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The Story of Spaces:
On the Production of SMART Apartments in Vienna

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von

Sara Tahir

01476040

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Abstract

This research discusses the theory of the production of space presented by the French philosopher and sociologist Henri Lefebvre. It analyzes the political and socio-spatial relations that produce and are produced by spaces.

The research implies the concepts of *lived, conceived*, and *perceived* spaces and the theories of *spatial practices, representations of space,* and *spatial representation* to evaluate the SMART housing program initiated in Vienna as part of the city-subsidized housing program. It aims at exploring how SMART apartments are produced, planned, built, appropriated, and reproduced in the future.

Kurzzusammenfassung

Diese Arbeit diskutiert die Theorie der Produktion des Raumes präsentiert durch den französischen Philosophen und Soziologen Henri Lefebvre. Die Arbeit analysiert die politischen und sozialräumlichen Strukturen, die durch Räume entstehen und produziert werden. Die Arbeit impliziert die Konzepte *gelebter, konzipierter,* und *wahrgenommener Räume* und die Theorien der *räumlichen Praxis, Repräsentationsräume,* und *Raumrepräsentationen,* um das im Rahmen der Stadt geförderte Wohnungsbauprogramms in Wien initiierte SMART-Wohnprogramm zu bewerten. Es soll untersucht werden, wie SMART-Wohnungen produziert, geplant, gebaut, angeeignet werden und wie sie in Zukunft reproduziert werden.

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Table of Contents

List of Figures

Introduction

Context and Topic

> *"it is hard to argue that housing is not a fundamental human need... The reason is simple: without stable shelter, everything else falls apart."*[1]

It is commonly accepted that housing fulfills important roles in our lives, it is a basic human need and without access to adequate housing, many other social problems arise. The problem of access and affordability of housing, however, is global and affects not only the developed countries but also many Western economies, especially due to the growth of the urban population and the prices that rise faster than people's income [7].

In Vienna, the situation is no more different, despite ongoing supply, housing is still in short [8]. The number of people living in Vienna has increased from 1,571,123 to 1,897,491 between 2002 and early 2019 and is expected to be 2,079,587 in 2030[2]. In response to the population growth and the increased property prices (property prices in Vienna increased by 39% since 2010[2]), the city of Vienna initialized in 2012 the new SMART Housing program as part of its subsidized housing program.

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[1] Desmond, M., Evicted: Poverty and Profit in the American City. 2016: Crown.

The new program offers living spaces of low cost (fixed at 7.50 Euro per square meter) and the result is *"compact and space and cost-efficient "smart" apartments for young families, single parents, couples, seniors, and singles"*[2] [40].

Scope and focus

> *"In the extensions and proliferations of cities, housing is the guarantee of reproductivity, be it biological, social, or political"*[3]

To evaluate the effectiveness of the SMART housing program to fulfill the needs and expectations of the target groups and inhabitants, it is important to understand first its story, how it came into being and how it is produced and reproduced. The study of housing problems not only as economic but also as social problems leads us to analyze housing from the perspective of the French philosopher Henri Lefebvre as socially produced in different contexts.

The focus here is not to study SMART apartments as a product of architecture and aesthetics (although both are important factors in the process of production [18]) rather, study them first as social products that contribute people-oriented solutions and enable people to transform, reshape, and explore the potentials of their spaces, and second as processes of production and reproduction that are aware of the social formations and spatial properties of the society.

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[2] Wien, W. SMART-wohnen. [cited 2020 September]; Available from: https://wohnservice-wien.at/wohnen/smart-wohnen.

[3] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. P. 232

Objectives and Questions

This research discusses the story of spaces and how do they come into being, explain their social constitution and study their potentials, or as Hayden in his book *Urban landscape history: The sense of place and the politics of space* puts it:

> *"the story of how places are planned, designed, built, inhabited, appropriated, celebrated, despoiled and discarded"*

The main goal of this research is to answer the question of how SMART apartments are produced and describe how and why they came into the agenda of social housing in Vienna. To explore the story of spaces, the following is discussed in detail:

- The production and reproduction of space.

- Triads of the production of space.

- The relationship between space and power.

- The socio-spatial relations.

- The characters of abstract, social, and differential spaces.

The research questions are explored through the perspective of the French philosopher Henri Lefebvre and his ideas on the social production of spaces and are supplemented with ideas of other geographers and urban planners who discussed Lefebvre concepts and developed new theories to better understand spaces and their constitution.

Importance and Relevance

The concept of the production of spaces has gained great importance in recent years and is important if we, as Lefebvre asserts, want to create better spaces for our societies. The fact that housing can and should be also socially produced is of great importance especially with the growing demand for adequate housing not only for the people who are in need but for everyone as this is one of the basic rights of city inhabitants. The new SMART-housing program, therefore, needs to be examined and studied not only as a final product and a solution to solve an existing problem, rather as a process of production on one hand and as a tool of social production on the other. This research is aimed at makers of spaces and those who are in charge of producing the *planned space*, as it is relevant for them to understand how their vision and their *representations of space* are changing the faces of our societies and shaping our everyday lives.

Methodology

To answer the research questions a qualitative research method is applied, where data is conducted through the following:

First, by analyzing theories and concepts of space production which provides a preliminary theoretical framework. The research focuses on the ideas of Henri Lefebvre and expands to the concepts of other geographers and urban planners on spaces and their constitution.

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Second, a case study (SMART apartments in Vienna) was analyzed by collecting data mainly from the Housing Service of Vienna *(german: Wohnservice Wien)* as they are responsible for the assignment of 45% of the built SMART apartments in Vienna, and also by holding two open-ended interviews. The first interview was organized with the head of property management at EGW (a non-profit Housing development company cooperating with the Housing Service of Vienna to produce SMART apartments). The second interview was organized with the head of the supply management at the Housing Advice Vienna *(german: Wohnberatung Wien)*. Information is compared with findings from the literature review to explore the processes and outcomes of the SMART housing program.

Third, unstructured filed observations were done, where one project was chosen (*Sonnwendviertel in the south of Vienna*), and small unstructured interviews were held with three residents of the project. The Sonnwendviertel is the first project where the SMART housing program was applied and therefore it was chosen to collect data and compare it with findings from the literature review to better understand the socio-spatial relations and understand the concepts of spatial appropriation.

Structure Overview

This research is organized into three parts. The first part is a methodological framework where theories necessary to understand the concept of the production of space are discussed. This part is divided into sections discussing various ideas related to the theory of the production of space.

The second part deals with the SMART apartments in Vienna. It is arranged in three sections; the first section begins with a brief introduction to the social housing system in Vienna and the introduction of the SMART housing program and the second section discusses the production of the SMART apartments themselves, the third section proceeds with how they are planned, appropriated, and reproduced in the future.

The final part of the research ends with conclusions and recommendations.

On the Production of Spaces

The theory of space that is socially produced has gained a lot of importance in the body of urban, social, and cultural studies. Not only because it suggests that society can survive and reproduce a new version of itself through its spatial arrangement and through the production of space itself, but also it suggests that space is reproduced and restructured through the social relations of the inhabitants[13].

To examine how spaces are produced, it is crucial to understand that space is, first a product of political, cultural, economic, and social processes, and second, it shapes these processes, influences them, and when necessary reproduce them[18].

The Production and Reproduction of Space

> *"Every society - and hence every mode of production with its subvariants...produces a space, its own space."* [4]

During the past four decades, the work of the French philosopher and sociologist Henri Lefebvre on the production of space has gained prominence in urban and social studies. Lefebvre presents a new understanding to the theory of space, where space is no longer only a physical location, absolute, and independent,

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[4] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.31

rather, a social product that produces and is produced through social and political practices[4].

One of the key arguments in Lefebvre's theory of space production is that the forces of production in the capitalist mode which are nature, knowledge, technology, and labor could never function without a fifth force which is space [18]. He considers space a force of production responsible for social contradictions and thus he frees it from the absolute theory that considers space merely a container, static, unchangeable, and exist naturally [32].

For Lefebvre and David Harvey, not only one form of space exists, rather a multiplicity of spaces which are produced differently and produce diverse socio-spatial relations [32]. How those spaces come into being is a question of history and politics [23]. Under the history of spaces, we understand that space as a product is an outcome of past activities, and in a continuous mode of reproduction and transformation. Politics, on the other hand, gives birth to spaces they ensemble, occupy, and control, they define how space is planned, organized, and inhabited[23].

Nigel Thrift likewise, agrees with Lefebvre and Harvey that there is a multiplicity of spaces but he insists that space is not a genuine element that can be explained because it is "*an outcome of highly problematic temporary settlements that divide and connect things up into different kinds of collectives*"[5] [36].

