Sharing Cities: Catalysts for Developing New Models for Urban Space

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ABSTRACT

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"Sharing city" is a prevalent worldwide term now in the context of the emerging sharing economy. This thesis will refine the term of "sharing economy" first and keep investigating the possible current and potential future social effects and spatial implications of sharing activities in urban space. The goal of this paper is to anticipate the major shift of urban space' usages in the process of increasingly sharing economy growth. Landscape architects can positively help the transformation of urban space to provide higher flexible spaces so that people can image possibilities. This thesis will focus on three major questions. The first section will address the question of how sharing activities will impact urban physical fabrics. In the first part, the paper will focus on investigating a wide range of sharing activities' current and future possible spatial implications. The second question of this thesis is that how sharing activities reshape the city of social life. The key to the second question is to find the social effects of various sharing activities. The first two questions are intertwined. Literature review and design case studies will be conducted to address them. Finally, diving into landscape architect's perspectives, the following question is eventually to be addressed "how landscape designer should design urban spaces coordinating with sharing economy?" This thesis will take Seattle's University District as a case study for exploration, as Seattle is entering the era of "sharing city"-potentially a catalyst for more environmentally sustainable and culturally innovative urban space. The final result of this thesis will be several scenarios of design proposals that show the possible transformation of urban space by applying conclusions from the former two sections of the thesis.

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1. PREFACE

As a UW graduate student living in Seattle's University District, I personally experience and benefit significantly from a sharing economy. I share living space with my roommates, who were strangers when we first met but gradually became friends. We share the apartment rent, and share space to live, cook and study. We get along well with each other and now share meals, share jokes, homesickness, experiences, and social networks. Even though we sometimes have conflicts, we have learned to agree to compromises and forgiveness. Sharing living space not only contributes to saving on rent but also avoids being socially isolated, helps our loneliness and encourage us to grows up.

With the rise of sharing city, contemporary generations are fortunate to live advanced collaborative lifestyles. "Sharing economy" has become a buzzword in our daily life. People in today's urban environments are able to ride shared bikes, take a shared car, rent an Airbnb (sharing bedroom), work in co-working space, eat with neighbors in shared kitchens, get clothes from shared closets and learn or share knowledge online. Sharing is spreading physically and with the support of efficient digital platforms. Sharing is important for low-income individuals and students financially supported by families, sharing is important because of cost saving and convenience. Students are not a living static group during their time in school. They are constantly moving and looking for new living places at the end of a quarter or the beginning of a new quarter. Selling and buying second-hand furniture, books or other tools are common occurrences on social media such as Facebook and WeChat. Normally, these transactions are cheap or even free. This is the way that many students live in U-District share things and experiences with each other.

In the past, students usually had to buy a car when they moved to Seattle for school. This is changing now and it's no longer a necessity for current

generations. Public transit is improving and can take us to most common destinations. If we plan to go to a destination beyond the range of public transit, sharing cars would be the top choice. For some of my friends, their cars gradually become idle. Driving cars to school is much more expensive than taking public transit with Husky cards because of parking fees and the expense of gas, car care, and maintenance. Thus, some of my friends sold their cars, and take bikes, public transit or shared vehicles. It is a relief for students not to have to spend thousands of dollars on a car and paying for car issuance.

Sharing is spreading, not only for students in Seattle's U-district, but worldwide, and as a result is changing our lifestyles and reshaping the urban fabric in different ways. Sharing vehicles, like sharing bikes, has millions of users all over the world, which can potentially encourage more bikable cities and more bike-friendly infrastructure. Sharing cars, help reduce the use of private cars, and will contribute to reducing the need for parking spaces. Sharing vehicles reshape our public urban space while sharing space platforms offers more opportunities to reshape private properties. For example, 'Spacious', a platform transforms restaurants into co-working spaces in New York, by opening the doors of restaurants to freelance workers, urban nomads and other flexible creatives in the hours when the restaurants are not normally open. Similarly, living rooms, bedrooms and kitchens can all be shared. Additionally, the opportunities to share tools, resources and experience are all launched by new platforms in different ways.

As a landscape architecture student, I have personally experienced the changes to my life owing to the sharing economy, I became curious about how sharing economies would reshape the urban fabric and how landscape designer could redesign urban spaces in coordination with a variety of sharing activities.

2. INTRODUCTION

2.1. AREA OF INQUIRY

> Human culture in the centrality of collaboration and sharing is more obvious in the city than anywhere else. [1]
>
> ——— Duncan McLaren and Julian Agyeman, Sharing Cities: A Case for Truly Smart and Sustainable Cities.

Historically cities were established to help their dwellers live in collaborative urban environment sharing public spaces and public goods, while every individual contributes their collective efforts. Broadly, a city is a sharing entity, as the city dwellers can access and share public/private spaces including city parks, plazas, college campus, and can benefit from public goods as well such as sanitation, public health, transportation, and education.

It is common for people living in contemporary urban environments to constantly move and travel greater distances more frequently. Mobile lifestyles create diverse cultures of sharing, as sharing is a way to reduce living expenses and bring convenience to individual lives. Cities use sharing to accommodate urban growth in different ways, including fully utilizing urban spaces and saving resources. New opportunities for sharing and collaboration are arising as a result of efficient high technology in both physical urban space and cyberspace.

Sharing cities are better than regular cities, as sharing has new meanings in the era of sharing economy. Sharing cities would be a good city model for urban space because sharing cities have more mindsets and more active participatory process characterized by the principles described below, and perhaps more solidarity, distributed architecture, private sufficiency, and civic abundance. They also provide for common needs and

co-designed solutions; support transformation over transactions, and local control along with global cooperation. Their impact may be enhanced through replication and not just scale but cross-sector collaboration and hybrid solutions. Sharing cities are also a good model for systems thinking and developing empathy, build and fight, and healthy urban environments. (Shareable 2017) Sharing economy, I believe, contributes to developing sharing cities as models for new urban spaces because of their digital economy platforms and contemporary sharing social values.

There are other terms related to “sharing economy” such as the collective economy, collaborative economy, collaborative consumption and access economy etc. The term “sharing economy” is a widely accepted as a characterization of the Internet age. It would be critical for economists to accurately define these new economic models. However, in this thesis, from the landscape architecture perspective, I will simply focus on how sharing-driven economies (for both monetary or non-monetary benefits) shape urban fabric and reshape social life. After conducting research on those similar definitions (collective economy, collaborative economy, collaboration consumption, access economy and sharing economy), I conclude that these similar terms actually represent different functions but operate in the same way in terms of urban landscape. In this thesis, I use the term “sharing economy” as an umbrella term to cover a wide range of meanings that contains all Internet age sharing paradigms.

2.2. PROBLEM STATEMENT AND QUESTIONS

Rapidly emerging and fast-growing sharing economies will shape urban environments in new ways, as mainstream economies have shaped cities in different ways in the past periods. Before the Industrial Revolution, eastern and western cities had narrow streets that were colonized with active urban life, along with small city blocks and mixed-used buildings. When industrial economy arose, previously narrow streets no longer functioned

efficiently. With the development of automobiles, people were able to travel further, so cities began to sprawl. City blocks got bigger, and cities were divided into single-use areas, which we now call zoning. As a result, contemporary citizens travel between urban areas daily. “Zoning is a form of regulation of the use of land that typically is an ordinance adopted by a municipal government. The zoning ordinance includes text and a zoning map that specifies the allowable uses of all parcels of land in the municipality. “(Brooks, Donaghy, and Knaap 2012) Now, as we enter the era of sharing economies, industrial city planning no longer functions well. Urban planners, municipal officials, and environmental scholars realize that our cities are congested with cars, and our streets are no longer walkable, bikeable and comfortable to stay on. *(https://www.ted.com/talks/peter_calthorpe_7_principles_for_building_better_cities#t-611167)* Strictly divide urban lands into different zones result in lots of issues such as traffic congestions, long commute time and environmental pollutions. Thus, researching on sharing economy and anticipating how sharing economy might shape the urban fabric is an urgent task for urban designers to accomplish.

Generally, the way sharing economies shape the urban fabric and social environments are to offer many opportunities to build sustainable urban environments. First, sharing gives incentives for the growth of collaborative consumption. The evolution of ownership is transferred from an individual or a family to other ownership entities. Take the Access economy as an example, “the Access economy is a business model where goods and services are traded on the basis of access rather than ownership: the term refers to renting things temporarily rather than selling them permanently. The term arose as a correction to the term sharing economy because major players in the sharing economy, such as Airbnb, Zipcar, and Uber, are commercial enterprises. “*(https://en.wikipedia.org/wiki/Access_economy)* This sharing model usually relies on technology platforms, access via mobile devices to connect suppliers willing to share assets. Second, sharing economy questions the traditional definition of “public” and “private” spaces in interesting ways. Communities, in the sense of neighborhoods of private homes and public spaces may change. For example, privately owned

spaces, facilities, and objects may be used by public/private combinations for free or for fees. Also, public space and facilities may be rented for private use. Third, sharing spaces can be a powerful tool to modify constraining regulations of zoning. Homeowners may share their living rooms as co-working spaces, urban businesses may open the doors of restaurants to freelance workers, urban nomads and other flexible creatives for working, and people may transform the ground floors of apartments to retail spaces. Land uses may be intermixed with each other without strict dividing lines.

Fourth, sharing establishes a precondition and motivation for developing close-knit communities with collective civic engagements. Digital sharing platforms welcome wider civic engagement to address the evolving needs of populations and to shape urban environment. Digitally collecting data on the urban environment and governing by open standards, and well-designed, documented information can be shared with the public. City officials may invite city residents to participate in urban space making and civic space management via both traditional face-to-face community meetings and by use of efficient digital platforms. Finally, new opportunities created by platform sharing can encourage social sharing, and eventually form a stronger sharing culture. Sharing can make use of digital platforms providing a way for people to connect and share experience, products and spaces together. For instance, Seoul is facilitating the formation of lending libraries in apartment buildings. These lending libraries can offer books, tool rental, and repair (plus woodworking programs). In this case, the lending library is not only a physical sharing space but also a space for social activity. It functions more like a small neighborhood hub where people gather together and engage with each other, generating more social energy than a commercial space. Another example is zipbop, a platform providing a way for people who are interested in eating homemade food to connect and share the experience together. With this platform, “anyone can organize a meal gathering online, and if at least seven people sign up to participate, the group meets.”(McLaren and Agyeman 2015) The success of zipbop arises not simply from sharing homemade food but, more strongly, it satisfies a thirst for social connection among people.

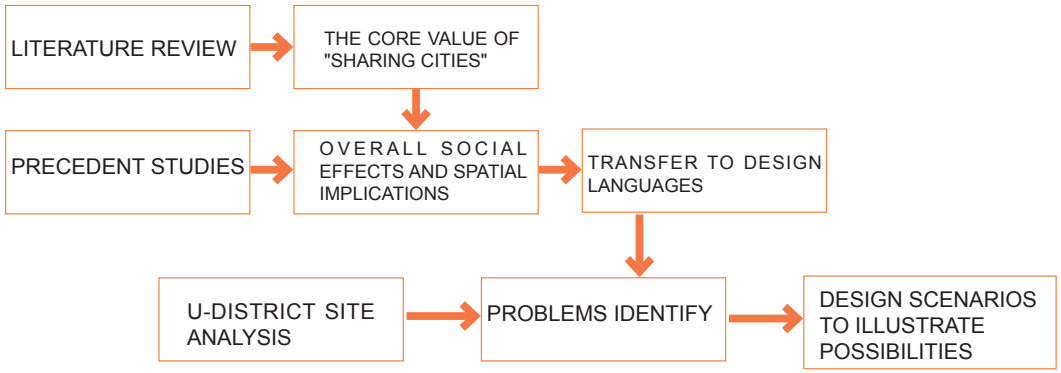
I believe our city is entering the sharing economy era in the context of an efficient twenty-first-century digital economy and sharing communities rooted in a sharing culture. I also believe this will be a catalyst for more environmentally sustainable and culturally innovative urban spaces. In this thesis, I will address three important questions:

1. What are current and future possible social effects and spatial implications of sharing economy models?
2. What opportunities do sharing economies encourage the new ways to use urban spaces?
3. How should landscape designers design urban spaces in coordination with sharing economies?

2.3. DESIGN METHODS

To answer my questions, I will first examine how sharing economies will impact the urban physical fabric. For this, I will focus on investigating current and future possible spatial implications of sharing economies. The second question I shall explore is how sharing economies may reshape urban social life. The key to this question is identifying the social effects of sharing economies. These two questions are intertwined. I will conduct a literature review and examine design case studies to address them. Finally, the goal of this thesis is to address the question of "how landscape designer should design urban spaces in coordination with sharing economies" I will take Seattle's University District as a case study for these explorations. This is a good place to study as Seattle is entering the era of "sharing economies"-and is therefore potentially a catalyst for more environmentally sustainable and culturally innovative urban spaces. My final products will be several design scenarios that show the possible transformations of urban spaces by applying conclusions from my earlier research. (Figure2-1)

Figure 2-1



3. THEORY + LITERATURE REVIEW

This literature review has two purposes: the first is to summarize the theories of sharing economies and build a bridge between theory and practical projects; the second is to conduct further research on precedents and absorb the lessons from different approaches. In the following pages: I will clarify key concepts and give definitions of keywords; learn more about potential physical/social effects and spatial implications and identify ways for landscape architects to respond to and design for the emerging sharing urban environment.

3.1. DEFINITIONS

My literature review focuses on an exploration of “Sharing economy” and other related economic models emerging in the Internet age. I do this to construct connections between economic models and urban design. Interdisciplinary barriers between economy and urban planning and design

mean that few comprehensive perspectives about sharing economy arise from urban planning and design fields. The majority of this research is conducted on different economic models, including sharing economies, collective economies, collaborative economies, access economies, peer-to-peer sharing and gift economies, etc., in order to better understand these emerging Internet age economic models, and find clues to how they will reshape the urban fabric. These findings are important for this thesis as they, along with the precedent studies, will help me to address my final question, as well as provide the foundation for my design scenario--how landscape designers can recreate or transform urban environments in coordination with the development of sharing economies.

- SHARING ECONOMY & ACCESS ECONOMY

Wikipedia describes the sharing economy as an umbrella term with profound and diverse meanings. It is often used to describe economic activities involving with online transactions. *(https://en.wikipedia.org/wiki/Sharing_economy)* According to recent economic studies, the popularized term "sharing economy" is frequently used to describe different organizational forms that connect users/renters and owner/providers through consumer-to-consumer (C2C) (e.g. Uber, Airbnb) or business-to-consumer (B2C) platforms, allowing rentals more flexibility.(Parente, Geleilate, and Rong 2018) However, The term "sharing economy" is new and its definition is contentious, some people believe "*The Sharing Economy Isn't About Sharing at all*", and the sharing economy should be called an "access economy". The so-called "sharing economy" has disrupted mature industries, such as hotels and automobiles, by providing consumers with convenient and cost-efficient access to resources without the financial, emotional, or social burdens of ownership. (Eckhardt and Bardhi, 2015)

According to Eckhardt and Bardhi, sharing is a form of social exchange that takes place among people known to each other without involving any profit. The insight that an access economy, rather than a sharing economy, represents consumers who are more interested in lower costs and convenience than fostering social connection. (Eckhardt and Bardhi, 2015) However, there are weaknesses to this argument. First, sharing does not necessarily only happens between people who know each other, it can also happen between strangers. “Sharing encompasses all the processes whereby we divide something among multiple users; we allow others to consume a portion of, or take a turn using things that are ours; we obtain access to a portion of, or a turn using, things that belong to others; or we use, occupy, or enjoy a facility, space or resource jointly with one or more others.” (McLaren and Agyeman 2015) Second, there is no strong evidence suggesting that consumers are more interested in lower costs and convenience rather than in social connections when they book a room through Airbnb, or share their car with neighbors. Private bedrooms, cars and other possessions express the specific personalities of their owners, which is an attractive element when people choose them rather than standardized hotels and taxis. Also, some platforms like sharing kitchens, co-working space and co-living spaces incubate and foster social connections.

For this reason, I prefer the term of “sharing economy” rather than “access economy” for my thesis, because as a landscape architect, I believe economic transactions are not always about economic benefits; better economic models may improve the urban fabric and benefit social life.

- SHARING ECONOMIES & COLLABORATIVE ECONOMIES & COLLABORATIVE CONSUMPTION

The Oxford English Dictionary describes “Sharing economy” in as follows: “An economic system in which assets or services are shared between private individuals either free or for a fee, typically by means of the Internet. “ However, what’s happened as a result of the rise of digital economies

is the appearance of many terms that describe a broad range of economic models. These terms often function in the way we use digital technologies to connect services and goods providers with customers, but the terms are confusing. Rachel Botsman, a global thought leader on the power of collaboration and sharing who has a background of Business, believes the “sharing economy” is a term frequently incorrectly applied to ideas where there is an efficient model of matching supply with demand, but zero sharing and collaboration involved. (Bostman, 2015) In her article, Bosman differentiates three closing related terms: sharing economy, collaborative economy, and collaboration consumption.

According to Bostman’s definitions, a collaborative Economy is an economic system with decentralized networks and marketplaces that unlock the value of underused assets by matching needs and owners, in ways that bypass traditional middlemen. The sharing economy is an economic system based on sharing underused assets or services, for free or for a fee, directly from individuals. Collaborative consumption is the reinvention of traditional market behaviors--renting, lending, swapping, sharing, bartering, gifting-through technology. It takes place in ways and on scales not possible before the Internet. (Bostman, 2015) However, sharing economies are incubators and may continue to generate new concepts and new economic models. It is important to differentiate the core concepts of each term sharing economy, collaborative economy and collaborative consumption in economic and business fields, but for the purpose of this thesis they share common values and are substantially the same.

In the context of this thesis, the term sharing economy will be used as a broad concept to include economic systems based on sharing assets or services, matching needs and haves, in both traditional market behaviors and relying on the Internet, for free or for a fee in the Internet age. The reason for adopting a broad definition is that I am interested in how sharing-driven economies will reshape our urban fabric and social life, and less interested in how these terms operate in economic or business fields.

