, engineers, business consultants, and entrepreneurs reproduce the articulation of smart city as green by working on innovative solutions not only to achieve sustainability goal but also to revitalize economy and create jobs. Some of the recent proposals in these venues have started to iterate their engagement with the local community. In the name of furthering liberal and civic ideals, they press the issues of how to make our cities more open, socially inclusive, and sustainable (indeed, how to make the matter of technology and science more 'ethical' one). What is also often been emphasized in their discussions is how going green actually saves costs for the municipality and businesses in a long term.[30]

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[30] In Greenbuild Expo in Los Angeles 2016, for instance, many small and medium-sized startup companies from Silicon Valley showcased their new bundles of software and services that can cater to the desires of many cities to be smart. Through programs like 'Internet of Things', cities that installed high-precision sensors throughout the city can eventually allow policymakers and researchers to understand and model the city environment like never before, predicting and managing individual activities at a micro level. It is often repeated that although the initial investment in the installment of the array of technologies may be costly, in the long run, it will reduce their spending on electricity and fuel consumption considerably.

South Korea was relatively a latecomer in joining the global imperatives for sustainable development, as the predominant 'catch up mentality' pressed the country during the rapid industrialization phase in the mid to late- 20th century. However, as it will be discussed in the next section, the national government plays a directive role in implementing the 'green' and 'low-carbon' initiatives in South Korean cities in the first decade of the 21st century, as part of its development strategy to foster urban redevelopment and green industry. Apart from discussing whether those strategies were successful or not, I will primarily focus instead on how sustainability was materialized in Songdo, through urban design schemes and institutional arrangements where digital technologies were promoted as part of the government's green initiatives. I make a crucial point about how techniques and technologies involved in recasting Songdo as a green city reflect the new and novel ways in which government operates *with* the citizen's desires to have a good life and to better themselves and the ways in which technological objects in the smart city mediate the aim of the government and individual life of the citizens.

South Korea's New Urban Discourse and Sustainable City

The relationships between the city, the government, and the environment evince both historical continuity and rupture in Songdo and South Korea. Until the 1990s, South Korean urban planning and construction occurred within the parameters set by the military government's national development plans, which meant that the government-run institutions were in charge of designing the cities. They relied on three methods to effectively organize urban spaces: the concentric expansion of urban boundaries; the compartmentalization of city blocks and zoning techniques; and the construction of large apartment complexes (Jung, 2013, p.126).

In the 1990s, the approach came under scrutiny by the pro-democratic party and civil society groups, who criticized the unilateral implementation of urban policies and its

bureaucratic focus confined to technical management of zoning, density, and size. They instead

demanded for an alternative planning that involved multiple stakeholders and asked that a wide

range of efforts be made to rehabilitate natural environment that had been damaged during the

fast development period. Jung (2013) points out that the sociopolitical shift in the 1990s directly

influenced and fostered what she calls the 'new urban discourse' in South Korea, which brought

forth the issues of urban ecology to the political agenda. Built environment, it was said, should

be viewed as an integral part of natural ecology, instead of its anti-thesis. The new urban

discourse stimulated a series of movements as the terms like *toshihwan'gyŏng* (city

environment), *saengt'aedoshi* (eco city), and *munhwadoshi* (culture city) appeared regularly in

the mainstream Korean media.

The new urban discourse also benefited from the sustained momentum toward

democratization and globalization in the 1990s. It was in this period that the world-renowned

architects participated in projects in Korea, the then emerging and significant market for global

architectural community – Samsung-owned Leeum Museum of Art, designed by Jean Nouvel,

Rem Koolhaas, and Mario Botta for instance, was a typical example. These projects set in

motion a competitive spirit in Korean community of architects and landscape architects, and

eventually urban planners, who sprinkled the buzzwords of ecology, high-tech, participation, and

livability in their new projects and urban policies.

In the first decade of the 21st century, the ideas about the new urban design – ecologically

conscious, community-based, livable, and global city – that occupied the public imaginaries of

the 1990s were rearticulated in the technologies and techniques of national and urban governance

and were curated within a construction-business-oriented developmental framework. This was

most apparent when South Korean government co-opted the new urban discourse and propagated

the plans for 'low-carbon', 'eco-friendly', 'green', and 'sustainable' development, especially since 2008 when the Green Growth (*Noksaek Seongjang*) became the main thrust of national policy. President Lee Myung-Bak's "Five Year Plan for Green Growth (2009-2013)" and "National Strategy for Green Growth" (2009-2050) presented a development paradigm that embraced the concern for the environment but did not compromise the policy priority of economic growth. Having had a marked career at Hyundai Construction company for three decades and a record of becoming the youngest CEO of the company at the age of 35, Lee Myung-Bak's national economic plan for the green growth heavily relied on invigorating the construction businesses. The national mandate for the green growth was followed by numerous regional initiatives such as the 'green city', perceived as a new urban planning paradigm (Lee, Sohn, & Kim, 2013).[31]

Yet, the challenge of pursuing environmentalism in conjunction with the developmentalist goal was a major challenge for the government. In response to the problem, various *old and new* practices were deployed. On the one hand, the national plan for the green growth largely was a cosmetic revision of the industrial mode of 'brown growth' that was based on exploiting fossil fuels and focused on efficiency and mobility. In a way, the green growth strategy was an extension of the existing developmental paradigm in that it perceived 'going green' as complementary to Korea's long-entrenched industrial economic model, based on

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[31] During his term as a mayor of Seoul (2007-2007), Lee Myung-Bak completed a large-scale construction project that aimed to restore the bridge of Cheonggyecheon stream, an urban waterway that had been paved over by an elevated highway in the 1960s. By tearing out the highway that ran through the financial center of Seoul, Lee's project re-created the underlying stream of Cheonggyecheon as the central feature of 6-kilometer-long public park. This project has been widely hailed as a political success for Lee, who was even featured in the Times magazine as one of the 'Heroes of the Environment' in 2007 (Walsh, 2007).

development and commercialization of exportable product (Kim & Thronburn, 2015).[32] High

degree of bureaucratic centralization remained in implementing green growth strategies in this

period that provided opportunities for highly lucrative businesses for a handful of real estate and

construction companies.

On the other hand, there were new and novel ways in which the cities and companies

responded to the problem of environment *with* the problem of development. Numerous schemes

to digitize economic activities and urban life involved reconfiguring the existing ways in which

urban infrastructures have been managed. Songdo was a distinct case that most actively pursued

and materialized the digitally enabled urban design scheme. Since 2007, Songdo has been widely

promoted as a sustainable and green city. Publicly, city officials from Incheon Metropolitan

government proclaimed their willingness to reshape Incheon's urban policy in accordance with

the national policy goal for the green growth. Songdo showcased the city's commitment to the

value of sustainability not only through its branding strategy, but through an array of

technologies including the ubiquitous computing, radiofrequency identification (RFID), and

sensors that re-configured the urban infrastructure. In private sector, this was most apparent in a

planning document produced by the Gale International and KPF (2008), which charted the

evolution of the plan from a hub city to a green city (Kim, C., 2010). Gale's development

scheme for Songdo was closely coordinated with Cisco's ongoing project, Smart + Connected

Communities, which sought to recast Songdo as the "Sustainable 21st Century San Francisco." In

this way, the government (Incheon Metropolitan City), real estate company (Gale), and

multinational IT corporation (Cisco) came together under their shared goals to rearticulate smart

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[32] Kim and Thornburn (2015) explains this extension of governing strategy as embodying the Korean
political philosophy of 'developmental environmentalism'.

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city as a sustainable and green city, in accordance with South Korea's changing economic, political, and social conditions.

'G-tower', one of the landmarks in Songdo, changed its name in 2013 from 'I-tower', standing in for the city's pursuit of its branded image as 'Green', 'Global', and 'Growth'. As the headquarter building of the Incheon Free Economic Zone Authority, G-tower's change of its name symbolically affirmed Songdo's changing urban agenda from the 'international business district' to the cutting-edge, sustainable, and global city (Choi, 2013.06.26). Besides, one of the most often touted facts about Songdo is that it allotted 40% of its land to 'green' space (public parks) circumscribed by cycle paths and walking routes. Spatial layout of Songdo consists of a central park encircled by wide avenues with bicycle paths, partitioning high-rises for residential and office purposes.[33] Songdo also hosts annual events like 'Incheon Pentaport Rock Festival', 'Bicycle Festival', and other mega-scale international events that attract many tourists and visitors looking for a place to escape from the traffic-congested capital city area.

Furthermore, the widespread green image of Songdo was materialized in its infrastructural design. Songdo deployed various computing technologies such as ubiquitous sensor network (USN) and radio frequency identification (RFID) to actively monitor urban infrastructure systems including water, electricity, transport, and garbage disposal sites. Cisco environmental solutions deployed various sensing technologies in the environment - weather sensors that measure the wind velocity, temperature, humidity, level of fine dust, carbon monoxide, nitrogenous compound, sulfur oxides, and ozone amount. IoT sensors installed inside the houses and buildings provide real-time energy consumption levels to users so that the users

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[33] It resembles what Ebenezer Howard (1902) envisioned in his diagram of the Garden City of Tomorrow – a perfect combination of the town and the country that brings the attractions of the both while suppressing their drawbacks. For the town aspect, the ideal city would bring the opportunities for jobs and social interaction. For the country aspect, it would preserve the tranquil and green landscape of nature.

can minimize the city's overall energy consumption and maintenance cost (Lee, Kwon, Cho, Kim, and Lee, 2016). Songdo also utilizes 'smart' electricity grid system, a network technology that allows two-way interaction capacity built into the power utility to detect the peak hours of electricity use and to react to the individual demand of electricity. As a result, the residents in Songdo are said to be using 40% less energy than average cities.

What then, are the terms of relationships among technology, environment, and the government that the rearticulation of Songdo as a green city brings forth? One of the takeaways from this transition is that the green city embodies the changing mode of rule that implicates the environment as an object of government and technological intervention. The green directives in the smart city can be seen as *an extension of government* function that encompasses the matter of quality of life, health, and well-being of population and mediates the everyday life environment via dispersed and networked technologies. This extensivity on the ground level is achieved through layering of networked computing devices that monitor and capture the environmental data, which can be visualized and communicated across platforms. Furthermore, the extensivity entails the whole range of governing techniques that problematizes and redefines the environment in a way that supposedly brings the nature closer to the city, but nevertheless imposes technologically rationalized ways of managing and monitoring, so as to keep the nature confined and distant from the population. In other words, the new mode of rule enrolls the environment to the network of urban governance in a datafied and standardized terms, with which the government extends its aim of governing population to that of governing environment.

Upon this reflection, in the next section, I will more closely examine how the new mode of rule is articulated in Songdo's infrastructure and urban design. It largely benefits from the notion of 'environmentality' (Gabrys, 2016), which refers to the range of emerging mechanisms

of governance that deploys techniques and practices of sensing and monitoring the environment. The discussion continues from the ones from the previous chapter regarding how the security governance in the smart city involves the holistic visualization and monitoring of the environment through data, in order to pre-emptively design out crimes in the city. The same strategy applies to management of environment through the smart city, wherein the environment is made knowable, governable, and intervene-able through datafication and standardization techniques.