He continues to explain that we could recognize four types of spaces that are under continuous construction; first is the empirical space, where daily life is

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[5] Thrift, N., Space. Theory, Culture & Society, 2006. 23(2-3): p.95

constructed, second, the block space that refers to the process of interactions with spatial boundaries, third the image space where images play a role in imagining and shaping how spaces might be in the future, fourth is the place space where several spaces are bounded and weaved together to produce a space of embodiments and potentials [36].

Martina Löw however, refers to space neither as a product nor as a process, rather as an institution and a structure action. Löw represents the idea of the duality of space, where spaces are produced through spacing (placing of social goods and people) and synthesis (processes of spatial perception) [19]. Likewise, Edward Soja suggests that we should distinguish between space as absolute and given, and spatiality in terms of socio-spatial relations [32]. Both Soja and Löw suggest here that the constitution and production of space go hand in hand in what Lefebvre considers the pillar of production; the human agency [37].

For Lefebvre, space is produced and reproduced through social interaction, for him space is not an object that suddenly came into being, nor an abstraction or a visual geometry, space is a project that continues growing and continues to embody and foster new social relations, it concerns the lives of people and it is reproduced through their experiences, visions, and practices [18].

Through this continuous process of producing and reproducing social relations and social structures are created and embodied in our spaces. These

structures comprise all our knowledge and practices and thus *"we reproduce the conditions of reproduction, the conditions that make these activities possible"*[6] [11]

The Spatial Triad

"In space, what came earlier continues to underpin what follows."[7]

In the context of production of space, Lefebvre distinguishes between three main aspects of space; physical, mental, and social, and space can be produced by one or by the three of them together, space can be a social formation, a mental conception, or both [18]. Based on these three moments Lefebvre presents a spatial triad to organize socio-spatial relations. It consists of the following elements:

Spatial practice: This first element of the triad represents the patterns of everyday life, the routines, and the practices of people in their spaces. Thus, the spatial practices involve the physical aspect of production (urban networks) and the mental aspect (routines of every day). Spatial practice produces, reproduces, appropriates, and *"secretes that society's space"*[8] [18].

Representations of space: the second element of the triad refers to the official, administrative, and pre-produced conceptions of space. They are representations produced by power (let it be state, planners, or artists). The representations of space may involve written documents, like urban and land use regulations, or they can be

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[6] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.229
[7] Giddens, A., The Constitution of Society: Outline of the Theory of Structuration. 1984: Polity Press. p.2
[8] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.38

visual presentations of spaces, like paintings and plans. These representations present abstract knowledge based on past experiences and acquired education. According to Lefebvre, these representations produce the dominant spaces in the city.[18]

Representational space: The last element of the triad reflects the spaces that are lived directly by inhabitants. The representational space reflects both symbols and images assigned by the users to their spaces but also includes the images and perceptions of artists and poets that are connected to the spaces [18]. On the opposite of the representations of spaces, they are not controlled by power and regulations, rather originates from artistic visions and artistic representations [17].

Lefebvre argues that the spatial practice, representations of space and representational spaces overlap and produce a second triad; the triad of perceived, conceived, and lived spaces [18].

Perceived spaces, on one hand, correspond to spatial practices, they are spaces of people's perception of the space they inhabit. They are spaces of thought and perception of daily routine and spaces of production and reproduction of social relations [17].

Conceived spaces, on the other hand, correspond to the representations of space, these are the planned spaces, they are products of knowledge and power. According to Lefebvre, conceived spaces are responsible for creating abstract spaces in the cities. While *Lived spaces* coincide with the representational spaces, they are the spaces that are balanced between what is conceived and what is perceived, they

present the social spaces with all their conflicts, values, and symbols. Lefebvre not only prioritizes the lived and the perceived spaces over the conceived spaces but also states that the difference between conceived and lived spaces is like the difference *"between science and utopia, reality and ideality"*[9] [17, 18].

The subject (user, inhabitant) in this triad can move from one space to another freely because although these spaces have different social and spatial characteristics, they only function when they are overlapped and interconnected[18].

An extension of these two triads is developed by Edward Soja through his theory of Thirdspace. Soja builds on the two triads and divides space into Firstspace (the real space, physical and material), Secondspace (the imagined or the perceived space), and Thirdspace (a combination of the Firstspace and Secondspace). Soja describes the Thirdspace as a fully lived space" *a reflective mirror of societal modernization"*[10] where experiences from the Firstspace are arbitrated with expectations from the Secondspace[34].

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[9] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.60
[10] Soja, E.W., Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places. 1996: Wiley. p.11

Space and Power

> *"space is fundamental in any form of communal life; space is fundamental in any exercise of power"* [11]

The spatial triad presented by Lefebvre is not the only crucial element in the process of production of space. The socio-spatial relations are confronted by political processes. The spaces of cities are not molded through historical, natural, and geographical elements only, but also through political powers. Lefebvre argues that "*there is a politics of space because space is political*"[12]. The representations of space are representations of political relations imposed on spaces. The political processes are forces of production themselves, and products of conflicts, representations, practices, and appropriations which occur in accordance with social developments and urbanization models [18]. This debate about space once as a social product and second as a political product means that space can also be understood as a mediator between social change and social order[13].

In the same vein, Foucault connects space with power and knowledge. He uses knowledge as a force to produce possible alternatives, thus both knowledge and power are used to produce the ideal space or as Lefebvre calls it the *lived space*. Power when used alone and imposed on people and spaces in a top-bottom approach without studying and considering the diverse social and spatial contexts

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[11] Foucault, M. and C. Gordon, Power/knowledge: selected interviews and other writings, 1972-1977. 1980, New York: Pantheon Books. p.149

[12] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.59

results in the production of systems of control and institutionalized spaces that are abstract, fragmented, and homogenous [10].

On the other hand, Doreen Massey understands space as a re-emerging material and political reality[9]. She confirms the political possibilities provided by space and the interconnections and juxtapositions of the transformative power of space. For Massey "*space and power intimately interwind*"[13], and this relationship produces either a space of concentrated power (for example globalizing cities) or powers that tie multiple spaces together. In this context, Massey produces the concept of power-geometry which means that "*space is imbued with power and...power in its turn always has a spatiality*"[14] [22].

Similarly, the question of power and space was also discussed by Jacques Rancière, although he associates power with the conception of police and distinguishes between police and politics. Rancière argues that space becomes political only when "*a wrong can be addressed and equality can be demonstrated*"[15]. The presence of power in space refers to the emergence of politics that is represented by interconnected social relations in a defined space organized by power or more precisely organized by the police. The police is an established social order in a natural space, it indicates the presence of politics in a spatial organization

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[13] Massey, D., Concepts of space and power in theory and in political practice. Documents d'Analisi Geografica, 2009. 55. p. 1

[14] Massey, D., Concepts of space and power in theory and in political practice. Documents d'Analisi Geografica, 2009. 55. p. 19

[15] Ranciere, J., *Ten Theses on Politics*. 2001: The Johns Hopkins University. p. 11

that is dedicated to a specific form of social relations and institutionalized activities and practices[30].

The socio-spatial and political relations refer to the cognitive spaces of Lefebvre, where the planned spaces are characterized by the presence of order and power and the application of control and dominance. In such spaces the society is organized rationally, it is produced based on knowledge, historical backgrounds, and technology and although politics use power as an apparatus to place order and end conflicts, power also flattens the social and the lived realm in spaces, making them even more fragmented and generates socio-spatial contradictions and conflicts[18].

The Socio-spatial Relations

> *"Space itself may be primordially given, but the organization, use, and meaning of space is a product of social translation, transformation, and experience"* [16]

The conjunction between space, society, and power produces a collection of complicated relations that leads to the following understanding; organized spaces are affecting societies, and likewise, societies mold spaces to become organized, thus space and society are both united and interactive in the realm of production [18].

Giddens asserts that space, objects, and people give meaning to one another and produce patterns of social relations and patterns of social change. The structuring of space through power does not only reflects those patterns but also

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[16] Soja, E.W., THE SOCIO-SPATIAL DIALECTIC. Annals of the Association of American Geographers, 1980. 70(2): p. 201

interwinds with them to produce physically and symbolically spatial contexts. Those spatial relations explain how people interact and order their environments and how they accept and legitimate the use of power in their spaces [11].

On the other hand, Castells presents social and spatial relations as networks of social and spatial formations. The spatial formations consist of territories, places, and scales while the social formations include everyday actions of inhabitants. Castells and Brenner suggest that how socio-spatial relations are produced is dependent on the contradictions and conflicts between the forces of production and the social relations[5, 15].

The relations between individuals and their substantial forms are defined by Soja as spatiality. Soja argues that spatiality is socially produced because it represents the organization of social relations in space. He also argues that individuals and objects organized in a space (randomly or arbitrarily) are the factors that define spatiality, hence when analyzing those factors we can understand the social formation of space and understand its spatial and political organization[33].