➢ SHARING ECONOMY & SHARING PARADIGM

Sharing paradigm is a term defined by Duncan McLaren and Julian Agyeman, from a sustainable urban environmental perspective. It is a broader concept than the term "sharing economy". In their book "*Sharing Cities, A Case for Truly Smart and Sustainable Cities*", the authors believe that sharing, as an economic perspective from Russel Belk-- a professor of marketing in Toronto, is one of the components of the sharing paradigm.

Other terms such as collaborative consumption; solidarity economy and urban commons are all related to the sharing paradigm theme. Thus, the broad conception of the sharing paradigm includes multiple dimensions: sharing things (such as cars, tools, and books); sharing services (such as sites for meetings or sleeping); and sharing activities or experiences (notably political activity, but also other activities such as leisure). Additionally, the sharing paradigm includes sharing between private individuals as well as collective or state provisions of resources and services for sharing, such as green space, sanitation, city bikes, or childcare. Overall, the sharing paradigm concept covers a broad territory. (Table 3-1) (McLaren and Agyeman 2015)

Table 3-1-The Broad Territory of the Sharing Paradigm (McLaren and Agyeman 2015, Sharing cities: a case for truly smart and sustainable cities)

	Things	Services	Activities
Individual	Swapping, bartering, gifting	Ridesharing, couch surfing	Skill sharing
Collective	Car clubs, tool-banks, fab-labs	Childcare, credit unions, time-banks, crowd funding	Sports clubs, social media, open-source software
Public	Libraries, freecycling	Health services, public transit	Politics, public space

These concerns raised in the "sharing economy" discourse deal not just with the intrusion of commerce and money (which are not always

inappropriate,) into the idea of sharing but also with the framing of sharing activities as “economic activities”, rather than social, cultural, or political activities. (McLaren and Agyeman 2015) In this thesis, I share this critical perspective with them. In the sense, that I use the term “sharing” to be equivalent to “sharing paradigm” in “*Sharing Cities, A Case for Truly Smart and Sustainable Cities*”. When I explore the topic of “sharing economy”, I include lots of conventionally existing sharing activities before the growth of sharing economy. “Sharing” as a broad concept, is the main topic of my thesis. I will investigate how sharing would reshape our urban spaces, and what could be a sharing city.

The reasons that I persist in using the term “sharing economy” are as follows. First, this thesis focuses on investigating how new economic models can reshape the city, including its social, cultural and urban environments. The rise of the sharing economy, as a new Internet age economic model, not only changes commerce, but also offers new opportunities for urban commons, public benefits, and social life. For example, public facilities can be rented out by individuals, people share food and spaces for meeting and gathering activities, and the public has more chances to engage in political activities. These opportunities are grounded in the fact that we are living in a sharing economy era. Second, the economy is not confined solely to business, or money or economical benefits. The core value of economies is to manage and distribute resources, while the sharing economy is a more efficient resources management economy model. I am interested in anticipating how cities will change, with the rise of sharing economies and the decline of traditional economies, these changes include changes to the urban fabric, as well as cultural and social changes.

3.2. PRECEDENT STUDIES

The precedent studies examine cases of sharing programs in the context of sharing economies to understand how they work in the real world and to

identify the clues to their social effects and spatial implications. Additionally, studying sharing economies in other "sharing cities" can help me develop and define appropriate strategies and design approaches to transforming the U-District to include sharing urban spaces. The precedent studies focus on four categories of sharing: transportation, food, resources, and space although these categories are not strictly separate from each other.

- TRANSPORTATION

Sharing vehicles include car sharing and bicycle sharing; it is a rental model in which people rent vehicles for short periods of time, often by the hour. Car sharing includes car rental companies (Zipcar, Car2go), Peer-to-peer car rental (Getaround, Buzzcar), Ridesharing (Uber), and autonomous cars. Car rental means renting automobiles for short periods of time from a car company. This was long established before the Internet but has developed significantly during the sharing economy era. For example, peer-to-peer car rental is a process in which car owners make their vehicles available for others to rent for short periods of time. (*https://en.wikipedia.org/wiki/Peer-to-peer_carsharing*) Ride-sharing entails sharing car journeys so that more than one person travels in the car. This reduces the need for each individual to drive independently. (*https://en.wikipedia.org/wiki/Carpool*) Autonomous cars are a self-driving car rental system. Sharing cars give people the opportunities to share a car rather than own one themselves, it becomes viable when car ownership becomes a burden because of maintenance, cleaning, registration, repair, insurance, and parking costs. (Botsman and Rogers 2010) As a result of the number of cars is likely to decline because each car can be used by several people. Every car-share vehicle on the road replaces seven to eight privately owned vehicles, as people sell their cars or decide not to buy a second or third vehicle. (Botsman and Rogers 2010) When people reduce their car uses, especially use of private cars, large amounts of parking space will no longer be needed, this includes private parking spaces such as ground floor parking in building and single-house parking garages.

Research has shown that parking is routinely oversupplied in single-use urban districts in the United States, and parking is oversupplied by 65% on average in mixed-use urban districts. (Weinberger and Karlin-Resnick 2015) Ironically, people often have the experience of circling endlessly to find a parking space. According to Willa Ng from the website Site Walk Talk, the reason we often fail to find a parking space in a huge parking lot is that people reserve parking spaces even they don't always use. For example, parking lots reserved for employees of an office building, may only be used every Monday to Friday from 8 a.m. to 5 p.m. but may not be available to patrons of the hottest restaurant nearby. (Willa Ng, 2016) A shared parking system is an efficient way to address the issue of people failing to find parking spaces even in places where parking is largely oversupplied. Sharing of vacant parking lots in Seoul was used to solve the scarcity of parking spaces. Since 2007, there are 363 parking lots ranging in size from 9 to140 spaces that are open to the public and the sharing of parking lots is increasingly throughout the Seoul city region. (sharehub.kr.) Car sharing and shared parking systems save urban space, while bicycle sharing occupies urban public space. Bicycling is often favored by many municipalities and agencies. As Seattle Department of Transportation quotes Bill Nye, "Bicycling is a big part of the future. It has to be. There's something wrong with a society that drives a car to workout in a gym. " With the increasing number of bikes in our city, better bike facilities should be offered, including bike parking spaces, bike paths, and bike repair space. For all of these functions, bike sharing needs more space to support its spread and bike management.

- FOOD

Food is a topic that encourages people to start conversations with each other. It is highly possible that food sharing system increase opportunities for frequent engagement between individuals as well as between people with urban nature. Sharing kitchens and sharing refrigerators in South Korea is

a movement to reduce food waste and provide opportunities for neighbors to eat together. The “Sharing refrigerator” project is a means to reduce food waste by sharing unopened and unused food after it is purchased, while sharing kitchens offer neighbors a place to cook, eat together and have occasional social activity. The success of the food sharing space results in part from the high ration of single and two-person households in contemporary cities and the wish of citizens to not being socially isolated. The online platform “Zipbob” in Korea, “Chichifan” in China, and “Eatwith” in America provide a way to connect people who are willing to cook and others are interested to eat together. Social motivations and experience sharing could be big motivators for people to share food and time together. Eating encourages people to gather together and as a result, creates social hubs. Where should food sharing spaces be located? In community facilities or inside an apartment when they are only occasionally used? Mostly, sharing kitchens are located in community centers, where people frequently gather. Another example is common kitchens, which are kitchens shared by multiple households but not open to the public. Common kitchens are, usually in co-living apartments, motivated by the desire to reduce house rents. However, living together increases opportunities to share food by cooking and eating together. Common kitchens become social nodes in co-living apartments.

Sharing gardens usually rely on online platforms, which allow growers access to front or backyards belonged to other landowners to grow food. There are two types of garden sharing arrangements: One supplies the land, while the other supplies the labor, and the proceeds are shared; Or groups of neighbors share garden spaces, labor and the harvest. For example, Shared Earth connects people who have land, with people who want to garden or farm providing opportunities for people to enjoy the local healthy food. Sharing gardens not only produce local health food production, but also foster civic engagement and connections to nature.

Impacted by the gift economy, sharing food for free provides even more opportunities, which are very important for people without access to

adequate food supplies. The gift economy consists of giving away valuables without an explicit agreement for immediate or future rewards. (McLaren and Agyeman 2015) According to the Food and Agriculture Organization of the United Nations, around one-third of all food that is produced is wasted. FoodCloud is a custom-built technology platform on which participating businesses can post details of surplus food and identify times for its collection by charities. Additionally, FoodCloud has introduced a food rescue team of volunteers in Dublin, Ireland, who use a donated electric vehicle to facilitate pickup and drop-offs between businesses and charities. (Shareable 2017)Urban Canners in greater Boston has developed a network of individuals to map, harvest, preserve and share wasted food coming from landowners' backyard and sidewalk fruit trees. They enter into agreements with property owners to share the work of fruit harvesting and preserving, as well as tree and arbor pruning. (Shareable 2017)

These sharing platforms create new opportunities for urban agriculture and horticulture as they address the issues of food resources management: growing, harvesting, preserving and distributing. Urban citizens may prefer to take care of edible plants rather ornamental trees, lawns, and flowers. In this sense, urban agriculture and horticulture may reshape urban green space. The process of gardening will transform, urban green space making them less static and include more adaptive uses.

- RESOURCES

Sharing resources includes two categories: physical objects and intangible values. Sharing physical objects includes tools, books and clothes. Kitchen Share, launched in 2012 in Portland, Oregon, is a kitchen tool-lending library for home cooks that enables community members to borrow a wide variety of kitchen appliances such as dehydrators, mixers, and juicers. Members can check out over 400 items online using affordable lending

library software from myTurn. Kitchen Share helps residents save money, learn new skills from neighbors, and reduce their environmental footprint. As a nonprofit community resource for home cooks, Kitchen Share asks for a one-time donation upon joining, providing affordable access to otherwise expensive and bulky items while building a more resource-efficient city. (Shareable 2017) Pumpipumpe stickers are created by Swiss initiative Pumpipumpe, in order to encourage urbanites to share the occasionally used items with their neighbors. The stickers can be stuck to front doors or mailboxes to indicate items they are willing to loan to neighbors. (Jeroen Beekmans, 2017) Freecycle is a web platform that allows people can obtain or give away stuff for free. Renting wedding dress/suits and luxury items are common many countries, but sharing closet is a clothes-sharing platform in wider range. Open closet is an online platform for renting out senior's formal clothes to job seeker. Kiple is a children's clothing sharing project designated by Seoul City to send unused children clothing to preschools. (sharehub.kr.) Sharing handy but infrequently used things that fill our house can free up lots of space. In America alone, there are more than 53,000 personal storage facilities, which is about 2.35 billion square feet--more than 38, 000 football fields put together. (Botsman and Rogers 2010) Why do our cities build so much space for little-used items while there are so many people without shelter? Why not build less space for storage but instead create tools sharing centers in our cities?

Little library consists of small book exchange boxes scattered throughout in communities. They are not only book boxes, but also create a place for people to interact with others and their surroundings. People may become obsessed by a book and immediately sit near the little library and read it; sometimes people exchange opinions when they read the same books. In Seoul, the city is facilitating the formation of lending libraries in apartment buildings. The lending libraries offer books, tool rental, and repair programs. (McLaren and Agyeman 2015) The lending libraries become apartment social nodes, as people frequently connect with others in them.

Sharing physical items contributes to reducing waste and individual expenses, more importantly, sharing physical items in designated spaces create

social hubs in which neighbors or urbanites can interact with each other.

Sharing intangible values include knowledge, skills and experiences. “The people formerly known as the audience wish to inform media people of our existence, and of a shift in power that goes with the platform shift you’ve all heard about. “ (Mandiberg 2012) Similarly, people formerly known as the reader wish to share knowledge and write on the online platforms to achieve their goals. Knowledge sharing is an activity through which knowledge (i.e., information, skills, or expertise) is exchanged among people, friends, families, communities (for example, Wikipedia), or organizations. (*https://en.wikipedia.org/wiki/Knowledge_sharing*) In contrast to online knowledge sharing platforms, people expect more social interactions through face-to-face sharing activities. Public square dancing in China is popular among women typically over 50 years old. Dance leaders voluntary teach people to dance in each square dance group, and people who want to dance can join a dance group any time they are dancing. I recognize that dance lessons are not simply for exercising, people make friends in the process of learning and teaching. This is important for retired women over 50 years old to rebuild connections between themselves with other people. Repair café, is a case of experience sharing. Repair Cafés are free neighborhood meeting places where you can repair things together with the volunteer experts, who possess repair skills in all kinds of fields. When you are waiting for your things to be repaired, you can buy a cup of coffee and talk with people. Repairing broken things helps to reduce individual expenses, is good for the environment, and the repair process creates opportunities for people to communicate, cooperate and build connections.

- SPACE

Space sharing is prevalent in high-density cities. It includes sharing living space, working space, private entertainment space and parking space. Co-living housing provides affordable, quality space for many urbanites because housing affordability is slipping further out of reach of the average

citizen. CoAbode is a service that matches compatible single mothers with shared housing, as well as services and support to make parenting less challenging. It is an important idea--as around 40 percent of single parents in the U.S. are employed in low-wage jobs. Cohousing can help mothers share food and childcare; it reduces financial costs, frees up time, and enables mutual support. (Shareable 2017) Embassy Network is a new shared-housing model open to young urban professionals who frequently face high housing costs, social isolation, and career-building challenges. Residents share food expenses, regular communal meals, commons space, cars, and most importantly, career support. Embassy Network creates encouraging environments for personal and career development through peer support, regular public events, short-term visitors who share knowledge and access to all nine Embassy Network properties. (Shareable 2017) The Babayagas House, in eastern Paris, is a self-managed social housing initiative, established by a group of older women who wish to maintain their independence by living together in a supportive community. Residents pay an affordable rent for individuals' small apartments and share the cost of a monthly visit by a health care professional. (Shareable 2017) Overall, co-living housing offers people affordable places to live and helps residents in their lives and careers.

Digital platforms offer short-term sharing opportunities for residents to share their spare living spaces or even entire residences with urban travelers. Sharing platform like Airbnb, Flipkey, Stayz bring with them a range of benefits. They open up accommodation in areas where there's unmet demand and bring visitors to areas of the city for tourism. (Shareable 2017) In April 2010, Airbnb.com had nearly 85, 000 registered users, with more than 12,000 properties across 3,234 cities in more than 126 countries. (Botsman and Rogers 2010) It helps residents generate extra income from unused spaces. Most importantly, sharing living space reduces the number of idle bedrooms, which means we are not simply building more houses while keeping existing ones underutilized. Sharing underused living spaces with tourists has the values of accommodating people like hotels.

Working no longer means we have to stay in offices every weekday, especially for freelance workers, urban nomads and other flexible "creative".

Co-working space offers these workers a range of options. As you know, cafés like Starbuck are “co-working” spaces for lots of people. You can buy a cup of coffee, get your spot, access free Wi-Fi and start to work. New York-based startup Spacious is doing co-working space differently, as they see potential in spaces that are only temporarily used like restaurants during the day and transform these spaces to co-working spaces. In cities like New York where space is scarce and expensive making use of existing space but simply unused during certain times of day has great benefits: offering nice working space while reducing costs, having social interactions with other workers and saving urban indoor space. (Beekmans and De Boer 2014) To overcome the problems of working in a noisy coffee bar or an expensive co-working center, the Swedish peer-to-peer community Hoffice addresses these problems by building urban communities of working nomads who work at people's homes. People can offer their living rooms as daytime co-working spaces by registering for free at hoffice.nu, while guests are asked to pay in the form of snacks, coffee or some food. (Boer, 2015) According to these cases, the social effects of co-working include working in co-working space helps freelancers avoid social isolation and building social networks. Peer-to-peer platform sharing working spaces take advantage of underused spaces and adds new values to them.

Sharing gardens for private entertainment is also possible. Plot is the UK's first "on-demand" garden. It explores the idea of providing private garden spaces, booked by the hour, within urban centers. The Plot is designed for today's on-demand culture that happily streams instead of buying and accesses instead of owning. (*http://www.plotmanchester.com/)* Owning a garden in the city is a privilege, especially for people in high-density cities. With the concept of sharing in mind, urbanites are able to legally access private properties.

Here we can see, sharing economies shaping urban fabric in interesting ways. First, sharing economies pose a threat on city zoning, as they support mixed-use urban environments. Living space in residential zones can be shared as co-working space and retail space like restaurants and cafés can also be transformed to co-working space. New users can include underused public facilities. Urban agriculture can colonize urban green space. In

this way, people can live, work, eat and get entertainment easily within a mixed-use urban community reducing time on daily commutes. Second, sharing private underused space break the division between “public” and “private” space, as sharing allows the use of vehicles, items, resources and space without ownership. Privately owned gardens, living rooms, and bedrooms can be opened to users for free or for a fee. Public facilities can be booked by individuals when they are not in use. In these ways, sharing adds new values or usages in private shared spaces.

When people have opportunities to work and live in cities rather than commute long distances and can move between working/studying spaces, homes and markets, they will have better chances to interact with urban environments and urbanites. Sharing economies will allow people to use with urban spaces in diverse ways and share interact other urbanites as human beings. Cities shouldn't places where everyone is fighting for their life, rather our cities should places everyone has the right to choose how to live. In our urban spaces, citizens should be able to find a variety of stages on which their life activities.

