A Thesis for the Degree of Ph.D. in Engineering

Liveability and Anticipated Shrinkage:
Urban Design Assessment of Morphology and Management in Tokyo's Peripheral Areas

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ABSTRACT

Demographic changes in the Japanese society will inevitably restructure Tokyo's spatial organization in the coming decades: population loss will manifest itself unevenly and be most dramatic in peripheral areas, challenging established notions of quality of life. Several scholars have tackled this issue from a geographical or planning perspective. Nonetheless, the question of how liveability could be addressed at the urban design scale, remains an open one.

This research focuses on Tokyo's peripheral areas, aiming to evaluate, in a comparative manner, urban design factors affecting liveability at the neighborhood scale in an upcoming age of shrinkage, based on the analysis of three case studies (Kunitachi, Tama New Town, Yukarigaoka). After providing a tailored definition of liveability, emphasis is put on six factors relating to morphology (density/compactness, diversity of uses, walkability, green/water space) and to urban management (*machizukuri*/ participation, local character). The enquiry is limited to the Greater Tokyo Area because of its uniqueness within the Japanese urban development.

Our findings have clarified the need to focus urban design and policy-making on compactness, rather than on density; the importance of a spatial qualitative assessment of the mix of uses, otherwise deceiving from a purely quantitative planning standpoint; the possibility to maintain liveability in low-density settlements with the implementation of ad hoc accessibility strategies; the positive and negative effects of different types of green spaces; the importance of both cooperative and confrontational participatory practices toward co-production; the need for peripheral areas to offer a lifestyle alternative to that of the city center.

Beside presenting a workable and applicative toolkit for urban designers, we provide new data and information about our case studies for the benefit of local municipalities and interest groups, and propose an exemplary "shrinkage masterplan". Moreover, by means of comparison, tactics to cope with shrinkage can be transferred to and tested in other areas around Japan and be a reference for numerous East Asian cities about to face, in the near future, their own age of shrinkage.

Keywords:
liveability, shrinkage, Tokyo's peripheral areas, urban morphology, urban management

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF FIGURES

All figures are by the author, except where otherwise indicated.

LIST OF TABLES

A NOTE ON JAPANESE NAMES AND TERMS

As the reader may know, Japanese language is composed of Chinese characters (*kanji*) and two syllabic alphabets, one (*hiragana*) for native words, and the other (*katakana*) for terms of foreign import. These three systems are mixed in written language, and all can be transliterated into Latin alphabet (*rōmaji*, usually following the Hepburn romanization style).

In regard to personal names, we have always opted for *rōmaji*, writing, according to western customs, surnames after first names. Place names and Japanese terms commonly used in English have not been italicized, nor have they been provided with macrons. All other Japanese terms appear in italics and follow proper Hepburn romanization. When *kanji* and words in *kana* alphabet are needed to convey a particular point, they have been provided with their *rōmaji* transliteration. References to literature in Japanese have been indicated in their original form, and can be found in a dedicated section in the list of references.

日本の人口減少は、地方の過疎化の域を超えて、すでに首都東京の足もとにまで迫ってきている。

Population decline in Japan has already moved beyond rural areas and is coming closer to Tokyo.

小泉 *et al.* 2014:26

'Way of life' and 'quality of life' are concepts that interest urban designers.

Scott Brown 1990:19

1
INTRODUCTION

1.1 Context and relevance

It is a big problem [...] that [...] young people are moving to Tokyo, where the birth rate is low. The Tokyo metropolitan area will also see an explosive increase in the number of elderly people [...]. Outside the metropolis [...] there is a concern that many municipalities are at risk of disappearing entirely due to population decline, but it is actually Tokyo that will have to face a more difficult situation than any other municipality.
    Masuda 2015: no page

The aging of Japanese society will inevitably restructure Tokyo's spatial organization in the coming decades, posing a challenge to quality of life in many neighborhoods. A low fertility-rate (1,45), high life-expectancy (83 years) and a modest presence of immigrants (1,9% of the total population) (Statistics Bureau 2017) are causing the rapid aging of Japanese society. As a consequence, population shrinkage started around 2005.[1] Population loss will manifest itself unevenly, and, in the case of Tokyo, be most dramatic in peripheral areas,[2] where ca. 87% of Greater Tokyo Area's (首都圏 - *shutoken*) population lives (Ohno 2005), triggering a gradual spatial restructuring. In fact, population shrinkage is often followed by urban shrinkage (Oswalt 2006). This is not to say, though, that population loss is the only cause of urban shrinkage, since 'there is no single model or archetype of

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1   According to official simulations, Japan's peak population of 128 millions, reached in the late 2000s, could shrink below 100 millions by 2050 and eventually reach 88 millions around 2065 (National Institute of Population and Social Security Research 2017).

2   'Since 1960, over 90 percent of all growth in Tokyo and Osaka-Kobe-Kyoto has been on the periphery; 83 percent of the population increase in Nagoya has also been suburban. [...] [B]y 2013, suburbia accounted for almost 62 percent of all households.' (Kotkin 2016:153-54)

the "shrinking city".' (Haase *et al.* 2017:95)[3]

In Europe (e.g. the Ruhrgebiet in Germany) and in the US (e.g. Detroit) urban shrinkage was mainly triggered by severe deindustrialization starting in the late 1950s, or by internal migration following political and administrative disruptions (e.g. cities in the former German Democratic Republic in the 1990s). In the case of Tokyo, however, urban shrinkage will mainly be caused by population loss due to an aging society and low fertility rates. In this thesis, therefore, we will use the term "shrinkage" to indicate both population and urban shrinkage.

Given the far-reaching consequences that such demographic projections will trigger, urban design as a profession, driven by certain societal goals and ideals, will be confronted with new challenges. Specifically, new questions relating to liveability, residential preferences and ultimately lifestyle will be raised. How will neighborhoods and cities adapt to an age of shrinkage? Where will people want to live? How will the urban/suburban/rural relationship evolve? What will happen to the increasing amount of vacant properties?

Several scholars have tackled these issues in Japan from a geographical (e.g. Yui & Kubo 2013) or planning perspective (e.g. 村上 2016; Sorensen & Okata 2010). The former aimed at exposing the cause-effect relationship of population decline and built space, focussing on the risks of peripheral areas to become severely depopulated and dysfunctional. The latter called for the need of preserving socially mixed and lively neighborhoods, by means of urban policy and management. Such researches build a theoretical foundation upon which a more concrete investigation should be done, since the question of how liveability at the urban design scale could be addressed, remains an open one.

Assuming as a working hypothesis that a definition of liveability is—to a certain degree—locational and contextual, it is necessary to introduce the local peculiarities in which Tokyo's spaces are produced, i.e. its historical and geographical characteristics cannot be underestimated. Instead of considering places themselves as outcomes, the question is: what are the tendencies, mechanisms and processes that produce them? Tokyo is characterized by a number of attractive neighborhoods with a strong cultural identity, usually centered around a train station. Simultaneously, districts located further

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3   '[T]he urban shrinkage model does not fit any process of demographic decrease and functional decay occurring in urban systems, and [...] these processes need to be analysed by contextualising cities in the specific macro-regional system in which they are situated.' (Salone & Besana 2014:104)

from the city center are rapidly aging, while younger residents choose to live closer to their workplace. This creates great imbalances in the social structure of residential areas (Doteuchi 2003), which is inevitably reflected in the built environment.

Numerous scholars agree that Japanese cities, most emblematically Tokyo, manifest a tension between two opposing forces. On the one hand, national and local governments have been promoting urban development as a means of economic stimulus, relaxing and deregulating the building code, in line with global neoliberal agendas. On the other hand, local people are increasingly active in defending and improving quality of life in their own neighborhoods, as seen in *machizukuri* (see definition in 3.3) movements throughout Japan. The clash between these two contradictory trends—top-down state intervention against bottom-up civic organization—will effectively define the degree of liveability of Japanese (peripheral) urban areas.

1.2 Problem statement

Japan faces huge challenges in coming decades, and continuing to improve urban livability [...] will be one of the most difficult ones.
Sorensen & Funck 2007:278

The shrinkage of Japanese villages and remote towns has been discussed in academic circles since the 2000s, but it has found resonance in politicians' and planners' agendas only since the 2010s. Recently, however, as the effects of an aging society become more and more pronounced, the focus of both academia and policy-makers has been shifting towards the future shrinkage of urban areas (Hattori *et al.* 2017).

Due to the general population decline of Japan as a whole, even Tokyo is starting to face population loss in its peripheral areas, where the majority of its workforce commutes from (Fujii 2008; Oe 2005). According to Masuda (2015: no page), Tokyo will be the place 'that will have to face a more difficult situation than any other municipality.' Peripheral areas (i.e. within a 30-60 km radius from central Tokyo) will be particularly vulnerable, even though their conditions are rather diverse, depending on their location, serving train lines, etc. Nonetheless, they will, with varying degrees of intensity, experience the downsides of shrinkage, having to cope with diminished tax revenues and increasing

cost of public services. This could lead to the progressive degradation of peripheral areas and their abandonment, or to the ghettoization of their elderly population—becoming "shopping refugees" (杉田 2008). A further concern is the increasing rate of vacant houses across the country, expected to intensify with the so-called "2025 problem", when the number of deaths of baby boomers will peak (Nozawa 2016:7).

Some scholars argue, therefore, that a growth-oriented model should be turned into a "decline paradigm" (Müller & Siedentop 2004) and that an era of "deurbanization" (Onishi 2011:27) is about to start, requiring great shifts in planning policies. Moreover, even though Tokyo and its catchment area is continuing to attract residents as a whole, its growth is expected to halt and reverse after 2025 (河合 2017). Due to the massive inflow of the generation born in the 1930s and 1940s, its aging will be dramatic (Nozawa 2016; Masuda 2015; Oe 2005). This implies that assumptions regarding quality of life from a spatial point of view, residential preferences and lifestyle will be called into question.

As a first step to tackle these issues, in 2014 the Abe Cabinet has launched the Location Optimization Plan framework (立地適正化計画 - *ritchi tekiseika keikaku*), to be implemented through the "compact-city plus network" strategy (Tsuji 2015; 国土交通省 2014). Recognizing the imminent threat posed by shrinkage, the plan devises a set of policy mechanisms to define, within the current Urbanization Promotion Area (市街化区域 - *shigaika kuiki*) of each municipality, Urban Function Oriented Areas (都市機能誘導区域 - *toshi kinō yūdō kuiki*) and Residential Oriented Areas (居住誘導区域 - *kyojū yūdō kuiki)*. By relying on the support of local governments, the private sector and residents, the plan aims at promoting, in a gradual manner, the establishment of compact areas, while fading out dispersed developments. It remains to be seen whether these policies will be able to properly address shrinkage and reduce the unbalance of population flow between central Tokyo and the rest of the country.[4]

Research projects investigating liveability in an age of shrinkage have, so far, either tackled the regional scale and mainly dealt with the realm of large-scale and form-based masterplanning (e.g. Ohno 2005) or skipped a rigorous scientific approach, being design projects (e.g. Yamamoto 2012). The complexity of liveability, though, necessitates an interdisciplinary and intermediate step between large-scale policies and small-scale implementation. Specific and localized field analysis is required to understand how liveability unfolds in different neighborhoods.

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4   See 7.4 for a possible application of the Location Optimization Plan in Tama New Town.

1.3 Aim and scope

Every model for action [in shrinking cities] is structurally incomplete: it may be successful in certain areas, but in others it will have little effect or even worsen the problems.
      Oswalt 2008:10

This research focuses on Tokyo's peripheral areas, aiming to evaluate, in a comparative manner, urban design[5] factors affecting liveability at the neighborhood scale in an age of shrinkage, based on the analysis of three case studies. The emphasis is on six liveability factors, both relating to morphology (density/compactness, diversity of uses, walkability, green/water space) and to urban management (*machizukuri*/participation, local character).[6]

The research is limited to the Greater Tokyo Area because it represents an exceptional case within Japan, as it has been developing over a unique trajectory, different from that of other urban centers in the country. Moreover, shrinkage of remote towns and villages has specific drivers—such as poor accessibility, lack of jobs, deindustrialization—which make them incomparable with Tokyo. The term "peripheral areas" refers here to neighborhoods situated between 30 and 60 km from central Tokyo (Nakazawa 2011),[7] so

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5   To define urban design as a discipline, the following considerations shall here suffice. According to urban designer Allan Jacobs (1978:192), in the late 1960s urban design was 'viewed as a subfield of city planning, dealing primarily with the sensuous, aesthetic, and visual qualities of the urban environment.' A few years later, a New York-based urban designer commented: 'A city planner [...] was someone who was primarily concerned with the allocation of resources according to projections of future need. [...] Architects, on the other hand, design buildings. [...] There is a substantial middle ground between these professions, and each has some claim to it, but neither fills it very well. [...] Someone is needed to design the city, not just the buildings.' (Barnett 1974:186). The profession thus gradually integrated in its object-oriented concern also economic, social and managerial aspects. Architect Denise Scott Brown (1990:19) effectively summarized that 'the essence of the urban design approach is that it concentrates more on relations between objects, more on linkages, contexts and in between places, than on the objects themselves. It deals with long time-spans, incremental growth over time, decision-making that is complex and fractionated'. From an academic standpoint, Madanipour (2006) suggests that urban design and city planning are becoming closer together. Well-respected practicing architect and urban designer Kees Christiaanse points out how an urban designer is someone with design skills (usually coming from the field of architecture or landscape architecture), has to comprehend and mediate between a variety of professionals and stakeholders, often does not manage to oversee the completion of his work and is ultimately 'the coordinator of everybody's bad taste' (UrbanAge 2016:no page). On a personal front, the author recalls the closing words by Prof. Harald Bodenschatz—an urban sociologist and planner—for his class on the history of urban design at TU Berlin in 2011, stating that *urban design is not only about form, but it has mainly yo do with it.*

6   The significance and selection criteria of each factor will be explained in Chapter 3.

7   As a comparison, in German cities Müller & Siedentop (2004) distinguish between inner suburbs (within

that both central wards and farther cities were excluded from the study. More specifically, our focus is on inner suburbs, i.e. residential environments at 30/35 km of aerial distance from Tokyo's core; they are ambiguous zones, neither central nor rural, where shrinkage is often already unfolding. Despite housing a large portion of the capital city's population, their liveability in view of an anticipated shrinkage has been decidedly underresearched.

As this work investigates an intermediate scale—the "missing link" (Peter Calthorpe quoted in Ellin 2006:140)—between planning and architecture, national urban policy and building design go beyond its scope, which is to evaluate how urban design factors, physical and nonphysical, influence liveability in peripheral neighborhoods threatened by the downsides of shrinkage (three research questions are explicitly formulated in the introductory section of Chapter 3).

1.4 Significance and contribution

Japan is not the only country that faces a population decrease; it is said that the EU will face one by the early 2020s and China by the 2030s. Thus, the issues of environment and population in Japan will in the short run be equally common in the developed countries, and in the long run for the developing countries as well.

Scott & Ben-Joseph 2011:ix

The significance of the research is threefold: theoretical, methodological and pragmatic. In fact, we believe that a close connection between theory and practice is a most productive approach when dealing with complex and multidisciplinary phenomena.

On a theoretical level, the intended outcome of the research is an assessment of how urban design factors (relating to urban morphology and management) can impact liveability in Tokyo's (shrinking) peripheral areas. This will lead to recommendations for local policy-making, formulation of strategies to improve liveability, and recognition of successful practices to be examined. Since other municipalities in Japan are facing the same issues of Tokyo's peripheral areas, the findings can be generalized and be useful to a number of municipalities nationwide. Moreover, as numerous East Asian cities will be

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20 km from the center), outer suburbs (20-40 km) and rural areas (over 40 km).

confronted, in the near future, with the phenomenon of shrinkage (see Nakazawa 2011), the case studies examined in this research would constitute a reference to look at. This explains the presence, for referential purposes, of a Chinese and a Western case study in Appendix B and C, respectively.

On a methodological level, the intended outcome of the research is a workable liveability framework, that could be customized and used by architects and urban designers to analyze neighborhood liveability in quantitative and qualitative terms. Such method should be flexible enough to be adapted to a variety of contexts with different socio-economic characteristics, instead of being rigidly fixed a priori.

On a pragmatic level, the intended outcome of the research is to empower local *machizukuri* groups–primarily the ones in the analyzed case studies—by offering new data and information about their own neighborhoods, suggesting solutions to existing problems and highlighting potentials to be exploited, from a foreigner's point of view.[8]

1.5 Overview of the study

This thesis consists of seven further chapters, and can be graphically summarized according to Fig. 1. Chapters 2 & 3 provide the necessary background to position the research within a wider context and establish the methodological framework. Chapter 2 presents a literature review of Tokyo's urban development against globalization trends, specifically highlighting the inception and status quo of peripheral areas. The chapter concludes with a focus on the history of urban rules and policies that have been shaping the city's built environment since the early XX century, exposing the clash between top-down development and bottom-up liveability agenda. Chapter 3 starts with the formulation of research questions and proceeds by clarifying the methodology of the study. We introduce a novel and relational definition of liveability, both from an international and a Japanese perspective, before introducing six liveability factors to

8   In respect to his own "foreignness", the author's critical standpoint has been sharpened by a close examination of German architect Bruno Taut's work and vicissitudes in Japan in the early 1930s. As presented in the "West of Japan / East of Europe" research project and traveling exhibition, curated with Prof. Darko Radović, Taut consciously acknowledged his alien status within Japanese culture, trying to use it as a leverage point, and writing books such as "Nippon mit europäischen Augen gesehen" (Japan seen with European eyes) (Taut 2009), or "Houses and people of Japan" (Taut 1937).

analyze each case study. The chapter concludes clarifying the criteria adopted to select three case studies in Tokyo's peripheral areas and two international ones.

Chapters 4, 5 and 6 constitute the main body of the thesis and present analytical investigations. Chapter 4 is dedicated to Kunitachi, a 100-year old city in western Tokyo, which is recognized as a successful model, especially in terms of high-quality urban space, effective *machizukuri* practices and strong identity. Chapter 5 is dedicated to Tama New Town, a publicly-developed, 50-year old city not far from Kunitachi, known for facing serious problems relating to aging, depopulation, decreasing tax revenues and challenging urban space. Chapter 6 is dedicated to Yukarigaoka, a privately-developed, 40-year old city in Chiba Prefecture, known for its innovative management practices thanks to the long-term vision of its developer.

Chapter 7 discusses the results gained from the case-study analysis and explores the findings' implications by elaborating a shrinkage masterplan for Tama New Town. Chapter 8 draws conclusions from a theoretical, methodological and pragmatic point of view.
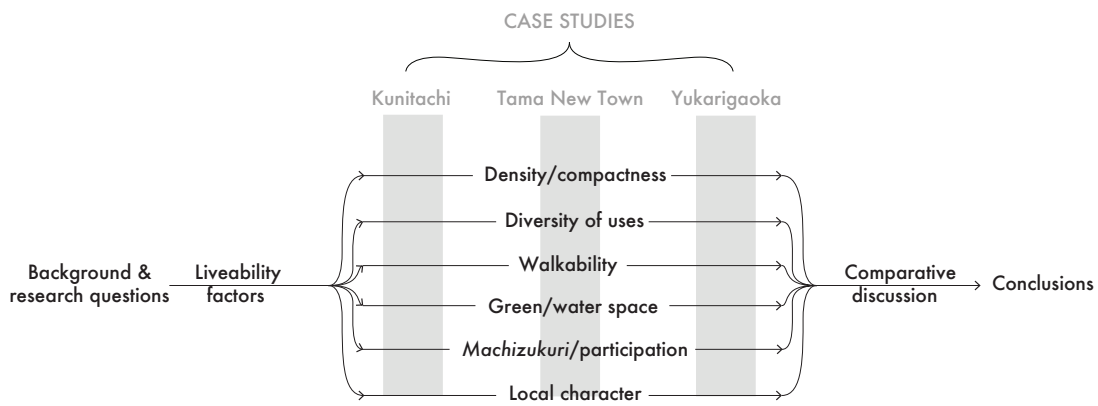
Figure 1: diagram of thesis flow

2 PERIPHERAL AREAS IN CONTEXT

Rather than based in global economic competition, or notions of a creative class, [...] the urge to create liveable cities, neighbourhoods and suburbs in Japan [...] will be driven primarily by the imperative of attracting and retaining population.

Sorensen 2012:216

To understand the peculiarities of Tokyo's peripheral areas as the object of investigation in this research, it is necessary to examine the city's positioning within the framework of globalization. In doing so, we will introduce the patterns and pathways of contemporary global restructuring at play in Tokyo as a global city. In fact, there is a need to underline the processes that produce spaces and the differences among them, rather than simply to compare them on the basis of what they appear to be, considered only as surface manifestations.[1] In this respect, we follow sociologist Pierre Bourdieu's (1996:12) assertion that social space mutates into physical space, or philosopher Henri Lefebvre's (2003:87) 1970s notion of urban space as projection of social relationships. Before introducing our three case studies and delving into morphological quantitative and qualitative analysis of observed phenomena, this chapter presents a chronological review of the global and local socio-economic forces that have been shaping urban space in the Japanese capital.

After examining how global restructuring and neoliberalism impact Tokyo, the chapter proceeds with an historical overview of the city's urban development since the Edo period, highlighting the key concepts of *shitamachi* and *yamanote*, and presenting

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1 'The idea of specificity is logically intelligible only in relation to an encompassing notion of generality against which it is defined. [...] The recognition of context dependency—the need to 'provincialize' urban theory—thus stands in tension with an equally persistent need to understand the historically evolving totality of inter-contextual patterns, developmental pathways and systemic transformations in which such contexts are embedded, whether at national, supranational or worldwide scales.' (Brenner & Schmid 2015:161,164)

the origin of neighborhood units in Japan. A further section discusses the process of intense suburbanization of peripheral areas since the end of WWII, introducing concerns regarding their anticipated shrinkage in the coming decades. The chapter ends with a review of building policies, laws and regulations that have been shaping the morphological appearance of Japanese urban space since the early XX century.

2.1 Embedding Tokyo into the global context

My hypothesis is that beneath the country specifics [...] lie emergent systemic trends shaped by a few very basic dynamics. For that reason, empirical research and conceptual recoding must happen together.

Sassen 2014:7

It is possible to outline three different standpoints regarding the relationship between Tokyo as a Japanese world city and globalization trends (Table 1). First, there are authors who insist on the prominence of local peculiarities over external influences (e.g. Hill & Kim 2000; Fujita & Hill 2003). For them, the right key to correctly interpret Tokyo's position in the global-cities matrix is an understanding of the so-called developmental state and of the Japanese socio-political context. This standpoint could be summarized by stating that
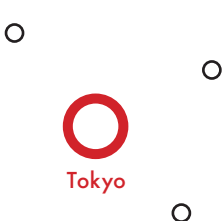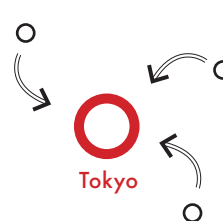
Fujita; Hill & Kim	Waley	Sorensen, Okata & Fujii
Stress on internal factors	Stress on globalization	Stress on developmental state
Tokyo is nested, not global	Role of capital	Relationship state / regions
	Corporations	Mismatch policies / profit
	East-Asian neoliberal urbanism	Sacrificed liveability

Table 1: three interpretations of Tokyo as a global city

Tokyo is "nested" within Japan, and it represents a "state-centered political-bureaucratic" system, in contrast to global cities like New York or London, which represent a "market-centered bourgeois" system (Hill & Kim 2000:173).

Second, a contrasting interpretation of Tokyo's status is presented by Waley (2013), who stresses the increasing importance of global capital in shaping ever more neoliberal policies in the Japanese capital. He suggests a thorough reflexion on global restructuring and on the role that corporations play, especially when considering their strong relationship with governmental bodies. As a methodological and operational framework, Waley proposes the notion of "East Asian neoliberal urbanism", to avoid treating Tokyo as an isolate, exceptional case, and to provide common ground with other East Asian cities like Shanghai, Seoul or Singapore.

A third and last point of view can be seen as a compromise between the former two. Sorensen, Okata & Fujii (2010) seem, at the same time, to borrow from and to criticize both previous interpretations. Together with Saito (2003), they agree that the notion of developmental state is crucial when contextualizing Tokyo. Moreover, in accordance with Brenner (2004), neoliberalism is not unilaterally disempowering the national state, but, quite on the contrary, the rescaling between national and regional levels is confirming the leading intervention of the state into policies aiming at capital accumulation.[2]

It has been claimed, most notably by Fujita & Hill (2003), that Tokyo represents a special global city, distinct from London or New York, as it is mainly Japanese capital that flows through it. It is also widely argued that the peculiar role and strength of the Japanese state calls for a special categorization of Tokyo within the panorama of neoliberal urbanism. While we do not believe that granting a unique role to Tokyo would benefit our investigation, the notion of "Capitalist Developmental State" (CDS), is nonetheless of prime importance, and deserves here to be introduced.

CDS is characterized by five main traits (Saito 2003). First, a blurry boundary between private and public interests, manifested in the many (partly) publicly-owned corporations, with clear profitability intents. Second, a strong role played by state

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2   '[T]he contemporary period has seen the proliferation of new geographies of urban governance [...]. [A]n intensely variegated, polarised, multiscalar and relatively uncoordinated landscape of territorial and networked governance has emerged through [...] the establishment of a 'new metropolitan mainstream' in which local and regional governments increasingly prioritize economic growth, property-led investment in flagship mega-projects, urban renewal and gentrification over job creation, social redistribution, equity and participation.' (Brenner & Schmid 2015:153)

ideology, highlighting the importance of a shared national interest in spite of individual ones. Third, government legitimacy through the realization of development projects to foster economic growth. Fourth, a tendency toward state intervention in market regulation. Lastly, the creation of powerful bureaucrats able to craft policies, often in accordance with the Liberal Democratic Party (LDP).[3] Let us now compare Japanese CDS with typical traits of global neoliberalism. This will reveal a fundamental correspondence of intents and operative mechanisms between the two.

Fitting in a neoliberal agenda

According to American urban theorist Neil Brenner, there are three typical traits of contemporary global neoliberalism: 1) a global economic integration, i.e. the intertwining of economic interests—often embodied in corporations—on a worldwide scale; 2) urban and regional resurgence, i.e. the increased importance and role of city-regions and urban areas against the national state; 3) the consolidation of new institutions at the supranational level, like the International Monetary Fund or the World Bank. On the one hand, global restructuring is producing equalization among locations and places, due to centralizing forces of global capital, resulting in the homogenization of the built environment (e.g. similar-looking central business districts (CBD) around the world). On the other hand, an opposite process unfolds, defined by differentiation and competition among places, driven by the continued strive toward local specificity, to gain advantage over competitors. As we will discuss later, competition to attract and retain residents is an important force at play in Tokyo's peripheral areas, and the challenge will be to move from a win-lose competitive model, to a cooperative win-win one.

In Brenner's work we encounter a methodological framework composed of three spatio-temporal levels: the abstract, the meso, and the concrete level. The abstract level is used to theoretically generalize the notion of neoliberalism on a global scale on a long-term perspective. The meso level defines medium-term trends, happening on a supranational scale. The concrete level defines empirical phenomena—happening nationally, regionally and locally—on a short-term period. Sociologist Saskia Sassen (2014) uses similar categories to analyze local phenomena against global trends. In contrast to Brenner, her focus lies in documenting concrete cases from an inductive perspective, identifying what

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3   Also called Jimintō (自民党), it is the conservative party constantly in power since 1955, with the exception of the periods between 1993-94 and 2009-2012.

she calls "subterranean trends": worldwide forces, that are at play in different contexts, but generate similar outcomes "on the surface". Subterranean trends are thus defined as dynamics that produce local outcomes. Sassen, one of the founders of the global-city theory, defines the contemporary world order as "advanced capitalism", happening since the 1980s. Its defining traits are the global outsourcing to developing countries as a means of increasing production; the creation of global cities with highly-defined economic specialization, interconnected through a novel concept of "centrality" based on networks and not on geographical proximity; the primacy of finance in the form of complex instruments— such as derivatives—over traditional economics and politics; the shrinking of the middle class and the progressive impoverishment of ever larger social strata.

Since the mid-1980s a new paradigm in the world order has emerged, guided by the idea that a free market would produce most desirable outcomes for society, without any intervention by public institutions. After decades of neoliberal experimentation this claim has proven not be true. On the one hand, because (economic) crises are becoming more and more systemic on a worldwide base; on the other hand, because, contradictorily, neoliberalism has been supported by political will and national policies, coalescing into "actually existing neoliberalism" (Peck *et al.* 2009:51), with different outcomes depending on the specific context.

Neoliberalism should thus not be seen as a linear replacement of the Keynesian welfare state, but has to be interpreted as an uneven process, which teams with national states and differs according to the characteristics of each location. These neoliberal trends happening in different areas of the globe are "path-dependent", i.e. they follow similar logics but can have different results and do not necessarily lead toward convergence. Waley (2013:45), in this respect, effectively sums up the salient traits of neoliberal urbanism as:

> *favoring of an entrepreneurial urban governance; policies that promote the involvement of the private sector in urban projects [...]. Neoliberal urban regulation could be expected to privilege property ownership [...] and favor urban restructuring projects through looser regulation. [...] Processes of marketization, commodification, and privatization are the hallmark of neoliberal urbanism, and one would reasonably expect them to lead to increasingly privatized city centers, greater involvement of business in urban management, and a greater extent of vertical construction.*

In this context, cities and urban regions have assumed an increasing importance in the eye of governments, since it is at the concrete level that policies can be most effectively crafted and implemented. As a result, cities have become battlegrounds for the devolution of responsibilities from the national state to regional governments, for the promotion of economic growth through urban redevelopment and for stronger inter-local competition. Neoliberal ideologies are manifesting themselves in cities, and the resulting (de-/sub-) urbanization patterns are thus expressions of neoliberal urbanism.

From this point of view, it would be useless to start an analysis of Tokyo by attempting to define the notion of "Japanese city", since this would miss the processes that shape the capital as a global city. Both Brenner[4] and Sassen agree that a dual approach, one that is deductive (from the abstract to the concrete) and at the same time inductive (from the concrete to the abstract) is needed when dealing with complex issues such as urbanization, policy-making or liveability. Therefore, departing from the abstract concept of global neoliberalism we will now turn to the concrete realm of Tokyo's historical urban development.

2.2 Tokyo's urban development from the Edo period to WWII

Some of the traditional techniques for building middle- and low-ranking warrior residencies seem to have been handed down to the suburban residential districts constructed all over the western part of Tokyo in the 1920s.

Jinnai 1995:60

As current liveability issues and the status of Tokyo as a global city do not stem from a tabula rasa, but are socio-historical products, the following contextualization will clarify how Tokyo's urban development relates to local lifestyles and housing preferences.

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4   '[A] generic model of territorial governance has [not] emerged. [I]ndividualizing and variation-finding comparisons—which generally emphasize contextual specificity, institutional diversity, path dependency, and the divergence of evolutionary pathways—are as salient as ever under contemporary geoeconomic conditions.' (Brenner 2004:18)

The Edo period

Since the beginning of the Edo period (1603-1868), when Tokugawa Ieyasu established the ruling center of his shogunate in Edo (the former name of Tokyo)—even if the official imperial capital remained Kyoto—the city's importance within Japan has been steadily increasing. During this period, Edo functioned as de facto capital and developed the bureaucratic system that would enable it to become Japan's political and administrative center. At the same time, Edo turned, from a medium-sized town like many others, into one of the most populous cities in the world, developing the characteristic *shitamachi* area (see below).

When Ieyasu selected Edo as the site where to base his shogunate, he chose an area characterized by little flatland flanked by gentle hills on the west and marshland leading to the ocean on the east. Edo grew rapidly thanks to the practice of *sankin kotai*, or so-called alternate residence (Sorensen 2004). The *daimyō*[5] active within the Tokugawa shogunate were requested to spend one every two or three years in Edo. This had a twofold result: on the one hand, by embarking on such travels and extra expenses the *daimyō* could not concentrate on accumulating wealth and power that could challenge the shogun. On the other hand, this system triggered the expansion and urbanization of Edo. In fact, samurai and commoners came to the city as well, given the growing demand for goods and services triggered by the residing *daimyō*.

Shitamachi & yamanote

Edo in the Tokugawa period developed into two topographically, socially and symbolically different areas: *shitamachi* and *yamanote* (Fig. 2). *Shitamachi* (下町, lit. "low-lying town") occupied almost ⅓ of Edo. It was the area lying east of the Edo Castle, extending toward the Sumida River. Its topography was characterized by flatland which had been reclaimed from preexisting swamps, given the proximity to Tokyo Bay and the river. It was mainly inhabited by townspeople and had a distinctive urban vitality, granted by the fine-grained mix of different functions. It was (and largely still is) organized into an urban grid—oriented south-west, in the direction of the Edo Castle and of Mount Fuji—composed of blocks, called *chō* (町), measuring 60 x 60 *ken*, roughly 109 x 109 m (1,2 ha) (Sorensen 2004). Such a city grid was of Chinese influence, previously employed most

5   Feudal lords who were directly subordinated to the shogun.
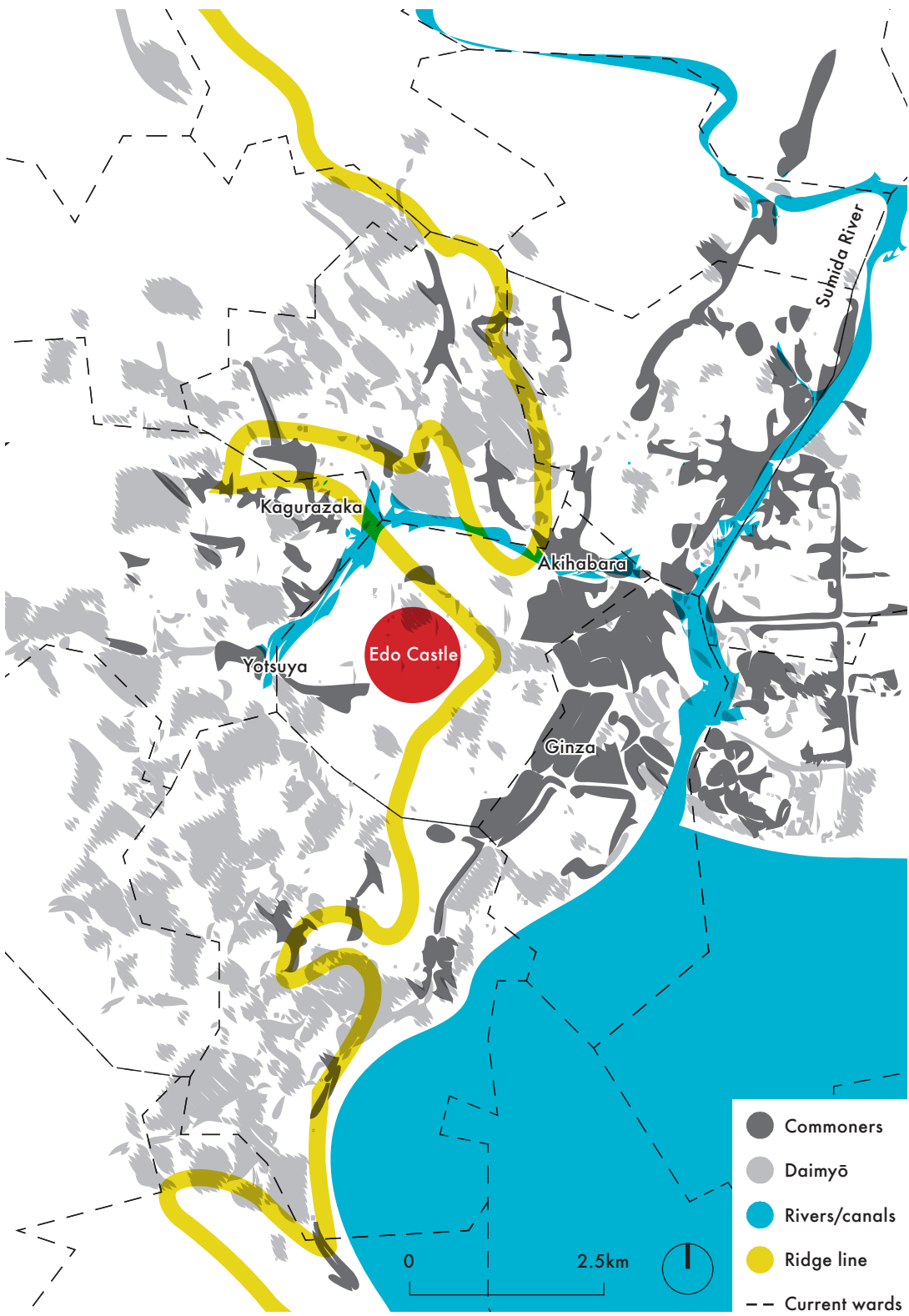
Figure 2: schematic map of *shitamachi* and *yamanote* areas in Edo

notably in Kyoto. *Shitamachi* was populated by a variety of peoples, such as shop owners and artisans of different trades.

Its larger counterpart, *yamanote* (山の手), occupying the western part of Edo and extending toward the Musashino Plateau, became the verdant upper-class area. In contrast to *shitamachi*, it was mainly a residential area, with virtually no mix of uses. *Yamanote*'s topography was characterized by gentle hills that were to play a pivotal role in its development. In fact, since a neat urban grid could not be established, the morphology of the plots resulted from the interplay between the terrain and the access roads that usually followed a ridgeline. *Yamanote* was occupied by *daimyō*, *hatamoto* and samurai. *Daimyō* had the largest and most prestigious estates and could select the site of their residences; they also built for themselves second and third residences further west of Edo Castle, in even leafier environs. They tended to select sites along ridge roads, where the residences could benefit from a south-oriented garden (Jinnai 1994). The *hatamoto*, shogun vassals, had smaller residences and plots, either located close to *daimyō* residences or organized in rare grids wherever this was possible, like in Bancho, on the west side of Edo Castle. Samurai residences were the smallest and most numerous. Ideally, they were distributed along a grid of 40 x 20 *ken*, but, more often than not, they had to be squeezed in whichever available plot was left, forming a patchwork of planned and unplanned city fabric.

Since many of the morphological characteristics that developed in *shitamachi* during the Edo period derived from a preexisting Kyoto model, it is useful here to briefly outline how Kyoto's urban fabric was organized, before highlighting the characteristics of the Japanese neighborhood and district unit.

Neighborhood and district unit in Japan

Before Kyoto became the capital of Japan—from the late 8th century until the Meiji Restoration—a law and administrative system of Chinese Confucian origin, mostly enforced between the VII and IX century, regulated the division of land. It was the *ritsuryō*. According to it, the country was first divided into provinces, or *kuni* (国). These were composed of districts, *kun* (郡), formed by 2-20 neighborhoods, or *ri* (里). Neighborhoods grouped 50 houses. This subdivision, called *kokugunrisei* (国郡里制), was later amended with the *gōrisei* (郷里制), introducing townships, *gō* (郷), as an intermediate subdivision between districts and neighborhoods. After this amendment, just 10-25 houses formed

one neighborhood. The *ritsuryō*, probably due to its rigidity, was short lived: when the capital moved from Nara to Kyoto in the later 8th century, the system was practically no longer in use.

Kyoto featured a north-south city grid of Chinese fashion, with blocks measuring 120 x 120 m (Fig. 3). Each city block amounted thus to ca. 1,4 ha and was split into 32 lots (4 east-west and 8 north-south divisions) with a length-width ratio of 1:2 and an area of ca. 450 sq.m each. At the beginning, the blocks (町 - *chō*), were closed off by walls and, as such, did not face the streets directly. This layout was to change as the shogunate located to Kamakura (1185-1333), starting to lose its grip over more distant locations like Kyoto. Citizens had thus the opportunity to gradually remove the enclosing walls and interact with street-life, e.g. engaging in trade and turning the front of their houses into shopfronts (Fig. 4A).[6] Around the same time, city blocks started to be subdivided diagonally into four triangular individual *chō*, and their center was left empty and shared among the neighbors (Fig. 4B). In a later stage, two *chō* facing each other and separated by a street, would be joined, thus forming a new *chō*, half the size of the original grid-based *chō*, rotated 45 degrees (Fig. 4C) (Nitschke 2003).
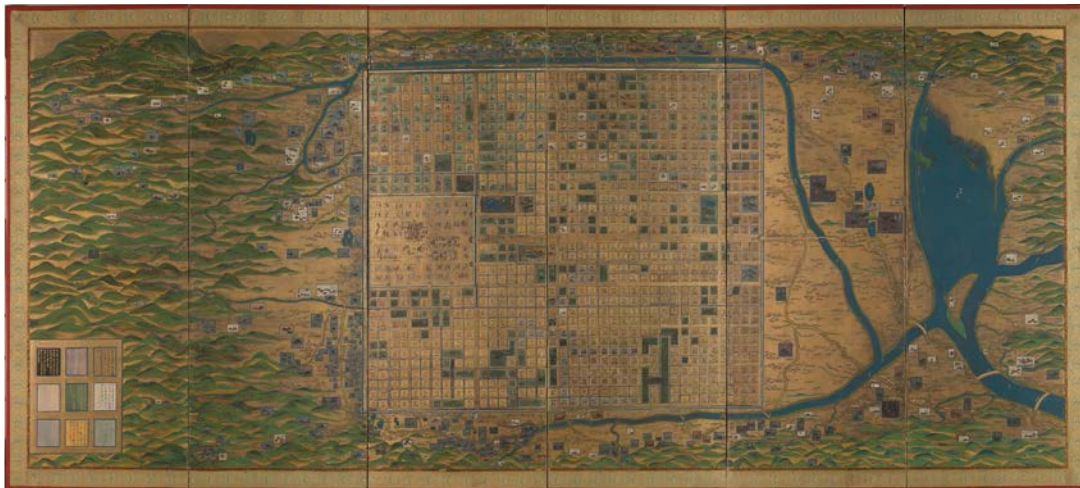
Figure 3: XVII century manuscript map of Kyoto, mounted on a six-panel screen.
The map shows Kyoto as it looked in approximately the X/XI century

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6   Causing the birth of the *machiya* (町屋/町家), the elongated wooden house combining a family-run commercial activity marked by a narrow shopfront, often featuring inner courtyards.
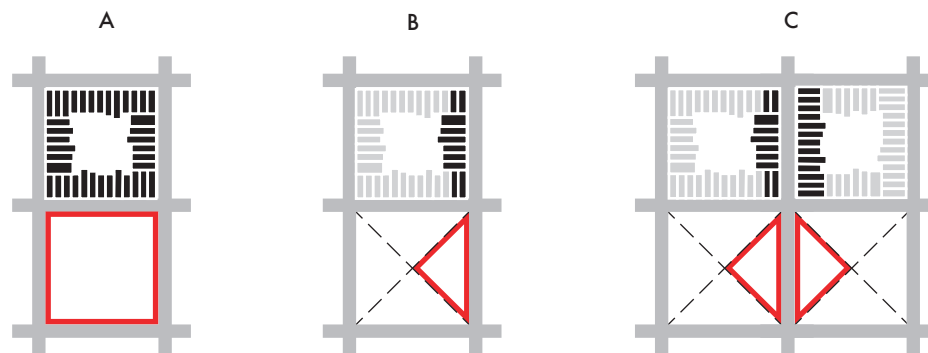
Figure 4: formation and evolution of neighborhoods in Kyoto

As we have seen, neighborhoods in Edo's *shitamachi* were organized into an urban grid too, oriented south-west and composed of *chō* measuring roughly 109 x 109 m (1,2 ha), being thus slightly smaller than their Kyoto counterpart. Each *chō* was subdivided into 12 sections measuring 10 x 30 *ken* (1'000 sq.m.) in the case of *hatamoto* residences or in rural areas. In *shitamachi*, though, the most common subdivision was carried-out taking into account a 20 *ken* maximum lot depth. In this way, each *chō* came to be divided into 3 strips with lot sizes comparable to the ones found in Kyoto, leaving the center available for shared toilets, the well, garbage collection, the local shrine, etc.[7] (Sorensen 2004). *Shitamachi* neighborhoods were populated by a variety of peoples, such as shop owners and artisans grouped according to the type of trade, following similar patterns found in Europe in the Middle Ages (e.g. guilds) or in China. Like in Kyoto, the residential lots were deeper than wide, since the amount of tax to be paid on the property was calculated according to the facade's length along the street. These historical antecedents stretch their influence to the current "nested" address system in Japan. In fact, any given location is specified by the town, *shi* (市), in which it lies, followed by the district name and by a three-digit code. The first digit represents the neighborhood (*chō*), the second the block (the former *kun* in the *ritsuryō* system), the third the building number.

A predecessor of *shitamachi* neighborhood administration can be found in the structure of rural villages across Japan. Villages were relatively autonomous, self-administered entities, as long as they did not question the shogunate's rule of law and paid

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7   Such shared central space, under the pressure of overcrowdedness and increased land prices, would gradually disappear during the 18th century.

their tributes. Rural communities were responsible for the construction and maintenance of their own infrastructure, e.g. roads, canals, woodland. Similarly, urban neighborhoods in Japan were given extensive responsibility. In the Edo period, they had to take care of the 'maintenance of streets, drainage of ditches and canals, wells, garbage disposal, manning of neighborhood watch houses, fire patrol, local relief for the poor, and the organization of local festivals.' (Sorensen 2006:112). As the national state became more organized and complex during the west-oriented, techno-optimist Meiji period, neighborhoods were increasingly seen as a valuable administrative system to ease the government's burden in multiple areas, such as 'garbage-collection points and recycling activities, sanitation and insecticide campaigns, street cleaning, installation and maintenance of streetlights, night watches against fire and crime, local information dissemination through circulating notice boards, shrine support and local festival organization, and providing small gifts to local families celebrating a wedding or mourning a death.' (ivi:114) In the XX century, neighborhood associations were crucial for the well-functioning of Japanese cities, and often mirrored the government's ideology. On the one hand, they represented a reliable local welfare system, e.g. playing an important organizational role during and after the 1923 Great Kantō Earthquake. On the other hand, they often acted as conservative bodies representing the political agenda of the elite in power. Their importance kept growing in the 1930s,[8] especially in connection with a nationalist agenda that led to WWII, and they tended to become a means of keeping social order and controlling the population. After the war, neighborhood organizations, or *jichikai*, were banned, since there was a widespread belief that they had been instrumental in fostering nationalism on behalf of the government. After the American occupation, though, *jichikai* gradually regained (part of) the influence they had before the war, even though their ideological basis shifted from nationalist to "1955-system"-oriented[9] (Brasor & Tsubuku 2015). Nowadays, having and nurturing good relationships with neighbors is still seen as an important goal of every household, especially in view of inter-neighbor self-help, should a major disaster happen (東京都総務局総合防災部防災菅理慢 2015).

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8   'By the 1930s they had spread to cities throughout the country, with virtually every urban area divided into neighborhoods of 100 to 200 families.' (Sorensen 2006:114)

9   Where the LDP was de facto the only viable ruling political party. See further section.

Meiji and Taisho periods

With the end of the shogunate and the spark of the Meiji Restoration, Edo was renamed Tokyo (東京, lit."eastern capital") and in 1888 officially became a city (市 - *shi*) consisting of 15 wards (区 - *ku*) (Hein & Pellettier 2006). During the Meiji period (1868-1912) Tokyo underwent a wave of modernization in multiple aspects, from administration to urban regulation, from physical appearance to societal organization. Japanese planners embarked on international visits—to Europe (Great Britain, France and Germany) and the United States—to get first-hand experience of the latest western technologies and trends (Sorensen 2004). They were thus confronted with a new vocabulary of urban design, discovering the implementation and use of squares, boulevards (Paris had just been remodeled by Baron Haussmann), parks and public amenities.

The Taisho period (1912-1926) was marked, in 1923, by the Great Kantō Earthquake, causing extensive damage and large population loss. Seeing the disaster as a chance, Home Minister Shinpei Gotō[10] (see also 4.1), former Mayor of Tokyo, came to propose the ambitious General Plan for the Reconstruction of the Imperial Capital (Fig. 5). The plan would have deeply transformed the city, but, due to its enormous cost, was heavily scaled down, causing a major blow to Gotō's political career. Nevertheless, its partial implementation led to the 'construction of several new trunk roads, two new bridges over the Sumida River and more than 50 new parks.' (Koolhaas & Obrist 2011:60)

After the shock of the earthquake, the city continued its modernization. During the early Showa period (1923-1989), in 1932, it added 20 new wards to its boundaries (it was only during WWII that the prefecture and the city of Tokyo merged into one entity, ruled by a metropolitan government). Tokyo's growth boomed in the 1920s (7.5 million inhabitants in 1920), and private railway companies started investing in new suburban lines and developed housing projects around stations, usually targeting the middle class (Okata 2010). From this point of view, it can be said that railway lines played a pivotal

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10   Gotō, a physician by training, had spent some time in Germany and had been the head of civilian affairs in Taiwan during the Japanese occupation after 1895. He is to be credited for the modernization of Taipei's infrastructure and for certain urban design features, such as the implementation of tree-lined boulevards in the city. Gotō also served as Mayor of Tokyo City in 1920, and as Home Minister in 1923, Among his legacies are the Tokyo Institute for Municipal Research, founded in 1922 and modeled after the New York Bureau of Municipal Research. Gotō was inspired by historian and political scientist Charles Beard, a member of the New York Bureau, and even invited him to Tokyo for consulting purposes during his tenure as mayor. Koolhaas & Obrist (2011) have exposed how Gotō's failed plan was a major source of inspiration and encouragement for Japanese Metabolist architects and their circle, e.g. in regard to Kenzo Tange's postwar reconstruction plan for Tokyo. For a detailed account of Gotō's vicissitudes, see Schencking 2013.

role in the urbanization of Tokyo's peripheral areas.

The garden city movement and British planner Ebenezer Howard's ideas set a reference for the planning of new towns in the periphery, supposed to be low-density, autonomous entities surrounded by greenbelts. The consistency of garden cities like
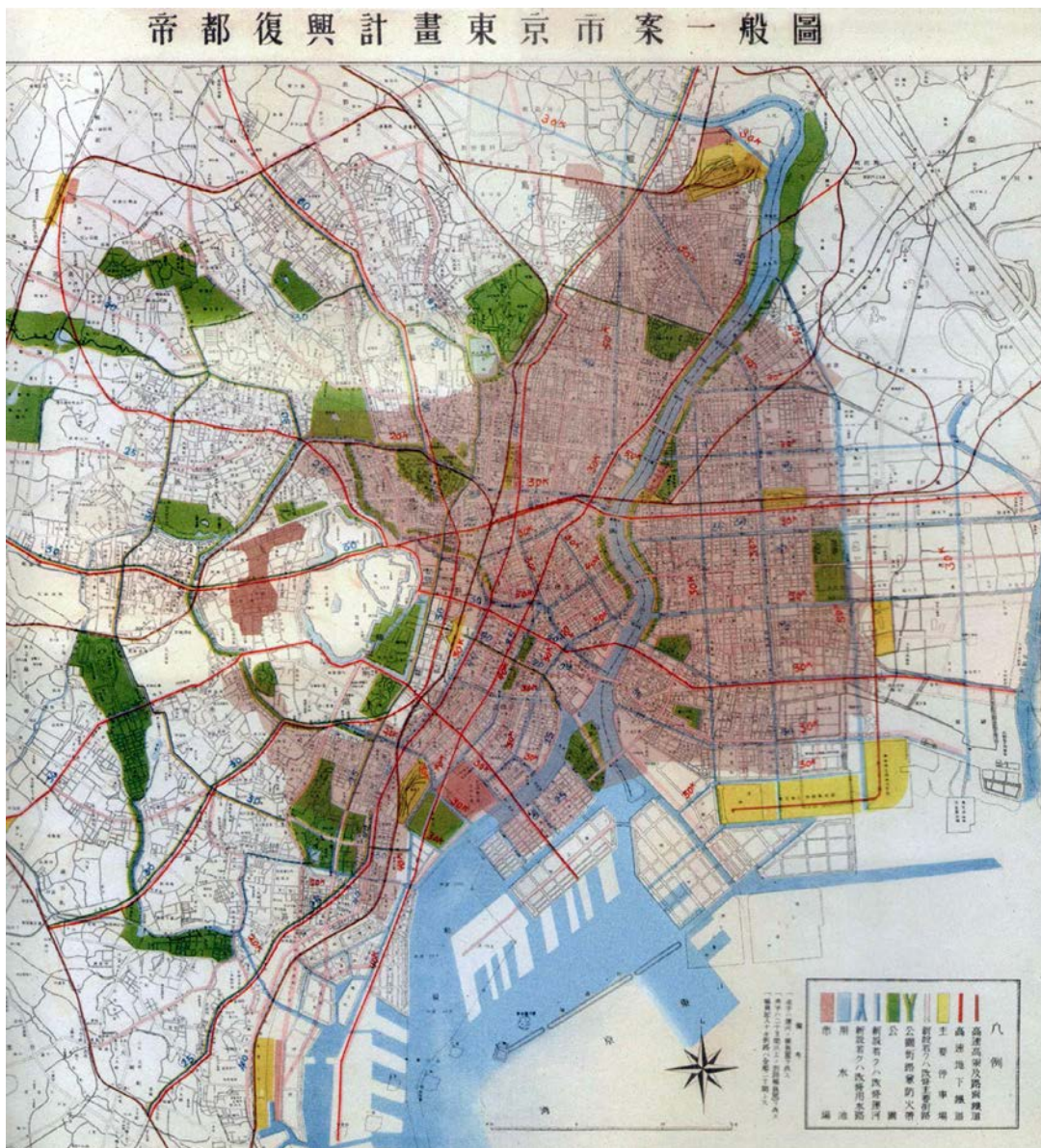
Figure 5: General Plan for the Reconstruction of the Imperial Capital by Gotō and his planners, 1923. The red overlay indicates areas destroyed by fire after the earthquake. Yellow indicates stations; green indicates parks and green roads; pink, red and purple lines indicate different type of roads; blue indicates water and waterways

Letchworth (1903) or Welwyn (1912) could not be achieved, as proper greenbelts could not be implemented as speculation steered development (Sorensen 2001b). Nonetheless, towns such as Kunitachi (see Chapter 4) or Den'en-Chofu testify clear western influences. It would be a mistake, though, to assume that the appeal of leafy environments appeared only as a result of contact with foreign ideas, given the historical precedent of *yamanote* residential environs.

By outlining Edo's urban development and examining key concepts such as *shitamachi*, *yamanote* and the Japanese neighborhood, we have laid the foundations for the understanding of modern Tokyo. The duality between greener living in the periphery and vibrant urbanity in the city core, and the morphological evolution of *chō* as a result of changing societal circumstances, will resonate with the following section.

2.3 Tokyo's urban development from the 1950s toward the 2020s

Japan is facing a big problem with rapid population decline. So, under these circumstances, I don't think Tokyo will continue to develop as it is today.
    Fumihiko Maki quoted in Logan 2018:no page

The liveability issues examined in this research are a consequence of socio-economic trends happening since the second half of the XX century. After an era of rapid (sub) urbanization, the Japanese capital has been shaped by the burst of the real-estate bubble in the early 1990s, by a sluggish economic recovery and by anticipated population shrinkage, as this section will clarify.

After WWII, when, under massive US bombings, Tokyo was subject to extensive destruction that annihilated large portions of its urban area, reconstruction became a government priority, supported by the client-state system under the American occupation. An alliance between the LDP, the bureaucratic establishment and big industry created an unchallenged paradigm under which economic recovery, growth and urban development unfolded at great speed.[11] This power structure came to be known as the "1955 system",

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11   'In 1950, 38 percent of Japan's total population lived in cities; by 1970, this figure had risen to 72 percent.'
      (Okamoto 1997:79)

and the 1950s and '60s represented an economic miracle that was about to make Japan the second largest world economy in 1978, hosting the 1964 Olympic Games in Tokyo and the 1970 World Exposition in Osaka. Tokyo, like many other cities and even rural areas, experienced a steep increase in publicly-funded infrastructure projects, e.g. land-reclamation, highways and flyovers, river-embankments. During this period and throughout the 1970s, the Japan Housing Corporation,[12] to tackle housing-shortage issues,[13] started building mid- and high-rise social housing compounds—*danchi* (団地)— in suburban areas, where land was available and affordable. In some cases, development projects took the form of entire new towns. In this respect, one of the most prominent examples in Tokyo, and the largest new town ever in Japan, is Tama New Town (see Chapter 5), located in the western suburbs. The 1970s also witnessed the birth of a new inner-city residential typology, the *manshon*, a Japanese counterpart of western condominiums. On the one hand, *manshon* proved to be popular because of their central location and relatively high quality, but, on the other hand, they caused tensions and conflict with neighbors in regard to compromised sunlight exposure and views (Sorensen *et al.* 2010a).

Beginning in the 1980s the influence of global restructuring started to manifest itself in the Japanese capital city, which became more and more entangled in global finance, facing an increasing importance of corporations and financial services firms. This shift caused a stronger demand of office space in central wards, led by surplus capital invested in the property market, triggering numerous redevelopment projects which gradually replaced large amounts of residential areas.[14] Central Tokyo was thus losing residents and shifting into a predominantly business-oriented area, dominated by ever taller and larger buildings draining away public life from the streets on weekends and at nighttime. Many salarymen,[15] in fact, lived in peripheral areas, commuting to the center to their workplaces. At the same time, large land-reclamation projects were being carried-out

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12   Established in 1955. Since 2004 called Urban Renaissance Agency or UR都市機構, now a semi-public entity.

13   Tokyo's population grew 'from about 3.5 million people in 1945 to more than 11 million by 1970.' (Johnston 2015)

14   The amount of office space built in 1988 was three times the one built in 1986 and the number of projects with more than 25'000 sq.m of floor space and higher than 45 m increased by two and a half times in 1987-89 compared to 1975-77 (Saito 2003:11).

15   The archetypal Japanese white-collar male employee, working in a corporation.

in Tokyo Bay, while brownfields became available due to the shifting to a service-based economy. A parallel effect of such globalization pressure was the skyrocketing of land prices, sustained by real-estate speculation.

A paradigm shift happened when the inflated real-estate bubble burst in the early 1990s. Suddenly, the seemingly unstoppable rise of land prices and take-over of office space retreated. The following decade—dubbed the "lost decade"—witnessing poor economic performance, was characterized by a renewed interest in inner-city living, since this had suddenly become more affordable. The ideal residential solution of a detached house with a garden in the periphery started to be challenged by more central locations, minimizing long and stressful commuting (Doteuchi 2003). Moreover, since a sustained population increase in central wards would rejuvenate commercial businesses, outdoor livelihood and security, local governments started to actively promote inner-city living. As a result, construction and further development did not stop, but simply adjusted to the new paradigm. This was in line with Prime Minister Koizumi's (2001-2006) push for neoliberal economic reforms, such as the privatization of the postal service.

Since 2005 land prices in Tokyo have started to rise again, matched by a growing population,[16] even though, as we will see later, depopulation trends will soon appear. The centralization of Japan around its capital city seems an unrivaled model, despite long-standing and continually renewed cries for more decentralization (be it political, demographic, economic or cultural), especially to the Kansai region headed by Osaka (Johnston 2015). Despite the serious consequences caused by the earthquake and tsunami in Tohoku in March 2011, Tokyo remained relatively unaffected by the event. Moreover, building on the rhetoric of reconstruction and recovery, in 2013 the city won its bid to host the 2020 Olympic and Paralympic Games, thus securing an opportunity for further (re-)developments, supposed to revamp the economy and fuel the construction industry. As a result, not only new office towers continue to be built, supposed to reach a peak by the Olympics' opening,[17] but, following a deja-vu script, residential skyscrapers are on

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16   The population in Tokyo metropolitan area (including 23 wards and 39 municipalities to the west) topped 13 millions in 2009, reaching 13,2 millions in 2013. (Tokyo Metropolitan Government 2016)

17   'There are 51 buildings of at least 20 stories expected to be completed in Tokyo's 23 wards by 2020 [...]. Of those buildings, 80 percent are in the five central Tokyo wards of Chiyoda, Chuo, Minato, Shinjuku and Shibuya. [...] This would create a total of 2.85 million square meters of office space, or the equivalent of 61 Tokyo Domes. In response, some analysts are starting to worry about oversupply of office space. People in the real estate business are talking about the "2019 problem," in which there could be a glut of old office space when the new developments reach their peak the year before the Olympics. Demand from

the rise too. This phenomenon is what Nozawa (2017) has called a "society with excessive residential supply".

Concerns about a near-future steep depopulation, especially in suburban areas—some authors even talk about "deurbanization" (Onishi 2011:27)—and about the ecological sustainability of the city seem at odds with the abovementioned attempts to revitalize economic performance through new construction projects. Therefore, after a summary of the stages which Tokyo's urban development went through (Table 2), we will turn our attention toward anticipated liveability issues in the region.

Period	Urban morphological phase	Sociocultural phase
1600s-1870s	City of greenery & water	Separation aristocrats / commoners
1870s-1920s	Westernification	Modernization
1920s-1940s	First new towns (garden cities)	Nationalism vs. international outlook
1940-1945	Urban policies to support ongoing conflict	War & destruction
1945-1970s	Suburbanization & new towns (modernist)	Reconstruction & economic development
1970s-1980s	Suburbanization & central developments	Globalization & environmental concerns
1980s-2000s	Deregulation & land use intensification	Profit vs. *machizukuri*
2000s-2020s	High-rise & re-centralization	Aging society / liveability issues
2020s onwards	De-urbanization	Depopulation

Table 2: chronological summary of residential urban development in Tokyo

Evolution and future shrinkage of Tokyo's peripheral areas

Just as every tree is never without shoots at its foot, so towns are never without suburbs.
   Braudel 1992:503

The suburbanization of Tokyo has had its specific driving forces, different from its American counterpart, since it unfolded on the premises of specific socio-economic characteristics.[18] This process did not start, as some literature claims, in the 1960s, but

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domestic companies will probably not cover supply. "Investment from around the world will be needed to make areas like the environs of Tokyo Station, Toranomon and around Shinagawa Station" a base for businesses.' (The Yomiuri Shimbun 2016: no page)

18   'One of the distinctive features of Japanese suburban development is the rarity of the planned, exclusive, quality residential area. The better residential areas in Japanese cities are often the result of haphazard sprawl into areas of small farms surrounding the city. The comprehensively planned suburban residential development never emerged as a dominant form in Japan as it did in Anglo-American cities.' (Sorensen 2004:39)

was already on its way before WWII, with the foundation of new towns like Kunitachi (see Chapter 4) or Den'en-Chofu. The 1960s witnessed, nonetheless, the extensive spread of suburban living. Because of increasing land-prices, housing shortage and environmental degradation, the generation born in the 1930s, coming to Tokyo to study and work, predominantly settled in areas situated between 10 and 20 km from the center (assumed to be Tokyo Station), e.g along the JR Chūō Line or the coast of Kanagawa Prefecture.