Both Lefebvre and Soja establish a dialectical connection between social relations and space. They argue that space and society could be analyzed as homologs structures where the social organization of space results in spatial differences and spatial disordering that opposes the state's power imposed on spaces[18, 33].

In the work of Max Weber and Georg Simmel, the socio-spatial relations are separately defined and their outcome embodies the products of spatial forms and social transformations[31, 39]. Weber speaks of three spatial relation forms; distance, boarder, and density, and three corresponding social relations; face to face interaction, exchange of gifts, and dominance. The combination of distance and face to face interaction produces familiarity as a socio-spatial relation. Familiarity means that all objects are ordered in space with a reasonable knowledge so that this ordered space until a specific distance (the distance of face to face relations) can provide a cognitive map to the inhabitant [25, 39].

The second combination of border and exchange of gifts results in bounded solidarity. One product of bounded solidarity is the ghetto, where a specific group of people (exchanging the same language, culture, belief) are bonded to a bordered space (space that has all signs of divisions). The last combination is land-use control as a product of density and dominance. The land-use control corresponds to the power to dominate space at different densities, hence it represents forcing power over individuals based on the control of ground and underground resources [25, 39].

The Abstract, Social, and Differential spaces

> *"Social space is not a thing among other things, nor a product among other products: rather it subsumes things produced and encompasses their interrelationships in their coexistence... It is the outcome of a sequence and set of operations, and thus cannot be reduced to the rank of a simple object"* [17]

The conjunction of socio-spatial and political relations produces and reproduces spaces. Lefebvre through his spatial triad presents three main types of spaces that exist together and produce one another. The first space we can recognize in Lefebvre's writings is the abstract space which is produced by colonizing power. It is a colonized space in the sense that it is produced to control and colonize the spatial practices of people. The state through its power is intervening in space and divides it into dominating and dominated spaces [18].

According to Harvey, the abstract space is a product of spatial articulations that lead to the concrete abstraction of social relations, he asserts that through the reproduction of abstract spaces new relations of production are also produced and they proceed to reproduce the same spaces over and over again which makes the abstract space continuous and homogenous [13].

Abstract spaces according to Lefebvre are products of alienation. He argues that alienation is not only limited to the economic sphere, rather it extends to political alienation (related to power and state) and human alienation (related to human everyday life). In opposite to

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[17] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.73

appropriation, alienation involves the abstraction of people activities and routines and the production of societies of consumption in which *"the world of commodities, like that of technique belongs"* [18] [18, 22].

In abstract spaces the exchange value is no longer expressed through qualitative values (richness of social life for example), rather it is expressed through quantitative values (money), thus social life is materialized and reduced to the minimum necessary. Furthermore, Harvey describes abstract space as the dominating space, it is where power is centered and imposed on the spatial practice of people, in consequence, it is a representational expression of alienation and a product of abstraction[13, 18].

Nevertheless, abstract spaces are not born out of nowhere, they as Lefebvre explains rise from the social spaces that precede them. In contrast to abstract space, social space is *"lived rather than conceived, it is a representational space rather than a representation of space"*[19]. In social spaces the relations of production are produced and reproduced, they are the spaces of spatial practices and the outcome of both social formations and knowledge and through the social space, we can understand how a city functions and how it produces and reproduces its spaces [18].

Abstract space also has the seeds for the differential space that follows it. The main difference between abstract space and differential space is that the former is a product of alienation and the latter is a product of appropriation. The alienation of

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[18] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.5
[19] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.48

social spaces produces abstract spaces, while the appropriation of abstract spaces produces deferential or lived spaces[17, 18].

The lived space according to Lefebvre is the space that is appropriated by its users, it is the space that has possibilities of creativity and imagination and fulfills the expectations of its users. The spaces that are closed for appropriation are no longer lived spaces, rather abstract commodities [18].

Harvey suggests that when people lose the ability to appropriate their spaces, they also lose the ability to control them, they are no longer users, rather consumers, and that is how societies change from societies of production to societies of consumption. When space is transformed into a commodity, it loses its natural and social dimension, it is no longer a space of dwelling, rather a space of inhabiting (habitat). Inhabiting is a character of abstraction, as it involves top-bottom politics and an imposed power over space while dwelling on the other hand is a quality of differential spaces as it indicates the will and power of people over their space[13, 18].

The differential space emerges from differences that form in spaces. Lefebvre recognizes two differences that can emerge in space, first the minimal differences that are forced by a state to control and establish order in space, second the maximal differences that are produced by the people during the process of space appropriation [18].

Accordingly, minimal differences produce abstract and homogenous spaces that enable control and alienation, while maximal differences produce lived spaces that are appropriated by users and liberated from the power of the state. When an abstract space is appropriated, it is no longer a dominating space, rather dominated by the force of appropriation, only then a city can celebrate its spaces as spaces of inclusion, de-colonized, and socially produced [18].

Conclusion

The theory of the production of space by Henri Lefebvre provides a deep understanding of how cities, spaces, and societies are produced and reproduced. Undoubtedly, the idea of spaces and cities that are no longer *containers of social relations* but producers of them is crucial in urban and social studies. It is through the relations of power *in* space and *over* space that spatial and social relations are shaped and through these sometimes conflicting and other times compatible relations, spaces are produced and reproduced infinitely.

The spatial triads discussed by Lefebvre, Soja, Massey, and others are essential in this process of production, it is only possible through the representational of spaces to create a differential space that can be appropriated by its people and it is only through appropriation that we can change the representation of spaces from a concrete abstraction of human activity to lived spaces that are heterogeneous, integrated, and liberated.

How spaces are produced, by whom and what for, are fundamental questions in analyzing the structures of a city and understanding how the dominant and the dominating spaces came into being, it is through this conception we can create better spaces that are socially produced and reproduced.

Figure (1) presents an overview of the theory of the production of space. The key concepts in it will be used in the following chapter to analyze how SMART apartments came into being and how they are produced.
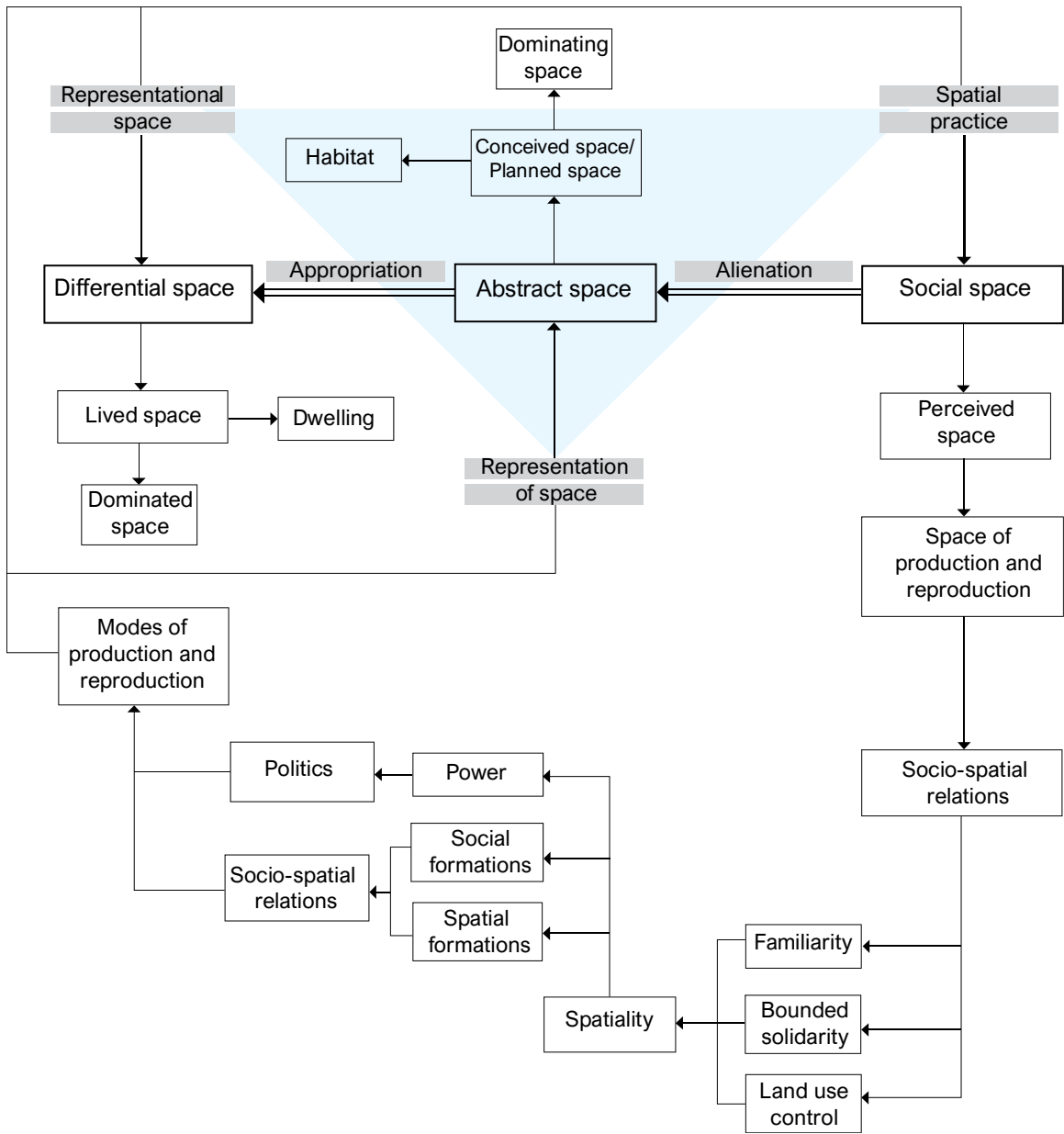
Figure 1. The production of space: Conclusion diagram.
Source: Author