3.3. DESIGN SCOPES AND CRITICAL STANCE

Seattle is entering the era of “sharing economies” – which are potential catalysts for generating more environmentally sustainable and culturally innovative urban spaces. By researching different sharing economy models and analyzing a wide range of sharing programs, this thesis explores how sharing economies (re)shape urban communities socially and spatially and can be powerful tools for accommodating the evolving needs of urban populations. It will focus on Seattle’s University District as a case study for exploration. I categorized sharing economies into four dimensions in this thesis: Peer-to-peer sharing, collective sharing, commercial sharing and urban commons. Table3.2 provides an overall list of the sharing

programs studied in this thesis. (Table 3-2)

Table 3-2- Sharing programs list

Dimensions	Sharing programs	Where it practices	What and How
Peer-to-peer sharing	Getaround	America	Car sharing
	Buzzcar	France	
	P-P Car	China	
	Airbnb	Worldwide	Sharing bedroom
	Hoffice	Europe and Taipei	Sharing living rooms as co-working space
	Spacious	New York	Sharing restaurants to co-working space
	Plot	Manchester, England	Sharing green space for private entertainment
	Zipbop	Korea	Sharing food
	Feastly	America	
	Garden sharing	Worldwide, mainly America	
	Chichi Fan	China	
	Shareyourmeal	Europe and America	
	Eatwith	Worldwide	
	Pumpipumpe	Europe	Sharing urban items
	Freecycle	Worldwide	
	Peerby	Worldwide	
	Buy nothing	America	
	Little library	America	Sharing books
Commercial sharing	Uber	Worldwide	Ride sharing
	Zipcar	Worldwide, mainly America	Car sharing
	Car2go	North America	

	Socar	Korea	
	Green car	Korea	
	Uber bike	California	Sharing electric bikes
	Limebike	North America	Sharing bikes
	OFO	Worldwide	
	SPIN	North America	
	V bike	America	
	Google car/other autonomous	Worldwide (in progress)	Self-driving car
Collective sharing	Repair café	Worldwide	Sharing experience
	Wikipedia	Worldwide	Sharing knowledge
	Social media	Worldwide	Sharing information
	Photo Bank	Korea	Sharing data
	Zhizhu.com	China	Sharing knowledge, skills
	TED TALK	Worldwide	Sharing ideas
Urban commons	Open closet	Korea	Sharing clothes
	P-Patch	America	Sharing green space for food production
	Tele-Health	Singapore	Public health care
	Community center	Worldwide	Public facilities and public space
	Library	Worldwide	
	Food bank	Worldwide	
	Public parking space	Worldwide	
	Apartment library	Korea	
	Sharing refrigerator/kitchen	Korea	
	Bus/Metro/Train	Worldwide	
	Childcare/Public schools	Worldwide	
	Plazas/streets/squares	Worldwide	
	Elderly monitoring system	Singapore	Public healthcare

4. INVESTIGATING AND MAPPING SHARING SPACES

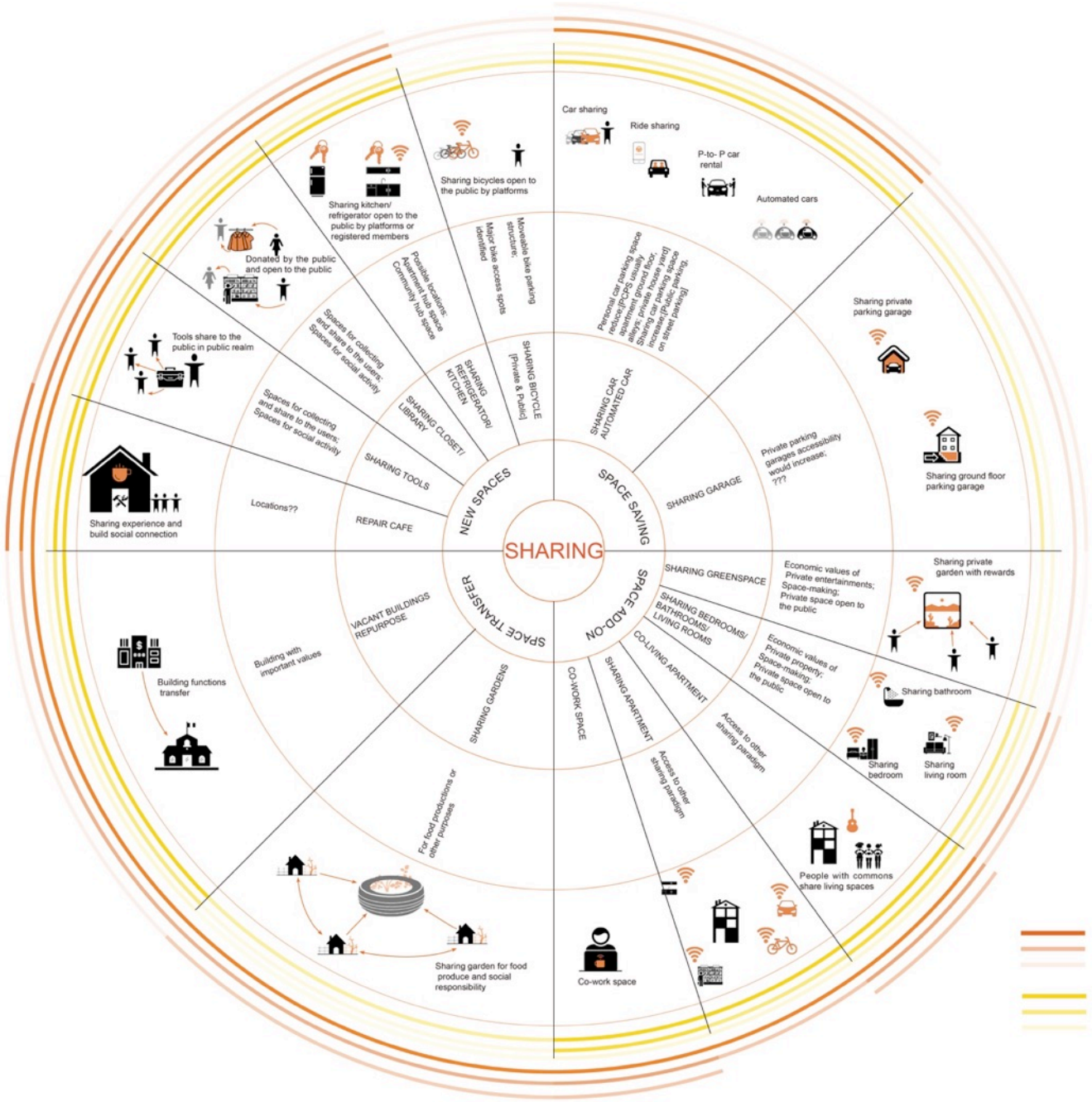
In terms of the landscape architect's perspective, I am interested first in mapping current and possible future social effects and spatial implications of sharing economy based on my research. Through the process of mapping, I will translate the overall social effects and spatial implications of sharing economies into landscape design language to see how landscape architects should coordinate the design of urban space with the needs of sharing economies. As an emerging landscape architect, I will pick several locations in Seattle's U-District for my design scenarios. In my design process, I will show how sharing economies may shape these U-District areas and with "sharing" in mind, how landscape architects can positively transform urban environments so people can see and implement more possibilities.

4.1. MAPPING--POSSIBLE SOCIAL EFFECTS AND SPATIAL IMPLICATIONS

Overall, sharing economies may shape the urban fabric in four ways (Figure 4-1): Some sharing programs need new spaces or new structures to support them, in brief, called 'New Space' (Figure 4-1-1); some sharing programs may need new spaces for new sharing activities, but will largely save conventional land uses, I call this 'Space Saving' (Figure 4-1-2); some sharing programs add new values for uses on existing underused spaces, which is Space Add-On (Figure 4-1-3); Space Transfer means sharing programs that transform vacant or underused spaces to other uses (Figure 4-1-4).

Programs requiring new spaces and structures includes sharing bikes, sharing refrigerators and kitchens, sharing closets, tools sharing, and knowledge sharing etc. Although free-floating bike sharing allows bike parking without docking in specific spaces, major locations for bike parking

Figure 4-1



SPATIAL IMPLICATIONS

NEW SPACE

Sharing program needs new spaces or new structure to support;

SPACE SAVING

Sharing program may need new spaces for new sharing subjects, but will largely save conventional land uses;

SPACE ADD-ON

Sharing programs add new values for uses on existing in-use spaces;

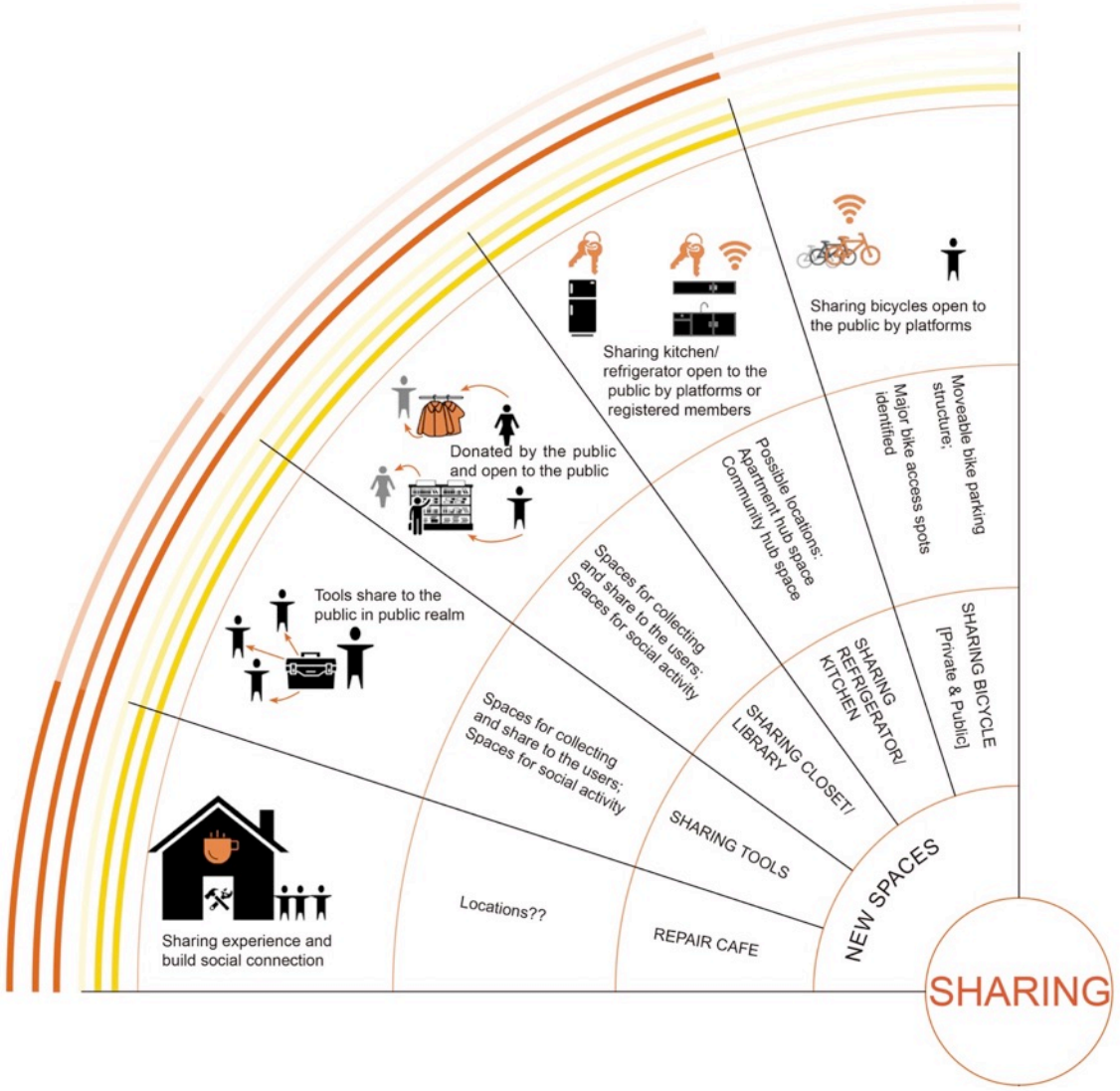
SPACE TRANSFER

Sharing program transfer vacant or low-use spaces to other usages.

Social motivation encourages sharing;

Sharing cultivate social connection.

Figure 4-1-1

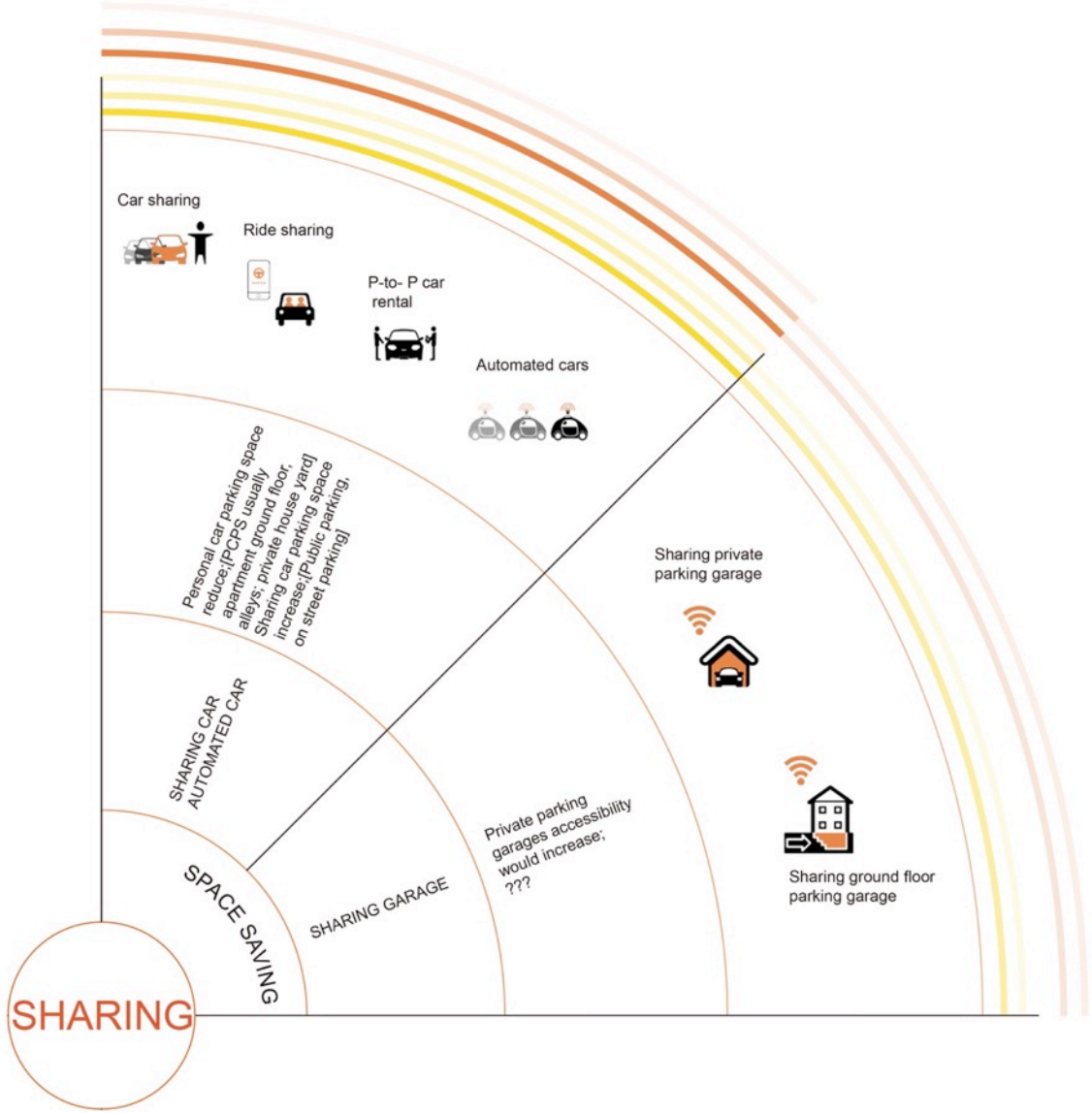


SPATIAL IMPLICATIONS

NEW SPACE

Sharing program needs new spaces or new structure to support;

Figure 4-1-2

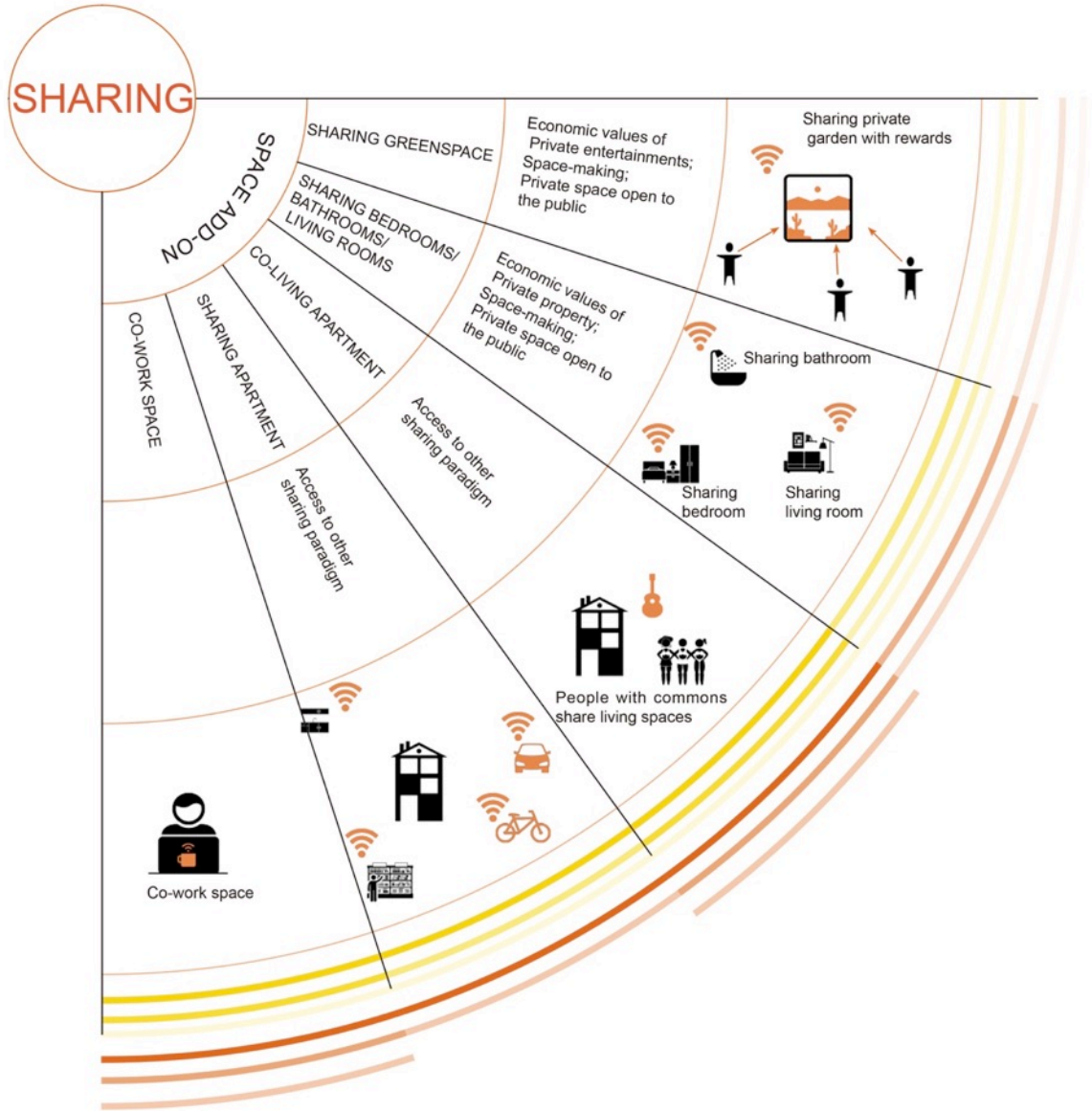


SPATIAL IMPLICATIONS

SPACE SAVING

Sharing program may need new spaces for new sharing subjects, but will largely save conventional land uses;

