CAMPUS IN TRANSITION: SUBURBAN TRANSFORMATION AND RESILIENT URBANITY

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ABSTRACT

This article looks at Finnish suburbs as a resource for urban growth. It explores the process of suburban transformation following the case of Otaniemi, an area which is actively changing following the regional development and the needs of the growing university campus.

The main focus of the study is the extent to which the suburbs, designed between 1960 and 1980 in accordance with modernist planning principles, can be transformed into livable and attractive urban spaces. Informed by two theoretical perspectives—social production and construction of space—this study outlines the factors which both enable and constrain suburban transformation using the data collected from 2015 to 2018. Study findings demonstrate that successful suburban transformation results from a combination of material and social factors.

The article suggests that social diversity is as important for a post-suburb as density, land use mix, and street connectivity, and that it calls for more attention towards non-material factors in urban design and planning.

KEYWORDS

Suburban transformation, modernism, Finland, social diversity

INTRODUCTION

Suburbs and urban sprawl have been subject to heavy critique due to their negative impact on environmental sustainability[1] and also to the high operating costs of services and infrastructures. Being a product of their time with post-war population growth, automobile-led development, and belief in a nuclear family, they seem obsolete for contemporary cities. However, suburbs can become a valuable resource for creating more decentralized and balanced urban areas. The notion of post-suburbia[2] suggests a new metropolitan reality which includes a more urbanized periphery.[3] In theory, post-suburbs are redeveloped to be more like a city, that is, denser and with a more complex land use and economic structure. In reality, the process of suburban transformation is slow due to the many constraints that prevent the suburbs from changing.

In Finland, urban sprawl originates from the planning paradigms introduced by the architects and planners Eliel Saarinen and Otto-Iivari Meurman in the 1950s. They advocated the concept of decentralization which supported urban growth through satellite cities, preventing the centre from becoming too populated.[4] As a result, the Helsinki capital region (the City of Helsinki and the satellite cities of Espoo, Vantaa, and Kauniainen) has a relatively evenly distributed population with an average density of 1,865 people per square kilometre,[5] which is less than half of the population density found in Amsterdam or Copenhagen. Today the satellite cities and the more classic suburbs built in the 1980s are problematic for the region as they account for high energy and transportation costs[6] and attract little new development in comparison to the city centre.

To change the situation in the capital region, the Helsinki and Espoo metropolitan areas have recently completed a milestone project of connecting several suburban areas to the city centre with an extended West metro line. The plan was to attract developers and increase the density of the suburbs, resulting in a higher quality of urban life. While better transport connections are indeed an important step forward, a successful suburban transformation implies more than that. In fact, more complex land use and economic structure,[7] walkability and compact form,[8] and street network connectivity and accessibility[9] are among the qualities that often appear in literature as the preconditions for livable urban spaces. Many require major changes in the street network, zoning regulations, and land use principles, which are challenging to implement in Finnish suburbs shaped by the functionalist planning paradigm.

The question posed by this article is if and how the suburbs, designed between 1960 and 1980 in accordance with the modernist planning principles of rationality and segregation,[10] can transform into livable and attractive urban spaces. The study follows the process of the suburban transformation of Otaniemi (Figure 1), an area in the City of Espoo which is home to Aalto University's main campus along with residential housing. The case of Otaniemi was chosen for three reasons:

1. It was originally envisioned and designed in line with modernist planning principles, segregating people and uses, separating pedestrian and car traffic, and leaving large open spaces between the buildings.
2. In recent years, the transformation of Otatiemi received a boost from the construction of the West metro line and the decision of Aalto University to consolidate its three campuses in the area.
3. Otaniemi is currently undergoing a sociospatial transformation following the needs of the university and the plans of the Helsinki capital region. New buildings and services emerge in the area, driving the process of urbanization.

At the same time, there are constraints preventing Otaniemi from changing into a dense urban cluster. Its plan and several buildings were designed by the famous Finnish architect Alvar Aalto and the area is subject to heritage preservation, making significant changes difficult. Additionally, the area has a nature reserve with birds and other protected species which could be threatened by intense urbanization and redevelopment.

Data collection for the article was done from 2015 to 2018. The first data set included official planning documents, historical records, maps, visualizations, and presentations about Otaniemi made by the representatives of the City of Espoo and development companies. It informed the study about the planning vision and policies, as well as about the values of different stakeholders. The second data set was collected through a range of ethnographic methods such as interviews, participant observations, activity monitoring, and engaged participation. This data shed light on the sociomaterial everyday practices which transform the space on the individual level.