Environmentality as a Mode of Governance

Computing technologies are becoming increasingly pervasive in today's urban environment. One of the major tasks given to the devices is monitoring carbon activities of individual movements, buildings, objects, and the environment. The availability of large volumes of data generated by the devices, in turn, is generating new opportunities to rationalize the governance and to marketize the services for the government, businesses and citizens living in the smart city. What supplements the technical base of data-driven urban governance is a series of calculative operations embedded in the distributed sensors, databases and urban control centers. These operations comprise of the interrelated dynamic between the centrifugal forces that distribute media (i.e., sensors and computing devices) in space and the centripetal forces of control that centralizes and reorders the data in a manageable and standardizable way (i.e., excel sheets, automated programs, rating systems, and protocols). Both the centrifugal and centripetal relations of media and space make up the dual architecture of the smart city system, which distributes and synchronizes media in space. In other words, the distribution of technologies goes hand in hand with rigorous ways of standardizing and ordering them. It is because the primary purpose of generating data is to integrate them eventually so that the different infrastructural

functions can interoperate. It is this capacity to disperse *and* integrate data that the smart city claims its merit for rational administration of environment.

Many proponents for the smart city consider their mandate as an equivalent for 'going green'. Main reasoning behind this consideration is that the data-based management of urban infrastructures is supposed to better serve the aim of the government to monitor and control carbon activities in the city and organize urban activities based on the green performativity. It is crucial to reiterate that this articulation of 'smart' as 'green' has double connotations, which encompasses both the "environmentalist objective of the government" and "environmental modes of governance." The difference between these two mechanisms of power is most appropriately explained by Gabrys (2016)'s discussion of 'environmentality', which she builds on from Foucault's concept of governmentality and biopower developed in the late 1970s and early 1980s. While the 'environmentalist objective of the government' refers to the green initiatives of the government that foregrounds the environment as the major problem for the government, the 'environmental mode of governance' denotes a broader trend of contemporary governance that modifies the way of governing through milieu, instead of directly affecting the individual or population as the governing subject. Although the goal may be the same – i.e. to change the behavior – the environmental mode of governance indirectly pursues that goal for instance, by embedding and distributing the ubiquitous computing in the city that functions at a fine-grained micro-level, while the environmentalist objective of the government has to do more with visibly and directly calling out individual subjects as green conscious citizens. For today's smart cities, the environment is *both the end and the means* for the government, in a sense that several aspects of urban environment – energy use, air quality, waste amount, traffic – become involved in enacting the automated governance of the city (thus not ostensibly targeting

population as individuals) *and* that these operations are legitimated and rationalized for the sake of protecting the environment and people's well-being.

Environmentality as a concept allow us to capture the emerging characteristics of urban governance in which both the environmentalist objective of the government and the environmental mode of governance is interrelated. It also allows us to expand our view beyond the greening objectives of the government to comprehend *how* the modes of governance and control are embedded in urban life that has always already been permeated by the cybernetic means of control (Gershenson, Santi, & Ratti, 2016). Smart city can be seen as the latest example of the cybernetic city in which different urban functions including transportation, security, and health are automated through multiple internal loops (so that the government does not have to initiate the process anymore). In this view, a city is seen like a large and complex system consisting of multiple feedback loops and mechanisms of control, which are supposed to be decentered, dispersed, and automated, instead of being dominated by a centralized bureaucratic system. The governance is thought of as an alignment rather than a fixed and unified system. One of the illustrating examples is the 'smart grid' system in the smart city, an alternative energy management system that operates with distributed sensors that monitor the energy flow of each households and buildings. Since every sensor is connected and networked, it can be integrated and centrally managed by a digital platform, which is a means of gaining back the level of control for centralized balancing and monitoring of the flow of energy in the city. The key point here is that the automated internal loop initiates a mechanism of self-regulation that economizes the use of energy, (supposedly) without human direction or legal intervention.

These automated mechanisms of regulating the urban environment are presented as objective, value-neutral, and apolitical instrument of the government. Environmental mode of

governance not only evade the conventional language of the politics (that pertain to the issues of social relations) and dissolve these matters into the availability of large sets of data, which are classified and assessed by the standards to rate the city's overall environmental performance. In other words, through environmental mode of governance, smart city is made into a technological zone where the success of the government can be rationally measured and evaluated, largely based on the data.

It is on this background that the standards such as the Leadership in Energy and Environmental Design (LEED) gain prevalence in the smart city's governance, as a proxy for the government. The LEED system was developed by the US Green Building Council (USGBC), a Washington D.C. based, non-profit organization that created a buzz around the green building since 1993. USGBC proposed a formal definition and standard of green building through their flagship program LEED, which is used to rate a building's environmental performance. LEED sustainability rating and certification system currently is the most well-known and is promoted as the authority in green design across the US and the rest of the world. It uses a point system to grade all aspects of a building's environmental impact, from water use, building materials, bicycle facilities, indoor air quality, storage and collection of recyclables, and the level of energy performance. LEED was a response to many municipalities and corporations that had demanded a plausible standard for certifying and approving the greenness of their building or their cities.[34]

Seoul Metropolitan Government and the USGBC signed an agreement to accelerate LEED in the capital city of South Korea in 2017, while Songdo had been proactively utilizing

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[34] In 2016, more than 60,000 commercial projects were participating in the LEED, which is said to have spawned an entire green building industry worth up to approximately $248 million in the US (US Green Building Council official website). Going "green" has become a powerful incentive and a prerequisite for construction companies driven by the potential PR benefits. However, it has also been met with a cynicism that you can earn LEED points without doing much of anything for the environment (Udall & Schendler, 2005.08.09.).

the LEED standard in managing the city's environmental performance even during its early construction phase. For example, *Songdo Convensia* is the name of an official convention center building that acquired the first LEED-certified status in Asia in 2009. According to Stan Gale, the CEO of Gale International, Songdo Convensia's acquisition of the LEED-certified status demonstrated their commitment to "foster environmental awareness" which supposedly "engenders a real sense of eco-responsibility within the larger Songdo IBD community" (Yoneda, 2010.04.13). Residents as well as officials of Songdo took a great pride in the fact that their city became a "showcase to the world as a major example of sustainable development and green growth," according to Soleiman Dias, director at Chadwick International, a K-12 international school in Songdo (Yi, 2012.10.15).

Since 2009 Songdo has sped up submitting other buildings' data to the LEED program, acquiring 22 million square feet of LEED-certified space as of 2017 (accounting for 40 percent of all LEED-certified space in South Korea) and in the same year, was recognized as the first city to earn pre-certification for the USGBC's new 'LEED for Cities' classification (Stanley, 2017). USGBC's LEED for Cities program was established in 2016, which was an expanded version of the LEED for buildings program that included socioeconomic categories such as education, crime, and employment data. The new program for the cities required each municipality to generate sustainability score across five categories – energy, water, waste, transportation, and human experience (Table 1).

In order for the cities to get certified, they have to commit to sharing a year of data with the USGBC at a pre-certification stage and optionally propose a goal and plans for carbon reduction, climate resilience, healthy community, and green infrastructure. The submitted data then goes through a review by the Green Business Certification Incorporated (GBCI), a sister

organization to the USGBC, which actually runs the LEED programs, before the city attains the

LEED-certified status.

Table 1: LEED for Cities Performance Score Categories (USGBC, 2016)

Category	Metric	Unit
Energy	1. Greenhouse gas emissions (CO_2 equivalent)	Tons/year/person
Water	2. Domestic water consumption	Amount/year/person
Waste	3. Municipal solid waste generated	Amount/Year/Person
	4. Municipal solid waste diverted from landfill	% of Total amount collected
Transportation	5. Distance traveled in individual vehicles daily	Distance per day
Education	6. Population with (at least a high school degree)	% of population 25 years and over
	7. Population with (at least) a bachelor's degree	% of population 25 years and over
Equitability	8. Median gross rent as % of household income	%
	9. Gini coefficient	Number between zero (0) and one (1)
Prosperity	10. Median household income	US Dollar per year
	11. Unemployment rate	% of population 16 years and over
Health & Safety	12. Median air quality index (AQI)	Number between zero (0) and 500
	13. Air quality days unhealthy for sensitive groups	Number of days between zero (0) and 365
	14. Violent crime	Per capita per year

South Korean government has been developing a domestic green building certification

system since 1998, called the Korean Green Building Certification System (KGBCS), which was

first implemented in 2002 and became the construction ordinance in 2005. Unlike in the LEED

system in the US, which is developed by a non-government organization and applied by

voluntary basis, the national government of South Korea was in direct charge of establishment

and implementation of the standard. The Ministry of Land, Transport, and Maritime Affairs (MLTM) and the Ministry of Environment (ME) jointly adopted the certification system for the purposes of "realizing sustainable development, and promoting the construction of natural resource-frugal, nature-friendly buildings" (Tae & Shin, 2009, p.1912). The evaluation categories include the noise level, structural durability, interior air quality, entertainment facilities, and fire safety among others. The KGBCS was originally applied to the multiple-family housing and later was expanded to office buildings, mixed-use residential buildings (in 2003), schools (in 2005), and retail markets and lodging facilities (in 2006). Both MLTE and ME enact regulations regarding the assessments and selection of committee members who are designated to evaluate and approve certification status for individual construction projects.

It is noteworthy that Songdo used both the Korean and international green building rating systems, unlike any other cities in South Korea. According to the POSCO E&C., the co-developer of Sogndo, they used the double standards (Korean and international) to ensure the projects are built on the highest possible standards of sustainable construction. The authority of the standards bolsters Songdo to establish itself as an example of the sustainable and green city and to pave the way for other cities in South Korea to come through. Since the ratings are entirely based on a large volume of data generated by the buildings and the city, having the infrastructures prepared to constantly produce the data in accordance to the standards, such as in the smart city, becomes a vital necessity for many cities that aspire to go green.

Coming back to the discussion of environmental mode of governance in the smart city, one can argue that the proliferating use of the standards in urban environmental design is one of the key aspects of the new environmentalist mode of governance. First of all, the smart city's environmental governance is predicated on a way of viewing the city that is 'knowable,

governable and intervene-able' (Shelton, 2017). City as well as the whole of environment is thought of as a transparent system that can be rated and manipulated by data. This cybernetic approach to the city informs the contemporary approach to the sustainability which parallels with a universal approach to the environment that assimilates the difference of different places. On this ground, a singular parameter such as the carbon emission becomes the depoliticized means of governing the environment across different geographical locations such as the national territory.

There is a long history of approaching the city with systematic means of experimental science and the smart city is the latest case of this perspective. Here, the city is imagined as a laboratory, a field of the "new urban science" (Shelton, 2017) where data-driven urban initiatives to quantitatively measure and modify the city from the micro-scale granularity is taking place. In such sterile and depoliticized environment, the green performativity becomes the singular criterion of success. The techniques of measuring and quantifying the city's performativity (standards, codes, and algorithms) *act* as the stand-in for the bureaucratic regulations. Smart city comprises of multiple 'zones' where technologies are undoubtedly considered as central to forging connections and barriers to access. And because these standards and codes are supposedly value-neutral, the processes of implementing the standards seem as though they are apolitical (Barry, 2001). While the development and implementation of the standards for green performativity entails replacing the bureaucratic management with automated technology, scientific standards and protocols embedded throughout a number of receptacles in the city, the residual forms of governing entities are appointed to a seemingly reduced role of steering the machinic city and running the city as a private-public partnership enterprise.

In such a highly technocratic approach favored by municipalities and corporations, the bottom line of their proposal always touches upon adopting new zoning rules, building codes, designing open spaces, and organizing the city with more 'ecological consciousness'. This is precisely the changing strategy of the government that dissolves the matter of politics into the distributed techniques of standards, codes, and algorithms.

So far I have explored the shifting modes of governance in the smart city through the concept of 'environmentality', which constitutes the major urban condition in Songdo smart city. Green initiatives in Songdo articulated smart city as a green city, through deploying various ubiquitous computing technologies that reshaped the relationship between the city and the environment. The environment has been redefined as a governmental problem, in need of regulation and intervention and an instrument for the government.

