Large Housing Estates under Socialism: Experiences and Perspectives on Sustainable Development of Mass Housing Districts

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on Sustainable Development
of Mass Housing Districts

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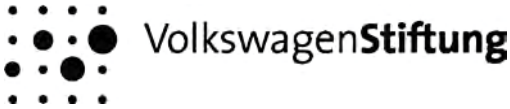
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Introduction

1. The Future of Modernist Housing

Barbara Engel, Nikolas Rogge

The Housing Question

In cities, almost no topic is as intensely discussed as housing. The attractiveness of cities and the resulting steady influx of new residents have led to shortages in the housing supply. Above all, there is a lack of affordable accommodation. The higher demand has led to tensions in the low-price segment of the housing market, which, in turn, have led to an increase in rent burden for lower- and middle-income groups. The need to build affordable housing is also a topic of intense discussion in the large cities of Germany, Russia, and Ukraine. The release of formerly state-owned and communal housing onto the private market, exploding rent prices, and a lack of new construction cumulatively mean that inhabitants are becoming increasingly worried about having a roof over their head.

In Germany, some initial steps have been taken by public administrations and politicians to cope with this problem. These steps include the (re-)establishment of municipal housing associations, testing and initiating new models for allocating and developing land, and a great deal more. Housing cooperatives have become popular again. But further steps must follow. Above all, local communities face the task of building new dwellings that meet the needs of the population. This requires proposals for innovative concepts of use, innovative building types, and innovative architectural design concepts. In addition, the development of inclusively designed residential space in cities must be addressed. Moreover, issues of housing are always a political and social question that must be answered in a differentiated manner in view of the divergent situations in each city.

Figure 1: Mass housing district "Kupchino," St. Petersburg, Russia.
Figure 2: Microrayon Nr. 7, Sayansk, Russia.

Source: Barbara Engel.

The shortage of residential space in many large cities and the question about how this can be alleviated takes us to the existing large residential housing estates. These settlements are of great significance when it comes to providing living space for broad sections of the population now and in the future—after all, millions of people live there. The situation on the housing market in the large housing estates of former East Germany has changed enormously in the past years. While demolition was still being propagated in many places some years ago and, at the same time, numerous incentives were created elsewhere to encourage people to move into large housing estates, attention is now focused on refurbishment, and even the potentials of densification are evaluated and tested as new buildings are erected to secure and further develop the existing housing stock (see Grunze 2017: 233).

In Russia and Ukraine, the housing situation in the large residential estates is different—vacancies in large housing estates never played a role to any relevant extent. Instead, a demand for further development still exists: due to the low average living space per person, which in Russia is less than 18 m^2 (Maslennikov 2019) and in Ukraine is less than 14 m^2 of floor area (State Statistics Service 2018), more living space is needed. However, in Russia and in Ukraine, the residential neighborhoods that were built in the 1950s and 1960s face a great deal of criticism. Many of these buildings, which were constructed across the entire territory of the former Soviet Union and in former Eastern Bloc countries, urgently need refurbishment. Today, investors see the opportunity to make large profits in areas with moderate building densities by

adding high-rise buildings or even by replacing existing buildings with denser urban structures. Demolition programs designed to eliminate the existing residential stock in large housing estates have already been set up by the state in many cities (Lovkin 2016). In Ukraine, the housing supply situation is worsening. After independence was declared in 1991, a gradual process of mass privatization got underway. In a housing sector that was already struggling with shortages of available housing, the demand for housing rose as a result of further stimulation due to urbanization (see Durmanov 2010). This has been exacerbated by the bad state of the housing infrastructure. More and more people are living in informal and illegal circumstances. This also gives rise to the question of how large housing estates from the Soviet era can be altered in such a way that they can contribute effectively to the housing supply (see Bibik and Dril 2017).

Figure 3: Self-constructed additions to enlarge the living space in Cheryomushki, Odessa, Ukraine.
Figure 4: Entrances in a mass housing district in Kharkov, Ukraine.

Source: Ekaterina Gladkova.
Source: Nikolas Rogge.

Large housing estates potentially have a valuable role to play in providing housing. The dwellings there are highly adaptable, making them suitable for designing a living environment with few barriers. Additionally, the estates have a high proportion of open spaces, which becomes increasingly relevant when thinking of climate-resilient neighborhoods. They offer extensive and varied housing options and living conditions that are interesting for different groups in the population. In addition to comparatively low rents, the com-

prehensive range of existing amenities and services that the estates offer are very important for certain types of households (see Altrock, Grunze, and Kabisch 2018: 5). At the same time, the districts require extensive renewal and improvement to make them capable of responding to new societal, functional, and technical needs. It is necessary to make technical improvements to the aging building stock, to expand the mix of dwelling types and offerings, and to create an attractive environment. The requisite renovation strategies necessitate measures at different levels and different scales—including an improvement of the spatial-structural organization and orientation, a redesign of the open spaces, and new mobility concepts and services. Additionally, planning strategies and instruments, regulations, and laws must be adapted.

Figure 5: Self-constructed parking between tree stumps in Cheryomushki.

Source: Nikolas Rogge.

Trilateral Scientific Cooperation

The military conflict in Ukraine in 2014 have had a severe impact on the political situation in Europe and prompted the Volkswagen Foundation to launch a call for trilateral research proposals in order to strengthen the cross-border cooperation among scientists and scientific institutions from Germany, Russia, and Ukraine through a unique funding measure and thus contribute to rapprochement, confidence-building, and understanding in the region.

The research consortium from Germany, Russia, and Ukraine—professionals from Karlsruhe Institute of Technology, Siberian Federal University Krasnoyarsk, Irkutsk National Research Technical University, Kharkiv National University of Civil Engineering and Architecture, and Odessa State Academy of Civil Engineering and Architecture—received the first research grant for the period from 2016 to 2018. The objective of this trilateral project was to understand large housing estates from the 1960s and 1970s in terms of their sociopolitical and cultural aspects as well as their current status. Previously implemented concepts of transformation were analyzed, critically reflected in trilateral comparison, and brought into a wider context. Evaluation of individual experiences was aimed at generating an impetus for further urban development of these neighborhoods and for improving planning methods and strategies. Exceptional research was conducted that not only reached scientists but also had a strong impact on the communities themselves and the inhabitants of the housing estates.

Based on the first project, which had laid a solid theoretical foundation, in 2020 the research team received the grant in a second call for proposals with its project "The Future of Modernist Housing: Living Labs Socialist City," which focuses on the topic of housing in large housing estates. The utilization of large housing estates as a valuable resource for the future housing supply in cities requires innovative and practicable strategies and concepts. Promising approaches to solutions for sustainable redevelopment can only be developed through dialogue between the academic community and practitioners from the realms of politics, business, and civil society.

The broad range of different types of large socialist housing estates, with their specific spatial and sociocultural residential qualities and their symbolic connotations, have received very little consideration and discussion to date. Spatial studies have often failed to place their results within a social context that would have made it possible to perceive and assess the role of the inves-

tigated large housing estates with regard to their instrumental, sociocultural, and economic framework conditions as well as the requirements of the city. Economic research often does not show the spatial impacts or significance of regulative decisions and interventions made at the economic level.

Figure 6: Self organized private gardens in Kharkov, Ukraine.
Figure 7: Parking garage beneath a yard after renovation, Dresden, Germany.

Source: Ekaterina Gladkova.
Source: Nikolas Rogge.

The core question dealt with by the project was how the existing living space in prefabricated settlements can be secured for the future and further developed in a sustainable manner. The aim was to map out the spatial qualities and deficits of the housing estates—in terms of both the living space and the residential environment—in order to develop recommendations for action on this basis. How can the often monostructural estates be altered in order to turn them into lively, socially, and functionally diverse districts? How can spatial and cultural identities be reinforced? What potentials for densification can be identified and where must open spaces be secured as important supplementary living spaces? How can existing buildings be converted so that the character of the estates remains intact? How can the existing buildings be altered so they meet today's living standards? Can large housing estates, based on their standardization, serial production, and rationalization, also play an exemplary role for new, future residential construction projects? Envisaged key components of the research project were two living labs that were to be established in two selected housing estates in Irkutsk (Russia) and Odessa (Ukraine), where

research was planned to be done "on site," accompanied by an ongoing dialogue with the different stakeholders.

As part of the research project, the conference Dialogue on Large Housing Estates: Experiences and Perspectives was organized in April 2021 to set the conceptual frame and foundation for the project. The conference discussed the topic of living in large housing estates from an interdisciplinary expert perspective. In three thematic sessions, various perspectives on the situation and prospects for the sustainable development of large housing estates were presented and discussed. The constructional-spatial and design aspects of large housing estates were examined here—that is, the supply of dwelling typologies and manifold technical aspects—and the sociocultural, economic, and instrumental aspects were also taken into focus. By evaluating international housing projects, the aim of the conference was to gain insights that can be used for large housing estates in Russia and Ukraine.

The speakers and those taking part in discussions were experts and young academics from the disciplines of architecture and urban planning as well as open-space and transport planning, along with experts from the housing and real estate sector as well as politics and the public administration—from Germany, Eastern Europe, and other countries. The conference brought valuable information and insights. It was not meant to present final solutions, but to inspire and to give the opportunity to learn from each other, to exchange experiences, and to develop new ideas.

Not until 2022, after the conflict in Ukraine intensified, did our joint project come to a standstill. But we continue to believe that cooperation must prevail. Every author in this publication condemns the war, and we do not want to let politics dictate who we can work and be friends with. Despite the current political conflicts, the authors share a common understanding that the only way to a prosperous future is through cooperation and dialogue. Through active partnership, solutions can be found to the common problems that should be at the center of our striving.

contributions to the conference give an international perspective on the future of modernist housing that has scientific and practical significance for many countries, well beyond Russia and Ukraine. The book at hand documents the reports presented and thus reflects the international context of the prospects for modernist housing. By sharing the international experiences and the work elaborated during the conference, we hope that this publication will support the sustainable transformation of large housing estates and lay the ground for further collaboration in a peaceful future.

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International Experiences and Practices on Prefabricated Panel Buildings and Their Urban Environments

In the following three chapters—"Housing Typologies and Urban Environment," "Citizens and Neighborhood," and "Economy and Policies"—different perspectives on the situation and perspectives for the sustainable development of large housing estates are presented and discussed. The constructional, spatial, and design aspects of large housing estates are examined. Specifically, the stock of various dwelling typologies and the need for further development of the technical infrastructure are discussed. Furthermore, the unique sociocultural and economic aspects within the settlements are addressed and the necessity for customized planning instruments and financing tools is emphasized.

The authors are experts and young academics from Germany and Eastern Europe as well as scholars from other countries. They come from various disciplines and are at different stages in their careers. In addition to specialists from architecture and urban planning, experts in open-space design and traffic planning also present their research. Lastly, professionals from housing and the real estate sector as well as politics and public administration give insights into their findings. The authors' diverse backgrounds represent the complexity and diversity of the topic of large housing estates very effectively and provide excellent insight into the multiplicity of challenges and approaches involved.

Housing Typologies and Urban Environment

Large housing settlements consist of self-mirroring urban patterns; they are composed of a repetition of the same building, constructed of the same elements. This symphony of panels and slabs forms the endless carpet of the socialist large housing estate.

What meaning do the grid, the repetition, and the seriality have for the housing itself and the lives that are lived within them? How should the fabric of the large housing estates be transformed, adopting them to the new functional and technical needs without losing their specific character? Can the estates, on the basis of their standardization, serial production, and rationalization, also play an exemplary role for future new residential construction projects?

Today, the variety and size of dwellings in these settlements do not meet modern standards, and the layout of the neighborhoods does not fit people's wishes for privacy and their little interest in shared facilities. If they are not adapted, they cannot, by and large, compete successfully on the market.

How can buildings be transformed, removed, or added in order to meet all the needs of different lifestyles? Prefabricated housing settlements were often discussed as experimental living areas; how can they now become pilot projects for innovative housing types for the future? Which models and new forms of housing can make the settlements more flexible? How are different user groups—those who can enrich the settlements and benefit from the good supply and short distances—addressed?

The other characteristic feature and great asset of the settlements are their open spaces—but these are a problem at the same time, since huge territories of greenery are often abandoned or misused. To ensure that the housing estates are suited for the next generation, the large green areas can play a crucial role in making the estates attractive for different types of users, such as families and senior citizens, who profit from easy access for leisure and recreation. What are the requirements of open spaces, and how should they complement the housing? How can private open spaces allocated to individual dwellings be created without fragmenting the spaciousness of the existing open spaces?

This chapter discusses the aesthetics of mass housing, the importance of public space, and the requirements for sustainable renewal.

Philipp Meuser, German architect and publisher, addresses a relevant topic that has been paid little attention in research thus far—the huge variety of mass housing that was realized between 1955 and 1991 with more than 700 series types. The article looks at different cities, from Moscow to Tashkent, presenting one of the greatest building programs of postwar modernism. In addition to classifying mass housing construction in the architectural-historical context of Soviet modernism, he presents a new approach of classifying and evaluating the specific typology of mass housing.

The contribution by Daniel Baldwin Hess of the School of Architecture and Planning at the University at Buffalo, Tiit Tammaru of the University of Tartu and Maarten van Ham, of the University of St Andrews reviews the formation and socio-spatial trajectories of large housing estates in Europe, casting a detailed eye on socialist-era housing in the Baltic countries. Their article discusses various policies and planning initiatives that have been implemented to prevent the social degradation of housing estates, and these are reviewed along with policy measures that have been used to address challenges in housing estates throughout Europe. The post–World War II predilection for "experimental living" in planned housing can be translated to contemporary interest in sustainable housing types for the future.

Daria Volkova, doctoral candidate at the Institute for European Urban Studies at Bauhaus University Weimar, explores the way to research mass housing through the issue of sustaining materiality. The report focuses on the different institutional actors at the local and national levels that are engaged with sustaining mass housing, each of them having different perspectives and different abilities to influence materiality. Comparing Russia and Germany, this contribution highlights the main methodological and institutional aspects through which the ecology of materiality can be explored and reveals the complexity of maintenance resulting from different property types, ownership structures, and institutional settings as well as stemming from public discourse.

Gavriil Malyshev and his co-authors present experiences made by the firm MLA+ of St. Petersburg with new mechanisms and tools for the redevelopment of existing assets. MLA+ is an architectural firm whose vision is that densification—the placement of new objects within already built-up territories—and spatial structuring of such territories can generate the financial resources required for housing renewal. The projects by MLA+ show how new construction

can improve the quality of the existing environment. Furthermore, their report points out the new policies that are needed to enable the local community to become the main actor in the rehabilitation process by providing it with both financial and institutional resources.

2. Understanding the Origin, Trajectories of Change, and Future Prospects for Large Housing Estates in Europe

Daniel Baldwin Hess, Tiit Tammaru, and Maarten van Ham

Introduction

It has been nearly fifteen years since a large European Union–funded project called RESTATE explored challenges in housing estates throughout several European countries and served as a clearinghouse for the exchange of ideas for counteracting negative trends in large housing estates (van Kempen et al. 2005). Since that time, a series of riots in the Paris banlieues and in the "Million Homes Programme" suburbs in Stockholm have revealed that many problems remain. Major European newspapers, including *The Guardian*, frequently publish articles about deep social problems in housing estates, the poor image from which they suffer, and dissident groups that reside in them. Families with resources often move away from large housing estates, and housing estates contribute to increasing segregation levels in European cities (Tammaru et al. 2016a). Immigration currently introduces new groups to European cities, and their initial places of settlement are low-cost neighborhoods, often in large housing estates (Wessel 2016). Moreover, new challenges arise, such as the ongoing aging of buildings along with their environments, which necessitates new investments and raises challenges related to sustainability, energy reduction, and aging populations. With many cities operating on austerity budgets and lacking cash to invest in improving housing and neighborhoods, now is a good time to revisit the challenges faced by large housing estates in European cities.

This essay presents the key findings of the book *Housing Estates in Europe: Poverty, Ethnic Segregation and Policy Challenges*, and is structured around ten takeaway messages. These messages convey, on the one hand, that few sub-

stantial changes have occurred in large housing estates in Europe since the RESTATE project, but they also carefully clarify some of the strategies for improvement that might help to secure a solid future for the dwellings and inhabitants of Europe's large housing estates.

Findings from past studies including *High-Rise Housing in Europe* (Turkington et al. 2004) and the RESTATE project (Van Kempen et al. 2005) provide in-depth evidence of the varieties of change in large housing estates in Europe through the mid-2000s. A recent book entitled *Socio-Economic Segregation in European Capital Cities* (Tammaru et al. 2016b) documents growing levels of segregation across Europe, suggesting an increasing overlap of ethnic and social segregation often to be found in large housing estates. Our current book focuses on the formation and later socio-spatial trajectories of large housing estates in Europe. The long-term growth in social inequalities in Europe, a growing number of immigrants in European cities seeking affordable housing, and the physical aging of apartment buildings form key policy challenges related to large housing estates in Europe.

This essay provides comparative city- and metropolitan-level evidence of the origins, trajectories of change, and future prospects of large housing estates. It specifically investigates the actions needed to realistically improve the fortunes of housing estates experiencing downward trends and pathways to enhance life for the residents living in them. This chapter is organized around ten synthesized takeaway messages distilled from the sixteen chapters of the book *Housing Estates in Europe: Poverty, Ethnic Segregation and Policy Challenges.*

Takeaway Messages

Message 1:   **Although large housing estates are a common phenomenon in Europe, large variations exist between countries, there were wide variations in the initial conditions and contexts of housing estates, and these placed housing estates along different trajectories of change.**

The standardized grand structures of housing estates in Europe are the children of post–World War II urban growth, industrialization, and urban renewal. Housing estates often formed a high-density urban-industrial circle around the historic cores of cities (Petsimeris 2018; Lelévrier and Melic 2018) but in some cases they were built to facilitate the redevelopment of inner-city neighborhoods of slum housing (Murie 2018). Many housing estates were

built outside the urban core on peripheral greenfield spaces where land was cheap and where it was easy to reap economies of scale; i.e., to provide a large amount of housing units at a single construction site (Wassenberg 2018). In some cases, the ease of movement of cranes on construction sites determined the way housing estates were planned (Meuser and Zadorin 2016).

Although there are fewer housing estates in some cities—for example, in Athens (Kandylis et al. 2018) or Brussels (Costa and de Valk 2018)—and even if they have been built outside the city's central areas, as in Paris (Lelévrier and Melic 2018), they are still a common characteristic in virtually all European cities. Despite many similarities in form and function, large variations among housing estates exist between European cities. The number of apartment buildings built, as well as the social and physical conditions in housing estates today, relate in part to the welfare regime that was prevalent in the countries at the time the housing estates were established. In some countries—the former Soviet Union, of course, but also the social democratic welfare states of Northern Europe—collective visions prevailed and communal living and egalitarian social conditions were consistent with societal expectations. In other countries—notably in Southern Europe—collective vision promoted private homeownership, even through a period of expansion of social housing and collective housing estates. Both societal visions shaped the formation of housing estates as well as set the tone for their long-term development.

The construction of new high-rise housing estates began decreasing in the 1970s in Western Europe. In the socialist countries of Eastern Europe, their construction increased rather than decreased in the 1970s, and the growth trend continued in many countries until the fall of the Berlin Wall in 1989 and the demise of the Soviet Union in 1991. The provision of free-of-charge public housing was one of the cornerstones of the egalitarian ideology in communist Europe. The ideals of large housing estates were modeled from Northern Europe (rather than from Western Europe) because central planners were inspired by the grand socio-spatial structures of Northern European cities, notably in Sweden. Central planners were less impressed by the public housing–based approaches to housing estate formation that prevailed in Western Europe. They developed various templates for planning the internal spatial structures of modernist neighborhoods. These templates included (a) a surround type where a square inner-courtyard is formed between apartment buildings; (b) a canyon-type formation with grand roads lined along both sides with tall apartment buildings; and (c) a parallel-blades formation featuring long rows of parallel buildings (Marin and Chelcea 2018). The neighborhoods,

which were planned to deliver necessary daily services within walkable reach, became the foci of daily life for people despite the fact that oftentimes not all planned service facilities were actually built.

Message 2:   **Housing estates are often viewed as universally problematic, but this characterization is too simplistic and there are varieties of trajectories of change, even within the same cities. Some housing estates have downgraded significantly, while others have been more successful in maintaining or even improving their status.**

Characteristics and features of housing estates vary not only between countries but also within cities. Construction methods for large housing estates changed over time. The first housing estates were smaller in size, strongly influenced both by modernist housing aims as well as by the ideals of the Garden City concept (Urban 2018). As mass production techniques improved and in order to meet the growing demand for new housing units, apartment buildings became taller and housing estates became denser from the 1960s onward. This change is especially evident in Eastern European cities where the construction of large housing estates lasted longer (until the early 1990s) compared to West European cities (Urban 2018; Marin and Chelcea 2018; Ouředníček et al. 2018).The metropolitan location of new housing estates changed over time as well. The first housing estates were often built either as infill in city centers or close to city centers, while later housing estates were usually built further away, on plots of land still available for large-scale construction. This implies that high densities and spatial isolation are often combined in newer housing estates, making them less attractive in today's housing market compared to older housing estates (Kovács et al. 2018). However, older housing estates face problems too. These problems relate to their older age and consequent higher investment needs, fewer amenities, and, in some cases, the small size of the apartments. In some cities, apartments increased in size and quality over time, better meeting families' needs (Ouředníček et al. 2018; Leal et al. 2018).

Figure 1: Distribution of housing estates in metropolitan space in case study cities.
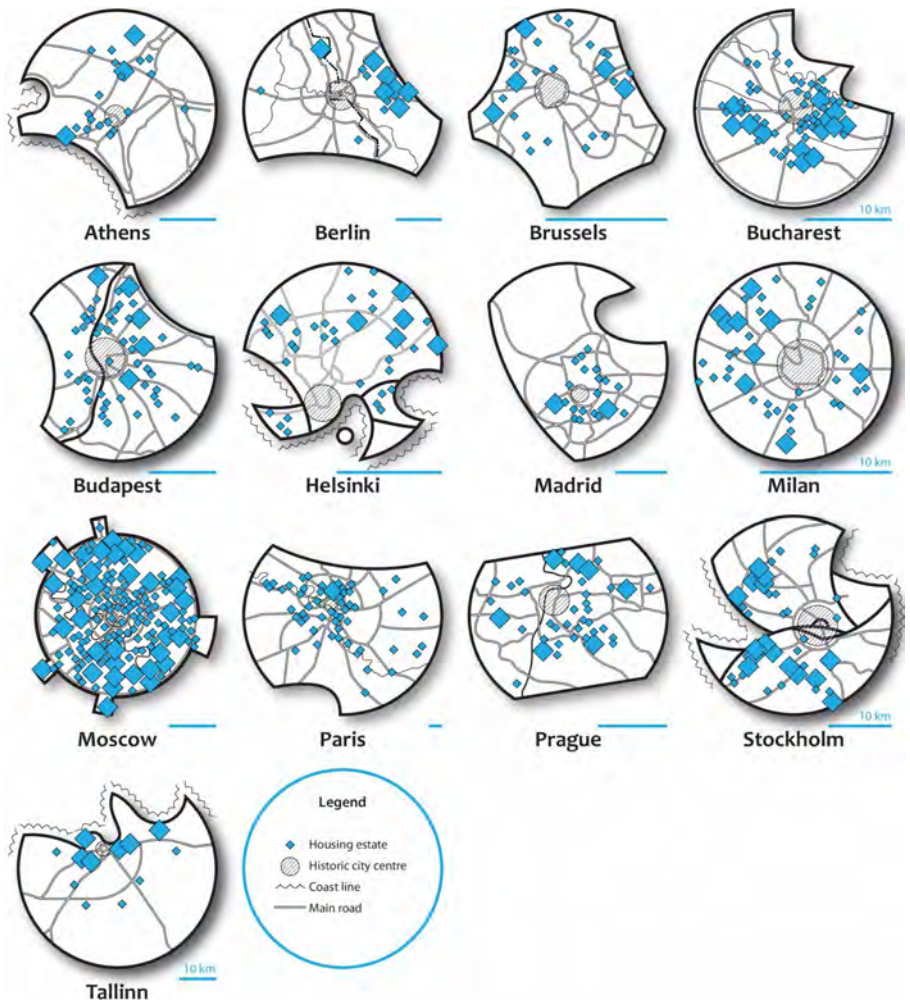
Source: Figure prepared by Raivo Aunap.

Figure 1 depicts the relative size (measured by current or recent residential population) and spatial arrangement of housing estates as detailed in the chapters in the book. High-density arrangements of housing estates (in Moscow and Bucharest, for example) can be identified, and largely peripheral

locations for housing estates (in Milan and Brussels, for example) can be contrasted with central locations for housing estates (in Paris, for example) and evenly distributed housing estates (in Budapest and Prague, for example). Underlying political contexts at the time of housing estates construction explain the concentration of housing estates in East Berlin (but not West Berlin), and the socialist system explains a fewer number of housing estates that are nonetheless large in size (in Tallinn, for example, and elsewhere in Eastern Europe).

Once established, the built environment is slow to change due to inertia. Initial choices made about the physical characteristics of housing estates—location, size, design, and construction—have had a crucial impact on the long-term trajectory and performance of housing estates, even if social and housing values have changed since then. As a rule of thumb, immense housing estates and those located in more peripheral locations face higher risks for social and physical downgrading than smaller housing estates (Andersson and Bråmå 2018; Kovács et al. 2018; Leetmaa et al. 2018), while smaller building types in housing estates within the urban core tend to perform better over the long run (Kovács et al. 2018; Vaattovaara et al. 2018).

While the absolute location of housing estates cannot be changed once established, their relative location has changed in many cities; where European cities have sprawled further since large housing estates were built, housing estates now often form a middle zone between urban cores and lower density outer rings. Transportation connections have often improved as well (Hess 2018). The relative spatial position of housing estates can be improved more by focusing on improving their integration with opportunities elsewhere in the city through transport networks (Lelévrier and Melic 2018). For example, in Tallinn, some housing estates face the challenge of a lowering social status, but people are not trapped in these neighborhoods thanks to free public transport (Leetmaa et al. 2018; Hess 2017).

Message 3: **Interventions that aim to reduce densities and improve the relative location of housing estates—investments in transport infrastructure, including the expansion of subway systems, construction of pathways for pedestrians and cyclists—can substantially improve access to housing estates.**

High-density per se is not necessarily a source of problems and dissatisfaction for residents; other related factors may be more detrimental, such as poor en-

vironmental quality, noise, lack of community involvement, or lack of safety (Howley et al. 2009; Andersson and Bråmå 2018). Since gentrification has elevated housing prices in central cities beyond the reach of large numbers of dwellers in many European cities, people seek alternatives in the housing market, and that could gear choice towards housing estates. For this to happen, measures need to be taken to downplay the negative aspects of high-density residential space, to improve the relative location of housing estates in urban housing markets, and to invest in the built environments within housing estates.

There are many aspects of housing estates that contribute to differences in the trajectories of change. Housing estates that are functionally more diverse and provide good jobs, services, and leisure-time activity can be relatively attractive. Functional diversification is an important way to increase the attractiveness of large housing estates. Private ownership of apartments combined with poverty and high shares of minorities may exacerbate the downward spiral of housing estates. The trend towards an overlap of ethnic, social, and spatial disadvantage is growing in Western and Northern European cities, and an increasing share of the housing stock is privatized. Certain risk factors call for caution when it comes to the future of particular housing estates in Eastern Europe as well, since there is some evidence of high-income groups moving away from the less attractive housing estates built in the 1980s (Kovács et al. 2018; Leetmaa et al. 2018). Similar risks also apply to many Southern European housing estates located on urban peripheries, which are characterized by high densities and tall buildings and private ownership combined with mainly low-income groups (Petsimeris 2018; Leal et al. 2018).

An alternative way to intervene is to demolish less attractive housing estates. Demolition of apartment buildings has been undertaken in three of our case study cities: Birmingham, Moscow, and Paris. In Paris, social aims drive housing demolition and renovation schemes (Lelévrier and Melic 2018). There is an ambition to provide one new housing unit for each one demolished and to reduce housing density through the removal of high-rise towers. The opposite takes place in Moscow, where an immense demolition plan of 1960s housing departs from an entrepreneurial way of thinking. Profit-driven developers operate within a rather ruthless real estate market and social considerations are unimportant (Gunko et al. 2018). The demolished area will be significantly densified through the addition of clusters of taller towers. Although their physical configuration thus becomes similar to the most problematic housing estates in South European cities, the social structure would be different since

in Moscow, a respectable income is needed to buy an apartment in new tower blocks to compete in the dynamic housing market with limited choice for new housing.

In short, vital neighborhoods adjust to changing circumstances in complex ways. These may include refurbishments, replacements of housing and people, physical and social upgrading, modernizing the built environment, adding new facilities, changing the housing stock when necessary, and altering individual dwellings (by combining, splitting or enlarging them). There is no single measure that can neatly apply to all countries, cities, and housing estates.

Message 4:   The position of housing estates on the housing ladder is unclear. Housing estates could have a better-defined role—for example, either as a final housing destination or as an interim position in a family's housing career—which could make it easier to clarify goals and design concrete interventions.

The original aim of the housing estates program was to provide modern apartments for working-class families. These apartments were often seen as a final destination in the housing career; they were carefully and scientifically designed to meet the expectations of families and then replicated in large numbers. In many European countries, the first residents were middle-class or affluent working-class families (Andersson and Bråmå 2018; Murie 2018); in others, the profile of residents was more diverse and included large shares of immigrants (Lelévrier and Melic 2018; Kandylis et al. 2018). The subsequent trajectory of change—lowering of social status and increase of immigrant population—bears more similarities, although the pace of these changes yet again varies from country to country and from housing estate to housing estate. Families with children have opted for low-rise housing alternatives as well. The lowering of social status, departure of native families, and increase in immigrant population have been most rapid in Western European cities (Andersson and Bråmå 2018; Lelévrier and Melic 2018). Higher income people have left housing estates and for them, this housing segment is either out of the question altogether or considered only for temporary housing; for many low-income groups, housing estates still form a final and permanent housing destination (Lelévrier and Melic 2018).

However, new population groups for whom large housing estates would serve as an attractive option on the housing market are on the rise in European cities. As the second demographic transition evolves, in most countries

the highest growth is predicted for small households (composed of young singles, elderly, divorced people, foreign students, and temporary workers), not families.

The social composition of housing estates has been more stable in Eastern European cities (Leetmaa et al. 2018; Kovács et al. 2018; Ouředníček et al. 2018; Gunko et al. 2018) than other parts of Europe for two main reasons. First, there was little lowering of the social status of housing estates during the socialist period. There was less life cycle related mobility in socialist countries and housing estates aged simultaneously with people who moved into them. Housing allocation was centrally administered; people waited for housing for years or even decades, and once an apartment was received, there were few opportunities for further residential moves. Second, housing estates became a dominant housing segment and they still provide shelter to a significant share of urban dwellers, slowing the pace of social change. However, there is some evidence of the lowering of the social status as well as increasing shares of immigrants in housing estates in Eastern European cities in the last two decades.

To conclude, lower socioeconomic groups and ethnic minorities have become increasingly concentrated in large housing estates and in other areas where social, ethnic, and spatial disadvantage overlaps and intensifies (Hess et al. 2012; Leetmaa et al. 2015; Bolt 2018). In this context, it is critical to better conceptualize the current role of housing estates in urban housing markets, especially in light of the second demographic transition and an increase of mobile people without families. Large housing estates are ideal for many of these groups. However, if the role of housing estates on the housing market is unclear, it is difficult to devise suitable intervention measures. Since the origins, size, location, and current condition of housing estates vary from country to country and housing estate to housing estate (Lelévrier and Melic 2018), it is difficult to universally conceptualize their role in the housing market. Increased marketization makes this complex too. Still, planning interventions could help to influence the choices made by specific population groups like students, families, or older people through planning of public spaces and services. Various innovations—such as setting up the best school in the city, locating a ministry office, establishing a center with diverse and sophisticated services for older people, providing land free of charge for a leisure-time center, and other measures—could potentially shape the main function, social vibe, and population composition in certain housing estates.

Message 5: Privatization of collective space should be handled with care. The function of housing estates, originally built by a central authority and intended for collective ownership, is strained when structural changes cause housing units to be placed in private hands. The often-grandiose physical configuration and social structure of housing estates require thoughtful management of common spaces when individual apartments become privatized.

The construction of large housing estates was usually publicly financed, resulting in publicly owned and publicly managed housing complexes. Public financing occurred to a lesser degree in Southern Europe and especially Athens, where housing estates have always been under private ownership (Kandylis et al. 2018). Governance structures were devised that were regarded as appropriate for public ownership and management. A common contemporary trend across Europe, however, is increased private ownership (Murie 2018; Petsimeris 2018; Lelévrier and Melic 2018) or semi-private ownership (Andersson and Bråmå 2018) of housing units (both in the general housing stock and in large housing estates).

Today, redevelopment of many of the publicly constructed and formerly state-managed housing complexes thus sometimes lies in the hands of private owners. Although private ownership is usually related to better housing maintenance, it does not always work this way in large housing estates for various reasons (Kandylis et al. 2018; Marin and Chelcea 2018). First, private ownership of apartments puts them morally outside the realm and responsibility of local and central governments. Second, owners do not always possess the culture, knowledge, or resources for property management to effectively upgrade housing themselves. Third, area-based coordination and management of common spaces is needed in housing estates. Privatization with no eye on the grand spatial structures, private management of apartments, and management of common spaces can easily lead to eclectic arrangements; individual improvements and care at the apartment level—or even at the building level—do not necessarily contribute to improved overall quality of living environments in housing estates. The selling of properties to large private development companies does not necessarily work, either. For example, Berlin sold 100,000 apartments to international investors; setting high rents for earning high profits tends to be more important for such investors than investing in the quality of the housing units and the built environment (Urban 2018).

Although apartment associations are common in Eastern Europe, the management of renovation programs is often chaotic. In Tallinn (Leetmaa et al. 2018) or Moscow (Gunko et al. 2018), for example, apartment owners who are dissatisfied with apartment association practices often pursue uncoordinated efforts to improve their apartments. The outcome of these improvements often leads to aesthetic compromises in buildings; for example, when windows are replaced by individual owners, every apartment may look different on the building facade. Even more radical developments that fall under the umbrella term of "do-it-yourself urbanism" can be found in less-wealthy post-socialist cities in the form of balcony construction or unregulated building additions (Bouzarovski et al. 2011). Again, the outcome is an eclectic building facade. Better coordination and management does not necessarily mean costly public investments; reasonable-cost renovations have been conducted in France (Lelévrier and Melic 2018). Poland is a good example of a healthy combination of privatization and management, with large housing associations responsible for large numbers of apartment buildings and collecting modest maintenance fees from residents. The outcome is a fully renovated housing stock in large housing estates that is still attractive for socially diverse urban residents without creating burdens for public finances (Szafrańska 2014).