Theoretically, the process of suburban transformation is analysed here from two perspectives. Social production of space highlights the economic, historical, and ideological forces that shape the material space, while social

construction of space emphasizes the changes which happen through everyday practices and human interaction. The combination of these perspectives allows the tracing of both the top-down strategies and the bottom-up tactics which contribute to suburban transformation.

Findings of the study demonstrate that successful suburban transformation results from a combination of material and social factors. The article suggests that social diversity is as important for a post-suburb as density, land use mix, and street connectivity, and that it calls for more attention towards non-material factors in urban design and planning.
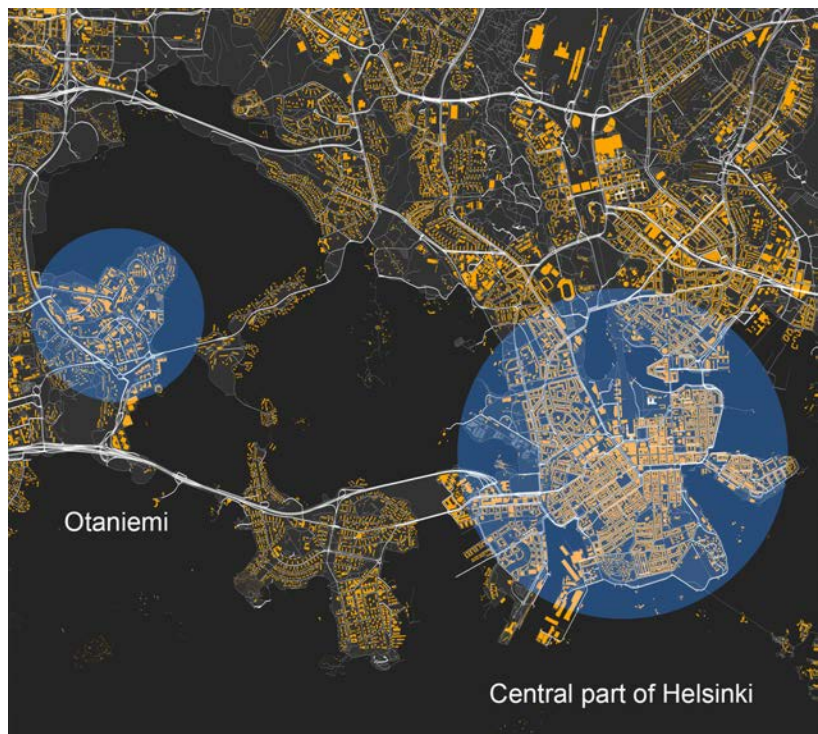

Figure 1. Otaniemi in relation to the central part of Helsinki. The map contains building footprints and road networks. Image created by the author with data from OpenStreetMap and by means of the OSMnx package developed by Geoff Boeing.

BACKGROUND

Originally, the rural area of Otaniemi (Figure 1) started to develop in 1948 after a decision made by the Helsinki University of Technology (TKK; Finnish: Teknillinen korkeakoulu) to move its premises from downtown Helsinki to a new location outside of the city. Two reasons contributed to this process: first, the economic growth and the post-war progress, which demanded more engineers and, consequentially, more and bigger laboratory spaces;[11] and second, the price of the land in Otaniemi (located in Espoo, the neighbouring municipality of Helsinki), which the university could afford to buy in order to expand its campus. The first buildings completed in Otaniemi after TKK's decision were the sports facilities and the student halls of residence in the Teekkari Village that were used to accommodate the athletes during the 1952 Olympic Games. Back then, the role of students and student culture was already visible in the way the new campus space was shaped:

> The construction of these buildings represents the world's largest stunt ever performed by students: engineering students helped on site to clear and move, in a voluntary work project, a total of 800,000 bricks from the Soviet Embassy, which had been bombed and destroyed during the Continuation War.[12]

The general plan of the area was designed by the Finnish architect Alvar Aalto. He won the town planning competition for the Otaniemi area in 1949.[13] By that time, Aalto had already distanced himself from the formalist ideas of CIAM purists and was concentrating instead on regional characteristics introducing a new Finish combination of town and country life.[14] His project was based on the Anglo-American campus model, but he also took into account the original agricultural landscape of Otaniemi.[15] The campus was designed around the topography of the area with the main building standing on a hill and others dispersed in the forested landscape: 'The buildings were placed either along the edges of open fields or in the middle of wooded hills.'[16]