The Story of SMART Apartments in Vienna

Overview

Social housing in Vienna

Despite the ongoing housing problem in the world, Vienna has so far managed to get over this crisis and be a good example for other cities, especially in Europe. Since the 1920s, the social housing program in Vienna has played an important role in supplying the city with affordable housing and competing with the private housing market [24].

Generally, we can distinguish between two social housing segments in Vienna: municipal housing and subsidized housing. The subsidized housing is aimed at the middle class and built with subsidies from the Federal Province of Vienna and managed by nonprofit and co-operative housing associations. The municipal housing, on the other hand, is entirely owned and managed by the city of Vienna and was traditionally aimed at the working class and the low-income people[38]. The first municipal housing project was built between 1916 and 1925 in the Margareten District in Vienna and the last one was built in 2015. However, the city of Vienna re-launched the new municipal housing program *(german: Gemeindebau Neu)* in 2019 with the advantages of subsidized housing but granted without a down payment. [38].

Nowadays there are about 220,000 municipal apartments and 200,000 subsidized apartments in Vienna and to be able to apply for apartments from both

segments, individuals must meet a certain criterion. First, they must be holders of the Wiener Wohn-Ticket which requires them to be more than 17 years old, living in Vienna for the past 5 Years, are Austrian or EU citizens, have a gray card or a valid residence permit for more than five years, and most importantly they have to show that their income is below the income limit set by the Vienna Housing Promotion and Rehabilitation Act *(german: Wiener Wohnbauförderungs- und Wohnhaussanierungsgesetz – WWFSG)* [38].

Additionally, individuals must sometimes also show a justified housing need especially when applying to subsidized apartments. Moreover, the Housing Initiative *(german: Wohnbauinitiative)* was launched in 2011 as a further segment to complement the social housing program. It is a special variant of privately financed housing which includes inexpensive loans from the city of Vienna to private partners tied to the maximum limit of down payment and upper limits for rents [38].

Today, almost 60 percent of Vienna's population live in subsidized or municipal apartments, and in 2019 over 10000 apartments were built to meet the growing demand for affordable housing and still, the housing is in short because of population growth (the number of people living in Vienna has increased from 1,571,123 to 1,897,491 between 2002 and early 2019 and is expected to be 2,079,587 in 2030) and increased property prices (property prices in Vienna increased by 39% since 2010) [2, 38].

The introduction of the SMART Housing program

As a response to the growing demand for affordable housing, the city of Vienna has initiated in 2012 the SMART housing program within the framework of its subsidized housing program. The word SMART, however, does not refer to home automation or the use of technology to automatically and remotely control and manage appliances and devices rather it refers to well-thought-out compact floorplans that ensure optimal use and avoid unnecessary rental costs for space. The SMART apartments as defined by the city of Vienna are *"compact, space and cost-efficient "smart" apartments for young families, single parents, couples, seniors, and singles"*[20][40]

The SMART apartment is 20% smaller than a conventional municipal apartment and designed to be offered in different sizes whereby the average living space of all SMART apartments is at a maximum of 65 square meters with a cost fixed at 7.50 euros per square meter and a down payment not higher than 60 euros per square meter [40].

Since 2012, 9000 SMART apartments have been built (stand 2020) and the city of Vienna is planning to further invest 135 million euros in the expansion of the SMART housing program in the next few years (until 2025). Until then, 2,000 - 3,000 new apartments of this type are to be built annually. In the future, instead of every third, every second subsidized apartment will be built as a SMART apartment [40].

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[20] Wien, W. *SMART-wohnen*. [cited 2020 September]; Available from: https://wohnservice-wien.at/wohnen/smart-wohnen.

The SMART apartments do not stand as independent projects, rather they are merged into large housing projects with different housing segments to ensure social mix and they are distributed mainly in the new urban centers. Figure (2) shows the distribution of housing projects with SMART apartments in Vienna until 2025 (stand 2015) [40].

Target groups of SMART apartments are singles, couples, young families, single parents, and seniors who fulfill the criteria of eligibility for social housing in Vienna in addition to justified housing needs. A justified housing need includes overcrowding, setting up a house (for individuals who are younger than 30 and have been living in parents' house for more than 10 years), and in case of people with special needs or older people above 65 who live in non-barrier-free buildings [40].

The main difference between SMART apartments and conventional apartments lies in the size and space design. In addition to the smaller size, the SMART apartments do not have an entrance area or storing rooms and must have a balcony or loggia. The entrance area is merged with the living room and the compact but fully complete kitchen. Because of the relatively small size, SMART apartments are also combined with shared indoor spaces like communal kitchens and communal workshops in addition to outdoor green areas [40].
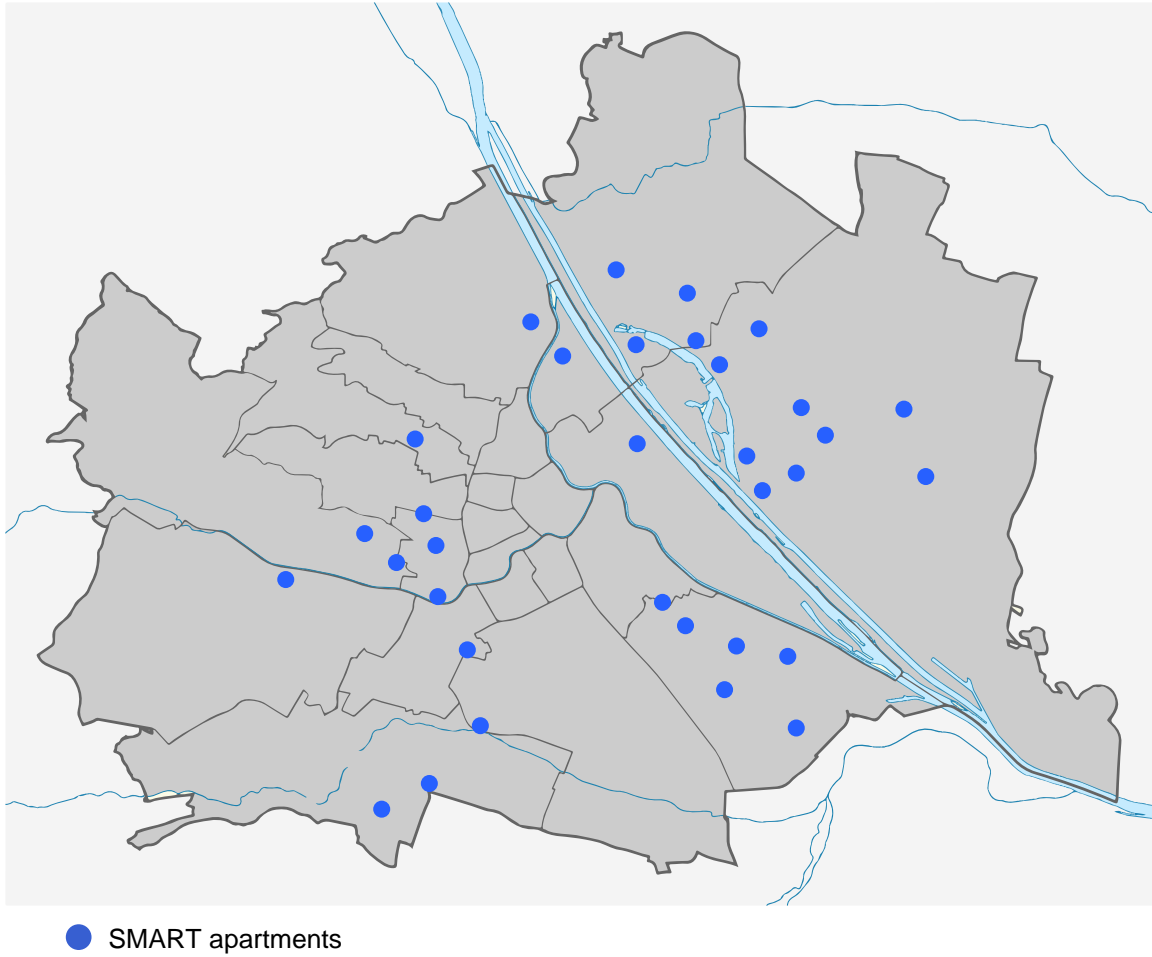
Figure 2. The distribution of SMART apartments in Vienna
Source: Wohnservice Wien (re-illustrated by the author)
https://wohnservice-wien.at/