The following generation, born in the 1950s and 1960s and getting married in the 1980s, aspiring to a detached house with a garden, came to populate areas located between 30 and 50 km from the center, along main train lines (Oe 2005). As analyzed by Okamoto (1997), in a suburban family of the period, the father would usually be a salaryman, spending long hours commuting to and from his workplace,[19] while his wife would either be a homemaker or would work (part-time) close to their house. Such a family-life pattern would often cause a weakening of relationships with neighbors and among family members (Okamoto 1997). The suburbanization of Tokyo was dictated by the impossibility of finding affordable housing close to the city center, and not by unattractiveness or decay of central locations, even though the 1960s environmental crisis was of great concern. In fact, the appeal of suburban living has deep roots within the Japanese people, which seems due to the resemblance between a detached house surrounded by a garden and a samurai residence in verdant *yamanote*, the high city (Sorensen 2004).

The generation born in the 1980s, because of the decreased land prices following the burst of the property bubble in the early 1990s, and because of the perceived burden and stress linked to commuting, seems to prefer living in central wards, exacerbating the current depopulation trend of peripheral areas.[20] In fact, as investigated by many scholars (e.g. Fujii 2008, Oe 2005), due to the general population decline in Japan, caused by aging society, low fertility-rates and low inflow of immigration, even Tokyo is starting to face population loss in its peripheral areas.

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19   Full-time employees of large corporations usually receive a reimbursement for their travel expenses.

20   '[T]he last census conducted in 2015 showed that the three prefectures surrounding Tokyo — Kanagawa, Saitama and Chiba — all lost population since the previous census in 2010 with regard to people in their 20s and 30s. In Tokyo, however, there was an increase of 356,000 people, with the bulk of that increase, 327,000, in the 23 central wards. This statistic becomes even more significant when you check the shift over the past 10 years. The 19- to 34-year-old population of the 23 wards increased by 695,000, while the total decrease of this demographic in all other prefecture that lost population was 949,000.' (Brasor & Tsubuku 2017)

It has to be noted though, that suburbs are not to be seen as a homogeneous body showing univocal trends (Fujii 2008:20). Their conditions are rather diverse, depending on their location, the train lines that serve them, etc. Nonetheless they will, with varying degree of intensity, experience the downsides of shrinkage, and will have to cope with diminished tax revenues and increasing cost of public services and transportation. This could lead to the progressive degradation of peripheral areas, to their abandonment or to the ghettoization of the elderly living there. Some scholars argue, therefore, that a growth-oriented model should be turned into a "decline paradigm" (Müller & Siedentop 2004) and that an era of "deurbanization" (Onishi 2011:27) is about to start. Moreover, even though Tokyo and its catchment area are continuing to attract residents, its growth is expected to halt and reverse after 2025 (河合 2017:75-9). Due to the massive inflow of the generation born in the 1930s and 1940s, its aging will be dramatic (Oe 2005, Masuda 2015).

Given the great heterogeneity of Tokyo's peripheral areas, it is worth examining whether the distance from the city center is directly proportional to the degree of anticipated shrinkage of suburban neighborhoods. Simulations by the Ministry of Land, Infrastructure and Transport (国土交通省国土政策局 2017) illustrate the spatial distribution of future shrinkage in the Greater Tokyo Area in the years 2025 and 2050 (Fig. 6).

The prediction for 2025 shows that the majority of residential areas within 40 km from the city center will moderately shrink up to 30%, compared to 2010 levels. The second largest group are places which will face population growth, while a small portion of areas shrinking more than 30% is to be found in farther locations. In spatial terms, the map resembles a sponge tissue: central wards appear to either grow or moderately shrink "in block", according to their administrative borders. This may be due to specific administrative reasons and urban/economic policies. Municipalities between 20 and 40 km from the city center present a variegated situation, in which no apparent spatial pattern is visible, except from a uniform alternation of growth and moderate-shrinkage patterns. Municipalities farther than 40 km from Tokyo's core are mainly constituted by shrinking neighborhoods, only rarely featuring small areas of growth.

The prediction for 2050 shows a rather different, and somewhat puzzling, situation. A small portion of residential areas face population growth, while the vast majority shrinks—half of them more than 30%. Areas farther than 40 km from the city center
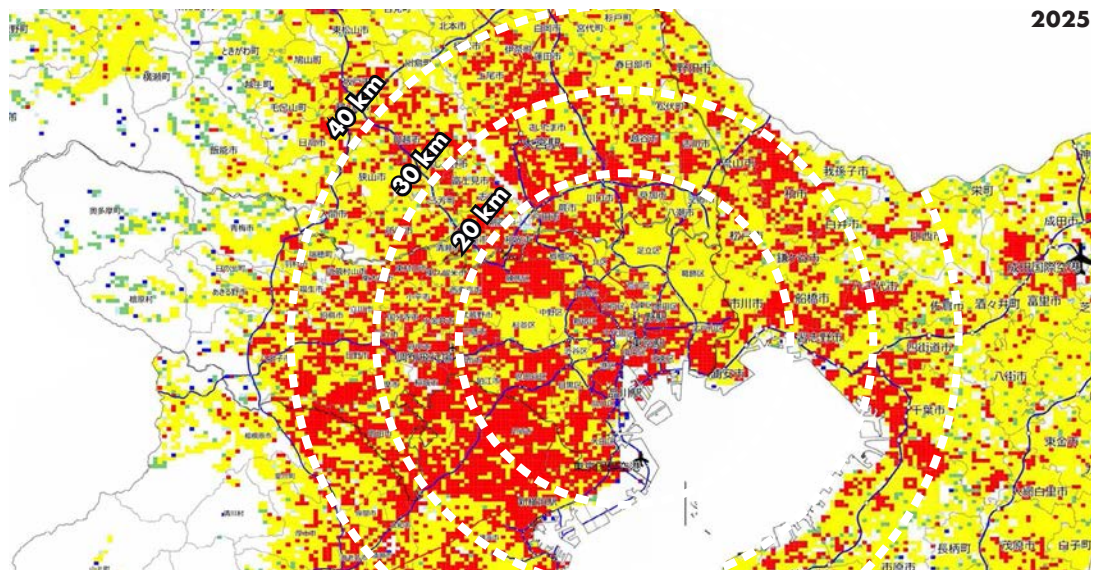
2025
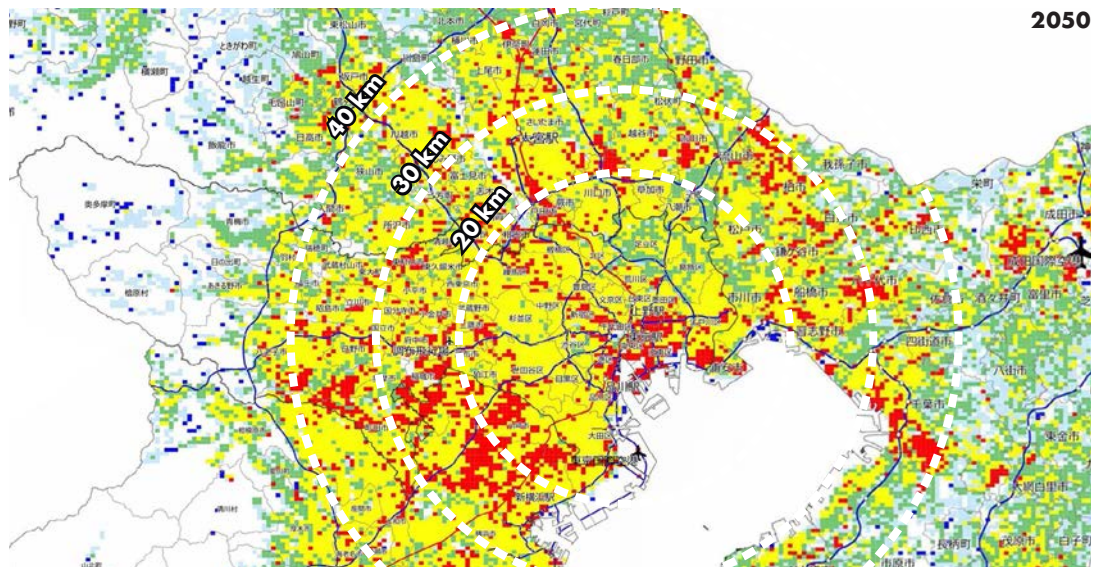
2050

- 🔵 Uninhabited area
- 🔵 >50% population loss
- 🟢 30-50% population loss
- 🟡 0-30% population loss
- 🔴 Population growth

Figure 6: demographic predictions in the Greater Tokyo Area, compared to 2010 levels. The three concentric circles represent aerial distances from central Tokyo

seem to almost invariably lose more than 30% of their inhabitants, while areas between 30 and 40 km from Tokyo's core present a rather variegated situation. Interestingly, there is no prominent growth of central Tokyo and a uniform depopulation of peripheral areas. In fact, growth is spatially concentrated at the very center of the 23 wards, around which extends a ca. 10-km thick radial belt of shrinking areas. But this shrinkage pattern is interspersed with an array of growing "hot spots" at around 20 km from the center of Tokyo. These spatial distribution simulations will be of great importance to establish and justify the focus and case-studies selection of this research (see Chap. 3).

At this point, we may wonder how professionals and policy-makers in Japan has been addressing prospects of shrinkage so far. On the one hand, from a policy-making perspective, the Japan Policy Council suggested to gradually favor the relocation of the elderly from Tokyo toward a number of areas in other prefectures, to balance the offer and demand of nursing care facilities and housing (The Japan Times Online 2015). Even though such a move might seem reasonable from a statistical and demographic point of view, it remains to be seen how the plan could be implemented and how many elderly, under which conditions, would be willing to leave their social connections and families behind. On the other hand, urban design proposals such as Fiber City / Tokyo 2050 (Ohno 2006) tackled depopulation from a spatial, design-oriented perspective. A de-urbanization strategy should convert less accessible, depopulated residential areas into green "fibers", to act as natural amenities and disaster-prevention measures. Complex policies and financial mechanisms would be needed, though, to make this proposal work. Meanwhile, the number of vacant houses is worryingly increasing, so that new legal instruments will be needed to cope with this issue (Nozawa 2016; HOME'S総研所長 2015).

Up to this point in our enquiry, the narrative around peripheral areas has been carrying decidedly negative overtones. We may now wonder whether suburban living can be seen in a more positive light, and whether it can find renewed appeal in an upcoming age of shrinkage.

2.4 Changing values in shrinking, slow peripheral areas

Many people, when asked what they imagine would be the best place to live, think of a house in a secluded garden, which is but one step from the center of a great city.
   Lynch 1984:193

The "slow movement" is the all-encompassing development of the "slow food movement", started in the late 1980s by Carlo Petrini in Italy (Honoré 2004). Of interest to this research is the so-called Cittaslow[21] movement, started in 1999: it is a controlled-membership consortium of villages, towns and small cities with maximum 50'000 inhabitants, adhering to a 54-points charter. Each member pledges to, among a variety of things, value locally-sourced materials and products, preserve traditions and identity of the area, resist consumerism and rapacious neoliberal practices. Cittaslow is ultimately about re-valuing time, engaging in mindful practices of everyday life, invested with meaning and pleasure. In some way, the movement is a reaction against ubiquitous contemporary globalization trends, by giving prominence to a socially-engaged life. Despite being spatially and culturally far from the background that gave rise to the Cittaslow movement, can Tokyo's peripheral areas adopt a similar attitude and assume a renewed attractiveness by offering an alternative lifestyle to that of more central locations?

International literature seems to suggest that more and more suburban areas are investing in their slow qualities. In fact, 'peripheries have gradually won a place for themselves [so] that for many people today they are the symptom of a new contemporary urbanity.' (Acebillo 2012:35) While Oswalt (2008) asks whether slowness itself can represent quality, Garlandini (2014:34 author's translation) points out that small, peripheral cities have to capitalize on their human scale: '[t]he idea of small city conveys thus images of tranquility, and of pedestrian-friendly spaces.' From a social point of view, Arcaleni & Baldazzi (2010:67) affirm that, in the case of Italy, family support and social exchange is weaker in large cities, so that better and more social relations should be expected in peripheral communities. There are socio-cultural differences to be taken into account, though.

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21   '[T]he ideological platform for networks of small towns – the Cittaslow movement – that constitutes what is arguably the broadest and most grassroots implementation of the principles associated with liveability, quality of life and sustainability.' (Knox & Mayer 2009:43)

Kotkin (2016) argues that, in the US, people—especially families with children—keep preferring and moving to the suburbs for childrearing purposes. In Tokyo, though, the trend seems to be the opposite. Young families tend to aspire to living close to their workplace, and, due to infamously-long working hours, often cannot take care of a detached house (with a garden), typical of peripheral areas, ending up buying an apartment in a centrally-located high-rise building. At present, peripheral and quiet areas seem to appeal first to retired people, to someone who has enough time at disposal, or someone who gives priority to family life over career. A particular group of people—quantitatively small but on the increase—that areas with an abundance of abandoned buildings may try to attract is that of singles willing to live in a shared house. As Ronald *et al.* (2018) have exposed, in large cities in Japan there is a growing number of singles who want to escape from individual isolation, looking for a "different urban life", in an environment where co-working spaces could also fit well with a more flexible and decentralized living (Allen 2018), and inject new life into underused public structures.

Living full-time in the periphery is not the only option, though. As seen in the interview with Kenji Fujii of Tokyo Tatemono (see Appendix A), temporary living in the form of (shared) weekend or holiday houses, promoting a strong connection with outdoor activities and the natural environment, may be a way to give new relevance to Tokyo's suburbs. Northern Europe and Russia in particular present a strong tradition of cottage-style living. It shall suffice to mention the Scandinavian custom of having a rural retreat fitted with sauna where to enjoy free-time, arrange intimate gatherings or even strike important business deals. British allotments or German kleingarten also resonate with the concept of a temporary, natural escape from city life. The Russian *dacha* is here especially relevant for the possible "slow" adaptation of Tokyo's peripheral areas. *Dacha*, in fact, are located relatively close to the city center and are usually grouped into clusters. The following description of *dacha*-life may well apply to Japan.

> *[N]ature is an essential part of Russian life and [...] a deep, abiding, even spiritual appreciation of nature is a fundamental quality of Russianness itself. [...] [T]he heart of this natural world [is] the* dacha, *or summer cottage. [...] The dacha world in all its richness and complexity symbolizes and encapsulates a meaningful life, a "good life".* (Caldwell 2011:xv, 4)

We can thus see that the issues faced by peripheral areas have to be addresses from a broader socio-economic perspective, and that far-reaching reforms, such as capping overtime work and fostering a better work-life balance have a crucial influence in determining where people choose to live. Nonetheless, it is important to realize that there is already a relevant share of Japanese population who thinks the advantages of a slow, peripheral life (affordability, larger living space, better child-rearing environment, stronger social relationships, etc.) outweigh its disadvantages (longer commuting, less services, etc.). Homeownership—especially of detached houses—tends to be higher in peripheral areas,[22] and this is in turn associated with improved and deeper relationships between neighbors, as everyone has an interest in maintaining the property and its surroundings in a state as good as possible. We may then generalize that suburban areas are more attractive and convenient for people starting a family and having children (Home's総研所長 2015), while the urban core appeals to younger people and/or single professionals, and both options should be given and respected.

Within this context, Tokyo's peripheral areas have to struggle for their relevance, as 'Japanese citizens are likely to have more choices in future about where to live [...] and are likely to become ever more selective as population decline become [sic] more pronounced' (Sorensen 2012:217). Even though technological advancements will be particularly disruptive in regard to mobility, and, thanks to the development of self-driving cars, 'suburbs could have a renaissance' (Norman Foster quoted in Brûlé 2015:no page), considerable areas will shrink.

Japanese literature confirms the potential of "slowness" for Tokyo's peripheral areas, as the term is explicitly mentioned by Doteuchi (2003) as a possible way out for Japanese suburbs, and is seen as a much-needed counterweight to balance bustling metropolitan life (Hidenobu Jinnai quoted in Gilhooly 2017; Takahashi & Kobayashi 2015). In fact, 'the Slow philosophy can be summed up in a single word: balance. Be fast when it makes sense to be fast, and be slow when slowness is called for' (Honoré 2004:14-15). This implies that peripheral areas need first of all to focus their efforts on child rearing, families and the elderly. This alone would be a major reason for families to move to these places (児玉 & 中野 2016). In this respect, Hirayama (2013:177) remarks:

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22   Ownership exceeds 70% of newly built houses (Statistics Bureau 2016).

There are many parental home dwellers on the fringes while single people concentrate in central city areas. In the suburbs, a decrease in young family-formers is accelerating the ageing of communities. Finally, it is worth emphasizing that Japan's low fertility rate can, at least partly, be attributed to the decline in young people's housing opportunities.

Moreover, as exposed by Suzuki & Asami (2017), in an age of shrinkage only high-quality houses will be able to retain a positive value in the suburban residential market. Tokyo's peripheral areas, in a similar fashion, need then to make people want to live in them, i.e. they need to be liveable. This is no simple task, requiring a shift in urban design values, moving from a growth- to a shrinkage-paradigm, as summarized in Table 3.

	URBAN GROWTH	URBAN SHRINKAGE
DENSITY/ COMPACTNESS	• high density through high rise & large-footprint buildings • rhetoric of the urban core	• compactization • reevaluation of loose settlements with fitting mobility strategies
DIVERSITY OF USES	• city-scale mix of uses • indoor mall-type & chain stores • deregulation & market • building as profit	• neighborhood-scale mix of uses • streetfront and local businesses • regulations & planning • reuse & transformation as necessity
WALKABILITY	• public infrastructural investment • efficiency • car-based errands	• role of privates in new mobility solutions • attractiveness • pedestrian-based errands
GREEN/WATER SPACE	• focus on quantity • public • unproductive	• focus on quality & management • public & private • productive
***MACHIZUKURI/* PARTICIPATION**	• paternalistic (top-down) • reactionary (bottom-up)	• co-productive • propositional & confrontational
LOCAL CHARACTER	• aspiration to generic global model • complex of inferiority	• reevaluation of local specificities • emphasis on the slow life

Table 3: changing urban design values under growth and shrinkage paradigms

In this section we have unearthed the socioeconomic causes of liveability concerns in Tokyo's peripheral areas. By sketching out anticipated demographic trends we are now able to better understand how to effectively tackle the issues at stake. But, as urban space is the outcome of policies and regulations, it is now necessary to examine them in detail.

2.5 Overview of urban policies and regulations in Japan

Reduction in people per household, reduction in tax revenues, increase in elderly people's welfare expenses, lack of workers, rapid increase of old and vacant houses, renewal of public facilities and infrastructure: we have entered a period where we have to seriously move away from traditional urban planning and housing policy.
野澤 2016:198 (author's translation)

As Japan, during the Meiji era, rapidly modernized and welcomed western influences, city planning naturally came to borrow from European and American models. German zoning,[23] i.e. a policy spatially separating urban functions with the aim of reducing clashes between incompatible uses, such as housing and factories, was particularly referenced to. This section explores the evolution of Japanese urban rules and focuses on the spatial outcomes that national and local regulations produced in Tokyo.

The origin of Japan's planning regulations can be traced back to the 1889 Tokyo City Improvement Ordinance, which was the basis upon which the 1919 City Planning Law and Urban Buildings Law were drafted. These laws introduced a classification of urban areas in different categories (Table 4), akin to western zoning, even though with a fundamental difference (Ministry of Land, Infrastructure and Transport 2003). Western zoning addressed, in the first place, land uses (e.g. residential, industrial, commercial), while the City Planning Law, combined with the Building Standard Law (BSL), aimed first at regulating building mass and height. As a result, land uses in Japan have been and still are more mixed than in the West or in other Asian countries such as China, even though the names of the classified areas suggest a classic zoning attempt.

Starting with the 1924 Amsterdam International City Planning Conference,

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23   The first zoning ordinances ever to be enforced are to be found in German cities in the late 1890s.

Category	Permitted uses	Floor Space Index	Ground Space Index
Category I exclusively low-rise residential zone	Residential; small shops & offices; elementary & junior-high schools	0.5-2	0.3-0.6
Category II exclusively low-rise residential zone	Residential; shops ≤150m²; elementary & junior-high schools	0.5-2	0.3-0.6
Category I mid/high-rise oriented residential zone	Residential; shops ≤500m²; universities; hospitals	1-5	0.3-0.6
Category II mid/high-rise oriented residential zone	Residential; shops & offices ≤1'500m²; universities; hospitals	1-5	0.3-0.6
Category I residential zone	Residential; shops, offices & hotels ≤3'000m²	1-5	0.5-0.8
Category II residential zone	Residential; shops, offices, hotels, karaoke	1-5	0.5-0.8
Quasi-residential zone	Mix of uses and transportation infrastructure	1-5	0.5-0.8
Neighborhood commercial zone	Residential; shops; small factories	1-5	0.6-0.8
Commercial zone	Commercial uses; residential; small factories	2-13	0.8
Quasi-industrial zone	Light-industrial factories; no other restrictions	1-5	0.5-0.8
Industrial zone	Mainly factories; no schools, hospitals & hotels	1-4	0.5-0.6
Exclusively industrial zone	Factories; no residential, shops, schools, hospitals & hotels	1-4	0.3-0.6

Table 4: land use zones according to the Japanese planning system

the western concept of green belt came to be known in Japan (Watanabe *et al.* 2008). Borrowing from the Garden City movement, green belts were seen as an answer to the spatial expansion of cities and the depletion of green open spaces. Land-use regulation and decentralization were means to preserve farmland and create buffer spaces within the urban development. The first administrative act to feature a green belt in Tokyo was the Tokyo Green Space Plan of 1939, although, due to the imminent war period, was never implemented. In the Special City Planning Act of 1946 foresaw, once more, the establishment of a green belt around the Japanese capital. Discussions between a governmental commission and large landowners resulted in a standstill, though, so that in 1954 the Act was dropped altogether. A further attempt to create a green belt took

place two years later, in 1956. The National Capital Sphere Redevelopment Act proposed the introduction of green belts as a means to protect agricultural land, and devised the foundation of a series of new towns. Opposition from landowners and peripheral municipalities, and the lack of a compensatory mechanism to deal with land transfers critically undermined the effectiveness of this Act. During a period of economic recovery and growth, and of housing shortage, urban development was prioritized, so that both the 1963 New Residential Town Development Act and the 1968 New City Planning Law marked *de facto* the end of green belt attempts in Japan. In this respect, it is interesting to note how Tama New Town came to be built in an area that had been designated as a future green belt. Watanabe *et al.* (2008:21) tellingly sum up that the 'implementation of Tokyo's green belt is a famous case of an attempt to impose an international planning ideal on a reluctant society.'

A number of revisions to the City Planning Law were carried-out to deregulate the building code from 1968 onwards, such as increasing the number of permitted zones (Sorensen *et al.* 2010a). Additional relaxation was also applied to the BSL, which contained two major devices that regulated built form: the slanted plane line (SPL) and a maximum height limit of 30 m, with the exception of the "Category I exclusively low-rise residential zone", where a 10 m height limit was prescribed. An important aspect to note is that the BSL had and still has nation-wide validity: only the national authority can change it and its changes automatically apply everywhere within Japan. The SPL was the single most effective piece of regulation that shaped the form of Japanese cities, in that it inhibited the development of high-rise buildings, given the predominance of narrow streets and roads in the urban landscape. Since the SPL was drawn from the opposite side of the street facing a plot, a narrow street automatically meant a more restrictive SPL (Fig. 7A). This situation started to change in the 1950s, when, as part of infrastructural development culminated in the 1964 Tokyo Olympic Games, new, wider roads were implemented. On the plots facing them, taller buildings inevitably appeared, even though still tied to the 30 m height-limit. In fact, it was only in 1970 that such absolute maximum height was abolished (except for the "Category I exclusively low-rise residential zone"), triggering a phenomenal increase in *manshon* construction, as seen in 2.3.

At this point in time, the LDP was witnessing a decreasing popularity, because it was deemed responsible for the declining environmental quality that had affected cities since the 1960s. Moreover, the *manshon* boom unleashed further concerns among the
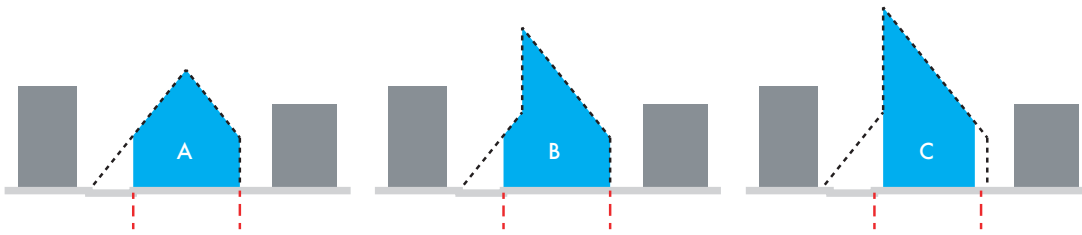
Figure 7: diagram of progressive changes to the slanted plane line (SPL)

population. In fact, taller buildings raised anger in neighboring homeowners, who were affected by less sunlight exposure, compromised views and worsened ventilation. To counteract mounting discontent the LDP addressed the environmental crisis with more stringent policies and also amended, in 1972 and in 1976, the BSL, by including the possibility for local governments to introduce a 10 m height-limit in selected areas (this was done extensively in central Tokyo by local wards), and by incorporating a grassroot proposal to guarantee a minimum amount of hour of sunlight exposure to neighboring plots. These measures had the effect of solving the most crucial environmental concerns and of sedating public unrest toward the construction of new high-rise developments.

The 1980s witnessed a worldwide inclination toward deregulation, and represented the real start of contemporary global restructuring marked by the primacy of finance. This shift was well-reflected in Tokyo. In 1987 the fourth Comprehensive National Development Plan (CNDP) depicted the role of Tokyo as a global city and outlined an urban strategy of both dispersion and concentration. On the one hand, the extreme concentration of services and functions in the capital city was starting to cause negative externalities, such as congestion and ever longer commuting, thus calling for dispersion. On the other hand, the center of Tokyo was supposed to become an international CBD, by concentrating global financial firms. Moreover, one year earlier, the second Long Term Plan for Tokyo proposed a shift from a monocentric to a polycentric city, designating a number of smaller cities around Tokyo (e.g. Yokohama, Kawasaki) to act as regional, delocalized centers hosting administrative and business functions (Saito 2003).

The effects of global restructuring in the 1980s manifested themselves in Japan in an additional way: the *minkatsu* policy, initiated by the Nakasone government. Public-private business partnerships were encouraged to fuel the construction industry to boost the economy. Privates could receive subsidies if they developed large projects

that had relevance in regard to the global city status that Tokyo wanted to achieve, such as convention centers or pieces of information-related infrastructure. Many public corporations were privatized, and, undergoing restructuring cuts, large, centrally-located and single-owned plots of land became available. Within this context, it is easy to imagine that the government had all interests in further loosening the BSL, to allow the construction of more high-rise, especially offices (triggering in return the property market bubble and its burst in the early 1990s).

In 1987 the SPL regulation was amended three times. First, the SPL could not be extended indefinitely anymore, but its effect ceased after 20-50 m from the opposite side of the street, depending on the area's zone. After such distance the building could now rise without limits (Fig. 7B). Second, if a building was set-back by a distance "x" from the street, that same distance could be used to offset back the SPL from the opposite side of the street. Third, if a building was set-back by a certain distance, the SPL started from a height of 20 or 31 m, instead of ground level (Fig. 7C). In 1995 a further amendment allowed a steeper SPL in "Category II mid/high-rise oriented residential zones", provided that the street facing the planned building was at minimum 12 m wide. Finally, in 2003, the allowed FAR and steepness of the SPL were further increased in High-Rise Residential Building Promotion Districts, and, more crucially, developers were allowed to ignore the SPL principle altogether, provided that a sky-view factor assessment of the project showed better or equal results (in terms of solar exposure and ventilation) compared to the SPL requirement.

In regard to Floor Area Ratio (FAR), some key regulations should be noted. The first of them happened in 1994, when basement areas were excluded from the FAR calculation of buildings. Second, in 1997 corridors, staircases, elevator shafts and lobbies were also excluded from the calculation, prompting far-reaching effects, such as a second *manshon* boom. Moreover, in 1999 the system for granting building permissions was privatized, leading to potential conflicts of interest, and, in 2002, under the new Special Urban Renaissance Law, landowners, if represented by a majority of ⅔, could propose to the local government a change to the official city plan in regard to their plots (Sorensen *et al.* 2010a).

In 2004 the Bureau of Urban Development of the Tokyo Metropolitan Government was created by merging the City Planning Bureau, the Housing Bureau and the Construction Bureau. Its activities and concerns are fundamentally in line with policy

developments of the past 20 years, but some specific points and goals, of interest for this research, should be highlighted (Bureau of Urban Development 2015).

First, in accordance to the 1968 City Planning Law, areas in Tokyo are classified into two main groups: Urbanization Promotion Areas (UPA, 市街化区域 - *shigaika kuiki*)—where further developments are welcome and encouraged—and Urbanization Control Areas (UCA, 市街化調整区域 - *shigaika chōsei kuiki*)—where in principle no further urbanization should happen. The subdivision is not clear-cut, though, and it is not uncommon to find agricultural patches in UPAs or housing in UCAs. On the one hand, the local government is aware that deregulation generates negative externalities, such as a progressive reduction of green and water space. On the other hand, loose planning can be seen as an effective way to support fine-grained agricultural activities within urbanized areas (Terada 2017).

Second, environmental restoration and improvement seems to slowly become a major policy issue for the government, which is lagging behind local wards, already active with initiatives such as the "Setagaya Ward Green and Water Masterplan" (世田谷区みどりとみず政策担当部 2008).

Third, infrastructural improvements in the form of road-widening and redevelopment of station plazas are often presented as disaster-prevention measures to be swiftly carried-out and as a means to increase inner-city population. While this is certainly true, the imposing logic is a systematic replacement of older, low-rise structures with mid- and high-rise *manshon* and condominiums. Such neglect of the existing low-rise heritage could be seen as a hint to the fact that realizing more developments is not only an effect of this policy, but also a driving intent.

Fourth, high-quality housing is a goal to be achieved in certain areas, through so-called Urban Renaissance Projects, which call for a prompt intervention of the private sector. Lastly, and of specific interest for this research, the 2012 Master Plan for Housing lists, among its goals, the revitalization of suburban residential districts, as a way to regulate housing imbalances.

The numerous interventions on Japan's and Tokyo's building regulations 'allow major changes in built form and massive intensification of land use, population density and floor area, without any system to consider appropriate locations [...]. This is clearly a policy that is primarily about short-term profits and economic stimulus, not about long-term liveability.' (Sorensen *et al.* 2010a:577-78) A first shift from this trend, though,

may be represented by the 2017 revision of the City Planning Law, introducing a new residential zone type—thus increasing the total number of land use zones to 13—called Garden Residential Zone. Terada (2017) interprets this move as an explicit support of urban agriculture and an official recognition of the social and environmental importance of allotment gardens.

Conclusions

This chapter has provided a background to understand how the Tokyo's urban development relates to global trends and to current liveability issues. Socio-economic characteristics and urban regulations are crucial factors shaping the built environment, and their relevance becomes clearer when seen from a historical point of view. We have thus brought to light four main points.

First, despite being tempted to treat Tokyo as a unique case, globalization plays a strong role in the Japanese capital, and a basic understanding of its abstract implications is of help for the analysis of concrete cases. Second, Edo's urban development and *daimyō* residential environment constitute an (unconscious) reference for Tokyo's rapid suburbanization after WWII; as western models of the garden city movement, in fact, merged with local lifestyles during the Meiji era. Third, demographic trends are deeply intertwined with personal and family choices, and they change as different generations unfold. These factors have been determining population shifts between central wards and peripheral areas since WWII. Fourth, urban regulations have been going hand in hand, since the mid-XX century, with a governmental agenda fostering development as a means of economic growth; the tendency toward deregulation is in line with global neoliberalism, even though it presents peculiar characteristics derived from the developmental state. While acknowledging that every place is unique, similar effects of global restructuring are to be seen in different cities across the globe, and Tokyo is no exception.

3
METHODS

Neighborhoods with an improved quality of life are places that people will be less likely to leave.
   Ryan 2012:205

Research questions

Peripheral areas in Tokyo will be confronted with the problem of retaining their population in view of a general national population loss. From this point of view, the presence of high-quality living environments (i.e. where residents' satisfaction is high) will be decisive to determine their success. Based on background research and literature review, we have formulated three research questions to be investigated by case-study comparisons:

I.   **How do different morphological and urban management factors affect liveability in peripheral areas, taking into account their anticipated shrinkage?**

II. **How is liveability to be understood and analyzed, from the point of view of urban design, and to what extent can the profession address it?**

III. **How can this investigation be useful to local policy-makers and *machizukuri* groups?**

By analyzing six liveability factors in three case studies, our goal is to represent different conditions among the variegated patterns of Tokyo's peripheral areas. The chapter opens with a definition of liveability, starting from a critique of the status quo and advancing a novel way to frame the concept in theoretical terms, before examining how liveability is commonly understood in Japan. We then present six liveability factors that were deemed fundamental to analyze urban space at the neighborhood/city scale. The chapter ends addressing the selection criteria to choose the three case studies.

3.1 Defining liveability

An important characteristic of the concept of livable cities is that it is impossible to determine a priori solutions that would be broadly applicable for diverse places, communities, and individuals. What livability means in practice can only be defined by those living in a place, and it is certain that there will sometimes be disagreement on what livability means, and whether, how and who should contribute what to achieving it.

    Sorensen & Funck 2007:21

Judging by the amount of coverage that the academic and non-academic world is dedicating to liveability and its related topics, we may come to think that the concept is a younger sibling of the equally popular term "sustainability". As the concept is multi-layered and varies in meaning depending on the professional or academic field and on the specific context, in the following paragraphs we examine liveability from four standpoints: historical, academic, professional and popular.

Historical standpoint: the western and eastern view

From a historical perspective, in the West the origins of liveability could be traced back to Aristotle, IV century BC. With *eudaimonia* he described a state of prosperity and welfare in city-states of his time, and much of Aristotle's production was devoted to the pursue of a "good life". Between the III century BC and the II century AD good life, considered from the point of view of individuals, was the core preoccupation of the philosophical school known as Stoicism. For stoic philosophers good life was one lived with virtue and reason, i.e. according to the nature of rational human beings; an active and engaged life blessed with tranquility and free of negative emotions (Irvine 2009).

Among other historical traces of liveability, it shall suffice to point out the fresco titled *The Allegory of Good and Bad Government* in Siena's town hall, Italy, painted in the late 1330s by Ambrogio Lorenzetti (Fig. 8). It is a depiction of liveability, or the lack of it, as a consequence of good or bad urban administration. The link between governance and high-quality city life was also explored by Italian intellectual Ludovico Antonio Muratori in a 1749 treaty about the public good, or, according to his definition, "public happiness". We could also see the various proposals and visions for ideal cities in western history— e.g. Thomas More's *Utopia* (1516), Tommaso Campanella's *The City of the Sun* (1602), or

Figure 8: *The effects of good government on the city*, Ambrogio Lorenzetti, Siena (IT), 1338-39

Francis Bacon's *New Atlantis* (1627)—as ways to utopically address the need for better and more liveable environments.

From an eastern point of view, the concept of *feng shui* has had lasting impact on the morphology of settlements in China and its neighboring countries, such as Japan. *Feng shui*—the expression is composed of two characters meaning "wind" and "water" (风水)—could be defined as a practice of placement with implications on building guidelines in terms of orientation, relationship to landscape and natural elements, positioning of objects and furniture in interiors, strategies to improve business, health, happiness, etc. The scholar Guo Pu (276-324 a.D.) is conventionally credited as the founder of *feng shui* and to him is attributed the *Book of Burial*, dealing with divination and attention toward natural topography and astrology. Academics and *literati* since Confucius have been generally critical or skeptical about the practice, just like many Chinese dynasties, and Mao Zedong included *feng shui* practitioners in his "black list" during the Cultural Revolution (1966-76). Nonetheless, *feng shui* still has strong, if undercover, influence on Chinese cities and villages: according to news agency Xinhua, in 2005 'at least 70 percent of [Nanjing's] real estate projects were appraised by *feng shui* masters before the construction started" (quoted in Bruun 2008:123).

After such historical overview on liveability-related precedents, it is now necessary to narrow-down the concept by looking at academic definition, examining the implications for contemporary urban design and planning.

Academic standpoint: liveability vs. sustainability

From an academic perspective, there is much confusion over the definition of liveability, especially when viewed alongside sustainability. Even though liveability has often been equated to sustainability, there is a growing amount of literature that grants it a more autonomous role. Nonetheless, the two tend to overlap. Some point out that liveability is more concerned with the present state of a city or neighborhood and is not so much focused on future outcomes. Others highlight the fact that measures of liveability are locational, i.e. stress the idea of place, while sustainability takes into account a broader range of variables (Ling & Yuan 2009). In comparison with sustainability, liveability focuses more on specific human needs and people's reactions to places (Wheeler 2004). Its area of intervention is restricted to the neighborhood and city scale, focussing less on environmental metrics and more on human activities.

International organizations have touched upon the concept of liveability in various occasions. While not explicitly using the word "liveability", in 1961 the World Health Organization singled-out four elements characterizing a healthy residential environment: safety, health, convenience and amenity. Based on these, Asami (浅見 2001; see 3.2) constructed his own definition of "residential environment", mainly from an economic perspective. In 2015 UN-Habitat compiled a list of 15 green urbanism principles, in reference to Asian and Pacific cities. Liveability appears here within the 10th principle, alongside healthy communities and mixed-use, with an emphasis on 'affordable housing, mixed-use programmes [...] including urban design being appropriate for children and an ageing population' (UN-Habitat 2015:156).

Some authors suggest that liveability results from the combination of urban environmental quality and human wellbeing (Kallidaikurichi & Yuan 2010), so that 'key elements of a liveable city often include attractive public spaces, walkable, mixed use, higher density neighbourhoods that support a range of green infrastructure and transport, affordable housing, [...] human-scaled pedestrian experiences' (Ling & Yuan 2009:3). This echoes the definition of liveability by Christiaanse *et al.* (2017:52) as 'the ability to offer highly qualitative, healthy and resilient environments that can accommodate a variety of uses and users'.

Other authors prefer to focus on more quantifiable aspects, pairing liveability with low-carbon developments and lifestyles (Pickerill 2013), while Wagner & Caves (2012) highlight the importance of community and social infrastructure. Sustainability and

liveability go often hand in hand and they mutually support each other though. In this respect, the city of Melbourne states that '[l]iveability reflects the wellbeing of a community and represents the many characteristics that make a location a place where people want to live now and in the future.' (VCEC 2008:xxi) The city council has stated five main principles to be pursued, namely retaining local character, ensuring connectivity, higher density living, diversity in land use and ensuring a high-quality public realm (Ling & Yuan 2009). Much confusion over liveability is caused by the different unit of analysis, or different scale, considered in liveability rankings. In fact, while lists of most liveable cities tackle the city scale, other rankings asses either national (e.g. OECD Better Life Index, UNDP Human Development Index) or neighborhood liveability (e.g. AARP Liveability Index).

A liveable neighborhood is the result of a multitude of actors and circumstances, pertaining, among other things, to the built and natural environment, the socio-political and economic context, adjusting over time. Despite numerous lists ranking cities' or nations' liveability according to preselected factors (e.g. The Economist's Global Liveability Ranking, Mercer's Quality of Living Ranking, Monocle's Quality of Life survey) and publications boasting comprehensive and sensible assessment methods (Tan *et al.* 2012), the assumption that liveability can be exhaustively defined, measured and compared is highly dubious. While liveability measurements attempt to be holistic, there is no consensus on the specific elements taken into account, nor on their relevance or methodological assessment (The National Association of Regional Councils 2012; Veenhoven 2006). Moreover, when liveability tends to be shaped by a normative standpoint, following rigid classifications, regional nuances and contextual specificities are erased. Given the cross-disciplinary nature of the concept, every attempt to ultimately and quantitatively define liveability is biased by the researcher's own professional discipline and personal preconceptions. From this point of view, an 'inclusive assessment of liveability is not feasible. The best we can do is to make promising condition profiles.' (ivi:12) Nevertheless, a number of professional liveability assessment tools is being used in practice to evaluate the quality of planned and built neighborhoods. We present below one of the most popular, LEED for Neighborhood Development.

Professional standpoint: using scorecards

The Leadership in Energy and Environmental Design (LEED) standard is arguably

the most prominent and applied green building certification system worldwide. It was founded in the US in 1994 and has been gradually improved and expanded over the years. Among the various rating systems, of interest for our research is the certification for neighborhood development. LEED for Neighborhood Development was introduced by the U.S. Green Building Council and the Congress for the New Urbanism in 2007 to enable the certification of sustainable urban design projects at the neighborhood scale, and 'it has increasingly been adopted by cities as a de facto measure of "livable" neighborhood design' (Boeing *et al.* 2014). A Japanese equivalent would be CASBEE (Comprehensive Assessment System for Built Environment Efficiency) for Cities, developed in 2011, even though CASBEE aims at the assessment of cities as a whole, moving beyond the neighborhood scale.

In order to pursue a LEED certification, a developer/owner with a design team has to prove that the intended design complies with a normative list of criteria defined in the rating system, relating to a project's location, neighborhood design and green strategies. Compliance is proven by submitting relevant documentation, e.g. plans and contracts, to be evaluated against a scorecard to determine whether a design or a built project can be certified and achieve silver, gold or platinum certification depending on the total score earned. On the one hand, such a certification process increases the workload and costs associated to a project, but on the other a LEED certification can be used very much like a marketing tool by the developer/owner. Moreover, it is believed that certification pursuit can effectively increase the sustainability of a project, generating environmental, economic and social benefits in the medium and long term.

Due to the normative and rather rigid framework of LEED as a way to assess neighborhoods and districts, there are certain drawbacks entailed in its use. As highlighted by Sharifi & Murayama (2013:73), such 'tools are not doing well regarding the coverage of social, economic, and institutional aspects of sustainability; there are ambiguities and shortcomings in the weighting, scoring, and rating'. These shortcomings are shared with the more popular liveability rankings.

Popular standpoint: the problem with liveability rankings

The Economist's Intelligence Unit Liveability Ranking is compiled by the business magazine The Economist, and classifies its chosen factors into five categories: stability (weight 25%), healthcare (weight 20%), culture and environment (weight 25%), education

(weight 10%) and infrastructure (weight 20%). Usually, cities in Canada, Australia and Central Europe top the list. Most notably, the cost of living is not considered, and the results tend to be anglocentric, i.e. favoring cities where English is widely spoken, at least as a second language.

Mercer Quality of Life Rankings is compiled by the human resources consulting firm Mercer, and aims at advising other firms in the relocation of their employees (expats). The ranking is thus directly helpful in determining how much a transferred employee should be compensated, according to a specific location. The assessed factors are safety, education, hygiene, health care, culture, environment, recreation, political-economic stability, public transport and access to goods and services. As in the Economist's ranking, cities in Central Europe, Australia and Canada top the list. A peculiar characteristic of Mercer's methodology is that all cities receive a score benchmarked against New York's one, which is set at 100.

The lifestyle monthly magazine Monocle compiles an annual Quality of Life survey that has been coupled since 2015 with a Quality of Life Conference. The stated aim of this ranking is to consider more qualitative, cultural and aesthetic factors for the assessment of cities' liveability. In 2015, after implementing a new assessment method, Tokyo reached the top of Monocle's list, a position it has maintained in 2016 and 2017. This is a rather unexpected result, given its absence in other major rankings. The assessed factors are: safety/crime, cost of living, international connectivity, climate/sunshine, quality of architecture, public transport, tolerance, environmental issues/access to nature, urban design, business conditions, pro-active policy developments, medical care. As Monocle targets cosmopolitan (single) readers, enjoying frequent travels and sufficient free time, its ranking deliberately grants much importance to factors relating to personal wellbeing and entertainment.

Table 5 classifies all assessment factors found in the abovementioned rankings. It can be seen that liveability is a multidisciplinary concept, whose definition pertains to two main fields of study: *morphology of the physical space*, and *urban management/ governance*. As the boundary between these realms is not clear-cut and overlapping occurs, a comprehensive definition of liveability from the point of view of a single discipline is utterly unfeasible.

The Economist Liveability Ranking	Mercer Quality of Living Ranking	Monocle Quality of Life survey
Stability	Safety	Safety/crime
Healthcare	Political-economic stability	Tolerance
Culture & environment	Hygiene	Medical care
Infrastructure	Healthcare	Climate/sunshine
Education	Culture	Environment & access to nature
	Recreation	International connections
	Environment	Public transport
	Public transport	Cost of living
	Access to goods & services	Quality of architecture
	Education	Urban design
		Business conditions
		Pro-active policy developments

Table 5: liveability factors assessed in three liveability rankings, color-coded to facilitate comparison

3.2 Liveability in Japan

Kichijoji's[1] the best [...] it combines east and west, old city, new city. The scale is perfect [...] and all the greenery [...]. [Y]ou get young and old too. The old families, and all the kids from the nearby universities. [...] And you have a lot of foreigners – or Japanese with foreign experience [...]. Lots of good food here – And record shops – And clothes – Parco – Clubs – Lots of stuff – Something for everyone [...].

Silva 2016:279-80

[S]he thought that there could be no finer place to live than the suburbs of Osaka. How unpleasant Tokyo was, how dusty, gray, pushing.

Tanizaki 1993 [first published 1943-48]:227

Similarly to the international context, in Japan the concept of liveability is used in multifarious situations. Its popularity has contributed to dilute and stretch its meaning. Etymologically, a literal translation of "liveability" is 居住性 (*kyojūsei*), but, in popular culture and for explanatory reasons, a number of related words and expressions are to be

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1   Popular neighborhood in Musashino City, Tokyo Prefecture.

found, such as:

- 賑わい (*nigiwai*): prosperity/bustle
- 住みよさ (*sumiyosa*): liveability
- 住みたい街 (*sumitai machi*): a town where one wants to live
- 生き生きした町 (*ikiiki shita machi*): lively/vivid town
- 住み心地の良い町 (*sumigokochi no yoi machi*): comfortable town

Asami[2] (浅見 2001) has thoroughly investigated "residential environments" (住環境 - *jūkankyō*) in Japan from a planning perspective, considering five basic principles for their evaluation: safety, health, convenience, comfort and sustainability, listed in order of importance. Safety has to do with possibility to live in a place without suffering injuries and at low risk of accidents and criminal acts. Safety indicators typically concern traffic accidents, criminal incidence rate, environmental and social risk assessments, etc.

Health has to do with the environmental quality of an area. Beside the climate (e.g. temperatures and humidity), this principle is concerned with the presence of hazardous substances, toxic waste, light or acoustic pollution, etc.

Convenience has to do with the presence and distribution of various types of facilities throughout or adjacent to a residential area. Among other things, the size, performance, cost of such facilities determines how convenient an area is.

Comfort consists, according to Asami, of five elements, namely spatial performance, spatial composition, nature, community and regional meaning/identity. It is what makes people want to live in an area and is related to people's values and overall lifestyle.

Lastly, sustainability projects the previous four principle toward future development and assures that they are pursued in a way that is compatible with the needs of future generations.

It is interesting to note that, sustainability apart, convenience and comfort are the principles that most of all relate to urban design, in the sense that the profession can have an impact on them, as they pertain to the realm of urban morphology and management.

Residential preferences in Japan, as in other countries, are difficult to predict, despite

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2   The author has been pointed to Asami's research by Kenji Fujii (see Appendix A) and Prof. Naoto Nakajima, among other people.

the fact that, in retrospect, it is possible to trace the historical evolution of residential patterns and highlight trends. In this respect, after a study of residential preferences in three Tokyo wards, employing surveys and elaborate econometric models, Hoshino (2011:379) tellingly concluded that

> *respondents' social, economic and residential characteristics explained a very small portion of the preference heterogeneity. This suggests that unobservable factors, such as personal experience, values and persistence, form the main determinants [...] in residential choice behaviour. Thus [...] residential preferences are fundamentally heterogeneous and idiosyncratic.*

One is reminded here of the Japanese saying 住めば都 (*sumeba miyako*), usually rendered in English as "home is where you make it": once someone settles somewhere, that becomes the best place to live. The following subsection shows how differently liveability is popularly portrayed in Japan, by means of five liveability rankings.

Japanese liveability rankings

I. 積水ハウス株式会社: 都市を住み継ぐ本 (*Sekisuihausu kabushikigaisha: toshi o sumi tsugu hon*) - Sekisui House: The Book of Reading City Life (積水ハウス株式会社 2015)

The homebuilder Sekisui House—one of the largest in Japan—compiled this booklet to orient its potential customers on issues relating to renting or building a house. The overarching theme is the idea that a lively, diverse urban neighborhood, with good access to services, convenient transportation and enough green spaces is a preferred residential location, where flexible houses designed by the company could fit the needs of many customer types. Of interest to us is a diagram (ivi:3) equating a neighborhood's attractiveness with its land value, rendering an explicitly investment-oriented and economic view of liveability. The message conveyed is that high land-values go hand in hand with quality of life. A further point of interest is the emphasis put on the triple meaning of "chien" as basis for good living and good aging: 地縁 (territorial bond), 血縁 (blood relationship) and 知縁 (connection with friends and acquaintances). Sekisui House's standpoint, in respect to liveability, is clearly addressing family life from a practical standpoint, in a society where the impacts of aging are becoming more and more prominent.

II. 2015年版 みんなが選んだ住みたい街ランキング 関東版 (2015 *Toshiban minna ga eranda sumitaimachi rankingu Kantōban*) - 2015 Kanto Ranking: Choosing Where to Live (Recruit Sumai Company 2015)

The real estate company Suumo conducted an inquiry, asking 3'000 people living in Tokyo, Saitama, Chiba, Kanagawa and Ibaraki prefectures, where they would like to live. All respondents had bought a house within the previous 5 years in one of the abovementioned prefectures, and had to indicate the name of a train station representing the neighborhood where they would ideally live. The most popular station was Kichijoji (along the JR Chūō Line and end station of the Keio Inokashira Line), but Suumo explicitly mentioned the good performance of Musashi Kosugi (along the Tokyu Toyoko Line, Meguro Line and JR Nanbu Line) occupying the 5th position. Other stations in the top 5 were Ebisu, Yokohama and Meguro. The most popular city or ward resulted Setagaya Ward, followed by Minato, Meguro and Bunkyo wards, and Musashino City occupying the 5th position.

Suumo' ranking seems to reflect the view of company workers with a family, who have to consider commuting time when choosing where to live, given their long working hours. From this point of view, this ranking suggests that liveability is a balance between high accessibility, comfort and offer of services and amenities.

III. 2012 東京都内生活者実感ランキング (2012 *Tōkyōtonai seikatsusha jikkan rankingu*) - 2012 People's Daily Life Experience Ranking, Tokyo (Next 2012)

Next, the company behind the real estate portal Home's, conducted an inquiry asking a sample of 150 residents in each ward and city of Tokyo about their satisfaction in regard to the following criteria: daily shopping fulfillment, access to facilities, convenience of transportation, parenting and education, nature and environment, municipal public service, local community, safety, area's future prospects. As in the previous ranking, Musashino City resulted the most popular city, followed by Fuchu City, Suginami, Chuo and Shinagawa wards.

This ranking seems more appropriate to evaluate the status quo of Tokyo's wards and cities, rather than to define most liveable places, since respondents were merely asked to express the satisfaction with their own area.

IV. 東洋経済の住みよさランキング2016 (*Tōyō keizai no sumiyosa rankingu 2016*) - Toyo Keizai's Liveability Ranking 2016 (東洋経済 2016)

Toyo Keizai is an established weekly business magazine in Japan, compiling since 1993 an annual liveability ranking of Japanese cities. In 2016 their most liveable city was, as in the previous 5 years, Inzai, a municipality in Chiba Prefecture. Since the mid-1980s, Inzai has been part of the so-called Chiba New Town project, being served by the Hokuso Line. This ranking clusters 15 assessed factors into 5 categories, namely safety, convenience, comfort, wealth and housing situation.[3] Unsurprisingly, the point of view of a business magazine results in an economy-based outcome, as the liveability of a town is equated with the affluence of its inhabitants and on exclusively quantitative and abstract data. In fact, the top 3 list features nondescript places, such as the abovementioned Inzai, Nagakute in Aichi Prefecture and Tonami in Toyama Prefecture. In this respect, regular columnists for The Japan Times Brasor & Tsubuku (catforehead 2012), residents of Inzai, have expressed their puzzlement upon reading the outcome of Toyo Keizai's ranking.[4]

V. Sensuous City - 官能都市 (*Kannō toshi*) (Home's総研所長 2015)

The real estate agency Home's produced in 2015 an extensive report bearing the English title "Sensuous City", based on a questionnaire survey. The stated aim was to produce a ranking which might be able to capture bodily qualities and attractiveness of places, in contrast to data-based and quantitative surveys, such at the one produced by Toyo Keizai.

134 Japanese cities or districts within large cities were surveyed: Bunkyo Ward (Tokyo) topped the list, followed by Kita Ward (Osaka), Musashino City, Meguro Ward (Tokyo) and Nishi Ward (Osaka). The report introduced 8 factors: belonging to the community, possibility for anonymity, feeling of romance, meeting chances, food culture, urban character, feeling of nature, walkability. As the publication clearly outlines, Home's

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3   The complete list of assessed factors is as follows: safety (hospital/general clinic bed number per capita; facilities for elderly care; number of births; child care facilities per capita), convenience (retailers' annual commodity sales amount; large retail stores per capita), comfort (sewage treatment diffusion; park area per capita; population turnover and transfer ratio; construction of new housing per household), wealth (fiscal power index; amount of local tax revenue; amount of taxable income), residential situation (floor area per household; homeownership ratio).

4   'The rating process and criteria are chosen to appeal to an average person who likely has little in common with us, and, truth be told, we're not even sure exactly what we like. We moved here because we couldn't afford Tokyo any more'. (catforehead 2012)

intention was to rely on subjective feelings to evaluate how liveable a certain area is. From this point of view, it follows a bottom-up approach similar to the one used by Next, directly asking local residents about their views. This seems to be a more appropriate way to evaluate the liveability of a place, rather than comparing qualitative factors from external observation. The last four rankings (II, III, IV and V) can be classified according to Fig. 9.

As in the case of worldwide rankings, a discourse on liveability in Japan suffers from similar questionable standpoints, and, therefore, is subject to similar critiques. Nonetheless, an important difference is to be noted: as the assessed cities or neighborhoods lie in the same country or even in the same region, and their number is limited, inquiries and questionnaires have been sometimes used to directly ask local population about their own preferences. This is a crucial point, in that it opens a bottom-up perspective that seems able to question or prove its respective ranking methods. By hearing locals, new ideas can be considered, while scientific validity and result soundness can be strengthened. Such methods are appropriate when there is homogeneous access to a pool of respondents and when like-minded individuals (e.g. of a certain nationality or residing in a defined

OBSERVATION

IV)
Toyo Keizai
2016 Liveability ranking

OBJECTIVE ——————————————————— SUBJECTIVE

II)
Suumo
2015 Kanto ranking

V)
Home's
Sensuous city

III)
Next
2012 People's daily life
experience ranking

QUESTIONNAIRE
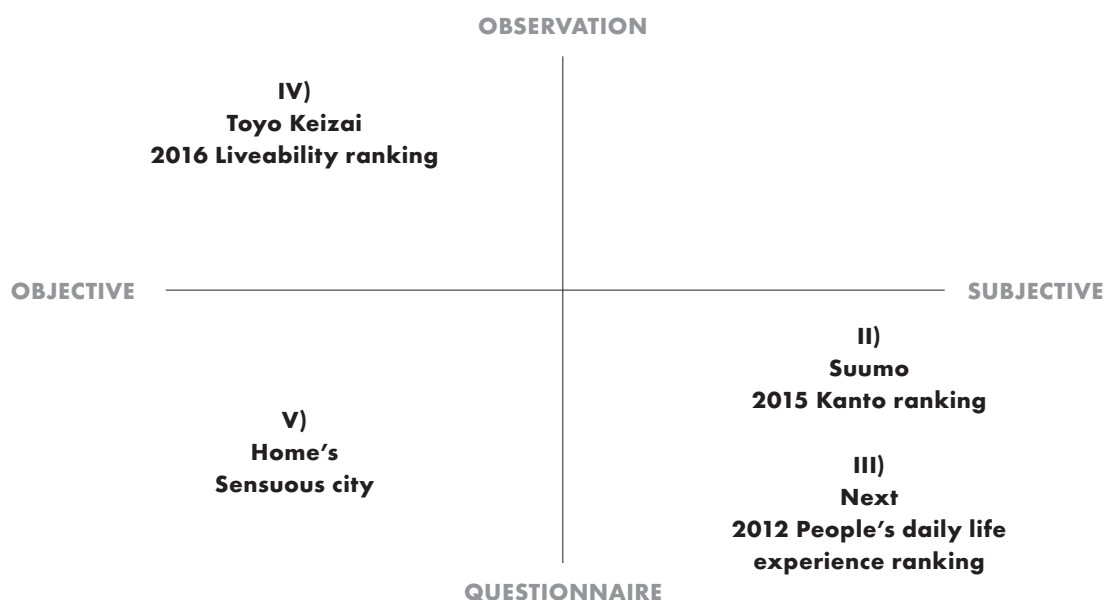
Figure 9: type of and methods used in four Japanese liveability rankings. Rankings by The Economist, Mercer and Monocle, all fall within the "objective/observation" quadrant

cultural region) are inquired. A study of this kind would be unfeasible on a worldwide base, as the approach of respondents toward questionnaires and local circumstances dramatically vary, inhibiting comparison.

A relative definition

As Knox & Mayer (2009:24) put it, 'liveability is a complex, multifaceted concept.' Indicators can be useful for administrative reasons when there is a need to establish future goals and to monitor and publicize progress. Nonetheless, city ranking and benchmarking should be seen with a critical eye, as it is subject to the following criticism. First, while quantitative comparisons have a methodological justification, qualitative ones are much trickier to perform.[5] How can we properly understand qualitative and thus subjective aspects, solely based on our point of view?

Second, the analyzed factors merely represent outcomes, while the processes that have constituted them remain hidden. From this point of view, judging the development of cities over time would harvest more insightful results.[6]

Third, as we have seen, the choice of assessed factors seems arbitrary and is never explained. How is one to select relevant criteria that have to be kept constant for all cities? Which criteria would local inhabitants pick?

Fourth, rankings are an attempt to impose a theoretical, global model upon concrete and local situations; they are a one-way deductive process. Instead of aspiring to an idealized goal, the focus should rather be on the unique characteristics of each city, since 'liveability is essentially local in character' (ibid.).

We have now established that liveability is very much determined by the specific goals, aspirations, habits, of each community, and it is thus impossible to pin it down in absolute (Latin etymology: *ab-solutum*, i.e. unconditional) terms, being a relative concept. It has also become clear that liveability has the following three characteristics: it is *locational*, changing with the spatial and temporal context (see Ruth & Franklin 2014); *open-ended*, being the result of multifarious actors (see Lynch 1984; Batty & Marshall 2009); *negotiatory*, mediating between individual and civic interests (Tomba 2014;

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5   As investigated by the whole Measuring the Non-Measurable project (Radović 2016).

6   'Specifics and time are both crucial because the basic assumption is that policy is about cities doing do [sic] more and better in specific domains over time to improve the local offer of foundational goods and services.' (Engelen *et al.* 2014)

Sennett 2003). These features, though, tell us what liveability is about, not what liveability is. Therefore, in this research we propose to simply define *liveability as the alignment between desired and actual living environment, aiming at the betterment of a community as a whole* (in a democratic and just society). This presupposes that communities know what they want, i.e. are sufficiently mature and informed to pick the right goals for their future development. In general terms, such goals should aim at achieving diverse, human-scaled neighborhoods relying on existing resources (Talen 2010), so that the role of urban design is to reach these targets, i.e. to be goal-oriented. Before introducing six urban design factors influencing neighborhood liveability (see 3.3), let us now explore how liveability is to be understood in Japan.

3.3 Six liveability factors

Cities are far too complex for formula-driven approaches and good urban design requires a complex mix of quite different kinds of approach.
    Dovey 2016:1

This section discusses the choice of six liveability factors, relevant from an urban design perspective, in regard to Tokyo's peripheral neighborhoods. The selection is based on a body of literature addressing empirical methods to investigate urban environments (e.g. Dovey 2016; Ye & van Nes 2013; Capitanio 2012; Jabareen 2006; Frey 1999; Gehl 1987; Lynch 1984; Jacobs 1961).[7] Consistent with our previous inquiry on liveability, the first four are *morphological*[8] factors (density/compactness, diversity of uses, walkability, green/water space), more prone to be investigated quantitatively and objectively, even though qualitative aspects will emerge through on-site observations. The last two (*machizukuri*/participation and local character) are *urban management*[9] factors, more qualitative in nature and based on formal and informal interviews with local inhabitants

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7   'What I call the urban DMA is an assemblage of density, mix and access that comprises a structural core that is necessary, although insufficient, for the emergence of urban intensity'. (Dovey 2016:15)

8   Urban morphology is the study of settlement form and type, exposing the causality between socio-economic drivers and their built manifestation.

9   Urban or place management typically embraces a socio-economic, operational view in regard to the governance of places.

and experts, review of local publications and relevant literature in Japanese language. In fact, 'liveability is essentially about *designing* and *managing* the places where people choose to live and work' (Knox & Mayer 2009:24).

This duality between material and immaterial urban factors is a recurrent theme throughout (western) civilization. It shall suffice here to refer to the ancient roman dichotomy between *urbs*—the morphology of the city—and *civitas*—its socio-cultural traits (Ratti 2014). Along the same lines, urban sociologist Richard Sennett distinguishes between *ville* and *cité*, borrowing from the French language: 'one a physical place, the other a mentality compiled from perceptions, behaviours and beliefs.' (Sennett 2018:1) We proceed now by explaining the choice of each liveability factor in detail, highlighting their relevance and meaning in the Japanese context.

Density/compactness

No less than an acre to each individual man, woman, and child.
  Wright 1963:83

[I]t is necessary to maintain the population density to a certain extent [...] to ensure that administrative services and indispensable living support services in the future are maintained at a sufficient level.
  野澤 2016:207 (author's translation)

Density has been, since the XIX and XX century, a controversial topic. In its beginnings, Modernism (ideologically) aimed at relieving overcrowded and polluted industrial cities, on the one hand producing extremely dense but not compact proposals like the Ville Radieuse (1929-31) by Le Corbusier,[10] and, on the other hand, indirectly influencing the development of extensive suburban environments, thanks to the introduction of the automobile. In spite of noble intentions (e.g. gain more sunshine and better air circulation for every apartment) the results of ideology pushed too far were superblocks and high-rise buildings often becoming social ghettos dispersed in greenery. English engineer and planner Raymond Unwin in *Nothing gained by overcrowding* (1912) proposed a maximum density of ca. 30 houses per hectare (ha from here onwards), American architect Frank

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10   The project foresaw 1'000 pph and 3'200 pph in the periphery and in the center respectively.