Productive management structures may not help if differential residential mobility has already produced significant population dynamics, leaving low-income groups in large housing estates. As the social status of residents of housing estates downgrades, it may be more difficult to reverse trends (Lelévrier and Melic 2018). Consequently, well-structured management programs in Czechia and Poland are effective since there is still a relatively high social mix in housing estates in those countries. If high- and low-income groups sort into different housing segments, the financial capacity for housing upkeep in low-income housing estates could fall short of investment needs. It follows that management structures should be revised in some countries before it is too late, since the differential sorting of various income groups is in an advanced state (Ouředníček et al. 2018).

To conclude, any action that increases private or semiprivate ownership—and this is a pronounced and growing trend across Europe—in housing estates that are designed as grand macro-structures should be connected to effective systems of area-based urban management. This simple rule seems self-evident but is often violated in everyday life in many European countries; in no other housing segment can the violation of this rule create more harm than in large housing estates.

Message 6: It is critical to improve the perception and elevate the reputation of housing estates. People have a tendency to create images in their mind that may or may not match reality, but a poor reputation for large housing estates can further hurt their future performance.

At the time of the construction of housing estates, people had high hopes for them. There was great excitement, since new apartments in modernist housing estates offered major improvements in living quality. Many of the previous residential units were without running water (or cold water only), without showers or baths, without indoor toilets, and without central heating. This made people enthusiastic about newly constructed housing estates, which offered a modern living style. Since social mixing within housing estates was a common aim of policymakers and planners, both working-class and middle-class families had the chance to live in a new, modern apartment. However, the public perception of housing estates in Western Europe reversed quickly as the negative qualities of housing estates or the high concentration of low-income people were acknowledged. For example, the term "deprivedhoods" was coined in France in 1981, referring to neighborhoods in which large social problems were readily apparent (Lelévrier and Melic 2018).

Large housing estates today tend to house people with lower than average incomes, but this is not always regarded as problematic (Urban 2018). As a rule of thumb, there is more stigma attached to large housing estates in Western European cities (e.g., Costa and de Valk 2018) than in Eastern and Southern European cities. Stereotyping by the media has contributed to the poor reputation of housing estates and has diminished their chances for success. For example, the public tends to have a distorted image of housing estates in Milan, based in part on media coverage of certain negative events. People think that housing estates are overrun with foreigners, but in reality, the share of ethnic minorities there is small (Petsimeris 2018). Likewise, residents of large housing estates find it shocking when media depict them as criminals living in ghettos (Urban 2018). In Paris, large-scale investments have significantly improved the built environments of large housing estates, but their reputation has not increased among middle-class families, especially when riots and delinquency are emphasized in the media (Lelévrier and Melic 2018). Meanwhile, housing estates in Finland are well managed and often beautifully landscaped and fully renovated (Vaattovaara et al. 2018). Hence there is nothing substantially wrong with housing estates in many cities of Western and Northern Europe, and the

negative perception of them, especially among people not living there, does not always fully reflect the objective reality.

A poor reputation for housing estates can certainly jeopardize their success. People often judge various segments of housing in relative terms, and the perception of each individual tends to follow the perceptions of the crowd. For example, the reputation of inner-city neighborhoods is high across Europe today, but not long ago these neighborhoods were sites of poor quality housing and low social status (Hess et al. 2017). This suggests that changes in perception could significantly alter the development trajectories of residential neighborhoods. Policy and planning interventions at all levels—places, people, and connectivity—can help to improve all aspects of housing estates, including their image. The latter is as crucial as the first. Changing the reputation, once damaged, is not an easy task though. It only succeeds when supported with a range of related measures, including real, visible improvements for the residents ("internal image") and newcomers to the city; it is most difficult to change reputation for those living outside housing estates (Wassenberg et al. 2004).

Message 7: Intervention strategies for reversing the fortunes of large housing estates are complex. The focus is usually on area-based interventions, with an aim to improve the physical qualities of neighborhoods, or on access- and connectivity-based interventions, with an aim to link large housing estates originally located in peripheral urban space. However, more attention is needed on people-based improvement strategies.

There is little wrong with large housing estates in many parts of Europe, either because they have never experienced significant physical decline and concomitant lowering of social status or because they have been subject to large-scale renovation. What is problematic is their negative public reputation and relative position at the bottom of the housing ladder. The consequences are, however, unfavorable since social, ethnic and spatial problems are often intermixed in a vicious circle of poverty and segregation (Van Ham et al. 2018; Bolt 2018). This cycle has turned large housing estates into poverty traps where delinquency can readily develop. As a consequence, a lack of safety is one of the major challenges in large housing estates (Wassenberg 2018; Petsimeris 2018). Poor quality of the built environment is another important issue. Many policymakers have clearly understood this, and a majority of investments have consequently been channeled to improving the physical conditions of apartment buildings and surrounding built environments. Political rewards can be tied to physical

improvements. In Eastern Europe, the requirement to comply with European Union energy directives is the most common way of improving large housing estates (Marin and Chelcea 2018; Lihtmaa et al. 2018).

Another important issue—especially in West European cities—pertains to the quality of schools. Since schools often draw their students from surrounding residential districts (and in many countries, children must attend the nearest neighborhood school), when low-income families begin to concentrate in certain areas of cities, higher income parents leave these places (and avoid moving into them in the first place) due to school quality (Bernelius 2013). This may deepen and hasten the lowering of the social status of large housing estates. The lowering of the social status of residents is partly related to changes in the economy in Northern and Western European countries. Middle-class families affected by the loss of jobs due to globalization and deindustrialization often become trapped in the most affordable parts of the housing sector, usually within large housing estates. As middle-income families leave (or avoid) such areas, unemployment levels are high in large housing estates (Lelévrier and Melic 2018; Andersson and Bråmå 2018). Children raised in these social environments often have low motivation to do well in school, lack positive role models, and lack resources for getting good education and jobs; consequently, poverty tends to pass from parents to children (Van Ham et al. 2018).

We identify three types of policy interventions—related to segregation and poverty—that can be pursued in large housing estates: place-based policies, people-based policies, and connectivity-based policies. The place-based policies have been most popular in European cities and they mainly focus on upgrading the physical environments of large housing estates. This is achieved, for example, by demolishing low-quality (social) housing, by building higher quality social housing, by establishing more expensive rental and owner-occupied housing, and by enhancing neighborhood amenities. Such measures have been extensive in the UK (Murie 2018), France (Lelévrier and Melic 2018), and Russia (Gunko et al. 2018). Place-based policies often require enormous investments, but the physical layout can be upgraded by renovating and replacing buildings within a relatively short period of time. Interestingly, though, the physical outcomes of demolition differ—in terms of densities and other factors. In Western European cities, the outcome is often reduced density (e.g. Lelévrier and Melic 2018), while in Eastern Europe, the outcome is often increased density, either as a result of infills as new apartment buildings are inserted among existing ones (Marin and Chelcea 2018) or when existing apart-

ment buildings are replaced with denser and taller housing blocks (Gunko et al. 2018).

While uniformity, repetition, and equality were original guiding principles for large housing estates, diversity, individualism, and choice are important for changing the future fortunes of large housing estates (Wassenberg 2018). Area-based intervention policies can only be successful if more affluent households can be attracted to large housing estates or in-situ social mobility of existing residents occurs, driven by changes in built environments and local services, improved local school quality, and employment opportunities. It is a challenge to keep the socially upward climbers within housing estates; it would require a parallel renewal of dwellings and upgrading of neighborhood facilities and amenities.

While some progress has been made in improving the quality of built environments and services, there has been less success in attracting middle-class families to large housing estates once social decline has advanced to a certain extent or "tipping point" (Lelévrier and Melic 2018). Recent evidence from the Moving to Opportunity project suggests that mixing in situ works better than relocation (to better neighborhoods) for low-income people (Chetty et al. 2016). An important lesson that follows is that it is never too early to intervene in the physical degradation and lowering of the social status of large housing estates, but it may be too late to intervene in an effective way. People-based policies focus on reducing poverty and creating opportunities for residents in the areas of education and employment. People-based policies require a long-term perspective as it might take a generation or longer to reduce (intergenerational) poverty. An important realm that could have important spillover effects in local communities pertains to primary and secondary education. Investing not only in the physical qualities of schools but attracting well-motivated and good teachers in schools and preschools located in large housing estates could be a crucial catalyst for positive change. Especially when a share of the residents of large housing estates is of immigrant background, their better integration into European societies hinges on policies that adjust to specific local contexts and day-to-day activities. A large pan-European project shows that across Europe, central governments tend to pursue naive and value-based integration policies that poorly relate to people living in housing estates who experience everyday challenges (Tasan-Kok et al. 2014). More context-sensitive approaches are thus needed. A good example is the halving of class size in French housing estates in order to give more attention to each child.

Place-based policies do not necessarily reduce poverty and inequality, and people-based policies might not have desired local effect. Therefore, a full set of interventions should ideally also focus on connectivity. Interventions to improve connectivity are aimed at reducing spatial separation of poor groups from opportunities, leisure-time facilities, services, suitable jobs, and, in particular, education. For example, segregation levels have risen quickly in Tallinn compared to other European capital cities (Tammaru et al. 2016b), but free public transport in the city helps to overcome the problems of socio-spatial isolation of residents living in large housing estates (Leetmaa et al. 2018; Hess 2017). But the effect also works in the opposite direction. When better connected to the rest of the city, other urban dwellers can have easier access to large housing estates. If private companies are attracted to large housing estates and if some public institutions and jobs are located there, good connectivity is crucial for facilitating inward mobility to large housing estates. In other words, new policies are needed to promote investments that link large housing estates with other parts of cities and wider metropolitan regions. Such linking includes public transport, improving road access (often large estates are poorly accessible by roads, or are easy to avoid), and creating bicycle routes, with each travel mode providing convenient access to the city center.

Place-based policies can also lead to the gentrification of housing estates, similar to events in central cities in which higher socioeconomic groups replace lower socioeconomic groups, or fragmentation of large housing estates into smaller subdistricts where people with different social statuses still live parallel lives. Intervention strategies should thus have an eye on such changes in large housing estates as well.

Message 8: Many ideas about contemporary urban life—including sustainability, ecological footprints, communal life and the sharing economy, and social equity—align well with the underlying principles of housing estates, which offers chances for the future.

The reputation of large housing estates tends to be poor, due to either real or perceived problems related to their physical decline and spiraling social status. The original formation of large housing estates was driven by a need to provide new housing in large quantities, but there was also a belief that modernist housing and urban planning could produce a more equal and fair society (Wassenberg 2018). In Sweden, modernist housing was intended to become

the core element of the welfare state (Andersson and Bråmå 2018) and in the former Soviet Union, large housing estates acted as the spatial manifestations of egalitarian ideology (Leetmaa et al. 2018). Contemporary social and urban discussions also revolve around the topics of equality and justice, especially in light of growing levels of income inequality (World Inequality Report 2018) and residential segregation (Tammaru et al. 2016b).

The problems tend to be larger in the most grandiose housing estates with high densities and tall apartment towers. However, recent studies challenge the assumption that higher densities per se are harmful to community life or to local social interaction, suggesting that the specific urban form of neighborhoods is more important (Arundel and Ronald 2017). In some cities where high-rise housing is almost ubiquitous, high densities are not perceived as a large problem. In Moscow, for example, high urban density is a norm and new urban regeneration programs increase rather than decrease housing densities (Gunko et al. 2018). In cities with a more diverse choice set for housing, that is, with more alternatives to large housing estates, high densities tend to correlate more strongly with poor reputations (Andersson and Bråmå 2018). It is thus important to avoid the formation of stigma toward high-rise buildings and to create a social mix and change within them (Lelévrier and Melic 2018).

Although differences exist in the perception toward high densities in large housing estates that might lead to different intervention strategies, a compact city strategy is not necessarily misguided. It aligns well with contemporary urban ideals that celebrate community life, urban sustainability, and the sharing economy. What has proved to be terribly wrong, rather, was confidence in an assumption that planners and architects know what is good for people, especially the replication of the idea en masse. Design weaknesses of housing estates can be changed to a certain degree—modifying urban densities, diversifying housing through retrofitting, introducing elements of smart cities, and the sharing economy—which can help bring about important change. In housing estates with high shares of elderly people, sharing of out-of-home obligations (like daily errands and shopping) might be useful. Likewise, shared usage of bicycles or electric vehicles might be another option, not to speak of common laundry and leisure facilities. When well-managed and cared for, shared activity spaces and activities might be attractive for younger people who have difficulties entering the labor market and achieving a good starting salary, who care about sustainability, and are comfortable with the idea of resource sharing.

Measures that connect housing estates efficiently to the rest of the city—to jobs, leisure-time activity sites, urban parks, suburban and rural greenery—not only by public transport but also by well-designed pathways for non-motorized travel are also an attractive option for young people who value environmental sustainability and cost efficiency. There are various ways to be creative and to try to match housing estates better to contemporary urban ideals, thinking in a very concrete way about the needs of people living in large housing estates by acknowledging the variety of living contexts, tenure structures, and trajectories of change that they represent in European cities.

Message 9: Reliable, up-to-date, and comparable data are needed about the residents of large housing estates across Europe. We cannot expect city governments and other actors to define effective intervention strategies if they cannot accurately diagnose problems and challenges.

In the current age of information and big data, there is, most surprisingly, little solid, reliable, and comparable data about European housing estates and their residents. The diversity of housing estates and their urban contexts pose challenges to amassing relevant data. However, the problem explicitly relates to the flexibility of using data at fine-grained geographic scale by important population segments (such as ethnic groups) and data that can be longitudinally analyzed over time. Without adequate and fine-grained data that can be flexibly used to fit a variety of definitions, it is difficult to quantify and understand urban problems and, as a consequence, it is challenging to design appropriate interventions addressing confirmed problems. Non-existence of detailed data, making it impossible to accurately delineate housing estates (Marin and Chelcea 2018; Lelévrier and Melic 2018), is the norm. Fortunately, however, relevant detailed data exists in a few places such as Sweden (Andersson and Bråmå 2018). Since there are few problems in many housing estates in Europe and negative public perceptions often emerge from media coverage of specific events, it is also difficult to overcome prejudice and stigma attached to housing estates and to their residents, as evidenced in Milan (Petsimeris 2018). It follows that the reputation of large housing estates in European cities unfortunately hinges more on media reports than on solid scientific evidence.

Message 10: Past mistakes made with large modernist housing estates could help guide the way current and future cities are planned in Europe and beyond. A lesson can be offered from twentieth-century experiences in Europe

with housing estates: the larger, higher density and the more peripherally located housing areas are at higher risk of concentrating poverty and producing and reproducing triple disadvantages—social, ethnic, spatial—through a vicious circle of poverty and segregation.

Housing estates in Europe were established during the post–World War II period of rapid industrialization and urbanization, providing cost-efficient housing for rapidly expanding urban populations. There is a risk, however, in succumbing to short-term thinking in attempts to solve housing crises, because this strategy is attached to long-term societal costs. The sequence of events is as follows for reproducing a vicious cycle of poverty and segregation (Van Ham et al. 2018): lower income people cluster into large housing estates; schools are often neighborhood-based, and thus children in less affluent families living in large housing estates attend the same schools, resulting in the transmission of social and spatial disadvantage from parents to children; these differences are carried on to the labor market and result in income inequalities; the vicious circle of poverty closes when labor-market outcomes shape residential choice. The signs of the formation of segregation cycles are most clear in Northern and Western European cities (Lelévrier and Melic 2018; Andersson and Bråmå 2018) but can also be traced elsewhere (Leetmaa et al. 2018). Focusing on teachers and school outcomes in large housing estates is a potential strategy for breaking the cycle of segregation.

Although the fortunes of housing estates and their residents can be changed, the main lesson is that city leaders should conscientiously avoid the formation of such quickly and cheaply constructed housing areas on inexpensive land in urban peripheries—where migrants, immigrants, guest workers, and low-income people become highly concentrated—since this would most likely produce long-term challenges. While the phase of large-scale industrialization and urbanization in Europe is in the past and will not be repeated, these processes are at their peak today in other places across the globe. The number of people living in cities increased from 0.75 to 3.9 billion between 1950 and 2014, and an additional 2.5 billion people will move to cities worldwide by 2050, a third of them in India, China, and Nigeria (United Nations 2014). To accommodate this contemporary urban population growth, large tower block districts continue to grow.

It is not imperative to completely avoid high population densities in urbanizing countries today since it would be a nearly impossible aim to achieve;

the population size in countries urbanizing today is larger than in Europe and lower population densities would consume a great deal of valuable land. High densities per se are often not a problem in European cities. Problems emanate, however, from (1) the relative position of high-density housing estates at the bottom of the housing hierarchy; (2) a "one-size-fits-all" way of thinking in urban planning, and (3) new housing districts with deleterious features including cost-efficient planning and construction, repetition, spatial isolation, an undeveloped sense of community and place attachment, and a lack of safety. To overcome these issues, planning for new residential areas should instead focus on creating human-scale environments and avoid density-related problems. Eastern European cities demonstrate that large housing estates can be desirable living spaces for many and provide a considerable share of the urban housing stock.

It is undoubtedly tempting for city planners to build cheap mass-produced housing on urban peripheries because the living conditions provided are better (at least at the time of construction) compared to most existing housing units in a city's housing stock. Based on the twentieth-century European experience, however, grandiose cost-efficient housing estates should be avoided in favor of more human-scale urban models. Although more expensive at the time of construction, traditional and human-scale residential environments would last longer and produce fewer social problems for future generations to solve. Moreover, good connectivity, an abundance of neighborhood amenities, and a sustainable social mix supporting interaction across social groups are important for avoiding poverty concentrations in large housing estates like those in Northern and Western European cities.

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3. Introduction to the System of Soviet Mass Housing. Type Design, Typification and Typology

Philipp Meuser

At first glance, developing a typology of standardized designs may seem tautological or paradoxical. Building typology as a discipline attempts to examine buildings for comparable parameters and assign them to individual groups. On the basis of preassigned criteria, a house is allocated to a type in a process in which the criteria can certainly be adjusted individually by the observer. "The type is the sum of local or regional agreements. This arises from how an urban society perceives, presents, uses, and builds its housing at a specific point in time" (Hoffmann-Axthelm 2011:12). The aim of defining a type is to filter out as many common features as possible. These can, in turn, be used as archetypes as the basis for a new design. This most likely explains why the urban historian Dieter Hoffmann-Axthelm comes to the conclusion that "typology is the opposite of typisation" (2011).

However, the standardization of designs works on the assumption that "it is possible and practical for buildings which are intended for the same purpose and are of the same capacity to be built a number of times in the same form. This is under the condition that requirements imposed upon a building must be typical and valid for the highest number of cases possible, depending on their function and capacity, and that the mode of implementation, with regards to building materials and construction methods, must similarly be the same for the highest number of cases possible" (Schmidt 1957). At first glance, a standardized building therefore hardly seems suitable for a typological analysis—after all, it embodies the perfect solution, which has been formulated with the design as the target. On closer inspection, even differences between standardized designs manifest themselves. When comparing finished standard-

ized designs with an identical serial number, for instance, different characteristic features certainly become apparent.

Figure 1: The construction industry in the Soviet Union was centrally organised. All authorities and political decision makers were subject to instructions issued by the Central Committee, the highest body of the Communist Party of the Soviet Union (CPSU).

Source: Soviet Modernism 1955–1991: Unknown Stories Exhibition in the Vienna Architecture Centre: 8 November 2012 to 25 February 2013. Revised Graphics: Masako Tomokiyo.

A few limitations apply to the typological classification of mass prefabricated residential buildings. Different social objectives as well as different living and working conditions—in the case of the Soviet Union under investigation here—are not always a reliable criterion owing to political and social conditions. A systematic classification of prefabrication in the Soviet Union and its socialist brother states in the history of twentieth century mass housing, with regards to the building typology and architectural history, has not yet

been issued. Through this study, which arose twenty years after the dissolution of the Soviet Union and the social change associated with it, a nonideological contribution is thus submitted to a debate on the typology of Soviet standardized designs and Soviet Modernism in general. The comparative analysis of mass housing between 1955 and 1991, taking its regional peculiarities into account, aims to simplify typology. It is precisely the use of mass production methods in a culturally different context that enhances awareness of the crucial parameters of prefabrication: although interpretations of mass architecture differ, its structure and essence have always remained easily perceptible. Besides nomenclature, the construction, design and urban development aspects also provide a framework. The ten parameters are also to be understood as an instrument that assigns serial mass housing to their three generations.

3.1   Organization in the Planning and Construction Sector

In common with other socialist countries, mass housing in the Soviet Union was a task for the state, which determined the volume and the locations of new buildings, regulated the free provision and usage of land, and even organized and financed construction. Therefore, the production of mass housing in the Soviet Union was a construction job for the government. Official design institutes planned the series of buildings and the state building concerns constructed them. Three stakeholders initially emerged in mass housing: the first was the construction of housing by the state; the second, housing cooperatives (an alliance of state administrations and institutions); and the third, individual mass housing (state enterprises which constructed houses for their workers). In the first half of the 1970s, a fourth stakeholder—agricultural production cooperatives—began to build apartments for its workers and their relatives. The respective shares of the total volume of new buildings differed widely. "In the cities and working class settlements, the share of mass housing construction by the state amounted to 80 percent of total construction activity between the years 1966 to 1975. The share of cooperative and individual building amounted to approximately 10 percent each" (Rubanenko 1976:14). Taken as a whole, there is a trend toward an increased share of construction of housing by the state in cities and rural areas. Between the years 1961 and 1975, its share of total construction activity increased from 51 percent to 68 percent. Therefore, an examination of the role of state design institutes and state building concerns is crucial for developing a basic understanding of the planning and construction

sector in the Soviet Union. In various design institutes—which assisted with planning tasks in individual cities—architects, city planners, engineers, and technicians worked under one roof. The design institute followed an integrated working method and therefore assumed responsibility for the entire planning process.[1] Since each standard design was officially registered, this meant that the projects were only subject to a simplified procedure for planning in which the connections to the urban infrastructure had to be evidenced. After this was authorized, the state housebuilding factories obtained detailed plans of standardized designs and was henceforth responsible for the site management and implementation. In respect of standard designs, no construction plans—in the traditional sense of the word—were necessary. Rather, it was a matter of assembly plans for industrially prefabricated elements. Planning permission and design details were compiled in a large A3-format album under the title *Proekt*. Upon completion, these were archived in the filing cabinets of the design institutes.

The main features of Soviet mass housing are reflected in the organization of committees and institutes as well as their relations to each other. Following a nationwide competition in 1957 for the development of prefabricated residential buildings throughout the USSR, various brick and prefabricated first-generation standard designs were created. However, second-generation standard designs that were issued in 1963 by the Council of Ministers were dominated by a strictly hierarchical development phase using block sections. The rigid system was relaxed for third-generation standard designs: the development of new product ranges of prefabricated elements was henceforth made the responsibility of more than two dozen design institutes. The transition between the generations of standard designs was accompanied by various factors. Since around the beginning of the 1960s, shortly after the widespread implementation of industrial mass housing, a certain disillusionment had taken root among planners and occupants, thereby forcing the Council of Ministers of the USSR to intervene. The results of first-generation serial mass housing were too monotonous and inadequately tailored to the needs of separate regions. In the periodical *Arkhitektura SSSR* (Architecture of the USSR), Anatoly Polyansky, the Russian architect who helped design the pioneer camp Artek in Crimea, reflected in hindsight upon the monotony of mass housing from this period. "The mass construction of apartments and social institutions has become a characteristic feature of Soviet architecture, shaping its profile. It is

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1   For the system and operation of Soviet design institutes, see: Matveeva 1979.

therefore the duty of each architect to contribute his utmost to the further development of the architecture of mass housing. Most buildings of this type, however, are characterized by a lack of expression and monotony." Polyansky was not alone in his opinion (1966).

With the aim of improving the quality of both public and residential buildings, as well as accelerating the technical development process in the construction industry, the Council of Ministers of the USSR issued a decree on August 21, 1963, titled *On Improvement of Design Practice in the Field of Civil Construction, Planning, and Construction of Cities.*

Decree No. 903 contained criticism of, among other things, the absence of six hundred master plans in Soviet cities in urban planning and the small-scale structure of too many independent design institutes within the context of mass housing. In the period that followed, planning procedures and construction became more centralized in the USSR. This resulted in Gosstroi, the State Committee for Construction, now functioning as the highest supervisory authority and being made fully responsible. In addition to ascertaining control of the content, the aim was to develop new series of mass housing or improve standard designs that were already available (see Serbinovich 1975). Although the USSR's Gosstroi made strategic decisions in Moscow about the future of mass housing and developed standards as well as guidelines, it was the responsibility of Gosstroi in the respective republics to make adjustments to Moscow's directives. Zonal design institutes such as TbilZNIIEP (Caucasus), KievZNIIEP (Southern Europe), SibZNIIEP (Siberia), LenZNIIEP (Northern Europe), and TashZNIIEP (Central Asia) assumed responsibility for the detailed planning of serial mass housing. Local design institutes and state building concerns now had the opportunity to implement slight modifications in relation to balconies, entrances, and mosaic facades. As a result of the restructuring measures, the Academy of Construction and Architecture was dissolved in 1964 and was instead merged into a department in the Academy of Sciences of the USSR. The transfer of responsibilities to regional and local levels in the development of standard designs continued at the beginning of the 1970s. Boris Rafailovich Rubanenko, the director of the Central Research Institute for the Experimental Planning of Housing (*ЦНИИЭП жилища*) in Moscow contributed significantly to the introduction of third-generation standard designs. After firstgeneration standard designs, which had only been able to mandate rows of housing, and second-generation standard designs consisting of wavy-shaped, meandering compositions using block sections, the newly developed series were more flexible in their combination. Based on a modular grid of 1.2 m, Rubanenko de-

veloped a standard catalog of elements. Each catalog was aimed at a different building typology (mass housing, public buildings, industrial buildings). Rubanenko took panels with a span of 3.0 m, 3.6 m, and 4.2 m into account for the construction of mass housing. For non-residential buildings, planners focused on the framing construction method. The catalog of wall and ceiling panels is complemented by intermediate elements and connecting modules, which meant prefabricated elements could consequently be installed flexibly or, for instance, be installed to fill the gaps between buildings. The recent Architecture Construction Technology System (ACTS), which was also a flexible system in terms of prefabricated construction, had an impact on the organizational structure of housing. Zonal series could now be adapted by design institutes to meet the individual requirements of the location where implemented.

For example, these specifications included adjustments to the three separate climate zones (south, central belt, and north) as well as additional soil types (permafrost, seismic region, and subsoil). Individual buildings were immediately possible because of the prefabricated system now being offered. In addition, the production of individual elements was not organized by a single housebuilding factory alone but rather by various state building concerns. These adopted a more decentralized approach owing to the influence of Taylorism. Rubanenko aimed to reduce the number of standard designs through the ACTS. As mass housing was dominated by economic constraints, this increased flexibility was to lead to lower costs. The division of production units among various housebuilding factories was also intended to produce the building elements catalog at a lower price and to simplify logistics. The new system elicited positive reactions within professional circles. In an article in the publication *Arkhitektura SSSR*, S. Kibirev and A. Olkhova (1970) praise "the new, to a greater extent more flexible methods for the standardization of designs, which combine development and implementation of standardized designs and individual designs for buildings." Architects would henceforth have greater creative possibilities with regard to the design of building ensembles. This not only applied to new buildings but also to the reconstruction of existing urban structures. Furthermore, an organization responsible for the standardization of designs was to be appointed whose purpose was to achieve a complete approximation of the design solution to specific construction conditions. "Twenty-six new project planning and construction districts in the USSR have been established for the development of standardized designs. This means, consequently, that each republic and individual region—which differ in terms of construction conditions—is able to obtain a series of standardized designs or variants

tailored to their own specific features. When this involves similar natural conditions, climate conditions, or other conditions, then the same series of standardized designs can be developed and used in several republics, which does in practice happen at the moment. In contrast to the earlier, predominantly centralized practice for the standardization of designs, design institutes of individual state committees and a number of cities, whose responsibility lies in the construction undertaken in the republics, contribute to the development of series of new standardized designs in addition to institutes belonging to Gosgrazhdanstroi." (Kibirev and Olkhova 1970) The new strategy specifically meant that institutes at a regional level—such as TashZNIIEP and TbilZNIIEP—could work together on, for instance, a series of mass housing with specific features to protect against seismic forces. However, this also meant that the nomenclature of standard designs could be significantly expanded, which made the series catalog of Soviet mass housing even more confusing.

3.2 Facade Decoration and Architectural Style

The constraints architects faced owing to cost-efficiency analyses and standards must be acknowledged in order to develop an understanding of the monotonous instances of mass housing produced in the USSR. Khrushchev had unsettled an entire generation of architects when in 1954 he publicly defamed colleagues, who in his opinion were responsible for the excessively high building costs. This blanket accusation—which did not take into consideration the circumstances of architects in the planning and construction process—had led to a cost control method; the consequences of this meant that any kind of architectural creativity could be stifled. In light of this, it is encouraging to note that architects were particularly creative in construction projects that gave them some leeway in the design. These tasks, as far as residential buildings were concerned, included three elements: facades / sun protection devices, balconies/loggias, and stairwells/entrances. Provided that the designs created by local architects were approved by local party committees, then large panels, prefabricated concrete elements, and architectural sun protection devices were sometimes assigned traditional decor. Facade mosaics are particularly noteworthy; these were embedded in concrete slabs and thus form a permanent link between architecture and art.

This passion for architectural ornamentation was especially pronounced in the southern Soviet republics, such as the multiethnic Caucasus and Islam-

dominated Central Asia. In these regions, the Uzbek SSR particularly distinguished itself as a location where national traditions formed a symbiosis with Soviet construction standards. To this day, Tashkent is still considered a successful example of Moscow's attempt to give architects and housebuilding factories in the remote republics a certain creative freedom. At the same time, an undeniable analogy between the creative framework of prefabrication and the guiding principles of Islamic art, as well as the interchangeability of location demanded by Khrushchev—and the use of the same principle for every conceivable building type—was proven to be true in the process. Or, to put this more provocatively: the Soviet ideology of housing series and the Islamic set of rules about the use of repetitive basic shapes in construction are indeed based on two different cultural perceptions, but are largely similar in terms of applied architecture (see Meuser 2012). Since design and construction were strictly separated and construction management or artistic supervision by architectural designers was only available in exceptional cases—such as during the construction of important public buildings—this means there is no record of the names of the architects responsible for serial mass housing. To date, facade decoration as an independent art form has hardly merited much description. It may be that the example of Tashkent represents regional peculiarities in Soviet architecture. In particular, the reconstruction of the Uzbek SSR's capital city after the earthquake is proof of the exchange of know-how throughout the Soviet Union. The significance of architecture, which, in addition to space travel and military engineering, enjoyed a glowing reputation amongst the general public and politicians, is emphasized by the fact that the city's large-scale transformation as part of the People's Friendship was recognized by Soviet propaganda as a media-friendly topic.[2] In this respect, the building boom in Tashkent and the city's distinctive facade decoration have made a significant contribution to the style of Soviet architecture.

Particularly noteworthy is the architectural work carried out by the brothers Petr, Nikolai, and Alexander Zharsky in Tashkent. It is owing to them that more than two hundred facades featuring colorful mosaics or filigree reliefs were built in Tashkent. Their work represents a link between art and architecture. In the floral decoration and core motifs, the heritage of Islamic architecture is simultaneously combined with the euphoric mood prevalent regarding the future of Soviet modernity. The Zharsky brothers arrived in Tashkent in

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2   The reconstruction of Tashkent is documented in numerous publications, such as: Arkhangelsky 1969.

1966 following the earthquake to share their ideas about the design of facades. "It is best to create something new, beautiful and useful in a place where a lot of construction work is being carried out. And at that time this city was Tashkent" (Zharsky 1972).

Figure 2: A gable façade adorned with a mosaic in Tashkent, Chilanzar. In the newspaper Stroitel' Tashkenta (The Construction Worker of Tashkent) it states on 16 July 1972: "The first residential buildings featuring patterns at the gable end had already been built in 1966. These buildings were a gift from all the Soviet republics to the Uzbek people who have helped rebuild the capital city after the earthquake. Each Soviet republic adorned its residential buildings in accordance with its own national style."

Source: Philipp Meuser.

The first decorative mural designed by the Zharsky brothers adorned a nine-story residential building located on Mukim street in the Chilanzar district. Four years later, the architect Yuri Miroshnichenko wrote (1987): "The design surprised architects. The composition, color and themes did not comply with the popular concept of Uzbek ornamentation. The red, brown, and gold colors; its height, the boldness of the composition and the imagination of the authors did not immediately draw us in. Only the need to implement these drawings testified to the obvious talent of the painters. Examining the first mural established the wide range of possibilities as to how to use Uzbekistan's cultural heritage. Their work was closer to the old works of art originating from Afrosiab and Pendshikent rather than those belonging to a later era, when a refined decorative style was common. The use of the earliest stylistic and compositional traditions which had been forgotten bestowed a particular value upon their work and made it stand out from the series of modern art." Even if the author's high regard is confined to the art found on the building, such praise for a prefabricated residential building was a rare occurrence when examining Soviet mass housing. Seen in this light, the works of the Zharsky brothers can be viewed as an exception in terms of both quality and quantity in Soviet construction history. The example of Tashkent nevertheless represents a nationwide attempt to alter monotonous prefabricated building facades through ornamentation, reliefs or by altering the layout of the facade elements and furthermore making them stand out from identical buildings of the same standard design. In this respect, facade decoration is an important feature of the architectural style of Soviet mass housing.

In addition to mosaics, Nikolai Zharsky, chief architect of the DSK-2 from 1972 to 1991, designed reliefs for exterior wall panels that were used for balcony parapets (closed construction) or sun protection devices in front of a loggia (open construction). These components had a significant impact on the cityscape, prompting Zharsky's employee Miroshnichenko (1987) to make the euphoric statement: "For some years now a group led by chief architect Zharsky and chief engineer Prassolova has worked on a new type of relief which is suitable for multistory facades. In contrast to the small reliefs that were developed previously, this experiment has met approval. Since then, a design team belonging to the housebuilding factory has worked intensively on planning. The buildings have since then become more diverse; municipalities have been assigned their own individual architectural appearance. Today such a thing as a unique Tashkent style does indeed exist!"

Figure 3: Façade elements with openings for loggias in Tashkent.
Figure 4: Building screens featuring Islamic ornamentation in Bishkek.

Source: Philipp Meuser.