The SMART apartments come in five types depending on the area and number of residents (see figure 4). Type A is a one-room apartment with a maximum area of 40 square meters and is designed for a single person, type B has two rooms and a maximum area of 55 square meters and is designed for couples. Types C, D, and E on the other hand are designed for families and have three, four, and five rooms respectively and a maximum area of 100 square meters in type E (although in 2019, the state building regulations stated that the average living space of all SMART apartments may not exceed 65 square meters)[40].

The first SMART apartments built in Vienna were in the Sonnwendviertel neighborhood in the 10. District of Vienna at the beginning of 2015. The SMART apartments in the Sonnwendviertel are part of a big housing project built on an area of 34 hectares and will be fully completed in 2025. The project consists of about 5000 apartments including more than 2000 subsidized apartments whereby 246 of them are SMART apartments. The project contains in addition to housing units many recreation spaces, gastronomy, leisure, and shopping areas besides a kindergarten, a school, and a library [35]. Figure (3) shows a master plan of the Sonnwendviertel with the location of SMART apartments and figure (4) shows the floor plans of the built SMART apartments in Sonnwendgasse 29+31.

Geförderter Wohnbau:
- SMART-Wohnungen
- Geförderte Wohnungen
- Wohnbauiniative
- Baugruppen
- Quartiershäuser
- Frei finanzierter Wohnbau
- Gewerbe
- Hochgaragen
- Soziale Infrastruktur

Figure 3. The Sonnwendviertel master plan
Schematic master plan of the Sonnwendviertel
Source: Wohnservice Wien. (re-illustrated by the author)
https://wohnservice-wien.at/

1 Living room and kitchen
2 Bedroom
3 Bathroom
4 WC
5 Balcony
6 Storeroom

Type A

Type B

Type C

Type D

Figure 4. SMART apartments in Sonnwendgasse 29+31
floor plans of the Smart apartments in object C.04 West.
Source: Geiswinkler & Geiswinkler Architekten.
http://geiswinkler-geiswinkler.com/aktuelles.html

31

Figure 5. SMART apartments in Sonnwendgasse 29+31
Top: view into the street facade. Bottom: view into the courtyard
Source: Competitionline, photos by Manfred Seidl
https://www.competitionline.com/de/projekte/67244

SMART apartments and Micro-apartments

The concept of small and compact apartments, also known as *micro-apartments* is becoming popular in many parts of the world, but it is very common in urban centers and large cities in Europe, North America, and Asia, mainly because of the increasing prices of property and land and because of population growth in those centers [14]. Generally, apartments are considered micro when the unit size does not exceed 40 square meters and in some other definitions even 30 or 20 square meters depending on zoning codes that set the minimum size for the unit in each city [21]. The target groups are mostly young people who are not earning enough to rent a conventional apartment and not eligible for social housing but still want to enjoy life in a big city. Other groups interested in micro-apartments include couples, single parents, and business commuters [21].

Architecturally we can identify two types of micro-apartments that are popular in urban centers. First, micro-apartments with fixed walls and traditional furnishing. Second, micro-apartments with sliding walls and built-in folding furnishing to transform the space [14].

Figure (2) shows an example of a micro-apartment in São Paulo with fixed walls and a unit area of 38 square meters designed for couples in the center of the city. Figure (3) shows an example of a micro-apartment in New York with sliding walls and a unit area of 30 square meters designed for a single person.

In both examples, the design of the unit alone was not sufficient to fulfill the needs of the occupants, that is why micro-apartments must be combined with outdoor open spaces and indoor common space provisions. They both also combine the advantages of living in a modern apartment located in a city center for relatively low monthly rent when compared to conventional apartments [14].

However, the concept of micro-apartments is applied differently in Vienna, hence we cannot compare SMART apartments with micro-apartments, although they both carry the same core idea (compact size and efficient cost) for several reasons. First, the target groups of micro-apartments, in general, are young people and mostly singles, students, or commuters, while the target groups of SMART apartments extend to include young families and seniors in addition to couples and single parents. Second, the micro-apartments do not usually include conditions or specific criteria of eligibility because they are built by developers to provide more affordable housing to the city and at the same time higher rental income for the landlords [21]. SMART apartments on the other hand have strict conditions to be fulfilled as they are part of the subsidized housing program of the city.

It is also important to notice that in Vienna SMART apartments are not built as standalone housing projects, rather they are always built as part of mixed housing complexes and have a certain percentage of the total number of housing units in a project [40].
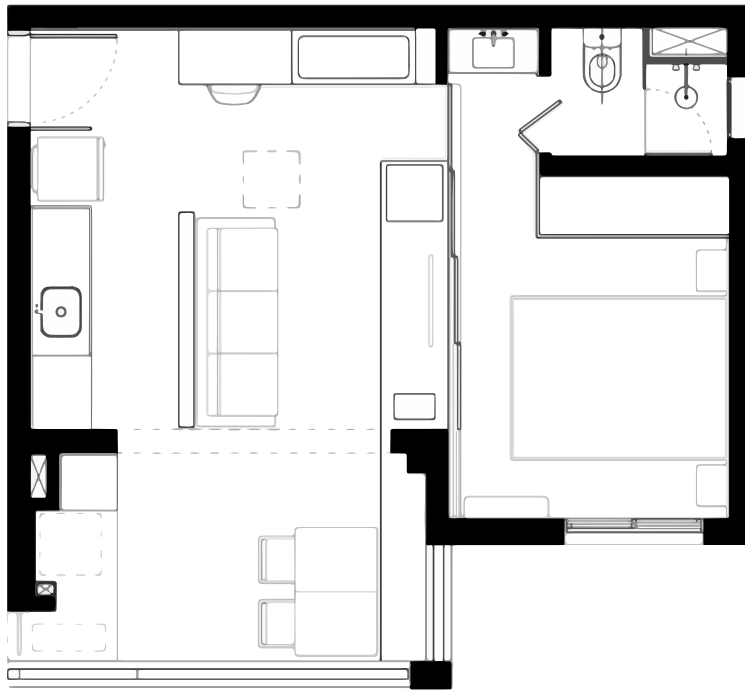
Figure 6. Caso apartment in São Paulo by Estúdio BRA
Top: view into the apartment. Bottom: floor plan.
Source: ArchDaily. https://www.archdaily.com/885147/cazo-apartment-estudio-bra
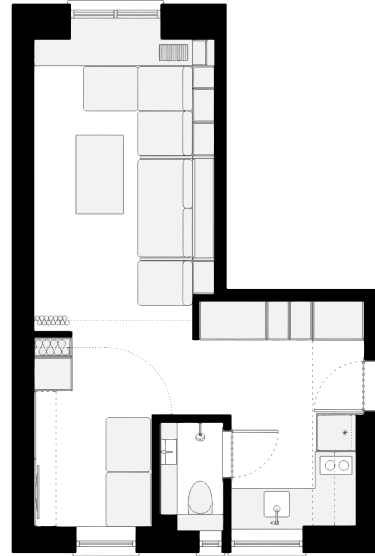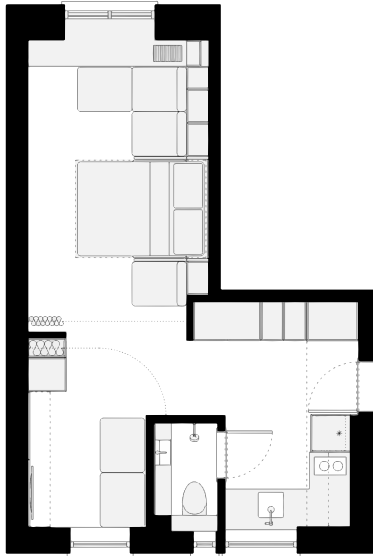
Figure 7. Tiny New York apartment by Graham Hill
Top left: view into the space transformed into bedroom. Top right: view into the space transformed into living room.
Bottom right and left: floor plans with folding furnisher.
Source: Dezeen. https://www.dezeen.com/2018/08/09/lifeedited2-tiny-new-york-apartment-graham-hill-functions-like-one-twice-its-size/

The Production of SMART Apartments in Vienna

Why SMART?