Lloyd Wright in *The disappearing city* (1932) came to the extreme of ca. 2.5 houses per ha and American author and activist Jane Jacobs (1961) theorized a minimum of 250 dwellings per ha for central urban areas (Berghauser Pont & Haupt 2004:22).

Tokyo is the most densely populated prefecture in Japan, with ca. 61 people per ha (pph from here onwards) in 2015 (Tokyo Metropolitan Government 2017). It has to be noted, though, that western cities in the Tokyo Metropolitan Area considerably lower this value thanks to their abundant green and mountainous topography. In fact, the density in Tokyo's 23 central wards is of ca. 151 pph (in 2015), and Tokyo's peak density reaches ca. 330 pph.[11] From a historical perspective, Tokyo's densities in Edo Period were polarized between the two extremes of *shitamachi* and *yamanote* (see 2.2). While the former featured very dense commoner settlements of ca. 580 pph[12] (Sorensen 2004:27), the latter, inhabited by the samurai class, registered densities of ca. 150 pph. In the Taishō era, due to further urbanization and inner-city industrialization, population densities in central districts reached even higher levels, topped by Nihonbashi with over 650 pph (Schencking 2013:157). Density is usually measured in three ways: home density, population density and Floor Space Index (FSI).[13] The FSI index, officially adopted in Europe in 1948 (Berghauser Pont & Haupt 2004:23), measures the total floor area of buildings in m² over a surface, and is generally used in planning practice.

The benefits of increased density in urban environments have been widely acknowledged, both in academia and in popular media, in view of a sustainability agenda. Enough critical mass in terms of inhabitants can better sustain public transport and is directly related to reduced car ownership (Jabareen 2006:41). Dense developments can save land and reduce infrastructural needs, ultimately reducing the carbon footprint of a city. Even though there is a general agreement in the academic world about the benefits of densification, density has long been disconnected from compactness, with no consideration of what type of urban environment a certain density produces. In fact, density as such does not give us any clue about urban form, lacking qualitative and morphological characteristics (Fig. 10). From this point of view, not only should a city be dense, it has most of all to be compact, ensuring walkability, interesting pedestrian

11   These values refer to residential densities, and do not count the extreme concentration of workers in central wards during daytime.

12   For the most part constituted by 1- or 2-story dwellings.

13   In the US this index is called Floor Area Ratio (FAR).
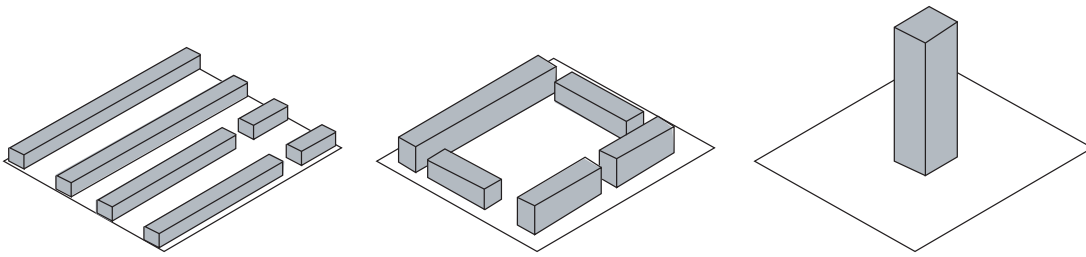
Figure 10: diagram of three settlement types sharing the same density (FSI)

environments and short trips. In an attempt to better describe the morphology of urban environments, we will rely in this research on the Spacematrix tool (Berghauser Pont & Haupt 2010), developed at TU Delft.Spacematrix integrates four variables in one chart: Floor Space Index (FSI), the ratio of floor space/ground area, i.e. the density or the intensity of a settlement; the Ground Space Index (GSI), the ratio of built footprint/ground area, i.e. the compactness of a settlement; Layers (L), the average number of floors; and the Open Space Ratio (OSR), the ratio of ground area/total FSI, i.e. the openness and pressure on non-built land (Fig. 11). In order to calculate the four variables, the gross floor area (the total amount of a building's m²), the built area (the footprint of a building in m²) and the plan area (the land area in m²) are needed. It has to be noted that a certain degree of approximation is to be expected when calculating the gross floor area of buildings. In view of the purpose of this research, we will suppose that detached, low-rise houses do not have basement floors, and that all mid- and high-rise buildings have one underground floor. Moreover, we will entirely disregard spaces under pitched roofs, as they are generally closed and non accessible.

Diversity of uses

Western visitors to Japan are often struck by the apparent disorder of land-uses in the urban fringe. Tiny patches of farmland dot an otherwise urban landscape of houses, shops, restaurants and small industries. This apparently haphazard pattern presents a challenge to the normative distinction between urban and rural.

Amati 2008:xvii

Talking about diversity of uses means moving away from a considerable inheritance of
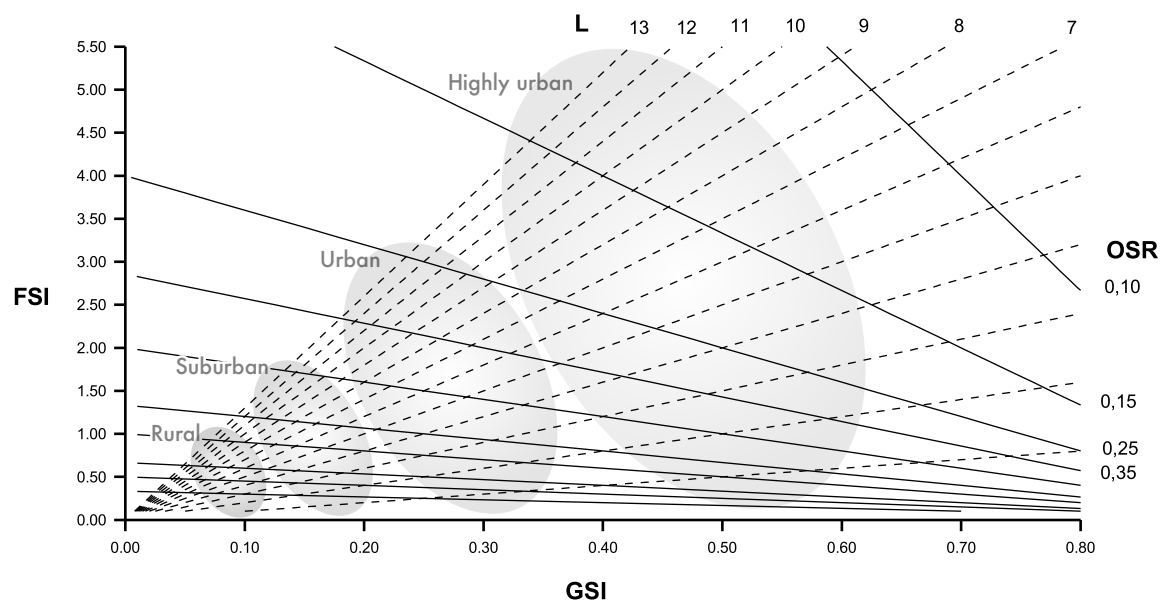
Figure 11: *Spacematrix diagram*

Modernism, i.e. strict zoning. With the Athens Chart (published in 1943, among others, by Le Corbusier) zoning acquired the status of an up-to-date design tool, and it took nearly 20 years until this principle, based on the separation between living, working, recreation and circulation, was criticized by Jacobs (1961) or declared literally dead, as pointed out by architectural historian and designer Charles Jencks, after the demolition of the Pruitt-Igoe apartments in St. Louis in 1972. 'Most researchers agree that properly conceived multiple use development could bring variety, vitality and viability to a place [...]. [A] sophisticated mixing of various uses is a precondition for sustainable urban development' (Jenks & Dempsey 2005:155). An ideal mix is rather naive to conceive, since it varies according to place and time, but the general trend is to assure it not only in the horizontal dimension, but also, and maybe most crucially, in the vertical one, like in the common mix of a business activity at ground floor with housing upon. Nonetheless, in the late XX century developers and investors have sometimes been reticent toward mixed use, mainly because it was thought to be cost-inefficient and difficult to manage. Mixed use, nonetheless, is crucial to generate diversity in the urban environment, and can be classified in two main categories: functional mix, as we will describe below, and population mix, when different age groups and social classes live in the same neighborhood. In this

respect, Lynch (1984) introduced the concept of "grain"—being fine or coarse, sharp or blurred—to describe the heterogeneity and diversity of a settlement, referring not only to uses but to building type and age, social composition, etc.

While the mixture of diverse functions is generally advocated, it remains rather unclear which are the uses that should be mixed and to which degree. Interestingly, according to van den Hoek (2008:7), 'during the period of industrial modernization the scale level and grain size of mixed-use expanded from a mix on a building level to the level of the district. [...] In the late XX century whole city districts became occupied with one type of housing or one type of production facilities. [...] One of the essential results of mixing-uses within a framework of the walk-able scale of the block and the neighborhood is the generation of a public realm.' Nowadays, a high degree of hybridity in urban areas seems more and more important to achieve livability and sustainability.

As discussed in Chapter 2, 'zoning in Japan [...] was never used in a very restrictive way to prevent mixing land uses'[14] (Sorensen *et al.* 2010:562). This could be considered a double-edged sword. On the one hand, mixed land uses in principle contribute to vibrant pedestrian environments and grant urban vitality to a street or neighborhood. On the other hand, without proper coordination, detrimental mixes can produce negative externalities and a fragmentation of the urban landscape, often seen in Japanese peripheral areas. Japan (like other East Asian countries) faces, in fact, contrary to Europe and the USA, qualitative issues rather than quantitative ones, deriving from lax zoning. The lack of strict land-use regulations in Japan is also the reason to title this liveability factor "diversity of uses", instead of the common term "land uses".

We will analyze the case studies in two ways. On the one hand, quantitatively, borrowing the so-called MXI (mixed use index) conceived by van den Hoek (2008; 2009): a tripartite index calculating the amount of floor space devoted to housing, working (e.g. offices and factories) and amenities (e.g. commercial activities and public functions). We will follow Dovey's (2016) suggestion to replace the term amenities with visiting, as the three categories clearly show the purpose of one's stay, namely *living* or *working* in a place, or *visiting* it. A chart represents these functions by a percentage over the total floor

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14   '[T]he dwelling and shop are one, the goods being displayed in the room on the street, while the family occupy (sic) the back rooms. [...] It is customary for the common merchant to live under the same roof with the shop, or in a closely contiguous building; though in Tokio, more than elsewhere, I was informed it is the custom among the wealthy merchants to have their houses in the suburbs of the city, at some distance from their places of business.' (Morse 1886:53-54)

space of the area, thus indicating the degree of mix (Fig. 12). It has to be noted that, even though we are analyzing diversity of uses, we take here into consideration just built space. Greenery and water space, land uses in their own right, will be separately addressed in a following factor.

On the other hand, we will analyze the case studies qualitatively. Mappings will distinguish between kinds of business and typologies they are housed in. We will thus be able to differentiate between private and civic amenities, such as schools. This will show which specific function belongs to the neighborhood-level, and which belongs to the wider city scale (supra-neighborhood). In fact, '[p]eople live complex lives and relate both to communities that are defined by where they live, and "communities of interest", based on interest, religion, or shared identity.' (Woodcraft *et al.* 2011:31) Some functions, as such, can be identified as expressions of a local lifestyle, while others belong to the "super-local", following the "central place theory" model outlined by German geographer Walter Christaller in the 1930s.
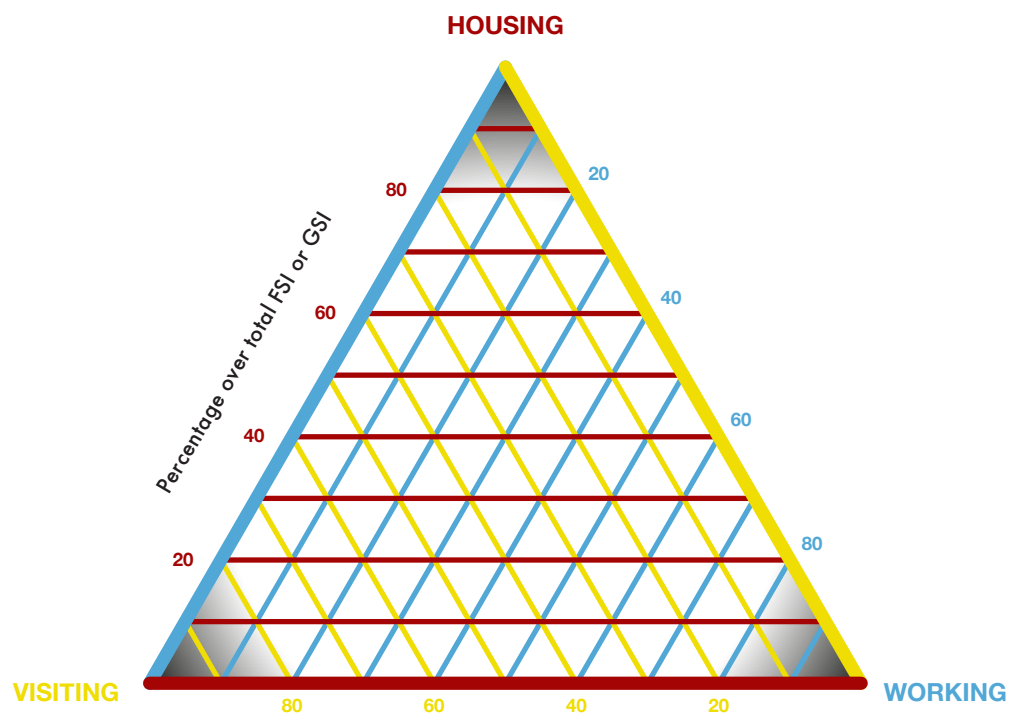
Figure 12: MXI diagram

Walkability

[S]tructural measures of urban path networks, such as "betweenness" or "reach" offer powerful approaches for explaining attractiveness and locational quality within an urban system.

Offenhuber & Ratti 2014:12

Walkability—and "bikeability" too—could be considered a sort of glue holding the city together, as it determines, among other things, accessibility to shops, quality of outdoor experiences, street character and usage. Encouraging pedestrian movement and bike-use is a commonly deployed strategy when aiming at reducing GHG emissions and creating more interesting and vital urban milieus. A compact urban form and mixed land uses alone, in fact, cannot guarantee an increase in non-motorized trips, if they are not sustained by high pedestrian permeability and pleasant streetscape. The degree of openness of a settlement, the quality and character of connections at ground floor and the presence of gates or fences determine, in fact, pedestrian behavior.

In principle, interconnected streets and pathways are preferable over dead-end streets, which do not encourage transit. In concrete terms, though, a so-called fused grid (a mixture between a classical grid and the Radburn pattern[15]) can be seen as a viable compromise to assure enough pedestrian permeability while limiting the negative externalities of traffic, such as noise and pollution. Nonetheless, the important meaning and long tradition of Asian alleyways (e.g. Japanese *roji*, Shanghainese *lilong*) or enclosed spaces (e.g. Beijing's *hutong*) should not be forgotten (see Radović 2012; Capitanio 2016).

According to Madanipour (2016), accessibility is regulated by essentially three kinds of barriers. First, physical barriers, e.g. fences and walls. Second, perceived barriers like codes and signs, as in the case when an expensive-looking shopping center may intimidate customers with insufficient economic means. Third, social control, e.g. legal prohibitions.

Danish urban designer Jan Gehl (1987) distinguishes between two types of activities in outdoor public space. On the one hand there are compulsory ones, which happen regardless of spatial quality, or weather conditions, e.g. going to work. On the other hand there are optional ones, that may or may not happen, depending on specific characteristics

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15   Radburn, New Jersey, was built in 1928 by the Regional Planning Association of America as an experimental residential community. Its masterplan features a bent grid of major thoroughfares and a finer mesh of gently-curving dead-end residential streets.

of a location, e.g. an evening stroll. According to Gehl, by considering the intensity of optional activities it is possible to understand how appreciated and successful a park, square or street is. High-quality street design is also linked to clear economic benefits, as research has shown that financial returns derived from land or property value increase along lively and attractive streets (CABE 2007).

In regard to Japan, while there is an established notion that public spaces, at least in the western sense, have never existed, it is possible to find (private) spaces that, despite being morphologically different from western public ones, essentially perform the same function. We are not interested here in joining the *querelle* about the true nature of Japanese public, non-public or privately-owned space (for this reason we have titled this section "walkability"). It shall suffice to mention the following local typologies that function in a way akin to European public spaces: sacred places; spaces at crossroads and at the foot of bridges; station squares; commercial streets; riversides, lake- and seashores; commercial rooftops (Jinnai 2015).

Walkability will be first analyzed with quantitative models and simulations referring to Space Syntax, a spatial and analytical theory developed by Hillier & Hanson (1984) at Bartlett University, London. Space Syntax is mainly used to assess the (intel)legibility of street networks and the accessibility of points (representing buildings) along given routes. For this research, we have used the plug-in software "Rhino UNA toolbox" developed by City Form Lab (Sevtsuk 2016) at MIT. This software was specifically programmed to be used by architects and planners, as it enables a seamless workflow between design, analysis and simulation of spatial configurations. Among the many types of Space Syntax analysis, we have focused on *betweenness*, to simulate pedestrian flow, and *gravity*, to assess shopping accessibility.

Betweenness 'approximates by-passing traffic or footfall at particular locations in a spatial network. The Betweenness of a building is defined as the fraction of shortest paths between pairs of other origins and destinations in the network that pass by a particular location' (City Form Lab 2015:23). A betweenness simulation will compute pedestrian routes between a) residential & office buildings, and train stations, b) shops and train stations. The former aims at simulating commuter routes, while the latter aims at simulating shopping routes. These will be compared with actual pedestrian flows, measured on-site, complemented with qualitative assessments. In case of great discrepancies or unexpected outcomes, we will run the betweenness simulation with

detour ratios, i.e. considering routes longer than shortest paths by a given percentage.[16]

Gravity,[17] beside 'the number of destinations around each Origin within a given Search Radius [...] measure[s] additionally factors in the travel cost required to arrive at each of the destinations.' (ivi:16-17) This analysis aims at indicating how many shops can be reached by each residential building within a 500 m walking distance,[18] along a given street network. Since topography greatly affects pedestrian behavior—hilly neighborhoods are harder to walk through—the gravity index can express aversion to walking by the exponent β,[19] which will be adjusted according to the topographical characteristics of each case study. Betweenness and gravity analyses will be "weighted", i.e. the buildings' number of floors will influence outcomes, generating a proportional amount of simulated pedestrian routes.[20]

16   'The Betweenness algorithm in the Rhino UNA toolbox has been specifically customized to make it useful and practical for estimating realistic pedestrian movement in spatial networks. Whereas a traditional Betweenness index would estimate trips from a set of origins to a set of destinations along shortest paths, keeping track of how many trips follow each route, the Betweenness algorithm in the Rhino UNA toolbox allows you to relax the shortest path assumption. A "DetourRatio" variable allows walks between origins and destinations to deviate up to the specified % above the shortest paths (the maximum deviation is fixed at 200%). Using a DetourRatio of "1.1", for instance, allows walks to use paths that are up to 10% longer than the shortest path to reach the destination. Each alternative path that is found is given an equal likelihood, dividing the weights of the Origin point equally between all alternative paths. This is useful since people don't necessarily take shortest paths in the city. Prior research has found that it is common for pedestrians to deviate around 10-20% above the shortest route in order to use a more useful, pleasant, simpler, or comfortable path.' (City Form Lab 2015:24)

17   'First introduced by Hansen (1959), the Gravity index remains one of the most popular spatial accessibility measures in transportation research. The Gravity measure assumes that accessibility at Origin i is proportional to the attractiveness (weight) of destinations j, and inversely proportional to the distances between i and j'. (City Form Lab 2015:17)

18   US researchers assume that 400 m is the average distance that Americans would walk rather than drive (Yang & Diez-Roux 2012:11). In the case of Japan, researchers have been assuming 3-500 m as a maximum convenient walking distance (Takemoto 2016; 薬師寺 2015; Hirai *et al.* 2015). Given the introduction of a β factor (see next footnote) in our analysis, we have assumed 500 m as an average walking distance.

19   'The inverse effect of distance specified in the Gravity index decreases exponentially. The exact shape of the distance decay can be controlled with the exponent β, specified in the command line input when running the Centrality tool β and the corresponding shape of distance decay should be derived from the assumed mode of travel – for walking measured in "minutes", for instance, researchers have found β to fall around 0.1813 [...]. The equivalent value of Beta for impedance units in "feet" 0.000663; in "kilometers" 2.175, and in "miles" 3.501. This corresponds to 0.00217 in meters. In the context of Singapore, for instance, we have determined that beta for walking varies between 0.005-0.005 [sic]. Beta values that are higher (closer to 1) indicate stronger aversion towards walking distance.' (City Form Lab 2015:17)

20   'Weights allow you to weight the analysis according to the properties of origin points. If an origin point has a weight of "100" for instance, describing its number of residents, then weighted Betweenness will route 100 trips from the origin location to the destination, instead of just one trip.' (City Form Lab 2015:24) In our case, buildings with 1-3 floors will count as 1, buildings with 4-6 floors as 10, buildings with 7-10

Green/water space

Edo has been called a grand garden city.
   Jinnai 1995:28-29

Tokyo was anything but a "green city" in the years before the Great Kantō Earthquake. In 1922 just 1.7 per cent of Tokyo's urban space was classified as parkland. Not only was this minuscule in real terms, but also in a comparative context.
   Schencking 2013:288-89

Nature in cities directly improves the health of their citizens. Not only physical well-being increases, as people—especially the elderly—are more likely to perform outdoor activities (Takano *et al.* 2002), but their psychological health improves too (Blaustein 2013:72). In this respect, Gunnarsson *et al.* (2017) have demonstrated the link between objectively measured biodiversity of a place and subjective perception of its pleasant qualities. These positive human reactions toward natural environments can be called biophilia, i.e. an affinity and feeling of empathy with other living organisms (Newman 2014).

   Tokyo's central wards score low in regard to green space per inhabitant, at around 5.77 sq.m. (Tokyo Metropolitan Government 2015). This value is well below that of developed (American and European) metropolises, and is lower than the often-quoted recommended minimum threshold of 9 sq.m./inh. Tokyo is nowadays perceived as an extremely urbanized environment, being one of the largest conurbations in the world. Yet, the city had a profound relationship with greenery and water until the end of the Edo period. Modernization and development during the following Meiji era came at a price, though.

   In regard to Tokyo, even though in 2008 the green and water coverage was as high as 50,7%, there were huge disparities between the 23 central wards and the western Tama Area: 19,6% and 67,4% respectively (Tokyo Metropolitan Government 2014). To reduce this gap and increase green space in central wards, the "Tokyo Green Plan 2012 - City Biodiversity Strategy" aims at creating small, high-quality, interconnected natural spaces, recognizing the lack of large plots in the city center to carry out extensive greening measures. Various stakeholders—including public and private ventures, NPOs and

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floors as 17 and buildings with 10+ floors as 24.

citizens—are foreseen to implement the plan. Nowadays public green spaces in Japan's capital city—like in other urban areas across the country—are complemented by the role that private gardens, potted greenery, green walls and rooftops play. In fact, small, private greenery increases the perceived presence of natural features by pedestrians.

Gao & Asami (2001) have established from an economic perspective that, in Tokyo's residential environments—characterized by small plots—linear neighborhood parks increase land values, while squarish parks seem to yield a positive effect when they are surrounded by larger plots. This has to do with different perimeter-length/area ratios, i.e. the amount of parcels directly adjacent to a green space. Kinoshita (2010) advances, in respect to private gardens, the concept of *niwa-roju* (庭路樹), i.e. green amenities that are privately owned and managed but, being visible from the street, benefit the whole neighborhood. Braiterman (2014) recognizes in potted street gardens a continuity with the social practices of dense and communal living of the Edo-period low-lying city, claiming that current street gardeners contribute to increasing streetscape quality in alleyways (*roji*), slowing down motorized traffic. Moreover, Almazán *et al.* (2012) acknowledge that, while green areas in Tokyo quantitatively score low in comparison to other international capitals, the perceived presence of greenery is appreciatively higher. This is thanks to the presence of micro-greenery—unaccounted for in official statistics. This phenomenon seems to have been true in the Meiji period too, as '[g]reen masses of tree-foliage springing from the numerous gardens', according to American zoologist and author Edward Morse (1886:1-2), 'add some life to this gray sea of domiciles.'

In Tokyo, and in Japan in general, there are two peculiar characteristics in regard to urban greenery that we should consider, one at the macro, and one at the micro scale. At the macro scale, temples and shrines have historically provided abundant and mature greenery for the enjoyment of citizens. As small forests and woods have had the function of detaching sacred from secular space, temple grounds have performed a function similar to western public parks, with some key differences though. If parks in the West are public spaces owned and managed by the city, religious green spaces in Japan were and are essentially private spaces both in terms of ownership and management, even though some of them have been made public during the Meiji period (Sorensen 2004).

Addressing the increase of green areas in Tokyo, a mixture of top-down and bottom-up initiatives is to be found in the Tokyo Metropolitan Government Park Association's "Greening the city center" project (まちなか緑化) (東京都公園協会 2017). Business owners

are encouraged to increase the presence of trees, shrubs and potted greenery in proximity to their shopfronts. These measures can boost the attractiveness of neighborhoods or shopping streets, responding to the greening and biodiversity conservation targets set by the local government. These environmental initiatives are supposed to trigger benefits related to community building too, as greening actions are often turned into local events. "Greening the city center" is being implemented in the neighborhoods of Asakusa, Kugayama, Nakano, Ikebukuro and Kiba. A stronger presence of natural features is also intended to increase the commercial appeal of an area. In fact, there is a growing body of international literature indicating the economic benefits of greening strategies in commercial areas. Customers seem to be willing to spend more and remain longer in shopping environments featuring natural amenities (Wolf 2004; Joye *et al.* 2010; City of Melbourne 2014).

In our analysis, we will first map and quantify publicly accessible parks, green and water spaces, and agricultural land, considering the local topography.[21] Moreover, we will distinguish privately-owned and managed green from shared or collective one (such as in the case of *danchi*). A qualitative analysis will follow, assessing the use, significance and performance of such spaces, based on on-site surveys, employing photographic material.

Machizukuri/participation

The measures of urban planning we have seen so far allow citizen participation, such as opinion hearings [...]. However, unfortunately, there are many cases where public relations are bad, or the discussion is too technical [...]. As a result, interest does not rise, and there are almost no voices of opposition from the citizens. Even if you raise your voice [...], it is often already late.

野澤 2016:200-201 (author's translation)

The word *machizukuri* (まちづくり) literally means "town-making", and it has become almost a buzzword among planning professionals and citizens in Japan since the 1990s. The concept has further spread to South Korea and Taiwan. It is usually used to characterize

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21   In our calculations we have quantified paved space around buildings by outwardly offsetting building footprints in the following manner: 100 cm for 1-6F structures, 200 cm for 7-10F structures, 300 cm for 10+F structures. Moreover, the footprint of sheds and shacks was classified as paved space and not as built space.

the action of local, relatively small groups of residents and citizens, concerned with the (environmental) improvement of their own community and neighborhood. As such, it is usually a bottom-up, spontaneous process that, despite its lack of juridical base, is seen by many as a major shift in recent Japanese planning and urban management practice (Watanabe 2012; Hayashi 2010; Sorensen & Funck 2007).

The word, entering Japanese vocabularies in the 1990s, can be written with two different characters. In 街づくり, the character 街, usually pronounced as "gai" and used as a suffix or prefix to another character, implies big streets in urban areas, lined with offices, shops, or trees. Meanwhile in 町づくり, the character 町, pronounced "machi," or "chō", denotes an administrative unit in either urban or rural areas. Nowadays, *machizukuri* is usually written in *hiragana* syllabic alphabet dispensing with the use of characters, conveniently done so to embrace diverse kinds of associated activities, thereby to get as many people as possible interested in the proposed project. The *hiragana* writing is a clever tactic to blur the relevant definitions, now ubiquitously used in civilian and administrative vocabularies.

Interestingly, when the citizens and the administration achieve a consensus on a cooperative project and sign an agreement, they often use a stiff word, *kyōdō* (協働), for the agreement title. This usage, suggesting "toil and moil to cooperate", is also new with slightly different connotations from traditional, long-established words pronounced *kyōdō* and meaning "to cooperate".

The origins of *machizukuri* can be traced back to the early 1950s in Kunitachi (see Chapter 4), a city located in Tokyo's western Tama Area. Kunitachi developed as a new town, akin to a garden city, in a leafy area ca. 30 km west of Tokyo station, reached by a new train station opened in 1926. Due to widespread destruction of Tokyo's central wards caused by the Great Kantō Earthquake in 1923, Kunitachi came to host two important educational institutions, the Tokyo Music Institute (later Kunitachi College of Music) and Hitotsubashi University, strengthening the sophisticated but quiet character of the town.

The outbreak of the Korean War in 1950, though, marked the coming to the neighboring town of Tachikawa of American soldiers, who were stationed in the local military base, prompting the flourishing of licit and illicit amusement businesses in Kunitachi. Concerned by this situation, local residents, especially women, together with Hitotsubashi University students and staff, organized themselves into resident groups

with the objective of strengthening control in the area and of designating Kunitachi as an Education District, subject to stricter land-use regulations. They were eventually successful and, in 1952, the Ministry of Construction granted Kunitachi the special status, which has hold until now (Watanabe 2012:2-5).

Numerous publications have been devoted to *machizukuri*, but the most comprehensive and far-reaching in English language was compiled by Sorensen & Funck (2007), from whom we hereafter summarize some key points. First, *machizukuri* seems to address specific neighborhoods and tackle local, concrete livability issues, often regarding environmental improvements or heritage preservation, by means of voluntary engagement through meetings, workshops or cultural initiatives. Second, in contrast to traditional neighborhood associations, *machizukuri* groups are, in principle, open to everyone interested in the actions being carried out. Third, *machizukuri* seems to be a two-tiered phenomenon: one the one hand, it sparks optimism as a potentially productive way of integrating bottom-up, local agendas into a stiff planning practice;[22] on the other hand, its influence and real effectiveness are questionable, since it seems to rest on a rather low pole of the "ladder of participation" (Arnstein 1969). Lastly, depending on the specific issue, location and people involved, *machizukuri* practices could be either a progressive attempt to improve and change neighborhoods, or represent the reactionary interests of powerful local groups resisting any disruptive change (Sorensen & Funck 2007:269-72).

Machizukuri movements are very diverse and, therefore, could be interpreted in different ways. Sorensen & Funck (2007:2-3) highlight the following fundamental questions: first, despite the claimed interest in livability issues, is *machizukuri* really contributing to making better communities and better environs to live in? Second, how effective are *machizukuri* practices in a context where the central government holds great steering power and is substantially backing policies targeting economic growth through further development? Third, does *machizukuri* testify an increasing importance and leverage of civil society in Japan?

Widening our focus to worldwide practices, we similarly encounter a generally favorable stance toward participation, which, in Hamdi's definition (UN-Habitat

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22   '[F]or many people, the history and texture of the 'ordinary places' where they live is of great value, and worth great investments of time and energy to protect. It is precisely this sort of activity of valuing, understanding, and improving particular small spaces in the city, and the values they embody for the people living there that is the great potential of machizukuri and the great blind spot of traditional urban planning.' (Sorensen & Funck 2007:271)

worldwide 2014) is 'responsibility with authority in partnership with other stakeholders'. This implies a process of cooperation with other people (Barnett 1974), having common interests and sharing common risks. Beside being an efficient mechanism, participation is supposed to build social capital and improve liveability. Participation helps build what Guiso *et al.* (2010:3) have defined as civic capital, 'i.e. those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities', which are passed down to younger generations by parents and educators. 'Thus, when a community has more (or stronger) values that foster cooperation, we can say that the community has more civic capital.' (ivi:8)

An unconditionally positive view of participatory practices, though, is a naive standpoint. German architect and author Markus Miessen has dedicated a trilogy of books to the exploration of opportunities and downsides of participation. Participation is not always a positive force, being a sort of war where conflict unfolds, that could result in the so-called "tyranny of the group" (when, instead of good choices, least bad ones are taken not to displease anyone) or "tyranny of the method" (when participants with no expertise have the same power as experts) (see Ratti 2014:42-63; Miessen 2011). In regard to our analysis, we will review the history and current status of local participatory practices and *machizukuri* activities in the case study areas, highlighting the contribution, if any, to neighborhood liveability.

Local character

The key to better cities in the twenty-first century, I believe, is in rediscovering the identity of our local cities.
   Ashihara 1989:50

In contrast to the other factors presented in this chapter, local character is decidedly subjective, both in the eyes of the researcher and in those of the people being inquired. Moreover, there are a number of terms relating to it, such as "identity", "locality" or "place", that have a body of literature on their own and assume different nuances, depending on the concerned discipline. We have opted for "local character" as it seemed the easiest to understand and the most neutral expression. We thus use the term interchangeably for a variety of practices that contribute to make a place unique and recognizable, both in terms of morphological assets and intangible characteristics, such as social capital,

perceived image or identity. As Kinoshita *et al.* (2012:43) have put it, 'there is a need to differentiate the "localness" [...] [which] does not just relate to the physical environment, but also has the meaning of "common use" as a result of an accumulation of activities carried out by groups within the area concerned, and hence can be understood as something constructed with the framework of social relations.'

As argued by American urban planner Kevin Lynch (1960), city districts are defined by being homogeneous and made up of characteristic parts. In some cases the district character might be quantitatively assessed, if it happens on a physical level, but, in many cases, it might be much more volatile and difficult to describe. In those instances, one has to resort to interviews, questionnaires and the like, in order to gain insights about how locals perceive their place. Obviously, the researcher should also trust his or her own personal impressions as a source of knowledge.

In regard to Tokyo, Radović & Boontharm (2012) have highlighted the importance of non-measurable aspects defining the character of the city. The keywords here are "smallness" and "subjectivity", unfolding through practices of everyday life. Takahashi & Kobayashi (2015), in an investigation about the "DNA" of Tokyo's Shimokitazawa district, have stressed the role of local business associations and *machizukuri* groups to produce a strong intangible identity, which is seen as a process and, thus, constantly changing.

We expect that peripheral areas with the ability to brand themselves as places offering an alternative lifestyle to that of the city center will be advantaged in the competition to attract and retain residents. In this respect, we are interested in exploring the interplay of the three types of place brand communication identified by Zenker & Braun (2017:276): physical space, official advertising and public relations, word-of-mouth.

In our analysis, we will survey the presence of historically relevant heritage, while assessing its importance and meaning for local character. We will also highlight practices of place branding and the image that the case studies have on media and popular culture.

3.4 Selection of case studies

The great danger in focusing on a single case study city (or part of one) is that it may not be representative of suburban development as a whole. Any city chosen will have its own unique characteristics, and there is in fact considerable variety in suburban development

in Japan.

    Sorensen 2001a:249

Given the obvious limits of selecting one case study and ground generalizations upon it, this research adopts a multiple case-study approach, investigating the relationship between liveability and the anticipated shrinkage of Tokyo's peripheral areas. Three case studies, located in the Greater Tokyo Area, namely Kunitachi, Tama New Town (in Tokyo Prefecture) and Yukarigaoka (in Chiba Prefecture), were selected according to the criteria summarized in Table 6 and introduced below.

Location and accessibility

Peripheral areas are defined in this research as neighborhoods spatially detached from central wards, but within commuting distance. They are dependent on the city core in regard to workplaces, as their population commutes on a daily basis. According to official statistics of 2011, the average, one-way, commuting time of salarymen in Tokyo, Chiba, Saitama and Kanagawa prefectures was ca. 38 minutes (Statistics Bureau 2011). As a comparison, the survey conducted by real estate company *at home* in 2014, among people who bought a house within the previous five years, had child(ren), lived in the four above-mentioned prefectures and worked in Tokyo, revealed a 58-minute, one-way, commuting time (athome 2014). Given these statistics, we selected as case studies areas that can be reached with public transport in ca. 40 to 60 minutes, assuming a major station as a starting point (e.g. Tokyo, Shinjuku, Shibuya, Ueno) (Fig. 13). This corresponds to a 30-40 km aerial distance from Tokyo Station. Moreover, each case study is served by only one train station, which is off-centered, i.e. located along the edge of the case study area.

	Den'en-Chofu	Kunitachi	Tama New Town	Yukarigaoka
Foundation	1923	1926	1967	1977
Distance to Tokyo St.	13 km	30 km	30 km	35 km
Train time to Tokyo St.	35 min	45 min	45 min	60 min
Size	75 ha	250 ha	263 ha	383 ha
Developer	Private	Private	Mainly public	Private
Status quo	+/-	++	- -	+

Table 6: criteria for case study selection. By means of example, Den'en-Chofu has been discarded as it is too close to the city center and too small in size
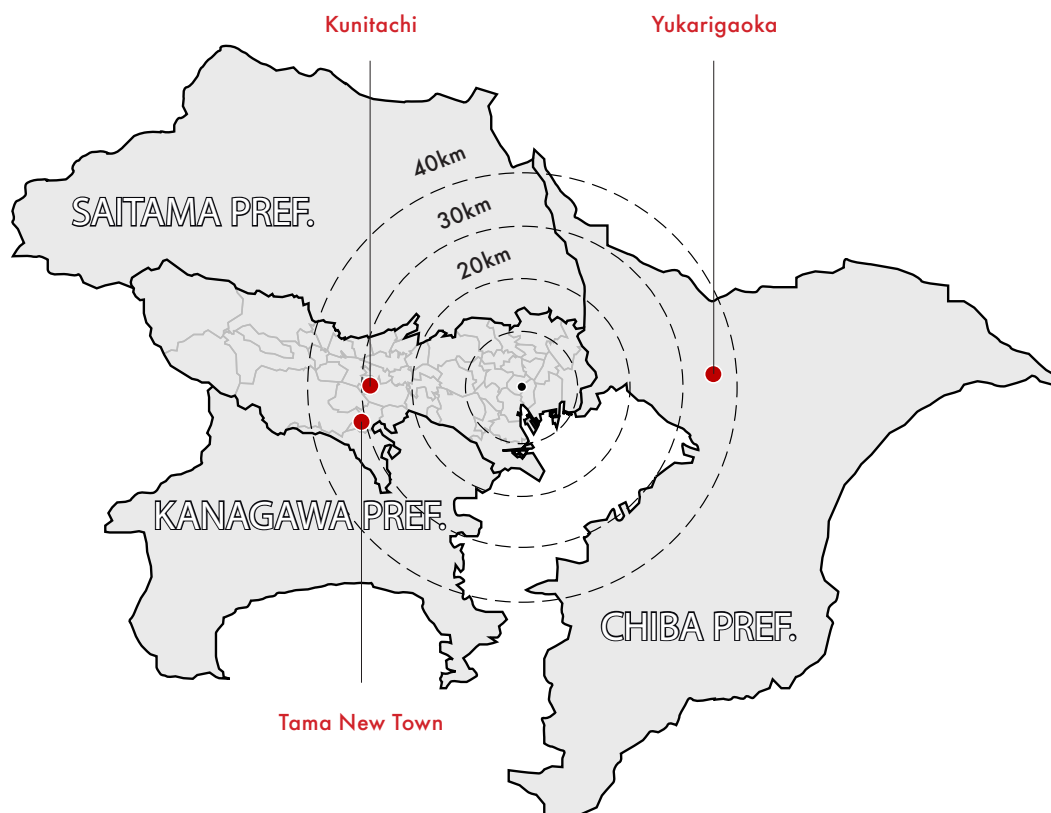
Figure 13: location of the three case studies in respect to the Greater Tokyo Area

Neighborhoods of new foundation and of comparable size

All three cases were founded as new towns, even though in different periods. Kunitachi has been developing since the late 1920s, Tama New Town (the case study area) and Yukarigaoka since the late 1970s. Younger towns have been discarded since they generally have not yet encountered population and building aging. Being founded from scratch, these towns are not bound to preexisting settlements, historically bearing positive or negative aspects, thus enabling a more focused analysis of their characteristics. Case studies of comparable size have been selected. In fact, both the original planned area of Kunitachi and the area owned by Yukarigaoka's developer are approximately 300 ha in size, roughly corresponding to the two selected districts in Tama New Town. Data for this investigation were collected first from literature review in English and Japanese; second, from fieldwork during the course of two years (2015-2017); third, from publicly-accessible geodata and aerial photographs.

Variety (performance, townscape, image, developer)

The three examples show different morphological characteristics (e.g. dwelling type, street network), history and image. Kunitachi can be considered a liveable town with a good reputation; Tama New Town is entangled with the image of an apartment-blocks area facing issues of aging and shrinkage; Yukarigaoka has emerged as a well-working suburban community with access to natural amenities. Moreover, Kunitachi, though privately founded, features strong *machizukuri* movements with an established history; Tama New Town is a public endeavor with a dwindling presence of public intervention; Yugarigaoka is both privately founded and privately managed. Lastly, all three case studies present a distinctive character, whether positive or negative, demonstrated by their appearance as the backdrop of the following movies: Kunitachi in *Wolf Children* (Hosoda 2012), Tama New Town in *Pom Poko* (Takahata 1994), Yukarigaoka in *Einstein Girl* (Oikawa 2005).

Conclusions

Contrary to the assumptions of liveability rankings, we have clarified that an assessment of liveability has always to take into account local characteristics. In fact, as argued by Gans (1991), the specific challenges and goals of each community should inductively determine the most appropriate research methods and the focus of analysis, fueling a dialectical spiral between research objects and tools. Our methodology has been crafted to be flexible and comprises a number of quantitative and qualitative methods supporting each other. In addition to morphological factors, intangible ones constitute an integral part of the case-study analysis.

Peripheral areas (dependent on the city core but spatially detached from it, whose inhabitants largely commute to the city center) have been chosen for this research because they are subject to the highest threats in the context of Japanese (de)urbanization. After the following summary table of demographic trends in our case studies (Fig. 14), let us proceed to the analytical part of the thesis, where the assessment of each case is preceded by a historical contextualization.

KUNITACHI   TAMA NEW TOWN (Whole)   YUKARIGAOKA (Sakura City)
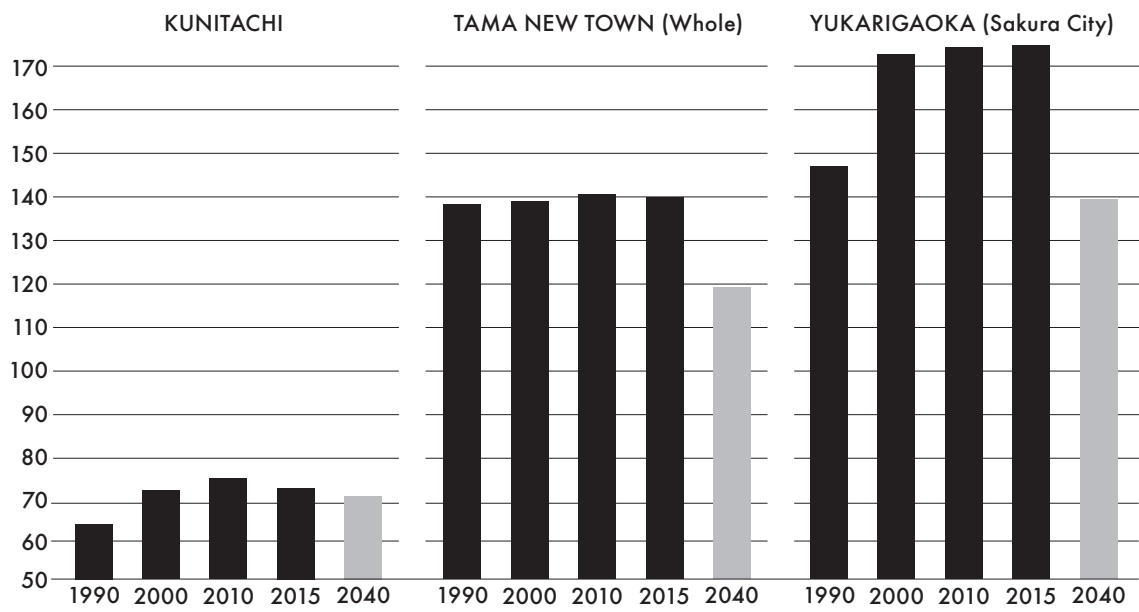
Figure 14: demographic changes in Kunitachi, Tama New Town and Sakura City—where Yukarigaoka is located—in thousands

4
KUNITACHI

[T]rough the 1970s [...] Kunitachi had consolidated its image as a child-friendly town known for its sophisticated culture and natural beauty.

    Molasky 2014:72

Kunitachi (国立)[1] is a city ca. 30 km (45 minutes by train) west of Tokyo Station, lying in the Tama Area, with a population of ca. 75'000. Despite its location, the city is considered convenient to live in and attractive, as a 2012 survey confirms (三浦 2012): in fact, while Kunitachi ranks number 28 among Tokyo neighborhoods where people would like to live in, it is the 7th best place among areas where respondents have actually lived. Nevertheless, Tama Area's 2015 population is expected to face a 30% reduction by 2050,[2] and, from this point of view, municipalities will have to compete among themselves and with central districts to retain and attract residents. As more affordable and more central living options will become available, peripheral areas will have to offer unique features and strengthen their appeal and image, something which Kunitachi has been (unconsciously) doing since its inception.

The chapter starts with a historical background of Kunitachi's foundation and development, especially highlighting the role played by local inhabitants and their bottom-up activities at times of crisis, originating the very concept of *machizukuri* in Japan. A second section will present the analysis of four morphological liveability factors, showing how built space shapes local quality of life. A third section will introduce the analysis of two urban management factors, examined from a socio-cultural point of view, clarifying how Kunitachi's identity is being sustained and exploited.

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1   These characters, which could be alternatively read as "kokuritsu" (meaning "national"), resulted from the combination of the names of two neighboring cities: Kokubunji (国分寺) and Tachikawa (立川).

2   4.22 millions in 2015, estimated to decrease to less than 3 millions by 2050 (帝京大学文学部社会学科, 2015).

4.1 Inception and historical development

We need to recall the Tokyo of the 1920s. The idea of the garden city was introduced from England around this time, and attention began to turn to the suburbs and their lush natural environment. [...] [I]t is easy to become absorbed in the "garden cities," "culture villages," and "educational cities" of the day.

   Jinnai 1995:206

Kunitachi was founded as a garden/educational city, developed by Yasujirō Tsutsumi of Hakone Estate, business tycoon and member of the Diet. He started buying land in the early 1920s with the (speculative) intent of establishing a university town, inspired by the model of Göttingen in Germany (Fig. 15). After the 1923 Great Kantō Earthquake struck, he proposed to the president[3] of the Tokyo College of Commerce (currently Hitotsubashi University) and of the Tokyo Higher School of Music (currently Kunitachi College of Music) to abandon their damaged properties in central Tokyo and move to the western, leafy suburbs, in a new town akin to Howard's garden cities.[4] Both universities relocated between 1927 and 1931.

The planning of Kunitachi was carried out by former planners of Mantetsu, the South Manchurian Railway Company founded in 1906. After the Treaty of Portsmouth that ended the Russo-Japanese war, in fact, Japan was granted the control of the area between Dalian and Changchun in China. In regard to city planning, Tsutsumi consulted Shimpei Gotō, the first president of Mantetsu, former Tokyo Mayor and Home Minister. Some 20 years earlier, Gotō had sent to Europe one of his architects, Yoshikichi Katō, to study planning. Impressed by Parisian boulevards and by German cities, such as Mannheim, Gotō and Katō adopted European models for the new masterplans of Fengtian (nowadays Shenyang), Changchun and Dalian (Scherer 2012). These influences mingled with ideas of the garden city movement, envisioning Kunitachi as a university town, a secure and relatively independent environment. An American-style campus was thus placed amid a city grid and along a boulevard reminiscent of Paris' Champs-Élysées and Berlin's Unter den Linden.

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3   Zensaku Sano, an economist who had spent time in the US, England and Germany.

4   Ebenezer Howard's theories were first translated in Japanese in the 1907 book "Den-en toshi", lit. "garden city".
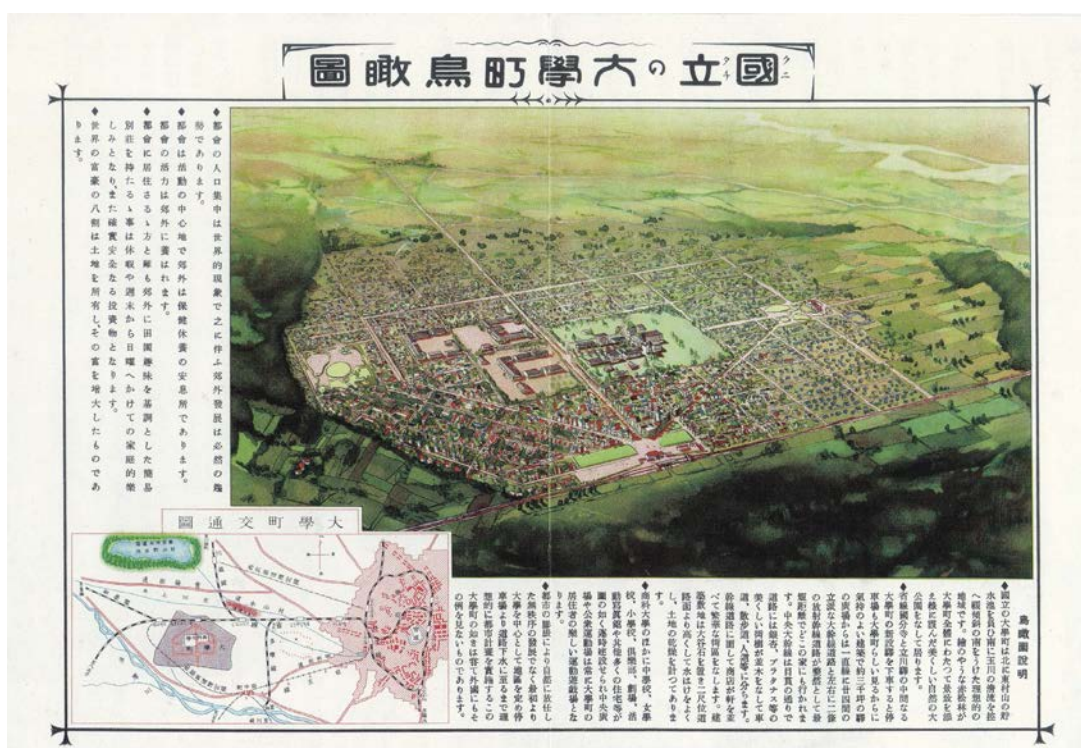
Figure 15: bird's-eye view of Kunitachi as a university town (ca. autumn 1925)

1926 marked the opening, on the JR Chūō Line, of Kunitachi Station, which constitutes the focal point of three radial streets cutting-through a city grid composed of 250 x 75 m blocks. The central artery, Daigaku-dōri ("university street"), connecting the train station—in front of which an aviary and pond were originally present—with Hitotsubashi University, was conceived as a European-style boulevard, featuring broad sidewalks lined with cherry and ginkgo trees (Capitanio 2016). These trees, foreseen in the original masterplan, were planted in 1934 by the youth association of Yaho village, a historical settlement adjacent to the new development, to be later incorporated in the municipality. They were planted to celebrate the birth, in December 1933, of crown-prince Akihito. This can be seen as an early sign of civic involvement in Kunitachi.

The town developed slowly until the end of WWII. Since 1945, though, the presence of an American military base in neighboring Tachikawa City had triggered prostitution in Kunitachi, leading to increasing tensions between residents and American authorities. As a result, local citizens (especially housewives), supported by university professors and students, formed a group with the aim of improving Kunitachi's reputation and quality

of life (Watanabe 2012). Citizens of Kunitachi successfully applied to the Ministry of Construction for the status of "Special Education and Culture District" (*bunkyō chiku*), granted in 1952, the first of its kind in Japan. After Kunitachi, dozens of neighborhoods around Japan have achieved this status, as they are areas with a high concentration of schools, museums, or libraries. Due to such special status, a stricter building code was enforced in Kunitachi, banning certain activities (e.g. prostitution, *pachinko*[5] parlors, hotels, dance clubs) in the vicinity of the station and of the university, and limiting building height. This bottom-up campaign is considered to be the origin of Japanese *machizukuri* practices.

Such a strong sense of community has helped to preserve and improve the liveability and attractiveness of Kunitachi in the following decades. Daigaku-dōri, in fact, was selected in 1982 as one of the 100 New Tokyo Sceneries (新東京百景 - *shin tōkyō hiakkei*) and in 2006 it won the Beautiful Townscape Excellence Award (美しいまちなみ優秀賞 - *utsukushii machinami yūshūshō*). It can be saud that residents 'made decisions in the process of landscape formation, [...] spent a lot of time in discussions and made strenuous efforts to create [a] favorable urban environment' (津川康雄 2014:136), as exemplified by the so-called Kunitachi Mansion Lawsuit (国立マンション訴訟 - *Kunitachi manshon soshō*) (Fujii *et al.* 2007).

During this contested trial, unraveling from 2000 to 2017, Kunitachi citizens sued the developer of an apartment building along Daigaku-dōri. The majority of buildings along the boulevard, except for the area adjacent to the station, are low-rise structures. In the absence of a district plan, in 1999 a developer was able to purchase a large plot, which allowed for a higher-than-usual FAR, with the intention to build an 18-story condominium. The plan initiated a fierce debate between the developer, residents, and the local government represented by mayor Hiroko Uehara, who strongly backed residents' opposition. As a way to stop the construction, citizens petitioned for the enactment of a district plan, limiting building height to 20 m, which was promptly ratified by the local government. The developer, nonetheless, upon lowering the building to 14 stories, managed to receive building permission just a few weeks before the enforcement of the new district plan. Kunitachi citizens proceeded by suing the developer for ruining the landscape qualities of Daigaku-dōri. Despite an historic sentence of the Tokyo District

5   A popular pinball-like gambling game, akin to a slot-machine.

Court in 2002 to demolish the part of the building exceeding 20 m in height, the Supreme Court ultimately ruled that, while landscape quality is a right in itself, the condominium building did not violate any law at the time of its building permit. Meanwhile, the developer sued Kunitachi City for damages, winning the trial and receiving compensation from the city. Nonetheless, the sum was paid back to Kunitachi by the same developer, as a sign of good will. Ironically, though, a group of Kunitachi citizens filed a complaint against former mayor Uehara, considering her responsible for the compensation the city had to pay to the developer. The complaint was later revoked by the local government, but the Supreme Court ruled against Uehara in 2017, and forced her to financially compensate Kunitachi with 31 million yen (ca. 250'000 euro).

The Kunitachi Mansion Lawsuit managed to set a meaningful precedent for other *machizukuri* practices across the country (see also the interview with Keita Yamazaki and Yukihiro Yasunami in Appendix A). In fact, this 'opposition movement [...] was probably the biggest and most sophisticated ever' (ivi:262) in Japan. These historical premises have shaped a track along which current *machizukuri* activities in Kunitachi align themselves, as we will see in the *machizukuri*/participation section in this chapter. Before proceeding to the morphological analysis, let us now introduce key statistical data to better frame Kunitachi's current condition (Table 7).

Statistical data

The case study area (from here onwards interchangeably indicated as Kunitachi) comprises 10 *chō* (see 2.2), spread over a surface of 250.6 ha, and hosts some 30'000 inhabitants, about 2/5 of Kunitachi's total population (Fig. 16). This area was selected as it roughly corresponds to Kunitachi's original masterplan, featuring a strong border given by the railway line on the north, a topographical and administrative border to the east and a change of city grid to the south and west. It also clearly gravitates around Kunitachi Station (and not on the neighboring Kokubunji, Tachikawa or Yaho stations), so that it could be considered its catchment area.

In demographic terms, the amount of one-person households is of interest as it is in line with Tokyo Prefecture's average. Despite being a peripheral town with a family-friendly image, the proportion of resident families is not larger than that of central wards (it may be also inferred that singles living in Kunitachi are constituted in a considerable part by university students). Since the mid-2000s, the city's population has begun to

Area	250.6 ha			
	1990	**2000**	**2010**	**2016**
Population	ca. 26'700	ca. 29'300	ca. 30'700	ca. 30'000
<15 years old	15.5%	13.6%	12%	11.6%
>65 years old	9.1%	14.4%	19%	22%
	1 person	**2 p.**	**3 p.**	**4/4+ p.**
Household composition (2016)	41.2%	26.5%	17.6%	14.7%

	Residential	**Commercial**
Referential land price (2016)	270'000-445'000 yen/m²	1 million yen/m² around train station

Crime (2017)	The larger crime frequency map presents data at the *chō* level; the smaller map frames crime frequency in Kunitachi within the context of Tokyo Prefecture
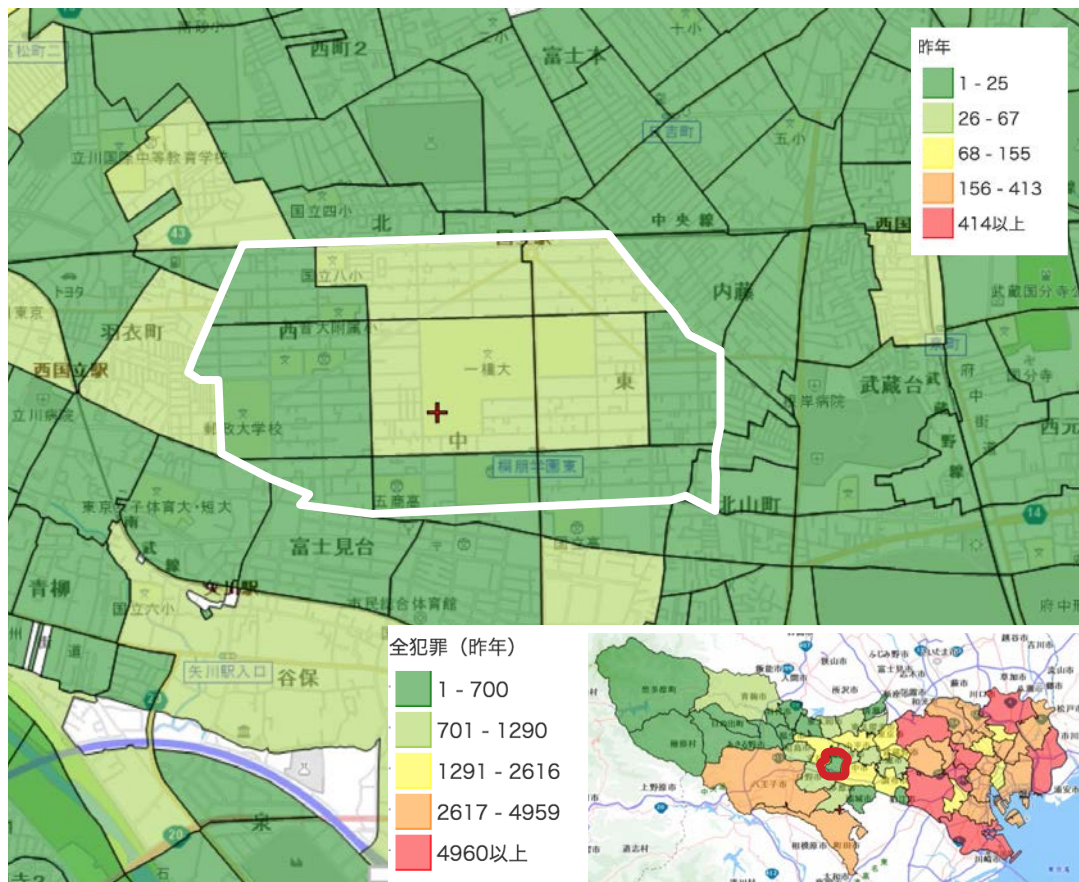
Table 7: summary of various statistical data about the case study area, representing about 1/5 of Kunitachi's municipal area
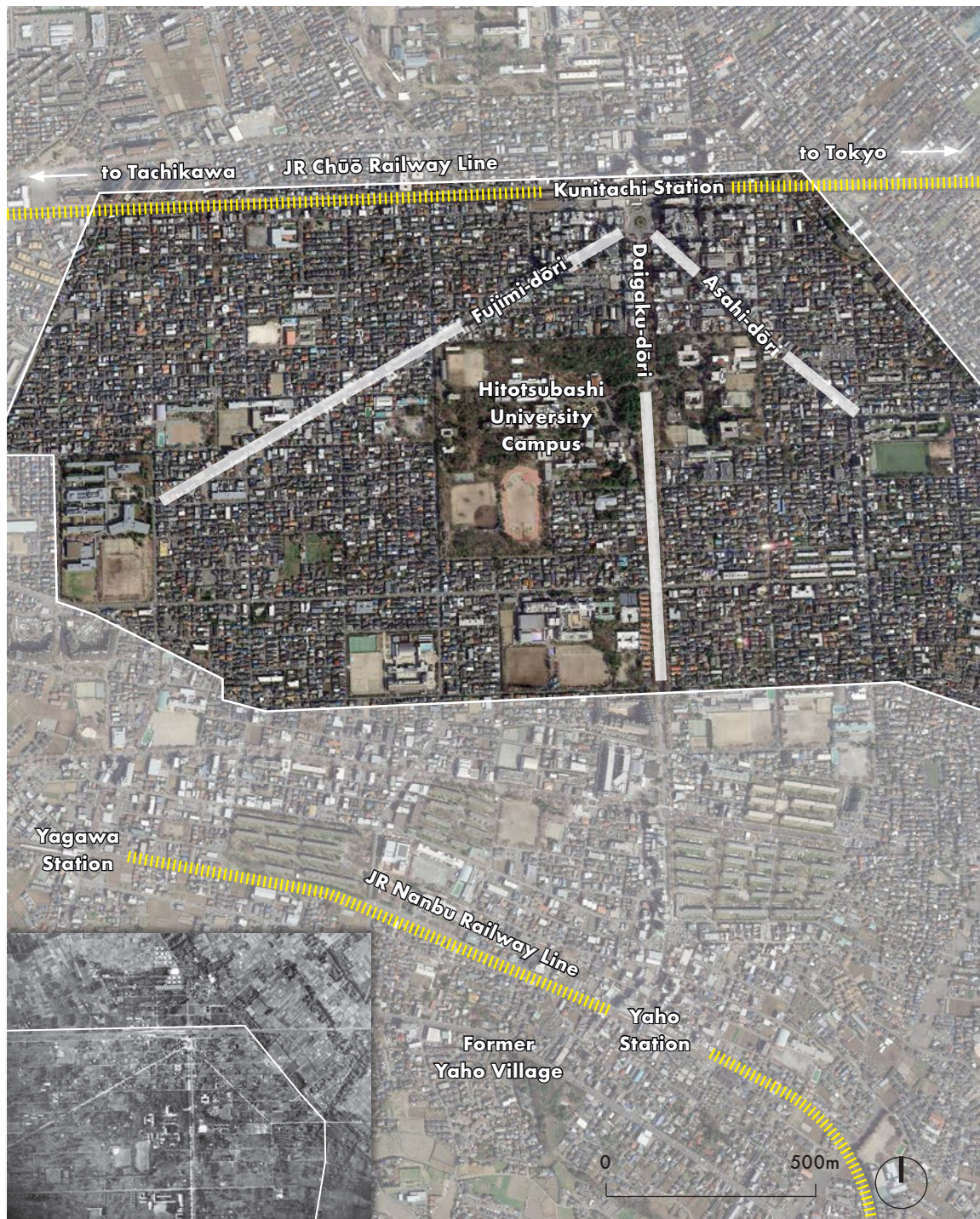
Figure 16: case study area and its immediate surroundings. At the bottom-left corner aerial image of Kunitachi in September 1947

slowly decline, but such shrinkage (-2.8% in 2040 compared to 2015) (国立社会保障・人口問題研究所 2013) is expected to be less dramatic than that of other municipalities in the Tama Area. We may wonder, at this point, whether this favorable prediction implies that Kunitachi is a liveable and more resilient community, i.e. less subject to depopulation. Land prices in the case study area are assessed at ca. 1 million yen/m² for commercial plots close to Kunitachi Station, and between 270-445'000 yen/m² for residential plots (木浦税務不動産 2017). These values are higher than those in other towns with the same aerial distance from Tokyo Station (積水ハウス椋試合祉 2015).