Architects other than Alvar Aalto were responsible for shaping the physical space of the area: the oldest dormitories, the Servin Mökki restaurant, and the Otaniemi chapel were designed by Heikki and Kaija Siren. The Dipoli building, the headquarters of the student union, was designed by Reima Pietilä and Raili Paatelainen.[17] In the following decades, the campus continued to grow as new buildings were added, but its visual feeling did not change much (Figure 2), for the architects were echoing the designs made by Alvar

Aalto. The growth turned into stagnation during the recession of the early 1990s, when some of the university facilities were rented out as event venues because it was too expensive for TKK to maintain them.

Major changes to the area started happening in 2010, when TKK merged with two other universities (Helsinki School of Economics and University of Art and Design Helsinki) and became known as Aalto University. In 2011, the board of the Aalto University Foundation decided to concentrate the activities of the joint university in Otaniemi.[18] The motivation behind this decision was to support interdisciplinary collaboration,[19] and also to minimize future expenses by letting go of the property that the university was renting in other parts of Helsinki in favour of its own land in Otaniemi.

Moving three different universities together brought another set of concerns. The newly established Aalto University envisioned interdisciplinary collaboration between different fields as its core strategy, but the existing 'mono-functional green-field campus'[20] did not fully support this idea, so a new vision for the area had to be created. This vision became known as 'Aalto City', a concept which implies 'a versatile and interactive environment for research, arts, and free-time services'.[21] The concept included densifying the core of the campus area within a radius of 500 metres with new buildings and services.

Parallel to this, the City of Espoo launched a new urban development strategy known as 'T3' in 2011. Its objective was to develop Otaniemi and the neighbouring area of Keilaniemi as the largest high technology hub in Northern Europe.[22] Implementing this vision would not be possible, however, without better transport connections to Helsinki and other parts of the metropolitan region. In 2017, a metro line connected Otaniemi directly to central Helsinki, and in the early 2020s a new light rail called Raide Jokeri will connect Otaniemi to the north and the east of Helsinki.[23] With the faster and better connection to other urban areas, Otaniemi should have seen a construction boost and attract new development. However, this process was constrained by two factors: in 2016, the Finnish Heritage Agency declared the core area of the campus a protected cultural environment.[24] Although the university convinced the City of Espoo to alter the original plan by Aalto and allow the construction of a new building next to the metro, the protection of Aalto architecture strongly limits the development of the campus.[25] Second, Otaniemi is located next to a natural preservation area in Laajalahti Bay of the Baltic Sea, one of the key bird reservoirs in the metropolitan region. The

192-hectare Natura area features some of South Finland's bird wetlands, and the presence of the rare species extends to Otaniemi, limiting the amount of construction possible in and around the forests.

Most importantly, Otaniemi faces challenges with transformation due to the modernist nature of its design. Separated pedestrian and car roads, housing isolated from study and shopping areas, an abundance of open green spaces, and a sprawled character which complicates walkability are some of the characteristics typical of suburban university campuses.[26]

THEORY AND METHODS

To understand the process of suburban transformation, the study integrated two theoretical perspectives: social production of space and social construction of space. This approach was developed by Setha Low, who synthesized the works of Henri Lefebvre[27] and the writings of Peter L. Berger and Thomas Luckmann[28] in a framework that allowed her to analyse how culture is spatialized.[29]

Figure 2. Changes in Otaniemi between 1968 (upper left), 1975 (lower left), and 2017 (upper and lower right). Source: Aalto Visual Heritage blog (https://blogs.aalto.fi/visualheritage/). Archive images identified by Aalto University are free of known copyright restrictions. Images from 2017 are works by Tove Ørsted and Marika Sarvilahti and are attributed under CC BY 4.0 license.

According to Low, social production looks at the historical, economic, ideological, political, and technological factors which produce the material setting. Social construction, on the other hand, is connected to how people transform their everyday environments, 'through peoples' social exchanges, memories, images, and daily use of the material setting'.[30] Combined, social production and social construction reflect the dichotomy of space and place, the material and the social, and highlight the importance of both the top-down planning strategies and the bottom-up tactics of urban transformation.