To understand the process of production of SMART apartments we need first to explain how SMART apartments appeared as a distinctive form of housing in Vienna. Several factors contribute to the production of a specific building form, three factors however play an important role in the appearance of a specific housing form in a society: the economy, the change in household forms, and transformation of space usage [16].

In a city like Vienna where the population grew by 10.1%, property prices raised by 39%, and rental cost increased by 13% (from 2014 to 2018) [2, 3] it is easy to estimate that the need for affordable housing is becoming even more crucial especially when we realize that Vienna housing market is mainly a rental market (homeownership shares only 18.8% from Vienna housing market) and that 57% of Viennese are depending on social housing[3].

Additionally, in Vienna, the living space per person in the 1970s was calculated on average at 25 square meters per person, whereas the figure in the 2000s was 40 square meters[28], at the same time, however, household incomes are stagnating. The force of the economy made the production of new housing forms with less building costs and respectively less living space per person and fewer rental costs essential for the continuity of the social housing market in Vienna.

Likewise, the economy played a rule in the production of the new municipal housing program *(german: Gemeindebau Neu)* in 2019, although this housing

segment is granted without a down payment, it also has a cost fixed at 7.50 euros per square meter and tenants must also prove their justified housing need [38].

The second factor is the change in household forms. A study in 2019 suggests that the traditional extended family is slowly diminishing and instead the number of small nuclear families is increasing in Vienna additionally the number of single households is also significantly increasing [1].

This change in the social household forms requires also a change in the spatial forms because bigger housing units are no longer needed, instead, smaller housing units are demanded since the number of persons living in a housing unit is decreasing [28].

The increasing number of single households was essential in the appearance of the SMART housing program because one of its main goals when it was announced, was to provide cost-efficient and compact housing units mainly for the singles who cannot afford to rent an apartment privately[21].

The third factor of production is the transformation of space usage. This factor works together with the previous factor because as the household changes in size and structure, a variety of dwellings are produced to meet their needs. Young families on one hand are looking for outdoor playgrounds and kindergartens for their kids, single persons and couples on the other hand are exchanging their living

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[21] Head of Supply Management at Housing Advice of Vienna, personal communication, October 2020.

spaces with spaces of recreation and leisure and elderly people are replacing their old spaces with new and barrier-free spaces[22].

In this context, the specialization of rooms and the privatizing of activities also play an important role in the production of SMART apartments[28].

If we examine the development of the kitchen for example over the 20th century, we see a continuous opening in the direction of the living room, and today's kitchens are presented as open bar furniture in the living room and not as separate closed spaces (see figure 8).

The modern apartments today also do not have separate dining rooms, hence three separate spaces are now combined into one open space. The trend of the big communal living space has been dominant in the architectural construction and the remodeling of many residential projects since the 1990s [28].

This trend of merging spaces has a role in producing the new SMART apartments and it is even expanded so that not only the kitchen, dining room, and living room are merged into one space but also the entrance and storing areas are combined into one main space in the apartment. The goal is however to produce compact spaces with a minimum area per person and less privatization to minimize the building cost. Although SMART apartments dispensed the presence of storing rooms, they were replaced with shared storing areas distributed mainly in the underground levels and the entrance area[40].

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[22] Head of Supply Management at Housing Advice of Vienna, personal communication, October 2020.

1920

HEIMHOF
1922-26

1960

**VORGARTEN-
STRASSE**
1959-62

1970

**AM MAUER-
BERG**
1962-63

1980

**WOHNPARK
ALT ERLAA**
1973-85

1990

**BRUNNER
STRASSE**
1986-91

**PILOTEN-
GASSE**
1989-91

**AUTOFREIE
MUSTER-
SIEDLUNG**
1998-99

2000

**FRAUENWOHN-
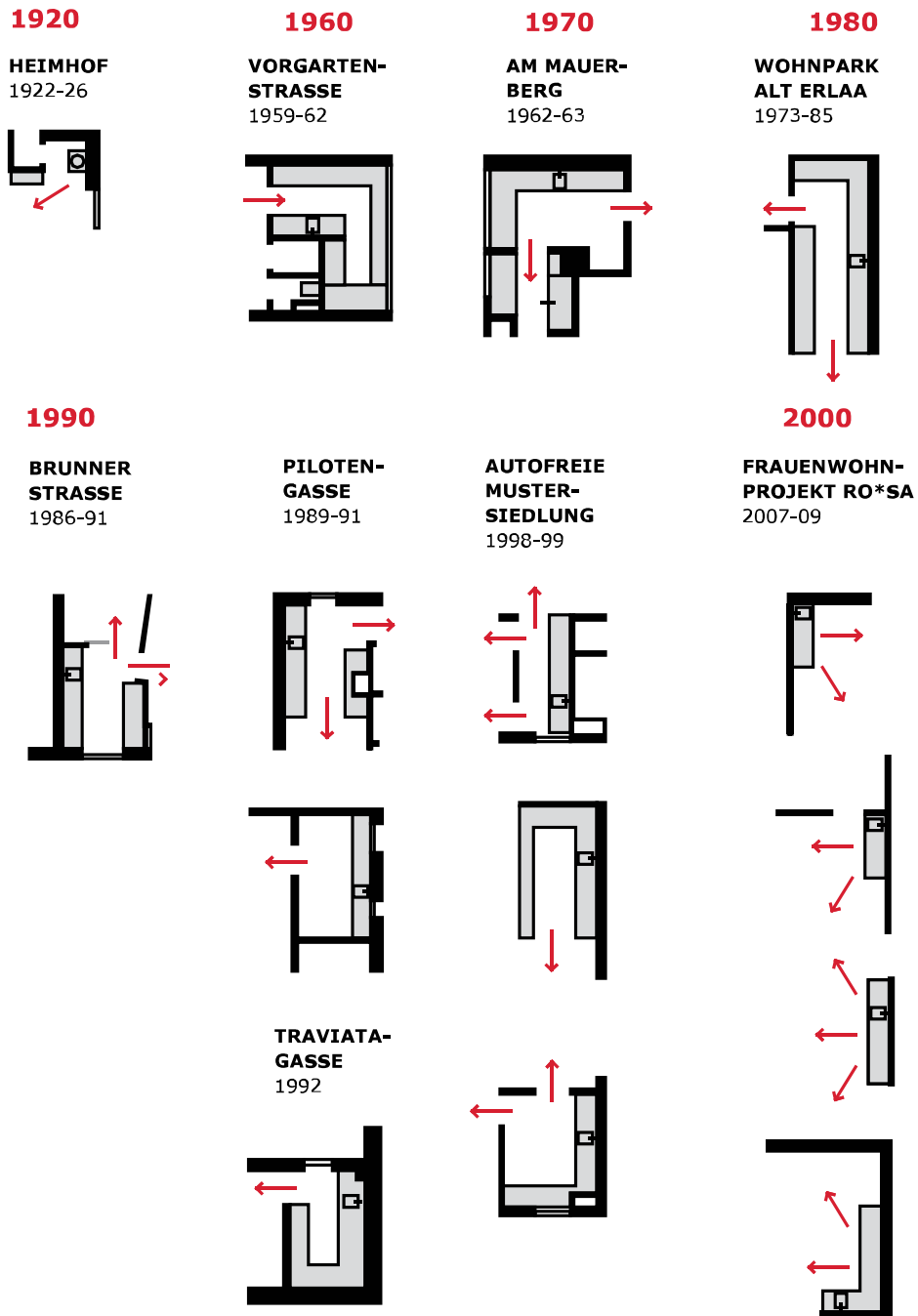PROJEKT RO*SA**
2007-09

**TRAVIATA-
GASSE**
1992

Figure 8. The development of kitchen typologies in Vienna
*Source: Pollak, S., et al., Wiener Typologien. Eine Studie zu neuen
Wohnungstypologien für Wien im Sinne zukünftiger Lebensformen als Grundlage
für ein Handbuch zum zukünftigen Wohnen in Wien. 2008, Wiener
Wohnbauforschung: Wien.
https://www.wohnbauforschung.at/index.php?id=357*

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The process

When the SMART housing program was first announced, it was not an initiative that came out from residents or target groups of social housing, rather it was more of a political initiative to present a solution for the housing problem. In 2012 the mayor of Vienna announced the program as a solution to bring smaller and affordable apartments aimed mainly at single persons, but later it was announced that bigger apartments will be included in the program to target young families and single parents[29].