With that being said, it is crucial to note that the environmental mode of governance in the smart city rely on another significant aspect of urban life. It involves a 'more-than technical formation' of the smart city, which is about the ethical relation between the individual subject and the city. A broader discursive work of the smart city's governance integrates the individual in the technological zone through enacting codes of conduct for an ideal personhood. In the next section of this chapter, I will briefly discuss how this ethical dimension of the smart city's extensive environmental mode of governance *complements* the technical formation of the smart city.

Government of Environ-*mentality*

It would be simplistic to claim that the environmental mode of governance is only achieved through putting in place the computational means to govern and to digitally animate the environment. Before closing this chapter, I want to give a final consideration for a deeper

discursive work at play that allow these technical relations to be taken up and enacted by the individual citizens 'voluntarily', instead of thinking about the smart city as a fixed and totalizing system imposed them 'from above'. As has been discussed previously, the city officials of Songdo have been keen to adopt the LEED rating systems, to acquire global recognition. By successfully gaining this recognition, Songdo gained tractions among professional individuals and families who sought to have a better quality of life in the high-tech and green city. For the most part, the well-curated greenness of Songdo is presented as a way of life that everyone is entitled to have and to pursue – a life that is well-secured in a clean, safe, and controlled environment. Ultimately, the ideal way of life is communicated through a city such as Songdo in various levels, in the ways that the city is thought of as an instrument for bettering itself and as a zone for deploying technologies to self-monitor and self-evaluate its performativity. Besides, by articulating the smart city as a green city, the environmental governance in Songdo has been morally justified as it supposedly procures humanitarian right to have a better quality of life. The imperative for greenness, in turn, demands individuals to bear responsibility to reshape their lives and their environment in accordance with the green standards.

That the city has become a useful field for rethinking the way in which the government operates environmentally has been explained above through the concept of environmentality. Following this thought, it is also worth considering what kind of 'mentality' is being forged in this new environment, which not only coerces the subject through regulations and legal means, but draws out moral virtue of the individual citizens to align themselves with the aim of the government. The argument advanced here slightly departs from how Gabrys (2016) had approached the 'subjectness' of the individual citizens, which is bypassed by the environmental distribution of power and citizen practices that are relatively reduced to operations and

performativity.[35] Nevertheless, I believe it is crucial to delve into the ways in which the seemingly indisputable smart and green city initiatives gain their momentum, precisely by mobilizing the willingness and commitments from the 'good' citizens, who are morally charged and responsibilized to join the green initiative and to sustain the 'quality of life'. For this reason, I emphasize the environ-*mentality* as a critical field of government as well as a component of the individual motives for action, which are socially constructed by desires for better life (and thus a better version of the self) and by fear of sickness and decay. Cities, often imagined in terms of disease, crowd, and noise, are now brought into the discourse of smart and green city, to be reshaped and redesigned in order for the aspects of urban living to be conditioned as a "network of living practices of well-being" (Rose & Osborne, 1999).

This particular shaping of environ-*mentality* constitutes an internal drive of the political machine such as the smart city. The 'environmental mode of governance' that distributes power in space informs the everyday conduct of the individuals, even the most mundane ones including the tasks of recycling the plastic bottles, monitoring the gas and electricity use, counting the daily footsteps, and economizing their carbon footprint. These individual operations, along with the computational activities that are already embedded in the environment, together make up the performative operations of the smart city. According to Gabrys (2016), in the scheme of the smart city, the matter of politics becomes delimited and confined to the matter of measurement, calculation, and management. By the same token, the practice of citizenship also gets reduced and confined to the matter of monitoring and managing data. In this way, the smart city "recasts who or what counts as a 'citizen'," by which the citizenship is "articulated environmentally

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[35] Citizens contribute to the smart city both by consciously engaging with the data and by unconsciously generating the data.

through the distribution and feedback of monitoring and urban data practices, rather than through governable subjects or populations" (pp.200-201).

However, even now when the system is increasingly becoming more automated so as to self-operate without constant engagement of the citizens, individual citizens still are important nodes of smart city's operation and the major objective of the government. Citizens are not merely primary points of gathering environmental data, but they are part of the operative rationale for the smart city, which *requires* problems that matter to the citizens and the ways of addressing the problems for the sake of their well-being. The discursive formation of the smart city thus articulates both the problem (sustainability) and the solutions (digital environment) in a way that supposedly benefits the citizens. Cities are important conduits through which 'good' citizen practices are envisioned and exercised, not necessarily based on the individuals' rational decision-making but on the hopes of fulfilling their collective desire – desires for a better life, better environment, and a better self. This normative dimension of the city and citizenship is a crucial component of the environ-*mentality,* which extends from the environmental operation of power that touches upon the government of desire and mentality. This framework helps us comprehend how desires – for economic development, recognition, distinction, and well-being – which had historically been relatively oppressed in public, is now operating *with* the government as it mobilizes the willingness and aspirations of the individual citizens to achieve its goal. The 'good' citizenry practice that previously was more or less grounded in one's dedication to the nation-state and family is now shifting its emphasis into individual accomplishment and desire for comfort.

Conclusion

In this chapter, I traced a brief history of Songdo's transition into a green city, with a special emphasis placed on the new mode of governance that involved the city, environment, and the individual citizens. I discussed the social and cultural implications of linking sustainable development and the smart city, which involved the shifting mode of government that distributes power in the environment.

During the first decade of the 21st century, smart city has been articulated as the green city by proposing to address the climate change through the pervasive use of ubiquitous computing technologies. In South Korea, environment was 'discovered' as the crucial problem for the government, which switched its economic strategy to the 'green growth', symbolically severing its previous industrial approaches to the 'brown growth'. Songdo was one of the primary examples that demonstrated the changing goals and the strategy of the government through a new spatial-material arrangement of power. Sensors and cameras were widely distributed and embedded in the urban infrastructures, to digitally manage transportation, waste, and energy, while the standards and protocols were developed to make sure that the different sets of data were centrally governed and controlled. The protocols and standards became the proxy for the government, as they were made to inform the guidelines for activities and performativity of not just individual citizens, but the buildings, objects, and infrastructures. The technologies and techniques of smart city are the central mode of rule that translates human and nonhuman environmental activities into quantifiable data, to render them visible, manageable, and governable. Data are foregrounded as the dominant instrument of power that defines the sense of the kind of the problem we face, and the ways that can be addressed.

With that being said, while the technical arrangement of the smart city constitutes a major example of environmentality, the new modes of governance that make available the conditions for the power to operate in less direct and visible ways, I also attended to the normative and subtle ways in which the power operates with the individual desires. Desires for well-being, progress, and comfort are the driving force of the environ-*mentality,* which extends its reach to the domain of government of the self (and others).

Within the arrangement of technology, space, and mentality through which the smart city operates, we are also witnessing how the cities in the 21st century have been called out as the social 'enterprise' that faces the challenges of globalization, climate change, and technological innovation. Cities are important conduits through which the global economy and the citizens are mediated, and the smart city is presented as a strategic zone for fostering the 'creative economy'. Following from this chapter's discussion on the economization of the urban environment through digital technologies, in the next chapter, I will explain how the economy of the smart city is predicated on the modeling of responsible and entrepreneurial subjects who hone their skills, knowledge, and capacities to become creative and innovative. The discourse of creative cities is a close cousin to the technical-spatial arrangement of the smart city, in that the technology is thought of as a salient instrument of the government that monitors and evaluates the performativity of the city and population and that the city is thought of as the exemplary zone of conduct that demonstrates the idea of citizens and their ideal way of life.

One caveat following the above argument is that the dichotomy between the civic duty for the collective good and the individual desire for well-being and comfort may not be so clear-cut. Especially in South Korea, there is a long history of how the prosperity and security of the nation have been perceived as the prerequisite for the individual well-being. South Korean

developmental state has reinforced and operated on the structure of mentality, which was predicated on the assimilation of the state as the patriarch of the family and the citizens as the dutiful children. In the next chapter, I will expand on this history of the South Korean developmental government and its administration of technology and culture, which is now rearticulated in the current discussions about the economy of creativity and innovation.

CHAPTER 5. K-SMART CITY AND CREATIVE ECONOMY: MYTHOLOGIES AND TECHNOLOGIES OF FUTURE-MAKING

As discussed in previous chapters, smart city is symptomatic of significant shifts in the ways in which the government instrumentalizes digital technologies to extend its influence in the aspects of urban life that had not been previously thought of as the direct realm of government's influence. The governance of and through a smart city is distinct from the institutionalized forms of 'government' in that it achieves a new level of effectiveness by distributing and embedding power in the environment and by formulating and enacting the ethos and norms of progress and development that work *with* the individual desire for their own well-being and survival. Smart city is also manifested as an open and transparent mode of governance that spreads out and invites "civic participation," albeit within the limited parameters of the citizenship (Gabrys, 2016). In the previous chapters I also discussed how the idea of smart city, while often thought of as a singular and universal idea, is in fact, comprised of multiple and complex processes of problematizations that arise from specific genealogies. The genealogy of South Korean smart city I have offered so far provides several 'signposts' that serve as the temporal index and historical force of each of those problems: the problem of 'mobilities' and its relation to the South Korean history of modernization, industrialization, globalization, and digitalization (Chapter 2); the problem of 'security and safety', in relation to the history of militarism and defensive citizenship that is rearticulated in the digital regime of the smart city (Chapter 3); the problem of 'environment' and its relation to the new spatial ordering of the smart city and the new urban discourse in the 1990s that demanded a 'quality of life' for the citizens (Chapter 4).

In this chapter, I think through how the problem of 'development' and 'futurity' has guided the Korean history of industrial development and urbanization and how this history is

rearticulated in the current regime of digital economy and creative cities. I will start with examining two features of Songdo which I have not addressed directly in prior chapters.

First, I will investigate how the 'smartness' of Songdo has been communicated via multiple forms of representation, including the K-pop music videos, dramas, festivals, and architectures. I examine how these texts construct and mediate Songdo and South Korea's relationship with its future: how *futurism* is instrumentalized in the present thanks to the advancement and valorization of technology, while the future, as a constantly receding temporal horizon, normalizes certain ethics of work and a way of life that constantly has to update, improve, and move forward, without pause. In particular, I examine how Songdo's identity as the "Tomorrow City," which has been reproduced through popular cultural texts and some of its iconic buildings (i.e., Songdo Convensia, Central Park, Tri-bowl, Canal Walk), constitutes a significant part of Korea's 'sociotechnical imaginaries' (Jasanoff & Kim, 2015; Sadowski & Bendor, 2018), which functions as the reference for the government's desirable goal and how the imaginaries of the future is perceived to be inextricably bound with advancement in technology and innovation.

Second, I trace the historical trajectory of South Korean industrialization and urbanization that occasioned the government's current approach to the city as a self-governing 'growth machine' and ask how that approach constantly inducted a city like Songdo as a technological zone of progress and entrepreneurialism. Long before the 'creativity' and 'innovation' became the watchwords of the first decade of the 21st century, the proponents of Songdo in the mid-1980s envisioned the city as a strategic node of global economy that would operate around the innovations in information technology and service industry sector. Since its designation as a Free Economic Zone in 2002, Songdo has further attempted to strengthen its

position in the logistical network in Northeast Asian region, by providing a favorable business environment for the global investors and tech companies. Domestically, South Korean government has attempted to commoditize and export Songdo's model through the 'K-Smart City' brand. I situate the techniques and practices around the K-Smart City at the intersection of the current preoccupation with innovation, global imperatives for creative economy, and South Korea's techno-nationalist approach to developmentalism. In addressing these multiple historical and global contexts that conditioned Songdo's transition into a zone of global entrepreneurial activities, I ask how Songdo has become a useful reference for the government and for the South Korean public to envision the future progress (and even survival) and technology-driven development.