These two perspectives informed the methods of the study. Social production was studied by analysing official planning and strategy documents, existing surveys, historical records, maps, visualizations, and the contents of public presentations about Otaniemi made by the representatives of the City of Espoo, Aalto University, or development companies. These materials were collected in 2015–18 from publicly available sources or recorded by the author during public events, workshops, and talks. Insights into social construction, on the other hand, were generated through fieldwork on site. Between 2015 and 2018, I made regular weekly visits to Otaniemi, participated in courses, conducted interviews with people who work, live, and study on campus (N=20), and documented my observations by means of field notes, photographs, and audio and video recordings. I also used the public life study methods pioneered by Jan Gehl[31] to analyse people's behaviour in public spaces, focusing on optional and social activities. This included counting people who were staying in public spaces in Otaniemi and registering the sites where it happened.

When analysing how suburban transformation happens in Otaniemi, the study looked at several criteria related to a well-developed urban realm. These criteria can also be divided into two groups, following the distinction between the social production and social construction of space. The first group consists of criteria related to the material setting. It includes qualities such as a mix of different uses, street connectivity, horizontal and vertical grain, walkability and accessibility. The second group refers to the social qualities of urban spaces. According to Emily Talen,[32] social diversity (in terms of income, age, family structure, and ethnicity) is a key characteristic of a successful urban community. This view is supported by Richard Sennett,[33] who argues that cities are places which encourage the concentration of differences.[34] The mixture of races, social classes, ethnicities, lifestyles, and cultures is what

produces informal learning and results through an exchange of ideas. It is 'a productive ground from which identity emerges'.[35] The connections between methods, theoretical perspectives, and criteria of suburban transformation are summarized in Figure 3.

FINDINGS

The findings of the study are grouped in accordance with the two theoretical perspectives: social production and social construction of space. To summarize the research results, each group lists the factors that drive suburban transformation and the factors that constrain it.

Social Production of Space: How Do Economic, Historical, Technological, and Ideological Factors Influence Suburban Transformation?
What Enables Suburban Transformation

At a regional scale, the suburban transformation of Otaniemi is supported by new and enhanced transport connections. The metro and the soon to be accomplished light rail connect the area to downtown Helsinki and the northern parts of the capital region, thus reducing car dependency and commuting time. At the neighbourhood scale, Aalto University is densifying the core of the campus around the metro. The new building (Väre) is directly connected to the metro and includes a shopping mall in addition to the university spaces, bringing a mix of commercial, educational, and recreational uses to Otaniemi.

Theoretical perspectives	Methods	Criteria related to suburban transformation
Social production of space	Analysing official planning and strategy documents, existing surveys, historical records, maps, visualisations and contents of public presentations	Mix of different uses, street connectivity, horizontal and vertical grain, walkability and accessibility
Social construction of space	Regular visits, interviews (N=20), participant observation, activity monitoring and other ethnographic practies	Social diversity or concentration of differences (races, social classes, ethnicities, lifestyles and cultures)

Figure 3. Research design: theoretical perspectives, methods, and criteria of suburban transformation. Image created by the author with data from OpenStreetMap and by means of the OSMnx package developed by Geoff Boeing

A decision to consolidate all of the schools of Aalto University in Otaniemi also had a major positive influence on its development as it brings more students to the area on a daily basis. Before the consolidation of the schools, the number of people was not enough to use the vast open spaces and squares, creating a feeling of emptiness. With more students coming to the area, existing public spaces have a chance to fulfil their social function of gathering and mixing people.

Aalto University clearly recognizes the problems associated with the way the area was designed. A quote attributed to the president of the university, which dates back to 2011, highlights the features of the space which emerged from modernist planning principles:

> The Campus Vision presented by the President of the University in June 2011 . . . criticizes the present state of the campus, marked with isolation, poor services, and areas heavily zoned for specific use and the infrastructure dominated by cars.[36]

The same viewpoint is shared by the higher management of the university:

> The opposite of this [socioeconomic] diversity is actually how the core of Otaniemi campus—designed by Alvar Aalto—is based on low degree mixing of users and user groups, and one could argue that there is a strong sense of formalism instead: the original plan from 1949 is based on concentrating buildings and roads on forested hills and ridges, while light traffic takes place on the lawns of lower fields. In the area produced by this original campus plan, the distances between different uses and user groups are huge, supporting private car traffic.[37]