The issue of style in Soviet mass housing situated outside the Uzbek SSR is reduced to "the basic principles and fundamental features of a Soviet architectural style" ("Problemy stilya" 1963). During a discussion about the design and theory of a socialist architectural style at the Central House of Architecture in Moscow on July 9 and 10, 1963, the chairman of the Commission for Theory and Criticism, Georgy A. Gradov, presented his views relating to the theory of design as well as a socialist architectural style deriving therefrom. Far from making any historical references to established architectural theorists, Gradov proposed the development of a national style: "Keynote speeches made by party leaders on issues such as the development of Soviet art and the decrees issued at the July Plenary Session by the Central Committee of the CPSU with regard to the upcoming tasks in the Party's ideological struggle during the present stage of building communism in our country are of fundamental importance for solving pressing problems related to the theory and practice of architecture" ("Problemy stilya" 1963). According to Gradov, architectural styles from the past developed spontaneously over long historic periods. Furthermore, in the capitalist system this process assumed a contradictory character. Under the rule of bourgeois ideology and the conditions of competitive struggle of the free market economy, the quest for style is taken over by fleeting trends. "Unlike the capitalist world, we bring a degree of order to the developing process of Soviet architecture, as our work is based on knowledge of objective laws pertaining to the development of society. We have the opportunity to influence the development of socialist architectural style" ("Problemy stilya" 1963). With his attempt

at a definition entirely devoid of meaning, Gradov draws on a statement by Khrushchev (1990) at the Twentieth Congress of the CPSU on the future of architecture: "It is a matter of honor for our architects to create an architectural style which embodies the best of what the architectural thinking of mankind has gained in the past. Therefore, this style ought to draw on the most advanced creations of Soviet architecture. Buildings which are yet to be built must offer maximum comfort and be durable, economic, and beautiful." Khrushchev had described the basics of architecture in his demand for Vitruvius's three-part rubric *firmitas, utilitas, venustas*, but expanded on this to cover the demand for cost-effectiveness. Gradov, who was still training and working as an architect in Stalin's time, was indeed geared towards a line of academic thinking acquired through a traditional architectural education. However, he attempted to distance himself from his past and was quoted in the conference report of the journal *Arkhitektura SSSR* saying: "The key battle against superfluous expenditure and the desire for decorative architecture has led to a victory for change. A victory for a creative target course which is characterized by honest architectural solutions and forms. Grave consequences owing to the cult of personality have been overcome" ("Problemy stilya" 1963).[3] Foundations in terms of a theoretical style are also discussed further on in the conference report. According to a conference participant, for instance, the style of Soviet architecture evolves in line with—and under the active influence of—continuous technical-scientific progress being made in the construction field: "In the current conditions, the examination of three influential aspects of technical and scientific progress and their effect on style is of interest: (a) style and the standardization of designs; (b) style and new construction materials; (c) style and prefabricated mass housing. Modern design and style methods are closely interrelated." By adopting this approach, Soviet architectural theory opted for an autonomous path within an international context of construction and design. The style is firmly illustrated by the example of the All-Union Series I-468: "Principles of typification which are constantly being perfected, standardization, and widespread unification play a significant role in generally robust stylistic features. Let us consider first of all the complex Series I-468, which is prevalent in the Urals and Siberia. This series comprises both prefabricated residential buildings and community facilities. All of the main design parameters for the series are based on a uniform spatial-unit system, so that the unit of planning is maintained for

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3   All further quotes in this section are also taken from this source or are cited there.

several construction variants. Consequently, this enables most of the community facilities to be constructed using a limited range of prefabricated elements that also applies to buildings with a different composition of apartments, number of floors, and different facade lengths. On the one hand, the new principles for the standardization of complex housing series played a significant role in common features emerging in the structure of different buildings; on the other hand, these new principles offered the possibility of adding variety to the development of microdistricts and designing these in a more expressive fashion." The production process in the housebuilding factory, with its serial building units, was declared the main parameter of style in the conference report. This further mentions that the evolution of style depends to a large extent on the type of construction materials being used and the structure itself. According to the conference report, it is not difficult to prove that the desire to emphasize the autonomy of style from materials and designs is only characteristic of *style limitations*, for a stylized and mere formal approach to architecture. Of course, prefabricated reinforced concrete elements and the extensive use of synthetic construction materials are the principal mechanism whereby a Soviet architectural style is developed. "A completely new feature involved in the evolution of socialist architectural style—a feature which has only emerged in the past few years—is its association with prefabricated mass housing and a construction output based on the workflow, whereby we constantly endeavor to enlarge assembly parts, increase the level of prefabrication to the maximum and reduce the required assembly work." The Moscow architecture conference in the summer of 1963 had a significant impact on the style of Soviet mass housing—not least owing to its monotonous style, which led Khrushchev (1964) to demand at the Central Committee Plenary Session in November 1962 that "unique architectural and artistic nuances must be created within the limits of what is possible and rational." For technical reasons, individual creative leeway when using large panels was limited to their surface treatment. At best, housebuilding factories were free to find different solutions with regard to loggias, balconies, and entrances. Against this backdrop, the Moscow conference also reached the conclusion that features of the new style were to include simple, functional architectural shapes that were structurally effective and which had a clear structure and cost-effective material usage. Debates about style in undemocratic cultural circles are always dominated by political rather than intellectual elites. Therefore, it is hardly surprising that the stylistic debate in the Soviet Union followed the political and planned economic framework of prefabricated mass housing. This makes the work carried out by the Zharsky brothers even more

remarkable, since they succeeded in using 2 percent of construction costs for artistic work in a planning and construction sector dominated by the economy. This proves that artistic drive and the civic engagement of individuals are able to insert a small mosaic stone into the style of Soviet mass housing.

Figure 5: Diagram of the three generations of prefabricated housing in the USSR.
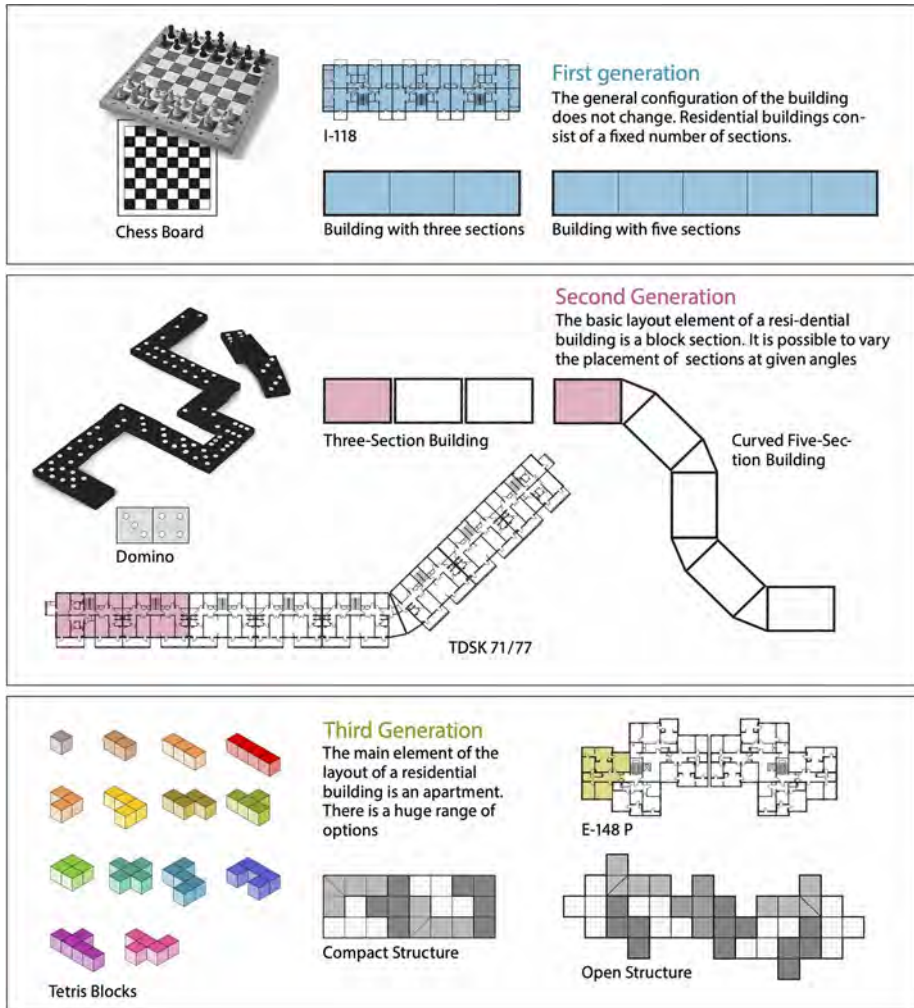
Source: Philipp Meuser.

3.3 House, Block Section, Catalog of Elements

Following the broached structural-organizational, constructive, and creative aspects, as well as the influences of production and assembly on architecture, an attempt shall now be made to classify building typologies twenty to sixty years later, with the advantage of time. With regard to architectural history, this presents specific challenges, especially in that it concerns mass-produced standardized designs and also owing to the fact that architectural skills were not a prime concern during the planning process. Furthermore, this is a period of forty years over which—as has been discussed previously—mass housing typologies changed fundamentally. The major influential factors, among others, were politics (amendments to the SniP [construction norms and rules]), technology (a push for the modernization of industrial production), and finance (dictatorship of the economy). The fact that the dissolution of the Soviet Union meant that the political, economic, and social foundations of prefabrication in the former USSR had to undergo a process of transformation provides an incentive to view the period from 1955 to 1991 as an architectural epoch of the past. The fundamental concept of prefabrication—to produce individual parts that had been perfectly designed—and to manufacture these in large quantities in accordance with a system, invites the question as to whether the variability of mass-produced products is accompanied by a classification of the technology. The continuous refinement of serial mass housing—which led to larger panel dimensions owing to high-performance logistics—was accompanied by increasingly flexible systems. This can best be seen in a building proportionality which lies somewhere between architecture and urban planning. What is meant by that is the planning unit of the *section*, typical of socialist mass housing. The Russian concept of a *section* [секция] denotes the part of the building that is accessible via a staircase. There are at least two apartments per section; usually there are four apartments, and in rare cases, twelve. In the course of progress made between the 1950s and 1980s, the section came undone as an apartment cluster and became smaller and thus more flexible. Following the introduction of block sections, a previously inflexible sectional building gave way to a single-section house that could be assembled as a single-section or multisectional building as regards urban development. In the third phase, the block section decreased in importance as the smallest planning unit in favor of the apartment or residential group. This development can be illustrated through a comparison of the games chess, dominoes, and Tetris. Whereas chess is played on an unalterable chess board with individual squares,

in a game of dominoes the gaming pieces may be placed in a row or at right angles. The result is a shape made up of identical elements. Tetris, on the other hand, requires putting together any number of different types of blocks that can then be combined.

To distinguish residential buildings from the early phase, namely the late 1950s, the chessboard provides a good reference point, since it is not divisible and space must be distributed strategically within the prescribed limits. To begin with, this was a distinguishing criterion not only when dealing with mass housing; it only becomes a feature when the typology continues to evolve. Buildings made of inseparable sections became a signature of first-generation prefabricated mass housing. This includes, for instance, Series K-7 (panel), Series G-3 (block construction), Series I-477 (brick) and Series II-38 (spatial unit). All these housing series are united by the fact that the building as a whole was not alterable in its original version. Although multisectional buildings with three, four, or five sections could be designed and built since the individual sections were only separated from each other by a party wall—in other words, they were structurally indivisible—the sections as a whole represented a single building. This was indeed reflected in urban structures that were dominated by austere rows of housing. Variations were only possible when determining the size of the multisectional buildings that were to be taken into account in the design. Enhancing urban development was reduced to dominant features that had been strategically placed; these were usually nine-story single-section houses. For the most part, these were oriented toward the main roads and were supposed to mitigate the effect of the monotonous designs. Originally, these buildings were only intended to be used for a period of twenty to twenty-five years. Hence, the extent to which existing serial mass housing would subsequently have to be altered was irrelevant in the planning stages. Given that sidewall structures are involved when referring to several first-generation designs—whose facade components, for instance, cannot be replaced for structural reasons—these types have been on Moscow's lists of demolition programs for several years now.

At the beginning of the 1960s, serial mass housing could already be observed that complied with the sectional construction method but with a crucial difference. The individual section is a structurally independent section that appears as a single-section house or multisectional building. In terms of urban development, this represents a paradigm shift, since it was now possible for city planners and architects to vary the shapes of buildings. In order to liberate multisectional buildings from their former restraints of linearity,

design institutes now proceeded to develop intermediate modules—beyond those listed in the catalog of prefabricated elements for a section—to create curved forms. It was now possible to install sections based on an orthogonal floor plan to form a zigzag, circle, or caterpillar-like shape. Engineers mostly developed loggias or balcony units for gaps that arose due to bends. "Such a method, in which linear gable, corner, and angular blocks (at an angle of 150°) made of two sections with an overall length of 60 m were used as a basis, was also used by Workshop 12 of Lenproekt when elaborating the design for the development of the western part of Vasilyevsky Island. This yielded interesting results. Whereas buildings of any length can be constructed using middle and end sections, corner and angular sections offer the possibility of giving the design of the building as much scope for versatility as possible. This also ensures a pleasing urban effect" (Matusevich and Tovbin 1966:2). In addition to flexible urban planning, second-generation serial mass housing offers a choice of floor plan design. Up to six apartment sizes were included in the improved standardized designs, in contrast to the typical three (Rubanenko 1976:28). The modified standard designs were also assigned a suffix in their name. For example, letters such as *VM* [*вечная мерзлота* = permafrost]; *S* [*сейсмическая зона* = seismic zone]; or, according to geographic logic, *Li* (Lithuania) were assigned to Series I-464. First-generation standard designs were modified by zonal design institutes so they could also be constructed as block sections no later than after the introduction of further mass-housing types, such as 1LG-600 (Leningrad), 1MG-300 (Moscow), 1KG-480 (Kiev), and 1UZ-500 (Uzbekistan). It can be seen that residential building projects grew larger in parallel to progress being made in construction techniques and the adjustment of apartment sizes in the SNiP. Many second-generation buildings were not only taller but also curved like tapeworms through the microdistricts. At least city planners had achieved one aim with regard to urban development: the monotony of earlier years had been overcome in a single step. Soviet mass housing had reached a milestone that Polyansky had already defined a few years earlier: "The creative variability and interchangeability of the standard details will make it possible to give each building its own architectural style. This offers the architect limitless creative opportunities" (Polyansky 1966).

Third-generation serial mass housing hearkens back to the decree issued by the CC of the CPSU and the Council of Ministers of the USSR in May 1969. *On Measures for Improvement of the Quality of Residential and Civil Construction* led to the introduction of new standardized designs two years later with the aim of achieving greater architectural expressiveness and a unique cityscape. The new

standardized design series in the years 1971 to 1975 were more complex than their predecessors. In particular, frequently used types were now assigned additional variants for facades, entrances, balconies, loggias, and for expansion. Standardized designs for block sections were equipped with new floor plan variants, gable-end buildings, and corner buildings. Furthermore, a catalog now existed for standardized prefabricated elements. "The new, to a greater degree more flexible method for the standardization of designs, which merges the drafting and application of standardized and individual designs for mass housing, thereby offers architects greater creative possibilities for the design of architectural ensembles as well as for the new construction and reconstruction of the expanding development" (Kibirev and Olkhova 1970). The new strategy was geared towards establishing a stronger identity in residential areas by using a reduced number of standard designs and standardized prefabricated elements. This was a response to the monotony criticized throughout municipalities, but was also related to production methods increasingly tailored to suit a market need in housebuilding factories. The new planning method allowed floor plans to be assembled in which the apartment constituted the smallest unit of design—provided that the standardized infrastructure of the project permitted this. A complete catalog of standardized prefabricated elements was being prepared up until 1973. However, it still took several years before this could be used as a basis for the new Series KOPE. "This system was based on the principle of modules that are formed by apartments grouped together around stairwells. Each element of the plan acts independently but is compatible with all other parts of the building" (Solopova 2001).

Owing to the standardized production process in the Comecon member states, the examination of Soviet serial mass production of sections, block sections, and apartments can be applied to socialist mass housing in general. As of the mid-1980s, architects increasingly demanded that prefabrication be added to an intricate product range catalog. Adhering to the analogy of toys, the idea was not only to produce prefabricated elements for a specific series, but also to allow prefabricated elements to be used for housing series in general, similar to interlocking Lego pieces. At this particular time, however, the Soviet construction industry was faced with the dilemma of having to produce more and more apartments with an ever-decreasing budget. The attempts to develop a product range catalog for widespread use foundered during the general social, political, and economic upheaval toward the end of the Soviet Union.

3.4 Microdistrict and Residential Area

Never before in the history of architecture had industrial production methods made such a great impact on urban planning than during the last thirty years of the Soviet Union. The focus on the economy and production methods was so pronounced that the discipline of urban planning was forced to subjugate itself to the dictates of a building layout geared toward efficiency. From this, the conclusion might be drawn that the discipline of urban planning had abolished itself in favor of fulfilling guidelines. Given that developments in mass housing are particularly noticeable in urban structures, the tenth parameter of a typology of Soviet mass housing broaches the issue of the transformation of the Soviet city through industrially prefabricated mass housing. By comparing the expansion of the Soviet city in 1950 with that of 1990, a trend can be seen which leads from the neoclassical superblock to the socialist microdistrict. Although under Stalin residential buildings were still governed by traditional laws, private and public spaces were separated from each other, courtyard structures were designed inside the superblock [квартал = neighborhood], and a segmented cityscape featuring wide and narrow road spaces was built, a period under Khrushchev followed in which first-generation industrial residential buildings were designed in rows. At most, these were accentuated by tower blocks and were in keeping with the logic of assembly cranes.

A comprehensive understanding of socialist urban planning can be absorbed through a comparison with urban development in market-oriented societies. "This is because the socialist city is based on a completely different set of laws, namely: class equality in the Soviet society; the absence of exploitation and unemployment; elimination of private ownership of land, a system of state-planned economy and demand for the best living conditions for the masses. All these factors offer unprecedented opportunities to create a ceaseless perfection of our cities. Socialism has completely changed life in the cities. Originating from an instrument of socialist oppression, the city has undergone a transformation to become a hub of freelance and creative work, a place of equality and friendship for its inhabitants" (Boris Svetlichny, quoted in Frolic 1964). A consistent implementation of philosophical-political ideals was only possible in a state-run society and economy—through the exclusion and oppression of private-sector initiatives and civil society engagement. When Soviet city planners—who divided the city landscape into traffic areas for automobile and pedestrian traffic—borrowed the term *superblock* from the Anglo-Saxon world, which means contemporary urban planning, they

unwittingly established the basis of Soviet urban planning up until the 1990s. A superblock covered about 15 hectares of land along a main access route and offered apartments for approximately six thousand people. In addition to residential buildings and in line with requirements, each superblock included crèches, kindergartens, a primary school, a venue for meetings or a club, shops, children's playgrounds, and a park. Everything had to be located within walking distance. Major roads with open spaces separated the superblocks from each other. An internal access route could only be used by delivery vehicles or served as an escape and rescue route. In densely populated areas, a superblock sometimes only covered 3 to 8 hectares of land (Parkins 1953:39f).

Residential buildings that form distinctive corners (mostly through towers or bay windows) are characteristic of the period until the middle of the 1950s and therefore aim to define a block. However, as tailor-made solutions were expensive and seldom allowed an appropriate use of space, this idea with regard to urban development also met heavy criticism during Khrushchev's speech at the National Conference of Builders in December 1954. "The conference demonstrated that when it comes to planning residential and public buildings, many architects took too little account of economic issues or the interior design of buildings and apartments; that they did not show any consideration towards the need to ensure comfort for people; [and] that they planned too generously, were concerned about external factors, incurred unjustified expenditures regarding facades, and did not care about the laws of prefabrication. Many architects and engineers interpreted the task of Soviet urban planning in a one-sided manner; paid close attention to the exterior of road infrastructures and squares; worked too little on the planning of residential areas; and forgot that in terms of urban planning there is an overriding need in our country to ensure comfort for local residents. In some projects, road infrastructures and community facilities were not set out efficiently enough. The main districts were not built on or rebuilt as scheduled and the construction of residential and public buildings was scattered over large isolated areas, as a result of which the provision of comfort and community services increased in price. In some cities there was an unwarranted tendency not to design the most economically advantageous four- to five-story residential buildings, but rather to design buildings to be as tall as possible. At the same time, many single-story residential buildings were being built, which led to the cities being unreasonably expanded and the terrain of the city being used inefficiently" (Tutuchenko 1960). Khrushchev's speech in 1954 and the decree issued a year later, *On Elimi-*

nation of Excesses in Design and Construction, represented a paradigm shift in urban planning in the USSR.

Figure 6: New residential buildings along Lomonosov prospekt in Moscow. The open space is divided by blocks in semi-public and public areas. Districts (kvartala) 1, 2 and 13 which were completed circa 1956 are shown.
Figure 7: Site plan of micro-district 1 in the Tashkent administrative district Kara Kamysh-II (Severo-Zapad-I). The urban structure is dominated by rows of housing and tower blocks. Social infrastructure is situated in the centre of the district (1966).
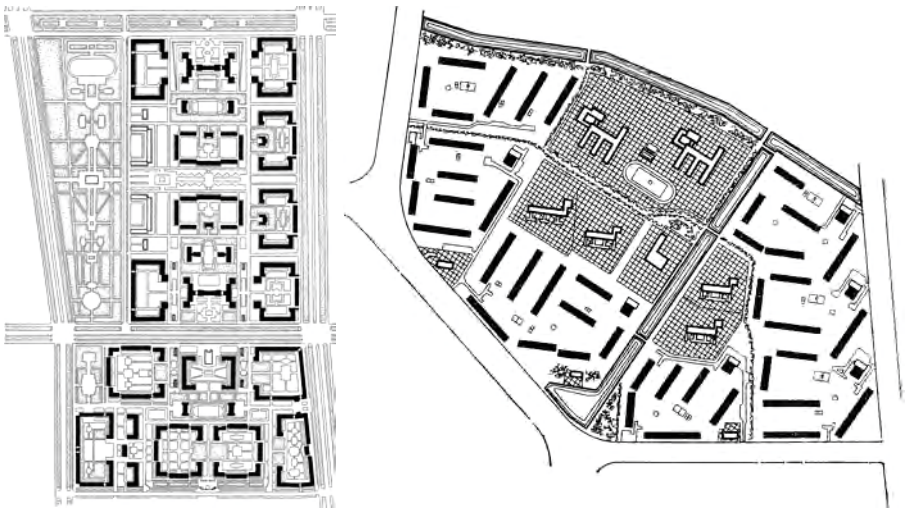
Source: Abrossimov et al. 1958, p. 23.
Source: Merport/TashZNIIEP 1976, p. 30.

Upon switching from residential buildings to industrial production, it is possible to trace a chain of large-scale factors down to the smallest detail. The superblock was replaced by the microdistrict as a coherent planning unit for which, ideally, a single project engineer was responsible. A key requirement of the Athens Charter also remained valid when it came to planning the microdistrict. "A characteristic feature of the modern structure of the microdistrict in Soviet cities is that one of the key elements of human existence is absent in the planning system for residential complexes and when it comes to arranging the microdistrict: work" (Authors' collective 1969).

In the Soviet Union, a microdistrict denotes a new housing estate that was normally situated outside the traditional city center.[4] The microdistrict was the "city region that is exclusively or predominantly used for residential areas and whose appropriate use and functional arrangement complied with the guidelines provided" (Glatte and Grieß 1978). City planners designed microdistricts on a significantly larger scale compared to the earlier superblocks: the aim, however, was still to achieve the desired harmonious effect under Stalinist rule: "The microdistrict is to be designed in a uniform manner as regards architectural planning, with and without housing complexes. In the central planning area a microdistrict may consist of blocks of buildings" (Mosgorispolkom 1981:2). In line with the SNiP, a Soviet microdistrict covered 10 to 60 hectares or a maximum of 80. The concept of a car-free inner zone remained in place as well as the "planning parameters of short distances" (Martin Wimmer, interview with author, Sept. 3, 2013), so that the maximum distance to community facilities was not allowed to exceed 500 m and main road infrastructures determined the boundary between two microdistricts. Within the microdistrict, the planning unit was divided into residential groups. Among residential groups were "social institutions, whose assembly and capacity is determined by reference to the structure and concentration of the population and from which the walking distance is not to exceed 200 m" (Glatte and Grieß 1978). The population density was also predetermined: "The number of inhabitants of a microdistrict is not allowed to exceed twenty thousand for the period of calculation and 25,000 inhabitants for the first phase of construction. It must at least account for ten thousand inhabitants" (Mosgorispolkom 1981:10). Consistent with the characteristic style of mass housing, microdistricts and residential areas were assigned consecutive numbers which are even today still in use, just like the term *microdistrict*. The principle of coherent planning units, whereby the infrastructure facilities and installations were to be completed in addition to, and at the same time as, mass housing and which was associated with the concept of complex mass housing, became widespread in other socialist states. In the GDR the microdistrict corresponded to the residential area or—in everyday language—the housing complex. In principle, the structures of microdistricts followed three parameters: compass direction, topography, and the economics of the assembly crane. Since the building forms of the standard designs were predetermined, this meant that the urban design concept was greatly reduced to the fulfillment of guidelines. Remarkably, scientific studies were re-

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4   The term continues to be used in the countries of the former USSR.

peatedly carried out on the altitude of the sun, noise emissions, or design theory. From today's perspective, these ideas may seem like proxy science owing to design restrictions. For example, the structure was subdivided into additive or integrative principles. Microdistricts close to industrial enterprises were governed to a large extent by the additive principle, whereas the integrative principle was followed without exception by microdistricts from the late phase of the Soviet Union. When it came to complying with guidelines, however, city planners and urban developers also endeavored to create individual ensembles and silhouettes in the public space by using expensive building types, such as the detached house. In the journal *Arkhitektura SSSR*, three architects outlined the following theories in 1966: "Single-section houses with a varying number of floors are essential to add variety to mass housing. Therefore, practical experience has shown that it is logical to combine five-story multisectional buildings with nine-story single-section houses. In districts where most of the nine-story multisectional buildings are situated, single-section houses must still be taller" (Kapustyan, Lubimova, and Lazareva 1966). What is striking here is the absence of a debate on architectural theory or urban planning based on the classical triad of *firmitas*, *utilitas*, and *venustas* or—with regard to urban planning—on the ideals of urban development history. Instead, abstract parameters and scientifically valid guidelines are a core issue in academic discourse. "In the search for style in mass housing, the formation of urban ensembles is a characteristic feature when it comes to the spatial composition of housing complexes and residential groups. Complex series of standardized designs are being created for housing associations. Large microdistricts are being constructed with these buildings in which the individual building no longer plays an independent role but is rather only a component of the overall organic complex, of the ensemble" ("Problemy stilya" 1963).

The decrease of socialist mass housing to satisfy demand led to an impoverishment of architectural diversity. Economic feasibility and savings in terms of material and costs dictated form, function, and structure. In an article in *Arkhitektura SSSR*, a major theme was production efficiency when it came to the question of Soviet architectural style. Diversity is defined here as a division of responsibilities between the construction factories. "A complex series of residential buildings and community facilities is currently being drawn up in Leningrad. Various housebuilding factories will be involved in the development of residential complexes and not only one factory, as has been the case thus far. This approach is lawful under the conditions of Leningrad, where several large firms exist. In other cities, permission can be given for the produc-

tion of prefabricated parts for the whole complex series to be organized in a factory; or cooperation can take place in specialized firms in cities and housing estates nearby" ("Problemy stilya" 1963). In terms of the actual implementation, this equated to an increased need for coordination for the main contractor, who was now dependent on the punctual service of construction factories. However, urban planning designs benefited from the breakdown of planning tasks and construction jobs. If residential buildings had still been additively arranged at the beginning of the 1960s, then housing complexes from the 1980s portrayed geometric patterns and meandering compositions.

Figure 8: Master plan for the free development of a residential area with a site evaluation for the brightness of the apartments (1960).
Figure 9: The satellite town Khimki-Khovrino, situated in the northwest of Moscow, shortly after completion. The development site is exclusively for residential buildings with kindergartens and schools. The five- to nine-storey buildings make a monotonous impression.
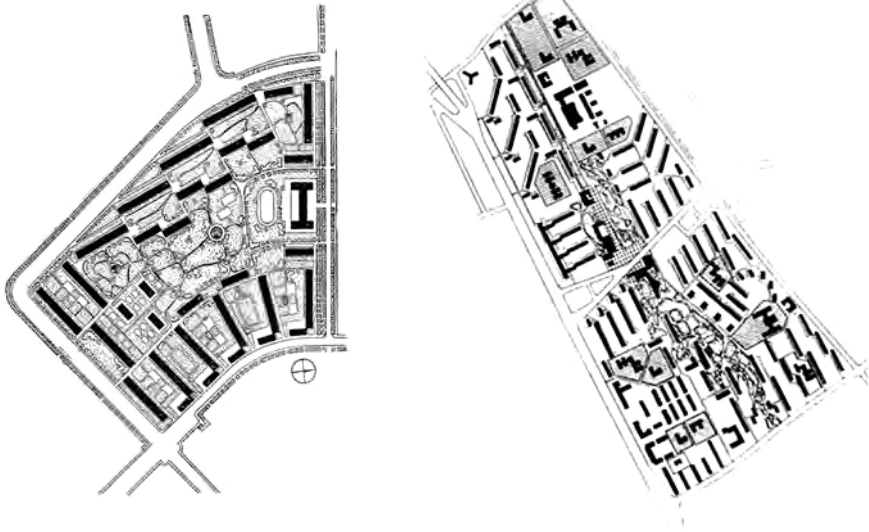
Source: Tutuchenko, Semen: Der Wohnungsbau in der UdSSR. Aufzeichnungen eines sowjetischen Architekten (Housing in the U.S.S.R.: Notes of an Architect). Moscow 1960, p. 118.
Source: Goldzamt, Edmund: Städtebau sozialistischer Länder (Urban Planning in Socialist Countries). Berlin 1974, p. 244.

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4. Maintaining Mass Housing: Methodology of Research and Comparative Perspective

Daria Volkova

Introduction

Mass housing has gone from being perceived as a progressivist housing approach, celebrated as an achievement of modernist urban planning, to being harshly criticized and even demonized. The professional and public discourse in different countries has either adhered more or less to one of these perspectives or made its way from one side of the spectrum to the other or even bounced back and forth. The rich history of discussions and changes around large housing estates offers us a unique opportunity to observe how similar environments are treated differently due to various social, political, economic, and cultural reasons, et cetera, and how materiality and the environment of such housing, while being very prominent in professional and public discourses, do not play a primary role when it comes to research.

Here, I explore how research on mass housing approaches the issue of materiality and its changing dynamics. Following the ideas of actor-network theory scholars, I propose a different angle of view on mass housing through the issue of maintenance, which allows for the unpacking of social dynamics and multi-actorship in each particular case.

For this purpose, I took the comparative perspective of three different cases. Here, I draw on Russian and (East and West) German contexts. In each case, the attitude toward housing and infrastructure provision differs: from ideas of the welfare state, centralized planning, and the distribution of resources, to market principles and direct subsidies. Drawing from the history of the last fifty years on this matter, different programs and approaches to resource allocations resulted in each case in various approaches to sustain mass housing. The condition of materiality in each case could be generally

described as: (1) an infrastructure crisis in Russia; (2) huge investments and attention of policymakers after the collapse of the former provision system in East Germany; and (3) market regulations with debate on the subsidy system in West Germany.

I argue that differences in how well the mass housing in each case has been sustained until this day cannot be explained purely by turning to institutional peculiarities per se or to the flow of investments. Not downplaying these factors, I suggest taking a micro-perspective on materiality and maintenance, unpacking those factors, and see them in action. I propose to look at mass housing estates as a system of actors and interactions, in which each building could be described as a set of actors, and sustaining materiality—as a process, implemented through the network of interactions.

Materiality and practices of sustaining it are often either missed from academic research or become the central focus that overshadows others. I propose to account for materiality as a system of relationships and not only as a given fact. This text leaves behind the debate on how appropriate mass housing estates are as a form for the needs of a contemporary city and how the environment could be framed as problematic and then adjusted. Instead, it proposes to uncover what makes actors treat materiality the way they do.

First, by comparing the approach to infrastructure provision in three institutional contexts, I show why mass housing can be considered as infrastructure and why this approach is fruitful. Second, I describe how the view of actor-network theory could be adopted to research on maintenance. In the last part, I propose a methodological approach to study maintenance through its practices.

Infrastructural Turn and Housing Studies

Scholars turn their attention to infrastructure since it helps to capture the ambiguities of urban development and the hidden work that embodies everyday life in a city and helps it run smoothly (Denis and Pontille 2014; Graham and Thrift 2007; McFarlane 2011). By exploring the communications and how they operate, scholars discover the side of urbanity rarely mentioned before: the maintenance of the mundane. By focusing on infrastructures, researchers reveal the complexity and decentralization of this phenomenon. Infrastructure demands multiple actors to support it; to invest time, resources, and knowledge.

As the discourse developed further, the object of research on infrastructure was broadened. Housing also could be considered as infrastructure, when taking into consideration the debate on how to provide it (Dodson 2017; Steele and Legacy 2017). Mass housing is a great example of the debate on infrastructure provision and how differently it is handled across the world. Here, I suggest exploring three different contexts—Russia, West Germany, and East Germany—to compare approaches to housing provision. First of all, mass housing in these three contexts and even inside each one differs significantly in terms of appearance, materials, and construction peculiarities, policies, et cetera. One of the major differences is which percentage of housing stock such buildings constitute. The mass housing environment often gets much attention in both the media and academic discourses in all three contexts. The look of it and its materiality is pictured as being crucial for the everyday life and practices of the residents. In Russia, panel buildings are often seen as fading and decaying: mass media, authorities, and some residents push the discourse on "morally deteriorated buildings" that are not suitable for the life of modern citizens (Zhelnina 2019). In Germany, mass housing is often stigmatized (Glaze et al. 2012): such neighborhoods are a relatively rare occasion in the built environment of cities (compared to Russia), which makes them more visible and emphasize their distinctions.

The question of how to supply infrastructure, allocate resources, and distribute responsibility for doing so is taken into account differently in different places. Consequently, this reflects on the average physical state of mass housing in each context. In the last fifty years in Russia, the change in infrastructure provision can be seen as tantamount to the sudden collapse of the welfare state. The introduction of a market economy changed the way housing is treated by the government, from the provision of the commonwealth to address support (Collier 2011). In the same way, infrastructure was excluded from the policy agenda. The focus of the government turned to deal with particular cases instead of carrying undivided responsibility: it is a "shift from a centralized infrastructural regime to an individualized and fragmented system" (Tuvikene et al. 2019). Neglected infrastructure and the high costs of maintaining it and the urgent need for repairs resulted in an infrastructure crisis and deteriorating communications, which inevitably touched mass housing.