Kinesthetic of Futurity: K-Pop and Smart City

By 2010, Songdo was receiving substantial attention by the Korean public through the government-sponsored promotions (e.g., festivals, conferences, TV shorts) as well as through a wide variety of cultural texts that featured Songdo as the city of future. For instance, Songdo appears in the background of numerous K-pop music videos – Psy's *Right Now* (YG Entertainment, 2010), *Gangnam-Style* (YG Entertainment, 2012)*,* BoA's *Hurricane Venus* (SM Entertainment, 2010)*,* F(x)'s *Hot Summer* (SM Entertainment, 2011), Exo-K's *MaMa* (SM Entertainment, 2012), Big Bang's *Beautiful Hangover* (YG Entertainment, 2010), Beast's *Fiction* (Cube Entertainment, 2011), Rain's *Love Song* (2010), to name just a few. In these videos, Songdo's grey empty streets scattered with the city's iconic landmarks (e.g., *Tribowl Gallery, Songdo Convensia, Central Park*, etc.) set the tone of dystopian ambience, which, harmonized with the meticulously choreographed performance of K-pop idol bands, creates a distinct aesthetic of Korean techno-futurist imaginaries. Just as the mechanically disciplined and

synchronized performances of the idol bands set apart K-pop from other music genres, Songdo's cool tonality sets itself distant and distinct not only from any other cities in Korea but from anywhere else in the world. It was no small coincidence that one critic for the *Korean Exposé* was stunned by the "Chernobyl-like emptiness" in Songdo (James, 2016.10.14), at his first encounter with the "silent and post-apocalyptic" cityscape turned into a "human desert" of some sort.

While some of these critics were slighted by the inhumane emptiness of Songdo, location managers for the music videos and drama producers were taking advantage of the city's tranquility for their logistical conveniences. Besides, no matter how inhumane and other-worldly its artificiality might have appeared at a first glance, still others projected their potential desirable future on to the vacant lots in Songdo, with variable scales of optimisms, hopes, and aspirations.

The visual power of "digital flow and glow" is one aspect that characterizes the smartness and futurity that is exemplified in the above music videos that feature Songdo. According to Gillian Rose (2018), the 'flow and glow' is the smart city in its visual form, which is in a constant state of morphing and transitioning where everything is mutable and on the move. The meticulously choreographed K-Pop dancers juxtaposed against the backdrop of Songdo embody the speed, flow and mechanical discipline exemplified in the city. Gray and cool tonality of the scenes enhances the dazzling glamor of the things and the bodies that are in motion. Everything flows and nothing stays still. That is the (visual) norm of smartness.

The iconic landmarks such as *Tomorrow City Plaza*, *Tri-bowl Gallery*, and *Songdo Convensia*, which became the regular props in the K-pop music videos and soap operas, are now the major tourist attractions in Songdo. Songdo's Central Park surrounded by the high-rise apartment complexes and office buildings remind the visitors of the typical image of New York

City's Central Park, a fascinating feeling of being 'foreign' in one's own country. Pragmatically and conventionally speaking, these buildings contribute little to the primary function of the smart city – efficiency and rational management of urban mobility, energy, and security. Designed as a site for hosting conferences and art exhibitions, however, these buildings serve as the primary, iconic, and crucial way to represent Sondo visually, as "hip" and energizing as the music videos and to campaign Songdo's smartness and futurity in various texts including the promotional brochures, exhibitions, and commercials. What then, might be the significance of these landmarks in terms of their non-functional quality? Can this futurist aesthetic of Songdo be indicative of the postmodern condition in which forms precede functions in a world that consists of a series of depth-less surfaces?[36]

In a way, the kinesthetic of futurity manifested in the digital flow and glow of Songdo and K-Pop videos became fused with the aesthetics of *creative economy in Korean style*. This distinct national style in fact has been described as one of the major features that buttress the recent expansion of K-pop in the global music industry. Part of the affective charge associated with the aesthetics is the speed and dynamism embodied in the K-Pop artists' ably synchronized and choreographed movements, as well as the amount of self-disciplining involved in creating and perfecting the movement. The kinesthetic of the K-Pop stars moving across various urban settings in Songdo (such as several scenes from Psy's *Gangnam Style* MV which were actually shot in Songdo), then, animates the sensation that viscerally, haptically, and emotionally moves the inner space of the viewers. As the growing influence of the "Korean Wave" across the globe well attests (Kim, 2013; Yoon & Jin, 2017), the dancing bodies of K-Pop stars now traverse

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[36] In his critique of postmodern architectures, Charles Jencks refers to today's iconic buildings as carriers of 'enigmatic signifiers', which are "desperate for new sensibilities," separated from the obviousness of the local context (Jencks, 2005). As a result, these enigmatic signifiers are devoid of temporality. Historicity only exists only in so far as it is made into a spectacle.

across the national territorial borders, fueling the momentum for a cultural flow that is even

hailed as a counter-cultural force against the US dominated entertainment industry (Jin, 2018).

How specifically then, do the K-Pop and Songdo relate to each other? As explained

above, the aesthetics of national style visually exemplified in the K-Pop MV lent its rhythmic

force to the narratives that were used in "selling smartness" in Songdo. In turn, K-Pop MV also

drew from the sociotechnical imaginaries of the urban futurism associated with Songdo and its

identity as a 'non-place' (Auge, 1995), which are embedded in a distinctly Korean system of

envisioning, producing, and managing the future. Therefore, K-Pop and Songdo depended on,

and *could not do without*, one another.

Besides, there were other substantial ways in which this interdependence occurred –

Songdo and K-Pop share considerable similarities in terms of their production system, global

aspirations, and their adaptability to shifting socio-economic context. First, in K-Pop music

industry, there are big entertainment companies (such as the SM, YG, JYP) that operate their

own 'star manufacturing system' (Shin, H. J., 2009) that entails a long period of (usually about

five to six years) rigorous training and education for the aspiring star trainees who, mostly in

their teens, acquire the skills for singing, dancing, acting, and so on. According to Shin

Hyunjoon (2009), what is exported (with the K-Pop) is not only cultural goods produced in

Korea but also an institution or system (star system in this case) and work ethic and discipline

that are attributed as distinctly Korean (even Asian) style. Highly regimented process of

discovering, educating, and exploiting the creative workers in the K-Pop industry is not

dissimilar to the planning process of Songdo, which involved reclaiming the land from the

Yellow Sea, which was then carefully designed and molded to become the cutting-edge global

city, the distinct currency of which is now widely consumed and desired by many Korean people.

Second, the techniques and practices of manufacturing and managing K-Pop stars and Songdo reflect Korea's changing socio-economic condition in the late 1990s. The economic crisis of 1997 was a watershed moment that demanded a holistic restructuring of Korea's industrial economic model to adjust to the new reality of global market economy and emerging media environment dominated by information technologies. K-Pop star training system, having evolved to adapt to the competitive global entertainment industry and new technological environment (e.g., social media channels like Youtube and Twitter), accomplished a remarkable growth throughout the first decade of the 21st century. During the same period, Songdo also emerged out of the social, technological, and economic condition of the 90s that pressured the Korean government to flexibilize its regulations and labor practices and ultimately to reinvent itself as an entrepreneurial actor to accommodate the global standard.

Third, both K-Pop and Songdo manifest their aspiration to go global. K-Pop has been characterized by its hybridity (if not an 'inauthentic imitation') that combined the American pop with Korean talent manufacturing system (Shin, 2009). In fact, much of the K-pop music in the 2010s has been written by American and European musicians (Jin, 2018). Even with the dire chances of rising to the stardom, trainees are said to enter the star academy based on their pure passion of 'making it' in the end and the hopes of eventually turning their success in Korea toward Japanese, Chinese, and/or the US market. Likewise, Songdo has been keen to become a global city by emulating the Western architectural design with the labor force of Korean construction agencies, with an aim of selling its model to the overseas market. As an outcome,

both K-Pop and Songdo comprise of hybridized components that emanate distant, yet somehow familiar ambience that can appeal to the universal audience.

Given the similarities between K-Pop and Songdo, in terms of their production, circulation, and audience, we can attempt a different approach to 'reading' Songdo and its relationship with future, not only through interpreting their textual representations but also triangulating those narrative forms with their undercurrent historical conditions and collective mentality of techno-centric developmentalism that served as the driving force toward the future visualized in those texts. What is significant about bringing these different sources together is that it allows us to see beyond the matter of how Songdo became the passive receptacle of the global imperatives to become smart, creative, and innovative and instead, see how the broader discursive work and a regime of governance informed, instructed, and shaped the mental disposition of the city (and citizens) to become willful and future-oriented economic actors. Songdo, articulated as the smart city, not only manifests the idea of future but *operates* the 'practice of future-making' (Datta, 2018) through direct and indirect governing strategies including technological, economic, juridical, as well as 'cultural' means.

What then, constitutes the practice of future-making that is enacted and operated in and through Songdo? What promises were made in planning Songdo and what did realizing that promise mean for the people in Songdo and in Korea? In Carey and Quirk (2009)'s essay "The History of Future," there are three ways that the future enunciates the present: exhortation, prophecy, and participation. First, future revitalizes optimism in the present, promising that things will be better and whatever problems of today will be somehow straightened out. Present is always inadequate, but the future will perfect its flaws. By a similar token, future recasts the past and the present in a teleological order, so as to serve certain purpose in history, such as

'progress', 'development', and 'national reconstruction'. These are the ways that the idea of the future can serve a political usage in the present, by evading the dissents and suffering in the present and/or by consoling the present with the offerings of the good old future for all.

But more crucially, science and technology – especially wedded through the creative economy of cultural content production (e.g., television drama, music video, digital games), innovation and startup ecologies, urban design, public art and memorials – gain supremacy in the practices of envisioning and planning for the future, especially as that future acquires new expression in the development of information and computing technologies. Often portrayed as the revolutionary driver of progress in history, such as in Cisco's current campaign to become "the Bridge to Possible," technology is perceived to be the main bridge between the present and the future, through which the inhabitants of the present can participate in bringing the future closer to the present. Planning, as an inherently optimistic and future-oriented endeavor (Abrams & Weszkalnys, 2011), particularly relies on the technoscientific approach to participating in the future, utilizing the ever-evolving methods of extrapolation, prediction, and preemption.

In Carey & Quirk (2009)'s terms, future manifests in all three dimensions – exhortative, prophetic, and techno-scientific – in Songdo. If the image of the future Songdo sketched in the K-Pop music videos were aesthetically pleasing and "moving" (affectively charged) yet too distant and out of reach (exhortative, and prophetic), there are more pragmatic (techno-scientific) ways in which the future is offered to the present. These different modalities of future – operated separately but synergistically with the others—were mobilized, made to move together by their relation to this urban space, as represented, material, and affective space.

For instance, the "Incheon Global City Fair & Festival" held from August to October 2009 held the slogan of "Lightening Tomorrow" and "Come and See the Future City." Eighty

days of the festival combined a series of events and exhibitions featuring these multiple

modalities of future: conferences on the green growth and urban future, a multimedia water

fountain show, a robot science museum, collection of international cuisine, K-Pop concert

(featuring the then top idol bands including the *Girls Generation, ShiNee, and Four-Minute*), and

interactive screens displaying the prototypes of the 'ubiquitous city'. The venue consisted of

different sections including the Urban Planning Pavilion, Robot Science Pavilion, Green Growth

Pavilion, and World Culture Street. Urban Planning Pavilion showcased the future city

prototypes designed by major Korean construction companies such as Hyundai, Daewoo, and

POSCO. While these events were meant to demonstrate and celebrate Korea's cultural and

technological excellence, they also communicated the ambitious vision for Korea's future cities

and economy that attainable through these technological achievements.