Recognizing the pitfalls of modernist planning principles supports the university management in creating a new concept for campus development oriented towards urban values of mixed use, increased density, and transit-oriented mobility. The description of the future campus mentions the word 'lively' several times to emphasize the upcoming change in the monotonous suburban atmosphere of the area. This vision targets not only the new prospective students for whom Aalto University competes with other universities. A transformation towards the urban realm is meant to bring Aalto University more 'lucky encounters', a term used by one of the deans to describe interdisciplinary projects which emerge when people from different fields

meet. These projects can significantly leverage the profile of the university, attract additional sources of funding, and fuel innovation. Suburban transformation from this perspective goes hand in hand with economic concerns.

What Constrains Suburban Transformation

There are two main factors which constrain the suburban transformation of Otaniemi from the social production perspective. The first relates to the morphology of the space, which the current development plans do not change. The second emerges from a discrepancy in the vision of the future of Otaniemi held by different stakeholders.

Even though the current plan highlights densification and new construction, such new development does not change the morphology of the space which has been shaped by the functionalist principles of the modernist approach to urban planning. The difference between Otaniemi and a morphology which supports walkable, compact, and mixed neighbourhoods can be illustrated by comparing it to another, older neighbourhood. Figure 4 demonstrates the differences between the road network and the building footprints in Otaniemi and Kruununhaka, an area in Helsinki which developed prior to the twentieth century.

While both areas are relatively similar in size, their morphological features reveal very different patterns. In Kruununhaka, an orthogonal grid of streets forms small blocks of different sizes. Building footprints mimic the street network and create a continuous 'street wall'.[38] In Otaniemi, the situation is entirely different. The street network follows the topography of the landscape and the logic of car movement. Since the pedestrian and the car traffic are separated, the street network is much less developed. The buildings do not form a continuous wall, but are positioned as separate blocks with their own setbacks.

This kind of morphology falls at odds with the principles of a socially resilient urban form, walkability or accessibility. Jane Jacobs's formula for urban diversity[39] stresses the importance of short blocks, mixed primary uses, old buildings, and concentration. Jan Gehl highlights the importance of active edges to make public life happen,[40] echoing Richard Sennett's ideas about borders versus boundaries.[41] Small grain and horizontal grain are mentioned in John Montgomery's principles of a good city.[42] Larger buildings set apart from each other can produce desired densities, but this does not necessarily create the same feeling as an area with a more compact structure:

A tall enough building with enough people living (or even working) in it, sited on a large parcel, can easily produce the densities we have talked about and can have internally mixed uses, like most 'mixed use' projects. But that building and its neighbours will be unrelated objects sitting in space if they are far enough apart, and the mixed uses might be only privately available.[43]

Another factor constraining the urban transformation of Otaniemi lies in the differences between the visions of its future held by the different stakeholders. The key players in the campus development, apart from Aalto University,

Figure 4. Morphological structure of Otaniemi (right) in comparison to Kruununhaka in central Helsinki (left). Top images display the car street network, while the bottom images display building footprints. Images created by the author with data from OpenStreetMap and by means of the OSMnx package developed by Geoff Boeing.

include the Aalto University Student Union, the Senate Properties, and the City of Espoo.[44] Each has its own agenda which envision a different future. Additionally, the Finnish Heritage Agency has a strong opinion about the changes that happen in a historically protected area. In the spring of 2017, an article in the leading Finnish news outlet *Helsingin Sanomat* featured an opinion written by the Alvar Aalto Foundation's director, who was concerned about Otaniemi losing its historical value because of the growing ambitions of Aalto University to make it denser:

> Alvar Aalto wanted to preserve the green areas and the hills. Now everything is filled. This should not be the case. In the worst case, even environmental crimes are legitimized.[45]

These different perspectives reveal a conflict of values behind the development of Otaniemi. While Aalto University wants to create a dense urban cluster, the narrative of the City of Espoo is based on innovation, competitiveness, and technology rather than on active urban life. Students want more housing, while local residents adopt a NIMBY strategy to stop new development in front of their property.[46] At the same time, public opinion falls victim to experts arguing for a need to preserve the landscape designed by Alvar Aalto, further blurring the narrative of a dense urban cluster. The importance of a shared narrative has been highlighted in urban planning discourses,[47] and two recent cases of urban transformation (Tammela neighbourhood in the City of Tampere and Tapiola just next to Otaniemi) demonstrate that the narrative as an instrument of power is extensively used in the Finnish context by decision-makers.[48]