4.2 Morphological factors

In order to highlight the causality between liveability and built space, we will now examine four morphological factors: density/compactness, diversity of uses, walkability and green/water space.

Density/compactness

All relevant metrics are graphically summarized in Fig. 17. The Spacematrix diagram indicates a total GSI of 0.32—i.e. 32% of the case study area is occupied by buildings—a FSI of 0.92, an OSR of 0.74, with an average number of floors of 2.9. These indicate that Kunitachi as a whole is a low-rise, compact development, displaying an urban character. Nevertheless, there are differences within the case study area. The blocks around the station and along the three radial streets presents, as expected, higher-than-average density and compactness, while residential blocks present a higher degree of compactness. These discrepancies are due to the increased height and plot coverage of mixed-use and commercial typologies close to the transportation hub, and to the relevant size of Hitotsubashi University's green campus, which considerably lowers the overall GSI and FSI.

The university campus and the schoolyards represent large open spaces within the regular city grid, composed almost exclusively of low-rise detached houses. Buildings, with the exception of schools, are generally aligned along the streets and are south facing. Residential blocks are generally composed of four rows, so that the two inner ones generate flagpole-shaped plots. The station square and Daigaku-dōri clearly act as urban

voids. Occasionally, higher buildings appear along Fujimi- and Asahi-dōri, while this does not happen along Daigaku-dōri, due to the enforcement of a tighter height limit. Educational facilities moderately stand-out as 4- to 6-story buildings. Population density is 119.7 pph, comparable to that of Tokyo's central wards (see 3.3).

Diversity of uses

All relevant metrics are graphically summarized in Fig. 18. First, we have quantified diversity of uses both at ground floor (MXI GSI)—where pedestrian activities take place— and in regard to the total floor space (MXI FSI). At ground level, 75.2% of built space is devoted to housing. Visiting functions (e.g. shops, public services) occupy 24% of the total ground floor space, while working functions (e.g. offices, factories, workshops) constitute a mere 0.7%. Figures regarding the diversity of uses over the total floor space present similar proportions. By these we understand that the case study is a predominantly-residential area, well provided with commercial and entertainment functions to be found at ground floor. Productive activities (whether agriculture, industry or services) are very limited. As it can be inferred from the difference in working functions between the MXI GSI and the MXI FSI, a small amount of offices can be found above ground floors.

Second, we have mapped the spatial distribution of uses. As expected, a higher diversity of uses happens around the train station and along the three radial streets, where higher density and compactness allow for mixed-use buildings. It can be noted that Kunitachi hosts a considerable number of educational facilities, surrounded by the open space of their schoolyards or campus, occupying one or more blocks. Other non-residential functions occasionally dot the city grid, and they are usually encountered at street intersections, to maximize their exposure to pedestrian routes.

Walkability

All relevant metrics are graphically summarized in Fig. 19. As Kunitachi's uniform city grid is pierced by three radial streets of exceptional orientation and width, we started the inquiry with an analysis of these. A betweenness simulation (see 3.3) was first carried out. Targeting compulsory routes, in the first simulation (a), all residences and offices represented origins, weighted according to the number of floors, while Kunitachi Station represented a single destination; routes were calculated according to shortest paths. Within a maximum value of 9'256 routes and a minimum of 1 (at the segment

Figure 17: TOP from left to right: Spacematrix diagram; building-height map
BOTTOM from left to right: station square; typical residential block; Asahi-dōri
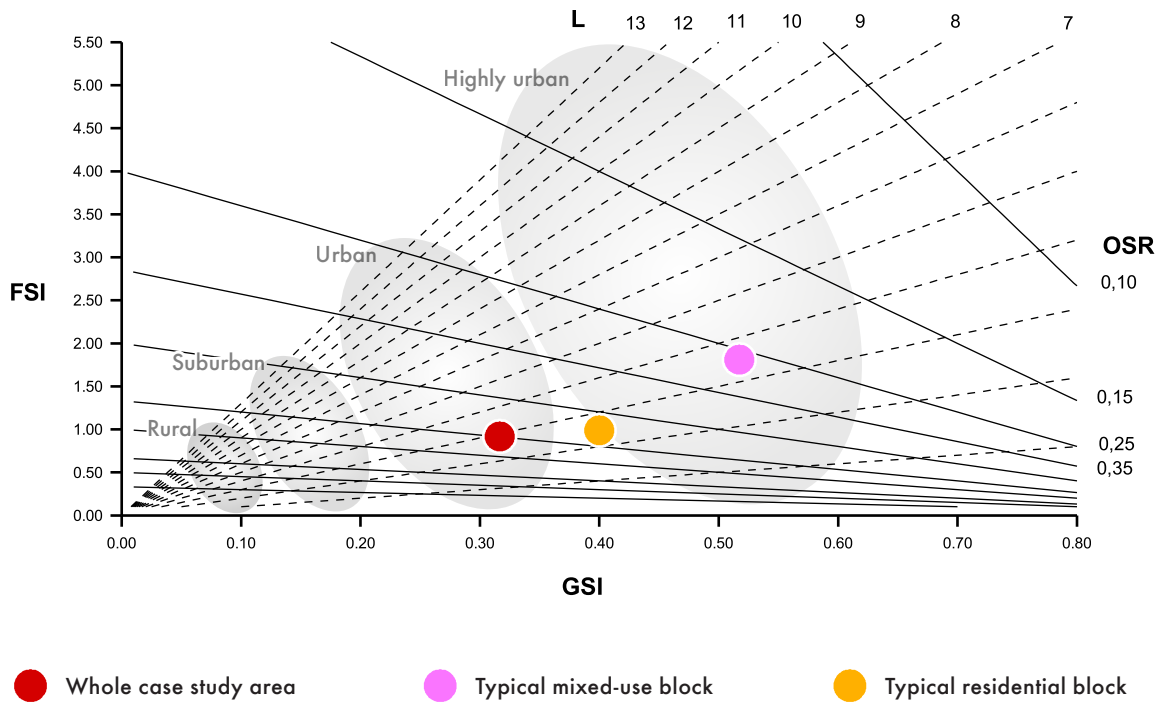
1-3F

4-6F

7-10F

10+F

0   500m
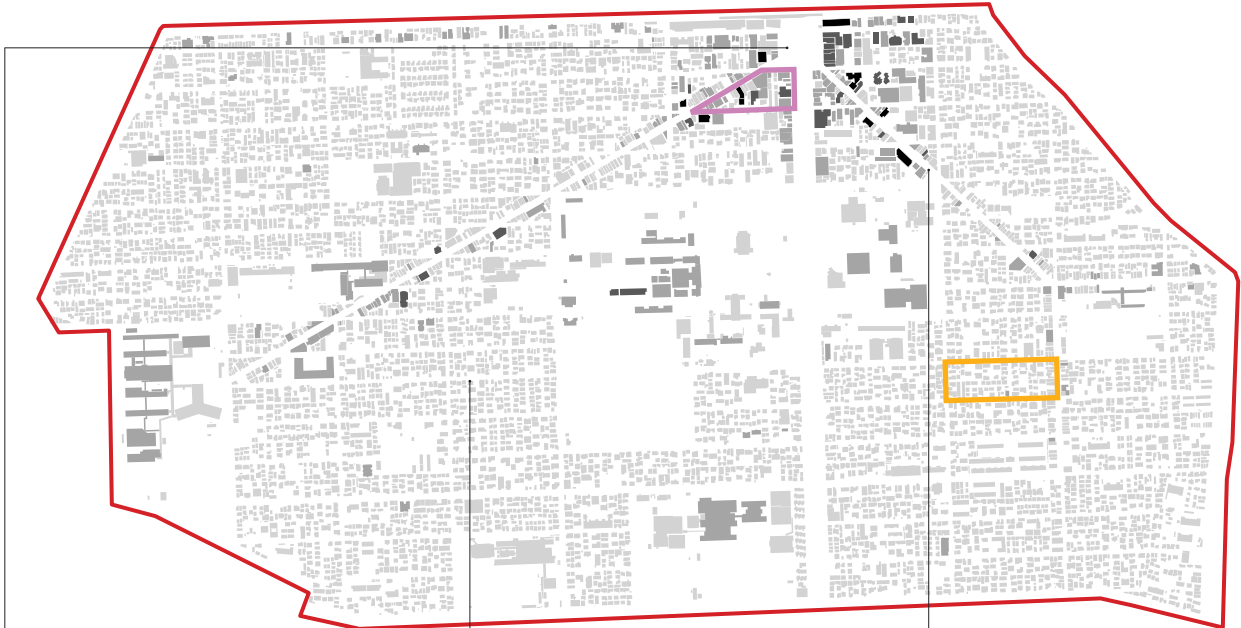
Figure 18: TOP from left to right: MXI diagram; building use map
BOTTOM from left to right: Sunday stall in front of garage entrance; stalls along Daigaku-dōri; detached
house with residence above and restaurant at ground floor; stores at the ground floor of multistory housing

H

H+W

W

W+V

V

V+H

0   500m
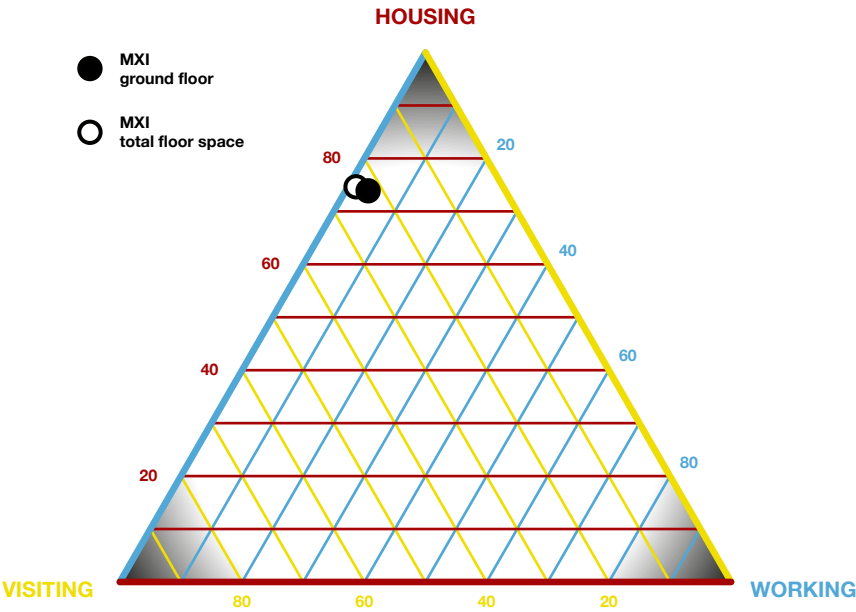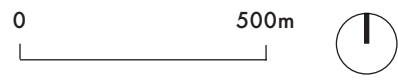
Figure 19: TOP from left to right: pedestrian counting (number of people walking in 1 min. on an October weekday with sparsely-cloudy weather); gravity analysis
BOTTOM from left to right: four variations of betweenness analysis
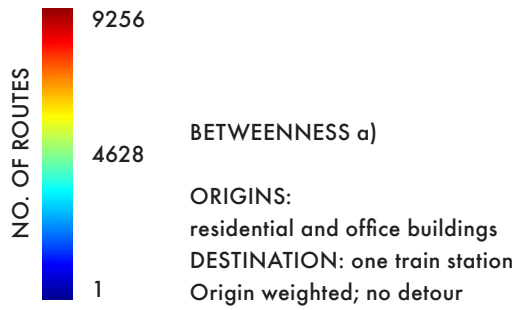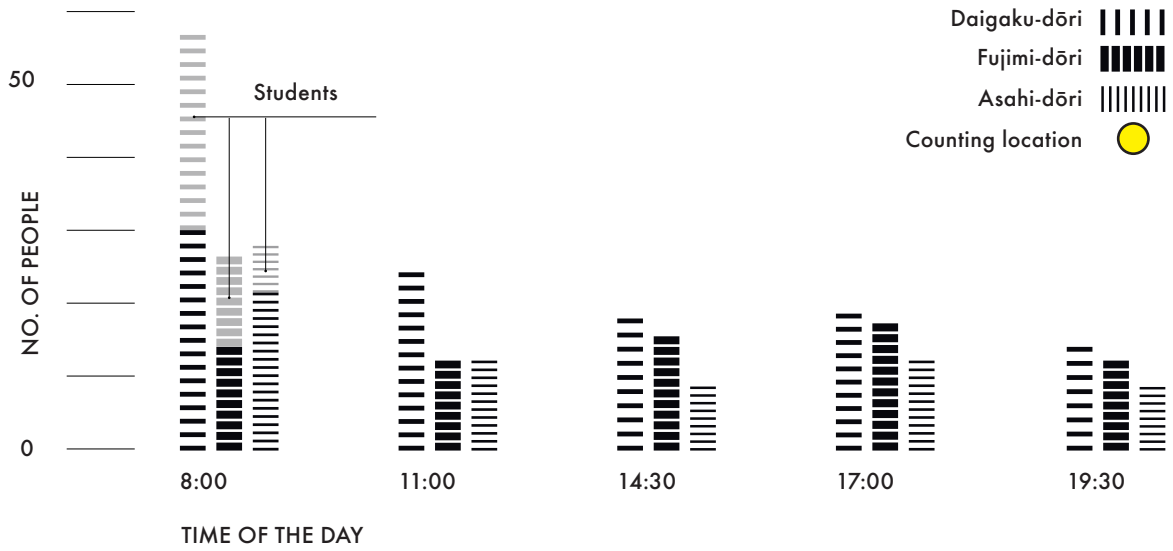
Daigaku-dōri
Fujimi-dōri
Asahi-dōri
Counting location

NO. OF PEOPLE

50

0

8:00   11:00   14:30   17:00   19:30

Students

TIME OF THE DAY

NO. OF ROUTES

9256

4628

1

BETWEENNESS a)

ORIGINS:
residential and office buildings
DESTINATION: one train station
Origin weighted; no detour

BETWEENNESS a1)

ORIGINS:
residential and office buildings
DESTINATION: one train station
Origin weighted; 20% detour

NO. OF REACHABLE SHOPS
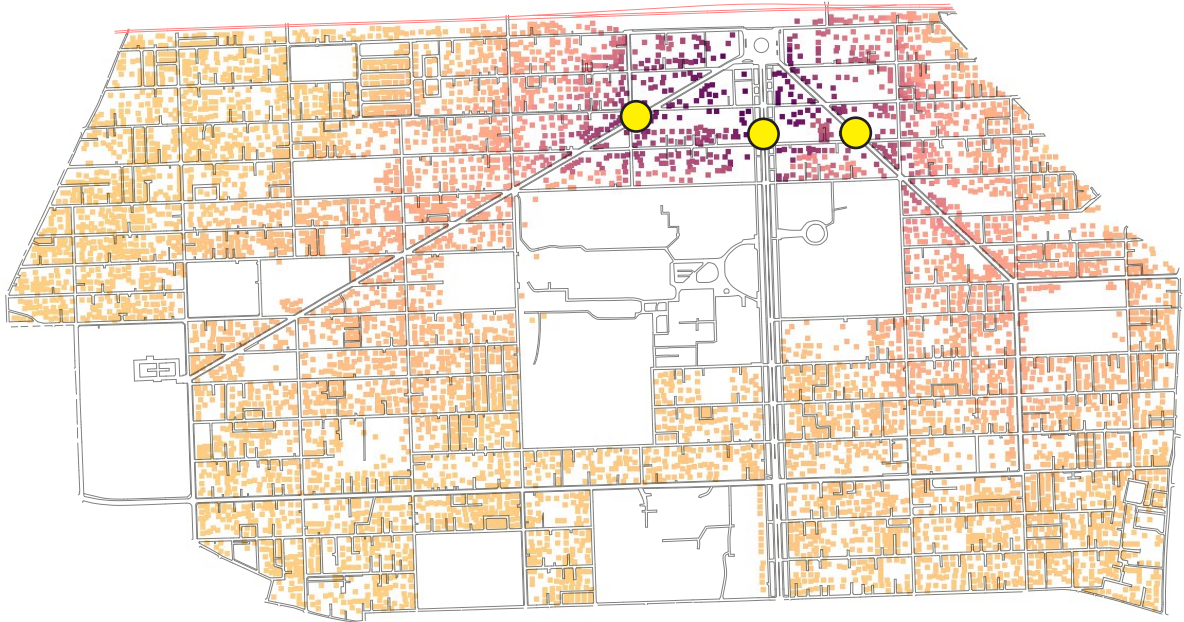
260

130

1

0   500m

NO. OF ROUTES

692

346

1

BETWEENNESS b)

ORIGINS:
shops
DESTINATION: one train station
Origin weighted; no detour

BETWEENNESS b1)

ORIGINS:
shops
DESTINATION: one train station
Origin weighted; 20% detour
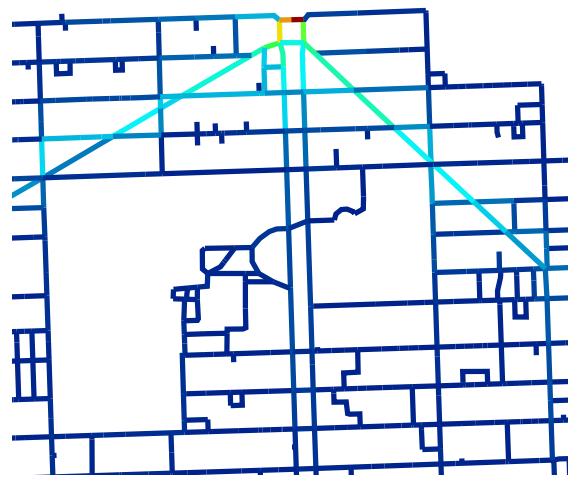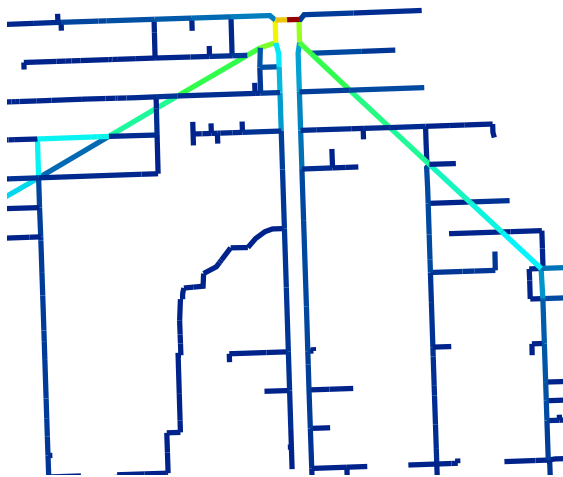
corresponding to the Gehl measurement location, see below) Fujimi-dōri reached 3'158, Daigaku-dōri 540 & 464 and Asahi-dōri 2'339. This result was surprising, as Daigaku-dōri, being the main boulevard, was expected to host the highest amount of pedestrians. We therefore proceeded with a further iteration (a1), where betweenness analysis allowed routes up to 20% longer (detours) than shortest paths. In this case, while passers-by were still predicted to be more numerous on Fujimi- and Asahi-dōri, the difference with Daigaku-dōri was less pronounced: Fujimi-dōri 1'422; Daigaku-dōri 941 & 643; Asahi-dōri 1'679.

Targeting optional routes, in the second simulation (b), shops represented origins, weighted according to the number of floors, while Kunitachi Station represented a single destination; routes were calculated according to shortest paths. Once again, Fujimi- and Asahi-dōri were predicted to be the main thoroughfares, assigning to Daigaku-dōri a marginal role: Fujimi-dōri 157; Daigaku-dōri 53 & 43; Asahi-dōri 174. In a further iteration (b1), betweenness analysis allowed routes up to 20% longer than shortest paths. In this case, passers-by were evenly distributed among the three radial streets: Fujimi-dōri 93; Daigaku-dōri 77 & 44; Asahi-dōri 139.

Given the unexpected results, we proceeded with an actual counting of passers-by with Gehl methods (Gehl & Svarre 2013). We counted the number of pedestrians over a time-span of one minute at a fixed location on Daigaku-, Fujimi- and Asahi-dōri. The counting was performed five times from 8am to 7:30pm, on a sparsely-cloudy weekday with mild temperatures, in early October, repeating a 1-minute counting session twice. Since Daigaku-dōri was drawn in plan with two parallel lines—indicating the left and right sidewalks—the number of pedestrians counted with Gehl method has been halved. The results show that Daigaku-dōri consistently hosted more passers-by in every counting, confirming our original expectations. Even leaving aside students (who flock to Hitotsubashi University's entrance, located on Daigaku-dōri, not having any alternative route), people on Daigaku-dōri outnumbered those walking along the other two radial streets. Thus, shortest path-simulations considerably differ from actual measurements. These discrepancies suggest that, in this case, people do not choose shortest routes to reach the station or shops. A possible reason for this will be offered in the next section. Meanwhile, let us examine the accessibility of shops.

A gravity analysis (see 3.3) was run with a 500 m radius and a β value of 0.00217. It indicated a maximum number of reachable shops of 260 and a minimum of 1. The spacial

distribution is strongly polarized and it centers around the train station. Residential buildings located between Kunitachi Station and Hitotsubashi University have thus a higher accessibility to shopping. Despite the presence of numerous shops along the three radial streets, they do not seem to significantly increase shopping accessibility of residential buildings in their vicinity. In fact, as seen in the previous section, the radial streets host shops in a linear fashion, while blocks around the station distribute shops in areal fashion.

Green/water space

All relevant metrics are graphically summarized in Fig. 20. Kunitachi is ca. 80 m above sea level. It presents a relatively flat topography, with a maximum variation in altitude of 20 m, to be found at its north-eastern edge, along the so-called Kokubunji Cliff. This steep edge explains the corresponding abrupt end of the city grid. Green and water space in the case study area amounts to 33.6%, and it is mainly represented by private green and non-paved areas (22.5%), followed by public green, mainly constituted by the university campus (10.9%), and a negligible presence of water (0.2%). Private gardens thus play a crucial role in determining the character and feeling of nature in Kunitachi, especially if they are separated from the street by see-through fencing. Nonetheless, it is the campus of Hitotsubashi University and the natural features of Daigaku-dōri, which most impact the area. The campus plays the role of a public neighborhood park: in fact, Hitotsubashi is a public national university. Local (elderly) inhabitants use it for strolling, families have outdoor picnics on weekends, parents (especially mothers) bring there their children to safely play around or ride their bikes, and kindergarten carers select it for the daily walk of their little guests. The campus has its rules though: among other things, it is not possible to drink alcohol or to spread sheets on the lawns.

If a first-time visitor to Kunitachi might not notice the presence of the campus, as it lies farther south from the station, he or she will surely notice the natural features of Daigaku-dōri. The boulevard is ca. 44 m wide, including a ca. 3.6 m-wide sidewalk with ample room for pedestrians and sitting space. It features abundant greenery of various height and kind, while rows of 100 year-old ginkgo biloba and cherry trees on each side provide shade all day long. In spring, the lawns under Daigaku-dōri's cherry trees are popular spots for *hanami* (cherry-blossom viewing), as families and friends spread their sheets on the grass. This boulevard is a true *unicum* in Japan, the result of wise urban

Figure 20: TOP from left to right: amount and type of green/water space; green/water space map
BOTTOM from left to right: section and plan of Daigaku-dōri; university campus; trees and flower beds
along Daigaku-dōri

Private green/non-paved

22.5%	10.9%	Water 0.2%	

0   Public green   100

33.6%

43.7m

20m

3.6m   9.1m   1.8m   14.7m

Ginkgo biloba
Cherry trees

Cherry trees
Ginkgo biloba
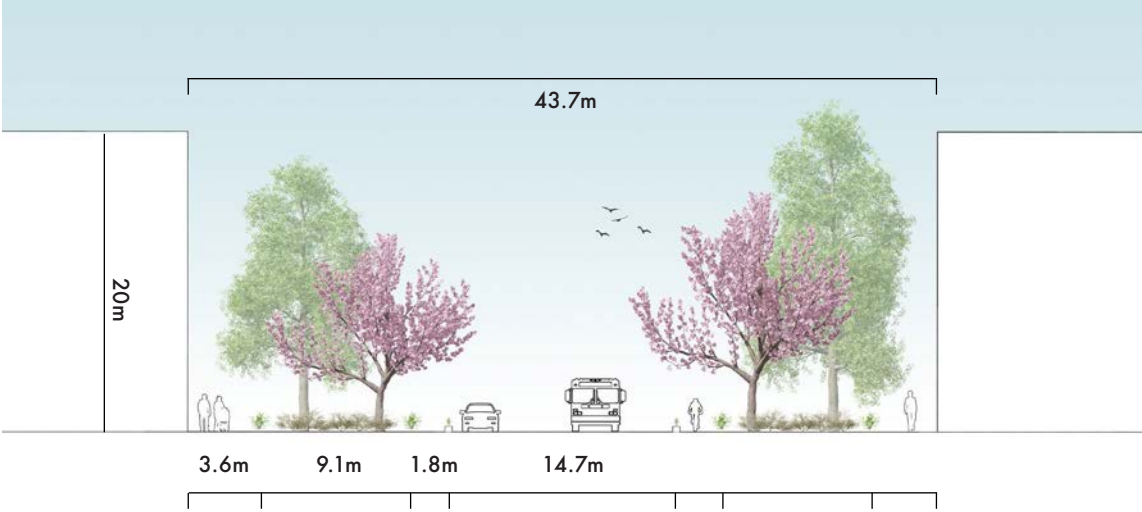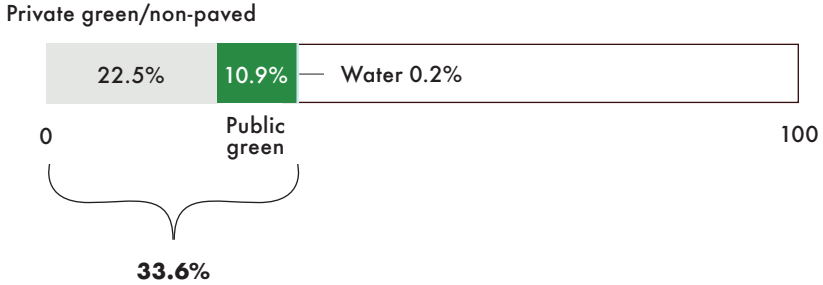
70-100m.a.s.l.

Public green

Agriculture

Water

0 500m
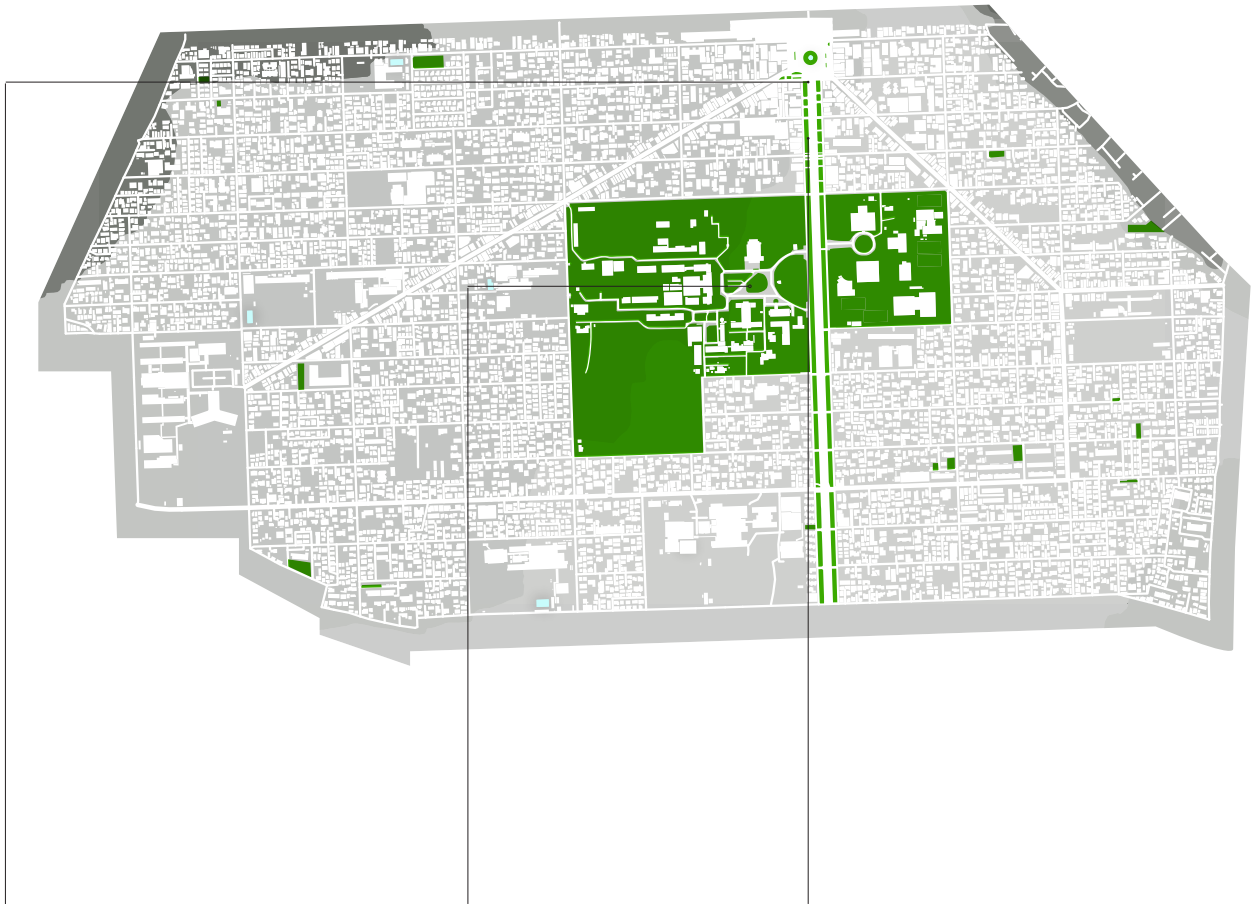
design choices and of bottom-up involvement of local inhabitants, as highlighted in the previous section.

Agricultural fields, forest or undeveloped land are not present in the case study area. Nevertheless, the southern part of Kunitachi, closer to the Tama River, still retains a rural character, hosting private and public farms, cultivated fields and orchards. In particular, *Joyama Sato no Ie* is a municipal educational facility (mostly catering children), where guests can be involved in farming, cooking lessons, etc.

The four factors we have examined so far have clarified the role that morphological features play in regard to Kunitachi's liveability. We need now to introduce a "soft" assessments to complement and better interpret our "hard" findings.

4.3 Urban management factors

The first sub-section about participatory practices will introduce top-down and bottom-up ways in which city management and governance have been improving the city's liveability. The second sub-section about local character will highlight how historical structures and unique natural features strongly define Kunitachi's image, which is being used akin to a brand. As these factors are mainly qualitative, the analysis will rely on personal observation, documentary research and interviews with locals (both experts and residents).

Machizukuri/participation

Machizukuri *activities initiated by the municipal government*
In 2016 the government of Kunitachi approved a revised urban code that explicitly calls for bottom-up civic participation to complement top-down regulations, an approach that is more inclusive and transparent than regular urban governance in Japan. This participatory mechanism, called "Kunitachi City Machizukuri Ordinance" (国立市役所都市整備部都市計画課 2016), provides a framework for the official implementation of citizen proposals relating to townscape matters (see the interview with Keita Yamazaki and Yukihiro Yasunami in Appendix A). Concerned topics are: a) building regulations, e.g. building use, scale, position; b) landscape regulations, e.g. building color, architectural design; c) site and area regulations, e.g. minimum site area, type of fences, greening

ratio. The implementation process comprises seven steps, ensuring that a proponent first discusses with his or her immediate neighbors, and then congregates with a minimum of five district residents. Once this group is registered by the municipal authority, study sessions with city officials can start. Upon determining the feasibility of a proposal, city authorities ensure that the population in the concerned neighborhood is not against the proposed change by conducting surveys and questionnaires. Further steps confirm that local residents correctly understand the plan, before the municipal government can enforce it.

A more prosaic participatory activity, initiated by the municipal government in 2017, involved asking its citizens to vote for their favorite bench out of a selection of four, to be newly installed along Daigaku-dōri. Despite being an activity of marginal importance, it was nonetheless well-received by the local population.

As of Spring 2018, plans to renovate the station square and some of its adjacent buildings are under way. The master plan includes the reconstruction of the old, hip-roofed station building—demolished in 2006 in favor of a new structure—and the creation of a larger pedestrian area featuring an open-air amphitheater, in place of the current fenced-off rotary. The old hip-roof station has become, over the years, a strong symbol of Kunitachi's identity, featured on all-sorts of advertisements, being the town's de facto mascot. Both the municipal government and residents have come to realize that its demolition was a hazardous move, so that the local government and the Merchants Association are now in the final stages of a fundraising campaign to reconstruct the building in front of the new station, as a flagship project to boost Kunitachi's image. At the point of writing site excavations are under way. Charrettes have been organized outdoor, close to the station square, as a way to gather residents' opinions and inform them on the reconstruction plan. Public officials were available to explain the details of the proposal in front of a physical model (Fig. 21). It remains to be seen, though, how influential the public opinion really is. From this point of view, place branding in Kunitachi reflects the challenges exposed by Braun *et al.* (2013:23) regarding residents' involvement, 'as they could "make or break" the whole place branding effort.'

Machizukuri *activities initiated by local associations*
The Kunitachi Tourism Association is an NPO founded in 2006, 'for the purpose of re-discovering the charms of Kunitachi and revitalizing its community'. Its activities are

Figure 21: outdoor public charrette showcasing the renewal plan of the station square

regularly updated on a dedicated website. The association has published a walking guide (Fig. 22) of Kunitachi and produces, with municipal funds, *Kunitachi Aruki*, a free quarterly leaflet, showcasing seasonal events, new businesses such as restaurant and cafes, historical trivia about the city, etc. The leaflet has, over time, acquired a semi-official status, as it is distributed to every household in Kunitachi.

The Merchants Association has funded and promoted the publication of at least four books, dedicated to the history and features of Kunitachi. These heavy publications collect historical photographs, plans and documents of the city's inception and

Figure 22: various local publications promoting Kunitachi's qualities

development, natural features and shopping streets. These books, on the one hand, aim at highlighting the uniqueness of Kunitachi and increase citizen awareness of its history and development. On the other hand, they are a way for the Merchants Association to raise its profile and present itself as a patron of the city's culture and image. Moreover, in September 2017 a 6-month long exhibition, displaying photographs of Kunitachi's changes within the last 50 years, opened at a gallery owned by a prominent member of the Merchants Association (Fig. 23). Responding to an open call advertised on the official municipal magazine, citizens disclosed their private archives, turning-in historical photographs to celebrate the 50th anniversary of Kunitachi's status as a city. The exhibition was also a means to promote a petition seeking the reduction of mall-type commercial space currently being planned by the JR Railway Company around the station.

Figure 23: photographic exhibition of Kunitachi's development over the past 50 years

Kunitachi Honten is a group of people in the creative business who organize design-related activities about Kunitachi. The group was founded in 2006 and has, among other things, published two booklets with anecdotes about the city's shops and businesses, organized walking tours and compiled a map of must-visit spots. In one case, the group campaigned against the demolition of the oldest residential structure in the city, built in 1930. The owner had financial concerns, and wanted to sell the lot where the house stood, upon splitting it into four parcels. Kunitachi

Figure 24: fundraising event for the renovation of *Hato no Yu* public bath

Honten was not able to find a viable alternative to demolition, but it made a survey of the building and produced a dedicated publication.

A more successful outcome is represented by the renovation of *Hato no Yu* public bath (Fig. 24). Once thriving and present in every neighborhood, public baths are now being demolished all over Japan, given the lack of patrons and the competition with modern spas. The renovation of Kunitachi's public bath, recognized as a valuable cultural asset, was supported by Kunitachi Honten and by the Alumni Association of Hitotsubashi University. A salient feature of Japanese public baths is a landscape painting of Mount Fuji, as a backdrop to the bathing area. Kunitachi Honten organized a fundraising event, where viewers could witness for a fee a live painting performance. Moreover, beside the ever present Mount Fuji, the new painting features the old hip-roof station, the rows of cherry and ginkgo trees on Daigaku-dōri, and the main auditorium of Hitotsubashi University.

Local character

Kunitachi has a strong and established image of a charming and verdant town. Due to the peculiar city grid and main boulevard of European influence, it shows both an exclusive and family-friendly character—in fact, the municipality offers above-average services in regard to child-rearing and welfare. From a morphological point of view, Kunitachi boasts unique symbolic elements: the old station building—soon to be rebuilt—Daigaku-dōri, and the campus of Hitotsubashi University.

As we have seen, the reconstruction of the old station building is a conscious branding operation. On the one hand, the government's intention is opportunistic, as it calls for the financial support of residents and associations to carry out its goal. On the other hand, the local population and businesses are willing to participate in the reconstruction, as this will ultimately strengthen the appeal of their neighborhoods, which is a crucial asset for peripheral areas competing with each other as population dwindles. The image of this building is so pervasive, that it can be found in endless situations, locations and variations (Fig. 25).

Daigaku-dōri and the campus are popular and beloved symbols too. The former is a powerful backdrop that resonates with the alternation of seasons, turning yellow and red in autumn and featuring cherry blossoms in spring. It also hosts some sculptures created for the 2015 Kunitachi Art Biennale. The latter has a historical aura, thanks to the

Romanesque style of its buildings, designed by Chuta Itō. Instead of the usual Gothic style (to be found in Keio University's Mita Library, Tokyo University's Yasuda Hall, etc.), this architect selected Romanesque as it historically predates Gothic (Tsugawa 2014; Fujimori 2008).

Well-established, often family-run stores play a relevant role in shaping Kunitachi's identity, even though more and more chain stores have been appearing (see interview with Akiko Watanabe in Appendix A). Some are known for their unique and somewhat exclusive offer, some for their long history, some for the care and personal touch with which they serve patrons. A Kunitachi Card is available to accumulate points at selected stores. To give a sense of the importance of local shops, it shall suffice here to mention the 2012 anime movie *Wolf Children* (Hosoda 2012). The protagonist of the story studies at Hitotsubashi University, and shots of actual shop fronts are shown in realistic detail, as well as the campus and Daigaku-dōri, clear symbols of Kunitachi.

Kunitachi hosts two main festivals (*matsuri*) every year in November: the Autumn people's

Figure 25: various products branded with the symbols of Kunitachi

Figure 26: Tenkaichi festival in Daigaku-dōri

festival, started in 1969, and the so-called *Tenkaichi*, started in 1964 by the local Merchants Association. These festivals take place on the upper part of Daigaku-dōri, which is shut off from motorized traffic, becoming a temporary stage where different kinds of performance, by local clubs and associations, take place (Fig. 26). Smaller festivals are held by taking advantage of the broad sidewalk of Daigaku-dōri. In such cases there are no performances to watch, but there appear food stalls lining all the way to the station.

The southern part of Kunitachi City, off our case study area, is constituted by the former Yaho village. Lying on one of the five Edo-period national highways, the Kōshū Kaidō, it features one of the most renowned Shintō shrines of the Tama Area: *Yaho tenman-gū*, founded in the early 10th century AD. As this kind of shrines are dedicated to scholarship and education, *Yaho tenman-gū* and Kunitachi as an Education District match particularly well.

Conclusions

Our analysis has shown how different morphological features of Kunitachi sustain each other: the hierarchy of streets is matched by a corresponding presence of commercial businesses with higher density and compactness that residential blocks. This creates a highly-intelligible city grid dotted with prominent reference points. The area around the station is the densest and most compact, the most diverse and accessible, standing out from residential blocks. Shops and businesses are placed along the most accessible and intelligible routes. Despite the intuitive assumption that people would choose shortest paths to reach their destinations, e.g. the station or shops, our analysis demonstrated that this is not the case here. In Kunitachi, the unique characteristics of Daigaku-dōri, abundant in greenery and featuring wide sidewalks, makes it a preferred walking route compared to shorter options. We may thus say that, up to a certain point, people choose (whether consciously or unconsciously) to walk more pleasant or interesting routes rather than shortest ones.

Because of their uniqueness, Daigaku-dōri, the old station building and the campus of Hitotsubashi University have become symbols of Kunitachi, constituting the image of this city and being major assets that differentiate it from other peripheral towns. Throughout history, local citizens have been actively involved in the preservation and maintenance of Kunitachi's landscape and streetscape. This has not only resulted in high-quality public spaces and a strong identity, but it has formed an established practice of

bottom-up and top-down cooperation between residents, business owners and town hall. Kunitachi is a city with a high civic capital, which is a fundamental soft infrastructure that complements peculiar morphological features, which are being used to boost the attractiveness of the area.

5
TAMA NEW TOWN

Serious issues afflicting Japanese society, such as how to deal with a declining birthrate and an aging population, or how to shift to a recycling society, appear now in Tama New Town in a condensed form.

財団法人多摩市文化振興財団 1998:12 (author's translation)

Tama New Town (多摩ニュータウン) is an area spread over four municipalities (Tama City, Hachioji City, Machida City, Inagi City), some 30 km (45 minutes by train) west of Tokyo Station, with a population of ca. 224'500. It was founded by a public joint venture in the late 1960's, for a planned population of 340'000, being the largest new town in Japan.[1] Once inhabited by young cohorts—mainly couples with children— the town has now to cope with depopulation and a high proportion of elderly residents, endangering its liveability on multiple fronts.

The chapter starts with a historical background of Tama New Town's foundation and development, especially highlighting current challenges and the relation between demographic trends and their spatial outcomes. A second section will present the analysis of four liveability factors, showing how morphological characteristics shape local quality of life. A third section will introduce the analysis of two urban management factors, examined from a socio-cultural point of view, highlighting the lack of strong civic involvement and identity.

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1   A comparable development, happening at the same time in the Kansai area, was Senri New Town.

5.1 Inception and historical development

The area where Tama New Town is located was, before its development, hilly forested land, dotted with villages mainly devoted to agricultural production. Parts of the Tama hills (in the Tama Area—named after the Tama River—where Kunitachi is also located) had been developed before WWII for leisure purposes, resulting in uncoordinated land use, where agriculture, forest, golf courses and scattered urbanization coexisted. Despite being spatially close to the city center, because of the difficult topography and poor accessibility, the site had remained undeveloped until the mid-XX century.

Severe housing shortage and the need for better land use to preserve green areas in Tokyo, sustained by ideological references to European and American green belts (Amati 2008:9), pushed for the creation of modernist new towns in leafy environments, often to serve as bed-towns for salarymen commuting to the center (see 2.3). The proximity of large swatches of land to central Tokyo was a crucial reason for choosing the location of numerous Japanese new towns in the 1960s and '70s. In fact, as land prices in urban areas sharply increased with the progress of high economic growth, it became increasingly difficult to publicly acquire housing sites within existing urban areas.

The Tokyo Metropolitan Government had been planning a 1'600 ha housing development for 150'000 people in the Minami Tama area (comprising the Tama and Inagi villages) in 1960-62. This was the "prototype" of Tama New Town. In 1963, though, a New Urban Development Law was enforced, changing the scope and extent of the project. Beside the Tokyo Metropolitan Government, the Japan Housing Corporation and the Tokyo Metropolitan Housing Supply Corporation came to be involved in the planning of the new town. A 3'000 ha area, spanning over four municipalities was decided upon in 1964, to be reached by two railway lines and served with water from the Tama River.

After six iterations on the masterplan, internally produced by the public developers, issues regarding the feasibility of land acquisition, earth- and waterworks became a major concern. As a way to test the viability and cost of an alternative masterplan, the Metabolist architect Masato Otaka[2] was commissioned to submit his own project proposal (木下 &

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2   Otaka was, by 1965, a prominent figure in the architectural community, having worked with Kunio Maekawa on the Tokyo Bunka Kaikan and on the Harumi Apartments. He would later design the Sakaide Artificial Ground project, where he tried to tackle the issue of plot fragmentation by means of an elevated platform. Industrial designer Kenji Ekuan, a collaborator of the Metabolists, so recalls him: 'Otaka was kind of a strong grandfather figure. [...] [H]e was the most involved in social issues, and he was kind of like

根本 2006). His strategy was to respect the natural topography as much as possible, by introducing clusters of 5-story housing arranged on a sloping terrain around a central playground and open space (Fig. 27). The layout of these clusters refers to what Fumihiko Maki and Otaka himself defined as "group form" (see Maki 1964) in their entry for the publication *Metabolism 1960*, which launched the Metabolists on the international stage. The residential clusters would be connected by green fingers, leading to junior and junior-high schools resiting on flat plateaus. The plan, taken into consideration from March to November 1965, was ultimately put aside, as plot subdivision was considered inefficient and the cost per housing unit was deemed too high.

After the adjusted original masterplan was finalized in late 1965 by the Ministry of Construction, the public developers began to undertake full-scale land acquisition negotiations, according to two types of area foreseen in the masterplan: "new urban residential development projects" on the hills, and "land readjustment projects" in the

a standard-bearer in the farmers' liberation movement. He was more of a country boy than a city boy, and he had a strong attachment to the earth.' (Koolhaas & Obrist 2011:497)
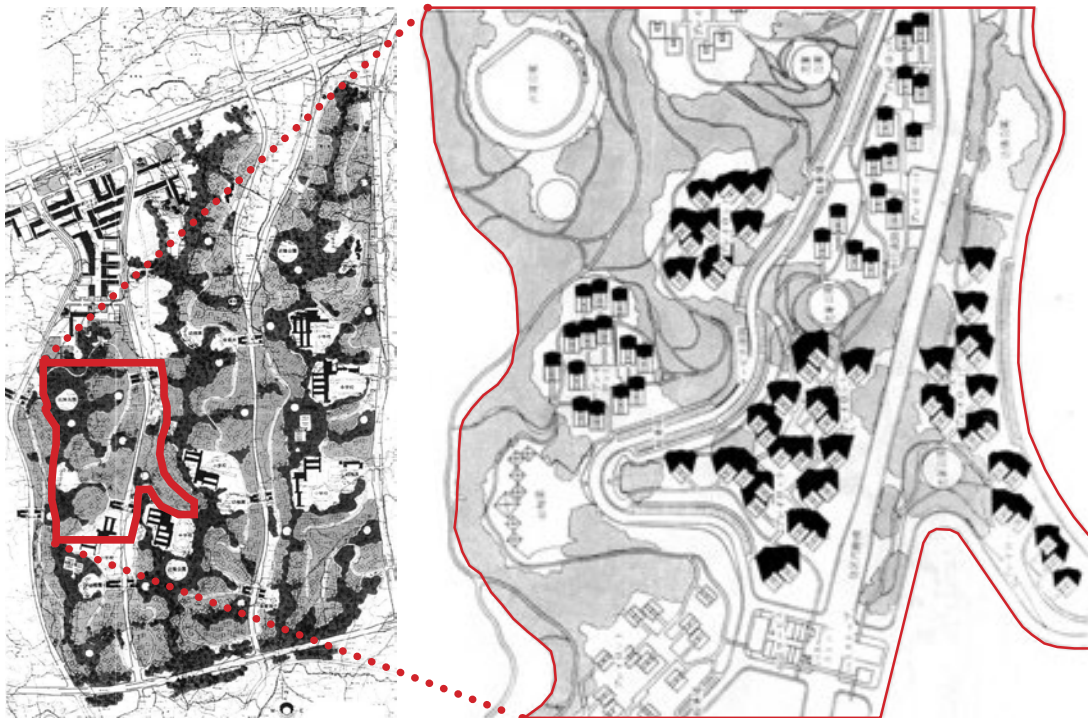
Figure 27: Masato Otaka's 1965 "seventh masterplan": concept for district and neighborhood development

valleys, where villages were present.

Land acquisitions, as it could be expected, encountered at times resistance from local farmers. Some of them, in fact, questioned the narrative of a new town as a means to preserve green spaces by better-coordinated land uses and denser urbanization. After all, the development was about to urbanize hundreds of hectares of productive agricultural land, which represented farmers' economic revenue. Some of them managed to organize themselves, but, given the aggressive land acquisition methods and the lack of influential or well-educated supporters, their movement was ultimately dissipated. As a result, local agriculture virtually vanished, except for a small area excluded from the masterplan in 1966. Farmers were either compensated or offered an apartment in the new development, receiving basic training in business and bookkeeping, to become shopkeepers of liquor stores, bookstores, stationery shops, groceries, rice shops, etc. People in existing communities were thus forced to suddenly change their lives with the progress of Tama New Town, being part of the "former residents" group, opposed to the "new residents" (財団法人多摩市文化振興財団 1998).

The whole masterplan spans some 14 km east-west, and 3 km north-south (Fig. 28). Construction started in 1967, beginning with waterworks along the Okuri River and the construction of major roads, followed by residential *danchi* in the Suwa and Nagayama
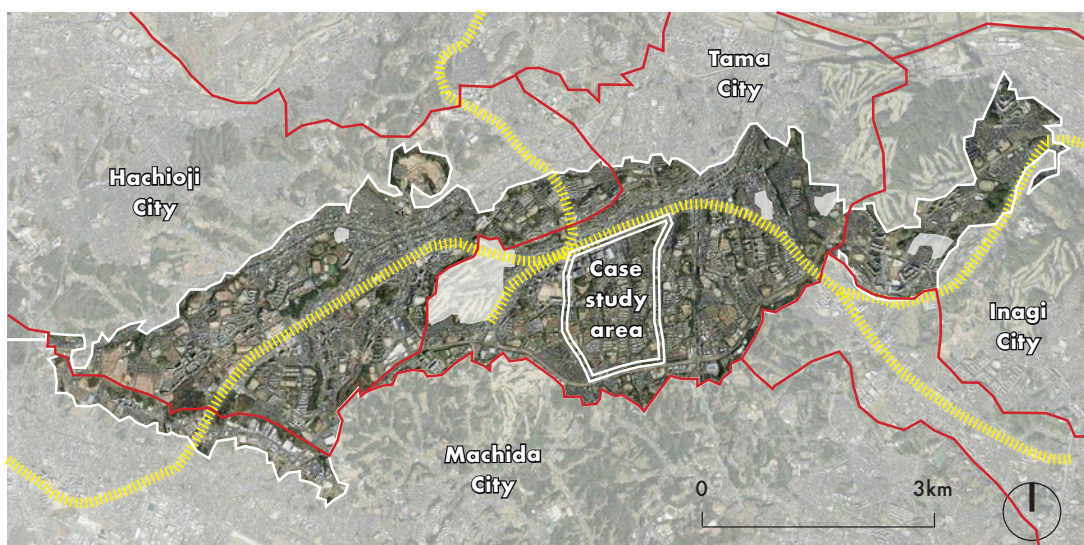
Figure 28: masterplan area of Tama New Town, spread over four municipalities. Railway lines in yellow

districts. Development proceeded over a timespan of 30 years, divided into phases, so that a group of districts was built at one time. Districts toward the east of the area were built first, and the development gradually proceeded westwards.

Tama New Town is composed of 21 residential districts, each centered around a junior-high school. According to the masterplan, each district (*chiku*) has an area of ca. 100 ha, originally

5-800m

District
Kindergarten
Elementary school
Junior-high school
Neighborhood center

Figure 29: diagram of the spatial distribution of functions within a neighborhood

planned for 3-5'000 dwellings or 12-20'000 people. Two elementary schools, a neighborhood center with post office and police box, stores and other facilities complete a district as a discrete neighborhood unit (Fig. 29). Each district-unit, thus, is supposed to host various functions necessary for everyday life, such as housing, commercial, medical, and public facilities, beside the above-mentioned schools (Ueno & Matsumoto 2012). This concept echoed American planner and sociologist Clarence Perry's 1920s theory of the neighborhood unit, with some relevant differences. Districts in Tama New Town are almost double the size of Perry's neighborhood unit, both in terms of area and of population. Perry assumed a 400 m radius as an ideal maximum walking distance of a squarish neighborhood. In Tama New Town, however, due to the elongated shape of the whole masterplan area and to the topography with valleys running north-south, districts are rather some 2 km north-south and 0.5 km east-west. In terms of circulation, while Perry had proposed to lay major streets along the borders of the unit—to limit traffic in its center— districts in Tama New Town feature a complete separation of pedestrian from vehicular traffic, according to classic principles of modernist planning.[3] Moreover, while in Perry's idealized neighborhood topographical levels were not taken into account, the terrain of the Tama hills, despite extensive bulldozing and flattening, called for numerous stairs, ramps, flyovers and bridges, a great burden for the elderly and the

3   Even Masato Otaka himself would argue in 1960, at the World Design Conference in Japan, that he 'would like to propose a method of Group Form... dividing the city spaces into two sections; the machine-like sections and the human sections; and also of dividing it into two spaces: the space for speed and the space for people to walk.' (Koolhaas & Obrist 2011:197)

physically impaired.

In 1971 the Suwa and Nagayama districts were occupied first: 1'182 households in Suwa and 1'508 in Nagayama. At the beginning, apartments were for rent, but later more and more apartments for sale were built. During this period, the main dwelling units supplied were 2DK (the number stands for the amount of rooms, while D and K stand for "dining" and "kitchen" respectively) or 3DK units, and the floor area was usually around 50 m². 5-story, freestanding blocks with no elevator, usually arranged in south-facing rows, were the standard residential typology of the first development phase. Even though, at the beginning, this typology embodied an idea of modernity for the common people, residents soon realized the downsides of such small and jerry-built apartments.

The vast majority of new tenants were young couples with children. Since district residents would move-in all at one time, Tama New Town came to host a much higher-than-average ratio of children, a demographic imbalance that would cause serious issues in the future (Home's総研所長 2015). An immediate result was the lack of schools and educational personnel, requiring great efforts by developers and local administrators, which only partially met residents' demands. Traffic was another concern for the inhabitants, which had to spend commuting time in traffic jams to and from train stations. Since a public transportation network had not been efficiently implemented, in fact, reliance on cars was high. To relieve this problem, Tama Center Station opened in 1974, connecting to Shinjuku Station.

During the mid development phase in districts such as Toyogaoka, the size of dwelling units was increased to 3LDK (L stands for "living") and 4LDK, about 80 m². Two-story townhouses with semi-private gardens, and with an area of 100 m² were added to the housing stock too, as a way to respond to changing lifestyles and residents' (and market's) needs.

In the 1980s, further west, the development of Ochiai and Tsurumaki districts showed a more diverse mix of typologies and uses (e.g. apartment buildings 5- to 11-story high, townhouses, row houses, detached houses), in a move from quantity to quality. In 1985 the new town hit a population of 100'000, and, during this decade, four universities, various firms (e.g. Benesse Corporation) and facilities moved there, especially around Tama Center Station. Around this area, in 1987 Parthenon Tama was opened, a massive multipurpose complex featuring two concert halls, exhibition space, and a museum about the town's history. In the vicinity, in 1990 opened Sanrio Puroland, a Hello Kitty-based,

indoor theme park. From the point of view of infrastructure, a monorail connecting to Tachikawa City and beyond started operating in 2000, roughly corresponding to the official completion, in 2006, of the whole Tama New Town project. The area has thus shifted from a construction phase to a stock management phase, reaching a maturity stage, with the gradual easing of UR Agency's burdens.

By this point, the first districts to be developed, Suwa and Nagayama, were already facing population decline, since their housing typologies, unsuitable for contemporary living standards, could not attract newcomers. Once bustling with children, these areas saw a rapid demographic U-turn: when children became adults, they often opted to move to more central locations, leaving soon-to-become elderly behind. The spatial consequences of this were the merging or closing of various schools, now lying abandoned.

Building stock in Tama New Town faces now serious challenges. By means of pilot projects, older *danchi* apartments have been proven difficult and expensive for barrier-free renovation due to their construction and layout. In addition to technical aspects, tenants are required to find an agreement on a renovation plan, and UR Agency is often unsupportive. Demolition and rebuilding has had some degree of success in one part of Suwa (2-chōme), where Tokyo Tatemono Group in 2010 built 11- to 14-story apartment buildings replacing old 5-story *danchi* (see interview with Kenji Fujii in Appendix A). Public buildings, most prominently Parthenon Tama, beside producing financial losses year by year (Brasor & Tsubuku 2016), are in need of extensive renovation, which, due to the lack of funds by local governments, keeps being postponed.

In sum, Tama New Town faces a number of challenges which are spatial manifestations of demographic trends being accelerated by questionable urban design and urban management. Before proceeding to the morphological analysis, let us now introduce key statistical data to better frame Tama New Town's current condition (Table 8).

Statistical data

The case study area (from here onwards interchangeably indicated as Tama New Town) is spread over 263.6 ha, and comprises two districts located in Tama City: Ochiai to the west (hosting Tama Center) and Toyogaoka to the east, both composed of six *chō*. The former has (as of 2015) ca. 13'000 residents, the latter 11'000, for a total of 24'000 inhabitants, about 1/10 of the whole Tama New Town. Toyogaoka and eastern Ochiai were built from 1976 onwards, the former by the Japan Housing Corporation, the latter by the Tokyo

Area	263.6 ha			
	1990	**2000**	**2010**	**2016**
Population	ca. 23'500	ca. 23'750	ca. 24'050	ca. 24'000
<15 years old	20.1%	12.9%	12%	11.8%
>65 years old	5.7%	11.1%	20.9%	26.4%
	1 person	**2 p.**	**3/3+ p.**	
Household composition (2016)	7.4%	60.5%	ca. 28.8%	
	Residential		**Commercial**	
Referential land price (2016)	175'000-220'000 yen/m²		410'000 yen/m² around Tama Center	
Crime (2017)	The larger crime frequency map presents data at the *chō* level; the smaller map frames crime frequency in Tama City within the context of Tokyo Prefecture			
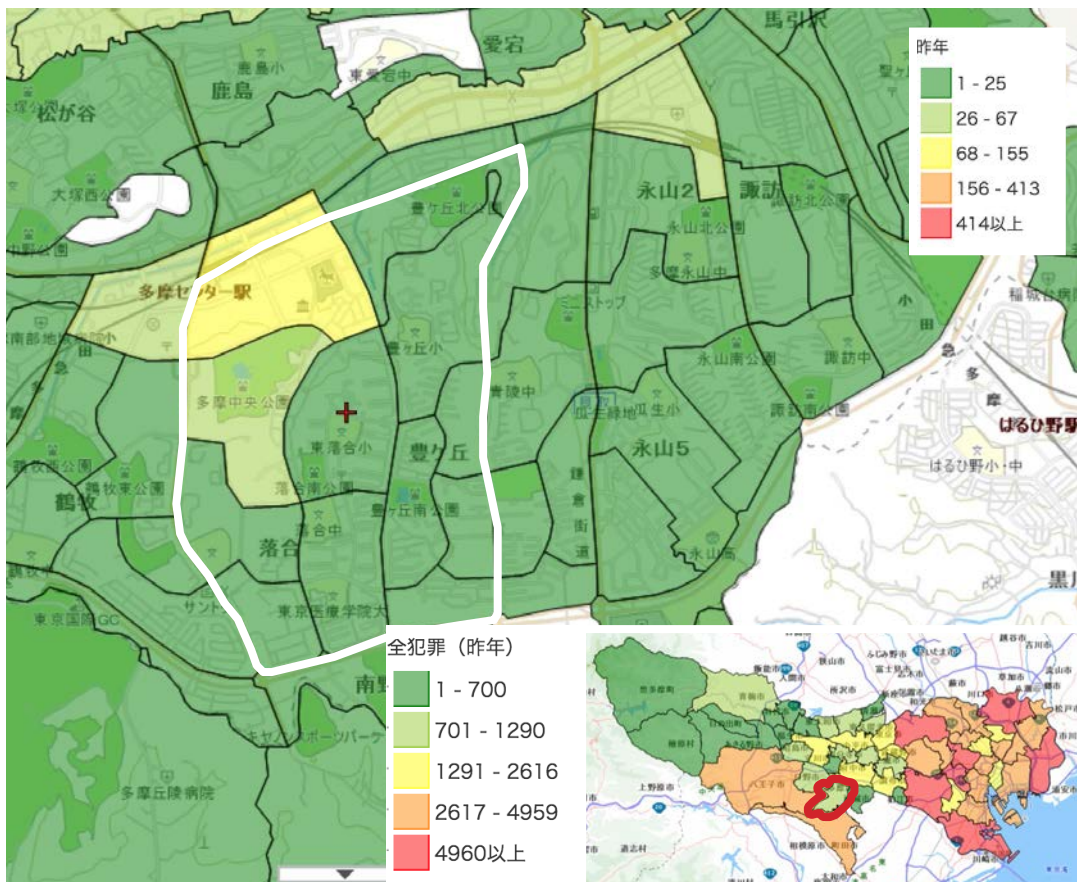
Table 8: summary of various statistical data about the case study area, representing about 1/10 of Tama New Town as a whole
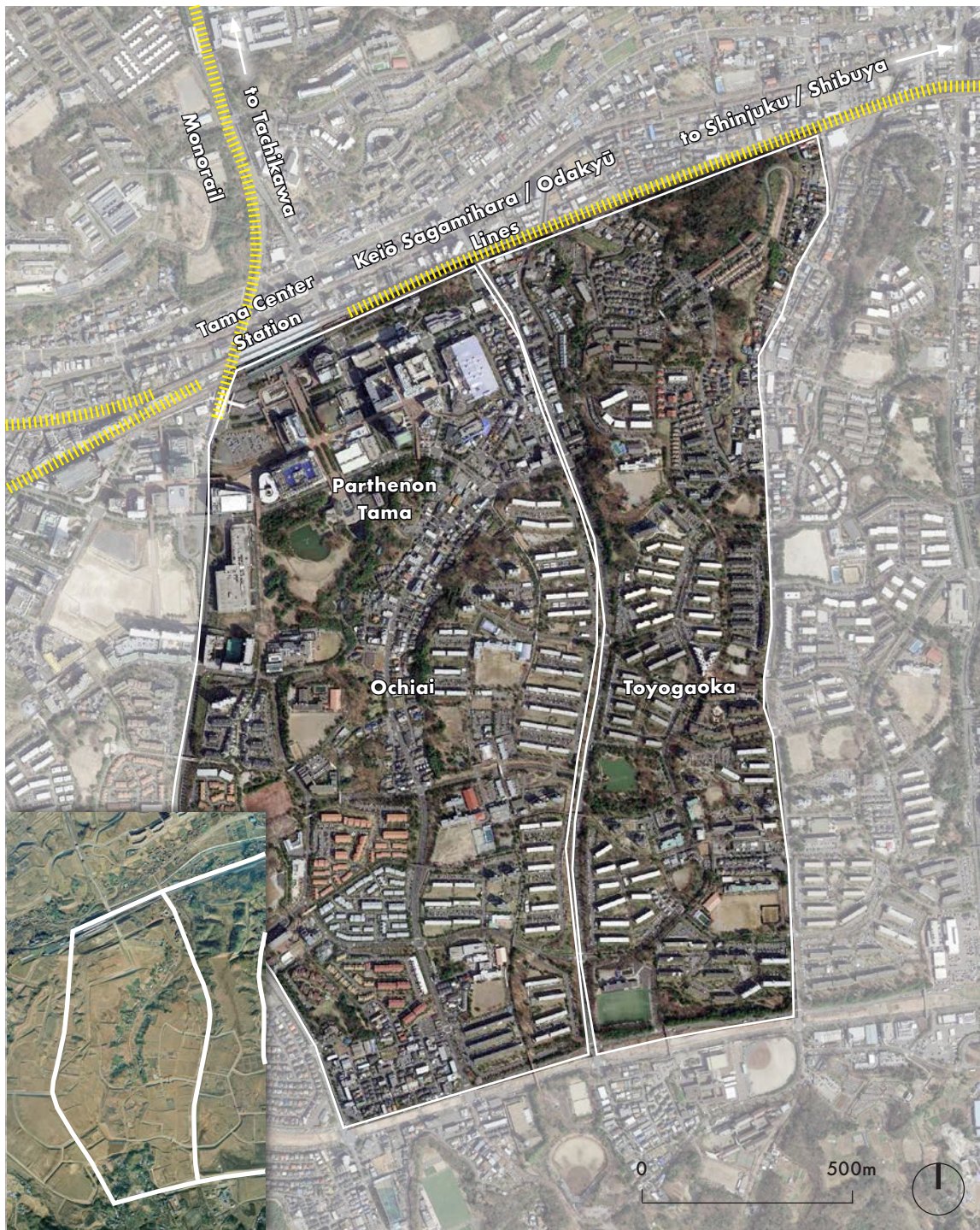
Figure 30: case study area and its immediate surroundings. At the bottom-left corner aerial image of the area in 1975, after extensive earthwork

Metropolitan Housing Supply Corporation. Western Ochiai and Tama Center were instead built from 1980 onwards (Ueno & Matsumoto 2012) (Fig. 28). At Tama Center Station, the Keio Sagamihara Line opened in 1974, the Ōdakyu Tama Line in 1975, and the Tama Toshi Monorail in 2000. This area was selected as it is highly comparable, both in terms of population and size, to the case study of Kunitachi. The mix of housing typologies and time span of development were believed to be of interest as they enable comparisons, not only with the other case studies, but also within the area itself.