As the head of Supply management in the Housing Advice of Vienna explains, the process of production of subsidized housing in Vienna is generally dependent on a top-bottom policy and public participation in the process of production is not possible because the goal of production is to provide the city with a specific number of units that fulfill the regulations to comply with the increasing housing demands and usually a conflict of interests arises especially with the restricted guidelines of planning and design. Tenants can however still participate in the rearrangement of the shared areas and shared outdoor spaces and the planning of the activities that take place in those spaces [23].

We can identify two main modes of public participation in housing development: participation and cooperation [27]. Participation, on one hand, means that the community has the power of decision-making, it is "*an active process by which beneficiary groups influence the direction of a development project with a view*

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[23] Head of Supply Management at Housing Advice of Vienna, personal communication, October 2020.

to enhancing their well-being"[24]. Cooperation, on the other hand, involves consulting and communicating with the community but the authority still keeps the power of decision-making [27].

In the social housing projects in Vienna, the process of public participation is usually limited to cooperation, the authorities extend information and plans of a project to the people, but only for consulting and communicating and not for actual participation in the early planning stages of the project[26].

The process of production begins with an announcement of a developers competition (*german: Bauträgerwettbewerb*) organized by Wohnfondos Wien (a non-profit organization founded to provide land for state-subsidized housing construction and to supervise the restoration of old houses[40]).

The projects are evaluated based on four main criteria: economy, social sustainability, architecture, and ecology. This process is however subject to very strict regulations and guidelines about the cost, the number of units, size, and design of the housing units which leaves no space for appropriation and adjustment and leads to the production of the standardized housing units[25].

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[24] Paul, S. and W. Bank, *Community Participation in Development Projects: The World Bank Experience*. 1987: World Bank. p.2
[25] Head of Property Management at EGW, personal communication, September 2020.

"Not in my garden!"

The result of the top-bottom policy in the process of production of SMART apartments can also develop socio-spatial conflicts. One case that can be reported is in the 21. District of Vienna, where a housing project with 161 SMART apartments and 95 apartments for single mothers and people with special needs was built next to a housing complex that consists of cooperative rented apartments and condominiums.

As soon as the construction work began on the site, rumors around the nature of the project began. The fact that the project was aimed at disadvantaged groups, led to protests from owners and tenants of the neighboring housing complex(fear of social problems and conflicts), although it was announced that this project is meant to be temporary with a maximum duration of 10 years.

As the construction work continued, tenants who can rent an apartment in another location began to leave and the owners of the condominiums who could not sell or leave their apartments, protested as they were not informed that a new housing project is planned next to them. As a response to the protests of the residents a fence was built to separate the two housing projects and although the fence (see figure 9) does not have an actual separating function as people from both locations could still cross through, it had a symbolic function to mark boundaries between the two projects and to express objection.[26]

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[26] The information regarding this case were conducted previously by the author earlier in 2020 during a personal communication with a former tenant of the cooperative rented apartments of the mentioned project.

Although the goal of the new housing project was the production of affordable housing for people with urgent housing needs, it was constructed on a land that is planned for commercial use, hence after 10 years, the housing project should be demolished and the residents must look for a new home. The resettlement of residents would then have significant negative effects not only on residents themselves but also on the investors and the neighborhood as a whole, especially because many of the tenants are showing an overall satisfaction with their apartments and the neighborhood and willing to stay in their apartments if they were not forced to resettle [20].

The conflict that occurred in the location of this project could have been avoided in two ways: first, if an exchange forum at the beginning of the planning process between the residence of the two projects was established whereby a significant contribution from all groups to the planning of the project and the neighborhood was reinforced with professional support, and second if the project was not announced to serve only the very disadvantaged groups, thus stigmatizing and conflicts between different groups based on their income or their background could also be prevented [20].

Figure 9. A separating fence between two housing projects in 21. District of Vienna
Top: A photo shows the fence between the two projects.
Bottom: Schematic plan shows the location of the fence.
Source: Author

The celebrated space

An equally significant aspect that is present in the process of production of SMART apartments is how they are marketed and presented to people. The marketing campaigns utilize imagery associations to influence behaviors and perceptions about certain products and housing can be one of them [8]. How planned spaces are celebrated before they are experienced by people is important in this context. The images and words associations used to advertise SMART apartments suggest that these housing units are aimed toward a specific group of people, although this is true, the advertisings are already excluding two target groups from the program.

When we examine the brochures and the website of the Housing service of Vienna (who is responsible for the assignment of 45% of the apartments) we find photos of single people, couples, and families with one young child, while elderly people and families with more than one child are excluded from the campaigns (see figure 10). Although the apartments are designed also for the elderly but very few have applied for them and the same goes for families with older children or families with more than one child [27].

[27] Head of Supply Management at Housing Advice of Vienna, personal communication, October 2020.

Figure 10. SMART apartments campaign photos
Source: Wohnservice Wien. https://wohnservice-wien.at/wohnen/smart-wohnen

People estimate according to the advertising documents that what these units have to offer do not match their needs regarding size and design of the units although this is not true especially when it comes to elderly people as all the apartments are designed to be barrier-free and planned to match the needs of different age groups[28].

Moreover, because many of the municipal apartments are relatively old, many young people want to move to the newly built subsidized housing units that provide not only better architectural qualities as advertised, but also new urban qualities. Young people compromise their living space with the opportunities that these new apartments have to offer; new urban centers with good infrastructure and more spaces for recreation and leisure[14].

Elderly people, on the other hand, find it hard to exchange their relatively big units with new compact units that require them to adjust not only to the size but also to the new trend of the single open space and to sacrifice their traditional massive pieces of furniture with small, sometimes fixed and personalized furnishing[29].

Another issue is concerning the rent duration, although SMART apartments were planned by the Housing Service of Vienna as permanent housing units, hence residence is not restricted to a certain period, and tenants do not have to prove their income or justify their housing need every five years like in other segments of

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[28] Head of Property Management at EGW, personal communication, September 2020.
[29] Head of Property Management at EGW, personal communication, September 2020.

subsidized housing[30], some tenants especially young families and young singles consider it a temporary housing form[31].

For SMART apartments to be perceived as a permanent residence, tenants have to pre-decide their household form early, since the size and the design of the apartment are very compact and the regulations that control the number of people living in a household are strict, it is hard for young people to consider their SMART apartment as their permanent home[32]. A second reason involves personal satisfaction with unit size and residential area. According to a study in 2015, 22% of tenants in Sonnwendviertel are unsatisfied with their housing unit mainly because of its size, and 80% unsatisfied with the residential area because they were expecting more recreational and leisure spaces [6].

Furthermore, the planned common spaces like communal kitchens and communal workshops which are integrated always in the buildings of SMART apartments as compensation for the small unit size are also posing a challenge.

According to the head of property management at EGW these spaces are usually left unused because tenants usually spend more time outside their apartments and second because of conflicts and problems among residents of SMART apartment[33] (50% of the residence of compact apartments reported noise complaint[6]).

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[30] Head of Supply Management at Housing Advice of Vienna, personal communication, October 2020.
[31] Resident of SMART apartments in Sonnwendgasse 29-31, personal communication, August 2020.
[32] Head of Property Management at EGW, personal communication, September 2020.
[33] Head of Property Management at EGW, personal communication, September 2020.

The fact that SMART apartments are aimed at the working class who spend most of the time in another working place and that all SMART apartments are integrated into multistory buildings that contain sometimes more than 300 apartment and depend mainly on elevators, led the traditional communal areas like staircases and laundry rooms to lose their role in creating social interaction between the residents unlike the old municipal apartments, for example, that still until today enjoy this quality[34].

The communal spaces that are constantly used by residents are the multipurpose spaces that can be reserved in advance for parties and gatherings in addition to the shared roof terraces and the indoor open spaces with seats and plugs to use electronic devices[35].

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[34] Resident of SMART apartments in Sonnwendgasse 29-31, personal communication, August 2020

[35] Head of Supply Management at Housing Advice of Vienna, personal communication, October 2020

The Spaces of Possibilities

The political space

> *"The freedom to make and remake our cities and ourselves is…one of the most precious yet most neglected of our human rights"* [36]

The policies and regulations involved in the production of SMART apartments also involve the production of new social and political relations. The fact that public participation is not practiced in the planning process of the subsidized housing program in general, presents as Lefebvre suggests the production of political spaces. The construction of a fence between two housing projects represents a spatial solution to social and political conflict. The bounded solidarity as a socio-spatial relation appeared when the society was in*"subjection to political practice- that is, to state power"* [37] and when the political use of knowledge, hence representations of space, conflicts with the existing social space.