Social Construction of Space: How Do People and Their Everyday Practices Influence Suburban Transformation?
What Enables Suburban Transformation
Some spaces in Otaniemi display social diversity which emerges in an organic, bottom-up way. During the fieldwork, my data collection protocol included recording the so-called optional and social activities.[49] They are the opposite of the necessary activities, such as going to work or to a shop, because they don't have a clear goal: people stay in public spaces only if they want to. Optional and social activities bring more people for longer periods into the public spaces, creating a natural concentration of different groups and a more urban-like feeling.

The site where I noticed the biggest concentration of optional and social activities was an old shopping mall designed by Alvar Aalto in the vicinity of a more iconic and well-known building. In most of my observations, I could notice at least one person casually hanging around outside of the shopping mall with a cup of coffee or a meal from a burger kiosk nearby (Figure 5). The shopping mall attracted different groups of people: students, construction workers, and local residents. It was one of the few venues where people felt comfortable staying in the public space by themselves. In other locations, I sometimes noticed groups of people spending time outdoors, but rarely individuals. I found these observations significant for the study because they directly pointed towards Talen's and Sennett's definitions of a well-developed urban realm (a mix of different classes).
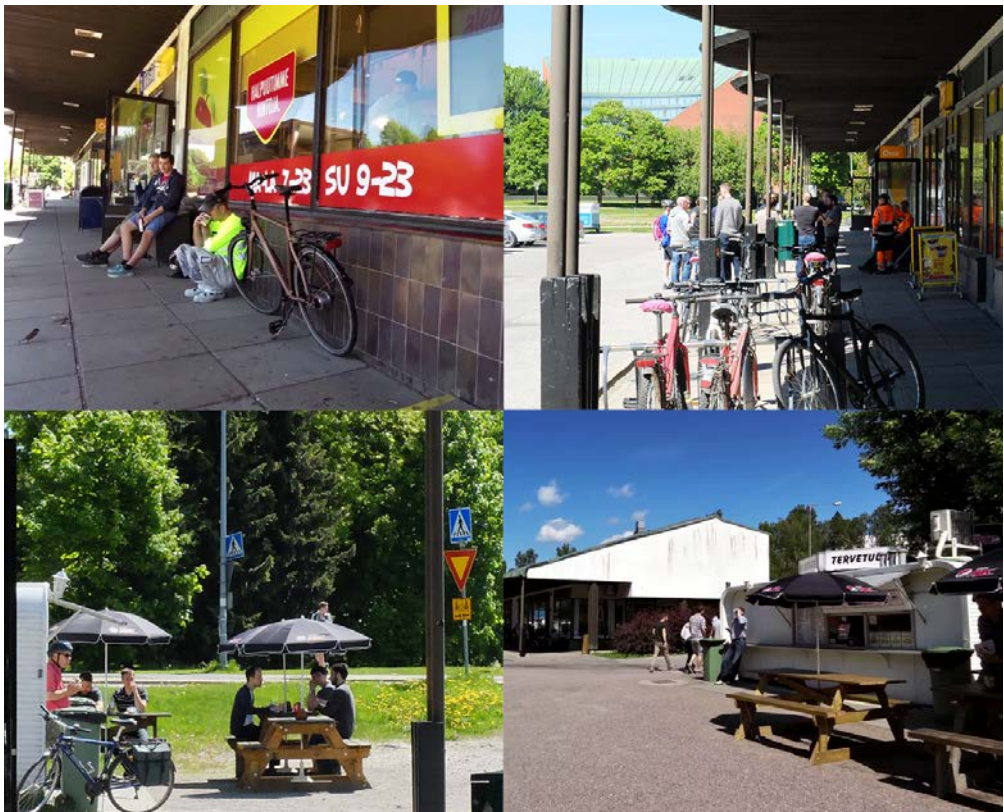

Figure 5. Activities observed around the old shopping mall (top) and the nearby X-burger place (bottom). Photos by the author.