In demographic terms, the amount of single-person households strikes as particularly low, around one fourth of the national average. This may indicate the lack of population inflow due to a scarcity of employment opportunities and institutions of higher education (such as those in Kunitachi). Since the mid-2010s, the population of Tama City (mainly constituted by residents of Tama New Town) has begun to slowly decline: the projected shrinkage in 2040 is -14,3%, compared to 2015 (国立社会保障・人口問題研究所 2013). This is in line with predictions for the overall Tama Area, but it is much higher than that of Kunitachi. Despite sharing similar accessibility and location in regard to the center of Tokyo, their predicted population loss greatly differs. Moreover, land prices in the case study area are assessed at ca. 410'000 yen/m² for commercial areas around Tama Center, and between 175-220'000 yen/m² for residential areas (木浦税務不動産 2017), around half of the land prices found in Kunitachi. With the following analysis, we will shed light on possible causes for this discrepancy.

5.2 Morphological factors

In order to highlight causality relations between liveability and built space, let us now examine four morphological factors: density/compactness, diversity of uses, walkability and green/water space.

Density/compactness

All relevant metrics are graphically summarized in Fig. 31. The Spacematrix diagram indicates a total GSI of 0.16—i.e. 16% of the case study area is occupied by buildings—a FSI of 0.84, an OSR of 1.00, with an average number of floors of 5.2. These show that Tama New Town is a mid-rise development with abundant open space between buildings,

presenting a suburban character. Nevertheless, there are great differences within the case study area. While residential blocks show degrees of density and compactness slightly lower than those of the total area, having an almost rural character, blocks around Tama Center Station present values typical of highly-urban areas, such as those of inner city, mixed-use blocks. These discrepancies are due to the increased height and plot coverage of mixed-use and commercial typologies close to the transportation hub.

Three types of urban fabric can be clearly identified: compact areas with low-rise detached- or row-houses (mainly in western Ochiai); spacious mid- to high-rise *danchi* or towers (mainly in eastern Ochiai and Toyogaoka); compact, mid- to high-rise blocks of large-footprint buildings around the station (in western Ochiai). Buildings in compact areas align themselves along streets, while *danchi* and towers are south-oriented irrespective of the given street network. According to the figure ground, the whole urban fabric does not present clearly-shaped voids, so that it is hard to tell where a public park or large water space might be located. The population density is 42.0 pph, ⅔ of that of the whole Tokyo Prefecture.

Diversity of uses

All relevant metrics are graphically summarized in Fig. 32. First, we have quantified diversity of uses both at ground floor (MXI GSI)—where pedestrian activities take place—and in regard to the total floor space (MXI FSI). At ground level, 58.7% of built space is devoted to housing. Visiting functions (e.g. shops, public services) occupy 39.5% of the total ground floor space, while working functions (e.g. offices, factories, workshops) constitute a mere 0.7%. Figures regarding the diversity of uses over the total floor space present similar proportions. By these figures we understand that the case study is a mixed-use area, with a substantial amount of non-residential functions, but with a minimal presence of productive activities. As it can be inferred from the difference in working functions between the MXI GSI and the MXI FSI, a small amount of offices can be found above ground floors.

Second, we have mapped the spatial distribution of uses. This shows that the distribution of functions within the area is extremely unbalanced, as there is great concentration of commercial activities around the station, housed in large structures. Tama Center is, in fact, a regional shopping and entertaining hub, catering patrons from the whole Tama Area, so that we can say it belongs to the supra-neighborhood level.

Figure 31: TOP from left to right: Spacematrix diagram; building height map
BOTTOM from left to right: elevated pedestrian deck around Tama Center; typical *danchi*; high-rise apart-
ment building; detached houses
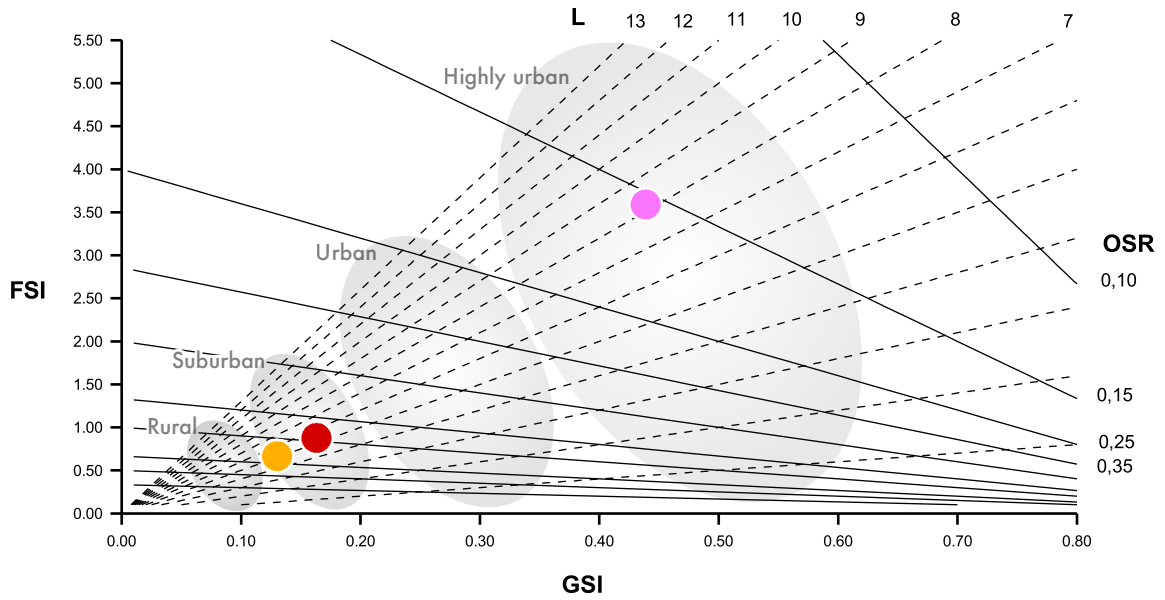
- Whole case study area
- Typical mixed-use block
- Typical residential block

Legend:
- 1-3F
- 4-6F
- 7-10F
- 10+F

0   500m
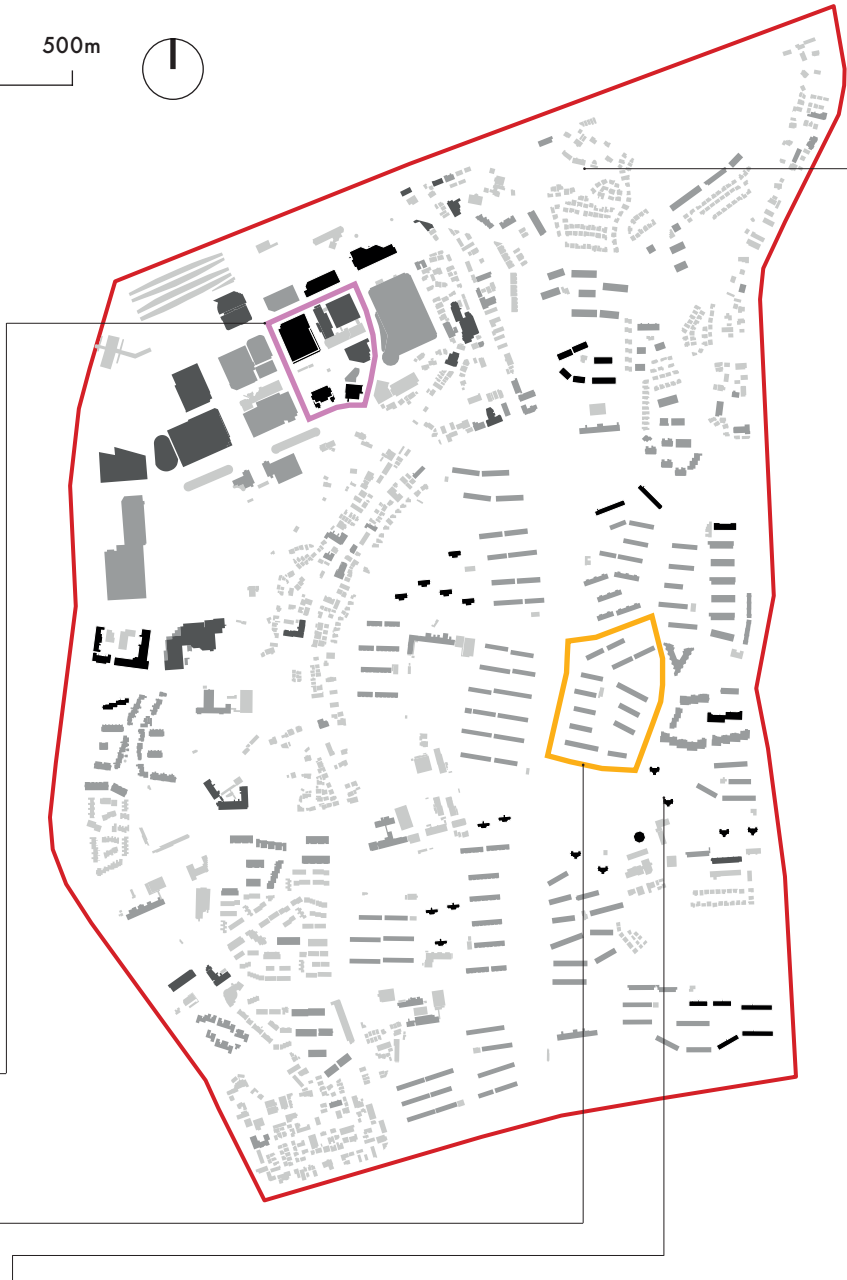
Figure 32: TOP from left to right: MXI diagram; building use map
BOTTOM from left to right: discontinuous commercial front in a "valley"; shops at the ground floor of a
danchi; malls around Tama Center; mobile vendor inside the premises of a *danchi*
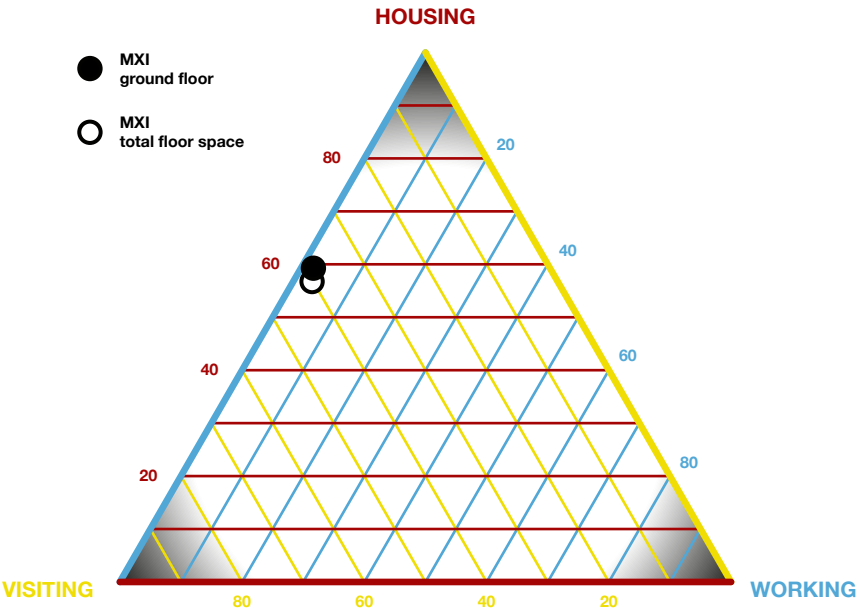
Legend:
- H
- H+W
- W
- W+V
- V
- V vacant
- V+H

0   500m

Despite the high quantitative presence of visiting functions according to the MXI, once we disregard Tama Center, neighborhood shopping facilities are scarce. *Danchi* and some of the compact residential areas are monofunctional, only interspersed with educational facilities (some of them already closed), following the principle of one junior-high and two elementary schools per district. Areas along the border between western and eastern Ochiai, and between western Ochiai and Toyogaoka—land readjustment areas where settlements were formerly present—are to be understood as shopping streets, even though they do not form a continuous commercial streetfront.

On qualitative terms, we have observed that neighborhood shops, originally planned at the ground floor of some *danchi*—forming a pedestrian-only shopping street— are generally in a declining state. Their structures are often in need of renovation and many shopfronts are shut down or vacant. A surprising finding, encountered within the premises of a *danchi*, was the presence of a mobile vendor selling fresh goods and groceries by truck. Parked on a small paved open space close to the *danchi* management office, this vendor placed his products in front of the opened-truck, providing carts and baskets for customers. Elderly formed the main pool of patrons, and this service seemed to be most welcome, being an opportunity for social contact too.

Walkability

All relevant metrics are graphically summarized in Fig. 33. With two betweenness simulations we aimed at predicting pedestrian flows in the case study area, according to shortest paths. Tama New Town is, though, a particularly challenging location to analyze, due to its topography and circulation concept. First, UNA Toolbox (see 3.3) cannot take into account topographical variations, so that a flat and a steep path are treated equally. This can greatly distort results. To mitigate the consequences of this issue we have drawn steep paths artificially longer than in reality, so that they appear as more unfavorable to the simulating software. Second, as we have seen in the previous section, Tama New Town's masterplan completely segregates vehicular from pedestrian traffic. This means that, by design, vehicular roads tend to appear uninviting and uninteresting to pedestrians, and might be discarded even though they might be the shortest possible route.

In the first simulation (a), all residential and office buildings represented origins, weighted according to the number of floors, while two stations (Tama Center and Tama

Center Monorail) represented destinations. Routes were calculated according to shortest paths, resulting in a maximum value of 6'654 routes and a minimum of 1. As expected, pedestrian flow was predicted to be at its highest around the destinations, even though the most trafficked segment was in the vicinity, and not adjacent to the stations. What is questionable in this simulation is the high pedestrian flow through Parthenon Tama coming from Tama Central Park. There are, in fact, long and steep stairs coming down from the park, through Parthenon Tama and to the stations. It appears that flow at this location has been overestimated.

In the second simulation (b), shops represented origins, weighted according to the number of floors, while two stations represented destinations. Routes were calculated according to shortest paths, resulting in a maximum value of 485 routes and a minimum of 1. As the majority of commercial activities are located around Tama Center, the predicted pedestrian flow mostly happened there, with only a handful of routes reaching farther locations.

On qualitative terms, we have observed on site how difficult it is for elderly people to move around Tama New Town, due to stairs and ramps, making manifest the problematic characteristics of such a pedestrian environment. Connecting all malls around Tama Center is a pedestrian deck at first-floor level, a reminder of the modernist planning ideas underpinning the masterplan. The deck appears in some tracts over-scaled and monumental (forming a 40 m-wide visual axis between Tama Center Station and Parthenon Tama) and, due to its sheer width, tends to seem empty. Nevertheless, more proportioned segments can be appreciated as a safe environment for pedestrians, e.g. parents with children, as motorized traffic exclusively happens at ground level. Landscape features, though, such as trees or seats, appear to have been designed with an aesthetic but not functional intent. "Informal" uses on the pedestrian deck only appear during special events, described in 5.3. Let us now examine the accessibility of shops.

A gravity analysis was run with a 500 m radius and a β value of 0.005 (more than double than that of Kunitachi, to reflect stronger aversion to walking due to the hilly topography). It indicated a maximum number of reachable shops of 116 and a minimum of 0. The results are strongly polarized, and only 3 to 5 buildings—new *manshon* in the vicinity of Tama Center—enjoy a convenient shopping environment within walking distance. The two shopping streets along the district borders seem to have limited influence on their surroundings. This is due to the fact that they are greatly outnumbered

Figure 33: TOP from left to right: two variations of betweenness analysis; gravity analysis
BOTTOM from left to right: elevated deck linking Tama Center Station to Parthenon Tama; neighborhood
park; stairs and ramps linking a "valley" to a "plateau"; elderly face great mobility challenges
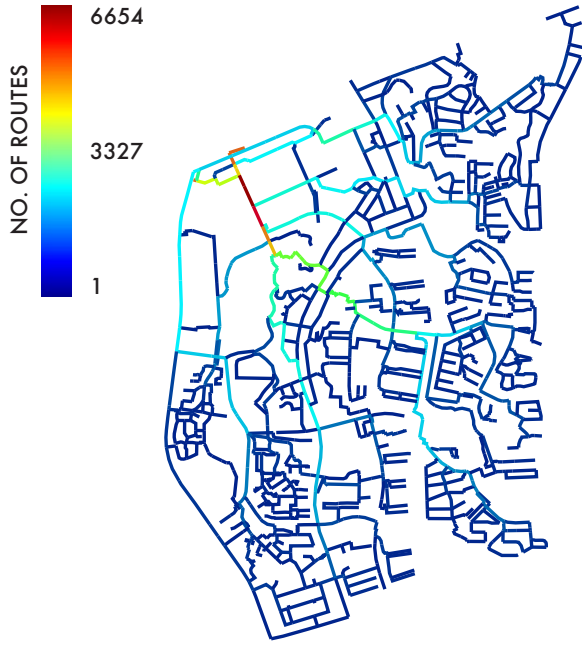
BETWEENNESS a)

ORIGINS: residential and office buildings
DESTINATIONS: two train stations
reach all; origin weighted; no detour
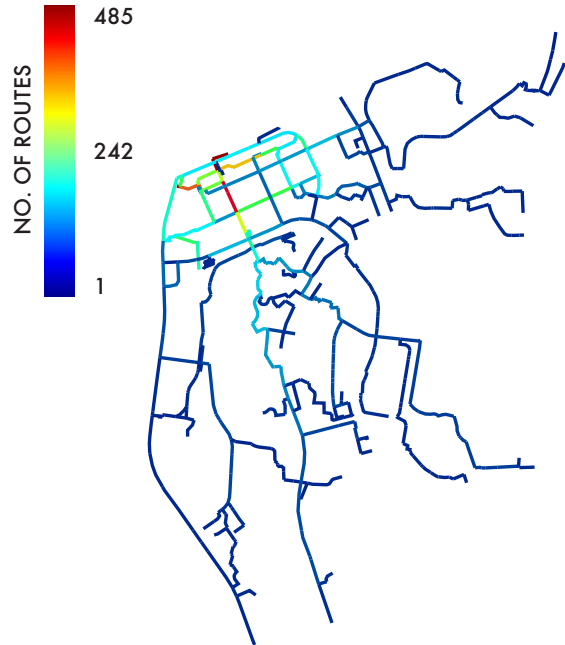
BETWEENNESS b)

ORIGINS: shops
DESTINATIONS: two train stations
reach all; origin weighted; no detour

NO. OF REACHABLE SHOPS

116

58

0

0   500m
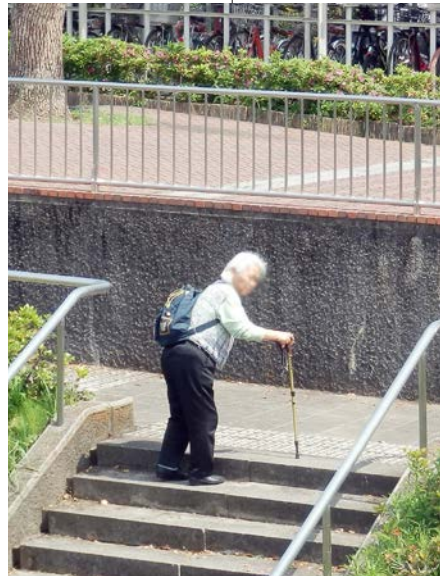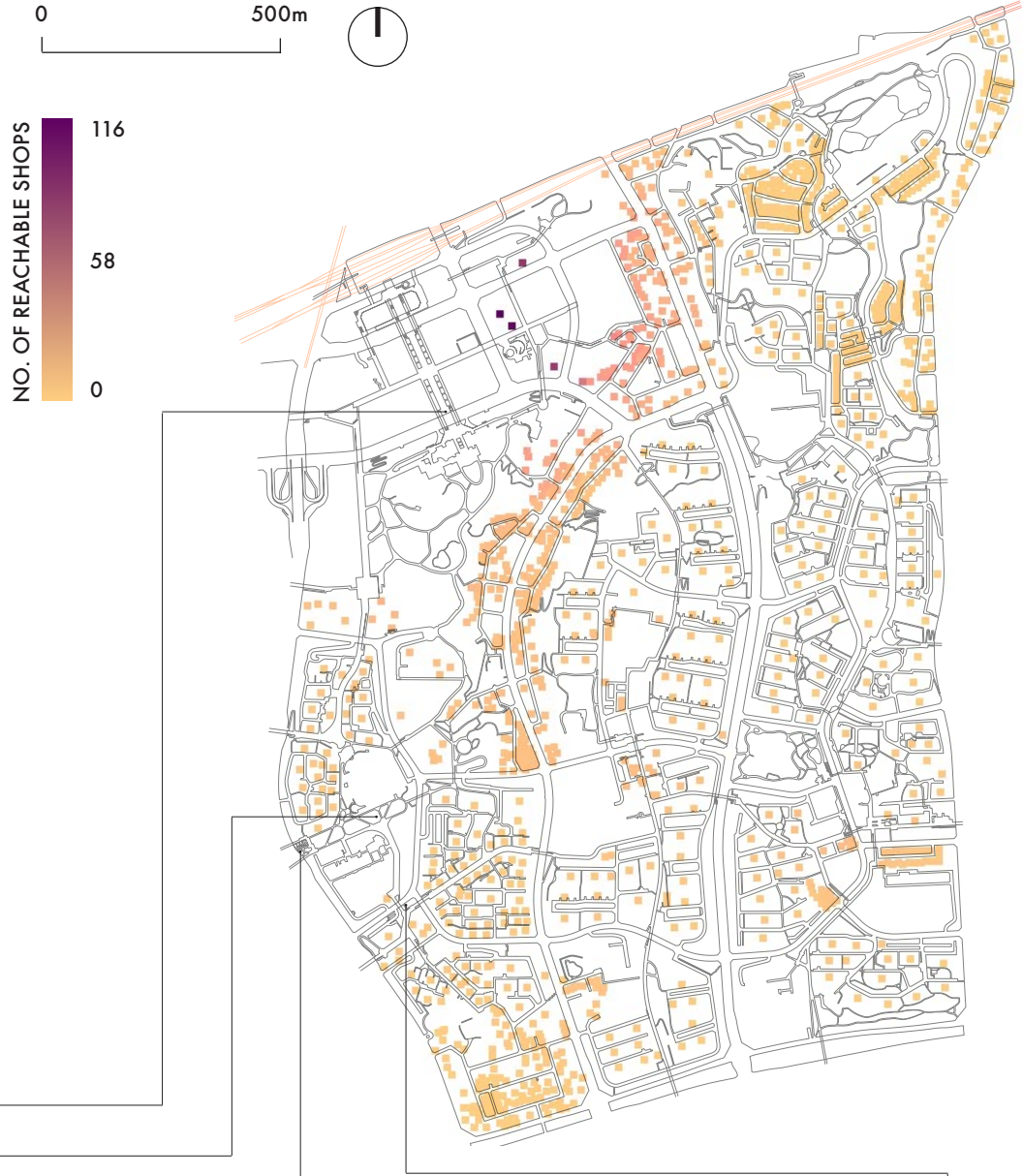
by commercial activities housed in the multistory malls around the station. Meanwhile, the rest of the residential area faces serious issues in shopping accessibility, explaining the presence of vendors on truck stopping within *danchi* premises.

Green/water space

All relevant metrics are graphically summarized in Fig. 34. Tama New Town is ca. 100 m above sea level, with a maximum variation in altitude of 40 m. It presents a hilly topography with valleys running north to south, creating narrow and long plateaus. The planners laid, in principle, vehicular roads in the valleys and often defined each plateau as a neighborhood unit, i.e. a district. From this point of view, an understanding of the topography of the area is crucial to grasp planners' intentions and current mobility issues. Green and water space in the case study area amounts to 51.9%, explaining the suburban character highlighted in the density/compactness sub-section. Qualitatively, it can be categorized as follows: private green or non-paved areas (20.5%), shared green (16.3), public green, i.e. parks (14.3%), water (0.7%) and a negligible presence of agriculture.

Since *danchi* and apartment towers are the main residential typology, shared or communal green space constitutes a considerable share of the overall natural environment. This is a fundamental qualitative trait, as the management of such spaces relies on residents' fees or volunteering activities. During our fieldwork we have encountered numerous elderly people taking care of these green spaces, which appeared as great burdens for an aging and shrinking pool of residents.

Beside smaller neighborhood parks and playgrounds, where we seldom encountered children or anyone at all, there are two district parks: Tama Central Park and Toyogaoka Park. The former is a pleasantly landscaped park, featuring a large pond, lawns where to lie and rest, abundant trees providing shade. It also hosts a reconstructed farmhouse with free entrance and a greenhouse where flowers are grown and displayed. According to our fieldwork, the park is used and appropriated by local inhabitants, given also its proximity to Parthenon Tama and Tama Center. Toyogaoka Park, on the other hand, is abandoned. It has poor accessibility and its only outstanding feature, a hilly topography, only makes it unattractive to elderly residents. During our fieldwork we encountered no single person walking the park, which was in a state of disrepair.

Agriculture, once abundant in the area, has virtually disappeared. *Danchi* residents, in fact, cannot have an orchard close to their apartments, and the only agricultural

patches we found were small private allotments adjacent to detached houses.

The four morphological factors we have examined so far have clarified the role that morphological features play in regard to Tama New Town's liveability. We need now to introduce assessments of urban management to complement the morphological findings.

5.3 Urban management factors

The first sub-section about participatory practices will introduce bottom-up efforts by residents to improve the new town's liveability. The second sub-section about local character will highlight the most prominent historical and natural features of the area, alongside unique facilities and institutions. As these factors are mainly qualitative, the analysis will rely on personal observation, documentary research and informal interviews with locals (both experts and residents).

Machizukuri/participation

Bottom-up activities by local residents, aiming at the improvement of liveability at the neighborhood scale, have had limited success. As the case study area can be considered, in part, a bed town where people commute from, civic engagement is relatively low (財団法人多摩市文化振興財団 1998). Not spending enough time socializing with neighbors and being involved in local activities and events, is a major reason for the lack of strong social cohesion. This problem is common to other bed towns across the country. As the population ages and retires, however, it would be easier to spend more free time in *machizukuri* activities, or simply to socialize more.

2004 saw the establishment of the Tama New Town Machizukuri Specialists' Committee (秋元 2005). According to its statement of intents, given the retreat of UR Agency from management duties, residents will have to organize themselves, cooperate and mobilize local resources, especially in view of an aging and declining population. The main focus of activity concerns thus liveability for the elderly and the improvement of childcare services. This committee can be seen as a board of well-educated residents, fostering the inception of bottom-up participatory activities and facilitating their development.

With the construction of large shopping malls around Tama Center in the 1980s

Figure 34: TOP from left to right: amount and type of green/water space; green/water map
BOTTOM from left to right: greenhouse; playground inside *danchi* premises; Tama Central Park; shared
green within *danchi* premises; abandoned Toyogaoka Park

Private green/non-paved   Public green

| 20.5% | 16.3% | 14.3% | Water 0.7% |

Shared green

0   100

51.9%
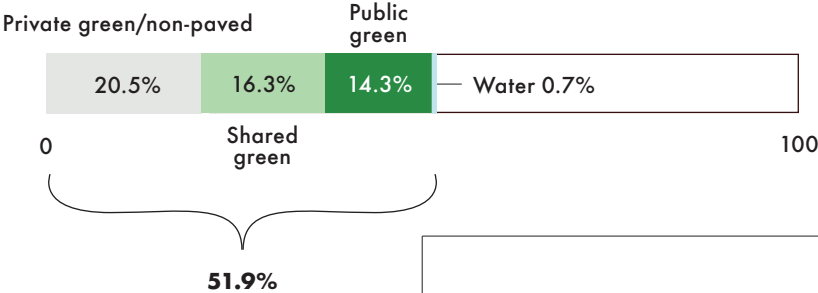
70-130m.a.s.l.

Public green

Abandoned public green

Shared green

Agriculture

Water
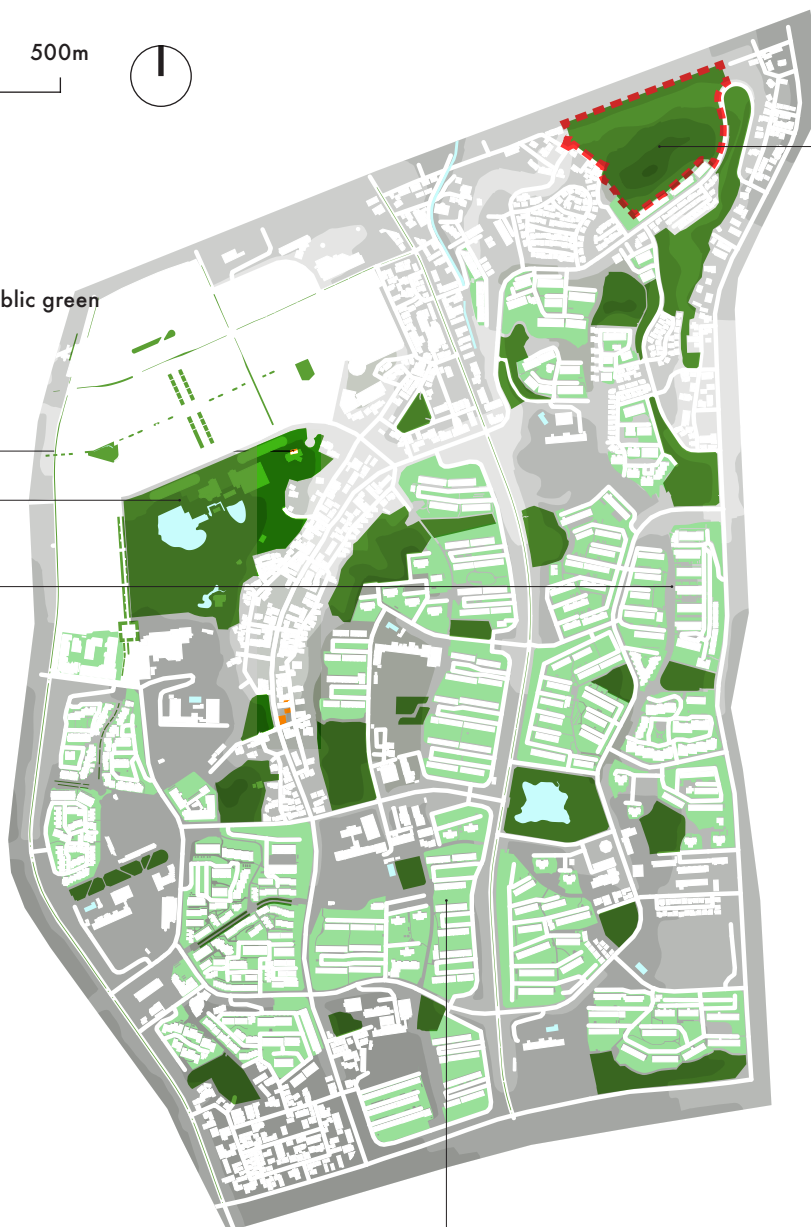
Figure 35: summer festival along Parthenon-dōri

and '90s, neighborhood shops have received a major blow, suffering a loss of patrons. As a result, many local businesses were forced to close, especially to the detriment of the elderly and of people without cars. Reacting to this situation, various revitalization initiatives have been launched, yielding mixed results. The merchants association of Toyogaoka, for instance, has been organizing a festival dedicated to hydrangeas in June.

The biggest festivals in the case study area are the Ochiai Danchi Hometown Summer *matsuri*, born in 1980 and organized by the Tama Center Merchants Association, and the Tama Center Sakura *matsuri*, born in 1976. These festivals take place on Parthenon-dōri, where food stalls and temporary stages are built to the right and left of the pedestrian deck (Fig. 35).

Local character

The current image of Tama New Town as a whole has a rather negative nuance. Despite embodying in the 1970s an idea of modernity and advancement, its marked aging and the accelerating depopulation have triggered numerous debates about the future sustainability of such residential environment. Specifically, *danchi* are seen as obsolete housing types, difficult to renovate, crammed and inhibiting social interaction. Moreover, the foundation of Tama New Town is seen by some as an act of disruption of the natural ecosystem, as massive earthwork, bulldozing and tree-cutting were deployed to lay the land according to the masterplan, as portrayed in the popular Studio Ghibli anime *Pom-Poko* (Takahata 1994). If Toyogaoka substantially reflects the above negative image of the town, Ochiai presents a more mixed and positive character, due to some outstanding features.

Tama Center in Ochiai functions as a regional hub, offering a number of attractions which draw people from nearby districts; Parthenon Tama, despite its eroding popularity

and financial burdens, is a cultural hotspot, where concerts and events take place; Sanrio Puroland (Fig. 36), a well-known theme park, defines the character of Tama Center; the towering structure of Benesse Corporation, offers a private plaza, childcare services and white-collar jobs.

The case study area does not present any religious building of prime importance, but it features a reconstructed wooden house from the XVIII century—Tomizawa House (Fig. 37)—and an archaeological museum with open-air reconstructions and excavations of Jōmon pit dwellings (Fig. 38). These attractions have a regional importance, and are destinations for school excursions.

Conclusions

Our analysis has shown that Tama New Town is a diverse area, in terms of housing types and land uses. Despite a suburban character with 1970s, 5-story *danchi* as the most present housing option, the case study features later developments with mid-rise and detached housing. Depending on the residential type— the less appealing the higher its age—

Figure 36: Sanrio Puroland's entrance

Figure 37: Tomizawa House within Tama Central Park

Figure 38: pit dwelling reconstruction at Jōmon Village

and location, neighborhood character and liveability greatly change.

The area around Tama Center Station is a regional commercial and entertainment hub, presenting highly-urban density and compactness. Large-footprint malls are connected at first-floor level with a pedestrian deck, a reminder of modernist planning ideas. Services catering patrons from the whole Tama area, such as a cultural complex, a theme park and corporate headquarters, are present.

At the district level, uses are rather mixed and seem to suggest a vibrant area. Nonetheless, their spatial distribution is highly unbalanced, as non-residential functions, mainly businesses and shops, are concentrated around Tama Center, while the rest of the case study area suffers from poor access to shopping within walking distance, as demonstrated by our gravity analysis.

Topography crucially influences accessibility: the valleys and plateaus of Tama hills called for stairs, ramps and flyovers to connect different neighborhoods in Tama New Town. As a result, elderly and impaired people are particularly disadvantaged in their daily errands.

In regard to open space, Tama New Town has a high presence of green. Particularly abundant are shared or communal green areas belonging to *danchi* or high-rise residential complexes. Their management being shared too, they are increasingly difficult to maintain. Given the abundant presence of natural areas, sometimes parks become redundant, as in the case of the abandoned Toyogaoka Park.

In the case study area there has not been a strong tradition of *machizukuri* activities. Nonetheless, there have been different initiatives to try to cope with most evident liveability issues, such as the lack of childcare facilities and the decline of small neighborhood shops.

The diversity of the area is confirmed by the mixed image it has: on the one hand, a modernist new town of *danchi* bears a negative aura; on the other hand, unique functions around Tama Center are able to attract visitors from the whole Tama region and beyond.

6 YUKARIGAOKA

The important thing is how to maintain a city so that people think: 'I want to move there'.
    Tetsuo Shimada, developer of Yukarigaoka, in 藻谷 2014:214 (author's translation)

Yukarigaoka (ユーカリが丘), meaning "eucalyptus hill"—despite the fact that this is not a native tree—is a privately-developed district in western Sakura City, Chiba Prefecture. Yukarigaoka is ca. 35 km (60 minutes by train) east of Tokyo Station and has a population of ca. 20'000. Both Kunitachi and Tama New Town lie in western Tokyo, but the latter was founded 40 years after the former; Yukarigaoka, instead, is located to the east of the city center, and was founded just a few years after Tama New Town.

The chapter starts with a historical background of Yukarigaoka's foundation and development, highlighting the innovating urban management policies of Yamaman Corporation. A second section will present the analysis of four liveability factors, showing how morphological characteristics shape local quality of life. A third section will introduce the analysis of two urban management factors, examined from a socio-cultural point of view, clarifying how Yukarigaoka sustains its image of a liveable suburban area, rich in natural features.

6.1 Inception and historical development

Grasping the demand of residents was the success factor.
    児玉 & 中野 2016:2 (author's translation)

The initiative to found Yukarigaoka can be traced down to a single person, Tetsuo Shimada, born to a family of farmers in 1935 in Fukui Prefecture, western Japan. Initially active in the textile business, he foresaw the upcoming competition with Chinese producers and decided to shift to real estate development (and management), founding the company Yamaman (山万) (藻谷 2014). Shimada had the intent to develop a town different from the publicly-initiated new town models of the time, such as Tama New Town. In line with the raised ecological awareness of the 1970s in Japan, Shimada envisioned a family-friendly, quiet residential environment for up to 30'000 people, where new development mingled with existing villages, agriculture and abundant nature. He selected an area in Sakura City, close to the reserve of the Inba swamps, roughly between the center of Tokyo and Narita Airport. He personally negotiated land acquisition from local farmers over a period of three years, assuring that the area would maintain its ecological and productive integrity.

According to the masterplan, Yukarigaoka would resemble a doughnut in plan, linked to the Keisei railway line. A privately-owned and operated monorail would run in an anti-clockwise loop, departing from and returning to Yukarigaoka Station in 13 minutes, stopping at six stations. This was the first time ever in Japan that a private developer came to manage a railway line. Ideally, every household should reach the nearest station within 10 minutes walking. The center of the loop, called Ino forest, would be left untouched as a *satoyama*,[1] comprising cultivated land, forests, paddy fields, shrines and temples. The area close to Yukarigaoka Station would be a more urban environment, with high-rise residential condominiums, commercial and mixed-use buildings. The project began in 1971, construction started in 1977 and the first residents moved-in in 1980.

Most of Yukarigaoka's success as a suburban residential area (Brasor & Tsubuku 2016; 児玉 & 中野 2016; Seki *et al.* 2002) comes down to the management strategies of Yamaman, a consciously non-listed company. Instead of developing and sell as many units as possible in a short time-frame, the developer opted for a long-term strategy. It would sell 200 houses per year at most, foreseeing to infill all plots in 40 years. Yamaman, in fact, realized that if a large number of inhabitants of the same cohort move in at once, a demographic unbalance would undermine future liveability, as actually would happen in Tama New Town (see Chapter 5).

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1   Combining the characters of "countryside" and "mountain" (里山), *satoyama* is the area marking the transition between hills or mountains and arable flatland. This border zone often hosts forests and cultivated fields, being an important ecosystem often endangered by urban development.

It is of special interest to note differences and similarities in approach and tactics with Den'en Toshi Company, the developer of Den'en-Chofu, a famed and exclusive rich enclave at the border between the prefectures of Tokyo and Kanagawa. Den'en Toshi was, unlike Yamaman, a stock company, founded in 1918 with a marked profit-oriented goal, veiled to a certain extent by the philanthropic ideas of its chairman, Eiichi Shibusawa, a prominent business leader of his time. Shibusawa, backing a number of speculators, aimed at introducing the English concept of the garden city by creating in 1922-23 Den'en-Chofu, a suburban residential area with a railway link to central Tokyo (Watanabe 1980). Den'en Toshi Company, like Yamaman, developed its own railway line, and pledged to do the following: manage the developed area; act as a real estate agent for residents; design and build facilities and infrastructure; undertake the necessary business to perform these tasks. Despite these intents, and unlike Yamaman, once all land was sold in 1927, the company ceased its activities and was terminated the following year.

Yukarigaoka Station opened in 1982, along the Keisei Line, and the monorail started operations. During the 1980s and '90s the area gradually expanded and added new services, such as schools, a post office and police station, community center, department stores, Wakayama Women's University annex, an NHK[2] cultural center. The area around Yukarigaoka Station strengthened its role as a hub, coming to host a hotel (managed by Yamaman) and a cinema. Starting in the 2000s, Yamaman decisively turned its efforts toward elderly-care and child-rearing, with the creation of a 15 ha wellness hub to the north of the town, where to find geriatric institutions, housing for the elderly, a biotope with therapeutic garden and childcare services. Of particular interest is the plan to closely integrate facilities for the elderly and for child-rearing, with a synergistic intent. The 2000s and 2010s saw stronger attention to and empowerment of local residents, with the establishment and strengthening of *machizukuri* groups and initiatives of town-promotion. Among other things, kleingarten were made available for rent; Yamaman Farm was created and branded tomatoes put on sale; NPOs, life-support services and volunteer organizations were created.

In 2005 Yamaman introduced an innovative urban management system: the so-called Happy Circle (山万株式会社 2016). Given generational shifts and changes in household composition, the company decided to assist households in search of a new

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2   Japan's national broadcasting network, operating television and radio channels.

house or apartment within Yukarigaoka. Yamaman guarantees its homeowners that they will be able to sell back their property to the company at full appraisal price, and change to another residential option, be it a house, apartment, or elderly home. The acquired property would then be renovated and resold at a competitive price by Yamaman itself.

As we have seen, Yamaman did not merely develop Yukarigaoka with immediate concerns for profit. It opted instead for a long-term development and management: this has been yielding a balanced demographic profile. As the company becomes more and more involved in stock management (a number of sister companies have branched out to better deal with different aspects of Yukarigaoka's urban management), it gradually empowers local inhabitants and relies on their feedback and involvement, filtered through neighborhood representatives. Before proceeding to the morphological analysis, let us now introduce key statistical data to better frame Yukarigaoka's current condition (Table 9).

Statistical data

The case study area (from here onwards interchangeably indicated as Yukarigaoka) is spread over a surface of ca. 383 ha, and hosts some 20'000 inhabitants, about 1/9 of Sakura City's population (Fig. 39). The case study boundary comprises the whole Yukarigaoka development by Yamaman (ca. 245 ha), and the forested and cultivated area—with the existing villages—inside the monorail loop. We included such natural environment in the analysis—even if the resulting case study area is ca. 50% larger than the previous

Area	383 ha			
	1990	**2000**	**2010**	**2016**
Population	9'387	13'750	15'762	18'194
Households	2'557	4'242	5'954	7'303
	Residential		**Commercial**	
Referential land price (2016)	100'000 yen/m²		n/a	

Table 9: summary of various statistical data about the case study area

Figure 39: case study area and its immediate surroundings. At the bottom-left corner aerial image of the area in 1966

case studies—as it was from the beginning part of the Yukarigaoka masterplan. In fact, the combination of existing villages, their agricultural activities, forests and culture with new residential developments was a crucial component in the developer's vision. Land prices in the case study area are assessed at ca. 100'000 yen/m² for residential plots (木浦税務不動産 2017), about half of those found in Tama New Town and one quarter of those in Kunitachi.

Given the constant policy of adding 200 new households per year, population in the area has been always increasing. Only a handful of blocks are still undeveloped at the point of writing, meaning that the town is approaching the end of its development. When this happens, population will level off and Yukarigaoka's goal will be that of retaining its inhabitants and assure a constant replacement of households. If we have a look at population trends in Sakura City, we find that here too population is leveling off. Demographic predictions, though, are rather dire: population in 2040 is expected to decrease by 20.4% compared to that of 2015 (Fig. 13). We may wonder, at this point, whether Yukarigaoka will be able to stand out against this trend and avoid population shrinkage.

6.2 Morphological factors

In order to highlight the causality between liveability and built space, we will now examine four morphological factors: density/compactness, diversity of uses, walkability and green/water space.

Density/compactness
All relevant metrics are graphically summarized in Fig. 40. The Spacematrix diagram indicates a total GSI of 0.15—i.e. 15% of the case study area is occupied by buildings—a FSI of 0.50, an OSR of 1.69, with an average number of floors of 3.3. These indicate that Yukarigaoka as a whole is a low-rise, spacious development, displaying a suburban/rural character. Nevertheless, there are pronounced differences within the case study area. Typical residential blocks of detached houses are two times as dense and almost three times as compact as the total average, assuming an urban character. As seen in Kunitachi, detached houses are closely built, with a minimum amount of private garden all around

the buildings. Mixed-use blocks around Yukarigaoka Station are an abrupt contrast to the residential area. They are eight times as dense as the total average and their bulk is typical of highly-urban environments. Such contrast is clearly visible in the mapping of building height.

A second exception to the uniform urban fabric is found toward the north of Yukarigaoka: this area, in fact, is a secondary hub, where a junior-high school, elderly housing, a high-rise condominium, a shopping mall and a water biotope are to be found. In the figure-ground plan, the void within the monorail loop and that corresponding to paddy fields on the north-eastern side of the area are clearly visible. Buildings are generally aligned along the street. The population density is 52.15 pph, slightly lower than that of the whole prefecture of Tokyo.

Diversity of uses

All relevant metrics are graphically summarized in Fig. 41. First, we have quantified diversity of uses both at ground floor (MXI GSI)—where pedestrian activities take place—and in regard to the total floor space (MXI FSI). At ground level, 74.2% of built space is devoted to housing. Visiting functions (e.g. shops, public services) occupy 18.3% of the total ground floor space, while working functions (e.g. offices, factories, workshops) constitute 7.4%. Figures regarding the diversity of uses over the total floor space present similar proportions. By these we understand that the case study is a predominantly residential area with a substantial amount of commercial and entertainment functions. The number of productive activities, mainly represented by farms, greenhouses and workstations, is fairly high, confirming the strong link between the new development and existing agricultural practices.

Second, we have mapped the spatial distribution of uses. A majority of visiting functions is concentrated, as expected, around Yukarigaoka Station, where the increased density allows for a higher mix of uses. The main road departing from the station, heading both north and south, can be identified as a high-street forming a coherent shopfront. Other visiting functions are distributed around the whole area, reflecting in part the location of the five monorail stations (not counting Yukarigaoka Station). Working functions, mainly activities predating the area's development, can be found inside the monorail loop and along the northern edge of the town.

Figure 40: TOP from left to right: Spacematrix diagram; building height map
BOTTOM from left to right: farmhouse beside Inō forest; typical residential area; mid- and high-rise development close to Yukarigaoka Station
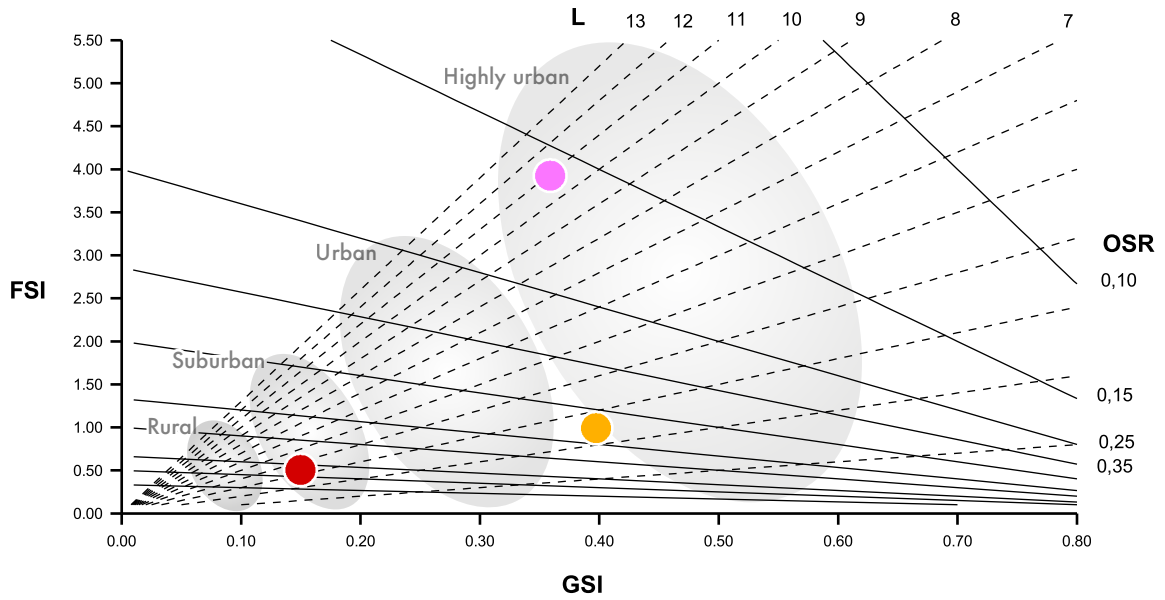
Legend:
- ● Whole case study area
- ● Typical mixed-use block
- ● Typical residential block

1-3F

4-6F

7-10F

10+F

0   500m

Figure 41: TOP from left to right: MXI diagram; building use map
BOTTOM from left to right: locally-produced rice being sold; high street departing from Yukarigaoka Station; shopping mall entrance
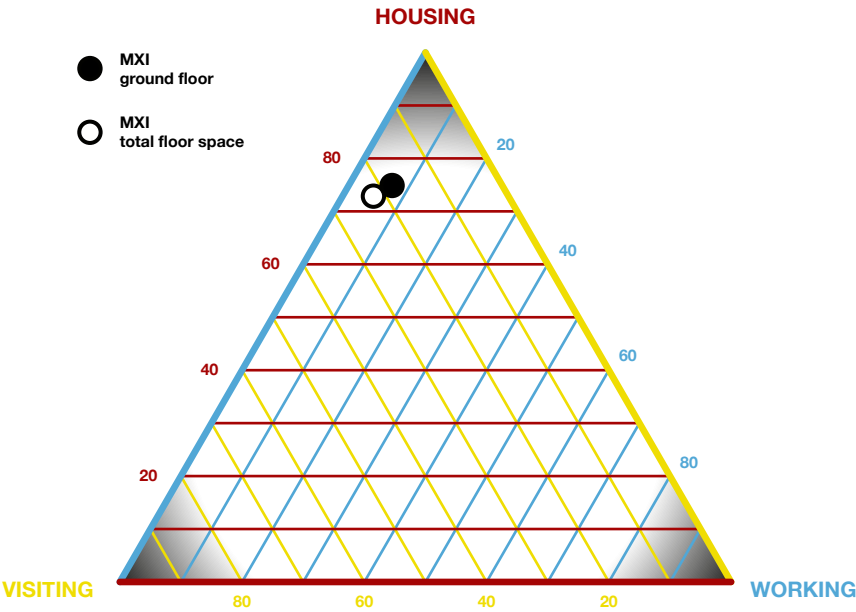
Legend:
- H
- H+W
- W
- W+V
- V
- V+H

0   500m

Walkability

All relevant metrics are graphically summarized in Fig. 42. With two betweenness simulations we aimed at predicting pedestrian flows in the case study area, according to shortest paths. In the first simulation (a), all residential and office buildings represented origins, weighted according to the number of floors, while all six monorail stations represented mutually excluding destinations, so that every origin generated a single route to its nearest station. Routes were calculated according to shortest paths, resulting in a maximum value of 1'624 routes and a minimum of 1. Pedestrian flow is expected to be at its highest around Kōen Station, which is the one closest to the highest amount of houses. Overall, there is a strong correspondence between the location of stations and residential buildings, as pedestrian flow is evenly distributed within the whole area.

In the second simulation (b), shops represented origins, weighted according to the number of floors, while all six monorail stations represented mutually excluding destinations, so that every origin generated a single route to its nearest station. Routes were calculated according to shortest paths, resulting in a maximum value of 70 routes and a minimum of 1. In this case, the highest pedestrian flow is predicted to happen around Yukarigaoka and Kōen stations. The subcenter to the north of the area and the high-street leading to Yukarigaoka Station clearly affect this simulation.

On qualitative terms, we have observed a low presence of people using outdoor and public spaces, giving the impression of a very quiet suburban area. Consistent with the previous simulations and with the analysis of diversity of uses, people outdoor are mostly found around the monorail stations and their commercial offers. The design quality of outdoor spaces is inconsistent and variegated: there are modernist decks and plazas, difficult to activate and appropriate; pleasant promenades featuring green, porticoes and shops; leftover spaces poorly fitted with urban furniture. As observed in Tama New Town, the big bulk malls around Yugarigaoka Station tend to suck-in outdoor streetlife. Even on Sundays, pedestrian presence is scarce: customers—and residents in general—tend to rely on cars for their daily errands, and people is mainly to be found indoors. Let us now examine the accessibility of shops.

A gravity analysis was run with a 500 m radius and a β value of 0.003 (corresponding to a topography slightly more demanding than that of Kunitachi, but not as prohibitive as that of Tama New Town). It indicated a maximum number of reachable shops of 42 and a minimum of 0. Despite the maximum value being relatively low, a large amount

of households enjoys fair accessibility to shopping. While the peak of accessibility lies around Yukarigaoka Station, a wide area between Chiku Center and Kōen stations can be considered as convenient for doing errands on foot. The subcenter toward the north of the development is clearly visible and complements the commercial hub to the south. The least-convenient households in terms of shopping accessibility are the ones located at the northern, eastern and western edges of the town, and the ones at the center of the monorail loop.

Green/water space

All relevant metrics are graphically summarized in Fig. 43. Yukarigaoka is ca. 20 m above sea level. It presents a moderately hilly topography, with a maximum variation in altitude of 20 m. By examining the terrain's contour lines, it is possible to notice a correspondence between the vehicular and railway network and topographical variations. In fact, the monorail loop runs along a valley, encircling a plateau of sorts, where the Inō forest is located. Paddy fields, forming an S-like strip, are located on low-lying land too, and lead to the Inba swamps towards north-east. Green/water space in the case study area amounts to 62.2%, and it is mainly constituted by private green and non-paved areas (27.8%), followed by agriculture (12.1%), public green, i.e. parks (9.9%), forests (8.5%), undeveloped parcels (2.5%) and water (1.4%).

Yukarigaoka's almost rural character is due to a considerable presence of paddy fields and other cultivated patches (feeding the local farmers market), and to the preserved forested area of Inō and its surroundings. Such presence is relevant both in pure quantitative terms and in experiential terms. In fact, residential blocks are located adjacent to natural environments, while roads and the monorail loop run around and through the *satoyama*. Yamaman facilitates gardening and small-scale agriculture by providing, since 1998, some 500 allotments at the price of 5'000 yen/year, and establishing in 2015 the award-winning Yamaman Farm, producing tomatoes "made in Yukarigaoka" (山万株式会社 2016).

Given the high amount of preserved natural spaces and private green, surface devoted to public parks is small. There are four main neighborhood parks, which appeared well-maintained and properly furnished. During field analysis we observed that the largest of them—Minami Kōen, beside the homonymous monorail station and the main community center—was well frequented by families and children. We noticed

Figure 42: TOP from left to right: two variations of betweenness analysis; gravity analysis
BOTTOM from left to right: nondescript outdoor space beside shopping mall; plaza and elevated deck around Yukarigaoka Station; landscaped high street to the south of the station
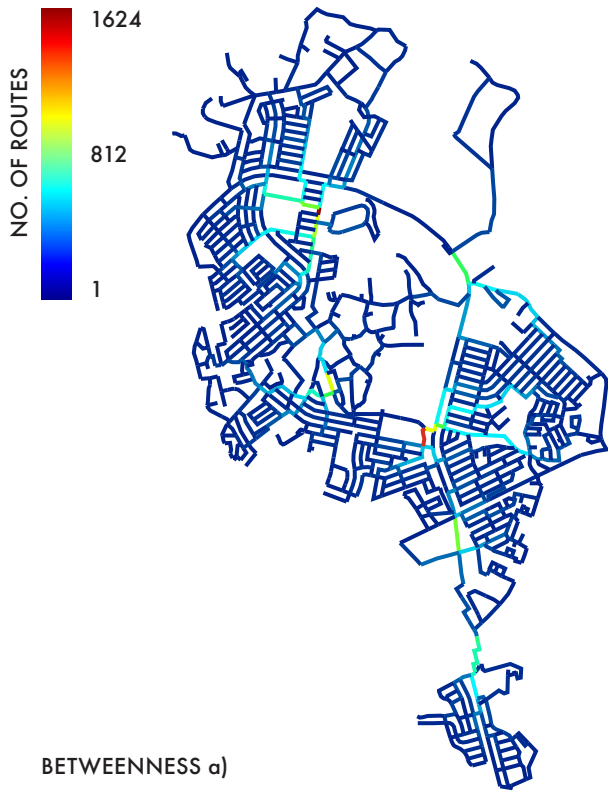
NO. OF ROUTES

1624

812

1

NO. OF ROUTES

70

35

1

BETWEENNESS a)

ORIGINS: residential and office buildings
DESTINATIONS: six train stations
Reach nearest; origin weighted; no detour

BETWEENNESS b)

ORIGINS: shops
DESTINATIONS: six train stations
Reach nearest; origin weighted; no detour

NO. OF REACHABLE SHOPS

42

21

0

0   500m
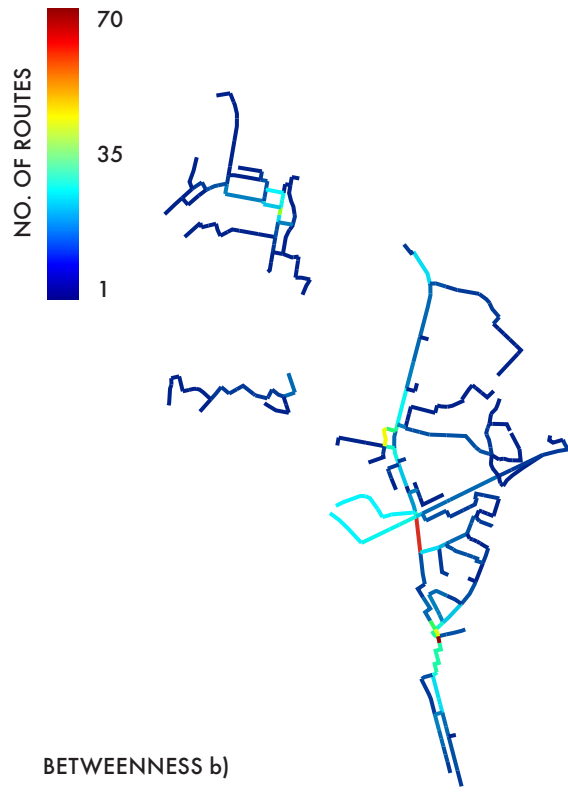
Figure 43: TOP from left to right: amount and type of green/water space; green/water map
BOTTOM from left to right: pond and landscaped area to serve as flood prevention measure; *satoyama* bordering Inō forest; Minami Kōen on a Sunday; paddy fields

Private green/non-paved   Forest   Agriculture

| 27.8% | 9.9% | 8.5% | 12.1% | | Undev. 2.5% |

0   Public green   Water 1.4%   100

62.2%

Legend
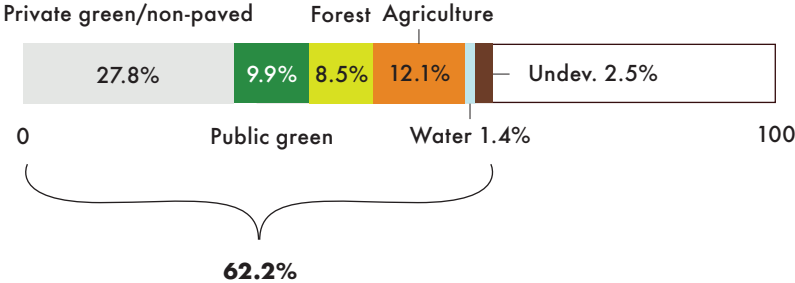
- ⬤ 10-30m.a.s.l.
- ⬤ Public green
- ⬤ Forest
- ⬤ Agriculture
- ⬤ Water
- ⬤ Undeveloped
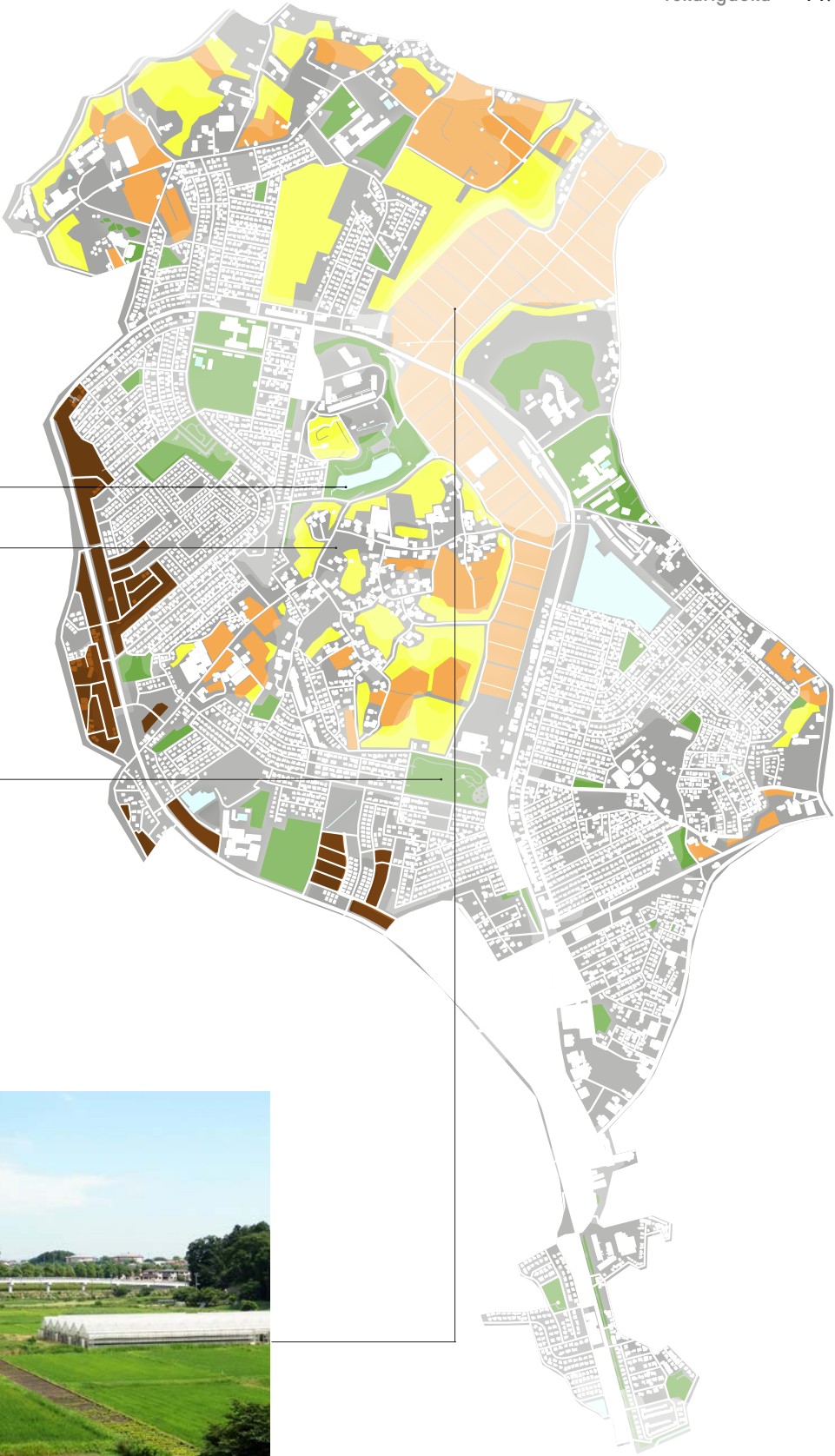
0   500m

in particular the lack of restrictions regarding playing with balls, stepping on the lawn and the like. The park at the northern subcenter, named Miyanomori, features a water biotope, which, along with other five reservoirs, functions as a retainment pond in case of floods. These ponds are the reason behind a relatively high amount of water space in the area.