The production of SMART apartments is also based on abstract qualities like size, area, and location, and the expansion of the program is a projection from the state of how the city should look and how the social and spatial formations should appear in the future. The three factors that led to the production of SMART apartments which are economy, change in household forms, and the transformation of space usage are respectively reproduced by the space continuously as the use-value of affordable housing is abstracted and reduced to a mere exchange-value [12].

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[36] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.315
[37] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.8

Furthermore, the eligibility criteria associated with SMART apartments is a socially produced sign and a symbol of political power over space, it grants access to the spaces that are bounded by abstract qualities, thus SMART housing units as spaces are no longer just mere spaces, rather political spaces since it is a project of public and urban policies (a necessity for the continuity of social housing program) that requires power relations (regulations regarding size, location, eligibility) to order the social relations spatially.

The planned, perceived, and lived space

> *"Spatial practice is lived directly before it is conceptualized, but the primacy of the conceived over the lived causes practice to disappear along with life"* [38]

How SMART apartments were conceived and how they were perceived and lived is also crucial in the process of their reproduction. The first generation of the SMART apartments built in the Sonnwendviertile explains how the representations of space and social practices interact and interchange one another.

The indoor shared spaces like the communal kitchens and the communal workshops were conceived as spaces of social interaction and were planned to facilitate social activities, but the tenants did not perceive them alike and as a result, they were left unused or in best cases used once or twice.

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[38] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.34

The representations of space here could not affect the spatial practices, hence people could not use the communal kitchens, as they were not part of their daily routine, instead they abounded it.

The indoor lived spaces on the other hands were multipurpose spaces and shared roof terraces because they had the possibilities of change and adjustment according to the spatial practices, thus they were the representational spaces or the spaces that are *"dominated - and passively experienced -spaces which the imagination seeks to change and appropriate."* [39]

Outdoor spaces in the Sonnwendviertel on the other hand are dominating spaces, as they continuously feature diverse activities and events arranged by inhabitants themselves, which suggests that they do not follow the rules of representations of space (logic, knowledge, and regulations), rather they appear more local and less formal, they are lived spaces that are *"redolent with imaginary and symbolic elements, they have their source...in the history of people as well as in the history of each individual"* [40].

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[39] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.39
[40] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.41

The appropriated space

> *"' Change life!' 'Change society!'. These precepts mean nothing without the production of an appropriated space"*[41]

The abstraction in the process of production of SMART apartments lies initially in the process that depends on calculations and quantifications (number, size, and cost of units) because when space is measured, it is no longer lived, the lived space is " *space of 'subjects' rather than of calculations"*[42]. For this reason, some tenants do not consider SMART apartments as their home, rather they consider it a temporary solution as it is the only form of housing they could afford, it is no longer appreciated for its spatial value, rather for its abstract and economic qualities.

The spaces of the SMART apartments are not planned to be fully appropriated by users, for example, tenants cannot add a wall or divide a room to create space for storage because that would immediately change the category of the apartment, and unlike other subsidized housing units or municipal apartments, tenants are prohibited to transform the loggia or the balcony into a closed space because that would also change the area and increase the price and the down payment[43]. SMART apartments as single units lost their superiority as lived spaces and transformed into commodities controlled by economic power.

This absence of personal appropriation on the scale of the small unit creates new spatial formations on the urban scale. The fact that people are experiencing

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[41] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.59

[42] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.362

[43] Head of Property Management at EGW, personal communication, September 2020.

their lived space outside the four walls of their apartments resulted in the production of more consumption spaces in the neighborhoods and especially those that are demanded by young people. And although economic spaces are part of abstract spaces according to Lefebvre, the fact that people could control, organize, and appropriate them suggests that conceived spaces are not always taking a dominant form, rather they are part of the lived space[18].

As a result, minimal differences between the representations of space and spatial practices created abstract housing units that are standardized and homogenous but are part of a bigger space that have the possibility of appropriation hence of dwelling.

The several conflicting powers that appear in locations of SMART apartments (political, spatial, social) suggest that representational spaces, on one hand, are working to appropriate the spaces they have power on (shared spaces, outdoor activities) while representations of space (regulations and guidelines) seek to transform the housing projects to a mere abstraction of commodity exchange, not what people want/need but what they can afford, hence they are producing *"modality of an accepted (i.e. Imposed) 'lifestyle' in a particular type of housing"*[44],

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[44] Lefebvre, H. and D. Nicholson-Smith, The production of space. 2010, Malden; Oxford; Carlton: Blackwell. p.338

The future of the SMART

> *"As a rule, people...wish for smaller places to live about as often as people on airplanes wish for smaller seats"* [45]

The target groups for compact housing is primarily people on low incomes, especially young families and those looking for the first home of their own. The aspect of affordability is an essential argument that this program is necessary for certain target groups.

In the context of the existing housing projects, like Sonnwenviertel for example, the production of SMART apartments does not have a great impact on the neighborhood socio-spatial relations[46], because only 246 apartments out of 2000 subsidized apartments are built according to the SMART criteria [35], the challenge lies in the newly built projects as half of them will be constructed as SMART apartments [40].

 First, the size of the apartment especially after changing the maximum unit size to 65 square meters in 2019 [40] suggests that the newly built subsidizing housing complexes will include many compact housing units, consequently, new overpopulated housing projects will be produced. In this manner, SMART apartments will not be an abstraction on the scale of the single unit, but also the chances of appropriation on the bigger scale will decrease and the new housing complexes will be merely an abstract habitat and socio-spatial relations like bounded solidarity will be more recognizable in these centers.

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45 Wilkinson, A. (2011). Let's Get Small. The New Yorker. New York, questa trusted online research. Vol. 87, No. 21.
46 Head of Property Management at EGW, personal communication, September 2020.

A possible solution would be to reproduce the empty municipal apartments as SMART and integrate them in the old urban centers, thus the already existing social space will be appropriated, the social constitutions will be reorganized as a result of spatial practices, and new spaces of possibilities are produced.

Moreover, two additional groups are competing to enter the market of compact apartments: students and business commuters who need these compact spaces as their second residence [41].

Although guidelines do not grant these two groups access to the program at the moment, the integration of these two segments in the future might create more social mixing in the neighborhood, but it would also create a socio-spatial problem concerned with familiarity, as the space would be tied to a certain period e.g., throughout the university semester during which it's exploited, and at other times it's going to be abandoned.

A scenario of a participatory approach in the planning of the new SMART apartments should also be part of the process of production. The participatory approach should include not only consulting and communicating, rather actual participation in the decision-making process and the early planning stages. Subsequently, the perceived spaces by people can overlap with the conceived ones to socially produce lived spaces that allow more appropriation and help the various spatial practices of people to prosper and shape the spaces of the city.

Conclusion

This research presents insights about the production and organization of SMART apartments as part of the city-subsidized housing program in Vienna. The goal is to understand how these housing units are produced and planned based on the theory of production of space presented by the French philosopher and sociologist Henri Lefebvre.

The starting point of this research was the study of socio-spatial relations and political relations in space: how they produce and reproduce spaces, how their interaction transforms the perceived and conceived spaces into lived spaces and vice versa, and how spaces themselves can reproduce those relations in return.

SMART apartments were analyzed through interviews and data collected from the Housing service of Vienna. They were not studied as an outcome or a product to solve the affordable housing problem, rather as a process of production where various forces and factors played a role in their production.

The research recognizes three factors that are crucial in the appearance of the SMART housing program: the economy, the change in household forms, and the transformation of space usage. The eligibility criteria represent the gateway to grant access to space, thus it changes the use-quality of the housing to a mere exchange-quality. Representations of space, on the other hand, quantify and calculate the housing units based on abstract qualities (size, cost, number of units) and produce compact, cost-efficient, abstract units, while spatial practices on the

other hand have power over the shared spaces and outdoor spaces which have the opportunity of social organization and appropriation.

Although this research addresses the production of SMART apartments specifically, it suggests that the social space is not produced on the scale of the single unit, rather on the scale of the neighborhood as a whole.

The research suggests that the construction of SMART apartments on a larger scale in the future as suggested by officials, represents a challenge to the existing social spaces and threatens the socio-spatial structures. As long as the production of these units does not depend on a people-oriented participatory approach that includes not only corporation but also participation at the very beginning of the process, conflicts between the spatial practices and the representations of space will occur. The process of production should engage with each target group and focus on their needs and interests to create spaces that can be appropriated to achieve the balance between the perceived, conceived, and lived spaces.

Finally, the research suggests that social cohesion should be further investigated, since this housing form might result in problems of social injustice when applied on a larger scale. The research also suggests studying potential social problems that might arise as a result of living in compact apartments, especially in pandemics where the mitigation measures require new spatial arrangements, e.g., integrating the working space into the living space. This raises the question of how such arrangements might change the organization of spaces, and how the shared spaces and outdoor areas are appropriated accordingly.

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