Figure 4-1-3

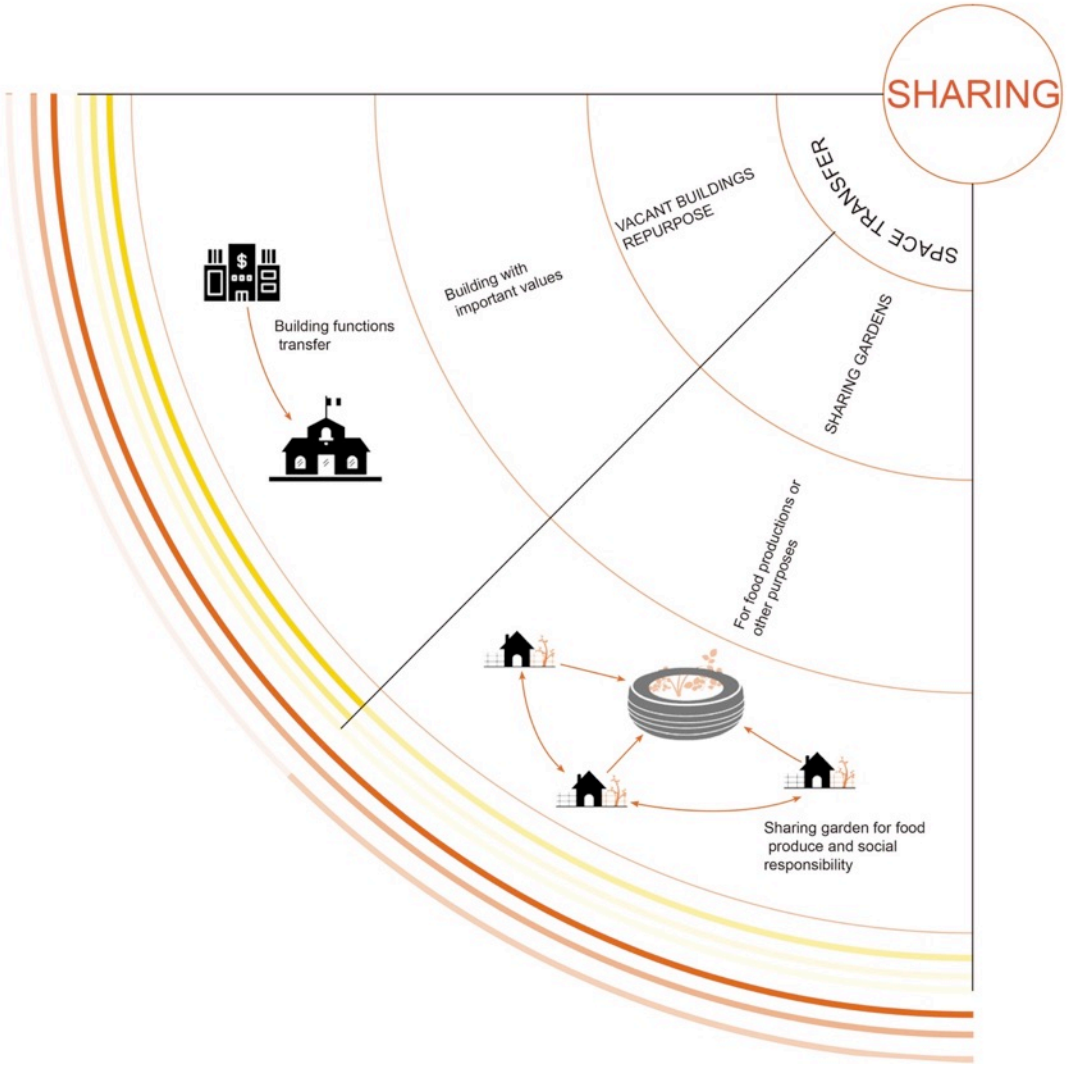


SPATIAL IMPLICATIONS

SPACE ADD-ON

Sharing programs add new values for uses on existing in-use spaces;

Figure 4-2



SPATIAL IMPLICATIONS

SPACE TRANSFER

Sharing program transfer vacant or low-use spaces to other usages.

should be identified in locations such as public transit stations, entrances to parks and major commercial spaces etc. If bike parking needs are ignored, thousands of bikes may block sidewalks or access to front doors. Shared refrigerators/ kitchens should be easily accessed by the public in convenient locations such as community centers or the ground floors of apartment buildings. Shared closets need spaces to collect and share clothes with users. Additionally, new spaces to support sharing programs are spaces where people can interact with each other when they use shared kitchens for eating together, go to open closets to get clothes or go to borrow tools and share experiences.

Some programs contribute to space saving, such as car sharing, parking space sharing and co-working or co-living space. Car sharing, includes rideshare, car rentals and peer-to-peer car rentals. These can reduce the use of private cars, which can help indirectly save parking spaces. Indeed, sharing parking spaces can directly save lots of space for other uses. These days, with the launch of the autonomous car, some people predict that they will reduce private cars by 80%, which means large amounts of public parking space can be saved as well.

Space Add-on sharing programs allow underused spaces to be used as multi-functional spaces. As mentioned above, Garden plot sharing combines the value of economic benefits and outdoor entertainment. Sharing bedrooms with tourists allows unused bedrooms to make money for you. Potentially, Space Add-on contributes to saving built spaces as well. For example, the Hoffice platform allows sharing of the living room as co-working space during the daytime, and the Spacious platform permits sharing restaurants space as co-working space when they are vacant. Since underused spaces can provide working spaces for people, this means that sharing contributes to building less office space. Space transfer mainly occurs when space is vacant but possesses important value. For example, underused or abandoned buildings such as churches, schools, shopping malls and other public facilities can be occupied by sharing programs.

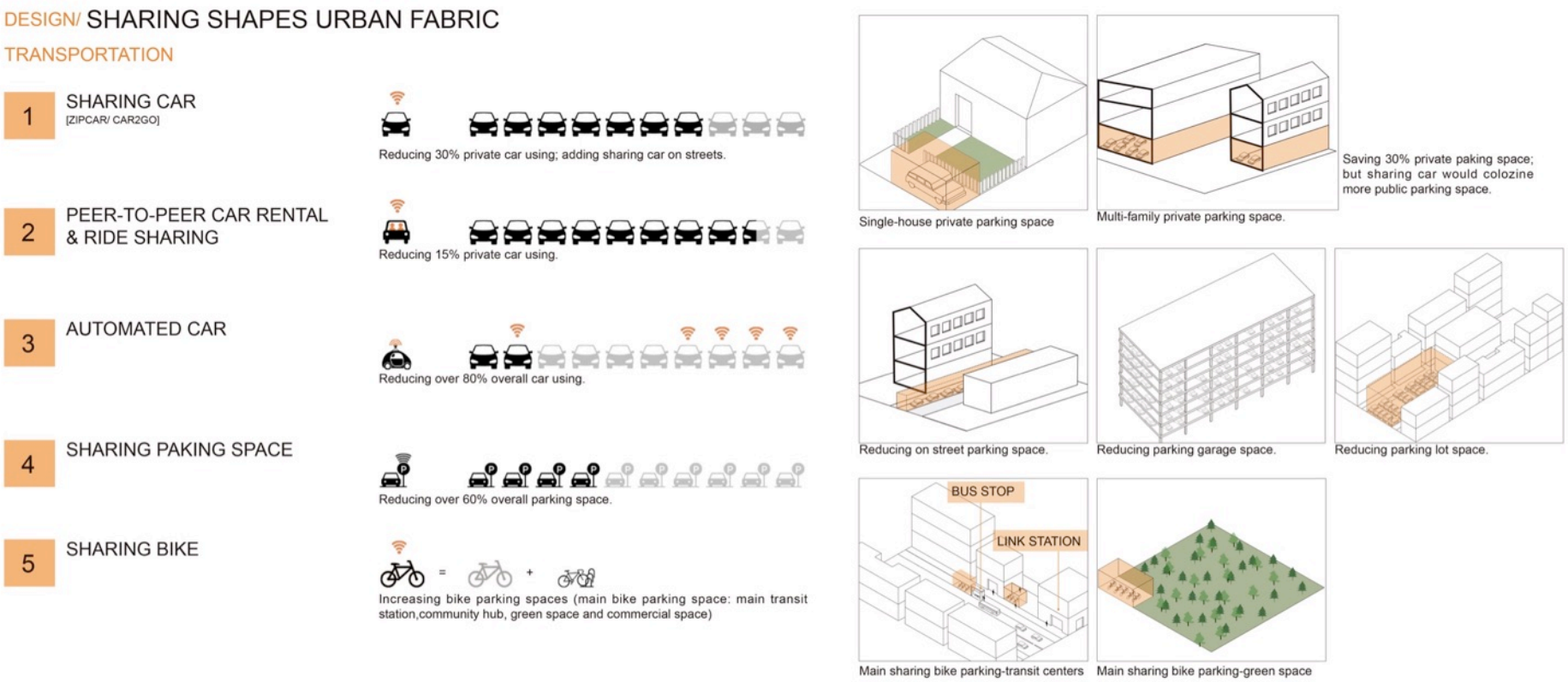
“Sharing” encourages close cooperation and social interactions because the act of “sharing” involves multiple people and the process of sharing offers opportunities for interaction. With the support of digital platforms, “sharing” can occur efficiently between people who know each other and with strangers. Social motivations contribute strongly to some sharing programs while other sharing programs also encourage social interactions. People, who want to make new friends can share food with others. Women dance on squares in China primary to seek rewarding social interactions. If you don’t want to be socially isolated, you can also share living and working space with other people. When people actually seek to lower their expenses, social interactions are sometimes a byproduct of “sharing”. For example, peer-to-peer car sharing mostly consists of sharing among neighbors which is a good way for people to get to know their neighbors and engage positively with each other. Repair café, an experience-sharing place, also encourages neighbors to meet together.

From the landscape designer’s perspective, creating places that encourage friendly social interactions is important in our urban environments. Coordinating physical design with sharing economies is critical to encourage more sharing programs.

4.2. DESIGN TRANSLATING- POSSIBLE SOCIAL EFFECTS AND SPATIAL IMPLICATIONS

According to the precedent studies I examined, there are four major categories of sharing programs: transportation, food, resources, and spaces. In term of landscape perspectives, each of these categories can shape the urban environment differently. Generally, car-sharing will save lots of parking space including single-family private parking spaces, multi-family private parking spaces (ground floor in America), street parking spaces, parking garage space and parking lot spaces. However, bike-sharing needs to be provided with more parking space such as close to major public transit stations, the entrances to green spaces and at commercial spaces. Bike facilities include bike paths, bike repair space, and bike culture center should be provided. (Figure 4-2)

Figure 4-3



To encourage food and resources sharing to reduce waste and build better urban social interactions, new spaces for people to gather have to be created. (Figure 4-3) Urban sharing resources offer space and opportunities for people to interact with each other. People may plan to meet others here or meet by chance. Ideally sharing resources should be located close to urban hubs. The spaces that can be saved as a result of sharing programs can be transferred to new gathering spaces to support other sharing programs. For example, the ground floor of parking space can be transformed into sharing kitchens, gyms or apartment libraries.

Figure 4-4

FOOD

6 COMMON KITCHEN

Saving building space and rearrage building layout.

7 SHARING KITCHEN/ REFRIGERATOR

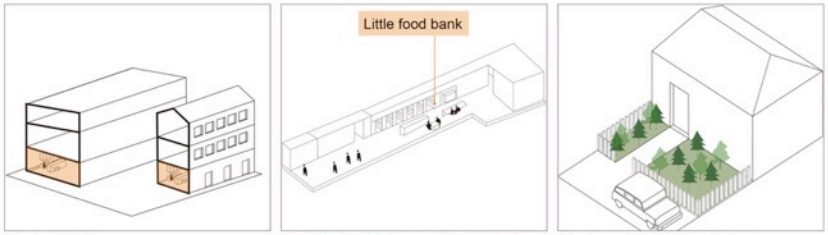
Reducing food waste and adding more community social hubs.

8 LITTLE FOOD BANK

Reducing food waste and adding more community social hubs.

9 SHARING GARDEN

Increasing food production space in urban environments and share good with people in need.



Sharing kitchen

Food bank offer cheaper food or for free.

Sharing private garden for food production.

RESOURCES

10 LIBRARY

Sharing knowledge, reducing waste, and favor community interaction.

11 OPEN CLOSET

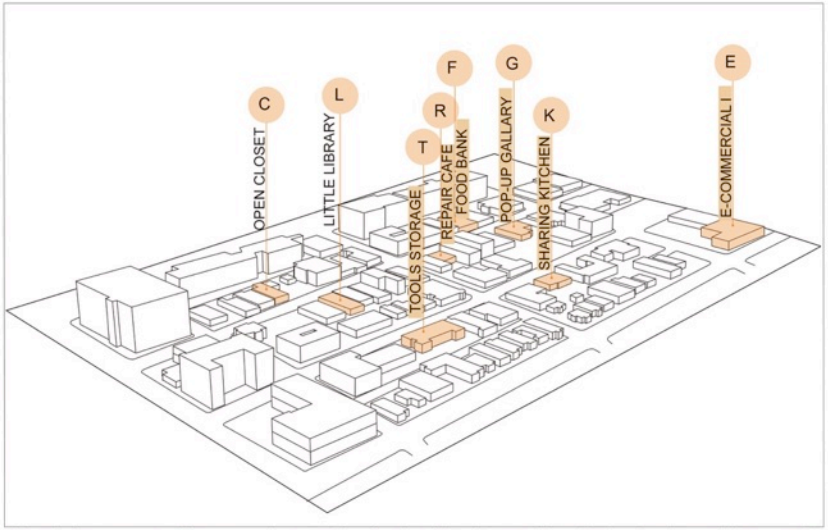
Saving money, reducing waste, and favor community interaction.

12 TOOLS SHARING

Saving money, reducing waste, and favor community interaction.

13 EXPERIENCE SHARING

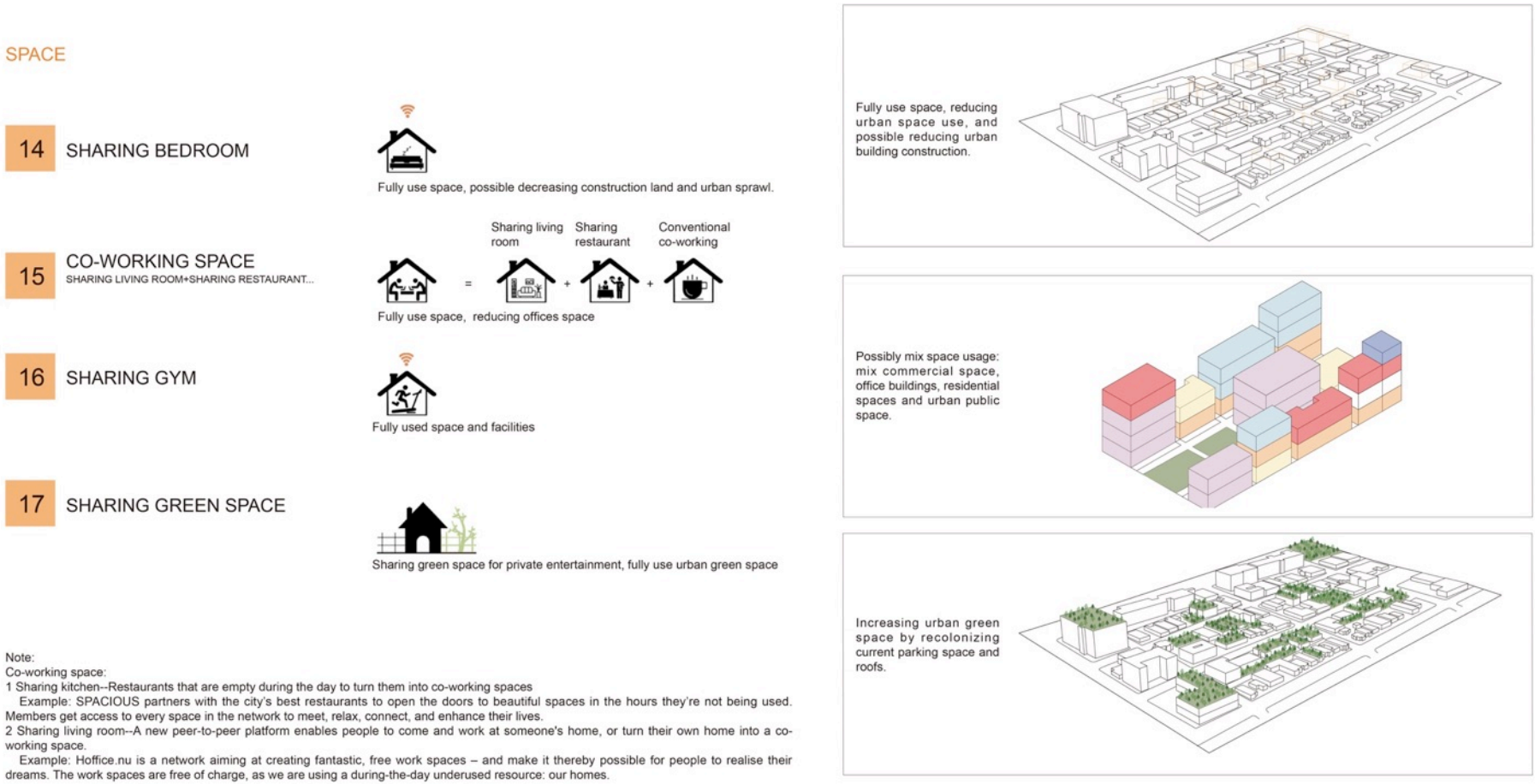
Sharing experience, reducing waste, and favor community interaction.