The four factors we have examined so far have clarified the role that morphological features play in regard to Yukarigaoka's liveability. We need now to introduce the assessment of urban management to complement morphological findings.

6.3 Urban management factors

The first section about participatory practices will introduce the peculiar way in which residents, area managers and Yamaman cooperate toward a more liveable and comfortable town. The second section about local character will highlight how historical structures and unique natural features strongly define Yukarigaoka's image. As these factors are qualitative, the analysis will rely on personal observation, documentary research and informal interviews with locals (both experts and residents).

Machizukuri/*participation*

Yukarigaoka exemplifies a planned urban management system where a combination of top-down and bottom-up activities is at work. In fact, Yamaman has established a tripartite cooperation between itself as an overarching entity in dialogue with Sakura City, local residents as clients most concerned with the environment they live in, and area managers and neighborhood groups as *trait d'union* between the former two. As 児玉 & 中野 (2016:2) put it, 'cityscape maintenance and management is harnessed from the residents. [...] Yamaman is not supposed to control everything, but to activate voluntary management by residents of each area.' (author's translation)

Bottom-up self-managed *machizukuri* groups have been popping up since the 2000s, 20 years after the town's inception. A crime-prevention volunteer organization was created in 2000 (山万株式会社 2016) and a comprehensive system of area management groups was born in 2009. A number of activities takes place, ranging from hearing sessions of residents' requests, proposals and degree of satisfaction, to offering life-support

services relating to any homeownership related issue. Most importantly, members of the area management group of Yamaman will visit each single household three times a year, to facilitate bottom-up feedback and provide various kinds of assistance. In addition, an NPO called Yukari Town Network—mainly formed by volunteers living in Yukarigaoka—aims to contribute to the vitality of the area with various *machizukuri* activities. The Yukarigaoka Merchants Association, born in the late 1980s, is a union consisting of owners of shops and businesses operating within approximately 500 m from Yukarigaoka Station; it organizes events such as festivals and other temporary activities throughout the year.

Of particular interest is the so-called "Happy Circle" system, established in 2005. According to this strategy, every homeowner who bought from Yamaman, can sell the property back to the company at market value at any time. As household numbers and needs change during the course of a lifetime, this possibility should facilitate the transition to larger or smaller housing options, or even to an elderly home. Yamaman, upon redeeming a property, thoroughly renovates it and puts it back on sale at a price lower than comparable new houses or apartments.

As Seki *et al.* (2002) observe, *machizukuri* and urban management in Yukarigaoka is of a closed type, i.e. only residents within the developer's area can benefit from its various services, upon payment of management fees. In addition, there can be found volunteer associations operating free of charge, but in close coordination with Yamaman.

Local character

Yukarigaoka is seen by some as one of the few successful post-WWII new towns in Japan (Brasor & Tsubuku 2016; 日本都市計画学会 2011). In fact, population has been constantly increasing, demographic composition is balanced, and vacancy rates are low, in contrast to a number of publicly-initiated projects, such as Tama New Town (see Chapter 5). Much of Yukarigaoka's success is attributed to its private developer, Yamaman Corporation, which devised unique urban management strategies with a long-term vision.

In 1983, a year after the first residents moved in, Yukarigaoka Matsuri started. It has since become the town's major event, held in summer over two days, drawing some 30'000 visitors to Minami Kōen (山万株式会社 2016). Throughout the year there are four other events, patronized by the Merchants Association, taking place between Yukarigaoka and

Figure 44: November festival beside community center

Figure 45: Yukarigaoka's mascot at the station square

Figure 46: Senjuin temple became part of Yukarigaoka

Kōen stations (Fig. 44).

The town, despite not being a municipality of its own, has a dedicated information magazine, internet portal, mobile phone application and mascot—a koala bear, true to the town's name of "Eucalyptus Hill" (Fig. 45). Since 2014 a so-called Yukari Card, akin to the Kunitachi Card, can be used for purchases at local shops and businesses, and for a number of services throughout the town. This is a peculiar case where a strong identity and clear borders in an area do not correspond to administrative subdivisions.

To reinforce the image and brand of Yukarigaoka, in 2008 Yamaman opened a gallery and consultation space where a physical model of the town is on display, commented by a promotional video. Personnel is available to provide information to prospective homebuyers and interested audience. This space seems to serve as a unique way to present the development of the town, and to reinforce the image of a cohesive entity with strong coordination between top-down management and bottom-up engagement. During our visit, in fact, a Yamaman

representative took care in stressing the tripartite cooperation between developer, area managers and residents. Moreover, being asked when the town would reach completion, he offered that, for Yamaman, completion is not an aim: even though all available plots will soon be developed, there is a constant involvement in housing-stock management, so that no completion can and should be conceived. He also took care to mention that he himself, like other Yamaman employees, lives in Yukarigaoka.

From a morphological point of view, the town can be most identified with its natural environment, defined by the monorail loop: the combination of residential areas and paddy or cultivated fields and forests is a most distinctive characteristic. Built space, on the other hand, whether buildings or public spaces, does not strike as particularly impressive, memorable or pleasant, beside the obvious contrast between low-rise residential areas and the high-rise commercial hub to the south. Historical structures, mainly shrines and temples—most notably *Senjuin* (Fig. 46)—play an important role tough: they prevent Yukarigaoka from being perceived as a parvenu development and they grant a layer of cultural traditions to the new town.

Conclusions

Our analysis has shown that Yukarigaoka is a low-rise, spacious residential area with a rural to suburban character. The uniform residential blocks, composed of detached houses, are nonetheless contrasted by a high-rise, dense mixed-use area departing in a linear fashion from Yukarigaoka Station. The monorail loop, encircling a preexisting *satoyama* at the center of the town, purposely left undeveloped, is a clear limit between developable and undevelopable areas. In morphological terms, we can thus say that Yakarigaoka has a core composed of cultivated and paddy fields with patches of forest.

Beside the commercial hub to the south of the town, a mixed-use subcenter can be identified to the north. Overall, though, all six monorail stations are complemented with a certain number of shops and businesses, so that accessibility to shopping appears balanced throughout the whole town, as the betweenness and gravity analyses have confirmed. A considerable number of productive activities, mainly farms and workstations, can be found inside the monorail loop and to the upper edges of Yukarigaoka, a continuation of pre-existing agricultural practices.

A high presence of productive green, water and forests justifies the limited amount of public parks. It can be said that the hilly natural environment is Yukarigaoka's most

outstanding morphological feature, as the quality of built spaces is not remarkable, both in functional and aesthetic terms.

From the point of view of urban management, the role of Yukarigaoka's developer, Yamaman, cannot be overestimated. Since the town's inception, Yamaman's long-term vision and involvement have prevented the appearance of issues typical of many new towns of the same period. Over four decades, top-down initiatives have been complemented more and more by bottom-up engagement, with the establishment of volunteer groups, NPOs and associations.

In sum, Yukarigaoka can be considered a successful new suburban development, both in economic and social terms, which has constantly been improving the quality of its townscape and services. The town is slowly but steadily forming its definite identity, and there appears to be further space for more bottom-up involvement and welfare support.

7 COMPARATIVE DISCUSSION

Tokyoites who feel attracted by nature, the sea and woods, by the opportunity to make use of free time without stress, by old-style communities, by human relations based on reciprocity, are not few.

Nishio 2018:59 (author's translation)

Atsushi Miura is an eclectic and prolific Tokyoite (born in Niigata Prefecture), author of numerous books on consumer society, socio-cultural trends, Tokyo's coolest neighborhoods, etc. He has also established himself as a suburb-basher of sorts, with book titles such as "Tokyo is disappearing starting from the suburbs" (三浦 2012) or "Suburbs and their pathology" (三浦 2004). Largely relying on personal experiences and subjective impressions, Miura vividly recollects his choice to enroll in Hitotsubashi University because of the favorable impression that Kunitachi and Daigaku-dōri left on him, or his strong dislike for Tama New Town as he strolled from Tama Center station toward Parthenon Tama and its adjacent park (三浦 2014:159-70).[1] It is not difficult to grasp Miura's standpoint, who also appeared as a testimonial in the city branding campaign &Tokyo: that of a hedonist enjoying cool Tokyo neighborhoods and the full advantage

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1   Miura has developed a personal hierarchy and classification of urban typologies: "ghiblious", "atomic" and "punk". Ghibli-like cities, named after the popular animation studio Ghibli, are areas where shopping streets, alleys and streets are human-scaled, bearing an almost nostalgic, historical but vibrant character. For example, Yanesen (Yanaka, Nezu, Sendagi) and Kagurazaka are representative cases, as well as Kichijoji (Harmonica Alley), Asagaya and Koenji. Typical of these areas are compact wooden houses. The atomic city, instead, embodies the idea of a "future city" of the 1960s and '70s. High-rise buildings characterize these neighborhoods, such as Nishi-Shinjuku, Odaiba and Toyosu. Punk cities are chaotic areas with alleys spread at the feet of skyscrapers, akin to those seen in the movie "Blade Runner", as the atomic and ghiblious landscapes coexist. One may think of skyscraper towers over the backdrop of old wooden houses, around Tsukishima's Monja Street, or of the highways hovering over Nihonbashi. The atomic city is engineered for efficiency and safety, while ghiblious areas are deemed to be spontaneous and unsafe. It is worth noting here that, according to Miura, the transition from ghiblious to atomic happened with the development of Tama New Town.

of a vibrant urban life. His profile is of interest here as it shows that the discourse on peripheral areas is essentially a palimpsest, where manifold and sometimes contradicting layers of interpretation coexist. For this reason our research juxtaposed both quantitative and qualitative layers—six liveability factors—in an attempt to better assess the complex status quo of Tokyo's peripheral areas. Let us now discuss, in a comparative manner, the results of our analysis in Kunitachi, Tama New Town and Yukarigaoka.

7.1 Morphological factors

There is a need to maintain a kind of combination of objectivity and subjectivity, a need to avoid extremes of either.
    Ed Soja quoted in Acebillo 2012:264

All four morphological factors of the three case studies are graphically summarized in Fig. 48, while each of the following sub-sections will provide additional comparative figures when needed.

Density/compactness

After all, the ideal of a house with a garden, no matter how tiny it may be, that imparts a feeling of communion with nature, is deeply entrenched among Japanese, and is not likely to fade.
    Ashihara 1989:49

Taking advantage of the Spacematrix diagram we can compare at a glance the morphological characteristics of our three case studies (Fig. 47). It is immediately apparent how Tama New Town and Yukarigaoka lie close to each other—presenting a suburban to rural character—in comparison with Kunitachi, which has a decisively urban character overall. It is useful here to distinguish between density, represented by the FSI, and compactness, represented by the GSI.

    Kunitachi and Tama New Town have a similar density overall, which doubles that of Yukarigaoka. That Kunitachi and Tama New Town share the same density may be surprising, since density as an absolute value is often used in planning as a parameter to
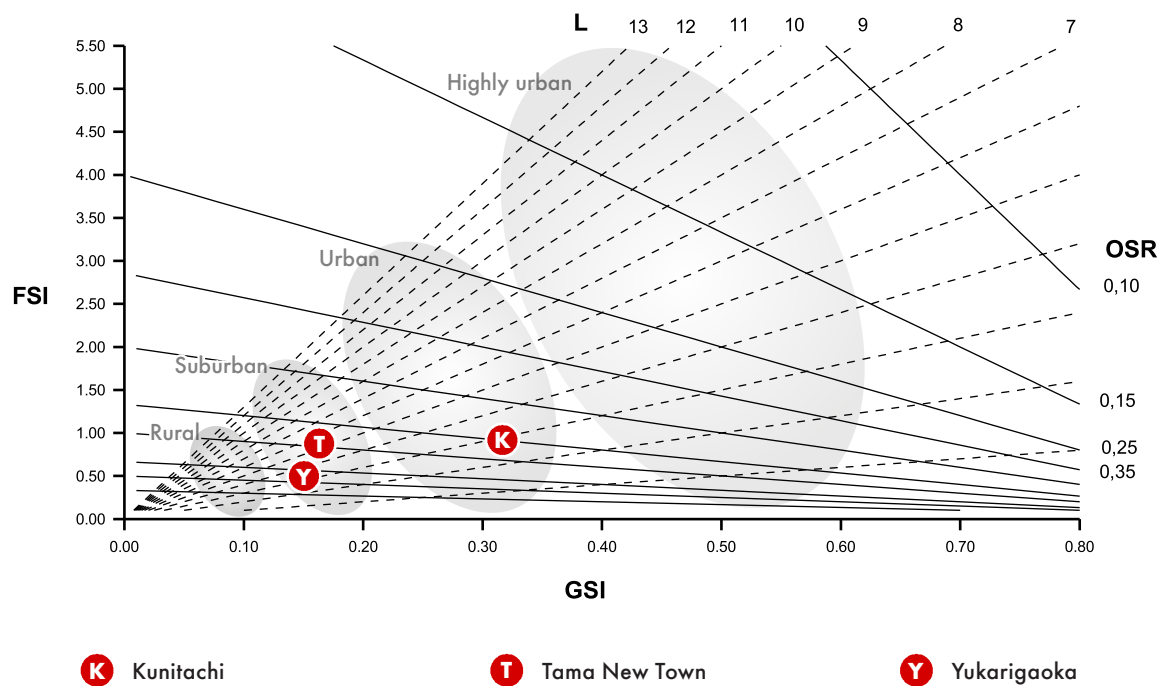
Figure 47: placement of the three case studies within the Spacematrix diagram

express the degree of urbanity of an area in abstract terms. As Berghauser Pont & Haupt (2010) have pointed out, though, a mere quantitative measure of density is unreliable to express the character of a settlement, as the comparison between Kunitachi and Tama New Town has shown. This point is particularly relevant since cities and their administrations around the world are often pushing for densification in an attempt to achieve sustainability goals, reduce costs of infrastructure and increase the efficiency of services. While densification itself may well be an appropriate goal in broad terms, the real question is how densification is achieved and in which building types it materializes, i.e. it becomes a question of compactness. Moreover, it is crucial to relativize and reevaluate densification as a goal in an age of shrinkage.

In regard to compactness, Tama New Town and Yukarigaoka share similar values, while Kunitachi is two times as compact as the former two cases. It can be implied that what grants Kunitachi its urban character is the compact nature of its blocks, rather than their density or height. This is a key aspect to consider when dealing with the liveability of peripheral areas with a shrinkage prospect. In fact, Kunitachi demonstrates that liveliness on the streets and urbanity can be achieved with modest densities and low- to

Density/compactness

Floors 13 12 11 10 9 8 7

FSI (density)
GSI (compactness)

Floors 13 12 11 10 9 8 7

FSI (density)
GSI (compactness)

Floors 13 12 11 10 9 8 7

FSI (density)
GSI (compactness)
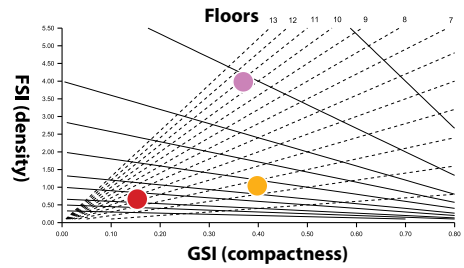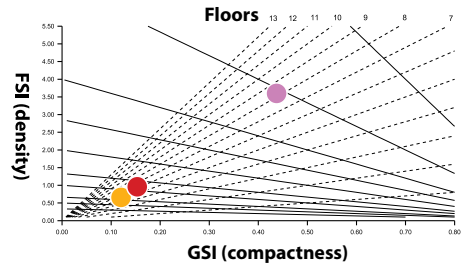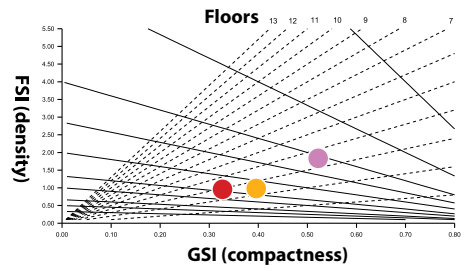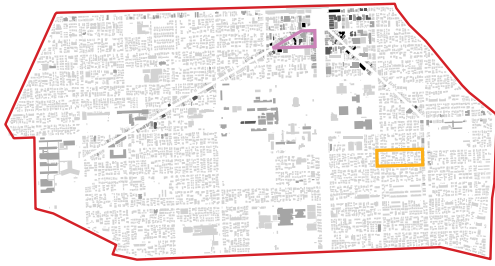
1-3F
4-6F
7-10F
10+F

Whole case study area
Typical mixed-use block
Typical residential block

Mix of uses

HOUSING

VISITING   WORKING

Walkability

260
130
1

116
58
0

42
21
0

Green/water space

Private green/
non-paved
22.5% 10.9 Water 0.2%
0   Public green   100
33.6%

Private green/   Public
non-paved   green
20.5% 16.3% 14.3% Water 0.7%
0   Shared   100
           green
51.9%

Private green/   Forest Agriculture
non-paved
27.8% 9.9 8.5 12.1 Undev. 2.5%
0   Public Water 1.4% 100
     green
62.2%

Legend:
- H
- H+W
- W
- W+V
- V
- V+H
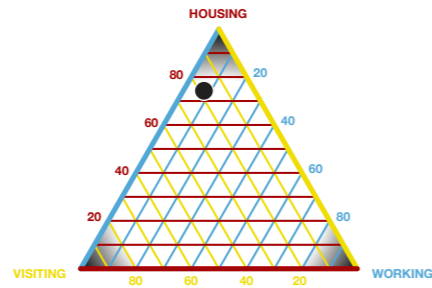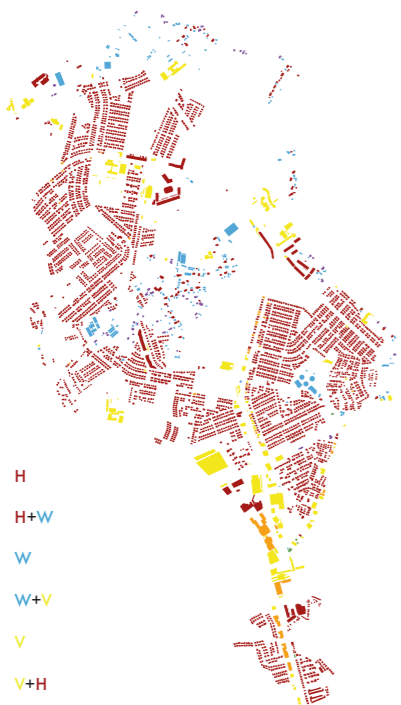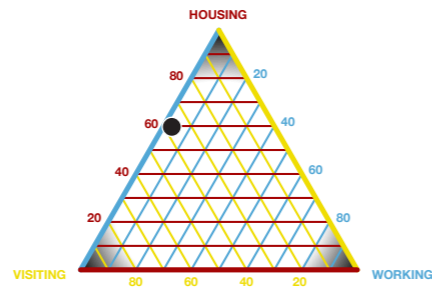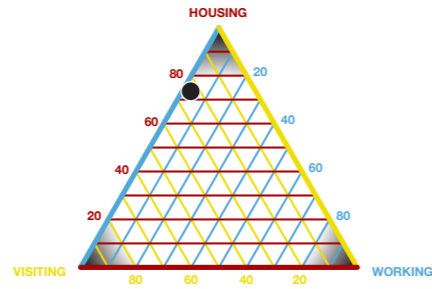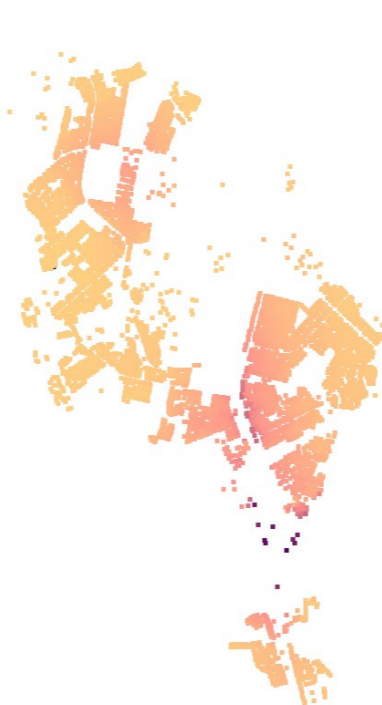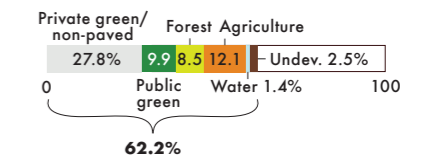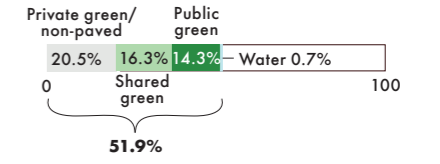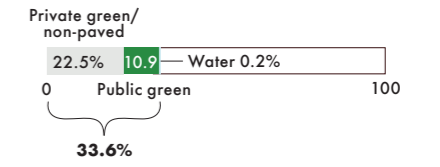
Figure 48: graphical comparison of the four
morphological factors in the three case studies

mid-rise buildings, as long as continuous street fronts are present, streets of appropriate width are laid out and a fitting mobility strategy is implemented. From this point of view, we argue that "compactization" (Wada & Ohno 2011) is a more appropriate concept than "densification" in the context of urban planning and policy-making. Moreover, a quantitative attempt at densification, without qualitative and typological considerations may even produce negative effects, especially when achieved through high-rise buildings.

When examining the spatial distribution and size of building footprints in the three case studies, Kunitachi emerged as a homogeneous city grid featuring notable morphological exceptions, such as three diagonal arteries and the large void of Hitotsubashi University Campus. Morphological differences between commercial and residential blocks are moderate. Tama New Town, on the contrary, has a more patchwork-like structure, and is very diverse in terms of building height and footprint size. Its commercial core around Tama Center Station—with a highly-urban character—is in stark contrast with residential areas. Morphological contrasts in Yukarigaoka are less pronounced than in Tama New Town but stronger than in Kunitachi. Its general urban tissue too lies midway between the former two cases: uniformly laid-out detached houses are interspersed with large green and water spaces, neatly encircled by the monorail loop.

We do not argue here, though, that a uniform urban character is better than a varied and contrasted one. The quality of Kunitachi's grid and Yukarigaoka's overall layout is, rather, the (intel)legibility of their structure. As Lynch (1984) has pointed out, being able to easily orient oneself around adds to the quality of an area: it increases accessibility and is particularly beneficial to the elderly—their cognitive faculties gradually declining—the impaired and strangers. From this point of view, it is interesting to recall a comment by Japanese musician and author Haruomi Hosono (細野 2006): a major characteristic of Tokyo' urban landscape, according to him, is the lack of references for orientation, due to the absence of a grid system and to the proliferation of high-rise buildings. This way, Tokyoites float in a fluid environment with an ever-changing horizon. As such, it can be argued that part of Kunitachi's uniqueness within the Tama Area is due to the legibility of its structure (see further subsection "Local character").

We should now attempt to link our findings about density/compactness to the specific challenges that Tokyo's peripheral areas are going to face in the near future. As different authors have highlighted (e.g. Ashihara 1989; Lynch 1984) there is a persistent demand for detached houses in quiet residential environments among Japanese people,

especially among families with children. Given the fact that central areas are likely to remain popular residential choices at least among certain social groups—because of their proximity to workplaces, services and amenities—peripheral areas should be offering an alternative lifestyle. They should be able to provide more living space for families, e.g. in the form of a detached house with a private garden; they should exploit their potential as childrearing places, what Kunitachi and Yukarigaoka seem to be doing.

Bearing in mind that, as population will shrink, more housing options will become available in central locations—presumably with a diverse range of prices—people living in peripheral areas will tend to move there, as their sole reason for living out of the center has often been an economic concern. Detached houses with private gardens are not in contrast with a sense of urbanity and with liveable environs. The case of Kunitachi has demonstrated that peripheral areas do not need to be dense, as long as they are compact, and a denser development around a transportation node can quickly give way to quiet residential blocks. The case of Tama New Town is more challenging, though.

As time has revealed, *danchi* and high-rise residential towers interspersed with green have proven to be unpopular types, both in architectural and urban design terms. Rather that attempting to renovate such aging housing stock—which would mitigate architectural flaws, but not urban design ones—it seems more reasonable to demolish the oldest and less accessible structures and gradually compact neighborhoods closer to transportation hubs by way of infill or retrofitting. This would be a long-term change which need to be supported by adequate local urban policies and financial mechanisms. We argue that such policies should replace quantitative goals of density with qualitative ones of compactness, in order to maintain vibrant, convenient and liveable neighborhoods in peripheral areas.

The "Strategy for the Establishment of Intensive Urban Structures" launched by the Abe Cabinet in 2014 aims at promoting 'intensive urban structures (compact cities) to ensure the steady provision of public services, such as medicine, welfare and shopping, by maintaining a certain population density' (Tsuji 2015:no page). From this point of view, betweenness and gravity analyses can assist local municipalities in identifying areas and corridors, within their boundaries, that are crucial for the vitality of their residential surroundings. Policy measures, such as economic incentives or disincentives, should aim at placing businesses and housing in such locations, making use of the Japanese planning framework separating "Urbanization Promotion Areas" from "Urbanization Control Areas". Moreover, transfer of development rights (TDR) should be explored as a financial

mechanism to empower prescriptive urban rules, when public and private spending is limited (see interview with Kenji Fujii in Appendix A).

Diversity of uses

If the question of access addresses the question of 'how do we get around?' (the network of flows), then the question of mix addresses the question of 'what's the attraction?' because these flows are flows of desire.

Dovey 2016:25

Diversity of uses is a liveability factor which considerably varies among different cultural contexts. Japan is a country whose planning system is particularly favorable to the mix of uses, so that it can be said that there is no actual zoning. As such, urban fabric in Japan is said to be more diverse than, for instance, Chinese counterparts (see Capitanio 2017). Our analysis partially confirmed this assumption in quantitative terms, even though, from a qualitative point of view, spatial distribution of non-residential functions is crucial in determining the degree of liveability of each case study area. As it can be seen in Appendix B, our case studies around Tokyo are indeed more mixed than an average residential neighborhood in Shanghai's outskirts. In comparison with a peripheral Swiss case, though, the Japanese case studies are *less* mixed (see Appendix C). We believe that this is due to their recent foundation, whereas Mendrisio, the examined case in Switzerland, is a small settlement with a long history. From this point of view, it is necessary to distinguish between recently founded (i.e. XX century) and historical settlements.

By comparing the placement of each case study within the MXI diagram, we notice a surprising outcome (Fig. 49): Tama New Town is the most diverse (i.e. mixed) area, despite the very limited presence of working activities. This is, given the exposed issues that the town faces, an unexpected result. It can be explained, though, by the spatial distribution of visiting functions, and by a qualitative assessment of their architectural type.

The vast majority of shops and businesses are to be found, in fact, around Tama Center Station, where housing is limited, and these commercial establishments perform a supra-neighborhood role, being convenient for visitors reaching the area by train. Local residents, though, live for the most part outside walking distance, and do not enjoy spatial proximity to these services. These issues could only be uncovered with a fine-
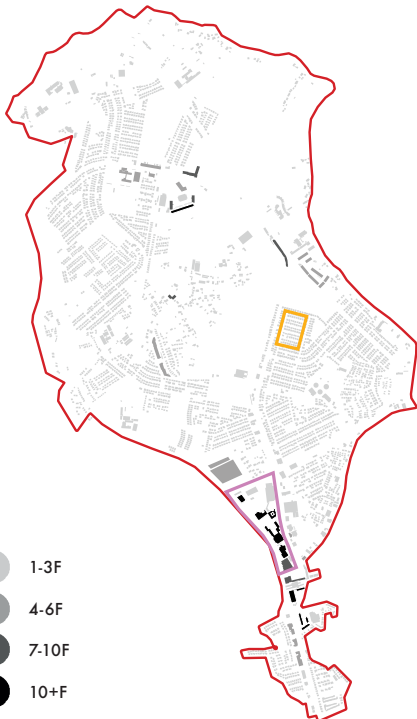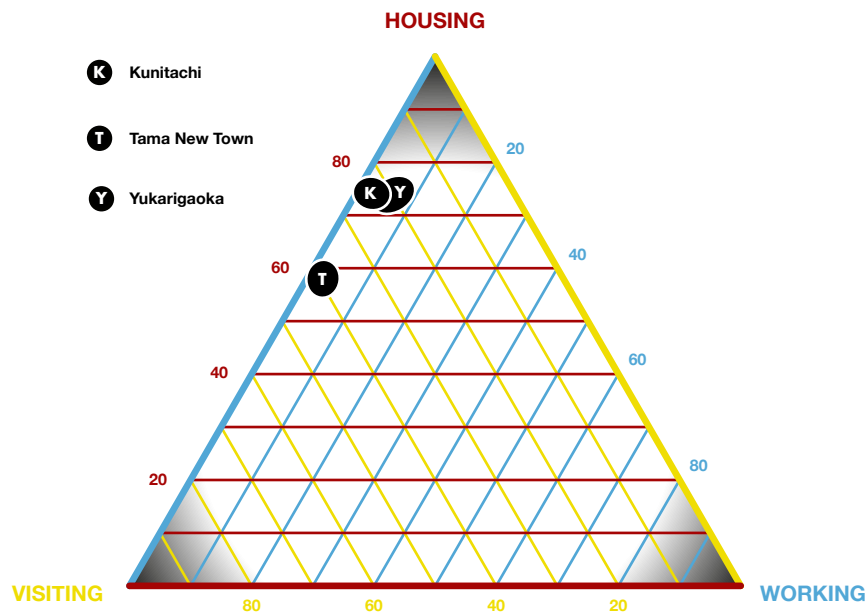
Figure 49: placement of the three case studies on the MXI diagram

grained, urban design analysis at the neighborhood level, involving both quantitative and qualitative spatial assessments (Talen 2010). Tama New Town presents a monocentric model in regard to the mix of uses, akin to Kunitachi, where, predictably, the majority of shops are clustered around the train station. In both cases, though, schools and educational facilities are evenly distributed across the area. There is, nonetheless, a fundamental difference in the way non-residential functions are arranged and in their building types.

In Tama New Town, we can detect a cluster of big-bulk volumes, forming an area of its own (Tama Center), whereas, in Kunitachi, we see a linear distribution of non-residential functions adjacent to residences, gradually intensifying as the station draws near. The latter has the advantage of offering spatial proximity to a larger share of residents, and of forming interesting streetfronts contributing to a lively outdoor space. Small-footprint businesses also help increasing diversity and offer more opportunity for non-chain stores to find suitable spaces at affordable rates. In fact, 'there is a strong correlation between the total amount of activities and the degree of satisfaction or happiness to a place of residence.' (Home's総研所長 2015:220; author's translation) The interview with Akiko Watanabe (Appendix A) has confirmed that family-run stores and historical businesses

are a constituent part of Kunitachi's identity, thanks to a particularly active and organized Merchants Association.[2] This is in line with international literature recognizing the fundamental role of small, specialized shops for the quality of pedestrian environment (Mikoleit & Pürckhauer 2011). On the contrary, mall-type buildings in Tama New Town tend to "suck-in" pedestrians, exacerbating the lack of lively environs, and offer a rather anonymous and nondescript outward appearance. Moreover, they do not foster bonding among merchants and are not conducive to place attachment.

Yukarigaoka seems to fit between the Kunitachi and the Tama New Town models. It features a high-rise, bulk-type commercial core around the main station, which develops in a linear fashion northwards and gradually dissolves into small-footprint buildings forming a high-street of sorts, running parallel to the monorail line. Yukarigaoka also departs from the monocentric type, in that it features a subcenter to the north of the area, close to one of the monorail stations. Grouped around this subcenter are a junior-high school, a mini-mall, some shops and elderly housing. Other monorail stations, despite not being proper subcenters, are nonetheless accompanied by an increased diversification of uses.

Our analysis has also shown that building types can be associated with the likelihood of functional hybridity, even though this has to be sustained by accessibility considerations. In fact, while *danchi* and low-compactness high-rise housing in Tama New Town are predominantly monofunctional, small-footprint buildings and even detached houses in Kunitachi often host a shop at ground floor with housing on top of it. By comparing Kunitachi with Yukarigaoka, it can be seen that compact, small-footprint building types are a favorable but not sufficient precondition to achieving functional hybridity. In fact, when these types are not within walking distance from the main station, accessibility is low and pedestrian flow is not sufficient—as we will see in the following subsection—to sustain a ground-floor shop.

A peculiarity of Yukarigaoka is the substantial presence of productive activities, mainly relating to agriculture and light-industry (e.g. construction or repairing). It is interesting to note that these activities are, for the most part, to be found among the preexisting villages later integrated into the plan of Yukarigaoka. The developer, by

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2   It is interesting to note how Bestor (1989) exposed the peculiar burden carried by the Merchants Association of a more central neighborhood in Tokyo, in regard to the transmission and preservation of local identity.

deciding not to disrupt the existing settlements, can now benefit from the economic stimulus deriving from these local businesses. Such a strategy is diametrically opposed to that of the developers of Tama New Town, who engaged in land expropriation and made local farmers learn new skills to become shop owners, obliterating all productive activities relating to agriculture. We should mention here that, even though there are no agricultural activities in our case study area in Kunitachi, the municipality as a whole hosts, towards its southern borders flanking the Tama River, a considerable presence of fields and cultivated land, and has even a municipally-run farm for educational purposes.

While Kunitachi and Yukarigaoka do not have serious building-vacancy issues yet, Tama New Town has been facing a lack of tenants and the closing of schools since 20 years. While this is certainly problematic in economic and safety terms, it should be used as an opportunity to initiate revitalization strategies, in a try-and-test approach. In fact, 'there is no success pattern that can be used in any city. One should try various things. If there are 100 ideas, maybe 10 will be successfully implemented.' (Home's総研所長 2015:192 author's translation) As an example, some vacant schools and other abandoned public buildings may be reused for a number of purposes, including elderly care. More ambitious strategies may envision the reuse of vacant buildings as startup hubs, fab labs and the like, offering low-cost spaces to innovative businesses. This would bring much needed young professionals to the area, activating various microeconomic mechanisms. Moreover, since Tama New Town benefits from excellent infrastructure and spatial proximity to Tokyo, it should exploit this asset and initiate low-cost renovation to turn unattractive housing into (shared) weekend houses, where urbanites can engage in outdoor activities such as gardening.

Given the increasing number of vacant properties, only the ones with good accessibility should be considered for reuse. Municipalities should estimate refurbishment and renovation costs to distinguish between buildings which may be reused and buildings to be demolished. We argue that, besides reserving some structures as emergency shelters and facilities in the case of natural disasters, as weekend houses or inexpensive co-working or production space, municipalities should realize that the majority of their vacant properties will not be reused, and that an early demolition would prevent growing negative externalities to unfold in the future.

Walkability

[P]laces of repose [...] can be understood only in relation to the movement to arrive there and anticipation of the movement away.

Bacon 1976:322

We will start by examining the most significant result of our walkability analysis, namely the fact that a high-quality pedestrian environment makes pedestrians walk longer routes, as demonstrated in Kunitachi. Given the numerous factors involved—degree of openness of a settlement, quality and character of connections at ground floor, presence of gates, fences or greenery, type and amount of amenities, etc.—it is methodologically complicated to measure and determine how morphological features of streetscape influence pedestrian behavior. While there is extensive literature on design principles for good street design (Massengale & Dover 2013; Talen 2002; Jacobs 1995) and on building codes to promote walkability (Hansen 2014; Ewing *et al.* 2005), results from empirical research are inconsistent. Moreover, a variety of research methods, hard-to-compare cultural specificities and different disciplinary standpoints call for more empirical and grounded investigations. Among the existing literature on the influence of environmental elements on walkability and route choice it shall here suffice to refer to the following work.

On the one hand, the research by Adkins *et al.* (2012), employing a survey-based method to assess walkability in a single-family residential environment in Portland, Oregon, highlighted the positive role on the attractiveness of streets played by well-designed greenery and sidewalks, and by good pedestrian network connectivity. On the other hand, Foltête and Piombini (2007) used a combined research method featuring Space Syntax and GIS-obtained routes of a relevant number of pedestrians. Route choices by pedestrians are explained in regard to the accessibility of routes—expressed with the "integration index" or "depth" in Space Syntax—and to the attractiveness or "preference" variables linked to each route. While the authors suggest that landscape features influence pedestrian behavior, they conclude that 'it is not certain that the promotion of landscapes appreciated by pedestrians can stimulate movement.' (ivi:233) It is therefore our goal to provide more evidence on pedestrian preferences and test whether pedestrians pick more attractive routes over shorter ones. The decade-long empirical enquiry by Gehl (2013), in fact, mainly deals with outdoor activities and ways to support them, but does not

systematically assess to which degree streetscapes can make people walk longer-than-necessary routes. This is why we have employed a variety of methods to investigate walkability in our case studies.

In Kunitachi, on-site counting of pedestrian presence differed considerably with the simulated results predicted by standard betweenness analysis. Only by allowing a certain detour ratio could betweenness approximate observed behaviors, an issue that the creator of the simulation software explicitly acknowledges (City Form Lab 2015). In the case of Daigaku-dōri, people tend to walk routes considerably longer than the shortest possible path. Given technical computational limitations and the nature of the software, it was not possible to determine how much longer the chosen routes were, but our results indicate that at least a 20-30% increase in length is common. Morphological mappings and behavioral observations could clarify the reasons behind this discrepancy.

People do not use Daigaku-dōri just as a thoroughfare, but they perceive the street as a destination in itself. Its broad sidewalk, protected from traffic by greenery and trees, is an amenity especially for the elderly and parents with children. Local kindergartens take out their little guests every day for a walk through Daigaku-dōri to Hitotsubashi University Campus. In one interview, in fact, a kindergarten teacher stated that many parents deliberately walk through Daigaku-dōri to the kindergarten because of the street's qualities, compared to shorter routes. Moreover, the landscape design, featuring ginkgo and cherry trees, allows for a radical change of scenery, when cherry trees bloom in spring and ginkgo turn yellow in autumn, thus linking the street to cultural traditions such as cherry blossom viewing and autumn leaves celebrations. Lastly, the wide sidewalk can host a number of informal activities, most notably a row of temporary stalls when local festivals—*matsuri*—take place. People go to Daigaku-dōri because of its physical qualities, which have been maintained and improved by *machizukuri* practices. This street is heterogeneous, i.e. its origin stemmed from a multitude of actors, and it is versatile, i.e. it can host multifarious activities and it changes according to the seasons. It is a feature that contributes to Kunitachi's liveability and uniqueness.

These findings are consistent with a growing body of literature indicating how greenery and well-tamed mature trees boost a street's attractiveness, generating greater profits for nearby commercial businesses (City of Melbourne 2014; Joye *et al.* 2009; Wolf 2004). Not only do shoppers prefer going to a farther destination if natural amenities are present, but they tend to spend more money and time, in a better mood.

As previously highlighted, Kunitachi follows a monocentric model, similar to Tama New Town. We may now wonder why the performance of the same model is so different in these two cases. This can be explained by two main reasons: accessibility to shopping and topography. By examining gravity analyses, we noticed that residences in Kunitachi reach on average twice as many shops than residences in Tama New Town within a 500 m walking distance. This is due both to the spacial distribution of commercial activities and to different topographies. In fact, considering the reduced mobility of the elderly, ramps and stairs greatly impair routes, even though a certain destination may lie within theoretical walking distance. This is the reason why a gravity analysis—taking into account the difficulty of walking—is to be preferred to a simple reach analysis.

Yukarigaoka, on the other hand, is useful here to illustrate another strategy to deal with walkability. As seen in the previous subsection, the town has opted for a polycentric model, making use of its monorail line connecting to the main station. Upon examining Yukarigaoka's gravity analysis, we are confronted with a puzzling scenario. It may seem as though the town has poor accessibility to shopping, in that residences reach on average half the number of commercial activities than residences in Tama New Town. It thus becomes crucial to link this result with the possibilities offered by the presence of the monorail, which greatly expands accessibility to shopping and services throughout Yukarigaoka.

In sum, our analysis has exposed the synergistic role of good accessibility to shopping and of high-quality pedestrian space to achieve a lively pedestrian environment. The downsides of a poor pedestrian environment in the context of Tokyo's peripheral areas has been exposed both "from the inside" in terms of daily inconveniences—by surveying resident opinions (Ueno & Matsumoto 2012)—and "from the outside" in terms of lack of attractiveness for visitors (三浦 2014). Both points of view should be included in a holistic strategy favoring the presence of shops and businesses along main streets within walking distance, which are the main driver of outdoor liveliness. Such shops are particularly needed when dealing with an aging population in small towns, as Brooks (2010) has pointed out. Moreover, having shops within walking distance is a major reason to exit one own's house, as Hirai *et al.* (2015) have demonstrated in the context of post-disaster Tohoku. From this point of view, there is abundant international literature stressing the importance of adapting public space to the needs of the elderly (Sassi & Molteni 2010), thus contributing to their wellbeing and to the vitality of towns.

In parallel, decentralization of essential services should gradually accompany the move towards compactization of residential areas. A minibus system and services by mobile vendors—like the one encountered in Tama New Town—may be boosted and supported as means of social cohesion, complemented with other offers—e.g. healthcare—to increase their attractiveness and efficiency. Takemoto (2016) stresses, in this respect, the increasing role that convenience stores will play in the future of peripheral areas, so that the involvement of the private sector to deal with walkability will be more and more needed.

While further research in other parts of Japan and other countries is needed to confirm our results, in the case of Tokyo's peripheral areas, this inquiry suggests that people prefer attractive, pleasant and comfortable routes rather than shorter ones. From this point of view, public and private investment towards more high-quality pedestrian environment can be directly related to an increase in pedestrian flow, with benefits to a neighborhood's liveability and to the wellbeing of its population.

Green/water space

Planners will strain to increase the quantity of open space and forget to monitor its quality.
    Lynch 1984:152-53

The three case studies show a wide range of variations regarding the amount and type of green spaces, while the presence of water space is negligible in all cases. In quantitative terms, Kunitachi hosts the least amount of green spaces, 33.6%; this figure reaches 51.9% in Tama New Town and tops in Yukarigaoka with 62.2%. There are here two surprising points: first, these percentages appear to be very high by planning standards; second, knowing the issues with green management in Tama New Town, highlighted in Chapter 5, we may wonder how Yukarigaoka is able to well manage an even higher amount of green space.

These percentages are derived from an urban design assessment at the neighborhood/city scale, which considerably differs from a planning standpoint. In fact, planning focuses on plots and on land uses, and tends to clearly separate private and public areas. This results in a green space assessment which only counts public parks and green of considerable size, neglecting the role played by private and micro-greenery, as Almazán *et al.* (2012) have demonstrated thanks to the analysis of pedestrians' field of view. Our

approach was based, on the contrary, on a detailed mapping of the whole neighborhood, derived from an assessment of open-access GIS data and observations on site.[3] Our analysis has demonstrated that, in the selected case studies, 20.5 to 27.8% of green area is attributable to privately-owned land, mainly in the form of gardens and micro-greenery. We may be able to generalize the finding by claiming that, in Tokyo's peripheral areas, private green generally amounts to 20 to 30% of the total land area (the methodological implications of this will be discussed in Chapter 8).

This leads us to the second surprising fact, namely the seemingly lack of causality between amount of green space and the degree of success of its management. In fact, while private and public green is quantitatively similar in all three case studies, in Tama New Town we face an additional 16.3% of shared green, and in Yukarigaoka an 8.5% of forest and 12.1% of agriculture. Let us now turn to a qualitative assessment of these types of greenery.

In Tama New Town, particularly abundant are shared or communal green areas belonging to *danchi* or high-rise residential complexes. Their management being shared too, they are increasingly difficult to maintain. As Takase & Furuya (2017) remark, green space management is an increasingly burdensome problem, especially for suburban areas, which suffer from a diminishing pool of volunteers. In this respect, it is useful to note that, according to their surveys, residents are more willing to engage in activities of green maintenance if such green spaces are within 1km from their homes and if they are at least 1 ha in size.

Given the abundant presence of natural areas, sometimes parks become redundant, as with the case of the abandoned Toyogaoka Park. As a solution, a subdivision of shared green spaces into allotments or private gardens may ease the communal burden of their maintenance. Moreover, reconverting some of the abandoned green spaces into productive uses, once abundant in the area before its development, could provide new vitality and economic stimulus to Tama New Town, exploiting a dormant asset at disposal. This would be an easy move from the point of view of planning regulations, as the Japanese planning system already allows for agricultural uses inside "Urbanization Promotion Areas".

Yukarigaoka, like Kunitachi, does not feature shared green spaces, but it has instead

3   Detailed calculation tables are available in Appendix D.

engaged in a dialogue with the pre-existing agricultural practices and natural features on site, integrating them into the whole masterplan. Moreover, it can be said that the town has developed around such elements, both in spacial and in socio-economic terms, preserving paddy fields and forested land. By maintaining a relevant amount of productive green, synergistic advantages can be unlocked: the developer does not bear management burdens, and agricultural production generates profit and keeps economic vitality in the area. Forested land, fulfilling the role of *satoyama*, requires less maintenance than public parks, and may even be exploited as a source of biomass.

In sum, in the case of Tokyo's peripheral areas, we can say that the type of green space plays a fundamental role in influencing livability. Green is generally present in sufficient amount in such areas, so that its quality assumes a renewed importance. The management of green spaces is a burdensome issue directly correlated with the liveliness, attractiveness and use of outdoor spaces. While we agree with Yokohari *et al.* (2006) that more civic engagement is needed in regard to the maintenance of green space in Japanese new towns, we argue that this may be ineffective in an age of shrinkage. Moreover, in opposition to their recommendation to 'limit the privatization of public space' (ivi:221), municipalities should take measures to reduce the amount of shared green by means of subdivisions, leases or re-naturalization, and take the chance to convert the most suitable redundant spaces to productive uses, with the help of local citizens and associations, or by leasing the land to professional farmers.

In this section we have comparatively examined how morphological liveability factors relate to each other and how their interplay influences liveability in our three case studies. If these four factors could be considered the hardware of liveability, let us now turn to the software, by examining the two remaining urban management factors.

7.2 Urban management factors

Machizukuri/*participation*

There is a soft and a hard side of machizukuri, *so that both bottom-up practices and a strong local administration are necessary. If residents lose interest, vigilance on what the administration does becomes weaker. In this respect, even though it seems a small force, civic engagement is of great importance.*

Interview with Akiko Watanabe (2016)

According to architect and planner Nabeel Hamdi (UN-Habitat worldwide 2014), there are several conditions which facilitate participation in communities. These conditions are not to be understood as normative prescriptions, but they are nonetheless useful to compare and evaluate participatory practices in our case studies, as summarized in Table 10.

Machizukuri movements are very diverse (initiated bottom-up or top-down, cooperative or confrontational) and, therefore, can be interpreted in different ways. On the one hand, they represent the genuine interest of civil society in improving quality of life in neighborhoods and cities. Well-defined goals, sometimes following disruptive events like natural disasters or specific local issues, ensure a certain degree of success and effectiveness of outcomes. On the other hand, local groups might reactionarily oppose changes which would endanger their status quo, hindering development which might benefit the whole community. This is a negotiation between individuals (groups, family), and society, so that specific interests could be sacrificed for the greater good.

In fact, when Kunitachi was granted the status of Special Education and Culture District, numerous businesses relating to entertainment were forced to close, sparking a controversy between business owners and local inhabitants. It can also be argued that, by protecting only the area close to the station, unwanted businesses and prostitution simply shifted further south toward Yaho village. As highlighted in 2.2, local associations have been often seen as ambivalent entities, embodying a certain degree of conflict.

International literature on participatory practices reflects this dual nature. According to Hamdi (UN-Habitat worldwide 2014:no page), participation is 'responsibility with authority in partnership with other stakeholders'. This implies a process of cooperation

Conditions for participation	Kunitachi	Tama New Town	Yukarigaoka
Strong organization	●	○	●
Political goodwill	●	◐	●
Shared issues	◐	●	◐
Trust & representation	●	○	●
Tangible results	◐	○	●

Table 10: conditions for participation in the three case studies: white=low; gray=average; black=high

with other people, having common interests and sharing common risks. Beside being an efficient mechanism, participation is supposed to build social capital and improve liveability. Participation helps build what Guiso *et al.* (2010:3) have defined as civic capital, 'i.e. those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities', which are passed down to younger generations by parents and educators. 'Thus, when a community has more (or stronger) values that foster cooperation, we can say that the community has more civic capital.' (ivi:8)

Nonetheless, an unconditionally positive view of participatory practices is a naive standpoint. German architect and author Markus Miessen has described participation as a war of sorts, where conflict unfolds, and can result in the "tyranny of the group" (when, instead of good choices, least bad ones are taken not to displease anyone) or in the "tyranny of the method" (when participants with no expertise have the same influence as experts) (see Ratti 2014; Miessen, 2011). Conflict is, nonetheless, not only inevitable—as different social groups and individuals necessarily bear conflicting interests and desires (Braun *et al.* 2013)—but it may also be desirable, a proof of real bottom-up involvement leading to more sophisticated and self-regulating urban management practices (Zenker & Erfgen 2014; Sennett 2013).

Kunitachi is a hotbed of participatory practices in Japan. Beside being the birthplace of *machizukuri*, it features a productive cooperation between the municipal government, associations and residents. As an example, the local government relies on civic participation for funding the reconstruction of the former station building, while bottom-up activities are patronized by town hall, generating synergies. It is of interest here to briefly compare the development of Kunitachi with that of another garden city of the 1920s in the Tokyo region, which, despite similar circumstances and intentions at the moment of foundation, developed in a very different way: Den'en-Chofu (lit. "garden city"). Kunitachi, is now, after hardships at the point of inception, an attractive peripheral city with a high-quality (built) environment, strong identity and dedicated residents. Den'en-Chofu, on the other hand, being an exclusive high-class residential area, did not have to face the kind of issues happened in Kunitachi, lacking the chance to develop a pool of active residents cooperating to solve everyday-life problems (see interview with Sumiko Enbutsu in Appendix A). A neighborhood solely composed of high-class, secluded residents—known in fact as "Japan's Beverly Hills" (Oshima, 1996)—resulted

in missing bottom-up self-organization. Negative externalities started to be felt when, especially after the 1964 Tokyo Olympics, land prices uncontrollably rose in the area (Den'en-Chofu is closer and better connected to the city center than Kunitachi), and the heavy burden of inheritance-tax became unbearable for many residents. Moreover, because of the lack of *machizukuri* practices, Den'en-Chofu has not been able to diversify its image of an enclave for rich people. It may be a superb place to live for the ones who can afford it (Watanabe 1980), but, unlike Kunitachi, it does not have anything to offer to visitors or to middle-class families. These characteristics have been slowly turning the area into what many now consider an ailing neighborhood.

The tension between opportunism and opportunity in participatory practices in Kunitachi seems to produce positive outcomes. This is due to the fact that Kunitachi residents cherish their neighborhoods and have a high degree of civic awareness, stemming from the city's peculiar history. Local groups and associations have thus enough weight to face the government on equal ground. This not only confirms Zenker & Seigis' speculation 'that people with higher education would be more interested in political processes and citizen participation' (2012:29), but also attests that they have a higher chance of success. On the other hand, the municipal government performs a well-intended, almost paternalistic role, aware that there will be ever stronger competition with neighboring cities to attract and retain population.

The increasing role of private initiatives, often in cooperation with public authorities, outlined in literature (e.g. Hayashi 2010), was confirmed in all three cases, even though with varying degrees of success: Kunitachi testifies a well-tempered relationship between citizens and town hall; Tama New Town suffers from a lack of private interest and involvement in local urban management; Yukarigaoka is an exceptional case where a private developer—Yamaman—coordinates a wide range of urban management practices, constituting the *trait d'union* between local inhabitants and the municipality of Sakura City. We may now argue that Yamaman's approach is paternalistic, but, from this point of view, the notion of "national state" is so too—it shall suffice to think about the forced saving scheme which is the pension system. Even though there is a potential issue (Yamaman's board and personnel is not an elected body) such benign capitalist model seems here to work. The question is how long this "illuminated" developer will be involved in Yukarigaoka's urban management, once the company founder is gone. The firm, though, seems to be aware of these questions, and is gradually devolving more and

new responsibilities to citizen-led groups.

In qualitative terms, *machizukuri* practices in Kunitachi have been particularly effective because of the high average education of its citizens, and because of the presence of a prestigious institution such as Hitotsubashi University. Since such conditions are a given and are not transferable to other areas, forming ad hoc groups of experienced and highly educated residents to guide bottom-up participation may be a strategy to be tested. Tama New Town Machizukuri Specialists' Committee seems to move in this direction, but it remains to be seen whether it will achieve tangible results. Municipalities should also look closely at Kunitachi's 2016 Machizukuri Ordinance as a model to be replicated. While it is still too early to assess its effectiveness, officially encouraging and establishing a clear and simple framework for bottom-up civic involvement requires little funds and does not bear negative externalities for municipalities themselves. Quite on the contrary, Kunitachi officials believe the city will benefit from the establishment of such framework, which they hope will prevent disputes and favor cooperation (see interview with Keita Yamazaki and Yukihiro Yasunami in Appendix A).

In June 2017 the national government passed among protests the controversial Anti-Conspiracy Law, which punishes the planning of 277 types of activity by criminal groups. Its vague definition of what a criminal group is and what constitutes planning, and the peculiar choice of targeted actions—e.g. 'sit-ins to protest against the construction of apartment buildings' (BBC News, 2017:no page)—prompted a formal letter of concern by UN Special Rapporteur on the right to privacy. The new law, in fact, could legitimize 'the surveillance of NGOs considered to be acting against national interest.' (Cannataci, 2017:2)

As the case of Kunitachi showed, the struggle between citizens and the developer of a residential high-rise, though, marked in the early 2000s a high point of civic engagement to protect townscape qualities. It can be argued that, because of such protests, the municipal government has been gradually institutionalizing bottom-up participation. The new national law, thus, threatens to undermine freedom of association, and deter opposition against any future development plan. Since interests of governments, (corporate) developers and local population have often been at odds, this law casts a shadow over the future effectiveness of more confrontational *machizukuri* practices. It can be also argued, though, that *because* of the new law, local groups will have to find more subtle ways to express their dissent. This may well lead to strengthened top-down

and bottom-up cooperation.

In sum, successful and effective *machizukuri* practices in the near future will likely move away from both the reactionary and the paternalistic participatory model, toward what Sennett (2018) calls "co-production". Stakeholders will have to work together on concrete and accountable issues, often with the initial help of an expert or professional. It is interesting to note that, in Sennett's view, such consultant should let the local stakeholders proceed on their own, once a basic framework and achievable goals and strategies have been established. This is needed to unleash creative potential and make participants take care and put effort in an unobstructed way.

Local character

The holy grail of urban design is to create places which have a particular character.
    Sennett 2018:211 (author's translation)

In our analysis of local character, we have interchangeably referred to the "identity" or "image" of an area. There is, nonetheless, a clear theoretical hierarchy between the two terms to be found in literature. As an example, Lynch (1960) formulated a definition of city image as composed of three elements—identity, structure and meaning—stressing the subjective perception of identity, varying from person to person. Our main concern here, though, is to practically review strategies and tactics adopted by municipalities, *machizukuri* groups and residents to 'strengthen the public image' (Lynch 1960:116) of peripheral areas. In this respect, our results challenge the generalization by Zenker & Braun (2017:281) that 'city brand perception is usually not a priority' for urban policy-makers, planners or mayors.

Kunitachi residents and officials are highly aware of the appeal and reputation of their town, and have been nurturing the image of an attractive, family-friendly area with high-quality outdoor spaces and renowned educational institutions. Both morphological elements—e.g. Daigaku-dōri; the former station building[4]—and intangible ones—e.g. Hitotsubashi University as an institution; the town's historical development as birthplace of *machizukuri*—concur in forming Kunitachi's local character. This has, over the years,

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4   Kunitachi Station, Daigaku-dōri and their environs recall what Bacon (1976:319) described as 'strongly articulated nuclei built around existing beloved landmarks and institutions [...] to establish powerful architectural imagery and rhythms which extend their influence into the less articulated areas around them. These would generate neighborhood identification, loyalty, and pride'.

sedimented as a cultural asset. Engaged interest groups struggle to maintain and enrich it, while developers of *manshons*, on the other hand, explicitly refer to Kunitachi's special features when advertising apartments on sale in town in an exploitatory manner. If we agree that the 'Tama area (i.e. western Tokyo) must build a brand to take steps against [...] trends that are driving the population and universities back to the center of Tokyo' (帝京大学文学部社会学科 2015:96), Kunitachi is a case well-worth studying.

In this respect, Tama New Town has been following a strikingly different trajectory, struggling against a rather negative image fueled by population loss, aging structures and general lack of vitality and engagement. Based on resident surveys (Ueno & Matsumoto 2012), it is interesting to note the following contradiction: residents who moved-in during the early and middle phases of the project are the ones with more pride and attachment to the area, but the majority of them is not willing to continue living in their current apartments in the future—mainly due to the lack of elevators, size and *danchi* condition. Moreover, the same surveys have exposed the causality between social contact in a neighborhood and the degree of attachment and pride of its residents. This suggests that Tama New Town is facing, from a morphological point of view, a double-tiered problem: on the one hand is the architectural issue, on the other hand is the urban design one.

In regard to Yukarigaoka, its developer granted particular importance to the integration of green and agricultural features within the town's masterplan. This decision seems now to be rewarding, as the example of Yamaman Farm showed: the image of a green town goes hand-in-hand with the local production and branding of tomatoes. From this point of view, natural elements and the presence of a unique monorail line encircling a green void are more distinctive elements of Yukarigaoka's character than the built environment itself. The area around the main train station, in fact, hosts nondescript and dull mixed-use buildings, not comparable to the memorable morphological elements of Kunitachi or even Tama New Town, no matter how appropriate they may be. It is interesting here to note that, according to Maki (2018 [first published in Japanese in 1980]:30), "gaps" or open spaces within the urban fabric in Japan 'helped each district establish its own identity, functioning in much the same way as green belts created in English New Towns'.

Having discussed how different liveability factors relate to each other and impact quality of life in peripheral areas in Tokyo, we will now outline the urban design paradigmatic shift needed to move from a growth-oriented to a shrinkage-oriented

model. This starts with the recognition of the quality of slowness, implying the close correlation between residential and lifestyle preferences, and the existence of different residential preference patterns in Japan, as highlighted by Ge & Hokao (2006): Pragmatist (1), Enjoyable-Naturalist (2), and Community (3) Preference Patterns. Slow peripheral areas would target preference pattern 2 and 3, affording an alternative to central areas in Tokyo, which can be seen as 'great experiments in cosubjectivity, bringing [...] people right next to one another while for the most part relieving them of any need to actually

7.3 Tama Nature Town 2050

Given a clear vision of a "design idea," the multiplicity of wills [...] can coalesce into positive, unified action on a scale large enough to change substantially the character of a city.
    Bacon 1976:13

To illustrate how neighborhoods may adapt to a shrinkage paradigm, we have imagined to make Tama New Town—analyzed in Chapter 5—a more liveable place, transforming into Tama *Nature* Town, a vision for the year 2050.

The following shrinkage masterplan is to be understood as a diagram of sorts, useful insofar it explicitates a possible way to takle current and future urban design issues in Tama New Town. If such plan were to be implemented for real, it would have to stem from a cooperation between local stakeholders (residents, associations and authorities) and professionals or experts in fields relating to the built environment.