At the first glance, the sociotechnical imaginaries reproduced in the venue do not seem so

distinct from any other techno-optimistic visions promoted by the companies such as Samsung,

LG, and Cisco. However, it is crucial to point out that the overarching theme of the Incheon

Global City Fair & Festival reflected the idea of the head of the organizing committee, Chin

Dae-je, one of the most well-known 'IT gurus' of South Korea. Chin maintained an envious

career after graduating from Stanford, as a research scientist at the IBM's Watson Lab in New

York, as the youngest CEO of Samsung Electronics, and the Minister of Information and

Communication in South Korea. Most notably, his career at Samsung is often hailed as the

Korean popular "myth of semiconductor" [*pandoch'e sinhwa*] that scaled up the company to the

leading position in the world's semiconductor and electronics market. Chin is known as the

heroic protagonist in the Korean nationalist myth of Samsung, where the 'globally recognized

semiconductor technology' was developed and produced by a group of Korean researchers,

without direct foreign aid or guidance. The story begins in 1985, when Chin starts his job at Samsung, then not very well known trade company, leaving behind his promising career at IBM's Watson Lab. In his memoir published in 2006, *Manage your Passion,* Chin recollects this moment when he risked a promised career path in the US to dedicate his passion for his own country, by achieving the goal of developing the world's best semiconductor memory chip and by defeating his competitors in Japan and in the US, who were way more advanced than Korea at the time. When Chin and his team successfully developed 4-Meg DRAM and 16-Meg DRAM in 1992, Samsung became the biggest supplier of the semiconductor chip in the world's market, accounting for the 40% of the entire sales.

This often cited story is more than just an urban legend that accounts for the success of the top electronics company in Korea, although it is known as one of the most important stories in the history of innovation in Samsung and in Korea. It is recognized as a national myth that has been religiously circulated in the mainstream media as well as his own biography as a best-selling book that inculcated moral imperatives to many Koreans that one's hard work and passion for the country pays off in the end, with the reward of uplifting the national pride. The story also articulated technology as a mythological object, the only reliable source of growth and survival for the country deprived of natural resource. Technology figures as *the* salvation method. Especially during the time of crisis when everything seems to be moving so fast and up in the air and nothing is certain about the future. The relationship between mythology and technology amplified during the time of financial crisis (e.g., 1997 IMF crisis, 2008 global financial crisis) when the social and economic structures supporting the welfare programs destabilized and anxiety grew over the transitory sense of time. Technology was perceived to be the only constant that does not change and cannot be taken away and a reliable and secure way to

make the future attainable. Technology, brought into this context, acquires a mythical power. Beyond its rational capacity to aid government in organizing, managing, and governing the city and its population, technology becomes a useful reference for the future that animates dreams, hopes, and optimisms and assuages the problems in the present.

The discursive practice of future-making that bridges national mythology and technology unfolds in the scale of smart city in Songdo. Chin Dae-je's strategic appointment as the head of Incheon Global City Fair & Festival explicitly reveals this intention to relive the glory of the past and to project that past glory toward the imagined future of Songdo. The myth serves as the source of optimism and anticipation for the future and legitimation of the transformations that take place in the present. Chin was chosen as the perfect person to bridge the past glory and the imagined technological future, a future of prosperity, pride, and success that was to materialize in the city of Songdo, embedded with ubiquitous computing technologies. With his current title as a corporate consultant, Chin also offered city officials in Songdo planning strategies to develop the ubiquitous city as a model to commoditize and export to the overseas market. So the technologized city of future, was not only to become the primary test site for the ubiquitous computing technologies, but a globally recognized and nationally produced technology that would revive the prosperity and pride that once marked Korea in a leading position in the world competition.

Perhaps, this discursive and performative dimension of a technological future imagined through Songdo is what distinguishes Korea's approach to the smart city from other smart cities (especially the ones in the Western developed countries). In postcolonial Indian context, Ayona Datta (2018) observes the conflation of the city and the state in many discussions about the smart cities, wherein the cities are perceived as the liberated zones through which the technoscientific

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future is to unfold, while the state is the paternal figure that governs that future. The relational dynamic between the state and the city manifests in a similar fashion in the present day context of Songdo, as well as many other smart city test sites that are emerging in Korea. Either through direct involvement or through financial support, the national government exerts great influence in making smart cities in South Korea, the trend which is at odds with the (neo-) liberalist approach to the development in the Western cities.

In the next section, I continue to address the dialectic between the city and the state, technology, and mythology, and the past and the future, with a special focus on the formation of 'creative economy with Korean characteristics'. This formation, as I will contend, involves not only politico-economic restructuration of industrial economy but is entangled with a much broader range of aesthetics, techniques, and ethics that pertain to Korea's tumultuous trajectory of modernization. I analyze the hybridization of Korean developmental state, history of governing culture and technology in Korea, and the principles of 'creative economy' and 'creative cities' imported from the West, and examine how the current "K-Smart City" plan manifests distinct characteristics about the practices of future-making and the developmentalist politics of entrepreneurial and creative urbanism in Korea. How Songdo reflects this hybridized vision of the future and how it manifests the political rationales for converging arts, culture, and technology under the framework of creative economy in Korea are the key questions that will be addressed in the next section, which will be followed by the discussions about the moral consequences that shape the idea of ideal cities and citizenship befitting the future.

K-Smart City and the Korean Style Creative Economy

> World class IT leaders have profound interest in our creative economy. I am going to establish online and seventeen offline creative economy innovation centers, which will become the pivot of our regional developments and the cradle for our future leaders. I ask that we all put our effort to innovate our way to

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achieve the miracle of creative economy […] Science, technology, ICT and the cultural contents, the vitamins of creative economy, are our strengths. We should apply these contents with the manufacture sector to build the newly converged industrial sectors such as 'internet-of-everything (IoE)', cloud computing, and big data. […] I will shift all the systems of regulation to encourage investment and to overcome economic hurdles in our nation.

President Park, Geun-Hye, "Three-Year-Plan for the Economic Innovation in Korea"

On February 25th, 2014, the president Park, Geun-Hye addressed the Korean public in her annual speech and laid out the "Three-Year-Plan for the Economic Innovation in Korea." President Park (in office from 2013 to 2017) had publicized her national economic agenda of the Creative Economy [*Changjo-gyeongje*] upon her inauguration in 2013, distinguishing her plan with that of her predecessor President Lee, Myung-Bak and his "Green Growth" strategy. During her opening speech at the Asia-Pacific Economic Cooperation (APEC) Summit Meeting in 2013, Park heavily politicized the K-pop's sensational success in the global 'creative' industry, marked by Psy's *Gangnam Style*'s global hit, which she lauded as the primary example of her vision for the creative economy (Ahn, 2013.10.07).

In establishing the creative economy as the national economic strategy, Park's administration foremost emphasized the significance of increasing flexibility to the existing economic structure and deregulating policies that had largely served the interests of large-size corporations (*chaebols*) over the small- and medium-size enterprises (SMEs). Under Park's administration, the new Ministry of Science, ICT and Future Planning [*Mirae-changjo-gwahak-bu*] (Hereafter 'Ministry of Future Planning') was established to implement policies and funding schemes to encourage and support the new venture start-ups run by young and innovative entrepreneurs. The Ministry of Future Planning since has collaborated with the Ministry of Land, Infrastructure and Transport and the Ministry of Trade, Industry and Energy among others to develop and sponsor various public and private research and development (R&D) projects in the

area of ICT, smart devices, smart cars, smart energy grid, bio and medical science, and security

and disaster prevention systems (National Information Society Agency 2014).[37]

In 2016, a special committee for the "K-Smart City" project was launched by the

Ministry of Future Planning, which aimed to lead the R&D projects for the smart city, one of the

nine national strategic focus area along with the artificial intelligence (AI), virtual and

augmented reality (VR/AR), and self-driving cars. Smart city being one of the key strategic

focuses of the creative economy, Songdo became a model for cities like Busan and Sejong that

developed their own version of smart city testbed. While each city government carried out the

experiments with digital sensors and big data-driven urban services, the Ministry of Future

Planning oversaw the process of branding and commercializing the exportable K-Smart City,

toward the emerging smart city market in the South and Southeast Asia (India and China in

particular) and the Middle East. As a collaborative project of the Ministry of Land,

Infrastructure, and Transport (MOLIT) and the Ministry of Science and ICT and Future Planning

(MSIP) since 2016, K-Smart City reconfirms the techno-nationalistic mythology in a supposedly

border-free universe of digital infrastructure. The hope was that Korea could claim the "Smart

City" as the national technological product (along with its system of production), which would

benefit South Korea's global reputation as a technologically advanced country and increase the

sales of Korean made products overseas.

In parallel with the increasing emphasis placed on the technology-driven innovation as

the main driver of economic growth, the field of culture was also undergoing a significant

transition. 'Culture technology (CT)', a term coined by Won Kwang-yun, the dean of the

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[37] The Ministry of Future Planning also collaborated with the Ministry of Education to develop a new curriculum to teach coding to elementary and middle school students to cultivate the capacity to "materialize creative idea through software," prepared to become the "future workforce of the creative economy" (Science & Technology Trend, 2015).

Graduate School of Culture Technology (GSCT) at the Korea Advanced Institute of Science and Technology (KAIST), was often cited in government policy documents. According to the webpage of the GSCT, "culture technology (CT)" covers a "broad field of research on digital media and related technologies, interaction, design and theory, that are becoming more and more important in forming our surroundings and culture" (KAIST, 2006; cited from Shin, 2009). Korean government selected CT as one of the 'five next generation promising technologies for economic growth', along with IT (information technology), BT (bio-technology), NT (nano-technology), and ET (environment technology).

Creative economy in Korea can be seen as an appropriation of the creative economy strategy imported from the US and the UK. It 'rediscovered' culture as economic utility, through Korea's state- initiatives, to revitalize the techno-nationalist mythology by fostering an information-technology industry as the new national growth engine. In other words, 'creative economy with Korean characteristics' emerged out of the confluence of the national and global policy movement to economize culture and Korean government's initiative to find the nation's next revenue stream through 'national informationalization' [*kukka chŏngbohwa*]. To comprehend these distinct characteristics of Korean creative economy then, it is crucial to examine how the concept of creative economy has transferred from the US and UK to South Korea in the late 2000s, when policymakers sought to imitate and benchmark the Western policies (Kim, 2018).

In fact, there had been a longer history of 'policy transfer' that has shaped Korea's information technology and R&D policy. For instance, in 2001, Alvin Toffler submitted a report to President Kim Dae-jung called "Beyond the Crisis: Korea in the 21st Century" where he

stressed the importance of reforming Korea's economic structure to adapt to the ever-

accelerating global trend of what he called the 'Third Wave Economy':

> Third Wave economy is based, as we know, on innovative applications of
> knowledge – creative mind-power instead of brute muscle-power. In the Third
> Wave, innovative knowledge becomes the most important factor of production,
> capable of reducing reliance on all the others. Data, images, symbols, culture, ideas,
> and processes can drive down requirements of labor, capital, inventory, raw
> materials, and energy.
> Toffler Associates. (2001). "Beyond the Crisis: Korea in the 21st Century." (p.8).