Although East Germany also experienced governmental withdrawal from centralized infrastructure provision, the response to the high deterioration rate was different. The need for rehabilitation and maintenance of the housing stock was constantly stressed by many experts (Balchin 1996). This demand

was met by many reconstruction programs that considered both the physical condition of the buildings, along with communications and appearance, and the changing needs of different social groups living there. Moreover, the whole system of ownership changed: from being owned by the state to being sold to international private companies (Urban 2018).

West Germany did not experience a socialist past and the collapse of the maintenance system in the past fifty years. However, the debate on how to provide housing was very crucial, and mass housing played quite an integral part in it, being one of the most affordable accommodations on the market. One of the crucial issues discussed in this regard is the amount of rent and how tightly it should be controlled. However, even in this heated debate on payments, maintenance costs, which are also paid by the renters, were not in focus for a long time (Busch-Geertsema 2000). Regarded as "secondary costs," the cost for maintenance was left uncontrolled until the early 2000s, while a sharp increase influenced the housing costs by far. Maintenance is often left unaddressed by the discourse on housing, let alone by research.

There has already been a large range of scholarship focused on mass housing estates from different angles. The research encompasses a variety of focal points, from various discourses and residents' satisfaction to planning principles. However, I argue that there is still a gap in areas of knowledge and especially in geographical range. First, the gap emerges between the contradictory presence of mass housing environment in research; second, scholars mostly focus on large cities. The most efficient way to address the gap is, as I argue, to focus on the micro level in research and to conduct comparisons.

The research on mass housing that accounts for materiality in some form can be vaguely allocated between two poles: environmental and social determinism. In such research, materiality frequently appears exclusively as a given background for the main action, which does not influence any of the studied phenomena—as it is often presented in sociological research—or as the main substance, which is often not very dynamic and is disconnected from the practices that constitute and change it. As has been repeatedly proven, the physical appearance and the environment of mass housing is not determinant of how this housing will be discussed and dealt with in particular context, but social relations rather than the environment per se are what drive this discourse (Zupan 2020).

The question of materiality and the system of its maintenance, and the way this leads to housing presented as deteriorated environments or housing which needs to be supported and maintained has barely been explored by

researchers. In Russia, there has been a growing field of studies on cooperation among residents, some of which were triggered by a recent renovation program in Moscow that exposed a significant amount of mass housing stock to demolition (Zhelnina 2020). When it comes to discussing infrastructure and mass housing, researchers tend more to explore macro-pictures of state or city policies (Büdenbender and Zupan 2017; Inizan and Coudroy de Lille 2019). Research on German cases is more extensive with greater empirical reach and tends to cover more particular cases (Grossmann et al. 2017; Grunze 2017). However, when the issue of maintenance is addressed in terms of social relations rather than technical peculiarities, materiality is presented in a static manner. Changing the angle in research to explore housing as infrastructure could help to uncover dynamics behind maintenance and see it as a consequence of social, political, cultural, and economic conditions—as well as of the agency of materiality.

ANT – Approach to Materiality

Not many actor-network theory researchers focus on housing, as it is a complex and multifaceted subject. Research on maintenance touches a lot of topics and objects in an urban environment (see, e.g., Strebel, Bovet, and Sormani 2019). Few researchers exploring the topic of housing point out how relevant the research on everyday routine and maintenance is for mass housing, and how it helps to avoid overgeneralized explanations aimed at "big" theoretical claims as well as superfluous descriptiveness (Jacobs and Cairns 2012). In the case of mass housing estates in post-socialist space, such a focus also helps to bring different actors with different agendas into one system where each actor is equally important in the research.

In such an approach, researchers claim that each building should not be considered a unified and stable entity, since it changes and transforms even during the time in which any particular researcher begins and ends their inquiry. Taking into consideration the dynamics and temporality, researchers suggest that each particular building should be considered as an assemblage of actants, events, and social constructions "subjected to external and internal disruptions" (Edensor 2011). Mass housing estates can be seen as a set of actors, events, conditions, and materials. Each of these elements influence the way the materiality of the building is sustained. However, those elements should not be treated as constants: each of them is fluid and changing all the time. The condi-

tion of each building can be seen as a negotiation over the cultural, economic, and social value of this housing, implemented by a set of interactions and dependent on existing materials and technicalities of the building. The main feature of such an approach is that it reveals what is visible only in the long run, such as deterioration, aging, and changes in the characteristics of the materials, and, from the perspective of the insider, such as the often-unseen territory of repair and maintenance.

Figure 1: The facade of a mass-housing building in Moscow that shows how differently residents deal with the materiality they are given: insulating balconies, changing windows, installing bars, using the greenery.

Source: Author.

Viewing mass housing through maintenance helps to account for materiality not just as a result of social relations but also as a driving force for a change in the whole process. Repairing something does not necessarily mean fixing something that is out of order due to human cause, such as vandalism or improper use. The nature of materials drives the maintenance and frames

it (Jacobs and Cairns 2012). Deteriorating constructions, thinning and eroding bonding paste between elements, faulty lighting above the entrance—maintenance should take into consideration the features of materials and mechanisms and their potential to change. Moreover, it should be emphasized that it is not possible to account for everything that could possibly happen to a building for at least two reasons: first, the complexity and interconnectedness of the system itself—because one may never know how properly another will use the utilities, which may influence the whole system; and second, due to emergencies that could be caused by internal properties of the materials.

Scholars following these theoretical notions put special attention to practices in the field. As they claim, institutional explanations are not sufficient to uncover what actually happens in any particular case, thus such explanations are no more than a mental exercise for a researcher, and all we can actually observe empirically are interactions and practices (Law 1992). Only through interactions do actors build up what we call institutional peculiarities. For the case of mass housing, this means that we can see resources allocated differently in all three cases mentioned above. However, only by observing the practices of maintenance could we find out why, for instance, a decision was reached to spend money and labor on painting the facades this year and how actors negotiated or handled such decisions.

Such an approach focuses on particular cases and helps to avoid overgeneralization that could otherwise be the case in research on mass housing. But the phenomenon itself is so diverse that the majority of generalized statements cannot be applied to mass housing even in a more or less single institutional context. As an example, mass housing in former East Germany was already influenced by different nearby processes involving the residents, the city itself, and environment, and could be categorized into various categories depending on how popular such housing is at the moment, what the situation on the housing market is in this particular city, and the programs undertaken in this regard (Grunze 2017). Researchers have particularly emphasized that we need to understand the particular pathways of housing estates without generalization: cases within East Germany should be compared cautiously with other postsocialist cases (Grossmann et al. 2017). I would add that when adapting the perspective of actor-network theory, research should be sensitive to making statements even for one entire neighborhood, and should distinguish carefully between generalizations that could be made for different scales.

Vignette: On Sewer Pipes

How can materiality be envisioned as an actor in the complexity of maintenance?

"I think I need to start from the beginning. Any system of public utility has a point where the authority for it changes. Up to a certain point, the utility provider is responsible, and after this point, the responsibility falls under the authority of a management company. The same applies to sewer systems. The part of the sewer pipe up to a certain point belongs to Mosvodokanal [water supply and sanitation company] *and after that, it belongs to a management company, Zhilishchnik* [state-owned management company]. *And that's the point where it is not clearly divided*

It's stated in a very confusing way in the law, and many interpretations exist. The Ministry of Housing and Communal Services states that it should be defined as the first sewage well. So here is the building, and the pipe goes from there to the first sewage well. However, often the interface is interpreted as the physical boundaries of the building. That's why there are 2–3 meters of pipe, between the edge of a building and the first sewage well, for which authority is often questioned. And consequently, this part of the pipe is clogged most often.

Do you see the problem? This part of the pipe is not repaired centrally because our Repair Fund defines the zone as the boundary of a building. Consequently, they do not change this section before the first sewage well. And it turns out that this segment of the pipe is the most problematic area. Consequently, if there's a breakdown, there's an emergency—it's severely clogged or torn up and only then Zhilishchnik comes to restore this section, swearing. It excavates the site, which is difficult and costly, and the building stays without a wastewater connection until the work is done. But at least it gets done. However, if this section is just a bit clogged from time to time and the cellar is flooded with shit and it smells in the flats—they [Zhilishchnik] *do not do the work."*

A resident of a mass housing estate in Moscow, explaining the peculiarities of maintenance

Practices of Maintenance

The story above accentuates mass housing as a complex object. In regard to the issue of maintenance and successful resolution of a particular task, as this case demonstrates, it is useful to picture the building as a system of interactions.

Despite the fact that the legal framework behind the sharing of responsibilities is, in this case, publicly known, it is interpreted differently by different actors. Moreover, the practices of maintenance go beyond the technical necessities and depend on negotiations and the way materiality itself performs and influences everyday life. As this short vignette shows, the question of who operates the building's infrastructure, and how, is quite crucial, but it can be explained in more detail when revealed through practices rather than through the institutional framework.

Practices are the crucial concept for addressing the issue of maintenance. By observing the maintenance through practices, one can see how actors establish rules through the interactions and negotiations amongst each other. The main concept to observe here is the limits of the order, the status quo: the conditions of the changing environment perceived to be normal. Residents, management companies, the building's owners, and the municipal authorities all have their own criteria to judge how and by what means the condition of any particular element of the building remains normal, and when it needs to be repaired, demolished, or significantly changed. Programs that aim to increase the energy efficiency of buildings, for example, are not a natural response to climate change or other environmental issues: these should be seen as a set of decisions inside the ecology of maintenance, which lead to a particular decision on how and when maintenance should be implemented.

Repair in this sense should be seen as a "successful event," evaluated as such by the actors (Jacobs and Cairns 2012). The built environment is changing and fragile, and repair is a way to reproduce it by certain rules and to a certain degree. Thus repair might be a practical, political, and/or theoretical category (Jackson 2019). As was shown by Alain Bovet and Ignaz Strebel on the example of tenants and caretakers in Switzerland, actors in maintenance do negotiate about which parts of the material environment can be repaired, how, to what degree, and how agreement on when the repair is to be finished can be reached (Bovet and Strebel 2019). They show how both aspects matter in this process: the discussion of power between the tenants and caretakers, and the embedded materiality and its features.

However, the status quo and the conditions under which something should be repaired or replaced is not a simple dichotomy. It is not an opposition between maintenance and repair (i.e., mundane upkeep vs. mending breakage) when the hidden processes behind everyday routine reveal themselves (Denis 2019). Sewage pipes do not have only two conditions: clogged and unclogged. There are instead several stages at which the situation is considered to be a

bearable condition by some actors but not by others. Many argue that there is a spectrum between functional and dysfunctional, and it is not easy to distinguish between different stages. However, such a view allows seeing the materiality of the building as a system that cannot be described in the terminology of binary choice, depicting whether it is working or not; it is rather fluid and adjustable (de Laet and Mol 2000).

Figure 2: The practices that are noticeable when looking at the facade of a mass-housing building in Weimar, Germany, are different. In this case, residents are inclined to let the materiality remain as it is and do not adjust much because the system of maintenance emerged differently: responsibilities are distributed in a different way, and repair and renewal happen more often.

Source: Author.

Each building must be seen as an ecological form that has to be maintained, shaped, and/or ignored through the order of things (Domínguez Rubio 2020). Actors shape maintenance not only through the way materials behave and

deteriorate, but also through the way different institutes, companies, and residents value the building, the way the economy influences its development, et cetera. Both components are crucial and cannot be considered apart. Here, I suggest using the term "ecology" in the sense that Domínguez Rubio proposes: "the material, atmospheric, semiotic, and imagined conditions in and through which something [. . .] exists, subsists, and becomes" (Domínguez Rubio 2020:8). The term ecology is not limited by practices of maintenance. It comprises the fluidity of the object, different structural conditions in each case, and takes into account the acting materiality itself.

Focusing on different ecologies of maintenance allows accounting for phenomena that are missed by structuralist logic. One example is DIY culture, in which actors adapt the given materiality by themselves and take over responsibility from more organized and centralized actors in maintenance. DIY could be a way to improve something if it is not possible to improve it otherwise, as was the case with the DIY culture in the Soviet Union (Gerasimova and Chuikina 2004), or the way to be conscious about and reuse the environment is present in the public discourse in modern Germany (Kuni 2016), or the important component of the "Ossi" identity in former East Germany (Kreis 2018). Tracing the effect of such culture on mass housing maintenance is possible only through the lenses of complex approaches such as ecologies.

The interplay among materiality and discourse, power, and the structure of repair can be unpacked by comparing how different actors treat look-alike materiality (Henke and Sims 2020). I suggest that the comparison between different contexts and cases reveals the opportunity to see beyond the given materiality and actants and to recognize the political and cultural elements as part of an ecology of maintenance.

Conclusion

This paper outlined how mass housing can be seen through the issue of maintenance. Research on housing, and on mass housing in particular, does not give much attention to the way materiality is sustained: it often appears either as a static background or as a subject of dispute. Focusing on maintenance allows one to see the system in relationships, how materiality is seen for different actors, and how it changes.

Such an approach to researching mass housing could benefit the debate in many ways. First and foremost, it could pave the way to discuss the environ-

ment and physical appearance of such housing as a neutral entity outside the debate on aesthetics. At the same time, stressing the importance of materiality and its agency, such an approach leaves no space to limit the physical characteristics to a simple container of social reality, but instead depicts it as a moving and changing actor. Taking into account the complexity of mass housing as an object for maintenance, such a view supports the idea of variety in the research. It adds to the debate on mass housing as a differentiated problem that should not be conveniently and simplistically lumped together merely because the appearance of such housing is similar. This paper is more of a set of observations than empirically proven knowledge. However, it gives the theoretical setting for an approach that solicits more empirical data and knowledge that can depict the changing environment of mass housing and capture its dynamics.

In lots of countries, large housing estates still remain one of the most affordable types of housing, available to different groups of citizens. In the face of housing and ecological crises, the matter of how to sustain already available housing and how to improve it and make it useable becomes integral. Focusing on maintenance, as proposed in this text, follows this idea and aims to contribute to achieving it.

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5. Non-Capital Renovation—Urban Tissue Morphotypes and Evaluation of Potential of Intensive Development: Saint Petersburg as Case Study

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Theory: Extensive or Intensive Development?

The urbanization process has been accelerating throughout recent decades, with an increase in urban population and decrease in density, or urban sprawl (UN Habitat). Large Russian cities follow the same trajectory. The recent amount of housing construction beats the records of the late decades of the Soviet era, with most of development happening through the extension of boundaries of urbanized core toward non-urbanized periphery (Starikov 2019).

Causes of Extensive Development

Despite the common character of problems caused by such a format of spatial development in large cities across the globe, the causes of urban sprawl in Russian cities have specificity and are linked both to their Socialist legacy of urban planning and institutional governance and to contemporary neoliberal type of urban planning policy oriented toward a market context. Unlike the Soviet management system, which was also been oriented toward development of new territories, today's public administrations have little hold over the spatial development of cities. Mechanisms of governance in new development of inner territories are almost nonexistent, the public authorities are unable to stimulate the resale of land plots in the former industrial zones and

do not have appropriate tools for working with real estate owners. The situation is further aggravated by the ongoing crisis of housing and communal services, which generates even more derelict and precarious housing due to many years of insufficient investment into major repairs of dwellings (Sivaev 2018). An ever-increasing amount of resources is required for managing the built-up territories, while the demand for new housing is soaring due to several factors.

The first factor is a colossal inflow of population into large cities due to uneven development of the country in the aftermath of the collapse of the Soviet distributive model; this manifests itself in hyper-concentration of population and resources in large cities and a rapid exodus of population from small and middle-sized cities and towns (Golubchikov et al. 2013). The second factor is an increased demand for cheap, mass-produced commercial housing due to low income, unreliable institutions of commercial rent, and the inaccessibility of social housing for the majority of Russia's urbanized population. The third factor is the reinforcement of demand for housing by federal policies that require an increase in housing construction up to 120 million square meters per year by 2024, as stated in the Housing National Project. For the above-mentioned reasons, the allocation of these "square meters" within urbanized territories is determined not by the urban administration, but rather by market forces and the interests of real estate developers. For them, the development of vacant periphery is easier and more profitable, as land prices and the risks of conflict with other stakeholders are minimal there.

Problems of Extensive Development

As for typology, most objects developed on the periphery of cities are organized according to the "microregion" format of development, following in many ways the modernist practice of urban planning. At the same time, a neoliberal capitalist setting and limited control from government and civil institutions contribute to a larger scale of construction with an inadequate amount and quality of transport and social infrastructure (Chirkunov 2011). Despite the declarations on self-sufficiency of new districts as a key principle of integrated territorial development programs, the newly built peripheral microregions are, in fact, monofunctional, located far away from workplaces, and deficient in local workplaces, cultural facilities, sports facilities, and other services (Korolev 2018). This "dorm district" character of new microregions within the context of extensive development of a monocentric city aggravates transport issues, as

their residents are forced to make daily commutes. The remoteness and isolation of peripheral territories, as well as low connectivity of the road network and deficiency in public transport, increase the usage of private vehicles in new districts, with such consequences as transportation issues, environmental impact, and increase of municipal expenses for construction and maintenance of new roads and parking. Besides numerous social and infrastructural problems, extensive urban sprawl causes loss of agricultural land and natural landscapes and irreversible damage to ecosystems. At the same time, public and private investment into road and grid infrastructure is being rerouted from the existing urban tissue, which causes the degradation of the urban core due to lack of money for maintenance and reconstruction.

Intensive Development as an Alternative

Thus, extensive development of major Russian cities by construction of "dormitory" microregions is a socially, economically, and environmentally unsustainable model that increases inequality within the city, because the periphery fills with cheap mass housing, the city center undergoes gradual gentrification, and the semi-peripheral zone decays due to lack of investment (Badina and Golubchikov 2005). As the costs of this model become ever more visible against the backdrop of exhausted external territorial reserve for urban development, the search for a reasonable alternative is a question of growing importance. We see such an alternative in the urban planning concept of a compact city. This concept builds upon the idea of intensification of use of the already developed urban territories by means of their reorganization and transformation (Dielmann 2004). As practitioners in the field of urban planning, in this paper we would like to explore the spatial aspects of urban development and try to explore the following questions:

- Which spatial methods may be used to create favorable conditions for intensive development of already built up inland urban territories while at the same time preserving their values?
- What capacity for intensive development within this approach do the already developed urban territories have?

Urban Morphotypes as a Resource for Intensive Development

In order to start a conversation about intensive development of the already developed urban territories, we need to describe our understanding of these territories. We propose to use the concept of urban planning continuity employed by, among others, Kevin Lynch, who considered the urban environment as a sort of code that immobilizes "an image of time" in the circumstances of constant cultural, political, and social change (Lynch 1960). At each historical stage of urban evolution, urbanized territory has expanded to keep pace with its population's needs for housing and workplaces, while the type of space produced during this expansion was determined by the dominant social and political order of each distinct period (Lefebvre 1991). Such an expansion also determined the preservation of historical urban tissue containing permanent structural planning foundations that bore the features of previous stages of development (Veretennikov 2014). Thus we can, although in a somewhat conventional manner, describe the structure of urban tissue of a large Russian city as a set of different morphotypes that reflect the spatial and functional features of its urban environment at each historical period. Using the model of periodization of urban planning development proposed by Sementsov (2007), we mark out the following morphotypes: the historical city center (districts dominated by the prerevolutionary built environment), the "gray belt" (mostly non-residential territories of the historical industrial-residential rim), the "temporary city" (private housing sector, districts of individual or block housing), the "working settlements" ("garden cities"; the 2- to 4-story housing of urban districts of the Soviet preindustrial period between 1918 and 1957), "Stalin-era housing" (buildings along the main streets of the Soviet preindustrial period), "Khrushchev-era housing" (microregions of the first generation of mass housing series between 1958 and 1974), "Brezhnev-era housing" (microregions of the later generations of mass housing between 1975 and 1991), and the "post-Soviet districts" (districts and microregions built after 1991). In terms of the sustainability of decision-making and urban planning continuity, it is important to account for specificity of the environment of each morphotype. However, today we witness attempts of intensive development that do not take into account the uniqueness of each morphotype, thus generating a lot of problems.

Moscow Renovation as an Unsustainable Model of Intensive Development

Let us begin by considering the manner of intensive development that is actively implemented in Moscow and may be extended to other regions in the near future. The program of renovation of mass housing, initiated in 2017 by Sergey Sobyanin, mayor of Moscow, included the demolition of more than 5,000 residential buildings of mostly postwar series and their replacement by newer housing, which affected over a million people. The newer construction realized on the newly available territories is no different from that which is characteristic for the peripheral areas—that is, microregions of high-rise residential buildings. Such a solution indeed allows intensifying the use of the built-up urban core and making use of the existing transportation, power distribution, and social infrastructures; the investments are allocated to their reconstruction rather than the creation of new ones. Still, despite the de-clared advantages, the urban renovation program has provoked controversy in the expert community and has led to the rise of the most intense urban resistance movement in Moscow's recent history. Criticism of such a form of intense development includes many aspects, including economic, social, and environmental concerns.

Firstly, such a model of urban renovation is far from flexible—it does not provide conditions for further autonomous development of the territory and its ability to change, but simply assumes a complete replacement of one mor-photype by another one. Secondly, such a change is in contradiction with the principle of urban planning continuity, as it implies complete destruction of an entire morphotype of an already established urban environment, completely negating its architectural, historical, and social value. Besides that, criticism is also aimed at the economic aspects of the project: their large scale of construc-tion, high cost of demolition, and the necessary relocation of residents of the affected buildings mean that such a program cannot be implemented at the ex-pense of private investors and requires considerable investments drawn from municipal budgets—which is practically impossible anywhere except Moscow. Finally, the "Moscow renovation" generated an intense social conflict, as many residents of the buildings subject to demolition refused to be relocated but were faced with the fact that even property rights did not guarantee immu-nity from demolition. Thus, Moscow's model of intense development of inner urban territories proved to be unsustainable, as it is not designed for full par-

ticipation of all stakeholders and destructive for the environment and communities already established within the morphotype.

Renovation Outside the Capital: Our Proposals

We assume that the implementation of an intensive model of development within the content of Russian cities requires a more nuanced and precise approach that would take into account all the complexity and diversity of the environment within cities, be economically realistic and well-founded, and essentially be a result of cooperation among all stakeholders that opens opportunities for further autonomous development of the territories in question. While considering the existing urban tissue as a set of morphotypes, we aim at demonstrating the potential for intense development that each of them has, as well as spatial methods suitable for realizing such potential. Our approach is based upon the model of intensive development and developed individually for each morphotype of the already existing urban tissue so that it accounts for their particular features and prevents them from losing their valuable environmental qualities. In our opinion, the right way to transform the established urban tissue consists not in demolishing the existing built environment and replacing it with a new one, but in extending the planning structure into the under-formed parcels of territories, construction on inefficiently used plots, and densification of the existing built environment. In our study, we have used the DBR (design-based research) method applied to real urban locations in order to explore spatial solutions that enable intense development within the morphotypes of the existing urban environment, as well as to approximately estimate their development capacity. In the next chapters, we will describe our methodology, research process, and results in more detail.

Methodology: Developing Research Principles and Methods

Principles

Before moving on directly to DBR methodology, it is necessary to formulate the principles that should, in our opinion, guide the intensive development of urban inner territories. Our position is based on the acknowledgement of the importance of urban planning continuity and is also close to Gutnov's statement (1984) regarding the necessity of preserving stable and sustainable elements of urban structure. We are also endorsing Chirkunov's concept (2011) of the compact city and Yablonskaya's position (2011) regarding the necessity for regeneration of the urban environment according to the principles of self-organization and authenticity. Thus, we consider that the treatment of already developed territories requires not only their densification, but also fixing the existing deficiencies of their environment, alongside the preservation of their valuable features and specificity, as well as providing conditions for flexible self-development. From these foundations, we have deduced the following principles of research that would allow us to design the necessary spatial tools during the planning stage:

1. Supporting small-scale development. The densification and increasing of spatial diversity of developed territories is to be implemented through local projects to add additional stories and extensions, as well as small objects of new typologies. In order for these tools to become widely used, a system of support for small-scale development may be required. Homeowners themselves should become agents of transformation of their surroundings.

2. Privatization of territories within districts. A lot of territories within the formed districts neither have clear legal status nor belong to specific owners. This abundance of "gray zones" may slow down the necessary transformation. An inventory of land plots is required in order to rationally distribute them between different kinds of users. There should not be such a thing as "no man's land" within the morphotypes in question.

3. Demarcation of land plots under the existing buildings, with a perspective toward further development. Such a demarcation should be done in a manner that opens opportunities for development of the existing real estate. Public spaces should be demarcated with clear boundaries, functions, and characteristics. The remaining plots may be allocated for private use, which would reduce maintenance costs for municipalities. The NIMBY

phenomena can be averted by empowering beneficiaries to induce demand for small-scale development. This process also contributes to formation of communities of responsible real estate owners.

4. Construction and rehabilitation of streets conceived as public spaces. In order to create a fully formed spatial structure within which functional land plots can be defined, streets must be rehabilitated as fully formed public space. Each demarcated space must have access to commonly used land and facilities. Increasing the overall length of streets improves the connectivity of spaces and creates new opportunities for small businesses.

5. Creation of a connected and intuitively "readable" structure of boulevards, gardens, and parks. Besides the streetscape, an integrated system of public spaces should be formed. Public spaces must function as a whole system of interesting places of different scales, and the transition between these spaces should be free from obstacles. A clear system of public spaces can also contribute to solving the non-authorized parking problem. Parking lots should be inventoried, and predictable parking policy roles should be established.

Methodology

In order to apply these principles to real territories of urban morphotypes in our own design-based research, we have developed the following methodology. On one hand, we have used the Research by Design (RbD) approach, which includes a certain sequence of phases of research, such as pre-project analysis of the territory and context research, the design itself, and theoretical analysis of the results of the design (Roggema 2017). On the other hand, during the design stage we have applied a widely used Massing Study approach, which implies an estimation of capacity characteristics of the territory concerned through placement of architectural volumes according to existing spatial and legal norms (Donath 2008)—in our case, according to the principles formulated above. The key feature of our methodology consists in looking for answers to the research question directly in the project phase of the research—that is, looking for spatial tools for work with the morphotypes of built environment at the designing stage; such tools would allow an intensive development of territories according to the principles formulated above.

1. Case study
   (a) Selecting the case
   (b) Defining boundaries of the already developed urbanized territories
   (c) Demarcating morphotypes of built environment within boundaries of urbanized territories
   (d) Selecting pilot territories in each morphotype to be redesigned

2. Pre-project analysis of pilot territories
   (a) Field studies, gathering data
   (b) Data analysis, defining values and deficiencies
   (c) Calculating present values of indicators

3. Developing test projects for selected pilot territories
   (a) Searching for spatial tools of intensive development
   (b) Massing study—evaluating capacity characteristics by placing building volumes according to chosen tools
   (c) Calculating new values of indicators

4. Post-project analysis
   (a) Extrapolating the infill capacity resource of each morphotype to all developed urbanized territory of the case city and evaluating the intensive development potential
   (b) Discussing results and defining conditions of applicability of the discovered spatial solutions

Data

In order to define the boundaries of research and the urban environment morphotypes and to calculate indicators, several GIS tools provided by the Committee of Urban Planning and Architecture of the Government of Saint Petersburg were used. The data included: buildings and structures (by year of construction), water bodies, road network, boundaries of commonly used territories and linear objects, commonly used green infrastructure and protected green areas, land-survey plots (and their respective types of allowed usage), and territorial planning projects for Saint Petersburg. Data derived from OpenStreetMap (OSM) and the "Reform of Housing and Communal Services" digital platform have also been used for calculation of respective indicators.

OSM data has been used regarding the following parameters: buildings and structures, water bodies, pedestrian crossings and road networks in the Oblast of Leningrad, and commercial and social objects and services. The "Reform of Housing and Communal Services" platform has been used to obtain the data regarding the residential buildings of Saint Petersburg and the Oblast of Leningrad.

Indicative Parameters

In order to characterize the environment and the built-up structure of each of the morphotypes, it is necessary to choose parameters for evaluation of the intensity of development, infill potential, and efficiency of use of territory. These parameters have been used according to the Spacematrix urban form description model (Berghauser Pont and Olsson 2017):

1. Public / private ratio: the percentage ratio of public and private spaces, which characterizes the structure and efficiency of use of urban areas.
2. FSI: floor space ratio, an indicator of density of territorial development. Calculated as a ratio of total floor-by-floor surface of buildings to the surface area of the plot.
3. GSI: ground space ratio. An indicator of density of construction. Calculated as a ratio of total surface covered with buildings to the surface area of the plot.
4. Height index: an average number of stories of buildings on the plot.
5. OSR: open space ratio. The amount of unbuilt surface on the territory. Calculated as a ratio of total surface of non-built territory to the total surface area of the plot.
6. Road network density: an indicator of territorial connectivity and structure. Calculated as a ratio of total length of streets to the surface area of the plot.
7. Parks: an indicator of publicly accessible green spaces. Calculated as a ratio of total surface of publicly accessible green spaces to the total surface area of the plot.

These parameters will be used to evaluate the present state of each morphotype. Next, the evaluation will be repeated after modifying the structure and adding new volumes to the existing urban tissue. After that, a comparison be-

tween the initial and modified values of indicators will allow us to make conclusions about the intensification of development and the existing capacity of each territory.

Empirical Experience: Design Study of Tools and Potential of Intensive Development

Case Study: Saint Petersburg

Saint Petersburg, the second largest Russian city, has exhibited positive dynamics of population growth for at least the last ten consecutive years; this growth is caused both by an ever-increasing number of immigrants and by natural population growth. The growing urban population is mostly provided with housing in the extensively developed peripheral territories—located for the most part in former agricultural lands, which erodes the green belt surrounding the city (see fig. 1). New areas of residential construction have already been established at the periphery of Saint Petersburg, such as Murino, Devyatkino, Parnas, Kudrovo, Shushary, the "Baltic Pearl," Koltushi, Bugry, Zanevskoe, the Solnechny Gorod residential complex, and Lensovetovsky. Most of these are built along the radial highways and characterized by their singular function, high density and average number of stories of housing, a deficiency in social infrastructure and everyday services, and traffic problems upon arrival to Saint Petersburg and in daily commutes to the city center because much of the new high-rise housing lacks any new workplaces (Babenko 2013). Besides that, many satellite towns of Saint Petersburg are also expanding: Vsevolozhsk (Yuzhny microregion), Pushkin (Slavyanka and Pushgorod residential complexes, District 9), Kolpino (Novaya Izhora), Novogorelovo, Sertolovo (Zolotye Kupola residential complex, Novoye Sertolovo microdistrict). New housing commissioning rates in the Oblast of Leningrad are nearly as high as in Saint Petersburg: in 2018, 2.64 million square meters have been commissioned in the Oblast of Leningrad, compared to 3.2 million square meters in Saint Petersburg itself, according to the information provided by the Government of Saint Petersburg in 2018. The increase of construction activity in the satellites of Saint Petersburg also continues: integrated territorial development projects are scheduled for realization on the sites of Planetograd (1.5 million sq. m.) and Yuzhny satellite town (4 million sq. m.).

Against the backdrop of extensive development, Saint Petersburg is facing numerous challenges related to aging of housing of inner urban territories (Sivaev 2018), as well as to a lack of social infrastructure and low transport accessibility. Resources and the attention of the urban administration are dedicated to solving problems caused by urban sprawl, whereas the existing developed territories suffer from degradation of utility infrastructure, housing, and the urban environment. As a result, the city is facing a double problem: peripheral outskirts with an ever-increasing demand in investment, and inner city territories that undergo degradation. In our opinion, what Saint Petersburg really needs is an exploration of approaches to implement the compact city model and testing of new spatial solutions to the placement of new housing within its inner territories, as well as creating conditions for intensive development.

Defining Boundaries of Already Developed Urbanized Areas

In order to further evaluate the potential of an already developed urbanized area in terms of capacity for intensive development, it is essential to define its boundaries in a precise manner. In European urban planning practice, boundaries of urbanized territories are defined according to continuity of dense development and high connectivity of urban tissue (Монастырская 2017). In order to define boundaries of highly connected, dense, and continuous urban tissue, we have used GIS tools in order to combine three spatial layers: historical strata of urban tissue (years of construction and historical districts of the city); density of services; and environmental barriers (industrialized territories, railroads, water bodies, and expansive green areas). The boundaries thus defined do not include several exclaves of high-density development, such as Devyatkino, Kudrovo, Lakhta, and Shushary. Barrier territories on this map are whitened in order to better show the relatively continuous fragments of urban tissue.

Defining Built Environment Morphotypes

According to the model of study of urbanized territory of the city as of a set of morphotypes that reflect the spatial and functional features of urban environment at each historical period (see section 1.4 of the present paper), the territory of Saint Petersburg has been divided in the following manner (see fig. 1):

Figure 1a: Boundaries of developed urbanized territory of Saint Petersburg.

Рабочие границы рассмотрения урбанизированной территории Санкт-Петербурга
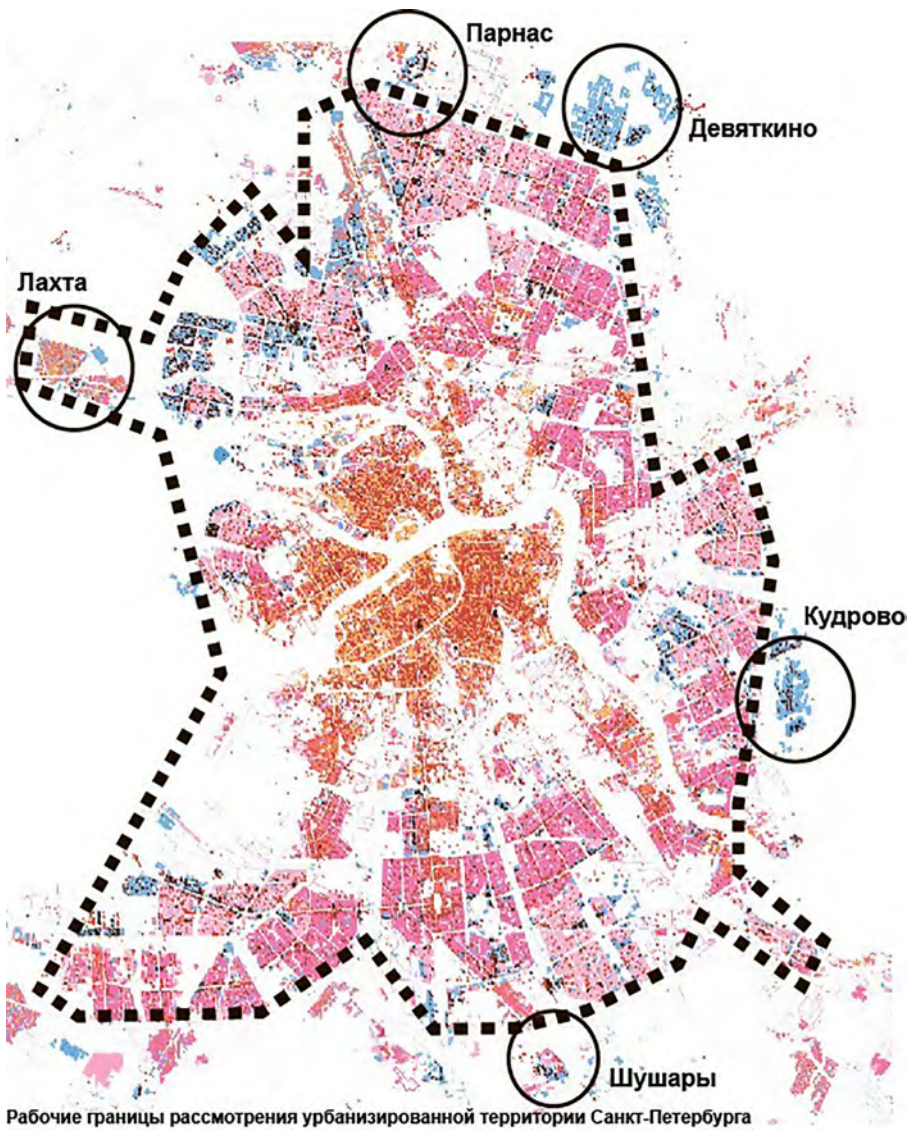
Source: Authors.