At first, it is necessary to establish the degree of anticipated population shrinkage in the area over the coming decades. According to Fig. 13, Tama City as a whole is expected to lose ca. 16% of its 2015 population by 2040. Considering that the overall compactness of the settlement should increase, we can assume that the current built area should shrink by around one quarter. This can be achieved by exploiting the policy mechanisms of the Location Optimization Plan framework (see 1.2). Specifically, the area to be compacted remains Urbanization Promotion Area (UPA), and the area to be gradually shrunk is designated as Urbanization Control Area (UCA). Six principles, relating to our liveability factors, constitute the backbone of the hypothetical Location Optimization Masterplan for Tama Nature Town, and are as follows:

1. **Policy framework** (Fig. 51): an analysis of the train station's pedestrian service area and of building clusters guides the establishment of the UPA and UCA. Moreover, certain parts of the UPA can be indicated as Urban Function Oriented Area and Residential Oriented Area, to suggest where compactization and densification should first happen.

2. **Compactization** (Fig. 52): it is a two-fold process. On the one hand, certain areas are gradually de-urbanized, thanks to an urban policy framework providing incentives and disincentives impeding future construction in and favoring relocation from UCA. On the other hand, UPA is retrofitted, resulting in a more dense and compact urban fabric (Fig. 50).

3. **Downscaling the mix of uses** (Fig. 53): it aims at revitalizing neighborhood outdoor space by strengthening the role of shopping high streets and providing essential services within walking distance to all residences. The introduction of mixed-use buildings with office space and of light-industrial activities boosts the local microeconomy. As a whole, uses are more mixed and their distribution more balanced (Fig. 56).

4. **Shopping on foot** (Fig. 54): if liveable neighborhoods are ones where it is possible to access businesses and shops on foot, it becomes a goal to shorten the distance between housing and commercial establishments. Thanks to the synergies between the previous three principles, it is possible to verify if accessibility to shopping has actually improved by means of Space Syntax, in particular making use of a Gravity analysis.

5. **Productive green** (Fig. 55, 57): gradually, agricultural activities come to replace open and built space in the UCA. Unnecessary infrastructure, such as fine-grained roads, piping and installations are removed thanks to a system of transferable development rights at the prefectural level (see interview with Kenji Fujii in Appendix A). Intensive agriculture done by professional farmers is separated from the UPA by a buffer space of allotments and kleingarten leased to privates for leisure purposes. To ease the burden of green maintenance, sheep and goats may be used to graze on common green spaces, which would not need to be mowed. In an experimental trial, Kajima Corporation (2018) highlighted the cost involved in moving sheep and goats from a rural to an urban area, but in Tama New Town the animals could be easily kept in the vicinity of residential

blocks all year round.

6. **M*achizukuri* framework:** *machizukuri* co-production between local authorities and residents should manage and support the shift to Tama Nature Town. This is a prerequisite to the overall masterplan, as a variety of decisions for concrete implementation have to stem from debate and proposals by the stakeholders themselves. In view of the instrumental role that Hitotsubashi University has been playing in the development of Kunitachi's identity and social capital, partnerships with local universities should be actively pursued. From this point of view, this masterplan is to be seen as a starting point to visualize a more liveable and appealing future for this area.

Despite obvious issues that Tama New Town currently faces, there is dormant potential to be activated, so that its hypothetical change and rebranding (Fig. 58-61) can be a reference for a number of peripheral areas around Tokyo.
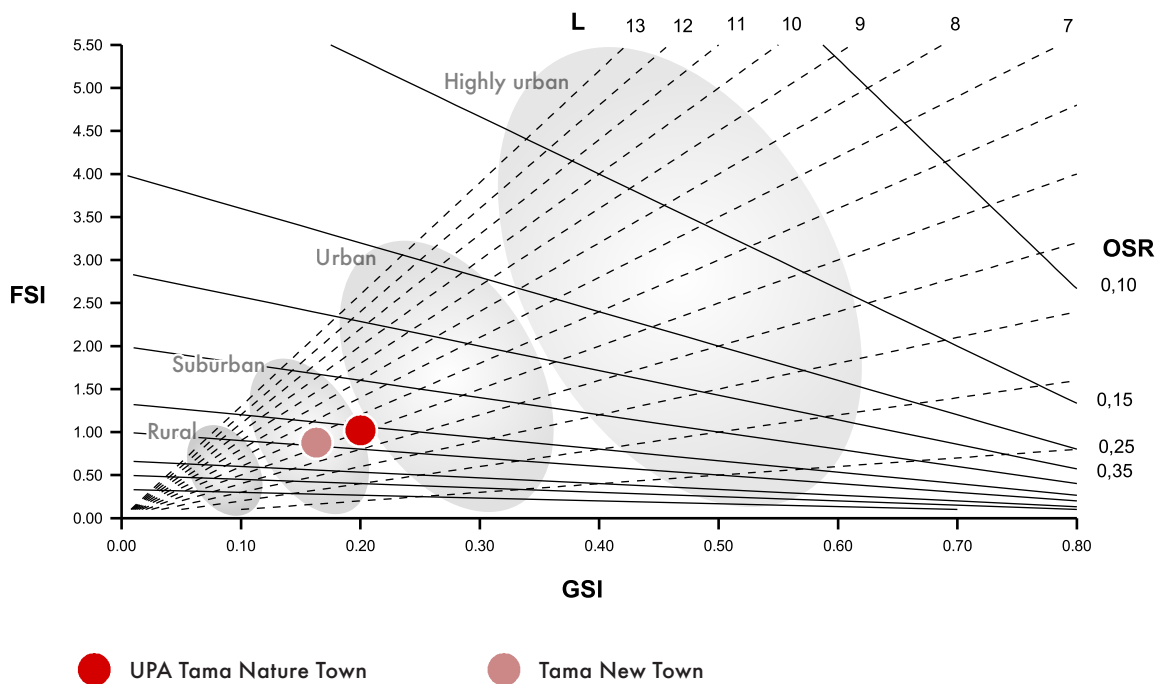
Figure 50: density/compactness comparison between Tama Nature Town and Tama New Town

1. Policy framework

Current UPA

Station pedestrian service area

Clusters

Urban Function Oriented Area

Residential Oriented Area

New UPA

UCA

At present, the whole case study area lies within an Urbanization Promotion Area (UPA).

Using Space Syntax, the area reachable within a 500 meter-walk from the station has been first identified. Second, the most compact building clusters were highlighted (a cluster is here composed of >6 buildings, where each of them is <10 m away from at least one of the others).

Taking into account the station pedestrian service area, building clusters, and the desired UPA reduction, we have established new UPA and UCA boundaries.

2. Compactization

Figure 52: transformation of the density/compactness of Tama New Town

Legend (left):
- 1-3F
- 4-6F
- 7-10F
- 10+F
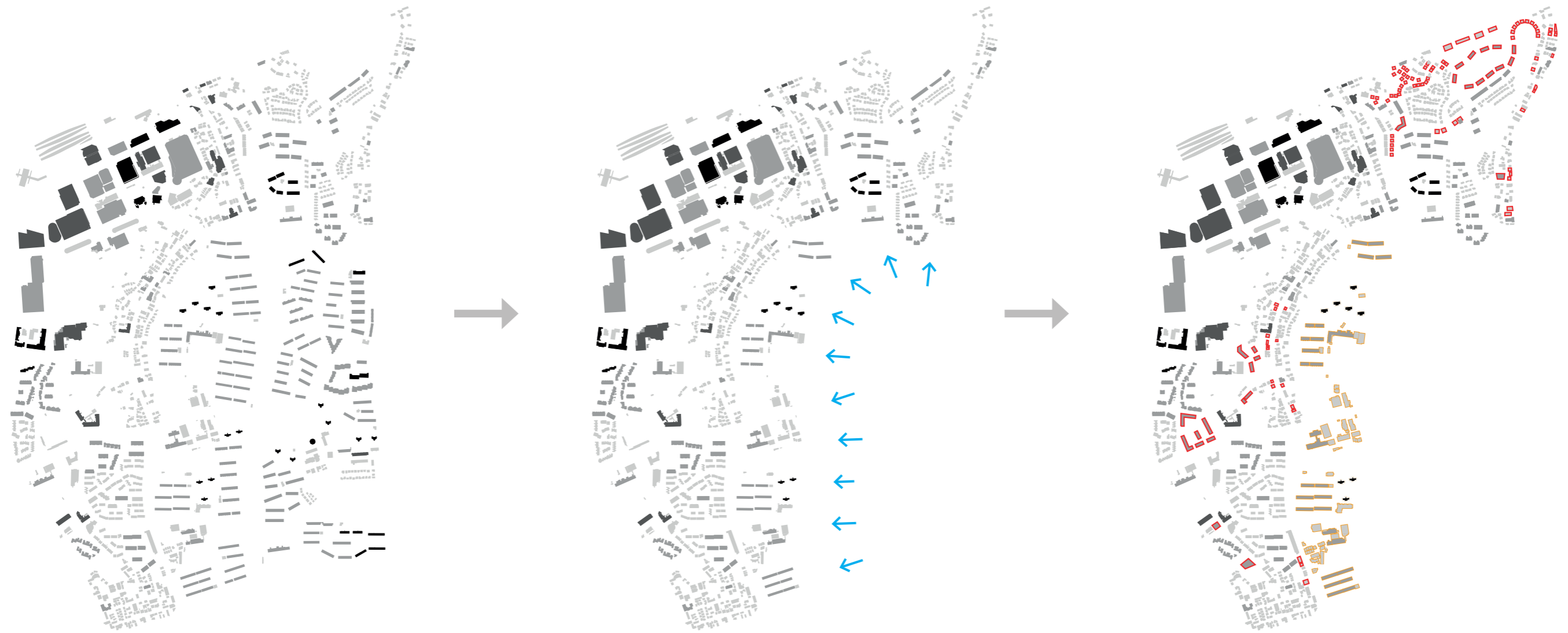
Legend (right):
- New buildings
- Buildings for try and test refurbishment

Current situation: *danchi* apartments form loose and dispersed ensembles.

Compactization of the whole urban fabric is first achieved through a gradual demolition of less attractive, less accessible and less compact housing. Ideally the built area will correspond over time with the designated UPA.

Within the newly established UPA, additional buildings increase the compactness of the settlement by means of retrofitting and of redevelopment of redundant (abandoned) open spaces, as identified in 5.2. Certain structures, such as abandoned schools, undergo try and test refurbishment.

3. Downscaling the mix of uses

Legend:
- ● H
- ● H+W
- ● W
- ● W+V
- ● V
- ● V+H

The area features a highly polarized mix of uses. As highlighted in our analysis in 5.2, a fine grained distribution and a reduction of publicly-maintained buildings is necessary.

Upon gradual demolition of problematic housing estates, high streets and neighborhood centers should be revitalized.

High streets in "valleys" are complemented with additional mixed-use small structures to create a more continuous streetfront. Buildings mixing office and commercial, or office and residential are introduced or refurbished. Low cost spaces for light industry, fab-labs, startups, co-working spaces, shared or weekend housing are provided.

4. Shopping on foot

NO. OF REACHABLE SHOPS

116

58

0

NO. OF REACHABLE SHOPS

171

85

1
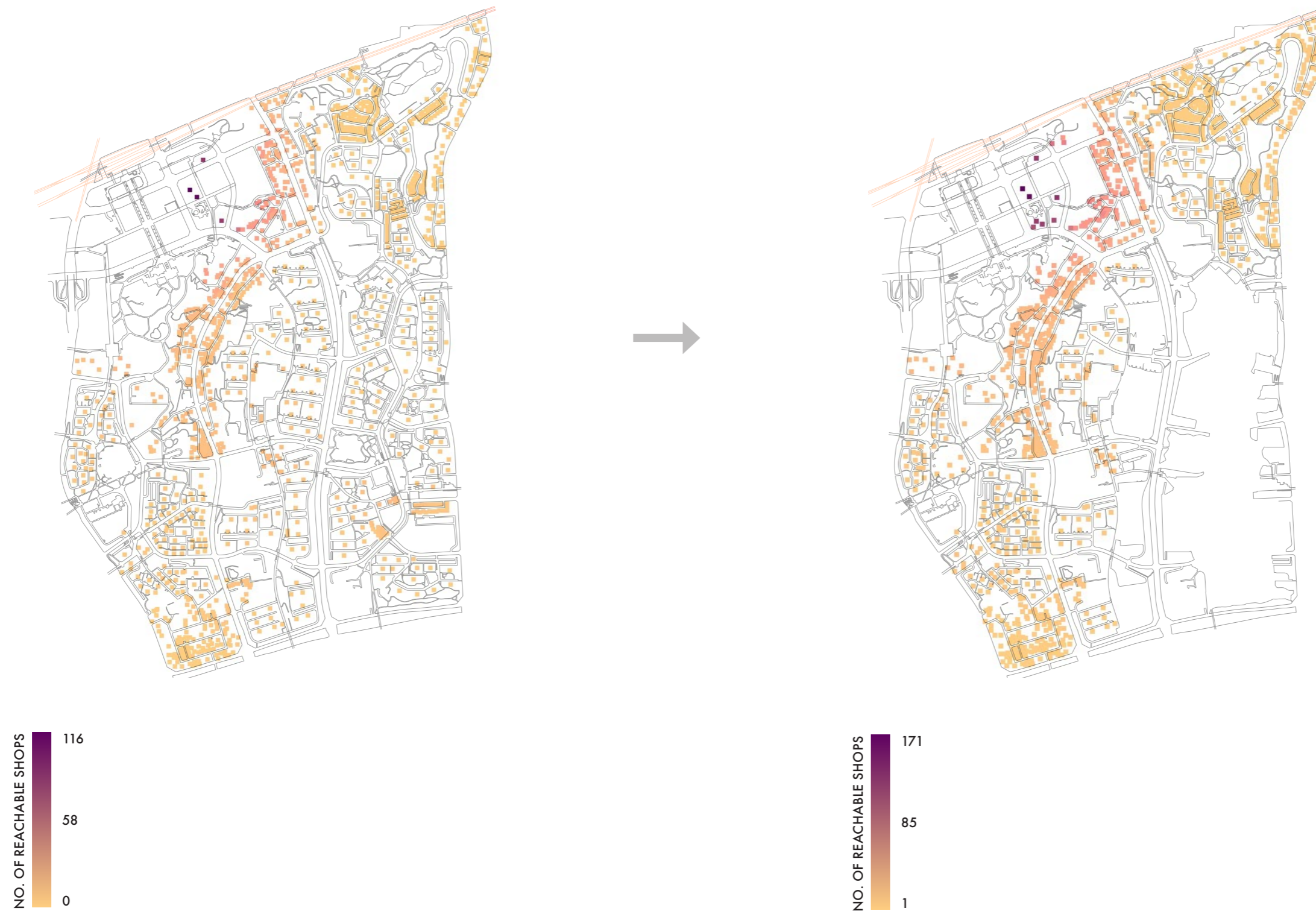
Current situation: as seen in Chap. 5, residents in Tama New Town have poor accessibility to shopping on foot, as the distribution of commercial businesses is greatly unbalanced. On the one hand, there is a sever lack of shops on the south-eastern portion of the area; on the other hand the urban fabric of *danchi* and high-rise towers is loose and not conducive to the establishment of commercial activities.

As a result of downscaling the mix of uses and of the gradual abandonment of the new UCA, every household has access to at least one shop within 500 m. Even though the visual representation is hard to compare to the original condition, in quantitative terms households in Tama Nature Town can reach ca. 40% more commercial businesses than those in Tama New Town, as the legend clarifies.

5. Productive green

Public green

Shared green

Agriculture

Water

As seen in our analysis, public and shared green spaces are redundant and increasingly problematic to maintain. At the same time, once prominent agricultural activities are almost nonexistent.

With the gradual demolition of selected structures, fine-grained infrastructure like local roads, piping and installations should be removed. These works would be financed through a system of transferable development rights and incentives, involving privates on a prefectural scale.

Allotments/Garden Residential Zones

Solar farm

Productive green uses are introduced. Intensive agriculture (e.g. rice or crops cultivation, vineyards) is separated from the UPA by a buffer space of allotments or kleingarten to be rented and communally used. These areas may be classified as Garden Residential Zones, according to the 2017 revision of the City Planning Law. Part of the reclaimed land could host energy-production infrastructure, for instance in the form of solar farms.

HOUSING

New MXI
ground floor

New MXI
total floor space

Former MXI
ground floor

Former MXI
total floor space

80   20

60   40

40   60

20   80

VISITING   80   60   40   20   **WORKING**
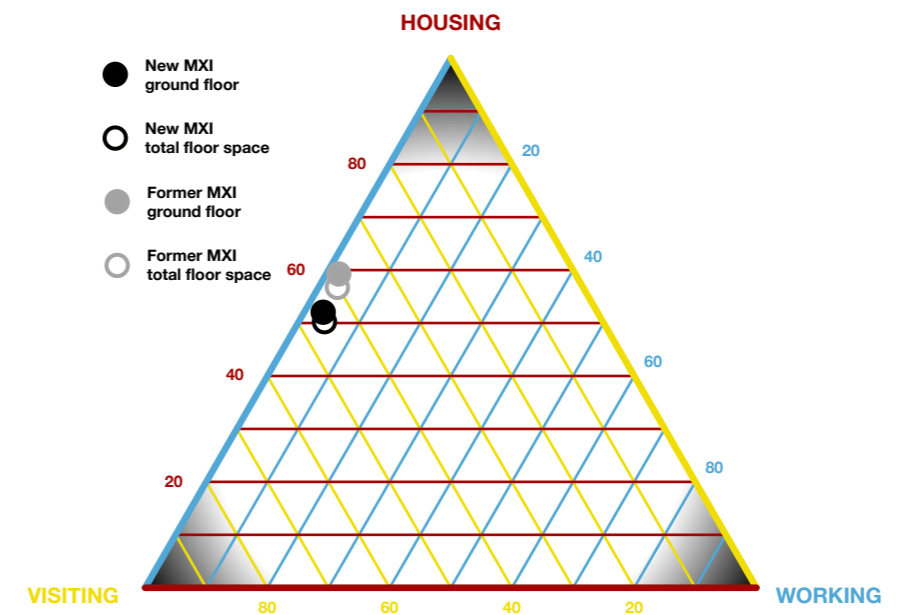
Figure 56: comparison of diversity of uses between Tama New Town and Tama Nature Town

Private green/non-paved   Public green

| 20.5% | 16.3% | 14.3% | Water 0.7% |

0   Shared green   100

51.9%

Private green/non-paved   Public green   Agriculture

| 18.0% | 7.3% | 8.9% | 6.4% | 19.0% | Water 0.7% |

0   Shared green   Allot-ments   100

60.3%
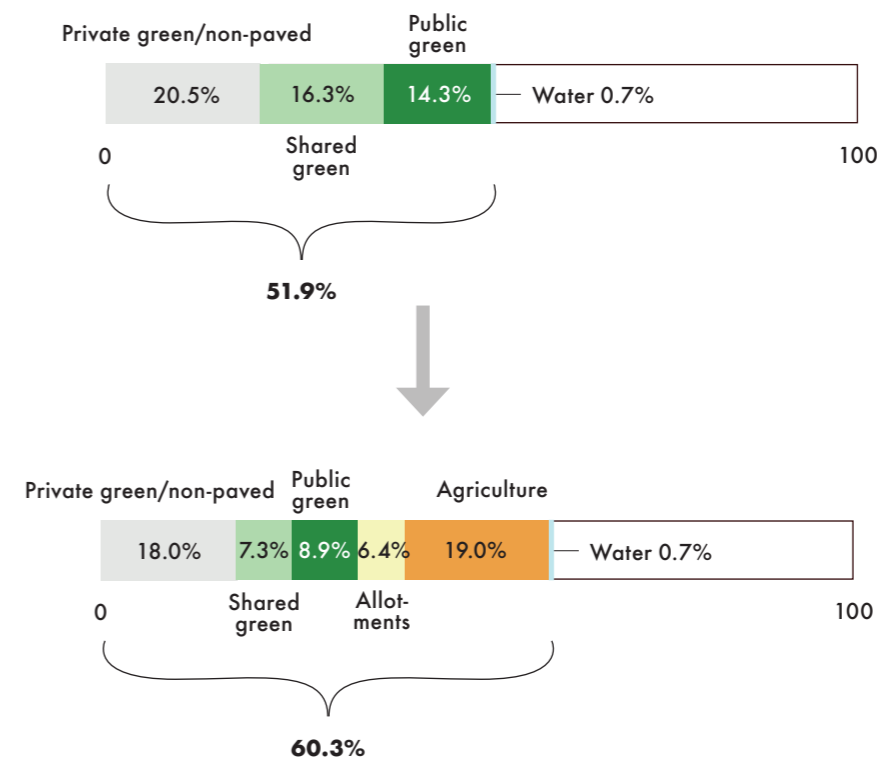
Figure 57: green/water comparison between Tama New Town and Tama Nature Town

NEW HOUSING

PADDY
FIELDS

ALLOTMENTS

COVERED MARKET

Figure 58: bird's-eye view of Tama New Town (top) and Tama Nature Town (bottom) looking north
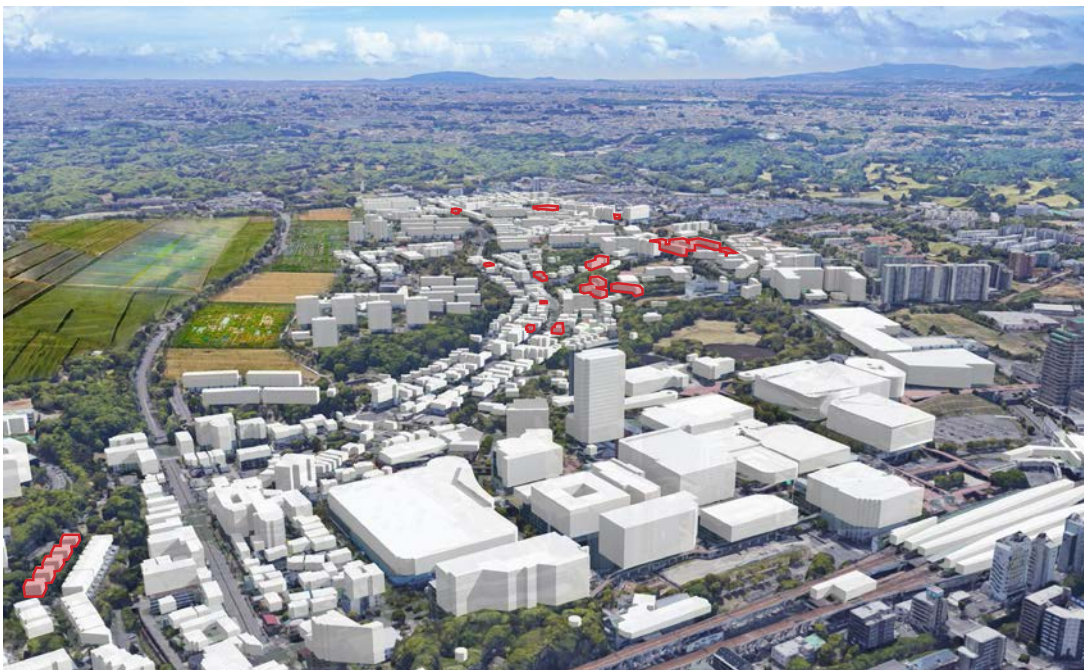
Figure 59: bird's-eye view of Tama New Town (top) and Tama Nature Town (bottom) looking south

Figure 60: bird's-eye view of Tama New Town (top) and Tama Nature Town (bottom) looking west toward Mount Takao

STREET-FRONT
COMPLETION

WWSHEEP/GOATS FOR
GREEN MANAGEMENT

Figure 61: bird's-eye view of Tama New Town (top) and Tama Nature Town (bottom) looking north

speak to one another.' (Roquet 2016:135).

The hypothetical shift to Tama Nature Town in the form of a shrinkage masterplan is here presented as a snapshot in time, i.e. it reflects current given conditions in this particular area, currently-available technologies and current lifestyle preferences. There is an important caveat to consider, though: spatial planning of this kind is necessarily a process in permanent evolution. As Friedmann (2011:217) authoritatively put it,

> *what planners choose to show is a selection of variables, all of which are subject to change over time, though the respective directions and velocities of change will vary. The first difficulty planners face, then, is to decide what variables to incorporate into their plan-making exercise and which to ignore [...]. [P]olitical change, demographic dynamics, economic performance, and sudden shifts in global trends [are] variables over which city planners have little or no control.*

From this point of view, plans are necessarily incomplete and, to some extent, never realized. Nevertheless, they are one of the very few instruments we have at our disposal to address future urban development.

7.4 Limitations and need for further investigation

There are certain limitations in this research, relating both to methodology and to the interpretation of results, that we would like to acknowledge here. On a methodological level, this research has been focusing on three case studies. Given the fact that no single case can be representative of the great variety of Tokyo's peripheral areas, we have chosen to analyze areas showing a certain range of diversity. Kunitachi, Tama New Town and Yukarigaoka differ in terms of foundation period, type of developer, degree of success, strength of their *machizukuri* practices and of their public image. Nonetheless, this by no means implies that the condition of peripheral areas has been examined in full extent. There are a number of cases with peculiar characteristic deserving a dedicated analysis, since their status quo cannot be easily compared to any of our case studies. Kunitachi, Tama New Town and Yukarigaoka were selected, among other things, based on the availability of data to the author, and, therefore, this choice necessarily entailed a

certain degree of subjectivity (Radović 2016), to be found also in the qualitative analysis of liveability factors, assessed after extensive fieldwork.

We chose to focus our inquiry on cities which are still relatively close to the center of Tokyo, if we agree with Nakazawa (2011) that "peripheral areas" are situated between 30 and 60 km from the city center. In logistical terms, this means that a large portion of residents in the three case studies commutes to central Tokyo, and that dramatic depopulation and shrinkage akin to that of rural or mountainous areas has yet to manifest itself. This is why these areas deserved to be more thoroughly studied: they still have some time to reorganize themselves in view of the anticipated population and urban shrinkage, but they are also in danger of losing residents once housing prices become more affordable in central wards. They are at the same time "not central enough" and "not rural enough." These characteristics need to be taken into account in regard to the generalizability of our findings (see following section).

The choice of six liveability factors—four relating to morphology and two to urban management—was based on literature review in English and on previous research by the author. These factors were deemed the most relevant in the field of urban design to analyze an area at the neighborhood/city scale. This choice, while explained and argued for in Chapter 3, cannot be exhausted once and for all, though, as that would imply a reductionist approach. Complex issues, in fact, require a matching complexity of methods. Moreover, the methods (e.g. Spacematrix, MXI diagram, Space Syntax, mappings) used in this research could be employed in a variety of ways, but we have strained to select the most reliable and easiest to communicate, trying to overlay layers of quantitative and qualitative information in a redundant manner, to double-check validity of results and correctness of interpretation.

The methodological choice was necessarily devised according to the author's means and access to particular equipment and pieces of software. In particular, agent-based models (ABM) could have replaced Space Syntax simulations: ABM are a class of computational models for simulating the actions and interactions of autonomous agents with a view to assessing their effects on a system as a whole. Artificial Intelligence assessing big data or laser trackers could have been an alternative to the actual people counting, as performed in the walkability assessment of Kunitachi. These alternative methods were dropped as they would have required a research on their own, given their nascent technology, high cost and sheer time demand in learning their usage. In the near

future, though, they are likely to become part of an urban designer's toolkit, especially when a specific focus on mobility and accessibility is at play. Moreover, in the future so-called "multi-criteria optimisation algorithms" may shed more light into the wide range of subjective decisions at play in planning practice and research, challenging currently-employed methods and procedures (see Koening & Standfest 2014).

Language constituted a major impasse, only partially circumvented by the author's limited knowledge of written Japanese. While existing literature on the three case studies was thoroughly researched, we could not examine in depth the whole body of work relating to demographic trends and urban shrinkage published in Japanese. From this point of view, we have limited literature review in Japanese to the most relevant works about the shrinkage of peripheral areas in Tokyo, and have made efforts to consider most recent publications.

As a suggestion for further investigation, we would like to highlight the need to first analyze more case studies within Tokyo's periphery, and second, to broaden the scope of inquiry by considering other major conurbations in Japan, such as the one comprising Osaka, or examining the case of municipalities between two strong urban poles, e.g. towns in Kanagawa Prefecture gravitating between Tokyo and Yokohama. A third step might be to compare Japanese cases with international ones. Given the time constraints of this research, we have been able to introduce two referential international case studies: Pujiang in Shanghai's periphery, presented in Appendix B, and Mendrisio in Switzerland, presented in Appendix C. A research of its own would be needed to embed these and more case studies within a coherent international theoretical framework tackling the condition of (shrinking) peripheral areas globally. Maintaining liveability in the age of shrinkage, in fact, is destined to become the "new normal" in most of the developed world.

7.5 Generalizability and relevance to the field of study

The issue of generalizability was carefully considered when selecting our three case studies, so that they represented as much as possible a great variety of performance, status quo, urban morphology, etc. Nevertheless, these cases are all planned districts/cities, and may be regarded as exceptional in some way: Kunitachi may be seen as special

in regard to the quality of built space and *machizukuri* movements; Tama New Town is particularly problematic area with much untapped potential but numerous threats; Yukarigaoka stands out in that its developer, Yamaman, is unique in the landscape of Japanese real estate. While much can be learned from best (or worst) practices—e.g. policies and initiatives can be imitated, mistakes can be avoided—it would have been insightful to introduce a fourth, nondescript case study. An area, in Robert Musil's words, "ohne Eigenschaften", to complete the picture. As much of Tokyo's peripheries are constituted by spontaneous, market-driven development, it can be argued that planned neighborhoods are an exeption to the rule. While this is true, it has to be noted first that strong planning did not necessarily generate better living environments, as the case of Tama New Town exemplified. Second, single blocks within the three analyzed case studies, specifically those in Kunitachi and Yukarigaoka, present typical patterns of detached houses found throughout Tokyo's outskirts.

The Japanese capital city is a unique entity within the country, so that it was a conscious choice to limit the study exclusively to its peripheral areas. These residential environments tend to host a large share of residents commuting daily to the city center for work, a common trait of virtually all suburbs gravitating around a large urban core. From this point of view, peripheral living can be seen as a common residential choice to be found in different cities. While each case is an unicum, 'what we can do is to look at how planning is actually practiced [...] in different cities within the same country – in short, engage in the empirical and critical study of planning – so that we will be better prepared to deal with the differences when we find ourselves in situations where these differences must be addressed.' (Friedmann 2011:207)

The contribution to the field of study is two-tiered: theoretical and methodological. Urban shrinkage is a well-researched phenomenon, both internationally and in Japan. Academics, especially in the field of planning, have been examining spatial issues triggered by demographic trends mainly from a large-scale perspective, focusing on land uses and policy-making. On the other hand, activists and *machizukuri* groups have been concentrating on singular issues regarding the area where they live, from a pragmatic and problem-solving point of view. This research has attempted to fill the gap between these approaches, by explicitly embracing the neighborhood/city scale as the preferred unit of analysis. In doing this, we have tried to present in an analytical urban design framework what Sorensen (2012:219) has called 'one of the great challenges for Japanese

society during the coming century.'

By integrating morphological and urban management factors in a single analysis, this research contributed to the call for a comprehensive take on the complex field of liveability. We have shown how liveability is to be understood as a relative term, its values and definition varying according to the context. Specifically, we have introduced to an international audience Japanese liveability rankings, which are in stark contrast to global ones. The relevance of the study is thus twofold: on the one hand, it has embedded the Japanese discourse on the liveability of peripheral areas within the wider international debate; on the other hand, it has pragmatically defined an urban design toolkit to assess the status of neighborhoods, which could be customized and used in any context, even though the interpretation of results would need to be adjusted to the local socio-cultural characteristics.

In sum, in 1.1 we stated that 'the question of how liveability at the urban design scale could be tackled remains an open one.' Now, at the end of the study, we can claim to have tackled this question with a rigorous and non-reductionist approach. Whereas Miura, introduced at the beginning of this chapter, judges peripheral areas on the basis of his feelings, and policy-makers tend to devise measures according to seemingly objective data, we have shown the possibility of an alternative approach. One that does not despise the "intuitive", but is firmly grounded on "exact" analysis.

Let us now elaborate on this point in the final chapter, to be seen as an extended conclusion to this discussion. It will be also a chance to review in more detail the methodological contribution to the field of study and the pragmatic relevance of the research.

8 CONCLUSIONS

Some things are in our control, and others not. [...] In nature, boundless development is not a given; the universe rests on equilibrium, and the same happens in cities.

Enchiridion (manual) of Epictetus, II century BC

These words by Greek philosopher Epictetus—transcribed by one of his disciples—are to be found in his Manual on the practice of Stoicism. Even though he addresses how single individuals should behave to enjoy a virtuous and good life, we may well use these words to frame the scope and effectiveness of urban design. As such, there are only certain things that urban design as a discipline can control, while it has no influence on others. Nevertheless, there is a spacious middle ground between these two extremes, i.e. things which can be controlled to a certain degree. Liveability, to be sure, falls within this third category. In fact, despite high-quality built or natural space, despite most reasonable urban management, neighborhoods might take a turn for the worse. This research aimed at highlighting ways in which urban design can make the most out of its partial control over liveability, both in morphological and urban management terms. We will here address the three research questions formulated in Chapter 3, based on our findings.

I) How do different morphological and urban management factors affect liveability in peripheral areas, taking into account their anticipated shrinkage?

Population shrinkage influences for the worse the degree of liveability of peripheral areas in multifarious but interconnected ways, if left unmanaged: among other things, it hinders the financial resources of municipalities, preventing proper maintenance of services and transportation; it poses a threat, in that vacant buildings are a safety hazard and produce negative economic externalities to their neighboring plots; it gradually erodes the vitality

of streets with a thinning-out of shops and services. From an urban design perspective, morphological and urban management factors must be jointly considered, as the analysis has shown how interdependent they are. For a correct understanding of the spatial implications of shrinkage, both the quantitative and the qualitative approach are needed.

In regard to density/compactness, we have established that compactness bears stronger causality with the degree of liveability of an area, than density. In fact, even a town like Yukarigaoka, despite rural densities, has been able to attain a satisfactory level of liveability by creating a commercial core around the main train station and developing a monorail line. Whereas Tama New Town, despite having a higher density overall, manifests typical issues to be found in shrinking areas. This is due to its low level of compactness and inconvenient accessibility. Detached houses, often blamed as an unsustainable residential type, are here to be seen in a favorable light; they cannot be compared to the residential landscape of American suburbs, where large yards and considerable open space separate one house from the other. On the contrary, in Japanese peripheral areas, compact by the limited size of private gardens and by a tight arrangement of buildings, detached houses improve the sense of belonging through homeownership and tend to foster community-bonding.

In regard to diversity of uses, we have observed that, more than the quantitative amount of non-residential functions, their spatial distribution defines the degree of vitality and liveability of an area. In fact, while Tama New Town is the case study with the highest quantitative mix of uses, it is also the most unbalanced one, resulting in a large commercial-only core around the station and monofunctional residential neighborhoods. This is a known issue in the field of geography, but it still has to be fully implemented into the planning and urban design discourse. From this point of view, a spatial, qualitative analysis at the neighborhood/city scale is necessary.

Walkability is deeply linked to both the mix of uses and to topography, and, like the former two factors, requires both quantitative and qualitative analyses. In fact, we have been able to demonstrate that, because of peculiar and exceptionally attractive qualities of Kunitachi's main boulevard—Daigaku-dōri—people choose to walk routes longer that shortest paths. Moreover, walkability and accessibility are a major reason to move to or leave certain residential areas. Municipalities, in view of the anticipated population and urban shrinkage, should carefully assess which areas within their borders may be compacted and improved in terms of access to shopping and services within walking

distance, and which areas need to be gradually de-urbanized. A possible administrative tool to implement this agenda would be a reassessment of the "Urbanization Promotion" and of the "Urbanization Control Areas", i.e. reducing the former and expanding the latter. Complex economic and policy mechanisms, over a long timeframe, would be needed to democratically achieve this goal.

The analysis of green/water space showed, as in the other morphological factors, a dichotomy between absolute quantities of green space and the qualitative difference between types of greenery. While in general terms we may agree that an overabundance of green spaces is problematic to well manage and maintain, we observed that what is determinant is not so much the quantity of green, but rather its kind. The amount of public green is similar in all three case studies, but Tama New Town faces a substantial additional presence of shared green space, mainly in the form of communal green between *danchi* apartment buildings. Such shared green space is difficult to maintain, given the large portion of elderly living in this housing type, and their limited financial resources in a context of cash-strapped municipalities. In Yukarigaoka, instead, an even higher total amount of green space is well maintained as it takes the form of productive paddy-fields and privately-cultivated plots. Lastly, the case of Kunitachi demonstrated that a verdant university campus, a wide tree-lined boulevard and private gardens are able to substitute a proper city park by providing high-quality and accessible greenery.

When it comes to urban management factors, we have realized how much the degree of involvement of local residents contributes to the creation and support of liveable neighborhoods. In this respect, Kunitachi serves as a model to learn from, being the very birthplace of *machizukuri* movements, which have been continuing until today. In a context where municipalities need to devolve more and more responsibilities to their inhabitants, active and educated residents are an invaluable asset. While there is no ready-made recipe to replicate the success of Kunitachi, other areas should closely examine the efforts by this municipality to engrave citizen participation in local building regulations.

Yukarigaoka's developer provides another reference to look at, one in which residents are gradually being charged with more and more responsibility in a paternalistic but effective way. In this respect, areas such as Tama New Town should realize that there is a need to proactively involve residents and educate them in regard to the need of their involvement in urban management practices.

Lastly, local character, by relying on high-quality or exceptional built and natural

environment, on historical roots or word-of-mouth strategies akin to city branding, is a powerful tool to attract new residents and visitors. From this point of view, an investment in good urban design pays off in the medium and long run. The research examined both top-down and bottom-up approaches, often working in synergy. The question here is how to let the citizens do the work, and act as promoters of an area beside the official channels. This is a difficult task, as attachment and love for a place cannot be quickly engineered, very much relating to the so-called civic capital at disposal. But, once a good reputation has been established, a place may be able to exploit its effects as a fixed asset. On the other hand, when bad reputation is associated with an area, it is difficult to reverse such image in people's minds.

II) How is liveability to be understood and analyzed, from the point of view of urban design, and to what extent can the profession address it?

At the beginning of this research we have made the hypothesis that liveability can only be understood as a relative concept, being dependent on the shared societal values of a certain location. After the analysis of three peripheral areas around Tokyo, and in light of the sketched international comparison with Pujiang in Shanghai's outskirts (Appendix B), and Mendrisio in Switzerland (Appendix C), we confirm that there are no absolute parameters valid the world over, setting minimum or maximum thresholds regarding "correct" values of density/compactness, mix of uses, etc.

A "neighborhood analysis toolkit" addressing six factors, relating to morphology and urban management seen from a quantitative and qualitative point of view, assured ample redundancy to cross-check results. Such redundancy does not mean that any of the six factors can be omitted, though, as each of them revealed unique and relevant findings. From a pragmatic point of view, we believe to have successfully presented a workable and applicative toolkit that urban designers around the world could use to assess the liveability of any settled area. As such, the methods used in this research can be easily borrowed and enriched.[1]

The focus on a middle scale between planning and architecture—choosing the

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1   'Urban design research examines how to tune into local specificity, but operates also in a register of replicable typologies and globally circulating 'solutions'.' (Cairns 2017:2)

neighborhood as the unit of analysis—enabled a detailed exposure of elements pertaining to the "life between buildings", something which cannot be seen neither in land-use plans, nor in common architectural drawings. This has to due with the very practical need of using scaled drawings, and with the level of detail that each scale can afford. As such, relationships between buildings can be expressed in plans scaled somewhere between 1:500 and 1:5000. Smaller scales "zoom in" too much, while in larger ones building footprints simply disappear. This scalar definition may be a novel way to define the realm of urban design.

The impact that urban design can have on liveability is considerable. However, as every profession tends to overestimate its importance, we have to note the following: urban design is relevant and can have a concrete impact on neighborhoods and communities as long as it engages with both form and process, i.e. with built space and its rules and policies. The number of involved stakeholders and a usually long timeframe call for a cooperative attitude, engaging in an effort, whenever possible, to not only explain to local residents and interest groups about new proposals, but to prompt their comments, ideas and feedback which may be integrated into a plan or may lead to beneficial adjustments. While the core of the urban design profession has to do with spatial relationships, it has nonetheless to be grounded in a local socio-cultural context. By performing analytical assessments, drafting plans and visualizing future scenarios, urban designers can, very much like public servants, help communities fill the gap between their desired and current living environment.

III) How can this investigation be useful to local policy-makers and *machizukuri* groups?

On a pragmatic level, we have provided new data and information about Kunitachi, Tama New Town and Yukarigaoka for the use of local municipalities and groups, suggesting strategies to tackle existing problems and highlighting potentials to be exploited. With a hypothetical "shrinkage masterplan" to be implemented in Tama New Town this research has offered a grounded example of how local policy-makers could address the spatial disruptions caused by urban shrinkage. This is no small task, as '[t]here is no official urban policy to encourage "smart shrinkage" in Japan to this date, and little policy discussion except for the continuing exploration of the concept of the compact city' (Hattori *et al.*

2017:131). Moreover, by means of comparison, tactics to cope with shrinkage and increase the degree of liveability may be transferred and tested in other areas around Japan. Given the fact that other municipalities are facing the same issues of Tokyo's peripheral areas, the findings can be generalized and be useful to municipalities nationwide. Moreover, as numerous East Asian cities will be confronted with the phenomenon of shrinkage, the case studies examined in this research can constitute a reference to look at.

Future prospects

In regard to suburban areas, Müller & Siedentop (2004) ask whether demographic shrinkage will diminish suburbanization. While the thinning-out of suburban population seems to be a matter of time, the ways in which this could unfold are multifarious, and the strategies to cope with a diminished population are still to be tested. New technologies, e.g. robotics for elderly-care—the so-called "biofied building" (Mita 2017)—driverless cars or automated drone delivery will likely disrupt our approach to aging and peripheral living, and their impacts will have to be taken into account. Moreover, a changing job market where people are less tied to their workplace will likely trigger new forms of living.

As a solution for the challenges ahead Doteuchi (2003:9) suggests that 'suburban areas will have to differentiate themselves through unique local characteristics. They must become a space to support lifestyles that take advantage of the local environment [...] and culture. What the ultra-aging society represents is an era of living the slow life in such unique communities.' Not only academics, but practicing professionals too agree that creating urban attractiveness and initiating participatory planning approaches tailored to each location is crucial for Japanese urbanization patterns, since 'there is no universal approach to land use planning for depopulating and aging society.' (Murayama 2016:79) The direct engagement of residents with their own living environment will be decisive, and it remains to be seen how local initiatives will merge with national policies in the long run. In fact, as Hattori *et al.* (2017:130) point out, 'constraints on local government and on local activism discourage a strong urban shrinking discourse.' Will the national government finally pass a *machizukuri* law, akin to the 1998 NPO Law, granting it official status in the planning system?

Ultimately, what will happen to peripheral areas will depend on national policy-making on the one hand, and on their own ingenuity, the capabilities of local *machizukuri* movements and the natural, social and cultural assets at disposal on the other. They

could become a decaying symbol of past prosperous times, or they could find a renewed importance in view of the "slow life", in contrast to the bustling city center. The suburban communities that will stand the test of time will be the ones with the ability to create synergies between the public and private sector, NPOs and interest groups.

Peripheral areas in Tokyo and in Japan will undoubtedly shrink in a considerable way, disrupting current living patterns and throwing communities in a state of crisis. As we know, the etymology of the very word "crisis" refers to a moment of discernment, entailing both risk and opportunity. Japan has, involuntarily, found itself at the forefront of the phenomenon of population aging, triggering shrinkage. While shrinkage has occurred multiple times throughout history, it may be argued that this is the first time that it happens because of insufficient birth-rate and population aging. As much of the developed world will soon find itself in a similar prospect, Japanese communities will be forced to lead the way, becoming either good or bad models to learn from, heightening the exchange of ideas and experiences between East and West. In fact, if 'we look at the demographic trends and predictions, for example in Japan or Germany, we have to assume a decline of inhabitants. [...] But what happens in Japan is not really discussed in Germany. [...] Architects, engineers and urban designers have to address this issue' (Sobek & Hanakata 2017:87).

German architect Bruno Taut lived in Japan from 1933 to 1936, immediately prior to another critical moment in the country's history. In "Japanese art seen with European eyes" he openly admitted to 'have written as a European.' (Taut 2011:195) Conversely, Japanese architect Masato Otaka[2] pointed out how in European cities 'a very *slow* metabolism has been achieved. [...] The fact that the traditional culture has never been forgotten is an admirable aspect [...] that we hoped to allude to as much as possible' (quoted in Koolhaas & Obrist 2011:485). The findings in this research come from a foreigner, even though one with vested interests. It is our hope that they can concretely help maintaining liveable communities in Japan and beyond, European eyes notwithstanding.

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2   See Footnote 2 in Chapter 5.

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APPENDIX: INTERVIEW & MEETING SUMMARIES

We provide here an outline of the most relevant interviews and meetings conducted during the course of this research. As conversations were mostly in Japanese, what follows is a collection of edited summaries, rather than proper transcripts, presented in chronological order.

Summary of a public meeting organized by Kunitachi City to explain future issues of its building stock to the population

Participants: 6 public officials of Kunitachi City and ca. 15 residents as audience
Date: October 29, 2015
Place: Kunitachi
Language: Japanese

The city is planning to build a new school and this would be an opportunity to build a larger new building combining different functions, which were previously separated (school, sports hall, community center, library). In fact, the estimated cost of separate new structures would be too much, and it is also unfeasible to renovate and maintain the current building stock. Beside the economic point of view, there would be the benefit of mixing social groups and age groups, but with the disadvantage of having a more generic buildings and possible clashes of functions (the officials referenced here an example in neighboring Tachikawa City, where a mixed-use building combines a school, community center and library). The city officials presented this as a challenge—deriving from economic constraints—but also as a chance for cooperative *machizukuri* action towards the creation of an attractive town for current residents and newcomers.

Residents attending the meeting, though, were skeptical about the need of new facilities, in view of an aging and declining population. Some were afraid that the character of Kunitachi might be negatively impacted, and that the role of the community might be weakened. Others were dissatisfied by the lateness with which the municipality is reacting to the anticipated challenges. They lamented the lack of concrete ideas and proposals to be shown to the population. At this stage, it was already too late for the residents to be involved, and they perceived the meeting as an explanation of the general strategy and idea, without disclosing concrete plans. Some other residents questioned the demolition of older buildings and asked to consider the possibility of renovation instead. Some other attendants proposed to use existing buildings in a flexible manner, differentiating functions between day- and evening-time, in order to build as few new structures as possible.

Email exchange

Interviewee: Sumiko Enbutsu [SE], member of the Bunkyo Link for Architectural Preservation and author of numerous books on Tokyo's spatial history
Interviewer: Marco Capitanio [MC]
Date: June 22-23, 2017
Language: English

[MC] Can you give historical examples of ways in which communities in Japan have engaged in cooperative practices?

[SE] For instance, feudal village communities and urban neighborhoods took care of children, much the same way as in the African proverb: "It takes a whole village to raise a child." Festivals were, and still are in many communities, great opportunities to strengthen the community bond, nurture the spirit of mutual help and to awaken younger generations to their responsibilities as community members. *Matsuri* is often used as a tool in *machizukuri*.

In respect to residents' organizations, "*chonaikai*" is usually used for neighborhood associations, while "*jichikai*" is used more often than not for apartment/condo residents

associations. Before and during WWII, *chonaikai* was called "*tonarigumi*" and there even was a PR song to promote communal bonds through the system, that goes: "*Ton ton tonkararito tonarigumi…*".

[MC] Could you explain the origin and meaning of the word "*machizukuri*"?

[SE] The word is usually written in *hiragana*, まちづくり, conveniently done so to embrace diverse kinds of associated activities, thereby to get as many people as possible interested in the proposed project. This word does not appear in the 広辞苑, the 1991 edition, a Japanese dictionary we have at home, suggesting that it was not fully established in the Japanese vocabulary in the preceding decades although actual practices must have been going on in many parts of Japan.

The kanji 街 is usually pronounced as "*gai*" and used as a suffix or prefix to another kanji word—such as 官庁街 (*kanchōgai*), 、商店街 (*shōtengai*), 街路樹 (*gairoju*), etc.—with the implications of big streets in urban areas, lined with offices, shops, or trees. An interesting exception is 花街 (*hanamachi*), pleasure districts with geisha houses, restaurants and bars. Meanwhile, 町, pronounced "*machi*" or "*chō*", denotes an administrative unit in either urban or rural areas. The *hiragana* writing まちづくり is a clever tactic to blur the relevant definitions, now ubiquitously used in civilian and administrative vocabularies.

Interestingly, when the citizens and the administration achieve a consensus on a cooperative project and sign an agreement, they often use a very stiff kanji word, 協働 (*kyōdō*), for the agreement title. This usage, suggesting "toil and moil to cooperate", is also new with slightly different connotations from traditional, long-established words such as 共同 or 協同, both pronounced "*kyōdō*" and meaning "cooperate".

[MC] What is the effectiveness of *machizukuri* practices at the local level, and what is the role of administrations?

[SE] Much depends on how responsive the first contact officer(s) in the local administration is (are). If officers share citizens' love of the community and motivations for enhancing the quality of living, the two parties will cooperate for the best possible solutions. When the administrative officer(s) is (are) not local resident(s), just assigned to the job, his/her/their primary concern is to finish the term of assignment without trouble; they are reluctant to

take the risks of doing anything new. The size of the administrative unit also matters in many ways for the progress of a proposed citizen and administration cooperation.

[MC] At a national level, what have *machizukuri* movements been able to achieve?

[SE] Concerning the enactment of the 1998 NPO Law, many fingers point to remarkable contributions by citizens' groups to prompt, effective relief of victims in the 1995 Great Hanshin-Awaji Earthquake.

[MC] Do you think Kunitachi can be seen as a best practice in regard to *machizukuri* practices?

[SE] Kunitachi-shi has undoubtedly taken an early lead over other municipalities in the *machizukuri* movement. In analyzing the factors of its pioneering spirit, I think your audience will be interested in the comparison of Kunitachi and Den'en-Chofu, contemporary developments inspired by E. Howard, planned in a similar pattern radiating from a train station. Comparison with Tama New Town, a post-WWII development, will also be of interest. Kunitachi's well defined identity as a university city with the Daigaku-dōri connecting the Kunitachi Station and Hitotsubashi University (with its own iconic Kanematsu Hall) has helped nurture a great pride and identity in its citizens. Hitotsubashi University's students have been a strong, continually rejuvenating source of Kunitachi's *machizukuri* power. On the other hand, Den'en-Chofu boasted its quiet elegance, but lacked a magnetic power in its street plan. I have not heard of any *matsuri* organized by Den'en-Chofu citizens.

Post-WWII suburban developments had no vision of Tsutsumi (the developer of Kunitachi) nor Shibusawa (the developer of Den'en-Chofu), being just expediencies to provide housing to the rushing influxes of workforce into Tokyo during the years of high economic growth. Kunitachi's relatively small size as an administrative unit is a positive factor, too. Citizens have a clear image of their home town and a good sense of identity. The image will be diffused about a larger, more complex city or prefecture.

I suggest a comparison of Kunitachi and Den'en-Chofu because of the great similarity at their birth and dissimilarity in their status quo almost a century past. Den'en-Chofu was very suburban in the 1950s. Even Sakurashimmachi, where we live now, was

surrounded by farming fields in the late '50s. That changed after the 1964 Olympics. During the economic bubbles of '80s, land priced skyrocketed everywhere, especially in Den'en-Chofu. The heavy burden of inheritance tax caused many tragedies in Den'en-Chofu, including even a case of suicide. The once envied upper-class residential area looks ailing, considered by many to be un-liveable. What have caused the difference between Kunitachi and Den'en-Chofu over the past 100 years? I thought there may be many lessons we can learn.

Interview 1

Interviewee: Akiko Watanabe [AW], activist in Kunitachi and *machizukuri* expert
Interviewer: Marco Capitanio [MC]
Date: May 15, 2016
Place: Kunitachi
Language: Japanese

[MC] Could you please elaborate on the origin, development and significance of *machizukuri* practices in Kunitachi?

[AW] The original development plan of Kunitachi comprised an area of 1 million *tsubo* (ca. 330 ha), and the future settlement was advertised in a pamphlet, as early as 1926, as a "college town". I believe this planted since the beginning a high civic awareness into the local residents. As the Japanese saying goes, the inception was important (最初が肝心 - *saisho ga kanjin*).

The concept of *machizukuri* in Kunitachi started in 1951 and the petitioned educational district was approved in January 1952. Horse racing, *pachinko* parlors and adult stores were made illegal, categorizing the shops into type one and two. Until today this has been enforced and has been a major cause of the environmental quality of the area. Whereas, in the southern part of Kunitachi, where no rules were established, *pachinko* parlors appeared. Maybe this was an egoist idea, to have one part (northern Kunitachi) with a better environment than the other, but this probably had positive effects on the overall area.

I will mention now a few cases where citizens directly addressed local authorities in issues regarding the quality of their built environment. In 1988 the station-building roof was refurbished. The citizens were not satisfied with the strong orange color and they demanded the roof to be repainted red or burgundy. The same happened with the overpass on Daigaku-dōri, that used to be light blue and was later repainted in brown, as more appropriate to its surroundings.

About twenty years ago, high-rise buildings started to be built for the first time along Daigaku-dōri, and the residents raised their voices opposing the height of these structures. A particular case regarded the so-called Endo Building, as it was the first time the height of a building on Daigaku-dōri was seen as a problem by the residents. Thereafter, the opposition movement to the condominium built at the site of the Tokyo Marine Fire Corporation, to the south of Daigaku-dōri, about 15 years ago is famous. The conflict between residents and developers may be settled by the ordinance that will be issued in October this year.

Shop owners and business people in Kunitachi are greatly involved in *machizukuri* activities, and aim at the creation of a comfortable and pleasant environment. Its quality, in fact, both influences and is influenced by the activities of local businesses. The street lights imported from France on Daigaku-dōri, for instance, are due to the efforts of the Merchants Association. Also, some executives take care to place flower beds in parking lots and their immediate surroundings.

With the project "Kunitachi Art Biennale", last year a number of outdoor sculptures were placed along Daigaku-dōri, thanks to the official group called "Kunitachi Sports and Cultural Promotion Foundation", and a variety of groups initiated by residents. Moreover, there are, among other things, the Kunitachi Tourism Development Association, Kunitachi Gallery Network, etc.

The municipal government is concerned with Kunitachi's environment too. On June 2, 1976, the Kunitachi Council of Basic Planning Committee was established. In September 1982, it petitioned to the Tokyo government to preserve Daigaku-dōri as a street where no high-rise buildings are allowed, a status that was granted on September 11, 1983. On November 30, 1984, the Kunitachi Council Second Phase Initiative Committee was established. Since then, the committee has been meeting once every several years.

In order to respond to the increase of motorized traffic volume, a direct road to Asahi-dōri and a road expansion to the east side of Kunitachi Station, passing under the

railway track, will be opened this November. While this will make it easier to commute between Kunitachi and Kokubunji, the original strength and character of Kunitachi's masterplan may be affected by the increased traffic.

In sum, there is a soft and a hard side of *machizukuri*, so that both bottom-up practices and a strong local administration are necessary. If residents lose interest, vigilance on what the administration does becomes weaker. In this respect, even though it seems a small force, civic engagement is of great importance.

Interview 2

Interviewee: Keita Yamazaki [KY], City Planning Division, Urban Planning Manager (都市計画課都市計画係長山崎) & Yukihiro Yasunami [YY], City Planning Division, Instructor (都市計画課指導係安波)
Interviewer: Marco Capitanio [MC]
Date: November 24, 2017
Place: Kunitachi City Hall
Language: Japanese

[MC] Is the "Kunitachi City Machizukuri Ordinance"—enforced in 2016 (see 4.3)—the first of its kind in Japan?

[YY] There are similar ordinances in Japan, and in Tokyo Prefecture maybe every other municipalities has one. But Kunitachi is unique in that it explicitly devises a mechanism to involve citizen in participatory mechanisms, and let them propose something, rather than imposing the town's decisions and merely ask for their approval. That is, for instance, what neighboring Kokubunji City does.

[MC] Do you think this kind of ordinance can work anywhere or does it need engaged, educated residents to function, like the ones in Kunitachi?

[KY] Citizens in Kunitachi are special, so that we can say that a certain degree of interest and involvement is necessary to make such a mechanism work. In this case, it is specific of

this place. We do not have the elements, though, to foresee whether other municipalities will come up with similar ordinances.

[MC] How do you actively foster civic participation? At a most basic level, do you advertise public meetings as appealing events, to make people come?

[YY] Civic interest has, unfortunately, been on the decreasing side in Kunitachi. Younger generations are not as interested—as previous were—in the liveability of their neighborhoods. As a result, there are not many residents attending public meetings where neighborhood and municipal plans are discussed. We haven't thought yet about presenting these meetings as something where one could have a good time.

[MC] The 2016 ordinance prescribes a mechanism where local groups can be appointed by the municipality as recognized stakeholders of a particular area. Has any group of residents applied for such appointment, so far?

[KY] Only one year has passed since the enactment of the ordinance, so it is very early to expect considerable results. Nonetheless, one group of shop owners of the Merchants Association in Asashi-dōri has applied and has been discussing with us.

[MC] How do you feel about confrontational participation—like the famous case of the mansion lawsuit in Kunitachi (see 4.1)—in respect to a cooperative-type of participation?

[KY] & [YY] The lawsuit case you mentioned is exactly what we would like to avoid. It is disruptive for the city and its population to have such strong and divisive opposition movements. These happened because, at the time, no local plan regulating the specific plot of land in question was present, a lack which was exploited by the developer. But, it can be said that, thanks to that confrontational case, we realized the need for an uptodate district plan. Moreover, the new 2016 ordinance may be seen as stemming from problematic past experiences, from which a lesson has been learned. We would like to clarify, nonetheless, that our role is to produce building rules and regulations for the betterment of the city as a whole, and we do not take side a priori in favor or against developers, regarding what

they can or cannot do.

[MC] Shifting the topic from *machizukuri* to the morphological characteristics of Kunitachi, I would like to know your opinion on my findings: according to my Space Syntax simulations, people in Kunitachi do not choose shortest routes in their daily trips on foot, but walk the nicest route—e.g. with trees for shading, or wider sidewalks.

[KY] This makes sense. Kunitachi has, in general, narrow streets, and consequently narrow sidewalks, especially in Fujimi- and Asahi-dōri. This may be an explanation. Actually, these days we are working on a similar kind of quantitative analysis, assessing the accessibility of community centers and other public functions, according to an aerial radial distance of 800 m. In this respect, I see you are using 500 m as a referential walking distance fitting the needs of the elderly.

In your research you mention the issue of shrinkage as a key driver, and, I must say, that what we are doing at the moment is revising our whole plans and mentality in view of an age where growth is reversed. This has never been done before.

Interview 3

Interviewee: Kenji Fujii [KF], Tokyo Tatemono Co., Ltd. Urban Development Division, Manager of Business Promotion Group
Interviewer: Marco Capitanio [MC]
Date: December 8, 2017
Place: Tokyo Tatemono Headquarters
Language: Japanese

[MC] How is your firm operating in peripheral areas?

[KF] We have, for instance, worked on "Suwa 2-chōme", a housing project in Tama New Town. Old *danchi* were replaced by new buildings, to offer more valuable and better residential types, compared to outdated *danchi* apartments. This was one of our Brillia projects, where we chose to redevelop a brownfield, as greenfields are now unavailable

close to the city center.

[MC] What do you expect the future of Tokyo's peripheral areas to be?

[KF] I believe there is a much higher chance to keep shrinkage under control, in comparison with, say, other cities like Akita or Sendai, where a sponge-like urban tissue is anticipated. From this point of view, Tokyo has great attractiveness, but smaller cities like Toyama have shown how to manage population aging in a progressive way.[1] In fact, the national Location Optimization Plan of 2014 (see 1.2) mimics Toyama's compact city strategies, by indicating the most suitable areas within cities where to foster the presence of housing and businesses.

[MC] In regard to possible strategies for maintaining liveability in an age of shrinkage, what would you suggest?

[KF] I see an issue with the tools of Urbanization Promotion Area and Urbanization Control Area, despite being complemented by the newly-established Residential Oriented Area—the tools foreseen by the Location Optimization Plan. In fact, as done in Toyama, you can incentivize the shift from a loosely-built area to a more accessible and denser one, but old or abandoned structures and infrastructure still remains in the left-behind locations. Leaving all these to rotten away would undermine the environment and the economic value of the area, beside being a safety hazard. But most of the time neither municipalities nor privates have the money to reclaim the land. In my view, there is the need of a market mechanism, where Transfer of Development Rights (TDR) happens on a large-scale basis. For instance, a business in the city center may want to increase the permitted FAR of its plot. To do so, it may buy development rights from a private or from a municipality wanting to reclaim and sell excess urbanized land. Central locations may have to lower their current FAR limits to incentivize TDR. My point is that a prescriptive

1   Toyama, facing the sea of Japan, is the only Japanese city to date selected for the Rockefeller 100 Resilient Cities initiative. Since 2007, under Mayor Masashi Mori, it has been pursuing a city strategy aiming at compactness. It has renovated and boosted its public transportation network by creating a Light Rail Transit (LRT), where the public sector constructed the track while the private sector operates the business; it has also been encouraging residents and businesses to relocate to high-accessibility areas; it has been revitalizing the city center. This strategy has been yielding substantial results in terms of population gain and land-value appreciation. Toyama has also won numerous prizes thanks to its resilient measures.

policy needs to be sustained by financial instruments. In this respect, the research by Tokyo University Professor Yasushi Asami (see 3.1) is of great interest.

[MC] Taking Tama New Town as an example, we have noticed in our research that one of the main spatial and management issues relates to green space. Shared greenery in *danchi* apartments is too much and difficult to maintain. Conversely, Yukarigaoka successfully manages an even higher amount of green space because it is of a productive kind: paddy-fields and cultivated plots. Do you think that shared green in Tama New Town could be subdivided into private allotments or kleingarten?

[KF] This is my personal opinion, and does not necessarily reflect Tokyo Tatemono's policies, but I often wonder where a safe environment for the elderly might be. It seems to me that areas like Tama New Town, with their excellent infrastructure and abundant greenery still hold a lot of untapped potential, or buried assets. Allotments are already being eyed by UR Agency as a way to increase the attractiveness of *manshon* and to make people go out and perform some physical activity. I would then make sure that these areas are "zone 30" (i.e. with maximum vehicular speed of 30 km/h), to launch a message to pedestrians.

[MC] In our research, we argue that peripheral areas should brand themselves as alternative places to the city center, aiming at the "slow life". Do you think the same?