Toffler's guidelines for the Third Wave economy suggested that Korea undertake a

holistic reform of its business model, organized around a few giant companies (*chaebols*), and

that it invest instead in the new economic sector of information technology as a vehicle for the

nation's future growth. Ideally, this reform was going to bring more flexibility and transparency

to the market as well as to the government. Besides, for a natural resource-poor country like

Korea, reaping the unlimited reservoir of human 'mind power' was seen as the only way to

survive and thrive in the global economy – a point affirmed by President Kim Dae-jung in his

address to the World Bank symposium in 1999: "In the 21st century… intangible elements such

as knowledge, information and cultural creativity will be the source of a nation's

competitiveness." This basic rationale was shared by Korean government ever since, albeit with

a slightly different emphasis and rhetoric deployed by different administrations – 'knowledge

economy' (1998-2007), 'green growth' (2008-2012), and 'creative economy' (2013-2017).

At the same time, there was a growing consensus at a national and global scale, regarding

the role of culture in economic development. The tendency to co-opt culture increased especially

since the international organizations such as World Bank and the United States Agency for

International Development (USAID) started calling for new directions in development work

wherein culture emerged as a positive resource in developmental interventions from the late

1970s onwards (Dutta, 2015). Together with the United Nations Educational, Scientific and Cultural Organization (UNESCO), these international organizations corresponded to such a shift and recognized the importance of culture as an economic resource and as an integral player in economic growth (Matarasso, 2001). For instance, a document titled "Recognizing culture: A series of briefing papers on culture and development" published in partnership with UNESCO and support from the World Bank notes: "cultural resources are replacing natural resources as the primary raw material of economic growth. Where timber, iron and oil ruled, knowledge, creativity and design are establishing themselves as the crucial sources of added value" (Matarasso, 2001, p. 4). Culture is seen as a source of aspiration, and by extension, the objective of development. It is through culture that people change the way they do things and how they see the world (Mulgan, 1997, cited from du Gay & Pryke, 2002).

Apropos these multiple national and international circumstances – such as the IMF financial crisis, the national initiatives to nurture the information technology industry, shifting emphasis on the mattering of culture in development programs – South Korean policymakers were gleaning from the case studies conducted largely in and about the US and the UK, most famously Richard Florida (2002) and his thesis of the "creative class" and "creative cities" and the UK's Department for Culture, Media and Sport's (DCMS) "creative industries" policy.[38] One of the most pronounced of these efforts materialized in Seoul where the city served as the first template for the government's new urban policy experiments. The "Design Seoul" project of mayor Oh Se-hoon (2006-2011) was among the series of the government's attempts to 'upgrade'

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[38] Initially introduced in Australia in the early 1990s, the concept of "creative industries" had fully found its definition under UK's New Labour administration during the late 1990s (Ross, 2009). The hallmark of its thought was that the convergence of the arts, science and technology would generate innovative synergy, by producing highly profitable copyright materials such as video games and softwares, as well as by fostering related business in service, real estate business and manufacture sector including fashion, design and tourism.

the city through culture, with a more practical guiding principle of 'design'. It was through

Seoul's new design policy that the rhetoric of creativity-driven urban development first entered

the public domain. For the cultural policy-makers, establishing Seoul as the design city was

synonymous to turning it into a global city (Lee, H. 2015). This aspect was not only evident in

the government's strenuous effort to forge a relationship with the authorities from global entities

such as UNESCO and WDC, but also in a series of city branding strategies that influenced the

image of Seoul as a tourist-centered global city.

At the political front stage and through the back channels, numerous efforts were

undertaken to foreground Seoul's presence in the global network of urban cultural policies.

Notably, in the year 2009, Seoul successfully joined United Nations Organization for Education,

Science and Culture (UNESCO)'s new initiative called "Creative Cities Network." By launching

this program since 2004, UNESCO had presented itself as a broker of collaborative relationships

among cities seeking leverage to promote themselves to other cities. While UNESCO already

had a 'World Heritage Cities' program since 1996, through which it has sought to valorize and

preserve the 'legacy' of humanity, the Creative Cities Network program shifted an emphasis

away from 'preservation' of cultural heritage to 'development' of cultural assets.[39] In promoting

creative industries, Seoul metropolitan government drew lessons from London and Tony Blair's

'Creative Britain' project as an exemplary case that Seoul had to be modeled upon (see Lee &

Hwang, 2012). After his resignation as the mayor, Oh went to reside as a fellow at the Graduate

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[39] This can be seen as the critical difference between 'cultural economy/industry/cities' and 'creative economy/industry/cities' – whereas the former model relies on welfarist government's subsidy on cultural sector, the latter emphasizes active entrepreneurialization of culture, by which culture has to be profitable on its own. Culture became a *utility* that creates wealth itself (Hewison, 2014) – a connotation that also relates to the newly assumed 'active' role of consumer, who is no longer supposed to be a passive anonymous audience but an independent, participatory agent who creates and contributes with his/her own ideas.

School of Social Science and Public Policy at King's College London in 2014, to substantiate his theory of 'culturenomics'.

The presidential agenda of 'creative economy' during Park administration (2013-2017) extended Seoul's experiment with creative city policies, with the idea of converging the art and culture with the cutting-edge technologies, while a special emphasis was placed on generating added value to the Korean-made IT products and expanding the list of exportable product line such as the artificial intelligence (AI), virtual and augmented reality (VR/AR), and self-driving cars. Implementing this creative economy policy at the national level involved a significant 'translation' process (Kim, E. S. 2018) of the practices and techniques that fit within the specific set of problems and institutional arrangement of the South Korean government. One particular problem that the government confronted at the time was the perceived lack of originality in software and cultural contents consumed by Korean users. In contrast to the rapid growth in hardware and ICT infrastructure, South Korean information technology was in need of significant improvement in its 'cultural' aspect. Creative economy policies therefore sought to promote Korean culture as original 'contents' that would improve Korean technology as a 'form'.

Another crucial aspect that deserves consideration for comprehending the distinct quality of creative economy in Korea is the enduring governing philosophy of 'technological developmentalism', the nationalist mythology that approached technology as the primary means of national security and economic growth. This sociotechnical imaginary was rearticulated in Korea's creative economy and constituted the distinct quality of creative economy with Korean characteristics. Korea's formation of technological developmentalism can be traced to the 1960s, when the fast 'catch-up mentality' drove the rapid industrialization and economic growth.

Especially from 1960 to 1996, a profound amount of technological learning occurred, while the authoritarian government of Park Chung-Hee orchestrated the export-oriented industrialization (Kim Linsu, 1997) – with a success in semiconductor chips, shipbuilding and automobile industry. Even when the current preoccupation with 'creativity' is giving way to more technology-centered 'innovation' and the 'Fourth Industrial Revolution' techno-nationalist developmental framework rearticulates in the seemingly new growth directive of innovation.

To summarize, the global imperatives to co-opt culture as a utility of development, the Tofflerian information utopianism, techno-nationalist developmentalism, and the role of the national government that orchestrated the convergence of art, culture, and technology have been the recipe for the creative economy with Korean characteristics – and these are important considerations that have to be factored into any account of creative economy, not only in South Korean context, but many other developing countries such as China and India that are experimenting with the new strategies of synergizing the production of culture and technology in varying degrees. Seen from the above perspective, the current K-Smart City project can be seen as a governing strategy reflective of the general changes in the field of culture that is increasingly governmentally and technologically organized and constructed, of the enduring techno-nationalist myths and practices of future making, and of the residual practices and approach to the export-oriented industrialization strategy that are rearticulated in the creative economy.

With that being said, it is crucial to mention that the broader social contexts reflected in the formation of the K-Smart City charted above have co-evolved with another important shift in the mode of governance that has occurred throughout the late 20th century to the present. In relation to the legal and economic transformation of creative economy, in the next section, I draw attention to the discursive and affective formation of 'entrepreneurial urbanism', which, as

a prominent mode of urban governance and a form of governmentality, was diffused with the ideal norms of citizenship and the regime of self-governance. In addressing the everyday consequences of wedding culture and technology and of synergizing the multiple modalities of enunciating future in the present, I especially attend to the interdependency of 'entrepreneurial urbanism' (as an idea of the city) and the 'entrepreneurial self' (as an idea of personhood and conduct). Traversing the nexus between these two discursive fields, I contend, is the idea of movement perceived as a historical force, a physical as well as an 'affective fact'. For instance, the movement idealized in various cultural forms – the kinesthetic imagery of K-Pop MV (e.g., Psy's Gangnam Style, BoA's Hurricane Venus, etc.), the transnational flow of Korean Wave, and the digital flow and glow of Songdo, becomes the embodied norm for the conduct and program of actions for the city and the citizens, as they map their way of being in space and shape their practices of carrying themselves into the future.

Manage Your Passion: **From Dutiful Nationals To the Creative Entrepreneurs**

The utilitarian assertion that culture and technology are supposed to serve the public's interest is not a novel idea of creative economy. Nevertheless, the current conjuncture of creative economy rearticulates the idea of how the society is to better itself through culture and through technological advancement. And this idea percolates through everyday realm of life-world, as people are constantly on the move, making sense of the world, mobilizing their resources, improving their technical facility, "managing their passion" (as the Samsung's hero of semiconductor myth Chin Dae-je's autobiography title suggests), and effectively governing themselves as self-responsible entrepreneurs. What then, were the overarching thematic of the city and citizenship that constituted the 'culture' of production in creative economy, which have been idealized and presumed in the discursive formation of creativity that cuts across personal,

urban, national, and global scales? And more importantly, how were these norms generative of certain styles of conduct?

Before I think through the subjective and affective dimension of Songdo and its manifestation of entrepreneurial urbanism, I revisit David Harvey (1989)'s observation of the general transformation of urban governance from a managerial to entrepreneurial one. In previous sections, I have offered a contextualized narrative of this transition in South Korea. In this section, I closely navigate the shifting 'psychogeography' (Bruno, 2002) and the 'affective landscape' (Grossberg, 2018) that have been coeval with the economic and legal transformation associated with the entrepreneurial urbanization and creative economy. In a way, I attempt to capture the double connotation of *motion* and *emotion*, as the Latin etymology of *kinesthesia* tells us. It is through charting the inner space of emotion, and especially the affective charge of mobilizing one's 'passion' that I will answer the above question regarding the ways in which the idea of entrepreneurial urbanism relied upon, and was synergized with the idea of entrepreneurial self.[40]

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[40] Several critical cultural studies scholars discussed the emerging subjective condition of life and work parallel to the 'rise of creative economy' and the formation of 'entrepreneurial self' (McRobbie, 2002, 2016; Ouellette, 2014). In the context of the UK, Angela McRobbie (2016) charts the broad societal transformation in which people are increasingly disembedded from the membership to the traditional social institutions as well as from the cushion of social welfare. As a result, people are pushed to embrace the re-invented notion of work that becomes a field to fulfill and actualize individual's mark of self. Young generations are pressed to apply "their facilities with new media technology and the experience of 'club culture sociality' with its attendant skills of networking and selling the self and have created form themselves new ways of earning a living in the cultural field" (p.521). No longer depending on the public funding, creative workers instruct themselves to become a 'microstructure' or a 'self-enterprise', adopting the features of what Laurie Ouellette describes as 'entrepreneurial selves' (Ouellette, 2014). This notion refers to the kind of self-awareness increasingly upheld by creative workers who conceive themselves "less as a subject of rights and collective interests, but more as an 'entrepreneur of self', incited to manage his or her own conduct and maximize his or her own capacities as the condition of expanding freedoms" (p.91). In this model, labor is no longer limited to what happens in the office or the factory, since work is "reconceived as an investment in the self as a personal enterprise that involves education, training, social networking, skill acquisition, and so on" (p.104).