Urban sharing resources offer space and opportunities for urban life to interact with each other. People are able to meet the others here on purpose or unwittingly. Where the sharing resources locate is where urban hub is.

Sharing space will contribute to more fully using urban spaces, transforming single-use private spaces into multi-functional spaces, may possibly reduce the need for more urban development. Sharing spaces will require changing urban zoning codes as they will mix space usage, including commercial space, office workspace, residential spaces and urban public spaces. Since some sharing cars contribute to saving parking spaces, they provide ways for green infrastructure to occupy parking spaces as they are abandoned. Additionally, the increase of urban agriculture and sharing green space can bring more green space into the city. (Figure4-4)

Figure 4-5



5. SITE ANALYSIS

5.1. SITE CONTEXTS OF UNIVERSITY DISTRICT

Figure 5-1-1

The University District, commonly known as the U District, is a district in Seattle adjacent to the main campus of the University of Washington. Like other Seattle districts, the boundaries of the University District are informal. However, the site I am looking at is focusing on 12 blocks. The site is bounded on the west by 11th Ave NE; on the east by 15th Ave NE; on the south by the NE 41st St; on the north by NE 45th St. (Figure 5-1-1)

The U-District is a densely populated and highly networked place where demographic, economic, and cultural forces bringing ever-growing numbers of people together. The majority of the population is young and without much income, 75% of total population is between the age of 18 and 29. (Figure 5-1-2) 85% of the employment is working in education institute (UW). (Figure 5-1-3) Young residents usually live in the U District temporarily for 2 to 5 years. Mobile living cultivates a culture of sharing. Low incomes encourage residents to adopt resource saving and energy saving lifestyles.

Demographics

This section of the report looks at baseline information from Census 2010.

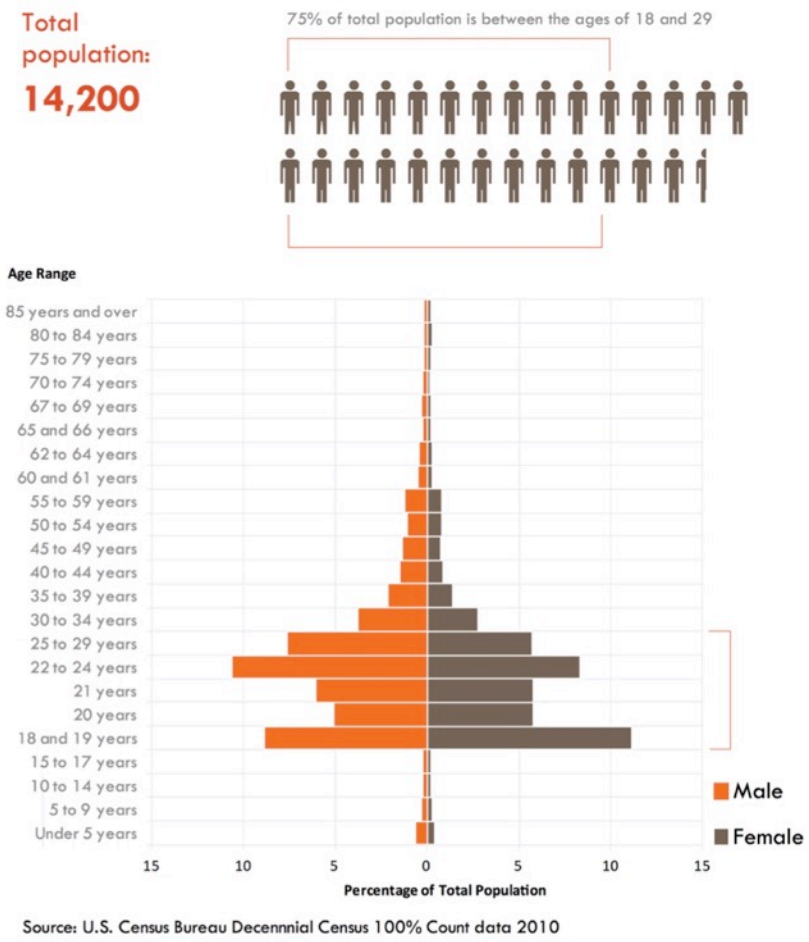
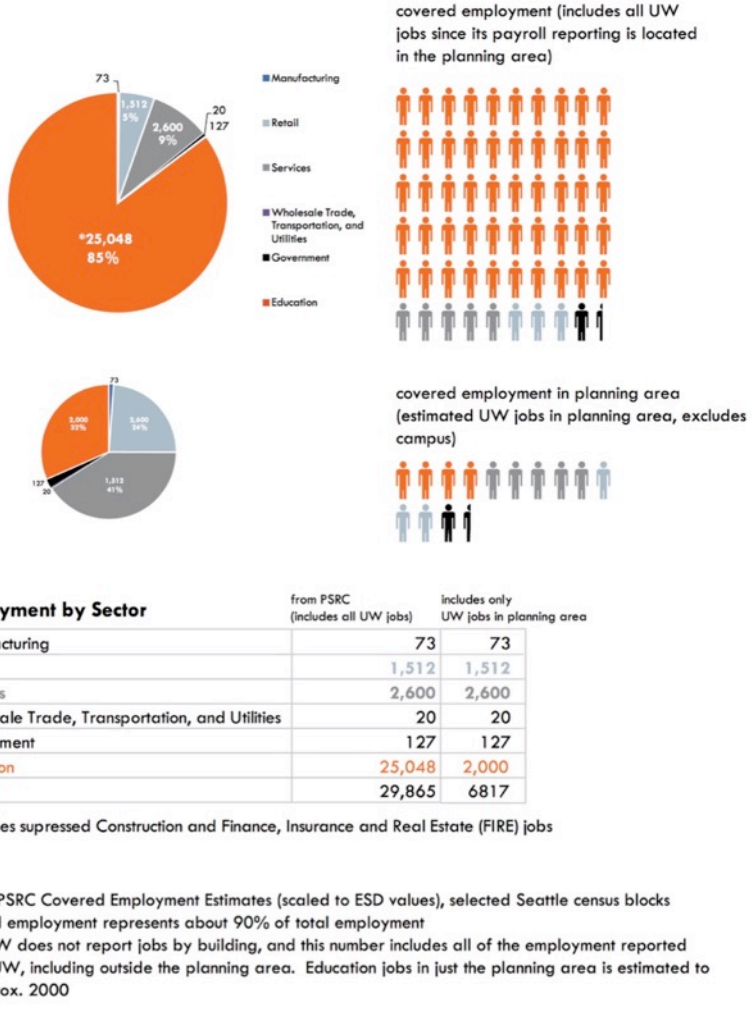


Figure 5-1-2 (https://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/dpdd016671.pdf)



Employment by Sector

	from PSRC (includes all UW jobs)	includes only UW jobs in planning area
Manufacturing	73	73
Retail	1,512	1,512
Services	2,600	2,600
Wholesale Trade, Transportation, and Utilities	20	20
Government	127	127
Education	25,048	2,000
* Total	29,865	6817

* includes supressed Construction and Finance, Insurance and Real Estate (FIRE) jobs

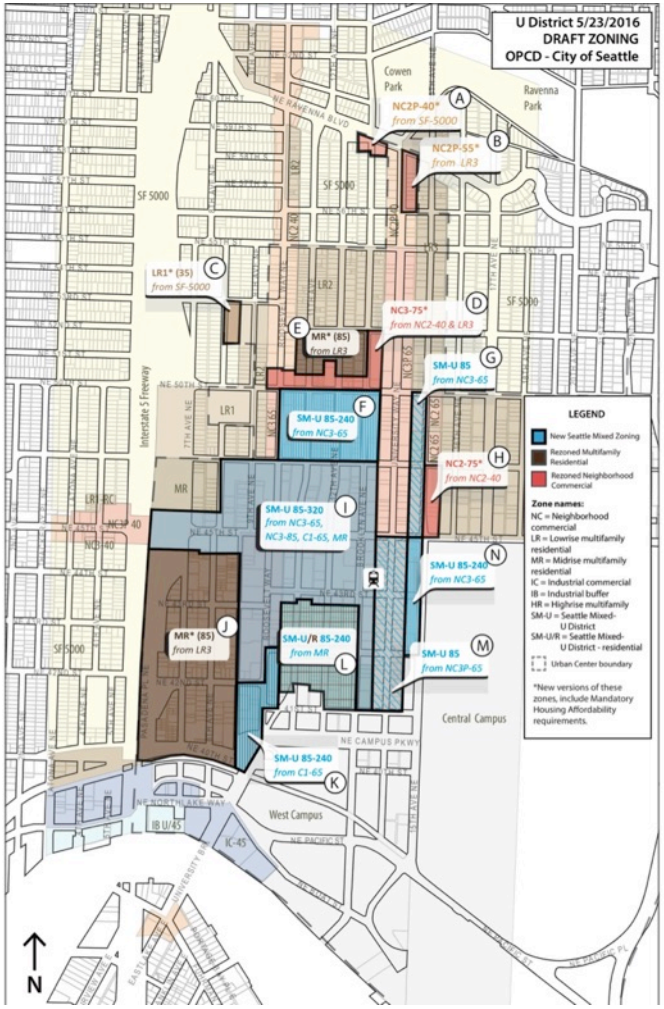
Source: PSRC Covered Employment Estimates (scaled to ESD values), selected Seattle census blocks
Covered employment represents about 90% of total employment
* The UW does not report jobs by building, and this number includes all of the employment reported by the UW, including outside the planning area. Education jobs in just the planning area is estimated to be approx. 2000

References: The Department of Planning and Development, 2012

Figure 5-1-3 (https://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/dpdd01667

5.2. U-DISTRICT REZONING MAP

Figure 5-2-1 (http://www.seattle.gov/opcd/ongoing-initiatives/u-district-urban-design)



The U-District rezoning map is still being developed but the common agreements have been reached and include a denser U-District, with walkable streets and more green public space. *(Seattle DPD - U District Draft EIS Sections 3-1 Land Use)* The U-District's recent draft Zoning (Figure5-2-1) shows a U-District that will be a more mixed-use neighborhood with high-rise buildings. Land use is predominately commercial/mixed-use with a relatively dense mix of residential, commercial, educational, and office use.

5.3. SITE SPATIAL ANALYSIS

Figure 5-3-1

The U-District land use map (Figure5-3-1), recognizes several main land uses, including single-family housing, multi-family (apartment), Retail space, institutional buildings, public facilities and a few mixed retail and living space. Seattle's U-District will become denser and accommodate larger populations in the future, current single-family houses will be replaced by high-rise apartments, most existing one-story retail space will be transformed into taller buildings. Lots of privately owned small parking garages and storage structures will disappear as well.

The urgent problem in the U-District is a lack of public gathering space both outdoor and indoor spaces. Although it is adjacent to the University of Washington campus, which is the main outdoor gathering space, U-District residents require more gathering spaces for community activities. The big opportunity for the future of Seattle's U-District is the coming Link station, which will bring more travelers, workers and other urbanites to the U-District, potentially encouraging a denser U-District.

Lots of historic single-family houses and one-story retail buildings have remained. (Figure 5-3-2) However, according to the U-District Future Rezones (http://www.seattle.gov/opcd/ongoing-initiatives/u-district-urban-design#projectdocuments), these single-family houses and one-story retail buildings will gradually be replaced by multiple-family apartment buildings and taller mixed-used building structures. Potentially, the adoption of the sharing cars and parking, will result in lots of parking spaces, including a 5-story parking garage and privately owned small parking structures will be transformed for other uses.

Figure 5-3-2

In Seattle's U-District, there are four types of parking space: private parking (apartment ground floor parking, alley and front yard parking), parking garages, public parking lots, and street parking. (Figure 5-3-3) My easier research suggests that the need for parking spaces will be largely reduced owing to the influence of sharing economy. In this way, lots of U-District parking spaces will be reduced in size and will be available to be transformed in the near future.

Figure 5-3-3

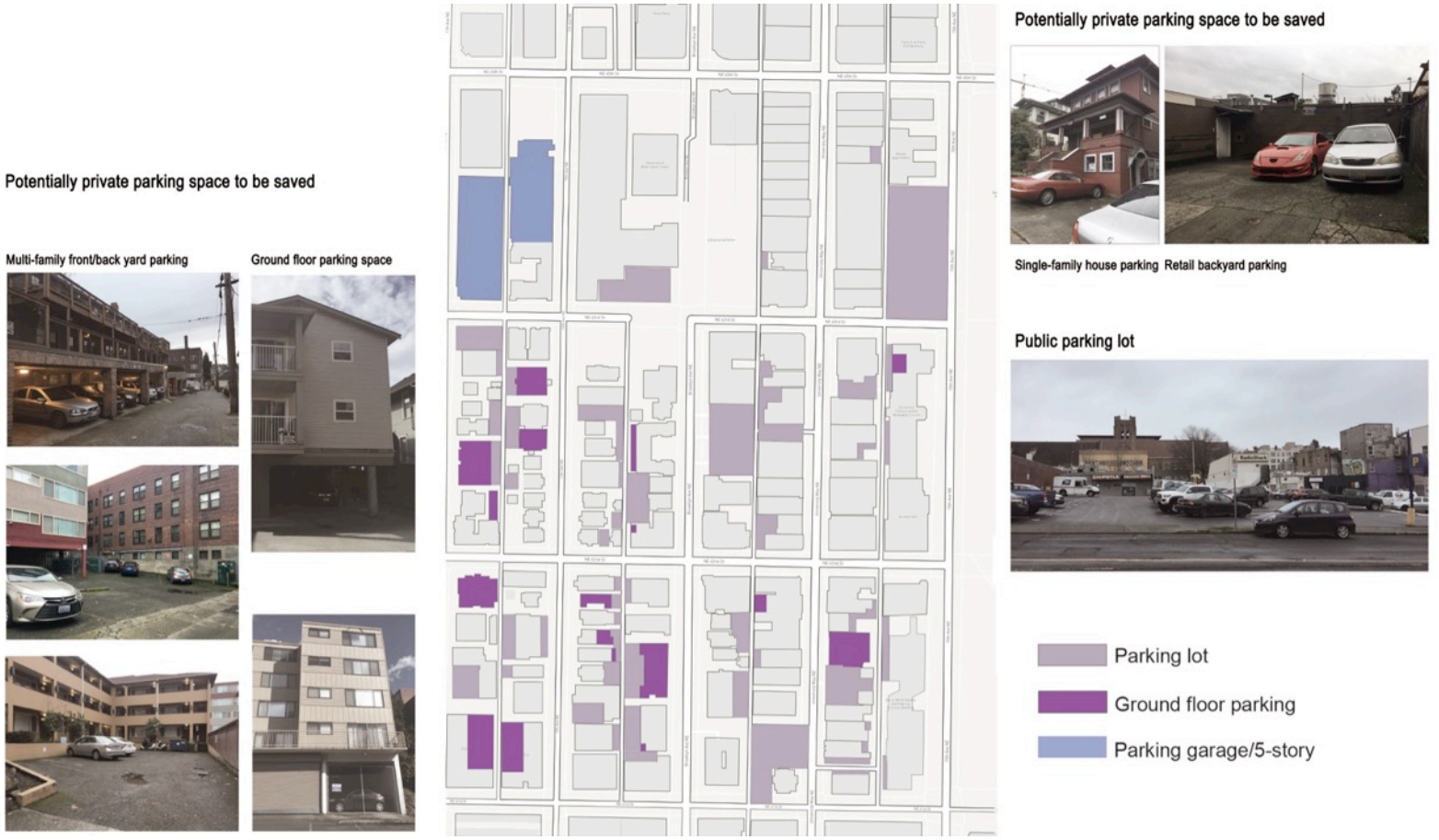
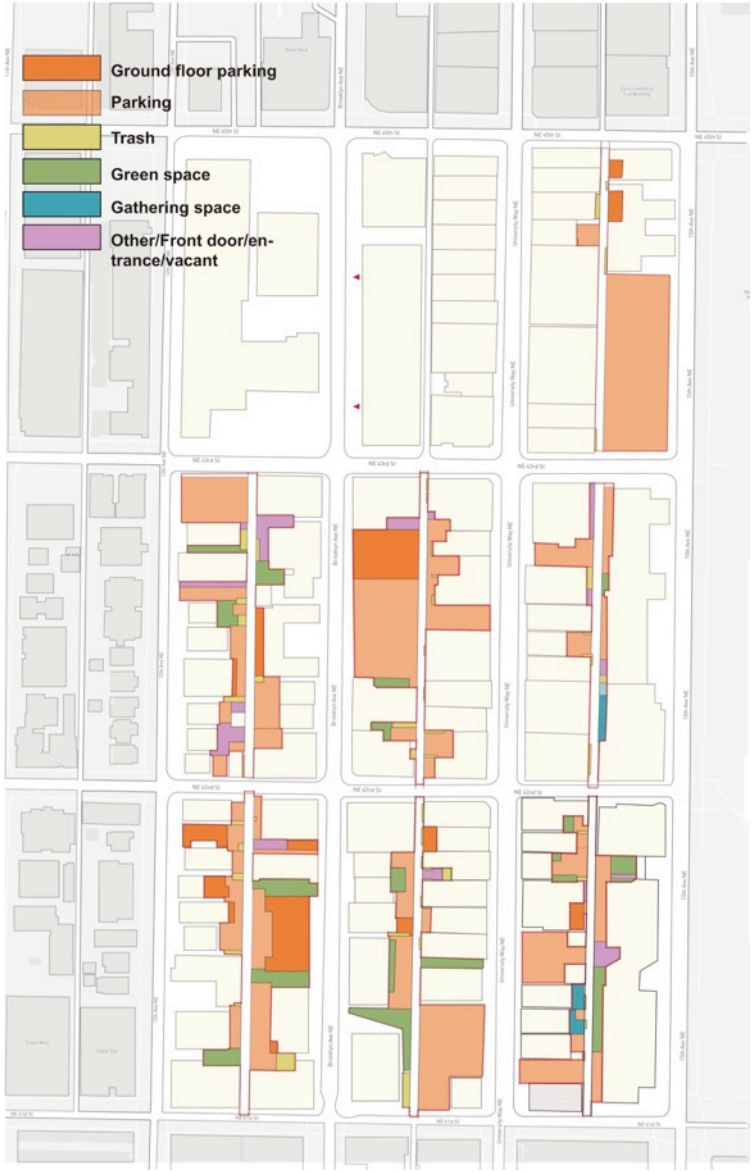


Figure 5-3-4



The current uses of alley space in the U-District include narrow paths, trash space, tiny green spaces and predominantly parking space. (Figure5-3-4) In Seattle's U-District, the majorities of alleys are unwelcoming because of the prevalence of dirty trash and occupied parking spaces. Thus, residents usually pass through the alley without stopping. Sometimes, these alleys are not safe because of illegal trades that happen in them. Additionally, 90% building ground floor spaces are used as parking space, which means people seldom use the ground floor unless parking cars in or driving cars out. No people in the ground floor means no eyes on the alley spaces, which could partially explain unsafe alleys.