Figure 1b: Morphotypes of urbanized territories of Saint Petersburg (map).
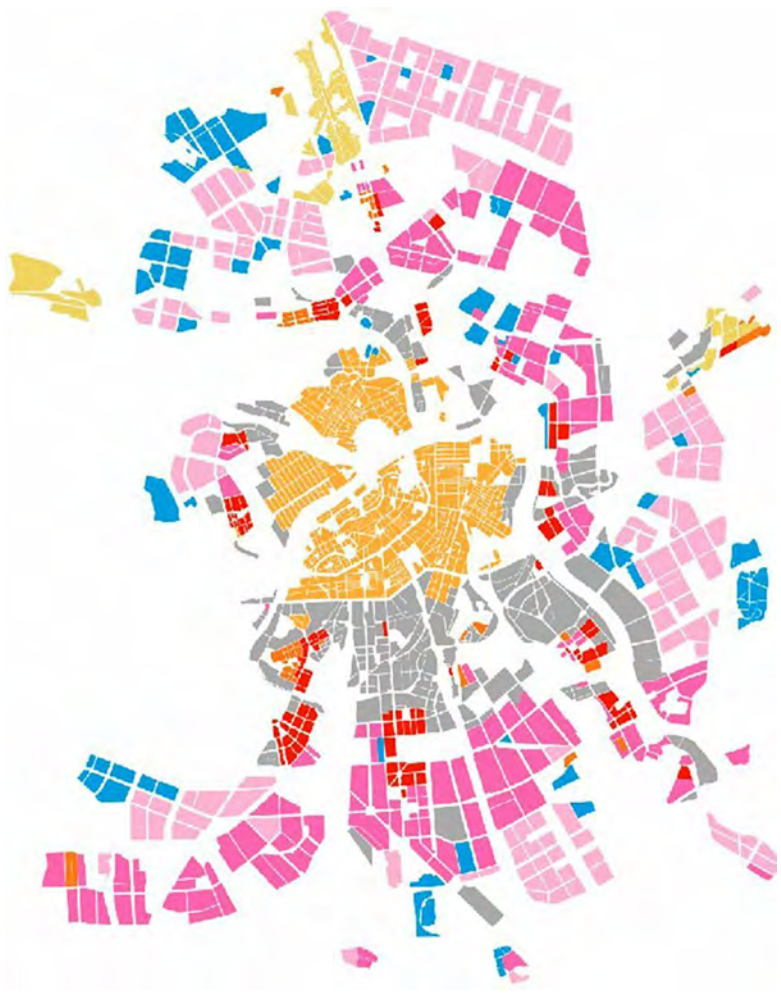
Source: Authors.

Figure 1c: Morphotypes of urbanized territories of Saint Petersburg.

Кварталы Петербурга, ранжированные по основным морфотипам застройки

Исторический центр:
кварталы брандмаэрной застройки (до 1917 г)

Серый пояс
Преимущественно нежилые территории исторического промышленно-селитебного пояса.

Рабочие поселки
2–4-этажная застройка городских периферийных кварталов советского доиндустриального периода (1918–1957 гг).

Сталинки
Застройка «парадных» кварталов советского доиндустриального периода (1918–1957 гг).

Хрущёвки
Микрорайоны первого поколения массовых серий (1958–1974 гг.)

Брежневки
Микрорайоны поздних поколений массовых серий (1975–1991 гг.)

Постсоветская застройка
Кварталы и микрорайоны, построенные после 1991 г.

Временный город
Кварталы индивидуальной или блокированной застройки

Source: Authors.

Allocation of territories has been implemented with GIS tools by means of aggregation of data related to years of construction and function of buildings within districts as units of planning structure. Morphotypes have been assigned to each district according to the prevalent built environment in terms of age or specific functional and environmental features (such as industrial objects for the "gray belt" morphotype or private housing for the "temporary city" morphotype). The scheme that reflects the distribution of urban territory between different morphotypes shows a ring-like structure that has formed as a result of consecutive waves of city expansion (see fig. 1).

Selection of pilot territories for design research within each morphotype:

For design purposes, several characteristic examples for each of the morpho-types have been selected (see fig. 2).

Figure 2a: Pilot territories of each morphotype, located on the city map.

Частный сектор

Исторический центр

Рабочие поселки

Сталинки
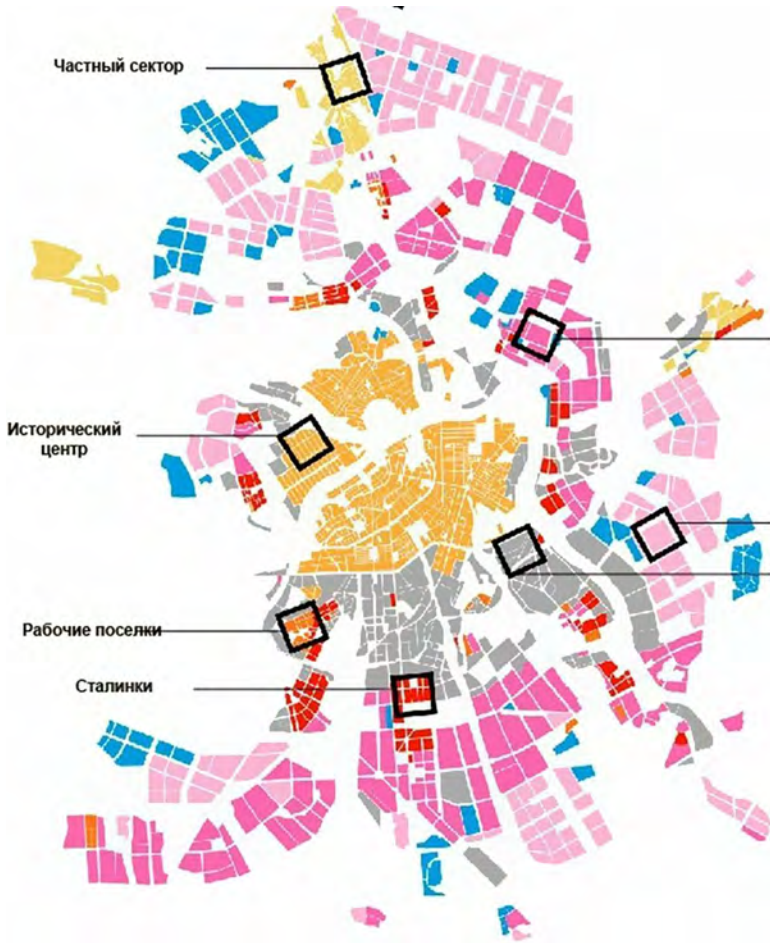
Source: Authors.

The main selection criteria was homogeneity of the tissue: the built environment of a pilot territory should reflect, as fully as possible, the type of environment proper to the morphotype. The test plot size was defined according to typical dimensions of planning elements of morphotypes.

Figure 2b: Comparative sizes of pilot territories of each morphotype.
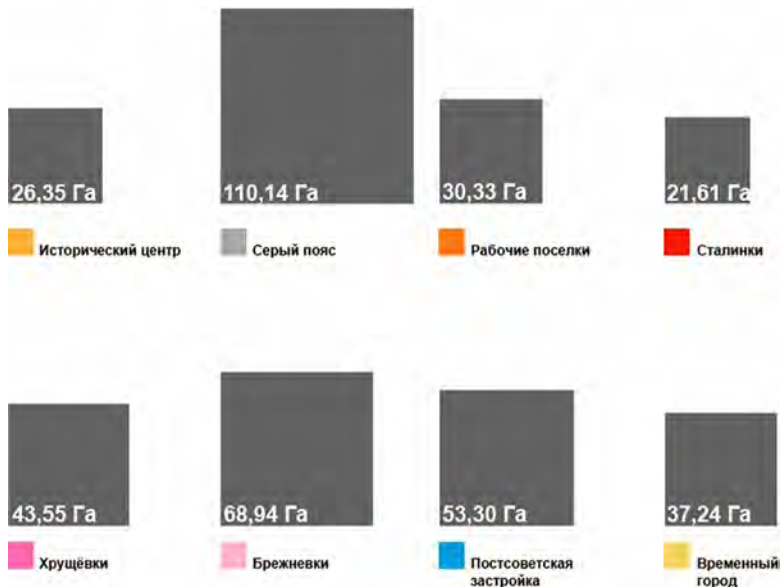
Source: Authors.

Pre-Project Analysis of Pilot Territories

In summer 2018, field studies have been conducted in order to gather understanding of specific features of pilot land plots in each of the eight morphotypes. Based on field and theoretical research, each morphotype has been assigned values to be preserved and issues to be solved. Also, values of indicator parameters have been calculated for each of the pilot zones.

Khrushchev-Era Housing:

Khrushchev-era housing encompasses the microregions of the first generation of massive housing series (1958–1974). Typical prefabricated block housing developments that happened on a wide scale from the late 1950s to early 1980s, commonly referred to as "Khrushchev-era housing," or "Khrushchevka," can be found in any city across Russia. In Saint Petersburg, Khrushchev-era housing districts occupy 15 percent of the surface area of the urban core. For our study purposes, the Polyustrovo district has been chosen, located at the intersection of Prospect Metallistov and Piskarovskiy Prospect. Functionalist architecture has influenced the approach to territorial planning; thus a number of specific features of Khrushchev-era development have formed. Among them are the typological monotony, a lack of distinctive features, and the zoning and hierarchy of spaces. The stigmatization of these territories caused by these numerous issues led to the situation where the dominant mode of redevelopment took the form of complete demolition of the existing buildings with subsequent redevelopment of the newly available plots. However, such an approach is tremendously difficult, costly, and is only possible as a large-scale, publicly operated project. Moreover, researchers have found that the consequences of demolition for the affected territory include the loss of confidence of inhabitants and the destruction of local communities and of positive characteristics of the place. Nevertheless, wide availability of this morphotype in the urbanized area enables the production of a significant amount of "surplus" square meters, all the while preserving the existing buildings and positive features of the environment—and this effect can be achieved by the proposed model of renovation in the framework of intensive development of urban core territories. Key identified values are: greening of intra-microregion territories and the presence of established communities. Key identified problems are: total permeability; lack of division between public and private spaces, transitional character of courtyards as sources of conflicts; rundown local amenities due to lack of shared responsibility for maintenance of courtyard spaces between homeowners and the municipality; monotonous character of built environment—all the facades have the same look, which makes the territory difficult to navigate; and a virtually complete absence of commercial fronts and necessary services. Indicative parameter values are: overall surface of the morphotype in the city = 4,160 ha; surface of the pilot zone = 43.55 ha; 45% private space / 55% public domain; FSI = 0.57; GSI = 0.14; height index = 4.53; OSR = 1.52; street grid density = 0.08; and parks = 6.17.

Brezhnev-Era Housing:

Microregions of the later generations of mass-produced housing (1975–1991) comprise the most widely distributed type of built environment in the Soviet Union. It is widely considered that Brezhnev-era housing includes all buildings constructed between the mid-1960s and late 1980s. Residential buildings mostly took the form of 9- to 12-storey-high housing organized into microregions. Such a morphology is widely present, taking up to 16 percent of the urban core area. For research purposes, a territory of the microregion adjacent to Prospekt Bolshevikov subway station has been chosen. This morphotype is characterized by diverse typologies of development, an absence of structured spaces and visible boundaries between public and private domains, and, therefore, a low-quality urban environment. The total surface of territories built up with Brezhnev-era houses is enormous, as this morphotype is one of the dominant ones on the territory of the urban core of Saint Petersburg. This factor alone makes these territories highly attractive for redevelopment. Moreover, the microregion structure is characterized by abundant underused spaces and empty lots. This opens wide opportunities for new construction, which is already happening in these territories. However, this usually takes form of high-rise infill development, which exacerbates the problems of Brezhnev-era housing instead of solving them. Key identified values are: good greening of territories inside microregions; a presence of dominants; and diversity of planning schemes within microregions. Key identified problems are similar to Khrushchev housing: total permeability; no distinction between public and private spaces; transitory character of courtyards, which generates conflicts; degradation of public amenities due to lack of shared responsibility between homeowners and municipalities; monotony of built environment—all facades have similar exteriors which makes the territory difficult to navigate; and numerous empty lots. Indicative parameter values are: overall surface of the morphotype in the city = 4,313 ha; surface of the pilot zone = 68.94 ha; 47% private space / 53% public domain; FSI = 1.23; GSI = 0.14; height index = 9.34; OSR = 0.70; street grid density = 0.05; and parks = 9.38.

Development of Test Projects for Pilot Areas

Drawing from the initial declared principles, as well as values and problems detected during the research, we have developed separate renovation projects

for each pilot area which take into account re-demarcation and restructuring as well as the construction of new streets and infill development. During the planning, appropriate spatial tools were chosen in order to preserve and rein-force the values of each morphotype, as well as to solve the characteristic prob-lems of territories. Based on the massing study conducted for each territory, new values of indicative parameters have been calculated. Chosen spatial so-lutions for intensive development of each morphotype, illustrations of design solutions, and new values of indicative parameters, which allow estimation of the modifications applied to the respective territories, are presented below.

Khrushchev-Era Housing:

Figure 3: Test project for renovation of Khrushchev-era housing morphotype.
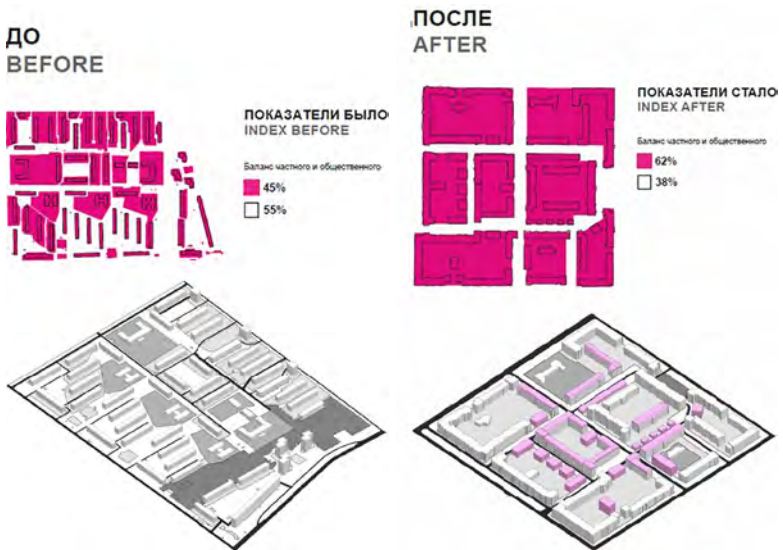
Source: Authors.

Tools used:
1. Fractioning of district structure: tracing new transit streets
2. Division of space between houses into courtyard spaces and streetscapes; privatization and enclosure of courtyards

3. Creation of fully functional parks and publicly accessible boulevards
4. New development along the front of transit streets
5. Increasing the height of buildings
6. Construction of multistory rental parking garages along the main streets. Multistory above-ground parking with active ground floors (including shops, gyms, etc.), unlike underground parking garages, can further be easily transformed into public buildings. At the present stage, they can serve as an efficient component of parking solutions.
7. Narrowing the corridors of thoroughfares and construction along the new front
8. Placement of "beacon" buildings as landmarks in key locations of microregions

Indicative parameter values: 56% private space / 44% public domain; FSI = 0.86; GSI = 0.22; height index = 4.11; OSR = 0.91; street grid density = 0.17; parks = 10.61

Brezhnev-Era Housing:

Figure 4: Test project for renovation of Brezhnev-era housing morphotype.
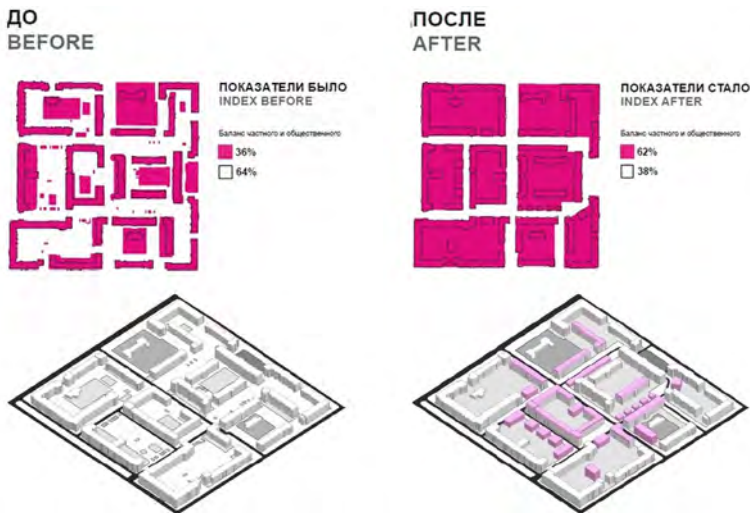
Source: Authors.

Tools used:

1. Transition from microregions into districts: tracing new transit streets
2. Creation of unified system of squares and boulevards within the new groups of districts; transformation of a "park town" into a "town of streets and squares." Reduction of the area of open spaces must be compensated by improving the quality and accessibility of preserved and newly created parks, boulevards, and squares.
3. Connecting the elements of green network into unified system by active greening of streets
4. Working at four levels of scale: superblock (microregion), group of blocks, block, plot
5. Forming fully functional parks and publicly used boulevards; each group of blocks has its own public space
6. Division of spaces between buildings into courtyard spaces and streetscapes; privatization and enclosure of courtyards
7. Creation of districts with two fronts: Brezhnev-era housing + low-rise development
8. Creation of "Brezhnev-era housing + low-rise development" districts by developing the front edges of the district
9. Increasing building height
10. Construction of multistory rental parking garages along the main streets
11. Optimization and "straightening" of street grid within the microregion; improving permeability, visibility and intuitive "readability" of the streets within the "super-block"
12. Densification of street front along the thoroughfares with temporary pavilions located at the "unusable" plot. In order to render the new streets more efficient, opportunities for development along the setback boundaries should be used as much as possible.

Indicative parameter values: 60% private space / 40% public domain; FSI = 1.71; GSI = 0.24; height index = 7.62; OSR = 0.45; street grid density = 0.17; park = 2.00

Post-Soviet Development:

Figure 5: Test project for renovation of Post-Soviet development housing morphotype.

ДО BEFORE

ПОКАЗАТЕЛИ БЫЛО
INDEX BEFORE

Баланс частного и общественного
59%
41%

ПОСЛЕ AFTER

ПОКАЗАТЕЛИ СТАЛО
INDEX AFTER

Баланс частного и общественного
64%
36%
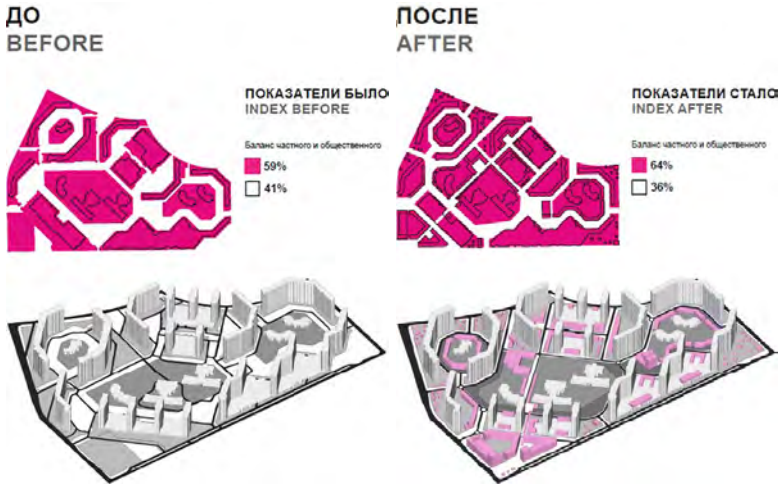
Source: Authors.

Tools used:

1. Division of space between houses into courtyard spaces and streetscapes
2. Optimization and "straightening" of the street grid within the microregion
3. Densification of "unusable" areas with small-scale typologies
4. Humanizing the scale of courtyards by integrating rows of the low scale block housing. Rows of block housing not only reduce the scale of the visual space of playgrounds and surrounding streets making perception of the space more comfortable, but also create new formats of housing and spatial cells for new businesses.
5. Landscaping tools for humanizing the scale of the environment. If new development cannot be used to "reduce" the scale of space between buildings, landscaping tools (such as artificial landforms and trees) can be used.
6. Integration of "beacon" buildings as landmarks in key locations across the microregions
7. Creation of human-scale street corridors along the way from subways to parks

8. Functional diversification or development of non-residential functions
9. Creation of high-density, multifunctional development nodes adjacent to subway stations

Indicative parameter values: 64% private space / 36% public domain; FSI = 3.09; GSI = 0.26; height index = 13.74; OSR = 0.24; street grid density = 0.15; parks = 3.34

Post-Project Analysis

The extrapolation of infill development potential values calculated during the project onto the entire urbanized territory of Saint Petersburg allows us to estimate an approximate potential of intensive development according to our model. These calculations show that about seventy million square meters of new residential and non-residential floor area can be integrated into the existing urbanized territories of the city. This number outstrips by far the need for new residential, business, and social development for many years ahead and proves the viability of developing Saint Petersburg according to the intensive development model, rather than extensive expansion. Three quarters of this capacity can be implemented by densification of territories occupied by three morphotypes—the gray belt and Khrushchev- and Brezhnev-era housing—as these morphotypes provide maximum infill development capacity. Thus, for example, microregions of Khrushchev-era development alone can accommodate about 17 million square meters of more new development. It is important to note that such a volume of new development can be produced with very limited amounts of demolition while preserving the values of each of morphotype and solving problems specific to each.

Limitations

The morphotype method can be successfully applied for approximate estimation of infill development potential of already developed territories. It has, however, a number of limitations that do not allow it to be used as a universal method for calculating additional capacity of the territory. Thus the method only works best in the case of fragments of "clean" and homogenous development, while urban planners mostly have to deal with mixed development that consists of buildings of different ages and typologies. Another limitation

is related to the fact that the spatial tools developed in the framework of the present research are based on a number of principles that reflect our position regarding the quality of urban space, yet urban planning principles adopted by different cities can differ from the ones adopted as a foundation of the present research. Also, this research only accounts for spatial characteristics of different types of developed environments, while the choice of planning solutions in practice can be also determined by a number of highly unpredictable factors, such as sanitary and environmental conditions, local regulations and restrictions, architectural and urban planning traditions, specific preferences of residents, et cetera. Any practical projects of infill development of any type of built environment should account for such a diversity of factors; our model can only serve as a tool for the estimation of maximal capacity for supplementary surfaces that does not diminish valuable features of urban space.

Conclusion

In the framework of this research, we have demonstrated a conceptual model of intensive development of already developed urbanized territories that can serve as an alternative to widespread models of extensive development and the "Moscow renovation project." Drawing from the principles of urban planning continuity and the concept of compact city, we have proposed a way of approaching already developed urbanized territories as a set of well-established morphotypes of urban tissue that reflect the historical and functional layers of urban evolution and have specific environmental features. By using the design-based research method, we have developed a number of spatial tools that can create conditions for the implementation of a compact model of urban development, while the estimation of infill development capacity has shown the presence of an enormous resource of urban tissue eligible for infill development. As urban planning practitioners we have proved that, while using these tools, it is possible to satisfy the needs for new real estate for many years to come while preserving the diversity of environments and preventing urban sprawl. The flexibility of our model is an advantage compared to the "Moscow renovation project," as it aims at self-organization and sustainable development of territories driven mostly by the efforts of owners of real estate and small-scale development, rather than by large corporations operating within integrated territorial development projects.

However, while our research focuses exclusively on spatial methods, we consider it important to note that the policy of intensification of inner territories cannot be implemented without legal end economic initiative, by working with urban communities and introducing changes to urban planning regulation mechanisms. Our concept may be used as a foundation for strategies of the spatial development of cities and serve as a tool for evaluating the capacity of inner urban territories for intensive development, but strategic planning should also include the participation of a wide range of stakeholders in the process of deliberation, ensuring their ability to voice their concerns and to influence the decision-making process. Whether the city must grow extensively or intensify the development of inner territories should be openly discussed at the level of urban development strategy. Only upon reaching consensus regarding the urban development policy can details be discussed, such as choosing priority hotspots for investment or defining territories with stricter protection or limitation of development. Strategic visions and principles should be legalized by adopting territorial planning documents, rules, and local norms. An infill development plan or matrices of optimal density for residential development of the city, stages, and rates of growth should determine key performance indicators of achieving strategic goals or provide more details to specific chapters of strategies.

In this paper, we have tried to demonstrate the dangers related to extensive urban development and propose spatial methods that can be used to implement the model of intensive development of urbanized territories, and we have also shown the potential of such a model. Besides spatial methods, however, social, economic, and political methods of transition from an extensive to a compact and intensive development paradigm should be explored. These methods include urban planning regulations, land use policy, economic stimuli and restrictions, and loan and mortgage policy, as well as policies regarding social and rental housing.

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Citizens and Neighborhood

After the collapse of the Eastern Bloc, large housing estates quickly crystallized as a symbol of the failure of socialist policies. They were considered monotonous and depressing, the population was stigmatized, and positive achievements were forgotten. However, the negative image was by far not shared by all residents—after all, for many people these apartments were their first home and the place where they grew up. Among architects and historians, the settlements, with their positive qualities and their weaknesses, were discussed in a much more differentiated way. But nevertheless, there is still a big discrepancy today between the views from inside and outside.

The relatively limited interaction between residents and outsiders—people who move to the settlements often stay there for a long time and outsiders do not visit regularly—cements the divergence of perception. This lack of fluctuation intensifies problems related to the overall demographic trend of an aging society. When the large settlements were planned, they were supposed to be a home for all groups of society, yet today they show a risk of segregation. However, loneliness and boredom are not the only factors to be addressed. As a result of reduced social infrastructures and centralized shopping facilities, the walkability of the districts diminishes and vulnerable groups who are dependent on easy access to these facilities are particularly affected.

Nevertheless, the migration that does occur often brings new groups of people into the settlements and hence the population is becoming increasingly heterogeneous. Both challenges raise an abundance of questions that are addressed in this section. What requirements exist and how can the large housing estates respond to existing and changing demands? What is neighborhood life like in the prefabricated housing settlements? What positive aspects do local people see in these neighborhoods—what do they like and where do they see weaknesses?

This chapter discusses social phenomena of the prefabricated districts, exploring aspects such as strategic plans to adapt them to the diverse needs of the population and the requirements for making them feel like home.

The report by Nilsson Samuelsson, who works in Dresden's municipal urban planning office, reflects the experience gained at the level of city government with urban strategies for large housing estates. The fundamental challenge posed by changing demographics lies in the gap between statistical knowledge and its translation into everyday challenges and lives. General knowledge based on statistics and scientific studies should become a self-evident and sustainable contribution to each specific neighborhood and its inhabitants as well as the diverse city as a whole. However, established characteristics of a specific neighborhood—regarding its location within the city, its built structure and local history as well as the composition of social structures and the active subcultures of its inhabitants—must provide the fundamental framework for any change.

Ekaterina Korableva and Elvira Gizatullina, from the Center for Applied Research, European University at Saint Petersburg, present two case studies of large housing estates in Saint Petersburg that are targets of harsh criticism and are problematized from beyond—by experts, officials, and the media. The two researchers shed light on differing perceptions related to quality of life and the image of mass housing districts, and they also take a closer look at the urban regeneration program Renovatsiya, which demolishes run-down khrushchevki and replaces them with criticized high-rise buildings.

Virág Molnár, from the Department of Sociology at the New School for Social Research in New York asserts that a shift of perspective is needed, a new way of approaching large housing estates that treats them as singular and unique rather than simply as individual exemplars of the same generic housing type. Adopting a specific perspective demands respecting the historically distinct configuration and its particular social, cultural, and urban context. Violeta Stefanović, researcher at the Department of Architecture and Urbanism at the University of Novi Sad in Serbia, focuses on collective housing complexes of socialist Yugoslavia. She examines the manner in which the living standards and spatial frame of the residential complexes influence or even shape the communities. This contribution gives us insight into the way communities were able to be forged, inevitably impacting the way social bonds, common ground, and collective consciousness were established in the socialist period.

6. Large Housing Estates: A Place to Call "Home"

Virág Molnár

The oddly titled Russian romantic comedy from the late 1970s, *Irony of Fate, or Enjoy Your Bath*—still a New Year's Eve favorite to watch in Russia—offers one of the most piercingly hilarious commentaries on the soul-wrenching monotony and drab uniformity of large socialist housing estates. The story begins with a group of friends celebrating New Year's Eve at a *banya* in Moscow, toasting also to the upcoming marriage of Zhenya, the main character. The vodka-soaked party culminates in confusion and the intoxicated protagonist—who was supposed to go home to celebrate with his soon to be wife—is shipped off by mistake to Leningrad (St. Petersburg). Zhenya is too drunk to notice that he is not in Moscow when he gets off the plane. He catches a taxi and gives his Moscow address to the driver. It turns out that in Leningrad there is also a street with the same name as his street in Moscow, and the building at the address looks exactly like Zhenya's. Thanks to the overarching standardization of housing construction, his key even fits into the standardized lock of the apartment. As the mass-produced furniture in the apartment is also nearly identical to Zhenya's, he dismisses minor differences and crashes out in the bedroom. When the actual tenant of the apartment, a young woman, comes home and finds a stranger sleeping in her bed, the screwball comedy truly takes off.

The film actually starts with a short animated sequence depicting how architects ended up with nondescript tower blocks as a result of unrelenting bureaucratic interventions and how these monstrous buildings took over the landscape. In the opening scenes, the narrator then highlights, tongue in cheek, the blessings of this brave new world: "In the past, when people found themselves in a strange city, they felt lost and lonely. Everything around was different: streets and buildings, even life. But now this has changed. A person comes to another city and immediately feels at home there"—given that everything looks exactly the same.

Although I grew up in an apartment block in a socialist new town in 1970s Hungary that was dominated by prefabricated housing estates, I never mixed up my block with another, not even as a small child. Ironically, however, an incident similar to the one in the film did occur to me in the United States, when I was a graduate student at Princeton University at the turn of the millennium. One year, I decided to stay for the summer and sublet a place in Butler Apartments, a university-owned development of single-story barracks-style units that was originally built in 1946/47 as temporary housing for students who enrolled at Princeton, thanks to the so-called G.I. Bill, which provided support to war veterans to pursue a university education. These buildings served as housing for graduate students and their families until 2012, when the university finally decided to tear them down. During the first week of my stay, I walked home in the afternoon and was caught by surprise when my key didn't open the front door of the bungalow. I tried to fiddle with the lock and force the key to work, getting increasingly irritated, when all of a sudden the door was opened by a frightened man—apparently the unit's tenant, who thought I was about to break into his home. It turned out that I was trying to get into the wrong building. The identical barracks, peppered on a large tract with no clear street structure, fooled me in a way socialist prefab apartment blocks had never done.

My personal experience is a reminder that large prefabricated housing developments are not unique to post-socialist cities. Though architecturally different, standardized prefabricated homes are also the staple of endless subdivisions stretching across the suburbs of American cities. Suburban model homes have received their share of criticism for their cookie-cutter looks, shoddy quality, and the alienating lifestyles they generate, as memorialized in the iconic song "Little Boxes" by folk and blues singer Malvina Reynolds. Her deceptively cheerful melody describes the "little boxes on the hillside" that are "made of ticky tacky" and "all look just the same," and they are full of people who "went to the university, where they were put in boxes, and they came out all the same."[1] Malvina Reynolds's political satire of the development of American suburbia, with its conformist, white middle class, is in fact not all that different from the political satire of Brezhnev-era public housing in the USSR put forward in *Irony of Fate*.

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1   The song's lyrics can be found at http://www.malvinareynolds.com/mr094.htm. The song has made a comeback in the early 2000s as the theme song of the popular TV show *Weeds*.

At the same time, the widely held assumption that large housing estates are overwhelmingly desolate places where it is hard to feel at home reveals important biases about the architecture, the neighborhoods, and the communities that inhabit them. It calls attention to how these estates have been predominantly investigated from a top-down perspective by architects, planners, social scientists, and policymakers (e.g., Csizmady 2003, 2008; Egedy 2000; Körner and Nagy 2006; van Kempen et al. 2005; Preisich 1998; Szelényi and Konrád 1969). It is usually outsiders who find it difficult to fathom how large housing estates can serve as a place to call home while residents often exhibit strong attachment to them. This in part reflects how large housing estates have tended to be examined from a bird's eye-view—a totalizing and detached perspective on the city, as described by Michel de Certeau (1984) in *The Practice of Everyday Life* using the view of Manhattan from the 100th floor of the former World Trade Center as an illustration. Large housing estates have always been considered a place to be acted on and to be dealt with: a utopian fantasy, a social engineering project, or a site of decay and social problems. Even the sporadic ethnographic studies that have tried to capture residents' lived experiences in the estates from below focus on them as hotbeds of pathological behavior and deviance: crime, drugs, gangs, and youth delinquency (e.g., Rácz and Hoyer 1995; Venkatesh 2002).[2]

In other words, large housing estates have been primarily understood as "spaces" rather than "places." The distinction between space and place is a key analytical tool in sociological and anthropological research. Place, in contrast with the abstract notion of space, is a "qualitative, historically specific configuration, incorporating a sense of individuals' rootedness in locale and the dependence of their memory on the particularities of the physical and cultural environment. Furthermore, place refers to the circumstances that agents are not merely located at a simple point in a grid, but occupy and define the world through unfolding practice" (Jordan 2003:31; see also Biernacki and Jordan 2002).[3] Place therefore is "space made meaningful," shedding light on how people appropriate spaces they inhabit through their subjective experiences and meaning making practices.