The old shopping mall had several features that attracted people and invited them to stay:

- **Services that target different groups of people.** An art supply store and a coffee shop were situated next to the burger truck. A workshop with sewing and embroidery machines was next to a grocery store. This mix of functions attracted a mix of people that otherwise would not meet.
- **An interface.** Most of the wall surface of the shopping mall is covered by transparent windows which allow eye contact and communicate what's inside. When passers-by saw people inside the shops or cafes, they were more likely to go inside as well. An active interface is a reflection of the border, membrane-like condition highlighted by Sennett.[50]
- **Closeness to human flows.** The shopping mall has no setback and forms a street-like pattern, turning the space under its roof into a sidewalk. As the place receives a flow of people due to a variety of functions, people stay there because they can observe other people, a quality which is known to support public life.
- **Material elements.** The space outside the shopping mall has temporary seating, outdoor furniture, bike racks, and protection from the weather conditions, fitting most of Gehl's criteria for good public spaces. Moreover, the protected space had a strong edge effect,[51] allowing people to stay along the border between two distinct areas.
- **Aesthetic character.** Unlike the other buildings designed in Otaniemi by Alvar Aalto, which require distance to appreciate their composition and harmony with the surrounding landscape, the shopping mall feels more intimate. It is famous for its wavy copper roof, but its aesthetics is everyday rather than monumental.

This shopping mall faces the challenge of maintaining the same level of social diversity in the future: once the metro started operating in 2017, most of the stores moved to the new shopping centre built in connection with the metro station. The old shopping mall will undergo renovation work, but attracting the same diversity of people once it reopens might be a challenge.

What Constrains Suburban Transformation
Student unions and guilds own an extensive infrastructure of amenities and have a potential to make the campus more interesting and vibrant. However, their exclusive, members-only attitude and the lack of ongoing operations

significantly reduce their possible positive impact on suburban transformation. The exclusive approach that the student unions practise is adjusted by their history, culture, and traditions, but at the same time it contradicts the ideals of a city, where the spontaneous, unplanned, and inclusive activities dominate over the privatized and exclusive ones.

Typical for Finnish universities, student unions are strong and independent bodies with an independent financial status and an ability to impact the development of the campus space:

> In Finland student unions have had a well-established legal and economical position since the 19th century. . . . All undergraduate students are automatically union members and obliged to pay an annual membership fee, which guarantees regular incomes for the unions. The oldest organizations, such as TKY, have gathered substantial fortunes over the decades.[52]

The purpose of the student unions historically has been to advocate the interests of the students and to nurture student communities. The student body, AYY (Aalto-yliopiston ylioppilaskunta), is the main protagonist and boasted more than 15,000 members in 2018. It includes the former student union of the Helsinki University of Technology (TKY), the student unions of the Helsinki School of Economics (KY) and of the University of Art and Design Helsinki called (TOKYO).[53] Despite the university merger in 2009, both the KY and TOKYO remain rather independent in terms of their operations and contact with the respective student communities. TF, the union of Swedish-speaking students, also maintains its independent status. It is physically manifested in the property that the unions own: TF manages a student restaurant building, Täffä, while KY owns two buildings in Otaniemi: Espilä and Saha.[54] AYY manages a number of saunas, sitsi locations (organized seated dinners), and meeting facilities, including a cinema. In addition, the guilds (student associations related to a specific department or programme) have their own guild rooms, and smaller student clubs operate in clubrooms, which are mainly located in the student village.

During my fieldwork, I made several attempts to investigate how to access the infrastructure controlled by the student unions and guilds. It was not an easy task since my status of a doctoral student in the School of Arts, Design, and Architecture did not automatically make me a member of any student association. I first interviewed students (N=7) who were either living in Otaniemi or were part of a student association, and after getting

the background information, I went on several visits to five event facilities and clubrooms. My main finding was that it was difficult to call these spaces completely public. Although there were no formal restrictions stipulating that only people belonging to Aalto University could use them, there were other kinds of constraints. First, some of the spaces operate on a pre-booking basis, meaning that all activity must be arranged and agreed on in advance. Secondly, their discoverability is complicated: some of them occupy spaces inside the student housing and are not visible from the street level. Also, discovering what is happening in a particular space is not easy since communication is primarily maintained among the members of the association to which the space belongs. When I discovered one of the clubrooms by chance, the members-only attitude was evident as people inside the room were waiting for me to leave before continuing their routines.