However, sharing brings new opportunities for improved alley environments. It is possible that the majority of parking spaces including ground floor parking space, alley parking lots and trash space will be transformed. If these spaces are transformed into more people-oriented spaces, alley will become more socially friendly spaces and more inviting environments. Alleys could be not only pass through paths, but also socially active gathering spaces.

6. DESIGN IMPLEMENTATION

6.1. GOALS AND OBJECTIVES

The foundation of my design explorations in this thesis has been to anticipate the most probable sharing models that might reshape the physical urban space and social environments of Seattle's U-District. To clearly represent the specific impacts of sharing, I have had to make a number of assumptions based on my earlier research. All the assumptions are reasonable and are likely to occur in the near future. For example, I assume that U-District parking space will be reduced by over 60%. Research shows that parking spaces are already oversupplied by 65% in mixed-use urban districts in the US, which means current parking spaces can be reduced. In addition, both sharing cars and sharing parking spaces can also contribute to reducing the need for parking space. In this way, reducing parking space by 60% is a reasonable percentage for the future. Based on my assumptions and calculations, the following diagrams will illustrate spaces that could be saved, or spaces will need to be transformed, or to be added new values on, or will support new usages.

In order to create a more socially friendly and spatially flexible U-District, the primary intent of my design explorations has been to develop both comprehensive design strategies and detailed scenarios for coordinating changing land use patterns that may result from sharing economies. First of all, I will quantify how each of four main sharing activities--transportation, food, resources and space, may possibly and comprehensively reshape U-District urban space. I will develop design proposals that are coordinate with the transformation of urban space. The intent of my design proposals is to show how urban spaces can evolve positively, and my design proposals illustrate ways to develop better social and spatial U-District environments. I will look at three typical sites in U-District: a multi-family block, a mixed transit and commercial block, and the University Way corridor.

I will investigate the current conditions of these sites, and identify potential problems and opportunities that sharing activities may contribute to space transforming.

6.2. DEVELOPMENT PROCESS

- TRANSPORTATION

  There are four parking space in Seattle's U-District: 30% parking lot, 11% Ground floor parking, 48% parking garage and 11% street parking, which together cover about 43,038 square meters. (Figure 6-2-1) My assumption is to reduce this by 60%, leaving 40% of current parking spaces. My research indicates that private cars will in the future be reduced because of sharing cars or self-driving cars, and public parking space will be more convenient than private spaces for people to parking shared cars. As a result, private parking spaces could be reduced even more than public parking spaces. Additionally, to create bikeable and walkable streets, we hope that even more street parking will be removed. According to my calculations, we can retain 8% parking lot, 3% Ground floor parking, and 24% parking garage and 3% street parking. (Figure 6-2-2).

Figure 6-2-1 Current parking space types

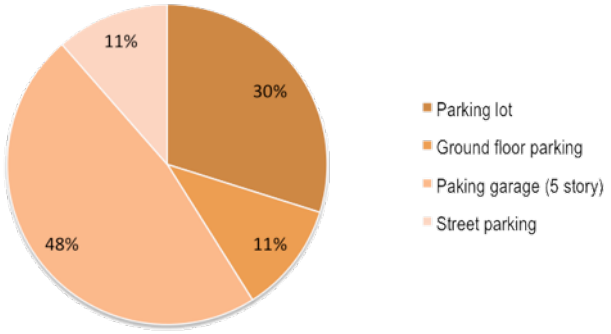
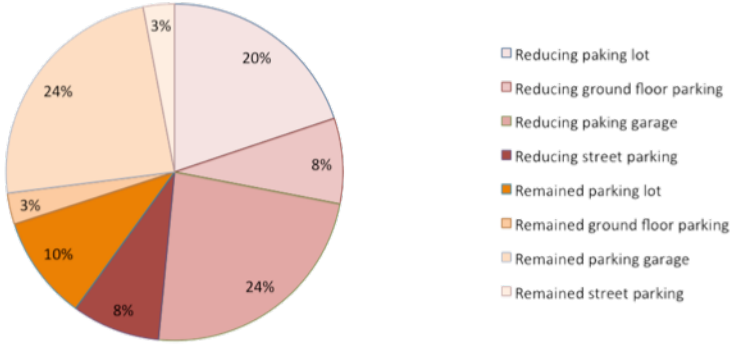


Figure 6-2-2 Reducing and remained parking space types



According to my calculations, 3% street parking space only occupies half a single side of the block. Here, I propose to place this 3% of street parking on two ends of one side street and leaving flexible unused space in the middle of the block for street gatherings, other activities and more green infrastructures. Additionally, more street space will become available as bike lanes on the other side of the street. (Figure6-2-3) To save more alley spaces to improve community social connections, 3% private parking spaces can be confined to locations near alley entrances. Above all, I propose to reduce parking space and transform space no longer needed for parking to other uses. (Figure6-2-4) In this proposal, 8% of street parking spaces are transformed to provide continuous bike lanes and adaptive street space for ecological and social purposes. Further, lots of alley parking spaces and ground floor parking spaces will be transformed into shared private spaces that may be open to the public for free or for a cost. Parking lots that are no longer needed can be transformed into public green space.

Figure 6-2-3 Street transformation proposals

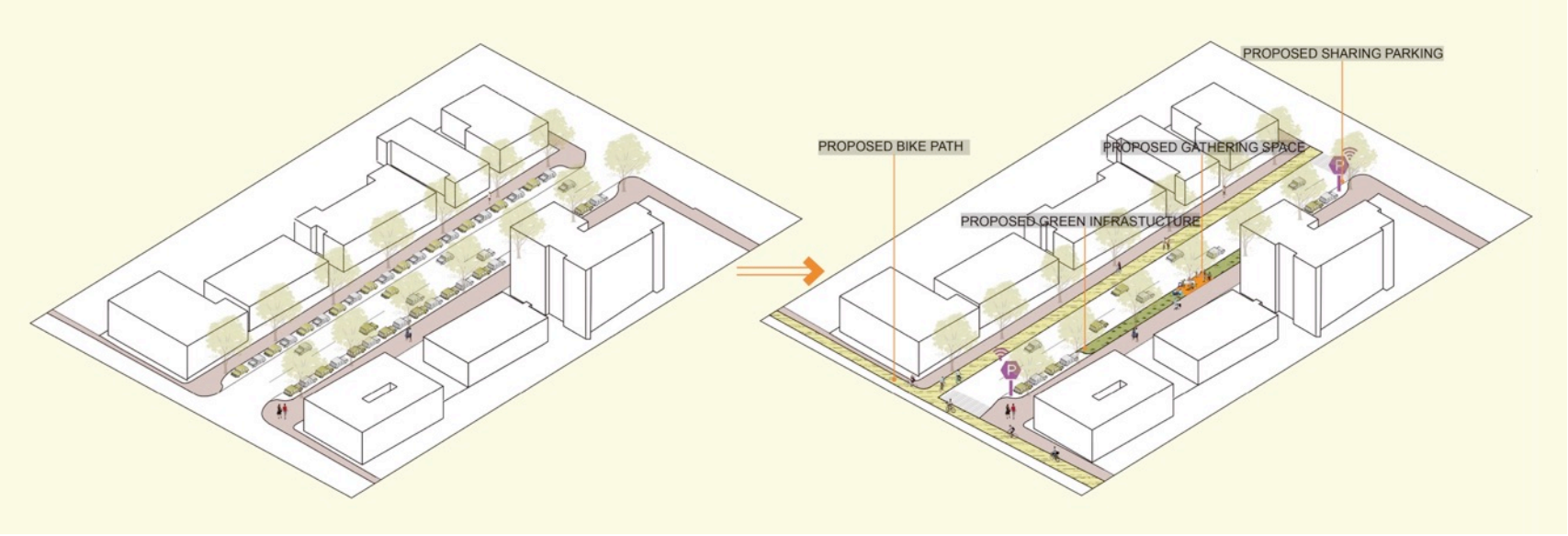


Figure 6-2-4 Parking space transformation proposals ONE

If shared cars and self-driving cars become increasingly successfully this will further reduce the number of private cars, thus the total number of cars would be reduced and there will be fewer cars on the streets. In this case, it may be possible to abandon some existing streets and

transform them into adaptive walkable streets for other uses, such as recreational spaces and green spaces. (Figure 6-2-5) In the second proposal, half of the streets in the U-District are transformed into adaptive streets, with the remaining 3% parking space occupying one side of remaining streets, and the other half of these streets converted to continuous bike lanes. In this case, U-District will become a public transit and bicycle-oriented urban area.

Figure 6-2-4 Parking space transformation proposals TWO

- FOOD

The Seattle U-District has lots of restaurants, café, and markets. I have interviewed over ten restaurants employees and found that lots of high quality cooked food is left over at the end of each day. Usually, employees take some of this food home, but they throw most of this extra-cooked food out because they are tired of eating the same food all the time. Ironically, there the neighborhood has lots of homeless and low-income residents begging for food. If there were small food banks to receive leftover cooked food from local restaurants and share it with for low costs or for free, this would contribute to saving food. In one of my case studies, sharing refrigerators in Korea, people can share their unopened food with others in their neighborhoods because lots of purchased food could be contributed by every family. If we provided sharing refrigerators where people can donate their food, and sharing kitchens where people can share and eat food together, this would also contribute to saving food. Potentially, food sharing spots could become strong community hubs where neighbors can meet, have conversations and build social bonds.

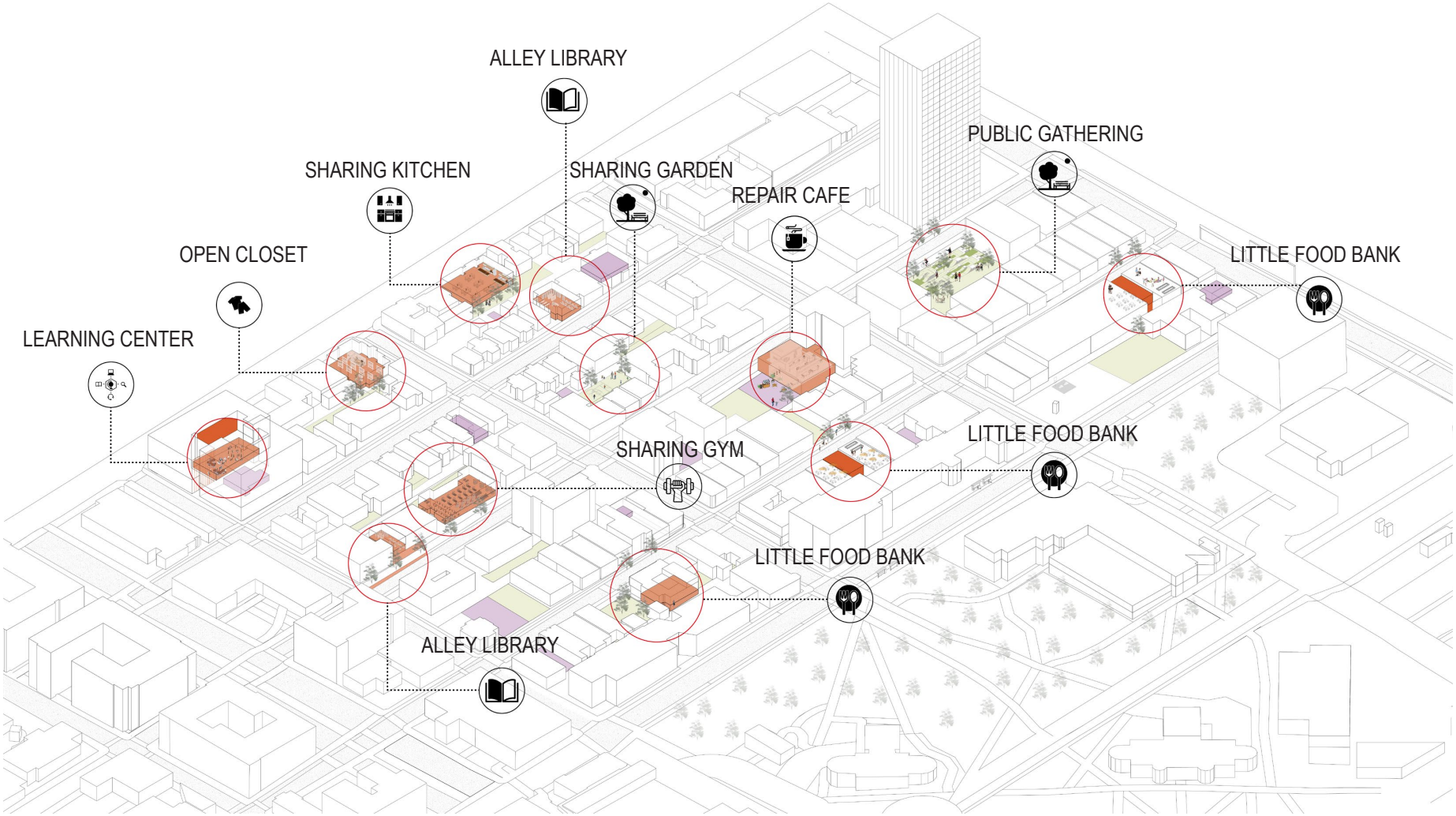
Sharing garden space, as food-producing agricultural land is a possible way to bring agricultural opportunities into our cities. However, there are also possibilities for roof agriculture and private developers could offer roof gardening spaces for dwellers. Seattle has a large network of P-Patch community gardens where people can grow their own food. However, lots of people are unable to successfully obtain a P-patch because of limited supply and so many applicants. Since many urbanites are obsessed with food production activities, sharing roof gardens is a possibility.

- Resources

Sharing resources include physical items and intangible values. There are lots of opportunities for U-District residents to share these sorts of resources. First, a large number of students live in the U-District for short periods of time from about six months to five years. When students leave, lots of items are thrown out, including clothes, furniture, tools, and books, etc. These could be useful for new students. Usually, students can sell belongs on Facebook, but this is not possible for all items. Second, some items that are only used occasionally can also be shared, such as weight scales, irons, vacuum cleaner, and repair tools. Third, there are large populations in Seattle's U-District possessing different background and skills, many of who are eager to learn something new. However, finding physical space to share these experience and learn new things is not easy, as we rely more and more on the Internet.