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2   And more recently, in (former East) Germany they are seen as breeding grounds for right-wing extremism (Shoshan 2016).

3   There is also a large anthropological literature on place attachment (e.g., Low 1992, 2009).

Understanding large housing estates as "home" therefore requires a bottom-up approach that explores them from the natives'—that is, the residents'—point of view. Currently, there is a remarkable dearth of scholarly literature that goes beyond simplistic survey research in probing residents' perceptions of everyday life in these neighborhoods.[4] Interestingly, while social scientists have largely failed to provide balanced accounts of the social complexities of life in the estates, Central and Eastern European cinema has produced a range of popular and art house films that captured a more nuanced view of how life unfolded in socialist housing estates. Some of the early classics, like the Hungarian *Two Stories of Happiness*, were undoubtedly coopted by state propaganda efforts. But many of the films made in the 1970s and 1980s delivered uncompromising insights into the everyday joys and struggles of the inhabitants, as well as the mundane absurdities of "real existing socialism." Films in which the story centered around large prefabricated housing estates marked important milestones in the career of some of the true luminaries of Central European cinema, including Vera Chytilova, Jiři Menzel, Béla Tarr, and Krzysztof Kieślowski.[5] Similarly, *Szomszédok* (Neighbors), which followed the life of several families who lived in *Gazdagrét*, a large prefabricated Budapest housing estate, and spanned 331 episodes from 1987 to 1999, remains one of the longest-running soap operas in Hungarian television history.

The first step towards appreciating large housing estates as places involves treating them as singular and unique rather than simply individual exemplars of the same generic housing type. The large Budapest housing estate *Gazdagrét*, set in the hills of Buda, is vastly different from the stigmatized *Havanna* estate on the eastern fringes of the Pest side of the city, just as *Marzahn-Hellersdorf* in Berlin has little in common with the prefabricated high-rises on Fischerinsel in the immediate proximity of Berlin's historical center. Each estate is a historically specific configuration and needs to be understood in its distinct social, cultural, and urban context. This is all the more important because it is often precisely these idiosyncratic local features that are responsible for making the estates livable and creating a sense of identity and home. Architects and urban planners have, of course, tried to discern a set of parameters that help determine the value of housing estates and explain how this varies from one estate

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4   For a notable exception, see Fehérváry (2013), although her focus is not exclusively on large housing estates.

5   Vera Chytilova's *Prefab Story*, Béla Tarr's *Family Nest* (*Családi Tűzfészek*), and Krzysztof Kieszlowski's *Dekalog* are key examples for this body of work.

to the other. The Hungarian urban planner Melinda Benkő (2015), for instance, devised the following "matrix of material values" that operate at three scales: building, neighborhood, and city (see Table 1).

Table 1: Matrix of Material Values in Three Scales.

City of Budapest	Neighborhood	Building
Location	Urban form	Apartment
Position within the city	Road network	Size
Natural characteristics	Land use	Spatial division
Proximity	Built volume	Wet area
Infrastructure	Facilities	Technology
Energy	Culture and education	Comfort
Water	Health and leisure activities	Panel structure
Waste	Commerce	Materials
Mobility	Open space use	Common spaces
Public transport	Territoriality	Doorway
Car	Green area	Staircase
Accessibility	Motorization	roof

Source: Melinda Benkő, 2015. "Budapest's Large Prefab Housing Estates: Urban Values of Yesterday, Today and Tomorrow." Hungarian Studies 29(1/2):21–36.

Despite her nuanced contextual approach, she still surveys housing estates from above.[6] When urban planners pledge to take place-making practices more seriously in large housing estates, they mostly do so by advocating participatory planning in regeneration efforts (Benkő, Balla, and Hory 2018). Participatory paradigms were not really part of the urban planning repertoire of post-socialist countries until the Eastern Enlargement of the European Union. Between 2004 and 2007, important changes were introduced into the urban planning codes of the new EU member states, making participatory planning a basic requirement in every project financed directly or indirectly

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6   This approach also assumes that the physical characteristics of the estates can be decoupled from their social characteristics.

by the EU. Thus participatory planning is also launched as a top-down bureau-cratic measure, thereby reinforcing the dominant approach to large housing estates.[7] Similarly, contemporary planners who care about large housing estates tend to focus primarily on sustainability as a progressive goal rather than livability (Benkő 2015; Benkő, Balla, and Hory 2018).

As described above, aptly capturing how large housing estates become a place to call home would require an ethnographic perspective that centers on residents' self-understandings of their relationship to this environment. Alas, in lieu of such first-hand empirical data, I can also only just tentatively outline a few key factors that I believe contribute to generating a sense of belonging in these residential areas in the post-socialist period. Drawing chiefly on the example of Hungary, I will discuss four such factors in the following sections: the impact of large-scale privatization of prefabricated apartments and how it has allowed for the individualization of the standardized units; the long-term stabilization and increasingly upward trend of the real estate value of prefab-ricated homes; the gradual upgrading of public open spaces; and the aesthetic dimension of energy efficiency upgrades to prefabricated buildings.

Home Improvements through Privatization and a Sense of Ownership

The swift and nearly all-encompassing privatization of the housing stock in Hungary in the early 1990s benefitted the sitting tenant and turned pre-fabricated housing blocks into self-governing condominiums (Bodnár 1996; Broulíková and Montag 2020).[8] Sitting tenants could purchase their residen-tial units for about 10–15 percent of the market price, but they also became responsible for the full maintenance of the building as well as the general upkeep and improvements of collectively owned areas and facilities such as staircases, roofs, facades, and mechanical and electrical installations. Besides,

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7   This attitude is also reflected in how planners scold residents for not being interested or active, "waiting for changes to be made by leaders," lamenting that the "real culture of participatory place-making is still missing in the post-Communist context" (Benkő, Balla, and Hory 2018:223).

8   In Hungary, the state actually already facilitated private home ownership with exten-sive state subsidies and mortgage schemes in the 1980s, before the collapse of social-ism. The share of owner-occupied units in large housing estates could reach as high as 30% of all units (Benkő 2015:186).

they had to face escalating utility bills as price regulation was lifted and state-owned public utility companies were privatized as part of the post-socialist market transition. As a result of the rapid privatization, owner-occupied housing made up 90 percent of the Hungarian housing stock by 2000. This figure compares with 74 percent in Ireland, 68 percent in the US and 40 percent in Germany (Bohle 2014:923; Bodnár and Molnár 2010).

Sweeping privatization transformed Hungary into a "super home owner-ship" state, creating long-term ripple effects for the Hungarian housing market. Very high levels of private home ownership made Hungarian households vulnerable to financialization and a quickly emerging mortgage market that became dominated by foreign currency mortgages after 2004, as state subsidies were gradually phased out (Bohle 2014; Pellandini-Simányi, Hammer, and Vargha 2015). Expanding foreign currency mortgages exposed households to the vagaries of global financial markets and the financial crash of 2008 brought about Hungary's own "subprime mortgage crisis" with staggering levels of indebtedness and a flurry of foreclosures. The ensuing housing poverty became a cornerstone of social inequality in Hungary (Gagyi and Vigvari 2018).

Despite the enormous risks, private home ownership remains a deeply ingrained cultural value in Hungarian society. While large-scale housing privatization has created a myriad of adverse effects and basically wiped out social housing, it also generated a sense of ownership that vested even residents of large prefabricated housing estates with individual agency to turn their apartments into homes of their own. As owners, it made sense for residents to invest in major renovations and modernizations, tailoring apartments to the actual needs of the dwellers. Residents also devised various strategies to extend the square footage of often-tiny apartments and create "defensible space" (Newman 1972) also in common areas.

Enclosing the apartment's balcony to gain some more habitable space became one of the most popular expansion strategies. A significant niche market developed among contractors to provide this service to residents of prefabricated apartments. These construction projects were commissioned by apartment owners and completed by different contractors using diverse materials, colors, and design. As a result, the facades of the buildings were transformed into a random patchwork of variously enclosed and unenclosed balconies, disrupting the standardized uniformity of the prefabricated exterior wall panels (fig. 1). These modifications are informal interventions by individual owners; they are not reviewed, regulated, or coordinated by the condominium. Although they contribute to creating a sense of place from the point of view of

residents, they often give a makeshift and disorderly impression to outsiders, reinforcing a negative image of prefabricated housing estates (see also Benkő, Balla, and Hory 2018). Architects and urban planners have been particularly critical and condescending of these practices, continuing a long tradition in these professions in Hungary that has regarded efforts by ordinary citizens to personalize their homes with elitist derision (Molnár 2013).

Figure 1: Informal balcony enclosures.

Source: https://erkelybeepitespecs.hu/#erk%C3%A9ly-ablakokkal.

In some cases, residents embarked on carving out communal spaces for a children's playroom, event space, or a DIY workshop, but more frequently they created private enclosures in communal areas. Gating off an area in front of the entrance of an apartment to create some storage space and extra security became a common way to "privatize" parts of the building hallway. These individ-

ual appropriations were informal, technically illegal, but generally tolerated, though certainly a constant source of tension among neighbors.

Real Estate Value and Quality of Life

The 1990s were dominated by doom-and-gloom scenarios regarding the future of large housing estates. Planners, sociologists, and real estate professionals predicted a downward spiral for the residents, the buildings, and the neighborhoods, due to the financial precarity of the tenants-turned-owners, rising utility costs, difficulties with properly maintaining the condominium from owners' contributions, and the lack of financial reserves, loans, and state grants for modernizing building infrastructure. News media incessantly perpetuated a negative image of large housing estates, describing them as a "prefab trap" (*panelcsapda*) that offered only a dead end to new buyers and old residents. Real estate advice columns appeared with headings such as: "A prefab apartment will push you into misery and abject poverty, run as far away as you can!"[9] The pejorative connotations of prefabricated housing were even incorporated into the larger symbolic vocabulary of the transition: "the losers" of the post-socialist transition, facing downward social mobility, were often referred to simply as *panelproli*, that is, a "prole from the prefab projects." The bleak outlook continued into the 2000s, when a new housing type, the so-called residential park appeared in Budapest (Bodnár and Molnár 2010). This high-density residential newcomer was in many ways the upgraded and upscaled, twenty-first century version of the large housing estate: newly built with modern materials, "American" kitchens, spacious balconies, underground parking, offering a range of amenities including 24-hour security surveillance, and—in many cases—physical gates. Theses new developments were projected to siphon off the remaining better-off residents from socialist era housing estates, leaving only the poor and struggling behind. And then, in 2008, the global financial meltdown, which left the Hungarian housing market in tatters and pushed homeowners holding foreign currency mortgages into foreclosures and personal bankruptcy, appeared to deliver the last blow to large housing estates.

Yet, the tide turned quite unexpectedly in the 2010s, and large prefabricated estates have been experiencing a remarkable renaissance in the past five

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9   "A panellakás nyomorba dönt, meneküljön ki merre lát!" https://www.penzcentrum.hu/otthon/a-panel-nyomorba-dont-menekuljon-ki-merre-lat.99918.html

to six years. This comeback is reflected, for instance, in the sharp rise of real estate prices in this housing segment (fig. 2). Given the general characteristics of the Budapest housing market and the high levels of owner-occupied housing in Hungary, real estate prices do convey meaningful information about the quality of life housing estates offer. Figure 2 shows that the steep appreciation of prefabricated apartments began in 2014, and prices have increased in the double digits every year, by roughly 17–30 percent in the past six years. The two most popular apartment types—a studio (35 m²) and a one-bedroom (53 m²)—have nearly tripled in value. The average price of a studio went from 6.4 million HUF in 2013 to 19.7 million HUF in 2020 and the price of the one-bedroom went from 8.5 million HUF in 2013 to 24.7 million HUF in 2020.[10] The price, of course, varies by the physical condition of the apartment and the location of the estate, but generally the average price per square meter in Budapest ranges from 450 to 650 thousand HUF.[11] Despite setbacks inflicted by the pandemic, apartments in prefabricated housing estates remain one of the most popular housing types on the market.

Thus homes in large housing estates have become increasingly marketable, signaling palpable demand from buyers who find them an attractive housing option. Affordability is, undoubtedly, one of the key selling points, but not the only one. Most housing estates in Budapest are well connected to the city center by public transportation. Buildings are surrounded by parks and playgrounds. Basic services such as grocery stores or drug stores as well as day care centers and public schools can be reached within walking distance. In addition, larger shopping malls and discount big-box stores that burgeoned in the postsocialist period were built in close proximity to large housing estates, improving the availability of shopping and service options. State-sponsored schemes launched in 2000 made subsidies available to condominiums for upgrading the energy efficiency of buildings, thereby significantly lowering utility bills and maintenance costs. Apartments tend to be small but have functional layouts, unlike many of their counterparts in prewar apartment buildings in the city center. As a result, large housing estates have emerged as a viable option for starter homes for singles or young families or as popular rentals for university students.

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10   https://index.hu/gazdasag/2020/06/11/ingatlan_lakaspiac_panellakas
11   Predictably, the real estate market was disrupted by the pandemic and prices started to drop across the board, but for prefabricated apartments, prices had gone down by only 2% by the end of 2020.

Figure 2: Price of Pre-Owned Homes in Budapest, 2007–2020 by square meter in thousand Hungarian Forints (HUF).
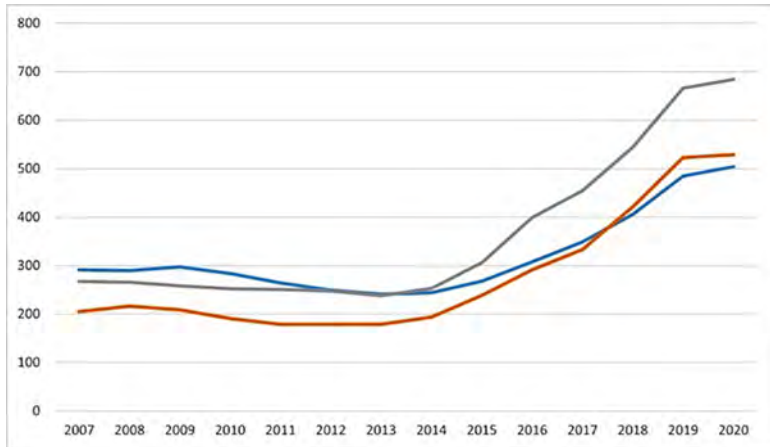
Source: Compiled by Ágnes Szanyi, based on housing market data from the Central Statistical Office of Hungary.

Rising real estate prices have also contributed to important shifts in the cultural representation and reputation of large housing estates. In sharp contrast to the 1990s, today housing estates are not portrayed exclusively with derision. These days, home and design magazines frequently publish home makeover stories featuring prefabricated apartments in housing estates, depicting them as "youthful," "adaptable," "modern and livable homes." And interestingly, younger generations, born after 1989, tend to be less prejudiced against living in housing estates than their parents' generation, which still closely associates prefabricated apartments with alienation and social decline.

In the southern Hungarian city of Pécs, the Marcel Breuer Doctoral School of Architecture at the University of Pécs, working in collaboration with the local company that supplies heat to large housing estates (PÉTÁV kft.), organized a competition in 2014 titled "Creative Prefab" (*Kreatív Panel*). They invited residents of large prefabricated housing estates to submit design tips and remodeling solutions they had implemented to make their apartments more habitable. The award winners were interviewed to share their thoughts on what made them feel at home in a housing estate. One of them stressed that "a lot depends on where the apartment actually is. A place where residents make up

a mindful community, where the hallways are kept clean and residents respect each other, will be a nice place to live." Moreover, "the apartment is only one factor, the other key factor is carefully planned, high quality public areas that surround the apartments, which in turn shape the residents. [. . .] The renewal of public spaces fosters a reevaluation of social relations, creating sustainable synapses [. . .] Something as simple as fixing the street and adding a bicycle lane can provide incentive to residents to think about what they can do to improve their own personal environment within their apartment." To him the "main prize" is "when the community's sense of well-being improves and everyone feels at home in their apartments" (Panelkommandó 2015).[12]

Similarly, a father of three children, who received a special prize for designing a multifunctional children's room, has lived in large housing estates all his life. He notes that for his family, the main advantage of living in a prefab estate is the residential community that offers plenty of stimuli: "we live in a place that is enclosed by buildings, there are two playgrounds right in front of us where every day we interact with residents, adults as much as children, who live in the area. We don't live cut off from others by walls and fences; we can be part of a community here" (Panelkommandó 2015). In his view, people who live in large housing estates pick their homes primarily based on the neighborhood, on the availability of grocery stores, drug stores, school, daycare, access to public transportation, and public safety. His family would also ideally prefer to live in a spacious single family home and keep domestic animals. But as "we cannot afford this, we are trying to enjoy ourselves at home. This is why we are doing our best to turn our apartment into a home."

Another special award recipient was relatively new to large housing estates, having grown up in a single family home. Not having to mow the lawn was certainly a plus in his view. To the question of how he saw the changing public image of housing estates, he replied: "I have yet to meet someone who is dying to live in a prefab estate. And I second this position. But prefab homes can be made livable" (Panelkommandó 2015). He added that he was impressed by the competition entries and would gladly move into any of the apartments he saw. He thought the competition was a good way to motivate homeowners to make improvements to their apartments.

The responses of the participants in the "Creative Prefab" competition underscore how hard it is to generalize across housing estates about what

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12   For this and other quotations originally made in Hungarian: English translation by author.

works and what does not. Quality of life in large housing estates differs along many characteristics as shown in Table 1 (Benkő 2015). These contextual differences are increasingly reflected in real estate prices with a growing gap between lower and higher status estates.[13] At the same time, it is ironical, for instance, that even the new residential parks that threatened to undermine prefabricated housing estates ended up contributing to their appreciation. Namely, these new residential parks were often erected near prefabricated estates, increasing the location's real estate value, from which the latter also benefited.

Playgrounds as a Catalyst for Upgrading Public Spaces

Many of the residents quoted in the previous section stressed how integral high quality public spaces are to the sense of well-being in housing estates. The built-up area in large prefabricated housing estates is about 20–25 percent in Hungary, following the Soviet standard of the times in which they were constructed. In the course of privatization in the 1990s, residential buildings plus the so-called floating plot (a one-meter strip around the building) became private while the remainder of the land was kept public or semipublic (Benkő, Balla, and Hory 2018). The public areas, as well as public institutions—schools, daycare centers, nursing homes, cultural centers—are maintained by the local government. The lack of proper upkeep of public spaces was a concern under socialism and increasingly so after 1989. In many large housing estates, public spaces continued to decline in tandem with the buildings throughout the 1990s, increasingly raising alarm about public safety in these neighborhoods. Things started to turn around in the early 2000s and one impetus for change arose from the need to upgrade public playgrounds. In fact, bringing playgrounds in compliance with European Union standards became an unlikely catalyst for the renewal of public spaces in large housing estates.

EU child safety standards for playgrounds were first introduced in Hungary in 1999. At the time, they were not yet legally binding but merely recommendations in anticipation of Hungary's impending accession into the European Union. Then, after 2004 when Hungary joined the EU, the new standards acquired legal force and had to be implemented. The EU gave a four-year grace

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13   https://g7.hu/adat/20190621/ketteszakadt-a-budapesti-panelmezony-mar-nem-a-
      pok-utca-a-legdragabb-lakotelep/

period, eventually extended to six years, to bring all playgrounds up to EU standards. Playgrounds that failed to meet these new standards by 2010 had to be dismantled. These new regulations forced local municipal governments to invest in redesigning and rebuilding old playgrounds, mostly relics from the socialist era.

Playgrounds in socialist times had little concern for child safety. They were paved with gravel, or even concrete, swings were too close to each other with unsafe seats, and slides were too steep and too narrow. Playground equipment in the 1970s was overwhelmingly made of tubular metal, with a space rocket and a globe-shaped climbing structure being among the most popular fixtures (fig. 3). The tubular metal gave way to elaborately themed playground structures made of wood in the 1980s—like the "Indian village" (i.e., Native American) in the Tahi street housing estate in Budapest, catering to teenagers raised on Karl May's pulp fiction novels of the American Wild West. Wooden equipment, however, quickly deteriorated due to wear and tear, and due to weather, exposing children to all sorts of lurking physical dangers.

Hence, the implementation of new EU standards required a complete overhaul of playground design and equipment. The new rules, for instance, only permit soft groundcover, such as rubber tiles or sand, to cushion children from falls. Materials used for playground structures, and their placement, are closely regulated; playground equipment, in fact, has to be certified piece by piece (fig. 4). Funds from the state and the EU to support remodeling efforts were limited, so local governments had to prioritize resources for the rebuilding of playgrounds. In the case of Budapest, for instance, local district governments were desperately short of funding for this purpose, so the central Budapest city government had to provide relief and mobilize funds to facilitate the upgrading process.[14] Inadvertently, playground renovations produced a spillover effect for public space renewal. Local governments increasingly tried to combine these projects with other improvements to the public areas of housing estates, including fixing sidewalks and streets, regenerating green areas, adding flower beds, introducing sprinkler systems and other irrigation solutions for these areas, or reorganizing traffic and parking patterns to better serve residents. Comprehensive projects became the norm by the 2010s, coinciding with and

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14   In 2006, for instance, the Budapest city government spent 1.2 billion HUF helping local district governments to bring playgrounds in compliance with EU standards, a task normally not within its jurisdiction.

reinforcing rising real estate prices for prefabricated apartments and the general upward trend of this segment in the housing market.[15]

Figure 3: Space rocket climbing structure in a socialist-era playground in Újpalota, Budapest, in the 1970s.
Figure 4: The "EU-conform" version of the space rocket in a playground opened in Csepel, Budapest, in 2020.

Source: https://fokert150.hu/2017/08/24/raketa-maszoka-regen-es-ma/.
Source: https://budapestkornyeke.hu/felmilliardos-szupermodern-jatszoteret-adtak-at-csepelen-wifi-es-uv-sugarzas-kijelzot-is-van/.

The Aesthetics of Energy Efficiency

In the first decade of the post-socialist era, forecasts for the trajectory of large housing estates were grim in large part because there was little hope that the physically (and socially) deteriorating estates would be modernized. This was especially true for much needed but costly investments in energy efficiency upgrades, given that former tenants who bought the apartments generally lacked the resources to fund projects beyond covering basic maintenance costs.

It was not until 2000 that the Hungarian government established the so-called "Panel Program" (*Panelprogram*) to provide financial support for tech-

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15   https://www.budapest13.hu/2016/07/08/tovabb-szepulnek-a-lakotelepi-kozteruleteink/

nical renovations to prefabricated buildings. The goal was to improve energy efficiency by installing exterior insulation, replacing windows, and modernizing heating systems. This program was updated in 2005 under the new moniker "Panel Plusz," which proceeded in three consecutive phases launched in 2008, 2009, and 2014, respectively. By 2015, about one third of the prefabricated housing stock was renovated through this program (Benkő 2015). Financing followed the "one-third rule," referring to a cofinancing scheme according to which one third of the costs are born by the Panel Program, one-third (if feasible) by the local municipal government, and one third by the condominium (Szabó and Bene 2019).[16]

While the renewal of open spaces and of public institutions were also supported in later phases of the program, regeneration efforts focused chiefly on improving the energy efficiency of buildings. Comprehensive urban regeneration programs that were launched in Western Europe for social housing in large estates (e.g., Droste et al. 2014) could not be replicated in Hungary, not just because of the shortage of resources but because of the ownership structure, that is, the high levels of private ownership and condominium form. Owners of the apartments all have to support the renovation and contribute to the costs based on their respective ownership share in the condominium. In the largest prefabricated building in the country—situated along the bank of the Danube on the Buda side in Budapest and nicknamed the "Village House"—there were 886 owners who had to agree to and participate in the renovation efforts. This has also meant that improvements realized through the Panel Program can be felt primarily at the scale of the building, not at the scale of the housing estate or the neighborhood (see also Benkő 2015).

One exception to this rule is the aesthetic effect achieved by the installation of exterior insulation, which also involves revamping the facade of the building: covering the gray precast concrete slabs by plastering the facade (fig. 5). The new, plastered surface often incorporates decorative patterns composed of various colors to enliven the buildings and light up the mood in the neighborhood. It has to be noted, though, that these renovations are done on very tight budgets and the aesthetic composition of the facade is not a priority budget item. In fact, the color scheme used might be a pragmatic function of what leftover paint colors the contractor has available at the time of the job. Facades

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16   In Phase II, the state relied on its carbon-emission quota to fund this program and state subsidies could reach as high as 60% of the costs. In Phase III, EU funds were also made available to complement carbon emission revenue (Szabó and Bence 2019).

are also often painted with lighter colors because the paint for them is cheaper than for darker colors (which would otherwise be more durable as they would withstand the effects of pollution longer). Yet, this camouflage technique significantly improves the perception of housing estates among their residents as well as members of the larger public, who might only get a glimpse of the buildings while riding by in a car or on the suburban rail. After decades of radiating grayness onto the cityscape, the colorful blocks now appear more livable and relatable; a place that could even be called a home.

Figure 5: Installing the exterior insulation on the largest prefabricated building in Hungary, the so-called Village House in Óbuda, Budapest.

Source: https://24.hu/tudomany/2016/11/18/igy-is-csokkentheti-rezsijet-tippek-regi-lakasok-szamara/, *photo:* MTI / Barnabás Honéczy.

Conclusion

Asking what makes large prefabricated housing estates feel like a home is important because it forces a change of perspective from a dominantly top-bottom to a bottom-up view of this housing type and its urban ecosystem. It calls for treating large housing estates as unique historical and social configurations—as places rather than spaces—and giving voice to residents, not just to architects and policymakers. Residents' voices must be captured through ethnographic approaches, oral history, and storytelling. The architect Esra Akcan's work on open architecture in Kreuzberg, Berlin, in the context of the urban renewal of the IBA 1984/87 project shows a promising example of how this can be done (2018). The shift of perspective also helps to shed some critical light on the role of architects, urban planners, sociologists, and policymakers. These professions have actively shaped the image and perception of large housing estates for the state, media, and the public at large, often contributing to the stigmatization of this housing form and its residents. Paying more attention to the "native's point of view" will provide a much-needed corrective to the largely totalizing gaze through which these estates are still viewed.

The examples surveyed in this analysis highlight key structural conditions (e.g., privatization, high ratio of private ownership) and some small-scale interventions (e.g., informal enclosure of balconies) that have influenced a sense of home in large prefabricated housing estates. Informal and small-scale interventions are especially significant in the post-socialist context in general and in Hungary in particular because the ownership structure imposes serious constraints on changes to the physical environment. So, for instance, as impressive and inspiring as the public housing regeneration efforts of recent Pritzker prize winners Anne Lacaton and Jean Phillippe Vassal are—such as the overhaul of a 1960s social housing project with 530 dwellings in Bordeaux—similar comprehensive projects are not conceivable in many countries of Eastern Europe where the rapid, extensive, and reckless privatization of the housing stock has left the new owners of prefabricated apartments with limited options.

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7. Images and Identities of the Post-Socialist Housing Estates in Ukraine vs. Jane Jacobs's *The Death and Life of Great American Cities*

Oksana Chabanyuk

Introduction: Context of the Research

Three decades of post-socialist transition from 1991 to 2021 in the countries of Eastern Europe still reveal the challenges in urban post-Soviet large housing estates, and Ukraine is amongst them. Prefabricated housing built in the 1950s to 1980s remains to be assessed and analyzed using new approaches for future changes. The environment of the living areas requires new images and identities as they occupy enormous territories in cities with large populations. The statistical data on construction of prefabricated housing using series (standardized) projects on the territory of the USSR shows they accounted for the following percentages: in 1958, 77 percent; in 1960, 88 percent; and in 1965, 95 percent. In Ukraine, a similar percentage of panel housing blocks of socialist "heritage" (from among all housing) were built in various cities, for instance in Kyiv: 63.8 percent; Donetsk: 81.8 percent; and Kharkiv: 85.2 percent. This means that the development of large housing estates with panel prefabricated buildings created a living environment that has monotonous and simple features, as they were built using series projects. One large housing estate could comprise the prefabricated housing for 130,000 inhabitants by using three to four series projects, so-called typical projects. Monotony and standardization in housing construction of post-socialist living areas demand attention today as they pose challenges to Ukrainian cities. Moreover, this problem is not on the agenda of city authorities in Ukraine, as there are many other economic, infrastructural, and societal problems in the cities. At the same time, the period of post-socialist transition has now reached thirty years and demands the implementation of new strategies based on deep research.

The existing investigations by architects, urban planners, sociologists, urban geographers, and anthropologists discuss the transformation of post-socialist large housing estates and societal challenges under the interdisciplinary framework covering the post-socialist East European countries (Zarecor 2011; Szafrańska 2014; Grossmann et al. 2015; Erőss 2013; Hess, Tammaru, van Ham 2018; Steiner 2014; Galuszka 2020; Šimáček et al. 2015; Tsenkova 2008). Ukraine is not fully represented in the international scientific debate (Otrishchenko 2017; Cherkes 2013, 2015; Habrel, Habrel, and Lysiak 2020).

Monotony, standardization, and exaggerated scale of typical series projects of prefabricated housing blocks became the core difficulty to overcome for positive achievements. Ongoing scientific debate is needed about what attempts need to be made to improve post-socialist large housing estates in Ukraine. Moreover, innovative nonstandard views should be involved in conceiving the research within the interdisciplinary frameworks. The approaches used most for the investigation of the urban environment in post-Soviet countries are based on post-Soviet theory (Sosnovskyy and Rusakova 2006). These methods have their roots in the time when urban planning in the USSR functioned according to the administrative planning and construction of new territories and even new cities, calculating prognoses for the quantities of future inhabitants of a residential area, microrayon, or city. The last thirty years of continuous usage of large housing estates do not fulfill the conditions of the old method of analysis and have to involve experts from other fields such as sociology, urban or social geography, and anthropology as well as urban activists' practices.

The main objective of the project was to reveal and add to the scientific field information about the existing conditions of the living environment in prefabricated post-socialist housing estates by analyzing their "images and identities," building the methodology of the research on the approaches described by Jane Jacobs in her book *The Death and Life of Great American Cities*. This world- renowned author had inspired citizens and researchers with her activism in the urban environment and her public position. The book gave directions for conducting research about housing environments and beyond in cities in different parts of the world, such as the Debar Maalo neighborhood in Skopje, North Macedonia (Velevska, Velevski, and Ognen 2016); Suzhou Industrial Park, China (He and Chen 2017); a residential district in Seoul, Korea (Sung and Lee 2015) and others. The Seoul case-study research analyzes the residential built environment and walking activity and reveals its relationship to Jacobs's six conditions for urban vitality, including land use mix, density,

block size, building age, accessibility, and border vacuums. The list of investigations based on the approaches described by Jane Jacobs (1961, 1993) does not comprise all the investigations done by researchers in different countries, but at the same time, it proves that the book and its ideas are actually firmly anchored in our time and could be implemented for diverse types of territories throughout the world.

Why has this book been chosen for the investigation of Ukrainian post-socialist living areas? Firstly, this is a book that becomes extremely important for the degraded post-socialist large housing estates on post-Soviet territory, in Ukraine in particular, because Jacobs expresses many challenges, and their underlying causes, that we may trace as a parallel comparison in post-socialist housing areas. Secondly, this book was unknown on the territory of Soviet Ukraine and the whole USSR until the later years of post-socialist transition—and it was recently translated into Ukrainian and published in Ukraine (Jacobs 2011). Finally, it is still referenced rarely in architectural education in Ukraine, although interdisciplinary programs such as urban studies have started to use and mention the book in their course plans. We sought to commemorate 2021, which marked thirty years of post-socialist transition (1991–2021), by taking a walk, with Jane Jacobs's *The Death and Life of Great American Cities* in our hands, around the post-socialist housing estates in Ukraine in search of "images and identities." The project was conducted from September to December 2020 within the course Norms and Typologies (3rd year) at the Faculty of Architecture, Kharkiv National University of Civil Engineering and Architecture. The intention was to acquaint the students of the course with Jane Jacobs's book and to investigate her concepts in a post-socialist city. The students were assigned tasks in several stages: study, research, and synthesis. This paper focuses on the integration of applied pedagogical methodologies for the studies of large post-socialist housing estates in the interdisciplinary framework of fundamental urban literature.

Post-Socialist Large Housing Estates: Framework of Earlier Studies

The previous stages of the research comprised the investigation and analysis of challenges of post-socialist transition and perspectives of urban regeneration of post-socialist large housing estates in Ukraine, the historical background of prefabricated mass housing typology in industrialized construction, and the

ideological influences of the socialist era on the construction of Soviet housing from 1917 to 1991 (Chabanyuk 2020).

The historical background of post-socialist large housing estates in Ukraine summarizes the prefabricated mass housing typology of industrialized construction in Ukraine during the second part of the twentieth century: (1) 1955–1969: planning of the first new housing estates with spacious layout of the residential area using a microdistrict approach, construction of 5- to 9-story slab housing, design of standardized projects (series) for housing prefabrication; and (2) 1970–1989: construction of the residential areas of mass housing estates using regular and non-regular planning types, design of building-block parts, semi-block parts, and block elements, design of prefabricated housing with different plan configurations and high-rise towers. Industrialized construction led to a faceless image for most of the new housing areas with primitive planning, to the poor appearance of useless spaces in the living environment, and to a decrease of consumer quality of post-socialist large housing estates built in Ukraine. These approaches had not achieved the desired result because the inhabitants were not considered as participants of life in the living environment. The previous stages of the research also included stigmergic studies of self-organization (Chabanyuk and Fonseca 2019; Fonseca and Chabanyuk 2019) in the urban contexts of case studies of post-Soviet prefabricated housing estates in Ukraine, focusing on the formal and informal non-systematic transformations of residential function to commerce on the ground floors of multistory housing blocks, which is widespread in the large-scale housing estates of prefabricated construction in the cities of Ukraine.

Methodology of the Research

The research methodology uses the didactical approach as the research had been implemented in the architectural education lecture and practice course Norms and Typologies (3rd year) at the Faculty of Architecture, Kharkiv National University of Civil Engineering and Architecture. The project was built with the following stages:

(1) The practical sessions of the course were transferred to distance learning because of COVID-19 restrictions in Ukraine from September through December, 2020. The online studies allowed us to cover cases of post-socialist

housing estates in different Ukrainian cities, such as Kharkiv, Sumy, Mariupol, Poltava, Nikopol, and Melitopol; urban diversity was a positive result of the online studies because the students had to choose the area in their home city.

(2) Study stage—getting acquainted with and reading the Jane Jacobs book *The Death and Life of Great American Cities* (2011); searching for concepts in the book that describe characteristics of residential areas that are similar to those chosen by the students.

(3) Research stage—making parallels between the chosen cases in Ukrainian cities and the concepts in the book by J. Jacobs; discussion about the chosen cases in Ukrainian cities, research on the concepts' elements, and search for the contemporary "images and identities" of the cases.