As explained above, the K-Smart City consists of multiplicity of techniques, practices, and perspectives regarding technology, culture, and development that manifests in a unique social and historical context of South Korea. One crucial aspect of such manifestation involves restylization of the mode of urban governance that casts the city not only as an exportable and tourist-friendly cultural product but as an active entrepreneurial actor – of which Songdo is a prime example. As discussed in chapter 2, Songdo was designated as a Free Economic Zone (FEZ) in 2002 and ever since, became a deregulated zone that partially gave away the state sovereign power to other non-government proxies such as multinational corporations and international organizations. Leveraging its zoning strategy, Incheon Free Economic Zone (IFEZ) Authority has procured partnerships with IT corporations, real estate investors, and the US and European universities. Through these partnerships, IFEZ implemented the new geographic investment strategy, by opening branch campuses of the US and European universities (e.g., State University of New York, University of Utah, Ghent University, George Mason University), offering relocation services for incoming officials working for the international organizations (Song, 2014.09.22). IFEZ also retained the Techno Park (IBITP)[41] model to support the growth of corporate research and development (R&D) centers and university labs in Songdo.[42] Techno Park in Songdo now hosts the newly established Center for Creative Economy and Innovation (CCEI) in 2014. CCEI was originally the Ministry of Future Planning's project, which established 19 branches spread out nationwide to serve as the regional incubating hub of startups

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[41] Songdo Techno Park was originally established in 1998 as a corporate body of Incheon Development Committee. Since its relocation to Songdo in 2004, it changed its name to Incheon Techno Park and expanded its structure by combining Incheon Business Agency and Incheon Information Service. Incheon Techno Park's official name is Incheon Business Information Techno Park (IBITP).
[42] The 'Smart Valley' within the Songdo district is located adjacent to Songdo Techno Park and its name is explicitly modeled after the Silicon Valley. Currently, the area is mostly used as an office and lab space for bio-tech and pharmaceutical research, for domestic and international companies including Samsung Biologics, Celtrion, Dong-a Pharmaceutical, Cisco (network infrastructure), Daewoo International (trade business), and Posco Engineering (civil engineering and construction).

and small and medium-sized enterprises (SMEs). CCEI's mission was to provide consultancies to the small businesses to strategize and promote their ideas and to broker relationships with investors and larger corporations, such as Samsung, LG, SK, and Lotte.[43] Following the Techno Park model, each city hosting CCEI established a corporate body, in order to manage its own venture finance operations, and designated its own regional focus: Songdo's CCEI for smart logistics and smart city-related innovations and businesses, while other cities were focusing on green energy (Daejeon), urban life and food technology (Seoul), IoT and tourism (Jeju), film and visual technology (Busan), game and fin-tech (Seongnam), smart agriculture (Sejong) and so on (CCEI official website).

These examples illustrate how the shifting mode of urban governance is organizing the cities as 'technological zones' that integrate the entrepreneurial role of the city with its managerial function, in service of innovation and business. As Harvey (1989) observed in the US context, the managerial stance of urban governance typical of the 1960s confined the city's role to the provision of the basic infrastructure and services. This stance started to shift into a more active and entrepreneurial form of urban governance in the 1970s and the 1980s, which put the cities in a position to support the enterprises and induce the local economic growth. The shift has been accompanied by the changing dynamics of socio-economic factors in a number of different levels: the transition from Fordist-Keynesian capitalist accumulation to neoliberal-flexible accumulation, the state government's shrinking role in the local politics, and the formation of 'coalition politics' among local administrative class which coalesced the city into a 'growth machine' (Logan & Molotch, 1987/2007). Besides, the growing prominence of global

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[43] As of 2017, the management of the CCEI was transferred from the Ministry of Future Planning to the Department of Small and Medium Enterprises and Startups, run under the Ministry of Trade, Industry and Energy.

competition and the rolling back of welfarist state made the city to become a crucial node through which neoliberal hegemony materialize in territorial forms.

This entrepreneurial mode of urban governance swept across the world in the late 20th century, the process which has been theorized by many urban geographers who foregrounded the related theses: 'city as a growth machine' (Logan & Molotch, 1987/2007); urban entrepreneurialism' (Harvey, 1989); 'neoliberal urbanization' (Keil, 2009); 'mobile urbanism' (McCann, 2011). Largely from a macro-economic perspective, these theories highlighted the role of cities in relation to the global network of capital accumulation that touch down and what the politico-economic consequences were for the cities to become the mobilizing ground of resources (Brenner & Theodore, 2002). In a similar vein, Sassen (2005)'s theory of 'global city' particularly stressed the role of the ICT in flexibilizing the financial exchanges across the territorial borders, which was integral to the process of consolidating power relations of global market economy in urban cores.[44]

The trope of globalization's competitive and punishing reality gained prominence in South Korea in the mid-1990s and especially during the wake of financial crisis in 1997. As the sobering experience of the crisis legitimized the imperative to adapt to the 'new' reality of globalization, Songdo developed into a fully fledged enterpreneurial city, internalizing the neoliberal logic of capital accumulation, while at the same time, manifesting the legacy of the Korean developmental state (Shin, H. B., 2017). Like many other cities in Korea, Songdo proactively stylized itself as an entrepreneurial actor that confronted the new economic reality of

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[44] The dynamic was more closely observed by Graham & Marvin (2001), who asserted that the networked infrastructures and technological mobilities have been the key assets of modern cities. From an infrastructural point of view, they view the current transitions that configure in urban forms as consisting of a series of 'splinters' and 'fragments' that are unbundled from the supposedly all-encompassing phenomonenon of globalization.

globalization, by interacting with the global network of corporate actors and by proclaiming its role as the facilitator of local economic growth.

That said, this 'internalization of neoliberal logic' that occurred within the dialectic of global capitalist economy and the developmental state involved much more than implementing new economic policies and deregulating the business environment. At the fundamental and yet intimate personal level, there was a course of collective will formation that weaved the entrepreneurial urbanism into the everyday fabric of life-world, which in turn, inducted the individual citizens' personal will to act upon oneself, through an entrepreneurial mode of self governance. With regard to the formation of the collective will in late 20th to early 21st century Korea, in a pessimistic tone, Kim Hong-Jung (2018) sees the undercurrent governmental rationality of 'survivalism', which turns the practices of future-making into the visceral matter of survival in the *now*.[45] In this perspective, it can be said that the sociotechnical imaginaries of future city rendered in the form of entrepreneurial urbanism then, is derivative less of the actual hopes and optimistic anticipation of future attainable through technology than of the enduring pessimism, anxiety, and helplessness that could be remedied by technology. In other words, as the individualization of risk, neoliberal governmentality, overwhelming sense of vulnerability forced people to internalize the survivalist regime where the world is seen as a series of challenges and crisis, the disempowered human agency is seemingly uplifted and salvaged

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[45] Kim Hong-Jung traces this historical formation of 'survivalist governmenality' during Park Chung-Hee's regime (1961-1979) and especially the broad range of sociopolitical circumstances that rendered 'precarity' as a given condition of life in Korea's Cold War period. As the trope of exigencies rendered the nation vulnerable to external threats (e.g., national security threat posed by communism, economic threat of poverty), Korean people internalized the view of the world as full of anomies, which extended to their view of life-world also consisting of a series of challenges and crises (Kim, 2018). This historically constructed regime of survivalist mentality is not only experienced and performed, but viscerally animated through the "inner, psychic, and even spiritual dimension of human actors" (p. 8) and Korean 'dreamscape' of modernity in Benjaminian sense.

through their passionate devotion in technology, creativity and innovation. Even if technology does not resolve the crisis, at least it is believed to prolong their survival in this world.

From the cultural point of view of looking at the specific performances and practices that urban dwellers are entangled, we can investigate how the discordance between the 'transcendental structure of problem' and the 'will of the governed' is mediated by the formation of an *ethos* (or 'spirit' in Weberian term) – a collective mentality of survivalism and a form of governmentality that shapes the ideal values and moral competency demanded of the subjects who seek their liberation (if not redemption). After all, it is *not greed but fear* that motivates these subjects. In the imaginaries of the future devoid of hope, the anxiety creeps in. In the world viewed as uncertainties and challenges, with little sense of life security guaranteed by the state, the individual becomes the responsible entrepreneur solely accountable for one's life.

In South Korea, this new survivalist regime of entrepreneurialism is grafted onto the enduring techno-nationalist developmentalism, which put in motion highly regimented and disciplined program of action for the individuals who are composed of personal 'specs' – denoting the qualifications, skills, experience, knowledge and other attributes that they must possess to perform certain job duties. In the world where precarity is understood as a new normalcy of life and the risk is individualized, technology presides the power to give assurance. As many Koreans internalize and enact the 'praxis of survivalism' and reinvent themselves as a technological zone defined by their level of 'specs'. Among today's Korean youth, the phrase "improving/accumulating one's specs" is in common parlance, denoting the practices of validating one's worth through technically assessable means: scoring high in English proficiency exams (e.g., TOEIC, TOEFL), documenting extracurricular activities (e.g., volunteering at social welfare institutions, doing internships), and learning software and database related techniques

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and acquiring the 'state-registered certifications' (e.g., spreadsheet and information management ability test, Word Processor application ability test, etc.).[46] Even many retirees are forced to reeducate themselves at technical colleges before entering the already tough job market for the second time. In the absence of social welfare programs that are supposed to provide a minimum safety net for the precarious and aged life, technology is their substitute insurance and retirement plan.[47]

It is through the specifying programs of governing oneself and the others that the governance of entrepreneurial city accomplishes its final goal, which is to automate its governing function in the realm of urban life that had not been previously thought of as the direct realm of government's influence. This point ties back to my discussion in previous chapters, about how the governance of smart city is distinct from the institutionalized forms of 'government' in that it achieves a new level of effectiveness by distributing and embedding power in the environment and by formulating and enacting the ethos and norms of progress and development that work *with* the individual desire for their own well-being and survival. What is remarkable about Songdo and smart city's seemingly voluntary, civic, participatory mode with which individuals are supposed to govern oneself is that, the terms with which they must navigate through the present uncertainties and precarities are beyond their means to exact an influence. The only way

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[46] The state-registered technology qualification test [*Kukka kisul chagyŏkshihŏm*] is a national certification system administered since 1975, which consists of both written test and performance test designed to evaluate the individual's level of knowledge and dexterity with specific technology or techniques. As of 2017, there are as many as 525 categories of test depending on the applicant's chosen area of technical expertise (e.g., computer application, information management, makeup skills, cooking skills, excavation machine operation, etc.). The number of issued certification steadily increased every year and in 2017, the total of 676,046 certifications were newly registered to the system, out of 2,451,067 individual tests administered (Human Resources Development Services of Korea, 2018).

[47] Such perception of science and technology as the driver of national economic growth especially gained prominence during Park Chung-Hee regime (1961-1979). See Han & Downey (2014) for the history of the relationship between the changing economic strategies of South Korean government and changing social status of the engineers.

to address the gap between the uncertainties of the present and the potential resolution in the future is through mobilizing one's 'passion', enduring all sorts of physical and mental suffering of the "Passion Pay" [*Yŏlchŏng p'ei*] – another common term among Korean youth that indicates very little or no payment earned by doing 'voluntary' internships and temporary jobs.