[KF] I can say that satellite-offices or temporary leave in more rural prefectures are a welcome alternative to city life. I think that there is much potential in verdant peripheral areas when it comes to weekend or holiday houses, cottages, etc. The Russian *dacha* (usually a hut or simple dwelling with an orchard or garden) comes to mind, where people go to for shorter or longer periods. *Dacha* are often in the outskirts of cities and it shouldn't take very long to reach them. Being out in the open air, engage with gardening and the like is part of the appeal, even though the building itself may be very basic. If one did inexpensive basic renovations of some apartments in Tama New Town, maybe joining multiple adjacent apartments of a *danchi*, there would be a possibility to target people looking for a little weekend retreat reconnecting to open-air activities. I am thinking also at shared apartments, since we are now in a sharing economy… In this way the value of housing would increase even in an area like Tama New Town.

APPENDIX
Pujiang as an East Asian referential case

As Chinese society is heading toward a rapid aging, the comparison with Japan is a valuable means to highlight transferable liveability strategies. While we agree with Friedmann (2011:430) that 'what we observe in one place cannot be readily generalized to other places [and that] actual periurban phenomena are specific to each country and even to each city', this comparative attempt helps to clarify convergence and divergence in urbanization pathways across the East Asian region. From this point of view, this attempt is an answer to Waley's (2012) call for a non-western, regional framework to pursue comparative urban studies in East Asia.

Liveability issues in Shanghai's peripheral areas

A considerable amount of literature has been published, over the past two decades, about patterns and pathways of Chinese urbanization. Nevertheless, while environmental (Gu *et al.* 2010; Song & Ding 2009; Chiu 2008) and socio-economic (Tomba 2014; Yeung 2006; Friedmann 2005) outcomes were extensively researched, the role of urban design in creating liveable environments has remained overlooked. Since 1990, when it became possible for private developers to lease land from the government, Shanghai has been witnessing a high-speed construction pace. This resulted in congestion in the city center and uncoordinated development at the fringes, threatening the amount of arable- and open-land at disposal, and of water resources. To tackle these problems, in 2001 the municipality decided to embrace a decentralization policy, through the foundation of new towns in its periphery. Thus, industrial and population growth during the 2000s took place mainly in outer areas (Chiu 2008; Wu & Phelps 2008). Shanghai's population is expected to increase from ca. 17,8 mil. in 2015 to over 20 mil. in 2025 (UN-Habitat 2013:155), even though with a decreasing growth-rate.

New towns, thanks to a strong top-down, state-driven planning, and to no organized

resistance (Tomba 2014), could be planned and built at a breakneck speed.[1] They followed a global trend aiming at creating autonomous, high-class satellite developments catering elites in search of more greenery and less congested and polluted environs (Chen *et al.* 2009). Between 2000 and 2020 the government planned, in fact, 'to relocate more than 1.15 million people to the suburbs' (den Hartog 2010:36).

The distance to underground stations is often too big. One aim of the Shanghai government was to discourage commuting to the central districts, even though job opportunities in the new towns remain scarce. In many cases, apartments were quickly sold out, but buyers turned out to be speculators. Moreover, since developments were carried out by private parties acquiring land use rights, a balanced mixture of services and public functions could often not be achieved, resulting in a critical lack of amenities and services. All this has been exacerbating Shanghai's increasing spatial segregation.

Contemporary urbanization patterns in Shanghai are spatialized through the *xiaoqu* (小区), literally 'small district'. Apart from residences, it can sometimes comprehend facilities like kindergartens, fitness centers, used also by people living outside the *xiaoqu*. This sort of development, given the stress on security and control issues, is referred to as 'compound'. It is usually constituted by a group of high-rise, south-oriented residential buildings, accessible through a limited number of patrolled gates and entrances. Compounds clearly separate the open space of the street outside from the semi-private space inside, thanks to fences or walls, usually combined with greenery. At the perimeter there can be found rows of outward-looking shops, and, in principle, every resident can open a business inside a compound, converting his or her apartment into a shop or office. The contemporary Chinese city can thus be understood as a "compound archipelago" (Capitanio 2012), holding drawbacks and potentials. Such urban pattern represents lack of urbanity and socio-spatial segregation, similar to gated communities, but, '[a]lthough the 'archipelago' of *xiaoqu* does not truly promote urban cohesion, the *xiaoqus* themselves do constitute a means for creating community identity.' (den Hartog 2010:380)

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1   In Japan, organized opposition has been rare in modern history, while the government and local authorities have been able to settle unrest through compromise or by tackling the source of discontent. In China, on the other hand, 'there have been many outbursts of local protest, but the tightly policed nature of the urban terrain has prevented coordinated and widespread manifestations of anger.' (Waley 2012:822; see also Tomba 2014)

Morphological factors

Pujiang Town (蒲江) belongs to the decentralization plan called One City Nine Towns (Xue & Zhou 2007). In 2001 the Italian firm Gregotti Associati won an invited competition to build an 'Italian-town' in Shanghai's southern district of Minhang. The office was responsible for the masterplan and an architectural implementation in the northern part of the district, targeting high-class buyers. The rest of the town has been designed by local companies and built by a number of different developers (Fig. 62).

When Shanghai won the bid to host the 2010 World Expo, the municipality chose to redevelop an area on the eastern bank of the Huangpu river, resettling industries and households located on that site. The southern part of Pujiang was selected as the area where to relocate these people. Moreover, farmers and peasants who used to live on Pujiang's site were relocated to the (southern) new town as well. Construction started in 2004 and was completed by 2006. 15'000 were the relocated households, spread over 15 blocks. Northern Pujiang is thus considerably different from the southern part: while the former aims at attracting higher-middle class, the latter (chosen as case study area) retains a generic character. The two parts share, nonetheless, the same street layout, composed of square blocks measuring 300 m on each side. Pujiang lies 15 km south of People's Square and it can be reached by subway (completed in 2009) in 45 minutes, even though the three stations' location, along the town's eastern edge, is not ideal.

Nowadays, we face a heterogeneous mix of inhabitants: on the one hand there are relocated people, on the other hand middle-class households which are either renting an apartment or have bought one. A number of white-collar workers decided to move here, mainly because of convenient apartment prices. Meanwhile, farmers, who used to live in the same area, had to abruptly adapt to live in a new urban environment. Even though access to commercial facilities and other services for them has improved, they lack enough indoor storage space and cannot grow vegetables and raise livestock in front-yards as they used to.

Diversity of uses

The whole neighborhood presents a mid-rise character, with a degree of compactness comparable to compounds in Shanghai's central districts but with sensibly lower densities (FAR 1,4; GSI 0,25). Buildings are mostly 6 or 11 storey-high, the former usually located along the *xiaoqu*'s borders, the latter towards the center of the compounds, more

To city center

Whole Pujian Town area
(developed and undeveloped)

Pujiang North

Underground stations

Huangpu River

Pujiang South
(World Expo Home)

Case study area

0   1km

Figure 62: location of the case study area within the whole Pujiang Town

Tot. area	Inhab.	Inhab./ha	FAR	GSI	Sqm public/inhab.	Sqm comm./inhab.
75ha	12'000	160	1,4	0,25	4,5	4,5

Residential 88,2% ▨
Public 5,5% ▨
Office 0,8% ▨
Commercial 5,5% ▨
Empty buildings ▤
Informal activities ●

0% Floor space   50%   100%

LIST OF COMMERCIAL ACTIVITIES (EXCLUDING WALMART):
Restaurant/Eatery (23,5%); Grocery store (11%); Clothes/Shoes (11%);
Workstation (8,5%); etc.

Commercial 21% empty (not considering Walmart)

Work 83% empty

Residential 5% empty

N 0   250 m
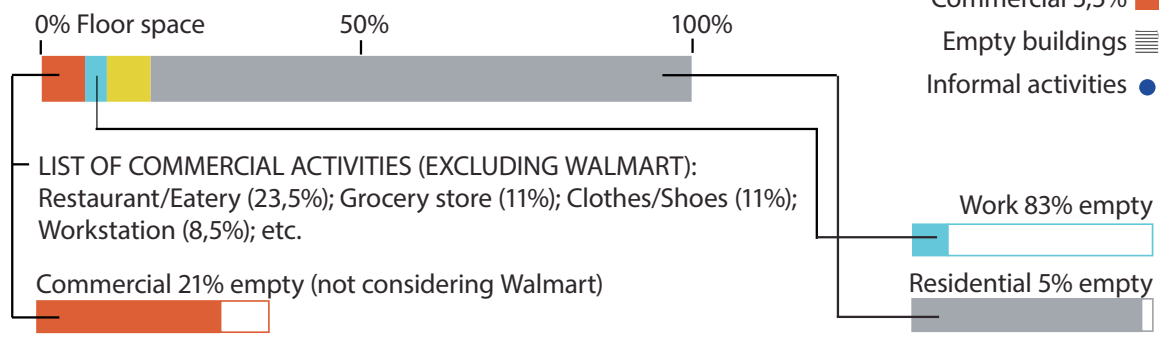
Figure 63: activities' distribution and town's morphology. The color bar refers to the total floor space.
Photographs from left to right: informal stall; brackets of shops along *xiaoqu*'s border; apartment converted
into shop

protected from street noise and pollution, thus more expensive.

Fig. 63 shows activities' distribution and morphological characteristics of the town. More than 80% of floor space in the area is devoted to residence. Being a relocation, virtually the totality of the apartments is inhabited. Public functions are represented by two schools and a kindergarten, serving the whole new town. Supra-neighborhood functions are clustered around the neighborhood's main central axis, namely the afore-mentioned schools, a Walmart supermarket (opened in 2011) and office buildings. Such uses are spatially detached from residential *xiaoqu*, becoming a block on their own. More than 80% of office space is empty.

It is possible to distinguish between two typologies of commercial activities: one belonging to the neighborhood scale and one to the district scale. The former is constituted by small businesses serving the daily needs of each *xiaoqu*, requiring a basic, almost standard architectural typology: a one-storey, narrow (2,5-5 m) shop. When more spacious (i.e. more expensive) typologies are built, they remain either empty, or their second floor is used, at best, for storage. Moreover, the lack of enough services is reflected by the conversion of ground floor apartments into informal businesses. Occasional informal stalls appear both inside and outside *xiaoqu*.

The presence of workstations (various kinds of hardware reparations) indicates that light-industrial activities can coexist close to residences. Shops tend to form a bracket encircling a xiaoqu, either following the north-south axis—where no apartments would be placed for orientation reasons—or along major streets. Beside neighborhood-scale activities there are district-scale ones, such as Walmart. It hosts a number of restaurants, high-end stores, entertainment businesses (with a high vacancy-rate though), targeting not only customers from immediate neighborhoods, but from the whole Pujiang Town. Though naturally a commercial spot, access is open to anyone, and, especially during weekends, it becomes an entertainment choice for families with children. While being popular among younger generations, elderly's behavior is here noteworthy: they tend to gravitate and visit the shops along the perimeter of Walmart, but do not seem attracted by the inner courtyard.

Walkability

Fig. 64 shows the level of hermeticism of the case study. All *xiaoqu* present a typical pattern, with fences (occasionally substituted by shopping strips) and gates to regulate

Avg. No. entrances/*xiaoqu*	Avg. distance between entrances
2,6	360m

Guard 👤
Entrance ◀
Fence/wall |||||||||

N
0 ———— 250 m

Figure 64: hermeticism of *xiaoqu*. Photographs from left to right: patrolled car entrance; unpatrolled pedestrian entrance; unpatrolled car entrance

access. A majority of gates is patrolled by one/two guards, checking cars driving through, but rather indifferent to pedestrians. By means of on-site observation, anyone, including Caucasians, could enter with ease, so that locals can walk through a *xiaoqu* to shorten walking distances. In the entire case study area there are only two buildings completely free of fences, the Walmart and an office building on the opposite side of the street, beside a public square. The average distance between *xiaoqu* entrances is around 360 meters.

Green/water space

Fig. 65 shows the type and use of open areas. Space enclosed by fences or walls has always been considered as 'place', carrying meanings and shared values, since ancient China. From this point of view, it is no wonder that most outdoor recreational activities are happening inside the *xiaoqu*, often in landscaped areas with lawns, plants and trees. There can be found elderly chatting, playing or doing physical exercises, their bikes showing that some of them come from another *xiaoqu*. Open parks have still to be appropriated by local inhabitants though. They are used as transitional spaces, e.g. shortcuts, but are not seen as places to be enjoyed, and, according to on-site observations, they were almost always deserted, even though their overall landscape quality was better than green spaces inside *xiaoqu*.

A large plot of land, beside Walmart and located along the central axis of Pujiang, because of its neglected and non-designed state, was converted into an orchard, cultivated by different people. It is a hint that an amount of informal temporary uses is highly needed in case of quickly built and inhabited neighborhoods. Similarly to enclosed open spaces, commercial streets are an ordinary component of the historical Chinese city. The analyzed streets with shop brackets selling their goods and services were lively, while streets bordered by fences, especially the ones located far from the underground station or from public functions, hosted few passers-by. In regard to typologies imported from the West, in Pujiang south we found an example of 'urban' square. A few people were sitting on their own, some of them eating, indicating a potential that could be more consciously exploited, if adequate services and businesses were located there. From this point of view, Walmart plays a great role as an attractor. Because of its numerous offers of services (including a post-office) it represents a central reference for the neighborhood's inhabitants. Its internal open spaces mimic an urban environment, halfway between an enlarged alley and a small plaza.

Sqm paved space/inhab.	Sqm park/inhab.	Sqm appropriated space/inhab.
1	1,7	2,5

Public paved space 1,8%

Public park 3,2%

Appropriated space 4,7%

Open space inside *xiaoqu* 90,3%

Canal

0% Floor space   50%   100%

N   0   250 m
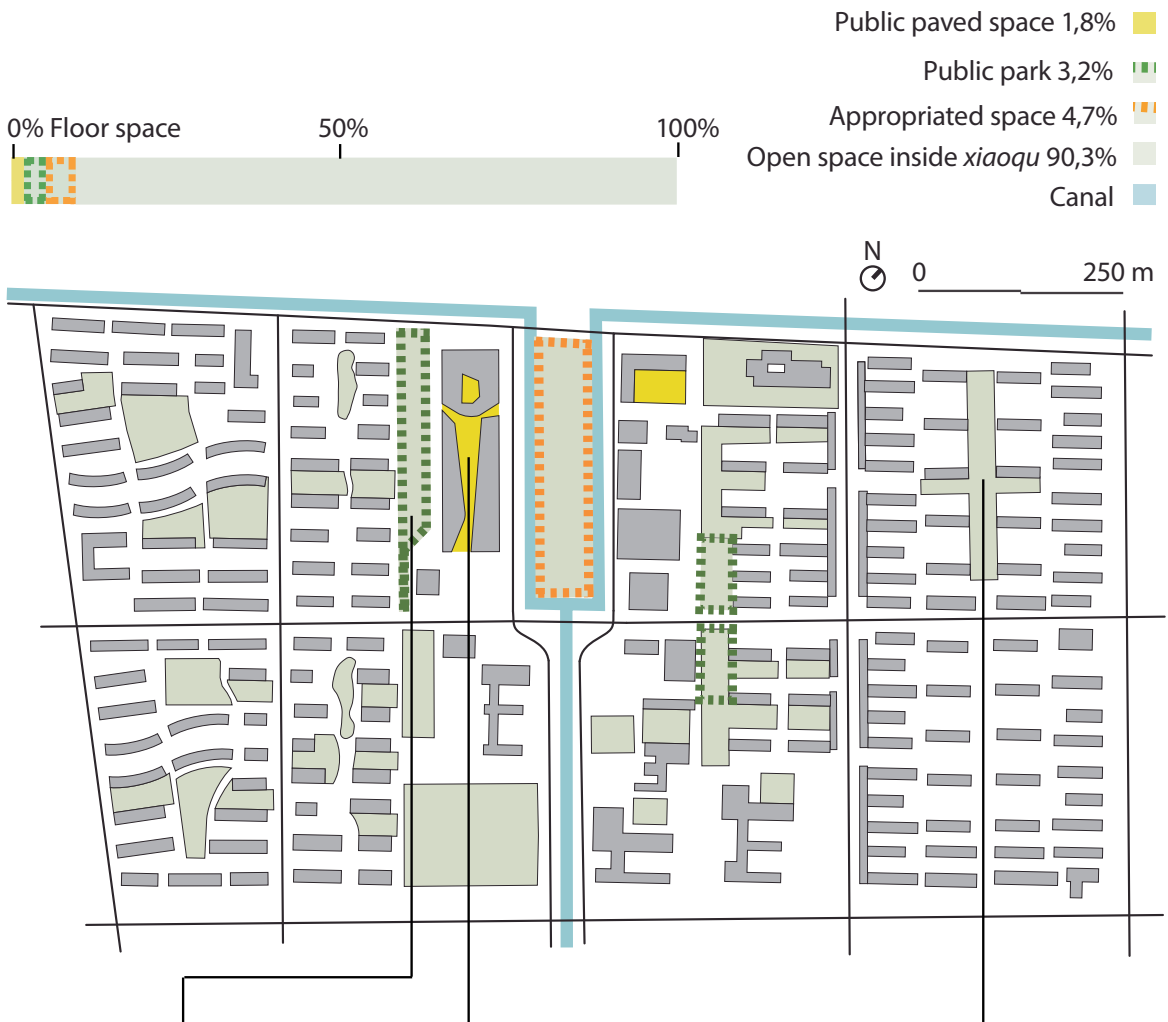
Figure 65: type and use of open space. Photographs from left to right: underused park; Walmart's internal square; open space inside *xiaoqu*

Discussion

Diversity of uses is probably the single most important factor contributing to the liveability of new Chinese peripheries. A balanced mixture of uses, like in certain city-centers, is a historical process adjusting over time, and the problem that urban designers (among other professionals) have to face is: how to make instant neighborhoods work from the beginning? Obviously, the location of a new development adjacent to an existing town has the advantage of relying on already functioning infrastructure and services, while developing its own. In this respect, enormous progress could be made in terms of policy-making and planning in carefully selecting the most suitable sites where to build new communities.

Moreover, how do we set targets to define successful urban design? We maintain that each community has its own specific goals to achieve and issues to solve, and that the goal of urban design is to be appropriate to the context, i.e. being relative instead of normative or prescriptive. If in general terms neighborhoods should be diverse, human-scaled and relying on existing resources (Talen 2010), specific design strategies should be a response to concrete local calls. In this case, the lack of enough services. Office-space is often too expensive and grouped in clusters, remaining empty and creating vast unused lots in the town fabric. From this point of view, SOHOs should be fostered, spread in a more discreet way in every compound, helping creating a stronger mixture of people during different times of the day.

Commercial activities, according to our analysis, are in deficit, as proved by the many examples of inhabitants converting their ground-floor apartment into a business. Every compound should have, within walking distance, commercial activities targeting daily needs (e.g. restaurant/eateries, food-shops, grocery stores). Single-story, narrow typologies suffice for this goal in most cases, while two-storey, larger and more expensive shops are often left empty. Brackets of shops, when present, are always designed along *xiaoqu*'s borders; it seems worth to experiment with commercial typologies inside compounds, injecting functions targeting the entire neighborhood, such as a sport facilities, health-care services, entertainment. This could help breaking the isolation and hermeticism of the compound-archipelago by the mere fact that people living elsewhere would have a reason to enter another compound. Conversely, such a particular function could also be used as an element fostering identity, distinguishing through specialization one *xiaoqu* from the other. These opening-up steps could be achieved, though, only through

a compromise with security issues, which may be more symbolic than actually needed. Room for self-adjustments over time and the need of flexibility is visible in various kinds of informality, from the afore-mentioned shops opened at ground-floors of apartments, to agricultural activities on left-over plots of land, to various kinds of street stalls.

When planning and building are carried out quickly, without participation from the bottom, often the outcome is not calibrated to real needs. In this respect, temporary uses, especially related to agricultural purposes, should be recognized as having manifold beneficial effects. Inhabitants of Pujiang Town are just beginning to appropriate their neighborhood. By initiating informal activities and transforming the town's built space, they are gradually creating a bottom-up project fitting their needs.

Even though 'the enclave should be understood as the typological success formula of market-controlled urbanization' (Mars & Hornsby 2008:187), incidentally reflecting the traditional Chinese preference for familiar and community relationships over civic ones, this urban model is helping exacerbating social segregation, a harm for future societal well-being. Within this archipelago some islands stand out. They are neighborhood shopping centers, combining convenience, luxury goods and entertainment. They represent the emergence of a middle-class lifestyle, where entire families enjoy going out and spending weekends shopping (it is not a coincidence that many attractions inside such commercial centers are directed to children). They indicate the birth of a hybrid public space, one mainly devoted to commerce but capable of hosting a number of additional activities, thanks to its large squares, pedestrian alleys and mix of low- and high-quality services with corresponding prices. Our analysis confirms that 'commercialization is [...] indispensable for the genealogy of [...] public spaces' (Hassenpflug 2010:32) and that the private sector is destined to play an ever-increasing role in this process. When children, now used to go to a shopping center on a weekend, will grow up, those spaces will appear to them a natural and indispensable component of city-making.

Most of the urban design issues found in the case study relate to the lack of shopping options and services, mismatch between available and desired architectural typologies, lack of low-cost working spaces and allotments to cultivate, oversupply of offices, limited pedestrian permeability increasing walking distances. A possible strategic pathway to be followed, when aiming at progressively move away from the compound-archipelago model, could be to downscale the tendency toward specialization from the neighborhood- to the *xiaoqu*-level, so that a mix of uses happens within blocks rather than within

districts.

Considering the past 100 years, Shanghai has been based on different kinds of walled or enclosed urban typologies; failing to acknowledge this and to understand the forces behind the production of the Chinese city would be naïve. But to consider the *xiaoqu* a given model to be followed seems to us reactionary thinking; it should rather be challenged, since it is useful only as long as it provides an anchoring point for newly-established neighborhoods. The *xiaoqu* could then be gradually transformed into a more inclusive model (abandoning gates, mixing uses on a finer grain, favoring low-rise but high-density typologies, etc.) once a community gains self-confidence.

China's central government has recognized the drawbacks of the compound archipelago in its new 2016 guidelines for urban planning and construction management, calling for a gradual opening of compounds by building more access roads (新华社 2016). These new regulations have unleashed a wave of discontent among apartment owners, who do not want to trade their privacy and sense of security for the public good. This case highlights the struggle between top-down and bottom-up initiatives, between individual interests and collective good. It remains to be seen with which methods and to which degree the central government will enforce the new regulations, and what kind of compromise between sense of enclosure, diversity of uses and higher walkability can be reached to increase liveability. In fact, '[a]s urbanization levels off dramatically in East Asia between 2030 and 2090 [...], will peri-urban areas become stranded remnant landscapes [...], or will they have consolidated into sustainable, [...] clustered [...] landscapes?' (Webster 2011:642)

APPENDIX
Mendrisio as a European referential case

Comparative analysis of shrinking cities is a well established trend in the field of planning (e.g. Oswalt 2006, 2008; Müller & Siedentop 2004). An attempt to internationally compare peripheral areas, though, remains almost unchartered territory, as the criterion for comparability shifts from a socio-economic to a spatial one. Complementing what we have done with Pujiang in Shanghai's periphery, we present here the case of a European peripheral town: Mendrisio, Switzerland.

Mendrisio

The paradigm [...] seems to imply a local scale that, bypassing the filters of national states, directly interacts with the global scale, thanks to the intertwining of urban physical networks and virtual economic ones.

Ratti 2017:22

Mendrisio is a Swiss town of 6'800 inhabitants in the Ticino canton; it is situated along the preferred route connecting Italy—in particular Milan and its surrounding areas—with central Europe. In this respect, it belongs to Milan's periphery, which counts some 8 million inhabitants, and heavily relies on cross-border commuting, which involves a total of 55'000 people migrating daily between Italy and Ticino. This is a territorial constellation spanning different provinces and nations, which causes, on the one hand, fragmentation—of one's life between different locations with a weakening of locational ties—and a strengthening of social networks, thanks to information technology, on the other. We may now wonder how this territory can remain productive, socially cohesive and liveable (Balducci 2017). As Perulli (i.CUP-IRE 2008:34) points out, it should guard off against both the dispersion of the city through generic, low-intensity urbanization, and backward-looking, defensive regionalism.

Despite being in a peripheral location between the city of Lugano (20 km to the north) and Milan (50 km to the south), Mendrisio has been able to devise strategies to connect to global logistics, shopping, and educational routes, while maintaining its local, suburban character. First, the logistics industry has exploited the commercial exchange passing through Ticino, and has proven to be reliant and efficient, given the straightforward Swiss bureaucracy and attractive tax system. Moreover, a continuous investment on infrastructure has helped achieving a state-of-the-art transportation network (e.g. TILO trains connecting Ticino with Milan). Second, Mendrisio is on the global map of luxury and fashion thanks to the outlet called Fox Town, attracting customers from as far as the Middle East and Asia, who usually reach Fox Town with a direct link from Malpensa Airport. Third, an institution like the Mendrisio Academy of Architecture has made the name of Mendrisio known to the global architectural scene, relying on a mixture of Swiss and international instructor. We can thus see how a town with a small population and located between two larger urban centers, has been able to plug into global routes.

This has not come without negative consequences, though. As Biondillo (2017) and Botta (2017) highlight, Mendrisio and other border towns and villages have been undergoing an unregulated urban development, wasting natural land in loose and scattered urbanization, producing a disorganized, ugly suburban environment. Botta stresses the lack of coordination, know-how and goodwill of local planners and of municipal urban regulations and plans, while the cantonal authority remains at bay. Moreover, at night, during weekdays and semester holidays, Mendrisio can seem rather empty, as much of its working population, patrons and students return home or travel. This generates what Garlandini (2014) calls "grandezza ad intervallo", intermittent size, which deeply affects local businesses such as restaurants. Moreover, as in Japan and in other western countries, issues relating to population aging and the necessity to update public space and services according to the needs of the elderly, become more and more prominent (Sassi & Molteni 2010).

Morphological factors

The case study area spreads over an area of 282 ha and hosts some 6'800 inhabitants and some 10'000 workplaces. Even though since 2009 a number of smaller towns has been administratively annexed into the municipality of Mendrisio, for the purpose of this analysis we have considered the former municipal borders of Mendrisio. A railway line

connecting Milano and Lugano crosses north-south the case study area. The old town center is located to the far east of the case study area, while the industrial and commercial park of Mendrisio lies to the west of the railway (Fig. 66).

Density/compactness

All relevant metrics are graphically summarized in Fig. 67. The Spacematrix diagram indicates a total GSI of 0.15, i.e. 15% of the case study area is occupied by buildings, a FSI of 0.43, an OSR of 1.97, with an average number of floors of 2.9. These indicate that Mendrisio as a whole is low-rise, loose development, displaying a suburban character. Nevertheless, there are differences within the case study area.

The historic center is almost three times as compact and two times as dense as the average in Mendrisio, being characterized by a small core of 3-storied buildings forming a continuous front along narrow streets, typical of a medieval town structure. Given the hilly topography, such nucleus does not unfold concentrically, as in most European
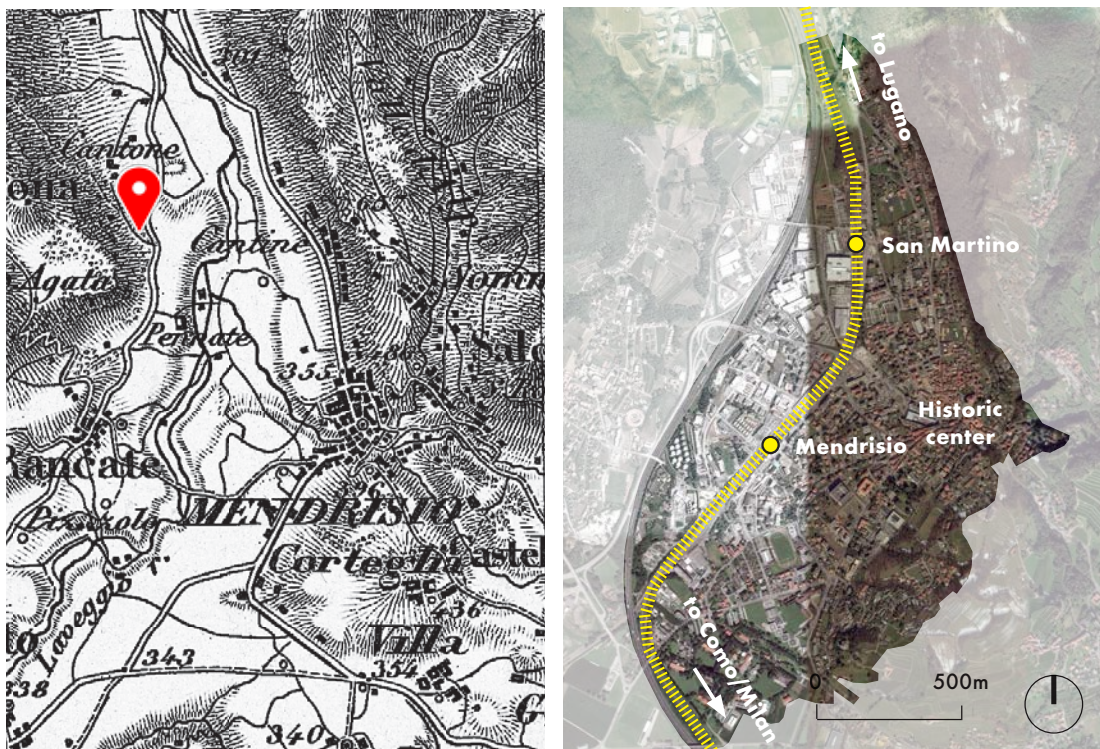
Figure 66: left, Mendrisio as represented in the so-called Dufour map of 1861; right, aerial image of Mendrisio

Figure 67: TOP from left to right: Spacematrix diagram; building height map
BOTTOM from left to right: alley in historic center; typical residential area
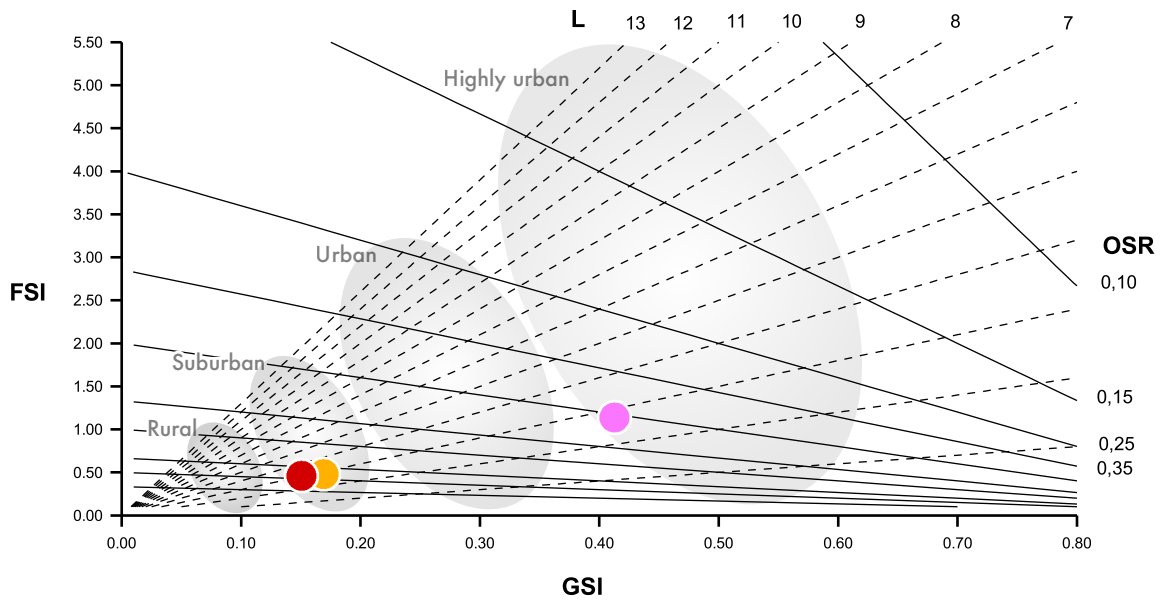
1-3F

4-6F

7-10F

10+F

0   500m

historic towns, but stretches north-south, following a given topographical plateau. The center of Mendrisio displays thus a highly urban character, despite the absence of highrise buildings.

In terms of building height, higher structures appear to be scattered throughout the whole case study area, without an apparent criterion or recognizable pattern. In regard to building footprint, to the west there can be seen large masses, the town's industrial area. The population density, 24 pph, is very low, typical of suburban to rural developments.

Diversity of uses

All relevant metrics are graphically summarized in Fig. 68. First, we have quantified diversity of uses both at ground floor (MXI GSI)—where pedestrian activities take place—and in regard to the total floor space (MXI FSI). At ground level, 42.9% of built space is devoted to housing. Visiting functions (e.g. shops, public services) occupy 38.4% of the total ground floor space, while working functions (e.g. offices, factories, workshops) constitute 18.7%. Figures regarding the diversity of uses over the total floor space show a higher proportion of housing (52%) and lower amount of visiting functions (30.4%). By these figures we understand that the case study is a very mixed area, where visiting functions are abundant and factories and offices represent a substantial part of the building stock. In fact, Mendrisio hosts a larger amount of workplaces than residents.

Second, we have mapped the spatial distribution of uses. There can be identified four different areas. First, the town center mainly hosts mixed typologies where shops at ground floor give way to residence in the upper storeys. Second, the monofunctional residential areas characterized by detached houses surrounded by private gardens. Third, the educational and medical compounds, marked in yellow, to the east of the railway. Fourth, the industrial and commercial park to the west of the railway, where housing is almost absent.

Walkability

All relevant metrics are graphically summarized in Fig. 69. With two betweenness simulations we aimed at predicting pedestrian flows in the case study area, according to shortest paths. In the first simulation (a), all residential and office buildings represented origins, weighted according to the number of floors, while Mendrisio station represented a single destination. Routes were calculated according to shortest paths, resulting in a

maximum value of 2'791 routes and a minimum of 1. As expected, pedestrian flow is at its highest around the train station, which pedestrians would reach following four main routes, all to the east of the station, where the majority of housing is located. In a second simulation (b), all residential and office buildings represented origins, weighted according to the number of floors, while all commercial activities represented destinations. Routes were calculated according to shortest paths, only considering routes up to 100 m long, resulting in a maximum value of 1039 routes and a minimum of 1.

A gravity analysis was run with a 500 m radius and a β value of 0.003 (corresponding to the slightly demanding, hilly topography of Mendrisio). It indicated a maximum number of reachable shops of 238 and a minimum of 1. The results show a monocentric array of shops and businesses, providing good accessibility to shopping around the historic center, stretching towards Mendrisio station, while the northern, southern and western portions of the case study area do not provide good access to commercial activities within walking distance. This analysis confirms the pedestrian character of the old town center and the obvious location of shops around the train station.

Green/water space

All relevant metrics are graphically summarized in Fig. 70. Mendrisio is 3-400 m above sea level. It is situated at the bottom of mounts Generoso and San Giorgio, on a hilly topography which soon gives way to steep mountain slopes. The majority of open space is occupied by private green (53.9%), followed by woods or public parks (10.7%), fields (4.5%), agriculture (2.2%) and water space (0.4%). These figures indicate that the case study borrows its suburban character from unbuilt land owned by privates (given the negligible presence of condominiums with own greenery). Given the abundance of such kind of green space, the presence of woods and public parks is limited, absent in the historic center. In fact, they are to be found along the borders of the case study area, flaking the mountain slopes as interstitial spaces between and around the highway and railway.

Fields and agricultural uses take place in-between transportation infrastructure as well, in proximity to the industrial and commercial park, where residences are unsuitable for obvious noise and accessibility concerns. Water space has a negligible presence, constituted by two streams overshadowed by the railway. In sum, while private green is uniformly spread across Mendrisio, with the exception of the historic core, public parks,

Figure 68: TOP from left to right: MXI diagram; building use map
BOTTOM from left to right: industrial and commercial zone; high-street leading to historic center

Legend:
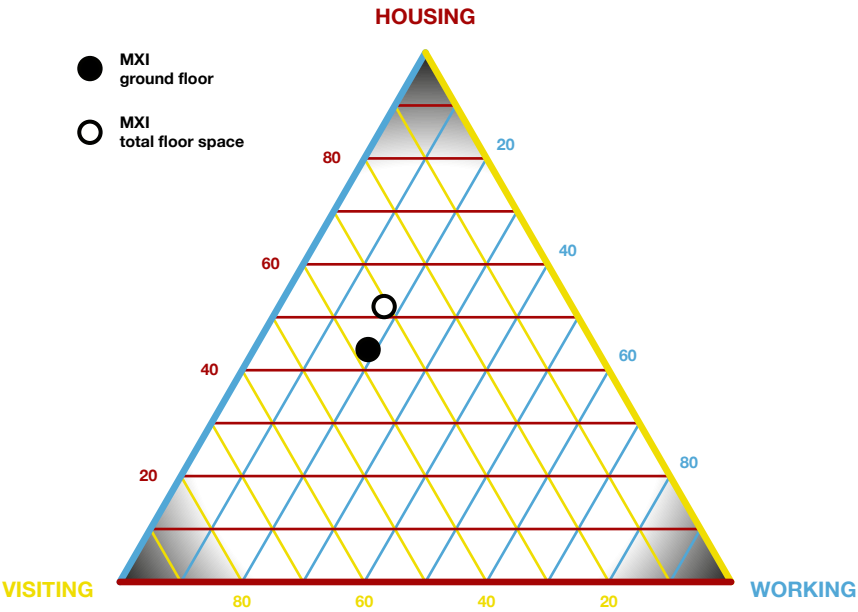
- H
- H+W
- W
- W+V
- V
- V+H
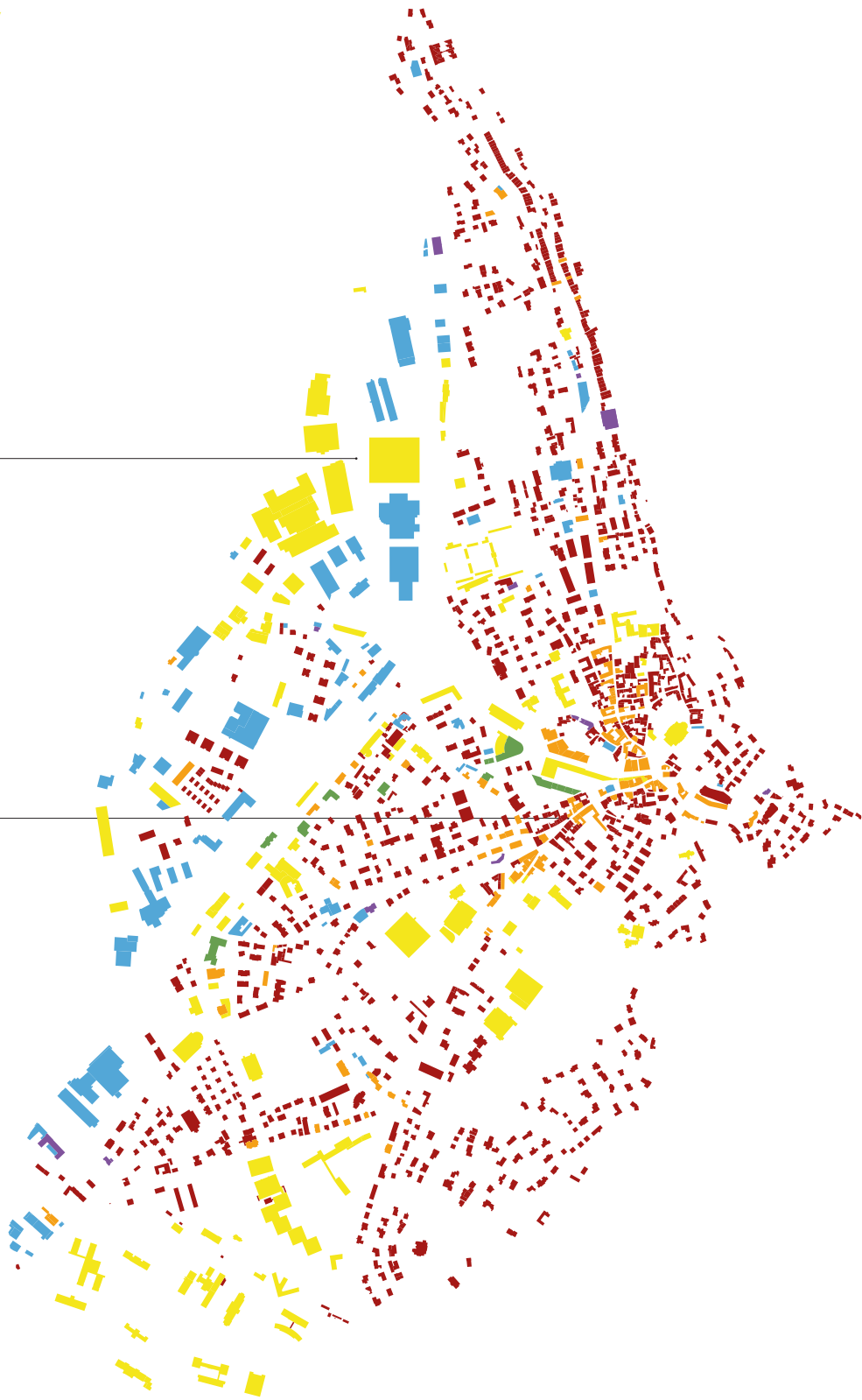
0   500m

Figure 69: TOP from left to right: two variations of betweenness analysis; gravity analysis

NO. OF ROUTES

2791

1395

1

BETWEENNESS a)

ORIGINS:
residential and office buildings
DESTINATIONS:
train station

Origins weighted; no detour

NO. OF ROUTES

1039

520

1

BETWEENNESS b)

ORIGINS:
residential and office buildings
DESTINATIONS:
commercial activities

Origins weighted; no detour; <100m

NO. OF REACHABLE SHOPS

238

119

1

0   500m
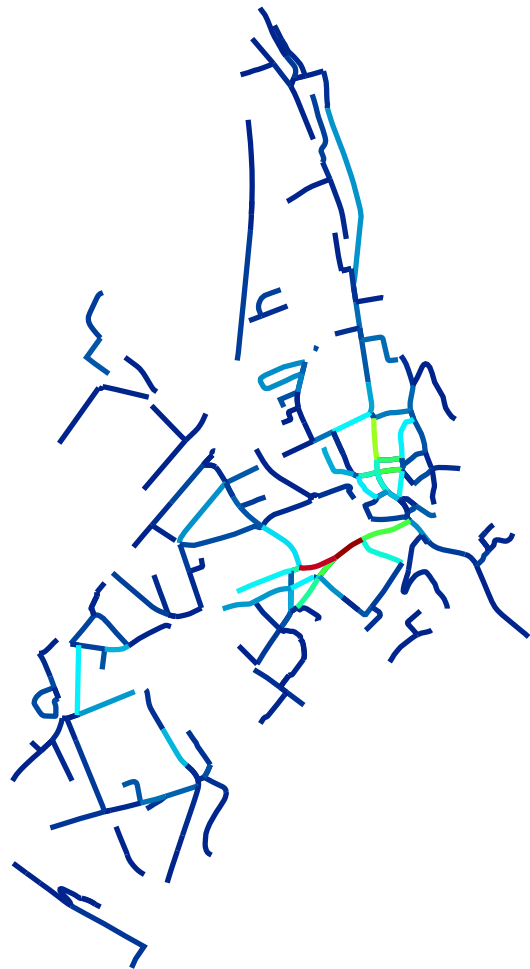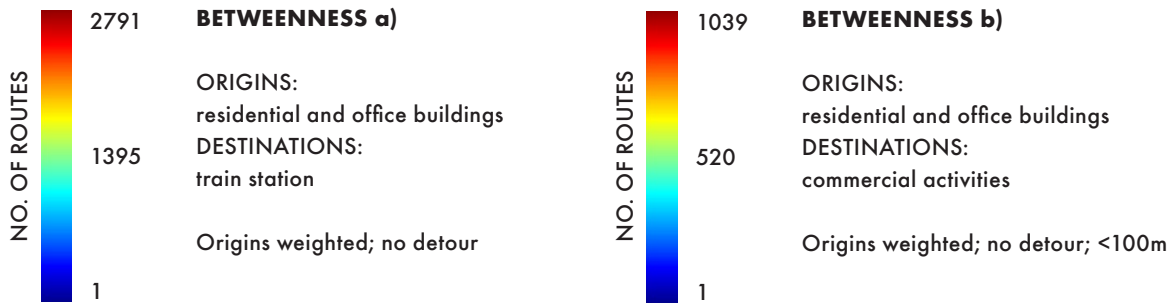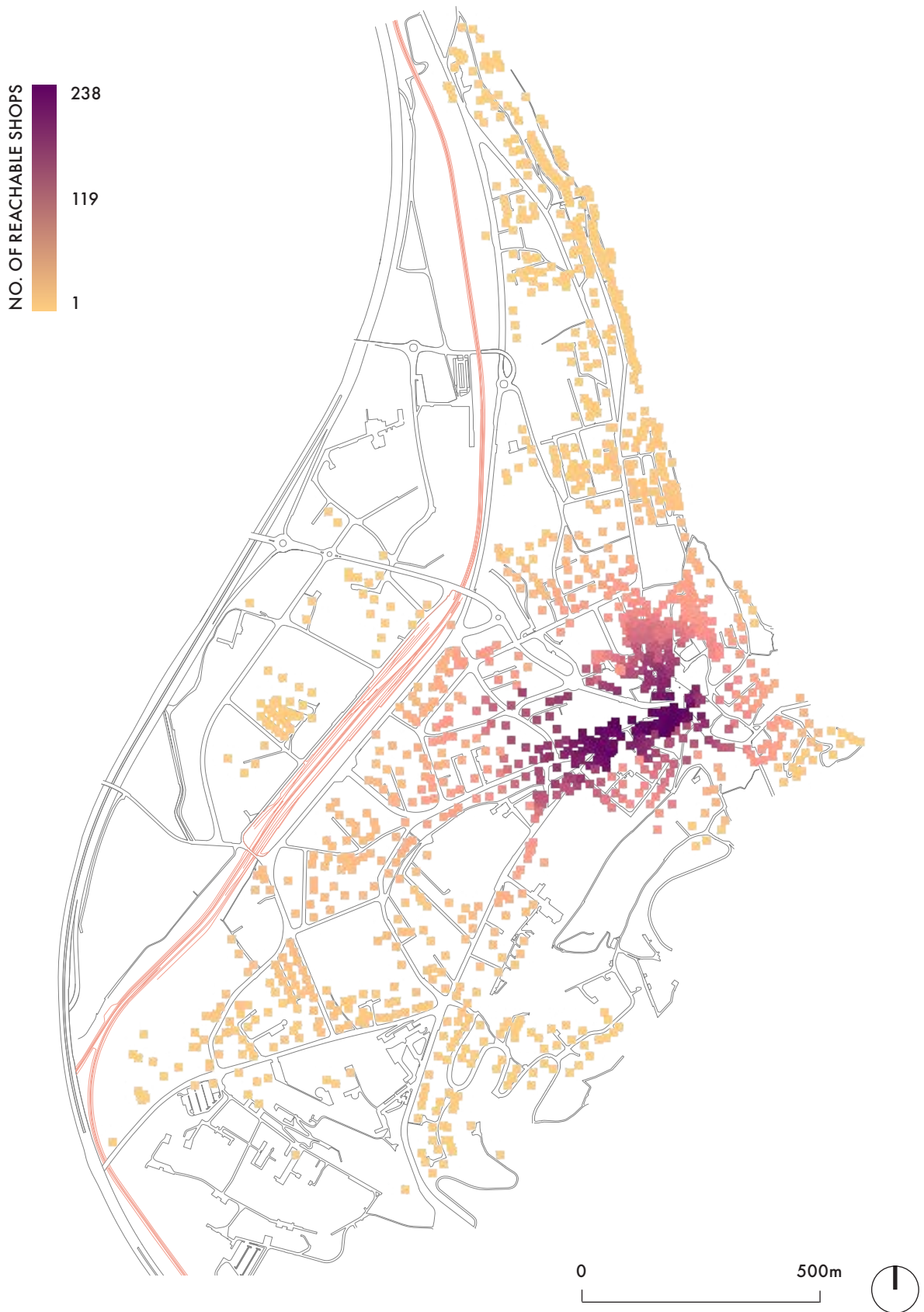
Figure 70: TOP from left to right: amount and type of green/water space; green/water map
BOTTOM from left to right: woods bordering grassland; road flanking the Laveggio river; public park within the premises of the Academy of Architecture

Private	Woods	Agriculture 2.2%
53.9%	10.7%	Water 0.4%

0   Fields   100
                                      4.5%
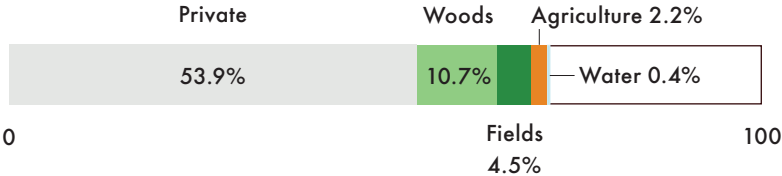
3-500m.a.s.l.

Woods

Fields

Agriculture

Water

0   500m
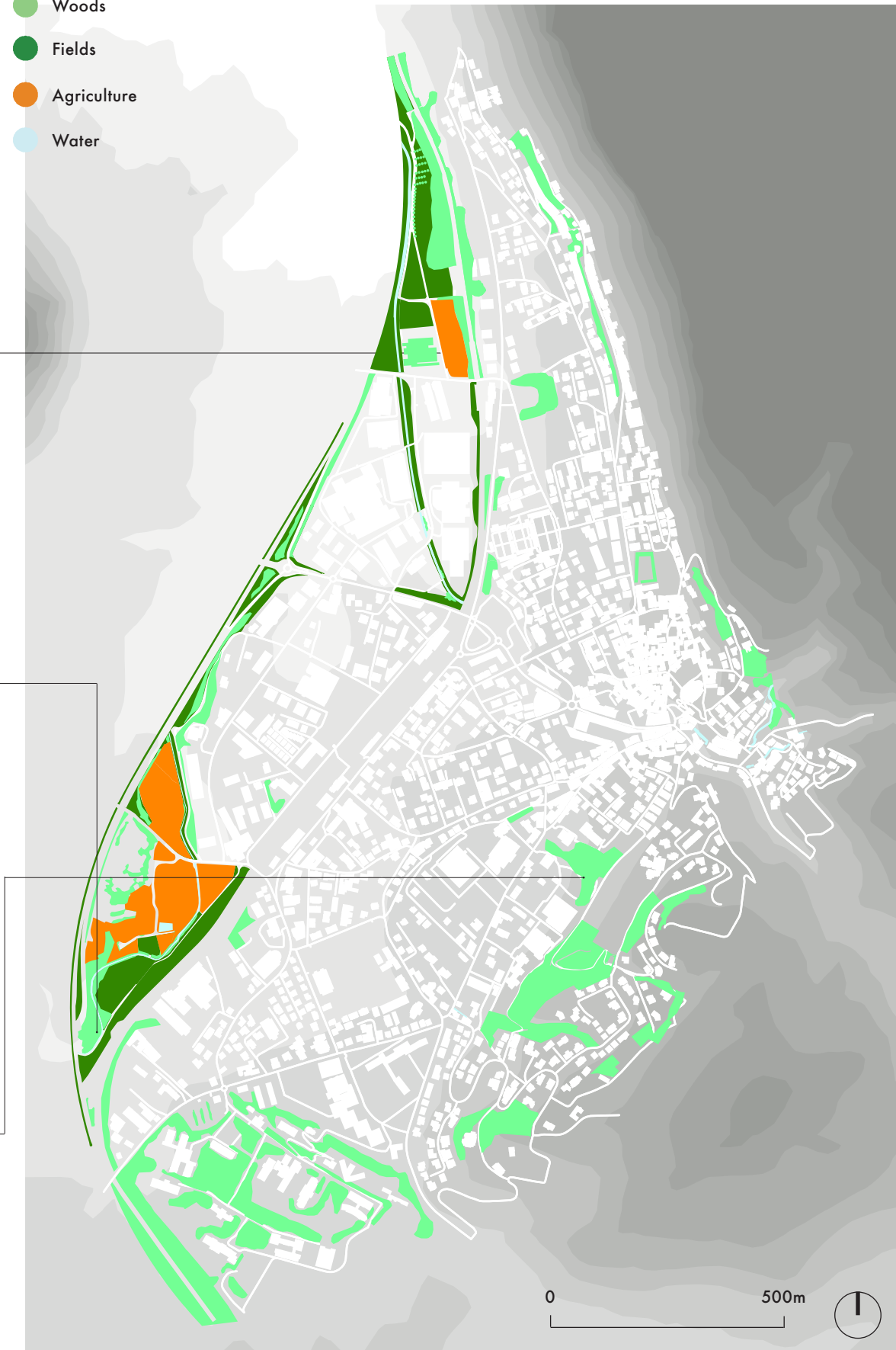
woods and fields are mainly present in interstitial spaces close to infrastructure to the west of the case study area. Some woods can also be found toward the east of Mendrisio, as a topographical plateau gives way to mountain slopes.

Discussion

Ticino as a whole can be considered a peripheral area as it is lies between Milan and Zurich, the largest urban centers in the region. From this point of view, it benefits from a locational advantage, being at the crossroad of the exchanges (whether goods or culture) between central Europe and Italy. Peripheral areas in Tokyo do not share such advantage and unilaterally rely on central wards for workplaces and regional services. Despite this, two main similarities can be pointed out: the gradual abandonment of less accessible (mountainous) villages and small towns, and the population aging and consequent need to adapt urban space to the needs of the elderly.

Mendrisio has been able to tap its locational potential, maintaining a considerable amount of workplaces, even of industrial nature, improving transportation infrastructure and creating the Academy of Architecture, which is now a worldwide-known institution. Municipalities in Ticino are putting effort in the adaptation of public space to the needs of the elderly. From this point of view, it becomes crucial to devise urban design and urban management strategies to adapt outdoor (public, shared and private) space in terms of accessibility, safety and attractiveness. Such strategies should be project-orientated and tackle specific issues at the neighborhood/city scale, framed by an analytical assessment considering the needs of local inhabitants.

In sum, there is a certain convergence in the development of Ticino and Tokyo's peripheral areas, socio-economic and geographical differences notwithstanding. These similarities are the result of a common trend of population aging. The experience of Ticino suggests to focus the efforts of municipalities and *machizukuri* groups in Japan toward the adaptation and improvement of outdoor public space as a way to foster the mobility of the elderly (having positive externalities for their health), their access to services and chance of social contacts.

APPENDIX D
Calculation tables

Kunitachi (Chapter 4)

GSI

	Housing	HW	Working	WV	Visiting	VH	Tot.
1-3F (m2)	572701.21	540.86	3131.67	6856.45	85040.69	21278.35	689549.23
4-6F (m2)	19150.66	774.24	968.3	7050.69	51890.77	10801.56	90636.22
7-10F (m2)	2911.58	0	486.43	2160.86	915.29	3102.05	9576.21
10+F (m2)	1984.29	0	0	0	0	1666.68	3650.97
Tot. (m2)	596747.74	1315.1	4586.4	16068	137846.75	36848.64	**793412.63**
Tot. (%)	75.2	0.17	0.58	2.03	17.37	4.64	100
	75.2		**0.7**		**24.0**		**100**

FSI

	Avg. No. F	Tot.	%	Housing	Working	Visiting
1-3F (m2)	2.5	1723873.075	74.88	1464481.84	18654.71	240736.53
4-6F (m2)	5	453181.1	19.68	142056.50	33818.50	277306.10
7-10F (m2)	8.5	81397.785	3.54	40954.88	16692.88	13042.88
10+F (m2)	12	43811.64	1.90	42144.96	0	20000.16
Tot. (m2)		**2309889.93**	100	1689638.18	69166.09	551085.66
Tot. (%)				**73.1**	**3.0**	**23.9**

Land uses

	m2	%
Buildings	793412.63	31.7
Streets*	409283	16.3
Private paved	460929.66	18.4
Private green/non-paved	564770.39	22.5
Public green	273941.07	10.9
Agriculture	0	0.0
Forest	0	0.0
Undeveloped	0	0.0
Water	3986	0.2
Tot.	**2506322.75**	**100**

*Assuming 5.5m standard street width;
Total street length of 70813m

Paved footprint

	Housing	HW	Working	WV	Visiting	VH	Tot.
1-3F (m2)	848460	842.71	40717	9509.4	105360	31111.9	1036001.01
4-6F (m2)	24368	1012.2	1174.9	96141	60345	14294	197335.1
7-10F (m2)	4660.7	0	687.38	3513.5	1340.1	4678.8	14880.48
10+F (m2)	3575.6	0	0	0	0	2550.1	6125.7
Shacks							0
Tot. (m2)							**1254342.29**

Population	People per ha
30000	119.70

Tama New Town (Chapter 5)

			GSI							FSI						Land uses		
	Housing	HW	Working	WV	Visiting	VH	Tot.		Avg. No. F	Tot.	%	Housing	Working	Visiting			m2	%
1-3F (m2)	108840	110.71	2804.3	1082.5	50939	6121.8	169898.31		2.5	424745.775	20.15	281448.77	8745.21	134551.80		Buildings	425773.92	16.2
4-6F (m2)	112790	0	0	0	58602	1916.5	173308.5		5	866542.5	41.10	571616.00	0	294926.50		Streets*	692250	26.3
7-10F (m2)	8474.8	0	0	1720.7	37161	2333.9	49690.4		8.5	422368.4	20.03	84941.05	12905.25	319923.10		Private paved	149518.46	5.7
10+F (m2)	19725	0	1422.6	3065.5	439.61	8224	32876.71		12	394520.52	18.71	327164.00	40062	140749.32		Shared green	429970	16.3
																Private green/non-paved	540261.18	20.5
Tot. (m2)	249829.8	110.71	2804.3	2803.2	146702	18596.2	425773.92			2217033.445	100	1265169.82	61712.91	890150.72		Public green	378000	14.3
																Agriculture	0	0.0
Tot. (%)	58.7	0.03	0.66	0.66	34.46	4.37	100					57.1	2.8	40.2		Forest	0	0.0
	58.7		0.7		39.5		100									Undeveloped	0	0.0
																Water	19502.1	0.7

			Paved footprint					Population	People per ha
1-3F (m2)	153630	158.19	3489.5	1466.8	60385	8274.2	227403.69	11078	42.04
4-6F (m2)	139030	0	0	0	63589	2364.8	204983.8		
7-10F (m2)	10374	0	0	2092	41991	3212.8	57669.8		
10+F (m2)	32187	0	2350.4	4059.2	698.49	11003	50298.09		
Shacks							19416		
Tot. (m2)							559771.38		

Tot. (Land uses): 2635275.66   100.0

*Assuming 4m standard pedestrian path width and 10m for streets. Total pedestrian path length of 41226m. Total street length of 52735m.

Yukarigaoka (Chapter 6)

			GSI							FSI						Land uses		
	Housing	HW	Working	WV	Visiting	VH	Tot.		Avg. No. F	Tot.	%	Housing	Working	Visiting			m2	%
1-3F (m2)	405065.5	7906.06	35451.12	428.9	63243.9	5135.49	517230.97		2.5	1293077.425	71.42	1032226.08	97177.21	163674.14		Buildings	583683.85	15.2
4-6F (m2)	11997.04	0	0	324.9	18428.32	3959.31	34709.57		5	173547.85	9.59	75822.44	1300	96425.81		Streets & squares*	621214	16.2
7-10F (m2)	5829.83	0	0	0	4757.5	0	10587.33		8.5	89992.305	4.97	49553.56	0.00	40438.75		Private paved	242944.14	6.3
10+F (m2)	10492.74	0	0	0	0	10663.24	21155.98		12	253871.76	14.02	243208.52	0	127958.88		Private green/non-paved	1066749.52	27.8
																Public green	381445.74	9.9
Tot. (m2)	433385.11	7906.06	35451.12	753.8	86429.72	19758.04	583683.85			1927784.98	100	1400810.59	98476.81	428497.58		Agriculture	462431.12	12.1
																Forest	327730.13	8.5
Tot. (%)	74.2	1.35	6.07	0.13	14.81	3.39	100					72.7	5.1	22.2		Undeveloped	96626.5	2.5
	74.2		7.4		18.3		100									Water	52275	1.4

			Paved footprint					Population	People per ha
1-3F (m2)	595330	10719	46273	612.3	77013	7030,4	729947.3	20000	52.15
4-6F (m2)	13950	0	0	403.19	19943	4651.8	38947.99		
7-10F (m2)	5322.7	0	0	0	5859	0	11181.7		
10+F (m2)	13312	0	0	0	0	14258	27570		
Shacks							18981		
Tot. (m2)							826627.99		

Tot. (Land uses): 3835100   100.0

*Assuming 6m standard street width. Total street length of 89797m.

Tama Nature Town (Chapter 7)

GSI

	Housing	HW	Working	WV	Visiting	VH	Tot.
1-3F (m2)	109540	110.71	4447.4	2099.3	46451	10140	172788.41
4-6F (m2)	62827	3718.6	0	0	57526	1916.5	125988.1
7-10F (m2)	8474.8	0	0	1720.7	37161	1602.7	48959.2
10+F (m2)	10999	0	1422.6	3065.5	0	8224	23711.1
Tot. (m2)	191840.8	3829.31	4447.4	3820	141138	21883.2	**371446.81**
Tot. (%)	51.6	1.03	1.20	1.03	38.00	5.89	100
	51.6		**2.2**		**44.9**		100

FSI

	Avg. No. F	Tot.	%	Housing	Working	Visiting
1-3F (m2)	2.5	431971.025	24.51	289226.07	14378.16	128366.80
4-6F (m2)	5	629940.5	35.74	336675.40	3719	289546.50
7-10F (m2)	8.5	416153.2	23.61	84941.05	12905.25	319191.90
10+F (m2)	12	284533.2	16.14	222452.00	40062	135474.00
		1876938.175	100	933294.52	71064.46	872579.20
				49.7	**3.8**	**46.5**

Land uses

	m2	%
Buildings	371446.81	14.1
Streets*	543100	20.6
Private paved	132221.28	5.0
Shared green	193410	7.3
Private green/non-paved	474295.47	18.0
Public green	234170	8.9
Agriculture	499710	19.0
Allotments	167420	6.4
Undeveloped	0	0.0
Water	19502.1	0.7
Tot.	**2635275.66**	**100.0**

Paved footprint

	Housing	HW	Working	WV	Visiting	VH	Tot.
1-3F (m2)	154310	158.19	5466.4	2620.4	54704	13737	230995.99
4-6F (m2)	77689	4504.9	0	0	62290	2364.8	146848.7
7-10F (m2)	10374	0	0	2092	41991	2154.8	56611.8
10+F (m2)	16862	0	2350.4	4059.2	0	11003	34274.6
Shacks							19416
Tot. (m2)							488147.09

Population	People per ha
11078	42.04

*Assuming 4m standard pedestrian path width and 10m for streets. Total pedestrian path length of 31859m. Total street length of 41566m.