(4) Synthesis stage—how Jacobs's concepts of diversity in functions, short blocks, variety in buildings' age and condition, and secure living environment in the area may help to improve the acceptance of cases of post-socialist housing estates and develop new images and identities there, and thus attract citizens to post-socialist large housing estates in the cities.

The project aimed to introduce students to the famous American author, a journalist and urban activist, Jane Jacobs; to study her concepts; and to motivate thinking about the problems of local Ukrainian large housing estates. The research allowed us to analyze the prefabricated neighborhoods from a new perspective and apply a new point of view.

Case Study Analysis: Study, Research, and Synthesis

The study stage aimed to acquaint the students with the Jane Jacobs book *The Death and Life of Great American Cities* (2011), analyzing it by searching for concepts that describe similarities and problems that are noticed in the residential areas chosen by students. The main difficulty for the students was to understand and accept the book, which describes living areas in American cities, in a different location and context. At the same time, deeper study of the book showed that there are concepts—such as using sidewalks and parks, diversity of functions, short blocks, and others—to build the theoretical framework for the analysis of a sample living area or neighborhood. The discussions, which were held online in Google Meet within the Google Classroom course, gave a deeper understanding of the interdisciplinary content of the urban environment and of approaches to identifying the challenges in each case study. Ob-

servations were made by students in their chosen case studies in their home cities, which allowed us to cover the typological diversity of post-socialist housing estates in Ukraine.

The research stage of the project aimed to find and discuss the parallels between the chosen cases in Ukrainian cities and the concepts in the book by Jane Jacobs. The discussion enabled us to identify the elements of Jacobs concepts that are present in the chosen case studies and to search for contemporary "images and identities."

Figure 1: Aerial view of Microrayon #5 in the post-socialist large housing estate Pavlove Pole, built in the 1960s.

Source: Still image from the video "Zasnezhennoe Pavlovo Pole, Khar'kov, Ukraina – Zima 2021" [Snowy Pavlovo Pole, Kharkiv, Ukraine – Winter 2021], Posted on YouTube by Skyline Walker, Jan. 18, 2021. https://www.youtube.com/watch?v=m6i2W-29yKI&t=2s.

One of the project's case studies is the case of Microrayon #5 (fig. 1) in the post-socialist large housing estate Pavlove Pole in Kharkiv, built in the 1960s. Five-story housing blocks constitute the main typology of the housing, which created a monotonous built environment. Our research of the book allowed us to identify several conceptual elements that are present in the case study. The problem of diversity is described by Jacobs as "No one way is a good way

to house a city neighborhood; no mere two or three ways are good. The more variations there can be, the better. As soon as the range and number of variations in buildings decline, the diversity of population and enterprises is too apt to stay static or decline, instead of increasing. [. . .] This is a kind of chaos" (Jacobs 1961: 214, 224), where the homogeneity becomes the characteristic element of the monotonous built environment and "chaos" erases the identity of the housing estate. Moreover, the monotonous built environment is a result of duplication of typical series projects of residential blocks and duplication of the function over the whole territory of Microrayon #5. According to the book, "differences, not duplications, make for cross-use" (Jacobs 1961: 130). Thus, *diversity* is the conceptual element that may become the aim for the housing estate in future development and stimulate cross-use of the territory.

Figure 2: Microrayon #5 in the post-socialist large housing estate Pavlove Pole, Kharkiv, Ukraine. View from 23rd of August Street (left).
Figure 3: A five-story residential building inside Microrayon #5 (right).

Source: Author, 2021.

The research identifies diversity as the opposite element to monotony, and it triggers renewal of a housing estate's "images and identities." Monotony spreads over the whole territory of the case study except for the high-rise towers that boost the concentration of dwellers. Microrayon [microdistrict] #5 consists of two project series of nine- and five-story housing blocks (fig. 2) that can also be found in other residential areas of the city, along with fourteen-story residential buildings that are united on the ground floor by various large retail shops. These towers create a memorable silhouette as accents for the

entire residential area (fig. 2). The authors of the solution were the architects G. M. Sokolovsky, L. N. Loevskaya, and V. S. Vasiliev.

However, "no concentration of residents, however high it may be, is 'sufficient' if diversity is suppressed or thwarted by other insufficiencies" (Jacobs 1961: 205). A conceptual element as a generator of diversity in the case study deals with the street network, where "frequent streets are not an end in themselves. They are a means toward an end [. . .] of many people besides planners" (Jacobs 1961: 186). Even though the street network consists of frequent roads, these roads mostly provide access to each building and do not constitute the frequent street network, and hence they do not generate diversity for people (fig. 4). The inhabitants use the usual routes across the area and the case study does not exhibit "a mixture of people on a street at one time [that bears] some reasonably proportionate relationship to people there at other times of day" (Jacobs 1961: 164). The lack of diversity and cross-use on the territory cause the uneven use of streets.

Figure 4: Case study: Microrayon #5 in Kharkiv. Aerial view (left).
Figure 5: structural diagram (right) with long housing blocks (orange), short housing blocks (red), and existing transit network (yellow).

Source: Google Maps + Author, 2020.

"Images and identities" of the case study form the identified conceptual elements. Identities of the case study are underdeveloped, lack diversity in cross-use, and confront homogeneity. The synthesis stage of the project continues the research of "images and identities."

Figure 6 + 7: Level of safety in the living environment of Microrayon #5, Kharkiv. Program for intervention: streets with the lowest level of safety in the microdistrict in need of improved lighting; potential locations for new functions in the area; privatization of land around the housing blocks by owners' associations.

— - the most dangerous sidewalks
— - low level of supervision
— - supervision of houses and cars
— - more thorough surveillance network
— - a large number of people, cars
● - negative incidents
● - places that increase security

● - potential places for new functions in the area
— - privatization of territory around the housing block by associations of owners
— - streets with the lowest level of safety in micro district, which needs the improvement of lighting

Source: aerial view – Google Maps; graphic analysis – Chabanyuk O., 2020.

The main objective of the synthesis stage was to show how Jacobs's concepts of functional diversity, short blocks, variety in buildings' age and condition, and a secure living environment may help to improve the cases of post-socialist housing estates and develop new images and identities there, attracting citizens to post-socialist large housing estates in the cities.

Figure 8: Large post-socialist housing estate Microrayon #5, Pavlove Pole, Kharkiv, Ukraine. View inside the microdistrict.

Source: Author 2021.

Discussion and Conclusions

The analysis of Microrayon #5, Pavlove Pole, Kharkiv, reveals the need for mixed primary use on the territory. The functions that were planned in the project for the construction of the housing area comprised implementation of the planning system with services inside the microdistrict, such as kindergartens, a school, and the shopping area on the southern perimeter of the housing estate. However, after the collapse of the USSR and due to the population crisis in the 1990s, half of the kindergarten facilities were not under demand and were thus transformed to other non-social functions, such as private offices, and one building was reconstructed into a residential block. New functions did not

stimulate inhabitants to take up an active presence in their living areas. More-over, the demand for kindergartens increased drastically after 2010, since no new facilities had been built in the large housing estate. Since the primary use of the kindergarten buildings in the microdistrict has been lost between the time of construction and the present, the functions now need to be restored, along with the introduction of new functions on the territory to promote di-versity. "Differences, not duplication, make for cross-use" (Jacobs 1961: 130). The case of the post-socialist microdistrict also has a problem of duplication of buildings not only with a residential function, but also with a public func-tion. This means the kindergartens are all buildings constructed according to one project series. This kind of "duplication" does not organize diversity in the territory. The type of diversity of new functions that has to be introduced into the area is the kind that may bring "the mixture of people on a street" (Jacobs 1961: 164) and the active presence of inhabitants.

The concept of short blocks may foresee the organization of smaller neigh-borhoods in a microdistrict. As the size of the microdistrict is not small and it cannot be compared with a micro-space in the living environment, the ter-ritory of the microdistrict does not work as a neighborhood. The Soviet urban planning theory substituted the meaning of neighborhood with a large plan-ning residential unit with 7,000–10,000 residents, or up to 17,500 residents in cities with a population of more than one million people, like the city of Kharkiv. The larger scale of microrayon erased the neighboring connections between inhabitants. A smaller scale inside the microdistrict could be achieved using the concept of short blocks and frequent streets: "Frequent streets [. . .] generate diversity" (Jacobs 1961: 186). In addition, one of the conditions for gen-erating diversity summarizes the necessity of short blocks, stating that "streets and opportunities to turn corners must be frequent" (Jacobs 1961: 150).

Jacobs's concept of generators of diversity in large cities is stated as the fo-cus of the book. The need to fulfill conditions of diversity is the most important thesis presented in the book by Jane Jacobs (2011: 162). These conditions are very important for the case study of Microrayon #5 in Kharkiv because the post-socialist housing area faces similar issues and problems in how it functions. "The district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two" (Jacobs 1961: 150). The typical dispersion of the functions within the territory of the microdistrict includes no more than two functions in any particular zone: residential and commerce in the perimeter of the area, residential and education in the mid-dle of the microdistrict, and residential and low-quality recreation between the

housing blocks. The diversity of functions "must insure the presence of people who go outdoors on different schedules and are in the place for different purposes, but who are able to use many facilities in common" (Jacobs 1961: 150). However, the existing primary functions in the case study do not stimulate the presence of inhabitants in the streets within the area. "There must be a sufficiently dense concentration of people, for whatever purposes they may be there. This includes dense concentration in the case of people who are there because of residence." (Jacobs 1961: 151).

The problem of an insecure living environment appears in the case study in places with a small concentration of residents within the microdistrict. Thus, the need to concentrate residents becomes as important as ensuring the diversity of functions and having short blocks. As a residential area of prefabricated housing, the case study site has been planned according to the concept of free planning following the rules of lateral orientation. The buildings erected here typically have some sides without windows. The streets may be planned in such a way that buildings face the streets and have side facades without windows. This type of planning causes problems with safety on the streets. This type of planning mostly appears inside the microdistricts near buildings with other primary functions, such as schools or kindergartens. These streets and sidewalks need a greater concentration of people. "No concentration of residents, however high it may be, is 'sufficient' if diversity is suppressed or thwarted by other insufficiencies." (Jacobs 1961: 205).

Jane Jacobs declares "the task is to promote the city life of city people, housed, let us hope, in concentrations both dense enough and diverse enough to offer them a decent chance at developing city life" (1961: 221). This statement pertains to contemporary post-socialist large housing estates because the architectural monotony diminishes the development of the residential areas while simultaneously fostering new chaotic functions. A next stage of development could be introduced in the area, starting with the complex renovation of buildings and complex interventions in the residential area. A concept of regeneration should be developed for large post-socialist housing estates that is based on the principles needed to bring about a new level of quality in the environment.

This research shows one of the ways for creating a concept of regeneration that fosters the development of images and identities of Ukraine's post-socialist housing estates by building on analysis based on Jane Jacobs's book *The Death and Life of Great American Cities*. To summarize, the research and analysis of the case studies of the large post-socialist estate in Kharkiv, carried

out on the basis of Jane Jacobs's concepts, led to the following conclusions: (a) diversity in functions—could stimulate new images of active presence of inhabitants in their living areas, adding new functions to the microdistrict; (b) short blocks—may develop opportunities for frequent strolls in microrayons, and trigger new identities for smaller communities within the microdistricts; (c) generators of diversity, variety in buildings' age and condition—density increases when new housing blocks are built in the large housing estate, while the post-socialist prefab housing continues to be of low quality, thus negatively impacting otherwise positive images and identities; and (d) more secure living environment and resuscitation of living areas—the large housing estates need renewal of the functions along the sidewalks, local parks for higher security, and communication as positive social aspects for the people in the prefabricated neighborhoods.

This paper focuses on the development of new methodologies for the studies of large post-socialist housing estates within the interdisciplinary framework of fundamental urban literature. The socialist approach to the urban planning of residential areas aimed to use prefabricated apartment blocks as a low-cost construction method that resulted in monotony and total replication of typical projects. Now we see that this approach does not work for the city in terms of reaching the goal of diversity. "No one way is a good way to house a city neighborhood; no mere two or three ways are good. The more variations there can be, the better." (Jacobs 1961: 214).

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8. Perceptions and Constructed Marginality in Soviet and Post-Soviet Large Housing Estates: The Case of Saint Petersburg, Russia

Ekaterina Korableva and Elvira Gizatullina

Introduction

Post-socialist housing estates face a number of considerable challenges. At the same time, little is known about the actual character, causes, and appropriate solutions for dealing with these challenges beyond singular context. The same is true for the resources and the approaches applied when dealing with them (Urban 2011; Hess, Tammaru, and van Ham 2018). The comparative research project Estates After Transition[1] studies recent urbanization processes in post-socialist housing estates and is conceived as an in-depth observation of the dynamics underlying the development of six neighborhoods in Estonia, Germany, and Russia. The project deliberately focuses on post-socialist cases, thus breaking free from dominant "Western" perspectives on housing estates. It takes stock of the variety of post-socialist conditions and seeks practical solutions that are adaptable to diverse constellations and conditions.

In this paper, we share some findings from the two Russian case studies explored within the project—two Large housing estates in Saint Petersburg, Russia: socialist microrayon *Sosnovaya Polyana* and post-socialist greenfield project *Severnaya Dolina.* Built at different times, within different institutional arrangements, the neighborhoods remain examples of large microrayons of mass-produced prefabs. They provide a fruitful ground for comparison

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1   *Estates After Transition* is run by the Leibniz Institute for Research on Society and Space (IRS) in Germany, the Center for Applied Research (CeAR) at the European University at St. Petersburg in Russia, and the Centre for Migration and Urban Studies (CMUS) at the University of Tartu in Estonia. estatestransition.org

because, despite their differences, both areas have been subjects of marginal-
ization by exterior actors such as media, experts, and officials, and both induce
discourses on demolition.

Figure 1: Renovatsiya in Sosnovaya Polyana.

Source: Photo by a local resident; used with the author's permission.

In our study, we engaged in governance analysis of the area development,
held over twenty interviews per case with various actors—from residents to
developers and city officials—and, in the last leg of the project, conducted focus
groups with local residents to shed light on the "interior" perspective of life and
urban environmental quality, as well as the neighborhood image, within the
two large housing estates.

Case 1: Sosnovaya Polyana

Sosnovaya Polyana is a green and well-developed area in the southwest of
Saint Petersburg dominated by *khrushchevki* estates. Khrushchevki [singu-

lar: *khrushchevka*] is a popular nickname that refers to five-story buildings[2] made of prefabricated concrete panels built between 1958 and the 1970s. These usually contain 80–100 apartments and house around three hundred people (Gunko et al. 2018). Named after Nikita Khrushchev (1894–1971), the Communist Party leader of the USSR from 1953 to 1964, khrushchevki were developed as a solution to the acute postwar housing crisis and as a means to raise the living standards of Soviet citizens and provide them with single-family apartments. There has been a perpetuated notion about khrushchevki as a "temporary solution" with an estimated service life period from twenty-five to fifty years depending on the series (Erofeev 2014), but this notion has been disputed by various experts (Linov and Ivanov 2018). Nowadays, these buildings are home to about 9 million Russian citizens. In Saint Petersburg, about 9 million m² of khrushchevki make up for about 8 percent of the housing stock and provide shelter for 12 percent of the population.

In 2008, the Saint Petersburg administration launched a public-private renovation program called Renovatsiya, or the Built-Up Territories Development Program, that with private investment, aimed to demolish about 1,095 khrushchevki on over two thousand acres in twenty-four areas around the city[3] that were homes to around 65,000 families, and to replace them with 8.5 million square meters of "modern and comfortable" housing at least three times as dense.

The program generated a peculiar discourse about khrushchevki estates—they were painted as "aged, soon-to-be-dilapidated, [and] morally and technically obsolete." Within the Renovatsiya paradigm, a welfare state and a benevolent developer were coming to relieve the plight of suffering khrushchevki residents that lived in "degrading and inhumane conditions." As one of the focus group participants states: "You know, I feel that there is some sort of campaign to paint our houses as obsolete and inadequate to make it easier to demolish them."

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2   More rarely, *khrushchevki* were made of brick or blocks or had a different number of floors (three, four, or nine).
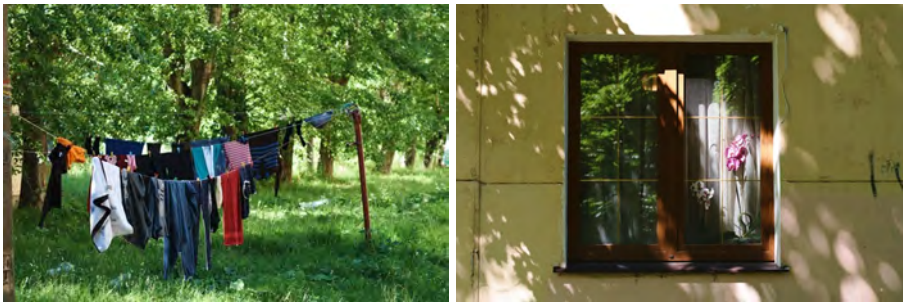
3   Ten of the areas actually included not khrushchevki but lower-density housing. In a way, it is symptomatic that in the media, the term khrushchevki was used to describe poor-quality, ageing housing in general.

Figure 2: Enovatsiya stagnation in Sosnovaya Polyana.

Source: Authors.

Figure 3 + 4: Sosnovaya Polyana.

Source: Photo by Sergey Cheperis.

While the implications of the Renovatsiya program were massive, its implementation faced major obstacles, and after ten years, only 3.5 percent of the program was completed. No khrushchevka was actually demolished until 2020, after the program was prolonged. Among Renovatsiya controversies was that the program was built on questionable premises about khrushchevki condition, and promulgated by an underdeveloped legislature at a time of a powerful city/business coalition that significantly weakened during the program's course. Fragmented building ownership also served as a factor that impeded implementation. Because of all that, the program zones have been frozen in uncertainty without proper maintenance or renovation and, indeed, have started to turn unsafe, depressing, and dilapidated.

In a research interview, a resident of a khrushchevka in a Renovatsiya zone described the situation as follows:

> "We cannot properly renovate our apartment, invest money in this way, because it has been many years of us being 'about to be relocated.' Up to this day we have no certainty whether we will move or not. [. . .] Nothing is being done. [. . .] If the fate of our house was clear, I would of course keep improving it".

Questioning the initial premises of Renovatsiya intervention, we conducted five focus groups with khrushchevka residents in Sosnovaya Polyana whose buildings were affected and unaffected by the program, paying attention to different age groups, ownership types, and levels of engagement in local activism. Among the findings regarding the life and urban environmental quality in Khrushchev-era large housing estates were the following:

- Residents assess the neighborhood higher than the buildings themselves (green, spacious, low-density, great infrastructure, well-connected, possibility for guerilla gardening, cozy atmosphere, peace and quiet, etc.)
- Among the disadvantages of the neighborhood: underdeveloped pedestrian infrastructure (non-inclusive environment), 24/7 liquor stores in apartment buildings, lack of modern infrastructure for youth leisure
- Within the buildings: overcrowding, poor condition of engineering networks, lack of prompt major overhaul, poor energy efficiency and sound insulation, inconvenient apartment plans, lack of elevators and spaces to store bikes and strollers

Curiously, describing the neighborhood residents of different ages brought up the image of a "*babushka*'s[4] district," which appears two-fold: When applied to a housing estate, the image of an old lady may refer to something negative—*old, old-fashioned, in poor physical condition, not moving with the times*. But on the other hand, the image of a *grandmother* is *warm, homey, caring, approachable*, and *nostalgic*. Living in such a neighborhood might not be for everyone, but it is a lifestyle of its own that cannot be found in the historical center or in the high-rise periphery. Despite the perpetuated stereotypes, local residents see the environment in their estates as more humane compared to the environment in other parts of the city:

> "We moved here when I was 14 and I thought it was the end of my life! I thought they brought me to a village, and everything here is like. . . people are growing flowers, everything will be terrible, I will grow old and die here. But after only two or three years I felt this was the best place! It is peaceful and quiet and people are growing flowers! That actually appeared to be the main advantage. And it is, I do not want to move any longer!"

> "Well, everyone says "babushka's district," "babushka's district," as if only old ladies lived there! But living there was actually cool: there was a park, people took walks, fewer cars, friendly neighbors."

> "Young people these days—they want to fly! They want those modern 16- to 15-floor high-rises. And our neighborhood is more babushka-style: the green, the flower beds, the quiet! Younger people may first need some partying."

The general sentiment was that the neighborhoods could be great if properly maintained. And many of those who supported Renovatsiya simply did not believe in the possibility of the buildings' overhaul or fixing of the maintenance system. Describing the estates, local residents do not use the terms *depressing, uniform*, or *ugly*—they describe them as *neglected, abandoned, not taken care of, run-down, in decay*. Therefore, residents formulate the issue of estate maintenance as the central one. However, their attempts to engage in neighborhood management appear disheartening, and the heads of house councils describe their work as a constant battlefield.

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4   In Russian: *grandmother, old lady*.

The Renovatsiya program, however, does not address the issues of overly complicated and failing house management. At the end of the program's initial term in 2019, its underlying premises were not reconsidered—the program was prolonged for ten years more and new legislation was issued to facilitate demolition. In that way, khrushchevki problems are now being reproduced at a larger scale.

Case 2: Severnaya Dolina

In the past decade, the commissioning of apartment buildings in Russia significantly increased and approached the rate of the first decades of mass housing construction in the twentieth century: about 43.5 million m² in 2019 compared to some 40 to 55 million m² in the 1960s and 1970s. In light of this, new large housing estates started to mushroom in the peripheries of most Russian big cities.

Figure 5: Severnaya Dolina masterplan.

Source: https://parnas.siava.ru.

Severnaya Dolina is an example of modern housing development in Russia and one of the archetypical newly built large housing estates that provide affordable housing to low- and middle-class inhabitants. It is one of the first and largest integrated urban development (IUD) projects in the country. Situated in the north of Saint Petersburg, it occupies 270 hectares and consists of 33 buildings of 29 stories with 900 to 3,500 apartments each. The development

of the estate started in 2009. Now it is inhabited by about 60,000 residents, and when finished it is supposed to accommodate about 100,000 occupants.

Severnaya Dolina belongs to the so-called "economy class" residential sector. Most flats (about 60%–70%) are bought with mortgage loans. With the exception of a minor share of social housing (about 1.5%), the vast majority of apartments in Severnaya Dolina are privately owned by individual residents. But about 30 percent of dwelling units are so-called investment flats: the owners do not live there but rent them out.

It is noteworthy that in Saint Petersburg, IUD projects that Severnaya Dolina exemplifies were meant as an alternative to strongly criticized infill development projects in which new residential buildings densified the built and already developed urban fabric. The developer in IUD projects takes responsibility for planning and building not only residential buildings but also an integrated and comfortable living environment, including roads, schools, kindergartens, and other social infrastructure.

Figure 6 + 7: Severnaya Dolina.

Source: https://www.novostroy.su/.

Such projects also have a very complicated governance structure in which the city owns the land but leases a large plot (667 acres in the case of Severnaya Dolina) to a private developer, for the purposes of constructing the residential complex, until completion of construction of the entire project. Therefore, the developer has a right to manage, use, and extract profit from the plot—it sells apartments in a free market and through this means, individual buyers acquire ownership rights to the apartments. With the lease agreement in force, the city and apartment owners have very limited instruments to influence the area's

development. Because of that, there is a significant lag in the commissioning of social infrastructure—so far in Severnaya Dolina, only three out of ten schools, six of thirteen kindergartens, and not even one hospital have been built.

To shed light on the residents' perception of environmental quality in the estate, we conducted five focus groups with residents of Severnaya Dolina, paying attention to different age groups, ownership types, and levels of engagement in local activism. Most of the focus group participants, regardless of their age and activity, chose housing in Severnaya Dolina based on a low cost, proximity to the metro station, location in the suitable urban area, and suitable apartment layouts rather than on a quality assessment of the housing. The criteria we mean by *"quality"* are mainly perceived and experienced by residents *after* moving into the area. So the quality of the living environment did not affect the initial choice of housing in a newly built area, but it does affect the decision of whether to stay there further or not.

We have discovered that inhabitants appreciate their district and housing because:

- It is well connected with the city center by metro
- A big historical park is located nearby
- The buildings and all infrustructure are new
- Plenty of businesses are situated on the ground floors of the residential buildings
- The planning is uniform and the facade design is discreet
- Buildings feature a high-rise aesthetic: there are spectacular views from upper floors and beautiful sunsets (some even called the district *"our Manhattan"*)

The *novelty* of the apartment and the area appeared to be a very important factor. On the one hand, it is associated with cleanliness and comfort, and on the other, with the economic liquidity of "fresher" housing. Thus, residents find in their new housing a positive contrast with the "old" buildings in the historic center and Soviet-era housing where engineering infrastructures are worndown and the entrance halls are "dirty." They perceive their new housing as being "higher quality" because it complies with more "modern" construction standards (width of streets, number of parking lots, infrastructure for low-mobility groups, etc.).

The focus group participants perceived the urban environmental quality through problems, through the *mismatch between expectations* (nice renderings

by the developer) *and the actual living experience*. For example, the nearby Shuvalovsky Park is an important asset for Severnaya Dolina, but at the same time it has many problems: it lacks infrastructure, lighting, and a convenient way to reach it on foot, while the territory of Severnaya Dolina itself lacks greenery and comfortable green walking areas. Only a few participants articulated the height of the buildings as a clearly negative factor, noting the "pressing, inhuman scale of buildings." Most participants did not mention the building height as an important factor in their decision to buy an apartment in Severnaya Dolina. At the same time, people criticized the indirect consequences of the estate's scale and densely populated area: limited parking lots, many neighbors, social detachment, and too many cars.

Many participants positively assess the aspects of IUD projects: the uniform and discreet design and modes of governance. However, they point to design "mistakes" such as the lack of parking lots and incorrect positioning of buildings that causes strong winds, and they blame the developer for delays in the construction of social infrastructure. This problem reinforces the already existing sense of peripherality, the image of a "sleeping area."

Among the building and apartment disadvantages mentioned by the focus group participants are: low quality of construction and infrastructure, poor sound insulation, too many apartments per floor, and too many studios and one-room apartments. They connected this with a big share of rented-out apartments inhabited by people who (from the point of view of the owners) are "temporary" residents and care much less about the housing conditions.

Housing activists especially highlighted the importance of estate management for the future of the area and the housing, identifying three major obstacles: (1) the scale of construction and the total number of dwellings, particularly since inappropriate legislation on the management of such large buildings makes it impossible to form self-governing bodies; (2) low level of owners' involvement in self-governing structures; and (3) negligent attitude and poor work of the management company.

As a result, the quality of building maintenance of Severnaya Dolina is perceived as poor. Some activists fear future degradation because of the difficulties in organizing self-governing structures and in controlling the management company: "In the future, governance issues will play a specifically important role. And the easier it will be for residents to make decisions. . . Now it is extremely difficult."

Conclusion

Juxtaposing the cases of Severnaya Dolina and Sosnovaya Polyana in Saint Petersburg, we come to the following conclusions:

1. The "outsider gaze" perceives the large housing estates' quality through technical and material characteristics of the buildings, while the image from the inside is more diverse, nuanced, and subtle. For the residents, estate management is one of the key characteristics that defines life quality in large housing estates.
2. Each housing type constitutes its own niche in the market. The idea of replacing one housing type with another is problematic—there is a demand for different segments and morphologies. While the described housing types have their flaws, they should not become subjects of marginalization and sweeping generalizations as this can have a negative impact.
3. The study on the trajectories of large housing estates has already shown that their fate depends to a significant extent on the quality of governance and maintenance, not only on social structure and urban forms (Urban 2011). However, at the moment, the state promotes large-scale construction all around Russia, but does not design effective management infrastructures.

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9. Collective Housing Complexes of Socialist Yugoslavia: The Development of Living Standards and the Strengthening of Communities

Violeta Stefanović

Architecture as the Setting for the Creation of Communities

Human existence cannot be separated from the space in which it occurs. Places in which we experience segments of our lives remain connected to those events—to our emotions, memories, and impressions. These spatial frames have the ability to shape the type of activities that can be realized within them, along with the type of interactions their users and inhabitants have. By forming the physical conditions under which events and activities are realized, they have the ability to influence the way people communicate, further influencing the type of relationship they are able to form. Undeniably, architecture has a great impact on the formation of peoples' everyday lives. Architecture, on the other hand, is unquestionably connected to the economic, political, social, and cultural conditions and circumstances that are present at the time of its creation. These tight connections create a complex system that enables changes in the way the building environment is formed, depending on the current sociopolitical system. When it comes to housing, which represents an architectural sphere that has the most direct relation with the everyday lives of the users of its spaces, its physical frame, apart from generating the primary settings for its residents and their existence in the narrowest sense, also influences the circumstances for the creation and development of communities and interpersonal relations. Martin Heidegger's thought that housing is the primary principle of existence (1951) highlights the significance that residential space has in the lives of human beings. By building people's

most personal, primary existential space, the architects of dwelling units and housing complexes directly influence the forming of the preconditions for the development of our everyday lives. The residential architecture of socialist Yugoslavia is of particular interest in this regard because, as a newly formed state, it brought with it complex aspirations, generating an extremely specific atmosphere and preconditions for the realization of a new architecture. This led to exhaustive changes in the lives of its citizens, who were being placed in new collective housing conditions and were therefore experiencing a new way of living and sharing their immediate physical surroundings, making way for new interpersonal relations and the creation of new communities. These housing solutions were continually developed as the state progressed, enabling the improvement of living standards and therefore further generating various opportunities for its residents to conduct the processes of their everyday lives.

The urban architectural context in which people live, as well as the living standards realized by it, has a significant impact on the way these people live, the way they conduct themselves on a daily basis, and how they interact with other people who occupy the same living space as well as the way interpersonal relations are formed. If communities are defined as aggregates of people who share common activities and/or beliefs and who are bound together principally by relations of affect, loyalty, common values, and/or personal concern (i.e., interest in the personalities and life events of one another) (Brint 2001) and a city community rests and survives on territorialized social relations which are mediated by urban interventions in space (Pajvančić-Cizelj and Knežević 2017), the link between the shared residential area and the resulting community is undeniable. Brint's classification of communities makes it clear that a neighborhood is a community where the elementary basis for forging relations (the first criterion for its classification) is spatial closeness—which, in this sense, contains an element of inevitability. The primary reason for interaction (the second criterion) in these communities is based on collective activities, and the frequency of this interaction (the third criterion) must be relatively high (Petrović 2007).

Referring to the three criteria crucial for forging communities, the aim of this paper is to analyze two residential blocks located in Novi Sad (Serbia), both of which were built in socialist Yugoslavia but during different time periods: a block in Liman I (built before 1960) and a block in Liman IV (built in the 1970s), so as to research whether the improvement of the living standard, which encompassed the way communal spaces were being articulated and shaped, could

have also directly influenced the strength of the communities being created in those spatial frames. Looking specifically for elements that could have influenced spatial closeness, collective activities, and the frequency of interaction that were created through the formation of these collective housing blocks could give us an insight into the way communities were able to be forged, inevitably impacting the way social bonds, common ground, and collective consciousness were established in the socialist period.

Collective Housing Complexes of Socialist Yugoslavia and the Development of Living Standards

Soon after the forming of socialist Yugoslavia after the Second World War, with rapid industrialization and the ensuing housing crisis, residential architecture and housing became, perhaps, the most daring project of the newly created state. Socialist Yugoslavia was characterized by rapid economic and technological development that underwent continual improvement from the beginning of postwar renewal until the 1980s, which were characterized by economic crisis along with political conflicts that eventually resulted in the disintegration of the federation. A mass migration of people from rural to urban environments arose as a consequence of the rapid progress, which created pressure and a great need to find a new solution for the housing crisis. This necessity, as well as the conditions created in the newly formed socialist state, enabled and encouraged the architects active in that period to deliberate and envision residential space. Guided by two ideologies—socialist and modernist—architects were given the opportunity to create new forms of housing. On the one hand, the socialist ideology, with its paradigms of social equality and its need to portray the future prosperity of the state as well as the importance of the unification of the republics, created an environment in which housing was not only an architectural but also a political matter. On the other hand, the purely architectural modernist ideology, which was extremely present in the architectural discourse at that time, was based on progress in all possible senses, and was assisted by the development of technology, represented the aspiration for opening a new chapter in the creation of cities, and consequently, city life. This architectural and urban expression served as a means of transferring the newly formed state's idea of progress and prosperity, and of enabling mass construction. These large-scale collective housing complexes were a reasonable answer to the huge influx of citizens who were moving from rural to urban

areas as a consequence of rapid industrialization, but they also provided the opportunity to realize a new architecture for a new state. As a result of these complex factors, the citizens of socialist Yugoslavia suddenly underwent a profound change in their everyday lives, stemming from the extremely different living environment they were now inhabiting. Until then, traditionally built one-family houses in rural environments were predominant.

This shift in living conditions, in which people were all of the sudden sharing their immediate physical environment with other residents, inevitably influenced the forming of new communities in a way that had never been experienced before. By transferring from privately-owned, traditionally built single-family houses to large, state-owned (society-owned) multifamily buildings, by exchanging their private yards for common block areas, and by finding themselves in uncharted territory, the citizens of socialist Yugoslavia were now in a position where they were rebuilding the picture of their everyday lives in all possible ways. The sheer density of people now being housed together in one neighborhood was bound to change the way they form social relations, communal values, and communities as a whole.

However, as the federation progressed over time, the living standard rose as well, spawning new ways of creating and strengthening communities. The first two decades after the Second World War were marked by rapid construction on all fronts: infrastructural development, immense construction of residential units, and the erection of administrative and prestigious buildings and all other elements crucial for the state's primary existence. Having realized the minimum standards for the state's functioning, socialist Yugoslavia reached a condition of utter well-being during the 1970s. This period was characterized by strong enthusiasm and zest, which made way for more innovation regarding architecture and its programs: sports centers, university centers, and shopping malls were now being built, improving the citizens' quality of life. When it comes to residential architecture, the impact this development had on housing can be seen through the development of concepts for residential units, but also in the way more attention was being given to the wider programming of the blocks, allowing for the expansion of inhabitants' needs that could be met in their primary surroundings. These changes can be seen in the development of the communal areas within the blocks, allowing for more of the residents' leisure time to be spent in their immediate surroundings. Since the development of interpersonal relations, as well as the feeling of community among residents of the same residential block, requires social encounters—both accidental and planned—the hypothesis of this paper is that the rise of the housing

standards which resulted in the enrichment of the shared and public spaces of the residential areas also provided more opportunities for these encounters, therefore possibly enabling the strengthening of communities.

In the following section of this paper, two residential blocks built in socialist Yugoslavia will be presented and analyzed, aiming to observe the changes that the housing concepts underwent as living standards rose and to analyze the conditions for the interaction of residents in those neighborhoods and, consequently, their ability to form and maintain communities.