The regime of survivalist entrepreneur rearticulated in Korean developmental mentality becomes a useful field for envisioning and governing Songdo as an entrepreneurial city. The new ethos of work that orders population along the series of 'specs' seemingly disrupts the previous norms civic virtue that were defined by their devotion to family and the nation. Still, there exists an enduring plane of mentality and desperation for development and survival that drives and animates the new practices of the self, which is 'willfully' embraced by various groups of people in all walks of life across the class distinction and generational gaps: students, teachers, parents, retirees, as well as the aspiring creative workers within the innovation ecology in Songdo. For instance, many Korean parents are vying to send their kids to Songdo or relocate the whole family to Songdo, hoping to provide a higher quality of education to their children from English-speaking schools such as the Chadwick International School (a kindergarten to twelfth grade-level private school, which has a main branch in Palos Verdes, California), and other satellite campuses of US and European universities. Regardless of their level of income or other means, many parents internalize the ethos of survivalist entrepreneur and developmental mentality in programming their children's educational path, in order for them to be better-equipped to navigate the precarious future in Korea and in the world. For them, Songdo is perceived as a facilitating ground to assemble the necessary 'specs' and to gain mobility, and as an imagined plane to project their dreams and passions of bequeathing a better quality of life and future to their children.

In this way, a city like Songdo becomes less of a field where the effect of ideologies is materialized and legitimated than an assemblage of techniques and affects that inspire certain ways of mapping one's existence in the world. Songdo maps the ways in which one is supposed to behave and compose oneself in order to navigate the road between his/her aspirations for the future and desperations of surviving in the present. It is through this roadmap that the individuals learn to articulate oneself in relation to the various societal shifts associated with creative economy, including the competitive reality of the global, 'flexibilizing' labor conditions, the production model that synergizes culture and technology, and compelling culture of work that individualizes risk, so as to constantly remind themselves of the skills and ways of conduct that they can practice on their own.

Thus, the governmental rationality of developmentalism articulated in the survivalist regime of entrepreneurial self operates through the shifting mode of governing the city that implicates and draws resources from the will to fabricate one's self and one's passion toward the fear and fascination with the future. As Osborne & Rose (1999) point out, "the fabrication of the self is not a once-and-for-all matter, accomplished in family or school, nor does it rely on exterior transcendental sources." Instead, "it is continuously maintained in the very act of participation in the networks of existence" (p.750). City is a useful milieu for these processes of self-fabrication, insofar as it is within the city that the forms of conduct are shaped and stabilized in how the self relates to itself and to others.

Conclusion

This chapter charted how the smart city serves as one of the ways in which the government grapples with South Korea's future in creative economy. Through Songdo, the idea of future was enunciated in multiple ways, including the exhortative and prophetic expressions of technophilia

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embodied in the dynamic and skillful movements of K-Pop musicians as well as the celebratory rendition of techno-nationalist mythology in the festive venues. Songdo was one of the key motifs for South Korea's sociotechnical imaginaries, in which culture and technology were perceived as the primary means of future-making in the creative economy. What is distinct about the rhetoric of future in Songdo is that while it shares with other smart cities the relentless optimisms and aspirations to become global, secure, and sustainable, the very aspiration of the city is entrenched in the perpetual desperation in the present and the history of techno-nationalist developmentalism, which are deeply implicated in the idea of nationhood. While discussing the smart cities in India, Ayona Datta (2018) points out how the state and the city are often conflated in the mythologizing rhetoric of technology, which she describes as one of the characteristics of postcolonial cities. The curious relationship between urban future, nationhood, and technology plays out in the future-making practices in Songdo, particularly through the discursive and material endeavor to plan and promote the "K-Smart City," which attempts to emulate K-Pop's growing influence in the global music industry.

There are both emergent and residual ways in which the city such as Songdo is enrolled in the practice of future-making. On the one hand, the imperative of creative economy has been increasingly pervading the cities in Korea, producing a new demand for the cities to become entrepreneurial actors and for the citizens to improve their capacities and to manage their lives in certain ways. Yet, there still persists an 'old' way of doing 'new' things, which partly has to do with the bureaucratic inertia of the government that, yet to devise a new response, applies the same methods of state-led development regime in dealing with the new problems of the creative economy. More crucially, the persisting plane of 'developmental mentality' articulated in the survivalist regime of entrepreneurial self, animates and draws out the passion of the self to

fabricate one's will and behavior, in order to navigate the precarious terrain of the present, which

hopefully leads the self to its imagined future.

CONCLUSION

Throughout this dissertation, I analyzed the multiple articulation of smart city in the scale of Songdo, South Korea. In each chapter, I mapped the specific diagrams that comprised different aspects of the smart city, which collectively manifested in Songdo. Overall, this dissertation illustrated how the intersecting urban diagrams and their specific genealogies regarding the problems of mobility, security, environment, and futurity simultaneously gave emergence to the current formation of Songdo. One of the primary goals of this research was to establish the ground for *a genealogical and cultural approach* to the smart city, which involved *mapping* the relationality between the institutional, technological, cultural, historical, and affective landscapes of Songdo and *articulating* the broad context within which public discussions about globalization, surveillance, sustainable development, and creative economy weaved through the everyday life world of the smart city.

The results from this research can be briefly summarized in the [Table 2] below. As a manifestation of multiple diagrams of Songdo, the table can be read both vertically and horizontally. Any column and row can be a starting point to read the map of Songdo and can even be utilized as a guideline for the future smart city research. The first row of [Table 2] suggests the general framework for viewing the history of the smart city as a multiple sociotechnical emergence out of the dialectics between continuity and ruptures. Charting the long history of the smart city throughout this dissertation, in Chapter 1 in particular, involved not only drawing upon the immediately related concepts and inventions of the smart city but exploring the relations between the dispersed genealogies that pertain to South Korea's urban history (e.g., the professionalization of urban planner and state-led urbanization since the 1960s),

Table 2: A Diagrammatic Summary of Previous Chapters

Dimensions / Chapters	Texts	Space	Culture	Technology	Analytical terms
Historical city	Archives and museum exhibitions	Palimpsest, multiplicity	Continuity and rupture	Sociohistorical process	Media genealogy, problematization
Global city	English as a second language, Songdo IBD website, IFEZ journals	Flow, mobility, network, hub, aerotropolis	International schools, multiculturalism, cosmopolitanism	Internet, information technology	Governmobility, extrastatecraft
Secure city	Crime reports, maps, emergency notifications, personal safety apps	Borders, walls, boundaries	Surveillance, Defensible self, bodies at risk	Lighting, CCTV, RFID, CPTED, GPS, blackbox cams	Individualization of risk, environmentalization of risk
Green city	Healthcare manuals, recycling and energy saving instructions	Environment, green space, city as a laboratory	Sustainability, Quality of life, New urbanism	IoT, LEED rating system, home energy control system, smart grid system	Environmentality, testbed urbanism
Future city	K-Pop MV, self-management manuals, Future city exhibitions	Festival, expressive architectures, kinesthetics	Creative economy, Techno-futurism, entrepreneurial self/urbanism, survivalism	Personal 'specs', star training system,	Technological zone, smartmentality*

communication and transportation history (e.g., highways, microwaves, airports, television, and the electronic media), history of militarized modernization and the subjective formation of 'dutiful nationals', and the development history of South Korea and the technology's privileged position in society. If my attempts were successful, this dissertation can serve as an antidote to the smart city research that narrowly focus on the 'newness' and the 'effect' of the smart city and instead, foreground the expanded cultural and historical continuity of the smart city.

The second row enlists the keywords that were used to analyze how Songdo has been articulated as a global city. Taking a cue from the smart city's primary emphasis on mobility management and the long history of 'governmobility' (perceived as a problem of the government and a mode of rule) in South Korea, Chapter 2 of this dissertation especially focused on how the government of mobility was exercised through the interdependency of communication and transportation infrastructure (e.g., highway-microwave network, airport-Internet) and discussed how the smart city's mobility management system functionally merges communication and transportation. From the mobility perspective, articulating Songdo as a global city involved synthesizing the new transportation infrastructure for the global mobility (through the airport), the new model of global communication (through the Internet), institutional arrangement for the global financial mobility (through the Free Economic Zone), and the cultural sensibilities for openness and global aspirations. One of the takeaways for the future smart city and mobility research is to keenly attend to the variegated aspects of mobility, which is not only about speeding up or setting something free. The chapter suggests the inherently dialectical relations between freedom and rule in mobility governance, which regulates and distributes freedom of movement selectively.

The third row presents a different, if not a paradoxical, dimension of the same mobility regime read through the second row. Chapter 3 was especially concerned with what techniques of security and safety were utilized in problematizing risk in Songdo (and smart city understood as a risk management machine) and how these techniques are symptomatic of South Korea's long history of militarism, public discussions of national security, and understanding of oneself as the frontier of personal defense responsibilities. This reading of smart city will be especially useful for future smart city research that narrowly view the surveillance issues from a deterministic perspective. This chapter triggers questions about how the risk, as a socially constructed concept, has been differently problematized and how, as a result, the idea of self and its responsibilities have reflected the historically contingent notion of risks (e.g., variously imagined in a scale of the national threat, street crimes, environmental hazard, etc.).

The fourth row presents another view of the smart city both as a media saturated environment and as a means for environmental sustainability. Chapter 4 of this dissertation especially charted how the environment became an emerging object of the government since the late 20th century and how the smart city is situated within the nexus between the discursive formation of the sustainable development and the growing demand for a better quality of life from the South Korean citizens. This chapter utilized the concept of 'environmentality' to discuss how the techniques and technologies of environmental mode of urban governance, such as the distributed digital sensors and protocols for managing environmental data, have relegated the governmental accountability to the non-governmental realm of the environment and automated governance. This significant shift in the mode of urban governance is the topic that deserves further exploration in the future smart city research along with the issue of citizen responsibility and participation that are largely dealt with in technical and depoliticized terms.

Lastly, Chapter 5 charts how the problem of 'development' and 'futurity' articulated in the regime of smart city in Songdo has been kinesthetically, visually, and governmentally communicated through the smart city's norm of mobility and progress. This chapter explores the inter-textual flows of these norms that traverse the K-pop music videos, festivals, architectures, and the nationalist mythologies of techno-futurism, which bear upon the mutual construction of Songdo and South Korea's relationship with its future, which in turn, normalize the constant mobility and progress in the present. The chapter also demonstrates how this futurity is conditioned by multiple modalities of temporalities and spatialities – the historical trajectory of South Korean industrialization and urbanization, the techno-nationalist approach to development, the global imperatives for creativity, innovation, and entrepreneurialism, and the affective charge associated with the kinesthetic and visual norm of smartness – which are co-articulated in the initiatives to commoditize and export South Korean cultural technology, the 'K-Smart City'. This chapter concludes that the smart city, as a form of governmentality, forges a particular disposition for life and future, which gains momentum from the city and the citizens' passion for self-improvement, prosperity, and a better life as well as from their desperation for survival and relevance in the present.

What have we learned through this research? How does my research contribute to the field of communication and media and other scholarly writings on the smart city? This dissertation charted a new direction in communication and media studies field by including urban history and environment as a topic of research. Moving away from the field's tendency to focus either on audiovisual media texts or political economy, this dissertation's approach to the topic suggested that a renewed framework is necessary to confront the evolving forms of power in the network age that operates through immanent, dispersed, and spatialized planes of social

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landscape and to capture the multiple and overlapping scales of mediality that traverse within and beyond the textual and institutional dimension of media.

As I have discussed above, my dissertation will serve as an antidote to the extremes of urban scientific approach to the smart city that focus on the immediate *effects* of technology. As a corrective to the deterministic and totalizing narratives about the smart city, this dissertation took a localized and cultural approach to the smart city, within a specific context of Songdo, South Korea. I emphasized the multifaceted, contingent, and situated nature of the smart city, which exists in relation to the specific histories, public memories, and governmental rationalities. I hope the future research will also factor in the complex web of relationships that produce and occur within the smart city that I presented in this dissertation – for it is based on such historical and cultural understanding of a city that we can hope to exact changes to it.

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