Among the students themselves, there are attempts to make the infrastructure of the associations more public and open: in 2017, a group of students started a project called 'Otaniemi sauna life', allowing people to join sauna sessions without pre-booking. Another project I have been observing closely, 'Otaniemi Free Space', has set a goal to break the boundaries of the student associations and operate on the same basis as a cafe or a co-working space. Despite these efforts, the future of the spaces which belong to student unions is unclear. AYY is currently collaborating with other student guilds in an effort to build a large student centre in the heart of the campus area. Depending on their decisions, it will either continue to be a facility with spaces for pre-organized events and clubrooms, or it will become a venue that supports more inclusive and open operations.[55]

DISCUSSION

Following the three years of spatiosocial development in Otaniemi, the study outlined the factors which both enable and constrain suburban transformation. The findings of this study can be summarized in a simple matrix (Table 1).

To answer the question as to whether the suburban transformation of areas built in accordance with the functionalist principles is possible, we need to clarify the outcomes of this process. If density of people or buildings is an indicator of a developed urban realm, then Otaniemi is rapidly transforming into a city. At the same time, the mix of uses is still relatively low and the space does not develop a compact city fabric as the new development continues to reproduce large buildings with setbacks. Depending on how we characterize

the urbanized post-suburb, the transformation process can be evaluated as more or less successful.

The distinction between social production and social construction allows for a shifting of focus from the material factors of density, land use mix, and street connectivity to the social dimension of diversity. If a suburban area is able to develop social diversity and a concentration of different people, then it will feel like an urban space, even if its material form is different from a traditional urban pattern. Attention to social diversity as an indicator of suburban transformation implies more work at the microscale of urban design rather than on the regional or the neighbourhood scale:

> It is at the smaller scales that the city delivers the intensive social encounters that most define the urban experience. . . . It is also the primary scale at which density translates into intensity, largely mediated by the public-private interface and the detailed design of urban space.[56]

However, unlike the material factors, social diversity is difficult to evaluate as we cannot equate it with a numeric parameter. Methods such as public life studies, observations, and interviews are more sensitive towards the changes

	What enables suburban transformation	What constrains suburban transformation
Social production of space	Good transport connections to the city centre and other parts of the city.

Larger density of both people and buildings.

Recognizing the pitfalls of modernist planning principles and shaping a vision for area development which is explicitly urban. | Existing urban morphology created in line with the functionalist planning paradigms which falls at odds with the compact, dense, mix-use development based on smaller lots and finer grain.

The lack of a shared vision by the different stakeholders involved in the development of the area. |
| Social construction of space | Social diversity which emerges in an organic way. | Semi-public spaces controlled by associations which practise exclusive member-only access. |

Table 1. Summary of research findings in relation to theoretical perspectives.

in the social plane, but what can make developers, decision-makers, and other stakeholders apply them in the process of suburban transformation?

CONCLUSION

This article has looked at Finnish suburbs as a resource for urban growth. It has explored the process of suburban transformation following the case of Otaniemi, an area which is actively changing following the regional development and the needs of the growing university campus. The main focus of the study was the extent to which the suburbs, designed between 1960 and 1980 in accordance with modernist planning principles, can be transformed into livable and attractive urban spaces. Informed by two theoretical perspectives—social production and construction of space—this study has outlined the factors which both enable and constrain suburban transformation using the data collected from 2015 to 2018.

Following Talen's and Sennett's definitions of an urban realm, the article suggests a reframing of the outcomes of the suburban transformation process, from increased density to social diversity and concentration of difference. In the case of Otaniemi, this outcome is in line with the strategy of Aalto University, one of the main stakeholders of the development process. The difficulty of shifting the focus towards social diversity as an outcome of suburban transformation lies in the limited influence of material design and planning over social life. According to Garrett Wolf and Nathan Mahaffey:

> Design and Planning professionals have long been influenced by the belief in physically and spatially deterministic power over people and the environment, a belief that their representations of space become space. As a result the goal of design often becomes 'fixing' or directing behavior and culture instead of letting culture happen.[57]

In the Finnish urban planning of the 1920s and 1940s, there was a general consensus among architects that they were the experts who knew how and what people should inhabit.[58] This was evident in many suburban projects aimed at creating a new social order. Enabling the suburban transformation of these areas calls for changes in the planning mindset towards co-creation, iteration, and facilitation instead of prescriptive solutions. 'Letting culture happen' requires widening the spectrum of practices currently used by urban design and planning professionals to include community building, inclusive design, and participatory methods.

NOTES

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