I therefore propose creating some sharing central spaces in the U-District such as apartment libraries, where people can rent/donate tools and borrow/donate books; repair cafés, where people can share experience and knowledge; open closets, where people can sell, buy and rent clothes; learning centers, where people can share or learn new skills, etc. These central spaces could be created from disused ground floor parking space, public facilities at certain times, or any flexible spaces. It is important to create some places in our cities where people can go to interact with their neighborhoods, to share their opinions with each other or simply to share the experiences of being humans. These proposed sharing spaces could act as stages created by urban designers where users create plays and engage in interactions. Sharing resources provide many diverse opportunities for stages and good plays in Seattle's U-Districts (Figure 6-2-5)

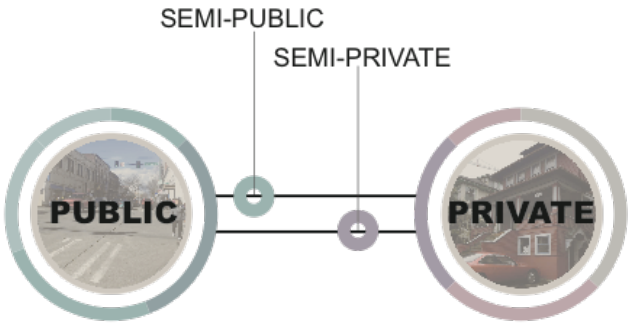
Figure 6-2-5 Sharing social hubs proposals



- SPACE

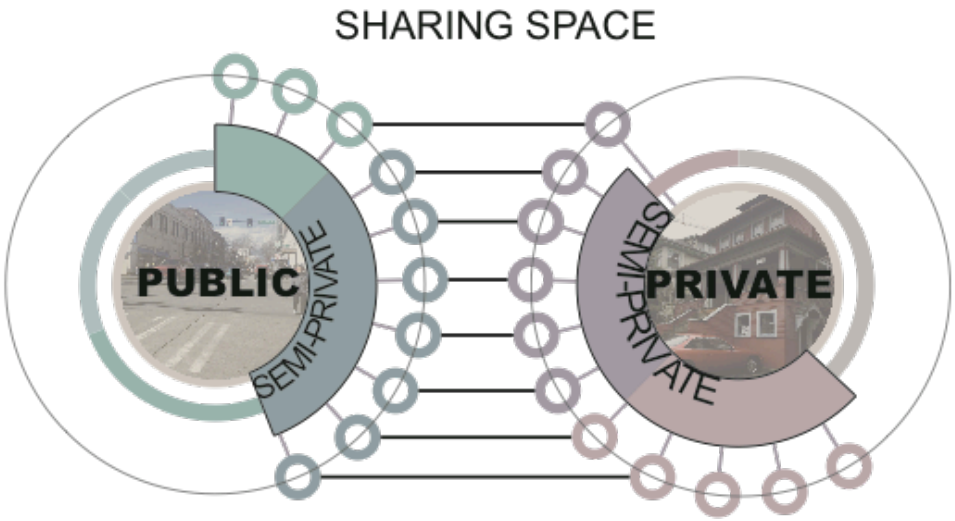
Developing cities, as sharing entities will attract most people to want to live in or move into them. In such cities, urban dwellers will get benefits of many public goods and shared resources such as sanitation, public health, transportation, and education. However, our cities don't share everything, especially private space. As the cities get denser, privatization expands. In Seattle U-District, for example, there are limited spaces currently available to the public. Residents commute between three spots: home, working/ studying space and markets. In the near future, sharing could change the public and private space typologies of cities and create more flexible spaces for people to engage with urban environments and their neighbors. Based on ownership and users, current urban spaces can be categorized into four categories: public space, where no permission is required to access; Private space, which are exclusively private ownership and right of use; semi-public space, that are under private ownership but open to the public; and semi-private space, that may be open to the public with permission. However, there are also possibilities for semi-public space and semi-private space. (Figure 6-2-6)

Figure 6-2-6 Current private & public space mapping diagram



Sharing economies may contribute to more fully connecting private and public space by offering more opportunities for developing intermediate-spaces. For example, sharing parking spaces, roof, gardens and co-working spaces could transform private spaces into semi-public spaces, where the public could easily access those sharing spaces within platforms. Additionally, sharing bedrooms, living rooms, bathrooms, kitchens, and co-living spaces provide opportunities to access the private space, which would increase more semi-private space in our urban environments. (Figure 6-2-7)

Figure 6-2-7 Proposed private & public space concept



Creating more semi-public and semi-private spaces is a sensible adaptive reuse of little-used urban spaces that are vacant for the majority of the time. This would entail changing private control of both ownership and right of uses. While still keeping their current functions re-conceptualizing spaces, semi-public and semi-private spaces provide a framework for sharing kitchens, living/working spaces, green spaces and community gathering space. It promotes urban adaptabilities and provides a wider range of possibilities for urbanites to have social activities and to thrive while bolstering human relationships thus enhancing Seattle's U-District as a livable city.

Sharing space makes space more adaptable, which encourages multi-use rather than single uses spaces. The current land uses in Seattle's U-District are residential, commercial and institutional space. (Figure6-2-7) Commercial spaces are mainly restaurants and cafés, and residential uses are mainly multi-family apartments. Restaurants could be shared as co-working spaces during times when they are not open; living rooms could be shared as co-working space as well, gardens and roofs could be shared for food production. I assume that 20% of living space could be shared as working space, and 10% residential parking space could be transformed into commercial space or gathering spaces; and 40% commercial space could be shared as working space and accommodate other uses; 30% of green space could be shared for food production and 10% of institutional space could be shared as community gathering spaces. We can expect a much more mix-used U-District spaces. (Figure6-2-8)

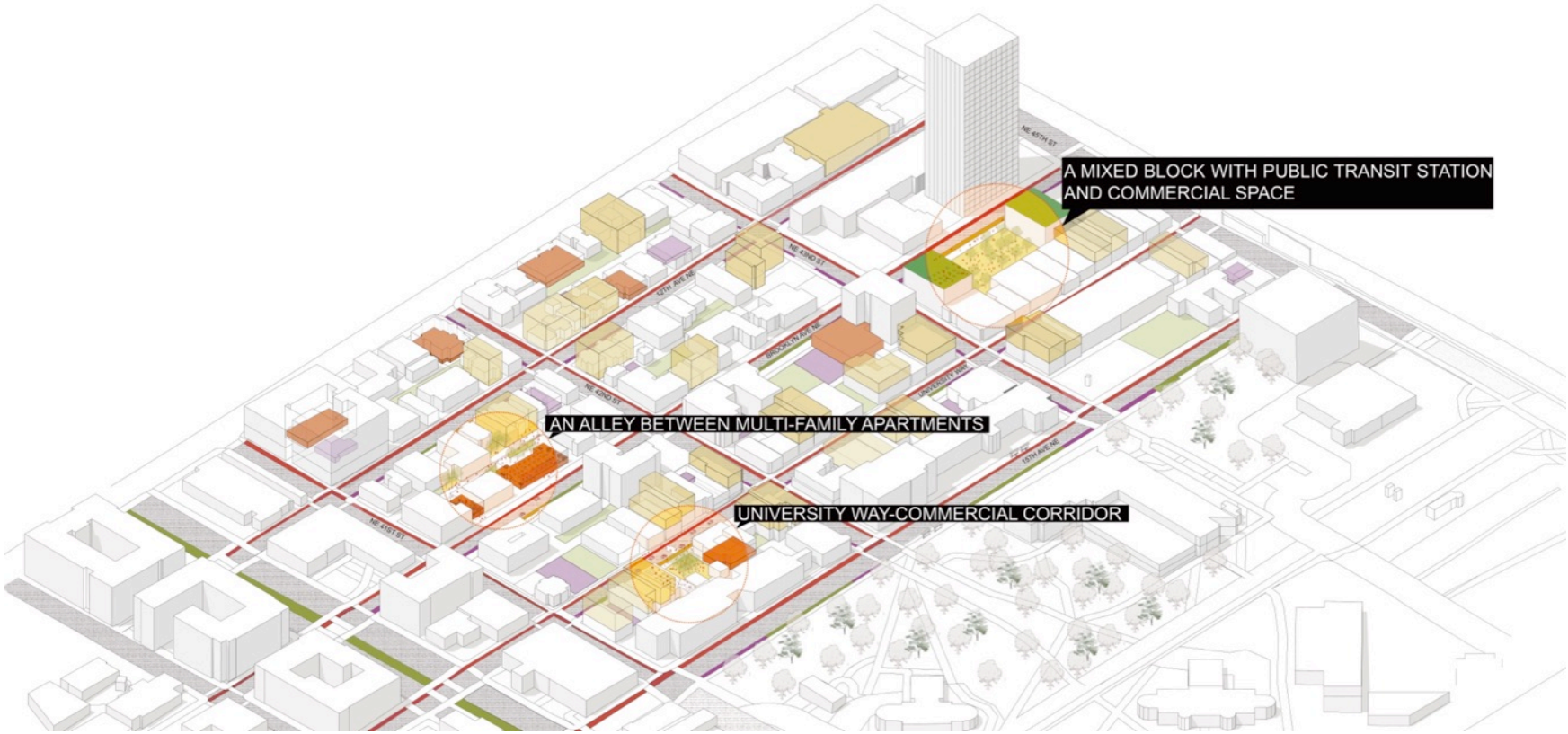
Figure 6-2-7 Current land use diagram

Figure 6-2-8 Sharing U-District land use diagram

6.3. SCENARIOS DESIGN

Seattle's U-District has four types of space: commercial space, multi-family space, institutional space and in the near future, public transit space. The three sites I chose for this scenario designs are a street between commercial space that is University Way; a mixed block with public transit station and commercial space; and an alley between multi-family apartments. (Figure 6-3-1)

Figure 6-3-1 Scenarios design locations



SCENARIO 1-NEW STREET FABRIC

First, the most urgent issue in Seattle's U-District is a lack of public outdoor spaces in which people can interact with each other. University Way is a busy street which people use because of its commercial activities and relatively good walkability. However, University Way currently provides limited space for gathering activities. Additionally, online commerce threatens the street's current 'real' brick and mortar economy in the Seattle's U-District, retail space especially clothes shops are gradually closed. The opportunity is that University way, as a busy street occupied by dense populations, accumulates economical, social, entertainment energy. In the future, if fewer cars will be on streets, parking garage along the University way and on-street parking spaces would be possibly transformed. (Figure 6-3-2)

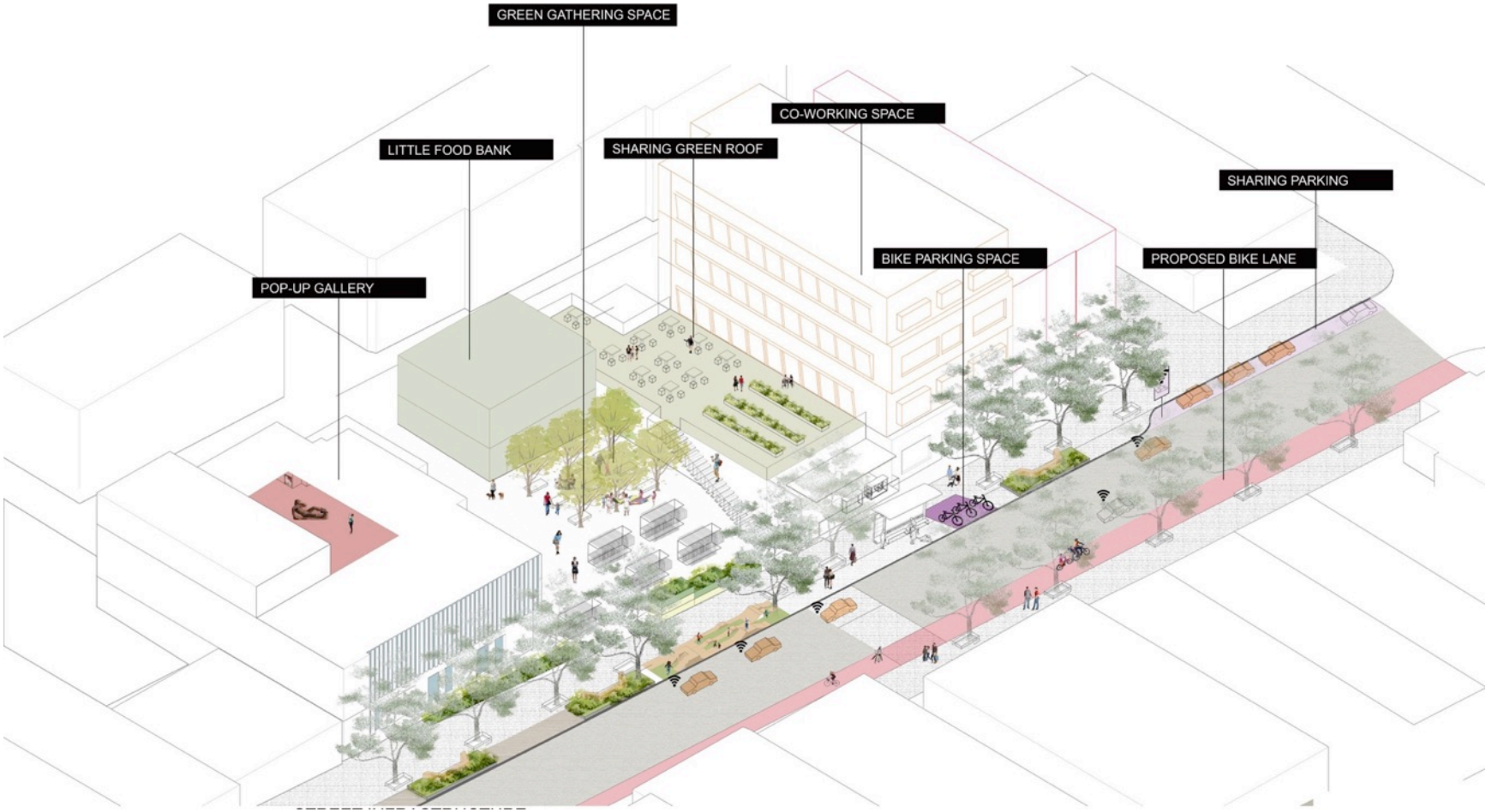
Figure 6-3-2 Current University Way

PROPOSALS

With the development of the sharing economy, University Way could become a linear public space for people to walk, bike and gather rather than a car-oriented street. I anticipate opportunities for the real economy in the future to provide better services through environments with social values. In this way, I propose to stitch commercial space on University Way. Sharing commercial space with the public will help create more semi-public and semi-private spaces, which will offer more gathering spaces, as well as creating better social environments. To achieve this goal of offering more social spaces and better commerce environmental values, I propose transforming University Way transforming as follows: (Figure 6-3-3) using space made available by sharing cars and parking spaces the street can accommodate, a bike path, more green gathering spaces, and a small amount of street parking. More facilities will be added to the streets such as bike parking space, green infrastructure, gathering space, pop-up spaces and bike lanes. Many sharing programs will contribute to connecting private and public spaces to improve social and commercial environments.

The sharing activities proposed to happen in the first scenario includes traditional sharing activities and emerging activities, which have developed new meanings on the basis of what they current represents. Here, little food bank means food-sharing spaces, where people can get qualified food for free or for a low price. The food shared in the little food bank, is donated by the neighbors or adjacent restaurants. Sharing parking, parking spaces are shared with the public on platforms so that drivers are able to easily find parking spaces, in order to reduce reserved parking spaces. Pop-up gallery, public facilities, churches and commercial spaces can be shared as a pop-up gallery when spaces are not used. Sharing green roof, private roof gardens are shared to the public or groups, who can access to roof garden by being members. Sharing private spaces with the public is a potential way to increase outdoor gathering spaces in the U-District area. Additionally, co-working spaces in the University way could be transformed from restaurants, café, and other retail spaces when they are not used.

Figure 6-3-3 University way design proposals



SCENARIO 2- MIXED-USE URBAN SPACE

Secondly, according to the Seattle U-District zoning, the University District will become much denser, especially when the new link station is opened. The coming link station will locate in a mixed-used block, mainly commercial spaces, multi-family and public transit. (Figure 6-3-4) According to the current planning, the new station has two main entrances in the Brooklyn Avenue. The spaces between two entrances would potentially open to neighborhoods as the public plaza. (Figure 6-3-5)

Figure 6-3-4 Scenario 2 site

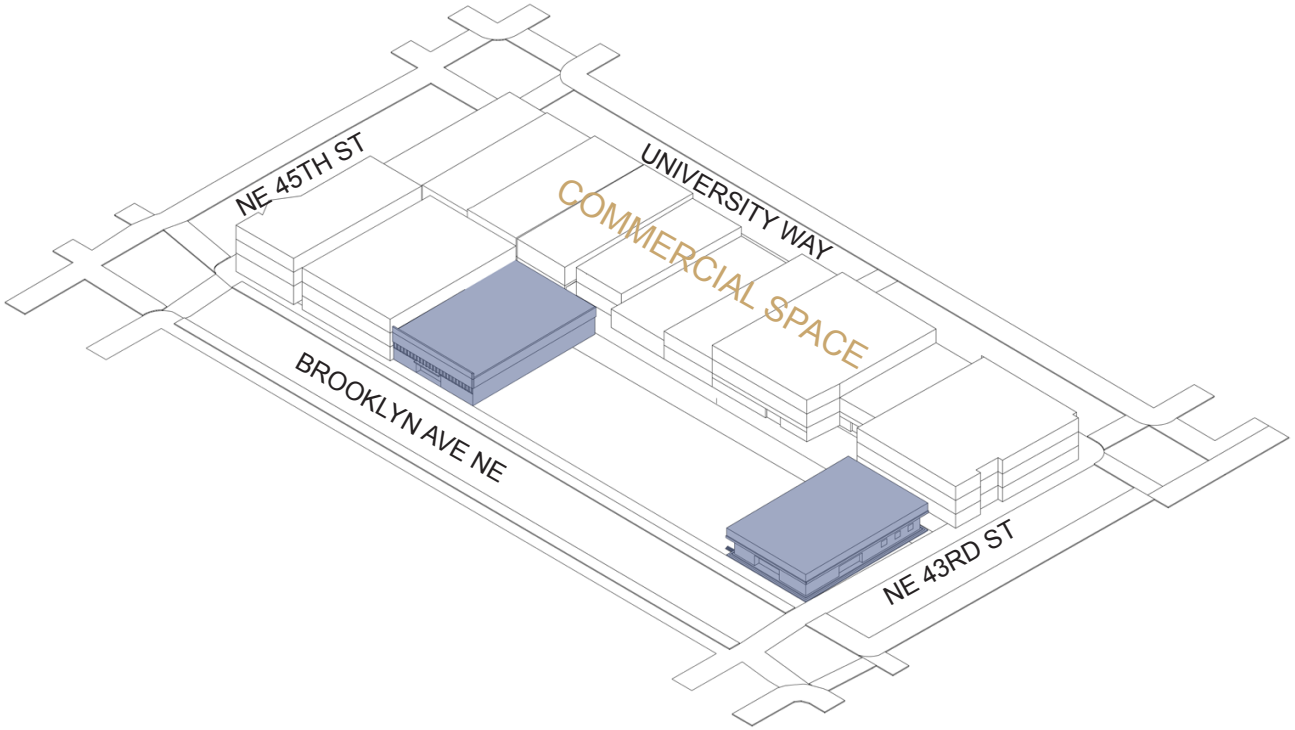


Figure 6-3-5 (http://www.seattle.gov/dpd/cityplanning/designcommission/cs/groups/pan/@pan/@designcommission/documents/web_informational/p2378468.pdf)

PROPOSALS

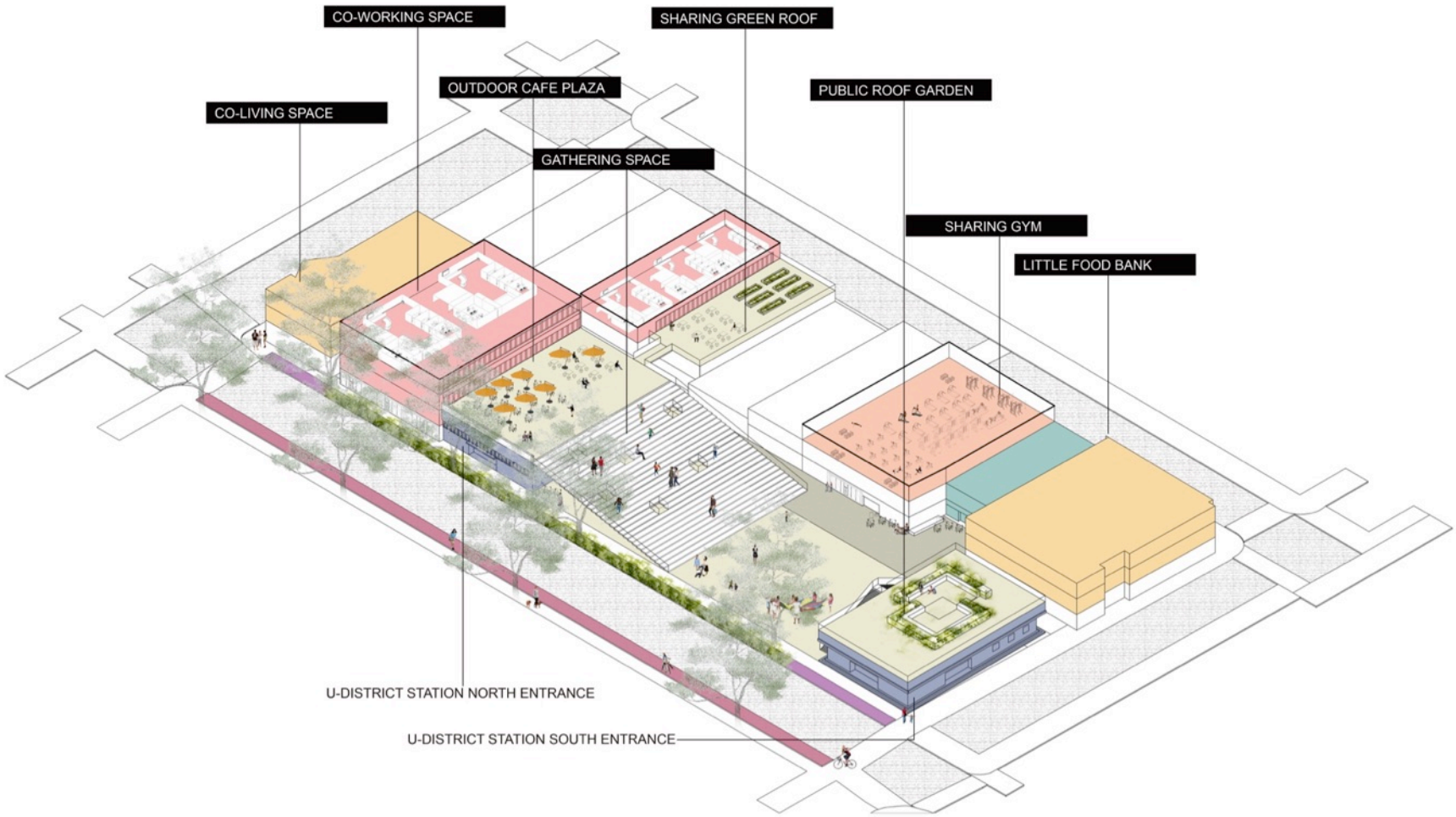
As a result, outdoor spaces will decrease even in from the current limited condition. Higher buildings shade the ground that poor people and homeless occupy. This scenario does not oppose all high-rise buildings but it proposes building the urban environments without much vacant space by reducing further constructions. It also proposes the creation of just urban spaces, where everyone can enough sunshine, warm temperatures and improved social environments rather than leaving only shaded corners for the poor. Here, I will look at the mixed-use block where the link station will be located and commercial space currently exists.

My research indicates that lots of U-District restaurants and cafés are only opening during lunch and dinnertimes and a large number of commercial backyards are filled with trash or are currently vacant. To fully use our urban spaces, we can encourage more sharing activities in these facilities and

locations. Sharing can shape these spaces to be more efficient and multi-functional. Restaurants could share their space with freelancer as co-working space when the restaurants are empty. Backyard spaces can be shared for gatherings such as beer drinking, meetings and outdoor cafés. Roof spaces can also be shared with the public to create economic benefits. Sharing can get a win-win by connecting the public train station with private commercial space. (Figure 6-3-6) When the number of users grows, many sharing activities could be encouraged in this block, such as a sharing gym, open closets, entertainment spaces etc. Such sharing activities potentially break zoning rules and encourage mixed-use urban spaces because, in this block, offices, restaurants, public station, entertainment spaces and a public plaza can be developed together.

The new sharing activities proposed to happen in the second scenario are as follows: sharing gym, public roof garden, co-working space, sharing green roofs, little food bank and co-living space. Sharing gym, neighbors can access it with gym sharing platform. With the platform, people can choose available gyms, which is the most convenient for them on different timelines. In this way, gyms are open to larger populations, while people can take exercise with more choices. Open closet, is the place, where people collect clothes and share with the students, new workers and other people-in-need. Outdoors café plaza and gathering space in this block can be managed by the private prosperities but owned and open to the public.

Figure 6-3-6 Mixed-use urban block design proposals



SCENARIO 3-IMPROVED ALLEY SOCIAL ENVIRONMENT

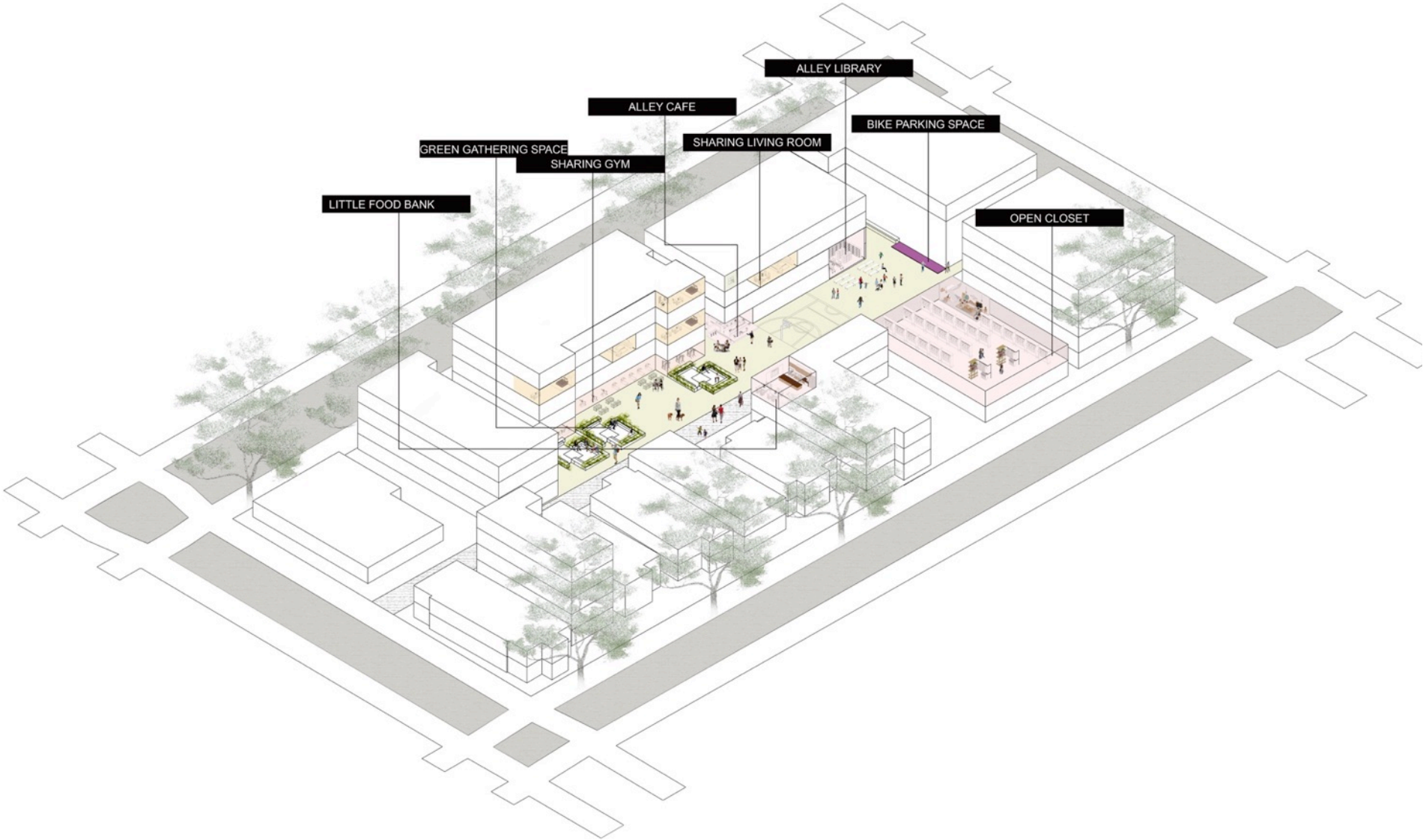
My final scenario looks at an alley space without much green space in a multi-family block along Brooklyn Ave. In this alley, parking occupies all of the ground floors, and parking and trash take up the majority of outdoor spaces. Residents don't come into the alley except to park cars or throw out the trash. No eyes on the alley and it is not safe because of some illegal activities, especially at night. (Figure 6-3-7)

PROPOSALS

In the near future, much of parking space will be unneeded, so the ground floor and alley parking could be transformed. In this alley, sharing activities could possibly contribute to a better social life for example by transforming the parking space into an alley library, sharing kitchens, sharing gardens, a sharing gym, sharing bedrooms and living rooms. This will create a better social space in the alley because the sharing activities are stages that will attract residents to perform their lives. Neighbors could gather in this alley more frequently, get to know each other and contribute to creating a safe and social friendly alley environment. (Figure 6-3-8) In this proposal, new green spaces and gathering space are proposed, where neighbors can interact with both nature and other humans; alley library, where people can rent tools and borrow books; a sharing gym, where people can access it with platform rather only open to the residents living in the apartment; sharing kitchen, where neighbors can share food together, etc.

Figure 6-3-7 Alley site analysis

Figure 6-3-8 Alley social environment design proposals



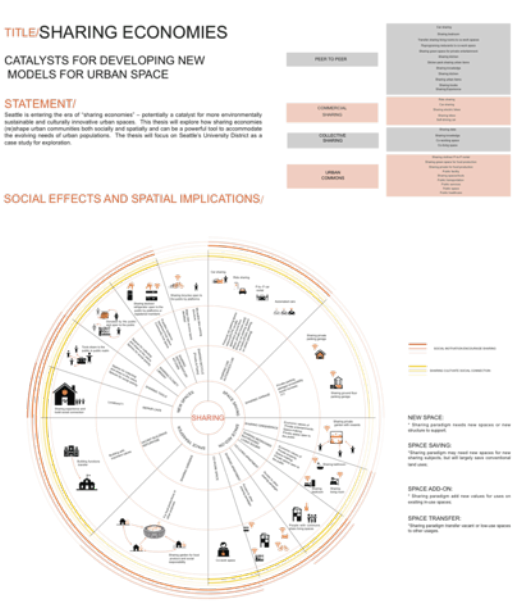
7. CONCLUSION

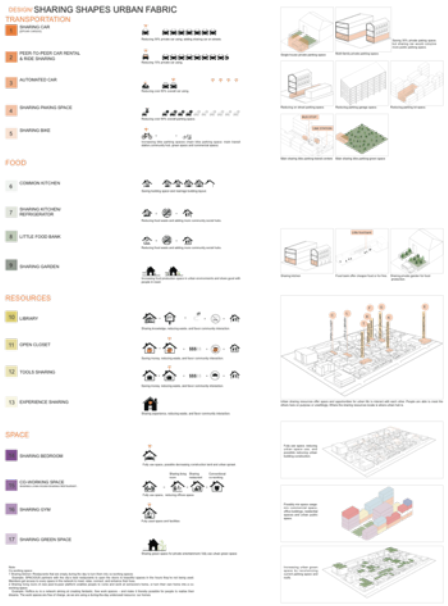
Sharing is going to happen no matter what we hope; sharing city will be more human-oriented, sustainable urban environments. It is vital for designers to recognize that and anticipate changes owing to the sharing activities. My design proposals in this thesis anticipate changes that might occur within five to fifteen years. However, with the development of new technologies and the shifting of societal values could result in sharing have more ambitious social effects and spatial implications than anticipated here. Although a sharing city is not a brand new cityscape, sharing will make our cities function differently. Sharing will spatially reshape our cities in a variety of ways: blending public and private spaces, encouraging mixed-use urban spaces, contributing to more open spaces and transforming streetscapes. The spatial effects of sharing can be beneficial and make more efficient use of urban resources, reduce waste, and more importantly, create a new and better urban fabric for people shared as humans.

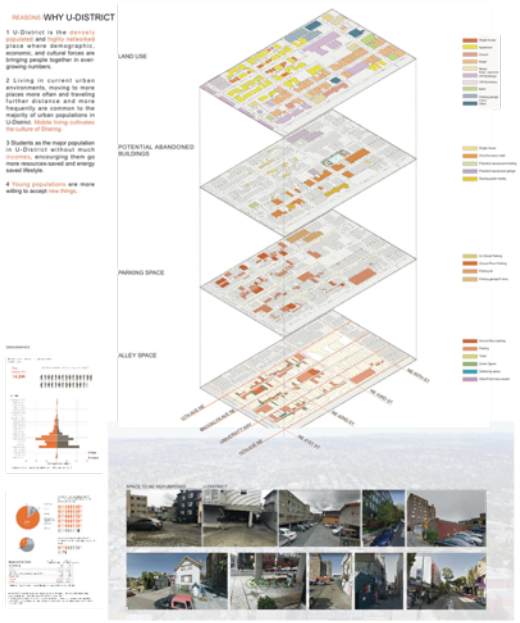
City streets will transform from car-oriented streets to people-occupied public spaces. Sharing can start an urban space Renaissance as it encourages human-oriented urban environments. Cities are not only the places where people can share public goods such as sanitation, education, transportation etc., but they are places that people can share and be fully human. To share spaces as human beings neighbors have to share opinions and values, and have social interactions with each other. In this sharing revolution of our city, contemporary technologies and new social values will provide opportunities to build social resilience and adaptively share urban spaces. In order to better capitalize sharing economy, Landscape architects/designers and urban planners should anticipate the ways in which sharing might impact our cities. Our position is clear that rearranging and transforming urban spaces should co-create positive future urban environments and designers should create the stages and urbanites develop the plays.

APPENDIX A: DESIGN POSTER

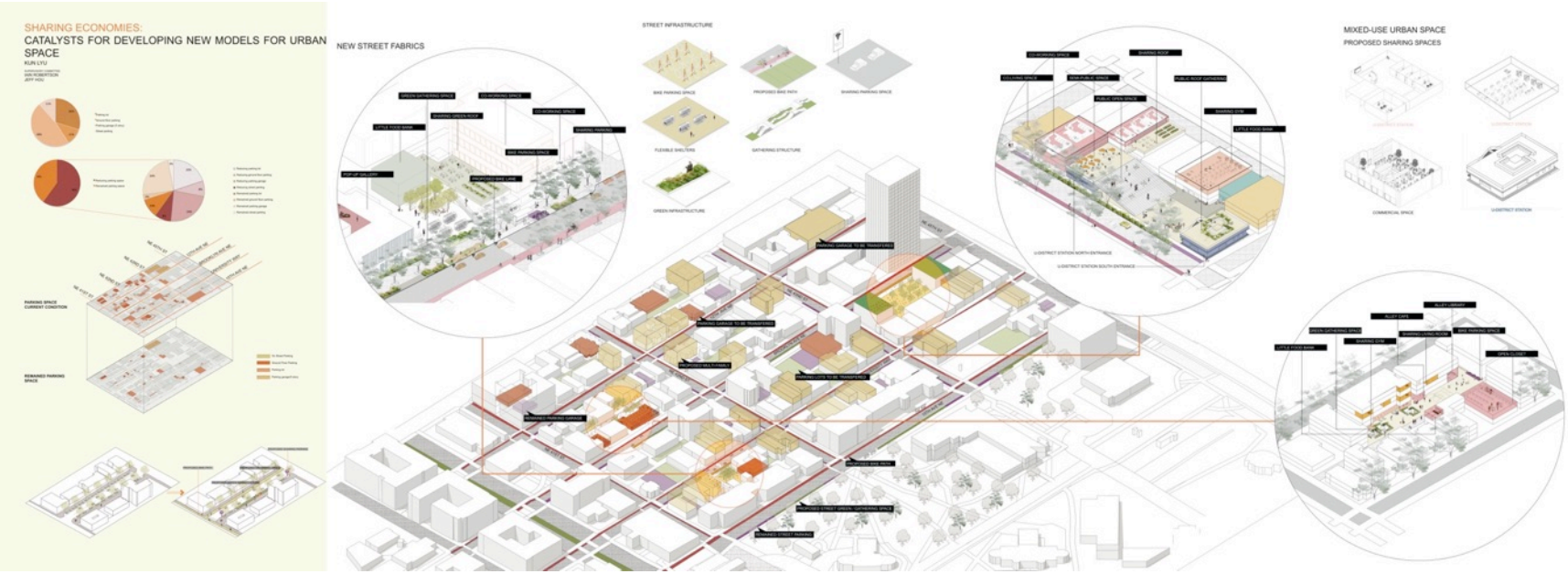
POSTER 1







POSTER 2


SHARING ECONOMIES:
CATALYSTS FOR DEVELOPING NEW MODELS FOR URBAN SPACE
KUN LYU
NEW STREET FABRICS
STREET INFRASTRUCTURE
MIXED-USE URBAN SPACE
PROPOSED SHARING SPACES

APPENDIX B: IMAGE GALLERY

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