Liman—the First Modern Novi Sad Residential Neighborhood

The city of Novi Sad is located in Serbia, a former republic of socialist Yugoslavia, and is the capital of the Autonomous Province of Vojvodina. The city went through numerous changes in the past, but its modernization is what characterizes it in a significant way even today. During the period between the two world wars, after Vojvodina joined the Kingdom of Serbs, Croats, and Slovenes, with the city being proclaimed the capital of the Danube Banate, the beginning of Novi Sad's modernization was initiated. Even though more than one architectural style was present in Novi Sad during the period between the two world wars, "the rise of modernism in the region coincided with the establishment of new government units, the key factor in its development could be related to changes in the very process of design and construction. [. . .] Buildings with flat roofs in modernist, unornamented style became the norm" (Mitrović 2010). As for housing, the case of "Mali Liman" ("Small Liman") is specific since it can be considered the first modern residential area in Vojvodina and it includes family villas and residential multistory buildings. However, it is important to note that its modernity stems from the architecture of its buildings, and not from its urban concept, whilst the Liman neighborhood (built after the Second World War), which will be the focus of the next part of this paper, represents the first installment of residential modern urban planning in Novi Sad. Therefore, we can treat "Mali Liman" as the beginning of the introduction of the modernist language in residential areas. This area is located close to today's Mihajlo Pupin Boulevard, adjacent to the city center, and represents the beginning of the city's expansion toward the Danube River.

The biggest changes were made in the city after the Second World War, when the building activity was extremely high. The city went through several radical changes that were carried out by means of official urban planning doc-

uments. These changes shaped and defined the city, creating the urban morphology and identity it has today. As for housing, the immense growth of the population required new residential spaces. Therefore, the marshes along the Danube River were drained so as to allow for the city's expansion. This previously largely uninhabited land, now prepared for development, enabled the exact realization of planned neighborhoods. Influenced by the discourse of modernism, as well as the famous Athens Charter, the Liman neighborhood was envisioned through the principles of modernist architecture and urban planning. The Liman neighborhood is actually comprised of four segments—Liman I, II, III and IV, with its names correlating with the sequence of their realization (fig. 1).

Figure 1: Disposition of the segments of the Liman neighborhood.

Source of original orthophoto image: https://a3.geosrbija.rs/.

Therefore, this paper will analyze one block from the Liman I area and one block from the Liman IV area—seeing as they were, respectively, the first and last installments of this large spatial development—in order to gain insight into the development of the conceptualization of the housing complexes, which went hand in hand with the rise of living standards, as well as their possible impact on the strengthening of communities formed in those neighborhoods. Apart from the spatial conception of the housing complexes, the elements that will be the focus of the examination of these localities were presented in the first section of this paper and have been derived from the criteria for the classification of communities. Hence, the focus of these analyses will be directed toward elements that could influence spatial closeness, the possibilities for collective activities, and the frequency of interaction, all of which serve as important factors for the establishment of interpersonal relations among residents and their communities.

Figure 2: Disposition of the two residential blocks under analysis within Liman I (far right) and Liman IV (far left).


Source of original orthophoto image: https://a3.geosrbija.rs/.

Analysis of the Residential Block in Liman I (Built before 1960)

Liman I marks the beginning of the establishment of the entire Liman area, which was the first residential area in Novi Sad to be conceptualized through the principles of modern urban planning and thus represented a new chapter in the development of urban planning in Novi Sad. According to Novi Sad's official records from 2012, the Liman I area, which spreads over a surface area of 12.9 hectares, is home to 4,527 inhabitants in 1,942 apartments (City of Novi Sad 2012). The block that will be analyzed in this section was built before 1960 and can therefore give us insight into the primary concept of the housing areas of Liman.

Figure 3: Morphology of residential the block under analysis in Liman I (b – basement; gf – ground floor).
Figure 4: Inner area of the block under analysis in Liman I.
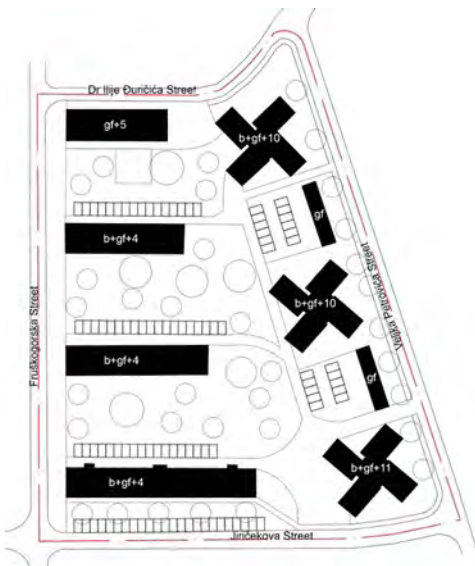
Source: Violeta Stefanović.
Source: Author's archive, June 2019.

The residential block in question features buildings that were built when the original block was realized and a few structures that were added at a later date: the longitudinal building alongside Dr Ilije Đuričića Street and small single-story structures (parking garages). Even though these buildings are of a later date, the original spatial concept of the block has remained intact.

Spatial closeness represents the elementary basis for forging relations in neighborhoods and therefore acts as a prerequisite for generating communities. The juxtapositions of the buildings that comprise the urban area in question were planned: the orderly positioning of the individual buildings was intended to allow sufficient space for adequate light, ventilation, and privacy conditions, and was implemented in accordance with the height, length, and width of each structure. However, the entire shared open area of the block is covered with greenery and rows of parking spaces, leaving little or no space for public gatherings other than the grassed areas and paved paths designed for fast access to and from the vehicles and the dwellings (fig. 4).

The absence of other infrastructure, paved areas, and other types of urban elements required for spending quality time in public shared spaces minimizes the opportunities for collective activities. The frequency of interaction is of a similar nature, although the strictly divided pathways that lead to the parking areas do facilitate communications that are convenient for accidental encounters of the residents. These encounters are important, since they enable the residents to get acquainted with one another, and they serve as a place for spontaneous conversations that are usually conducted while on the way from one's home to other parts of the city and vice versa.

The importance of the residents being able to bond over shared activities is undeniable when it comes to the strength of those communities. In the case of this residential block, the residents probably sensed the lack of the opportunities for collective activities, resulting in a spatial intervention executed much after the block was originated. A children's playground was set up on a part of the block's green area, making a focal point toward which children, as well as their family members, gravitate to (fig. 5). However, since this type of public area is limited to users of a certain social group, as well as seeing that there is no other type of gathering spot in the block, the collective activities that are based on it are also limited.

Figure 5: Children's playground in the shared open block space.

Source: Author's archive, June 2019.

Analysis of the Residential Block in Liman IV (Built in the 1970s)

In socialist Yugoslavia, housing concepts were continually developed since the Second World War ended. Numerous realizations and the forming of entirely new city areas were also accompanied by theoretical and other research in the fields of habitology (Alfirević and Simonović Alfirević 2018). During the 1970s, significant results were achieved in the fields of science and practice. As the federation progressed, housing conceptualizations (from residential units, buildings, and blocks to entire settlements) were also advancing. Liman IV represents the final installment of the entire Liman spatial endeavor, which was carried out continuously, leaving behind layers that reveal the development process of the first socialist modernist residential area in Novi Sad. The

block in the Liman IV neighborhood that will be analyzed was built during the 1970s, showcasing the changes that were made in the urban planning concepts. According to Novi Sad's official records from 2012, the Liman IV area covers a surface area of 29.2 hectares and has 3,388 apartments that are home to 9,287 inhabitants (City of Novi Sad 2012).

Figure 6: Morphology of the residential block under analysis in Liman IV (b – basement; gf – ground floor).
Figure 7: Inner open space of the block under analysis in Liman IV.

Source: Violeta Stefanović.
Source: Author's archive, June 2019.

Compared to the previously analyzed block, a distinctly different approach to the positioning of the individual buildings can be observed. As it was the case with the block in Liman I, juxtapositions were made here so as to allow sufficient space for adequate light, ventilation, and privacy conditions, which was implemented in accordance with the height, length, and width of each structure. Spatial closeness is guaranteed, of course, as it is in most neighborhoods.

The placement of the parking areas on the corners and ends of the block, as well as the varying dimensions of the spaces between the buildings, allow for different places to be defined and organized within the locality's open public spaces. The block is not lacking in green areas, but they are dispersed throughout the space so as to allow for the creation of paved pathways and areas that serve as gathering points (fig. 7). Urban furniture is also dispersed through-

out the block; some takes the form of benches, while others represent an integral part of the design of the entire residential area and are built of concrete in forms and patterns that coincide with the spatial and architectural concept as a whole.

Figure 8: A basketball and futsal court in Liman IV.

Source: Author's archive, June 2019.

Apart from these areas that have no a specific program but allow multifunctional use, this residential block also features a specifically designed space intended for sporting activities: a basketball and futsal court (fig. 8). These types of public spaces enable social gathering as well as collective activities. Even though the courts are fit for a certain range of sports activities and events, they also allow for spontaneous reprogramming done by the residents themselves, such as bike riding, chalk drawing, and socializing. The existence of these public areas and their varying sizes, dispositions, and equipment enable numerous

residents of different ages and social groups to take part in various shared activities and experiences, consequently allowing for more interaction between members of the same community, which inevitably leads to the strengthening of their interpersonal relations. Apart from these socializing opportunities, the frequency of interaction is at a high level, since not only is there infrastructure that acts as a precondition for the realization of communal activities, but also pathways that connect larger paved areas throughout the open space, allowing for numerous accidental encounters and also allowing passers-by to observe and even participate in the activities taking place.

Conclusions

When observing the two blocks that were the focus of this paper, we can say that both of them fulfill the goal of the state, which was the main investor in residential spaces in socialist Yugoslavia. The goal was to create a large number of housing units that provide users with humane living conditions: units that guarantee sunshine, ventilation, and overall functional organization. Apart from this, it was important to establish a new way of approaching the question of housing while using the language of modernism, which can be equally applied to all six republics. However, since the block in the Liman I area was built early on, under circumstances in the federation that required fast building execution and the construction of mass housing as well as other important infrastructure crucial to the functioning of the newly formed space, we could say that that block answered the requirements for the realization of housing set by the state at that time. It enabled humane, comfortable housing for its users, green areas, and parking spaces as well as functional housing units. The block in the Liman IV neighborhood, however, was conceptualized at a time when the federation had already established the primary conditions needed for its existence and had entered a state of well-being. This allowed the housing concepts to be expanded and further developed, based on the intensive work of architects that continually strived to improve housing conditions. Apart from meeting the same requirements that were set for the block in the Liman I neighborhood, the Liman IV block also made it possible to meet a broader set of its users' needs in their primary surroundings. The wider programming of this block allowed for the creation of various public spaces that serve as preconditions for the interaction of its residents.

If neighborhoods are not only a territorially defined area, but also a complex web of social relations (Petrović 2007), then it is of utmost importance to give the members of this community opportunities to create, develop, and nourish these interpersonal relations. The bonds formed among the residents of a neighborhood contribute to an individual's feeling of belonging to a certain group, which generates positive attitudes toward the members of that same group and results in the creation of a collective identity. The stronger this identity is, the stronger the community is, and the more trust there is between members of the community—which creates a sense of togetherness and safety that is crucial for fulfilling the social needs of individuals.

Therefore, if we take into account the importance of the possibilities for collective activities and the frequency of interaction, whereas both should be of a high level in order to initiate the forging of social relations and, consequently, communities, then we are able to note that the block that was realized later (in the Liman IV area) has a spatial infrastructure that can initiate collective activities and can create opportunities for frequent interaction. The progression and development of housing conceptualizations, which was a result of the architects' continuous theoretical and practical work, lead to complex architectural and urban solutions that peaked in the 1970s. These solutions encompassed residential buildings and their individual dwelling units, and also took into consideration the public spaces surrounding the residential blocks. By further developing these open spaces: by creating numerous gathering spaces with varied programming (i.e., diverse courts for sports activities, playgrounds, areas with urban furniture, etc.), the architects were able to provide the inhabitants of these places with common, shared spaces. It is precisely in these spaces that the main socialization of residents takes place, with different programs enabling various events and atmospheres. The fact that this infrastructure, which preconditions socialization, arose as a result of the federation's prosperity at the time indicates that there is a direct correlation between the rise of living standards and the possibilities for strengthening communities. The rise in the living standard, therefore, not only improved the general quality of life for residents, but it also gave them the opportunity to generate and build communities that contributed to the fulfillment of their social needs. The various possibilities for socialization also influenced the development of their collective identity through the formation of long-lasting social relations, which may, as a result, have had an impact on their personal lives as well.

Acknowledgment

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10. Challenge of Demographic Change — Recognizing General and Site-Specific Aspects in Large Housing Estates

Nilsson Samuelsson

Aspects of Demography

Demography is integral part of every urban development or transformation. Most physical urban developments correspond with different kinds of demographic change. Change might, for example, start with technical innovation in agriculture and production, which, as a result, motivates or forces rural populations to migrate into cities. In many cases, just certain parts of a rural population tend to migrate into cities, such as only the young men or the women, only families, or only singles; sometimes ethnic or cultural background influences the decision for a new start in the city. Other triggers for demographic change might be circumstances like poverty, violent conflicts, politics, climate, or just individual professional or private preferences. These kinds of background parameters also affect the inhabitants' site-specific compound of biographies and subcultures on all levels, from whole continents down to regions, cities, the urban block, or even a single house. The key words at this point are "site" and "specific."

Homogeneity, Diversity, and Equality

Sound social groups share some kind of common agreement on how to organize everyday life together. Individuals existing independently in total isolation are very rare. Societies communicate these "agreements" in law books, religious narratives, cultures, stories, or allegories depicting how life together can work out well and fair. Some agreements concerning inequality, murder,

violent dominance, and destruction seem to be very similar in human societies around the world. On the other hand, agreements about food, clothing, celebrations, language, habits for eating and sleeping, friendship, partnership, and sexual behavior as well as gender-related identities might differ very much between different cultures, groups, regions, countries, and continents. In a globalized world, different social groups from around the world are increasingly connected with each other. This is very much the case within the globalized, well-educated, and mainly relatively wealthy scientific community. This community praises background diversity as creative fuel for cooperation, innovation, and development. However, the globalized world also brings or even forces together people who are not searching for innovation or cooperation with other subcultures. Instead, they often experienced social exclusion based on their own cultural or ethnical background, gender, age, or sexual identity. If professionals at international universities form a community in which background diversity within the group contributes to form new concepts for social and cultural progress, by contrast, large housing estates in some cases form communities sharing a common experience of exclusion from justice, wealth, and political influence, directly related to their sub cultural background. This is not an acceptable status quo. This is not the way things should be. The challenge faced by demography is to activate our gathered knowledge in order to strengthen sustainable and inclusive neighborhoods, carefully based on the physical and social qualities at the specific site. There are no places without specific qualities. To recognize existing qualities is, in my opinion, the main challenge for successful development of large housing estates (as for every other neighborhood as well). The following examples from Stockholm and Dresden illustrate some of the dynamic parameters that make each large housing estate a singular and specific urban site with its own spaces, its own history, and its own residents who form a unique local community.

Grindtorp, Stockholm—Social Stability, Cooperative Housing, Sustainable Maintenance

The large housing estate Grindtorp, around twenty kilometers north of Stockholm, was designed by Sune Lindström and constructed between 1960 and 1965 with about 1,550 flats for the cooperative housing company HSB. Today, in 2021, the housing estate counts as an integrated part of a socially privileged and stable middle- to upper-class urban district. In 2017, 22.5 percent residents with foreign background, which is slightly below the Swedish average of 24.1 percent in 2017. The municipality grew from 10,000 inhabitants in 1950 to 70,000 inhabitants in 2018. The average income of 382,393 SEK is well over the average income in Sweden (296,484 SEK).

In a couple of debate articles in *Dagens Nyheter*, one of two main national newspapers, in January 2020, it was claimed that large Swedish housing estates "look like in Novosibirsk." For Swedish readers, this comparison would produce an impression that large housing estates are related to Soviet Union–style communism. Although large housing estates represent a building typology that appears around the globe in the second half of the twentieth century, at least in Sweden this is an often-cited cliché used as a stereotype to describe the character of large housing estates in general.

Figure 1: Screenshot of a debate article by Jöran Lindwall, posted on the website of the Swedish daily newspaper Dagens Nyheter in January 2020, titled "No, the one-million-flats-program doesn't look like Novosibirsk." The title refers to the Swedish state subsidy program for building one million apartments within the 10 years between 1965 and 1975.

Source: https://www.dn.se/debatt/nej-miljonprogrammet-ser-inte-ut-som-novosibirsk/. *Photo:* Bertil Ericson / TT.

Fittja People's Palace—Innovative Renovation Follows Neglected Maintenance and Social Tensions

In Fittja, a large housing estate about twenty kilometers south of Stockholm, 2,500 flats were constructed between 1970 and 1975 for the municipal real estate company Botkyrkabyggen. Related to different backgrounds for migration movements from 1975 onward, the municipality of Botkyrka today has a population with 59 percent foreign background (foreign-born or second generation), which is significantly above the Swedish average. Within the large housing area Fittja, about 91 percent of the population has a foreign background. The medium income in the municipality of Botkyrka in 2019 was 271,865 SEK, which is clearly below the Swedish average income 2019 of 296,484 SEK.

Fittja "People's Palace" was the winning proposal in the Swedish part of the Nordic Built Challenge 2013—a multidisciplinary competition that asked for sustainable, profitable, and scalable methods for the renovation of some of the most common building types in the Nordic countries. Spridd won the competition together with construction company NCC, and the project has now been realized.

A fundamental part of the project is to take advantage of the qualities of the area, utilize its potential, and involve residents, local business people, politicians, and organizations in a transparent process. In dialogue with the tenants, a storage space on the ground floor was transformed into an exhibition hall and meeting place where the project and future developments were discussed with the residents. As a result, the realized changes often have a modest character and are similar to prior designs and solutions.

"Fittja is a typical example of the postwar welfare architecture of Sweden—built as a response to the social aspirations of affordable housing for all citizens of the 1960s and 1970s. Today there is an immediate need for renovation of these areas. The municipal real estate company Botkyrkabyggen AB searched for a method to renovate its property in Fittja that would be able to solve urgent technical problems without considerably increasing the rent while at the same time contributing to the area's long-term development. The intention is to develop a method that can be applied to the entire area in a longer perspective" (Spridd 2016).

Figure 2: Fittja Botkyrka before (left) and after renovation (right). The realized changes often have a modest character and are similar to prior designs and solutions.


Source: Spridd.

Eastern and Western Germany—Different but Similar

Like in many European countries, in GDR (German Democratic Republic) and FGR (Federal German Republic) too, the ongoing urbanization dynamic developed parallel with restoring urban areas that had been demolished during Word War II. Compared to the chaotic conditions in destructed urban districts and the lingering memories of poor housing standards, new large housing estates were an attractive alternative for many citizens in both east and west. Young families with children often moved into the new housing estates. The urbanization was going hand in hand with a constantly increasing number of private cars, though developing at a higher speed in the FGR than in the GDR.

Figure 3: Social structure Dresden, Johannstadt and Prohlis.
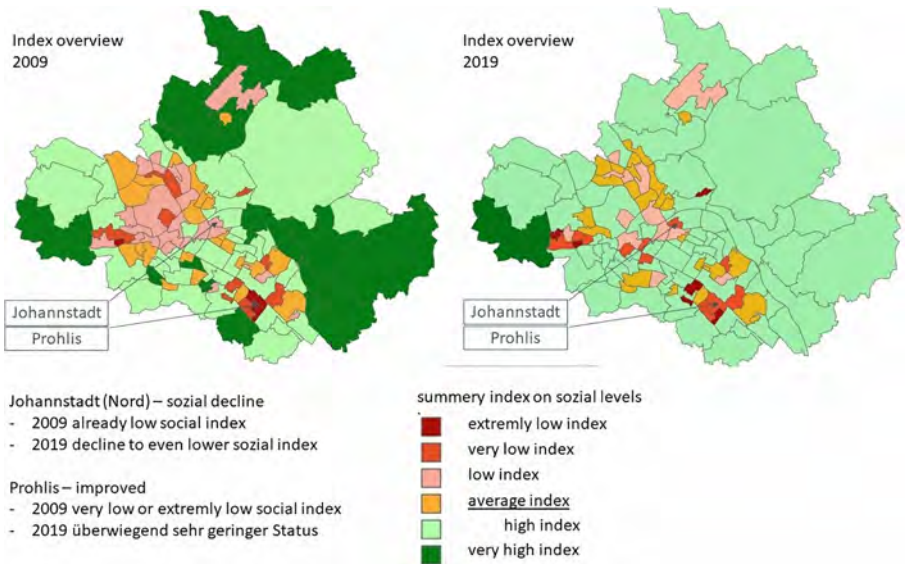
Source: Urban planning Department, Dresden, 2019.

Dresden, Prohlis

Between 1976 and 1985, the municipal residential housing company VEB Woh-nungsbaukombinat Dresden built around 10,000 flats as a satellite suburb next to the historical village Alt Prohlis. This situation brought a contrasting division between the new and the historical built structures. The municipal residential housing company had developed a catalog of building typologies optimized for the local industrialized construction process. They predominantly erected two building typologies in Dresden Prohlis: IWE 67 and WHH 17. The hous-ing company VEB Wohnungsbaukombinat Dresden planned several housing estates with similar building typologies at the same time. This makes Prohlis and the subsequent Johannstadt estate look similar although their inner-city and suburban contexts are different. At the end of the 1990s, the new federal states in eastern Germany experienced a strong shrinking process due to eco-nomic decline and ongoing migration to the old federal states in western parts of Germany. This demographic change also affected the real estate market with

increasing numbers of apartment vacancies and declining workloads for technical infrastructure. The German government introduced a national subsidy program in order to stabilize the real estate market for housing and at the same time strengthen qualities of attractive inner city areas. One central idea was to shrink cities from the outskirts by cutting off obsolete buildings and infrastructure. The subsidy program was also applied in Prohlis, and in 2011 about 1,600 dwelling units were demolished. At the same time, the demographics changed in Dresden and the city's population again grew, and so did the demand for affordable flats.

Figure 4: Aerial view of Prohlis.

Source: Amt für Stadtplanung und Mobilität, Dresden.

During this transformation, Prohlis developed an altered reputation that strongly corresponding with the new demographic reality, one describing a socially disadvantaged district with lower incomes compared to the average in-

come levels in the city. In particular, households with children suffered from a high degree of disadvantage compared to smaller households and the city as a whole (see table 2). Among other aspects, this was an obvious trigger for a new subsidy application for Prohlis for social stabilization in disadvantaged urban districts. Prohlis was accepted for the same national subsidy program as Johannstadt. In Prohlis, like in Johannstadt, a neighborhood management team was installed and efforts are made to include the residents in urban development processes and thereby strengthen democracy, transparency, and cooperation as well as local business, culture, and organizations.

Dresden, Johannstadt Nord

The same municipal residential housing company, VEB Wohnungsbaukombinat Dresden, planned and erected the large housing estate in Johannstadt Nord, with its approximately 3,000 flats, from about 1970 to 1978. Here, too, the municipal residential housing company had developed a catalog of building typologies optimized for the local industrialized construction process. They predominantly erected two building typologies in Dresden Johannstadt: IWE 67 and WHH 15.

From the beginning, in the mid 1970s, Johannstadt had a socially stable and economically mixed population with many young families. Although a critical public discourse dealing with scale and monotony in large housing estates also came up in the GDR, Johannstadt kept its positive image. After German unification in 1990, the area's valuation altered step by step over the following decade. The residents' average age rose, new residents often had incomes below the average income in Dresden, and an increasing proportion of residents had foreign backgrounds.

In 2014, the area in northern Johannstadt suffered from a serious social disadvantage linked to average social welfare levels in Dresden and Germany. The City of Dresden's application to a national subsidy program for social stabilization in disadvantaged urban districts was accepted. The city developed action concepts for the district based on a broad analysis of statistics and stakeholder perspectives from actors such as local business, local NGOs, housing companies, and other local institutions. In order to establish direct and personal contact with maximum process transparency, the city established a neighborhood management office in Johannstadt. The staff at the neighborhood management office stays in continuous contact with residents and

facilitate transformation processes in the district. Important subprojects in the development process are improvements of public spaces, streets, and social infrastructure as well as subprojects designed to support the establishment of sustainable institutions that promote active local political influence.

Figure 5: Aerial view of Johannstadt.

Source: Amt für Stadtplanung und Mobilität, Dresden.

In this process, it was very important to establish and maintain trustworthy relations amongst the city administration, residents, and other local stakeholders. The residents' diverse backgrounds present very specific challenges within the development process. This is not only a question of cultural background but also one of different lifestyles. One common conflict concerns traffic and public transportation. Some, often younger, residents wish for more greenery, more buses, and fewer cars, while others, often not so young and often male, wish for more parking lots close to their front doors. For the development process, it is important to have time and resources to moderate and

respectfully discuss conflicting standpoints in order to reach decisions with broad support in the neighborhood. Thereby, trust and confidence during the process might be just as important for sustainable urban development as the final design of a public space or, in this cas, the new Johannstadt cultural center.

Today, local cultural organizations share an old kindergarten now used as a cultural center for the district. Within the subsidy program for social stabilization, the city plans a new site and a new building in cooperation with local cultural organizations and the residents. The neighborhood management office communicates the steps in the ongoing process to people in the neighborhood. In this process, urban planning, functionality, and building design must go hand in hand with a transparent dialog with local residents and stakeholders. The planning process itself becomes an important component to support social stabilization by strengthening local engagement and the residents' actual influence. This means the success cannot be measured akin to an optimized time-saving planning process, but far more in terms of the way agreements on common solutions can be reached.

In this way, our local experiences in Johannstadt already closely correspond with the revised objectives in the New Leipzig Charta that was endorsed at the informal European minister conference in November 2020, putting a very clear focus on the importance of urban neighborhoods (Council of EU Ministers 2020).

Similar but Different

In comparing Dresden's large housing estates Prohlis and Johannstadt with Grindtorp und Fittja in Stockholm, the similarities become obvious. All four housing estates were erected between 1960 and 1985 and their planning concepts follow similar functional and aesthetic ideals. On the other hand, when looking back, these four residential areas developed in very diverse ways. Grindtorp, with average or privileged social conditions within the national context, looked back on a long term of continued maintenance of the buildings. Fittja, with obviously underprivileged social conditions within the national context, has a very high proportion of residents with a migration background. Johannstadt, located in Dresden's inner city and erected in part within the existing structure of streets, features an infrastructure from before the severe destruction in World War II but, despite the attractive location,

has been marked by underprivileged social conditions within the Dresden context. Finally, Prohlis, which was planned and erected in a visionary modern manner, including monumental public spaces with a central promenade accentuated by groups of higher buildings and monumental public art with mural paintings and sculptures, is today marked by underprivileged social conditions within the Dresden context. With these four examples, we can see that they offer different possibilities to analyze demographic statistics related to large housing estates.

Location Analysis
Focusing on Fittja and Prohlis, it possible to argue that their location at the outskirts of the city makes these large housing estates unattractive as urban alternatives, and that this leads to social segregation as people who can afford an apartment closer to the inner city would move away.

Scale and Design Analysis
Focusing on Fittja, Prohlis, and Johannstadt, it is possible to argue that scale and building design itself could be unattractive and that people who can afford a more human scale and more beautiful design would move away.

Subcultural Analysis
Focusing on Fittja, Prohlis, and Johannstadt, it is possible to argue that a demographic concentration of subcultural groups that differ from the city's supposed cultural mainstream makes these large housing estates unattractive for people who see themselves as part of the cultural mainstream. They would choose to move away and thereby further contribute to the ongoing segregation process.

Economic Analysis
Focusing on Fittja and Grindtorp, it is possible to argue that physical estate maintenance and social and economic stability (or instability) decide how large housing estates develop in one direction or another.

Conclusion / Challenge

Demographic change determines how blocks, cities, regions and nations develop over time. Large housing estates reflect the technical and economic con-

ditions for a certain segment of urbanization almost all over the globe. In comparing differences and similarities between large housing estates, we can learn that we are dealing with a category of immense diversity. Large housing estates are similar and different just like fortified medieval cities or urban districts from the end of the nineteenth century are similar and different within their own categories. From urban history we learn, that demographic change can produce social tensions and segregation in very different kinds of urban structures. From famous cities like London, Paris, and Berlin we know that social misery can develop in dense inner-city districts. Today, demographic change forces the development of informal cities at the outskirts of megacities. The migration from the countryside into the big cities did not yet come to an end. This might be interesting phenomena for scientists to study, but it is not over seeable, that this aspect of urbanization is closely related to extreme social inequality on local, regional and global scale (Dawson 2017).

From this point of view, it is unworldly to judge large housing estates in categories of god or bad. If we like it or not, we have this kind of urban districts with millions and millions of flats and residents all over the globe. In the first place they represent an enormous resource to maintain and develop for the future in a sustainable manner. Sustainable must in this case mean to use things so long and as good as possible, saving energy, environment but also social structures. Therefore, developing large housing estates—in many cases homes for people with modest lifestyles and diverse biographies and subcultures—top priority must also be, to keep social inclusion and equality as a main aspect of sustainable change in mind.

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Economy and Policies

With the end of the Soviet Union, responsibility for urban development and housing construction was handed over to the municipalities and the market. The new situation had severe consequences for the organizational and planning culture. Private and public actors were both suddenly competing for funds and responsibilities. Some private investors pushed for quick turnarounds and sought fast money. The municipalities had to seek new sources of funding, and they had to develop new integrated planning instruments and find methods of cooperation that involve all actors. New players on the scene —whether administrative bodies with guidance and expertise, private investors with money, or NGOs and citizens with grassroots support—could also stimulate various steering mechanisms for large housing estates. What new instruments for planning and managing the housing stock could be observed so far and in what ways have they been successful? Regulating the different interests and finding an appropriate balance between control and freedom is a challenging issue for all post-Soviet cites.

The new situation raises various questions concerning policies and stakeholders. Is privatization a chance or a threat for the transformation process? How can the municipality contribute to socially balanced development? What kind of (appropriate) regulations and controls are needed in order to ensure that sustainable developments remain under the control of the municipality and stimulate private investments? Private investments have to be managed and controlled in such a way that they contribute to the common good—for example, by building affordable housing and creating public spaces. The strengthening of private (nonprofit) entities plays a crucial role in the further development of the settlements. Alternative financing models that reflect the needs of the residents and are less dependent on the interests and demands of the market have to be developed and championed. Lastly, the role of the locally anchored owners of the housing estates has to be clearly defined. Especially vis-à-vis the power and expertise of global corporations. On the one hand, corporations are well equipped to manage the housing space with their

international experience and resources, but there is also a risk that they may overwhelm the interests of the inhabitants.

This chapter presents the perspectives of academics and practitioners from Canada, Germany, Lithuania, and Russia. The authors give insights into the specifics of transformation procedures, discuss the roles of the actors, and also share some of the challenges that can occur in the process.

Rūta Matoniene, senior advisor to the Chief City Architect of the Vilnius City Municipality, presents the efforts that the municipal administration in Vilnius is taking in order to transform its Soviet housing heritage. The resulting "complex transformation" is very challenging due to the hurdles concerning land ownership and management that cause serious delays and increased bureaucracy. The article discusses goals, actions, and organizations in charge of the Lithuanian capital, presenting its success stories and lessons to learn.

Marianna Shkurko and Alexander Mikahilov, researchers at the Higher School of Economics in Moscow, reflect on the transition to the standard neoliberal model of property and attempt to decolonize the idea of property and its division. By analyzing the spatial characteristics and socioeconomic situations in Ulan-Ude, Vorkuta, and Vladivostok, they identify the emergence of hybrid forms of property regimes.

The report by Knut Höller presents observations and projects in housing and urban development in Eastern Europe as seen from the perspective of the NGO Housing Initiative for Eastern Europe (IWO). The general context in Eastern Europe, with the energy transition, efforts to improve energy efficiency in buildings, and the housing market situation is explained. Looking at the housing situation and prospects in Latvia, the article discusses the decarbonization of the building stock, the issue of affordable housing, and IWO's contribution and commitment to energy efficiency in buildings and affordable housing.

Sasha Tsenkova, professor of planning and international development at the University of Calgary, focuses on the future of postwar housing estates and provides a compelling rationale for the need to mobilize economic and social capital to reinvent these places into vibrant neighborhoods. The report looks at the challenges of transition affecting the housing estates, providing a compelling rationale for more strategic investment in the housing estates and calling for policy and planning strategies to ensure quality of life. The article provides examples from neighborhood improvement programs in which strategic investment in diverse, socially cohesive, and participatory projects play an important role. They showcase how to sustain the vibrancy and vitality of housing estates, making them resilient to crises and attractive places to live.

11. Innovation in Housing: Decarbonization in Latvia

Knut Höller

Structure of the Stock

The available housing stock in Latvia is rapidly aging and depreciating. Dealing with the building stock is one of the most difficult issues in the country's further transition to a market economy. Achieving climate neutrality in the building stock by 2050 through energy refurbishment must be combined with solving some other fundamental issues, such as the availability of affordable and quality housing, thus encouraging residents to remain in the country and increasing their mobility.

Approximately 1.4 million buildings with a total area of 206.56 million m² are registered in the country. Of all buildings, 363,900 are residential buildings totaling 91.08 million m². About 285,000 buildings are heated. The number of single-family houses is the largest (309,900; compare this to 13,938 two-family houses), but by area this is only 17.6 percent. Multifamily buildings (three or more dwelling units) represent the largest proportion of the total area (51.55 million m²) with 24.9 percent, although they represent only 2.81 percent of the total building stock (39,400 buildings). Almost half of the residential buildings (44%) are in the capital Riga and its surroundings (Pieriga). In the very sparsely populated southeastern region of Latgale, bordering Russia and Belarus, the number of single-family houses is larger than in Riga's surroundings. The number of non-residential buildings (roughly 1 million) indicates that only 18.5 percent of all non-residential buildings are concentrated in Riga (about 74,000) and the other eight so-called large cities of Latvia (111,000). Of the non-residential buildings, only 108,000 are heated.

A large proportion (44.5%) of the multifamily buildings were built before 1941. Of these, more than 8,600 buildings have exterior walls made of wood.

Buildings constructed in the postwar years (1941–1960) were characterized by good quality, and in the housing sector, mainly brick buildings were built as part of the standardized Stalin-era projects.

Majority of outdated standardized multifamily buildings
Most of the buildings were built during the Soviet period and before 1992 (51%). The Soviet buildings were mostly built of industrial prefabricated construction in various typical building series, before the time when thermal requirements were significantly increased, and thus these buildings exhibit a very low level of energy efficiency.

Most of the various typical construction series (fig. 1) were built in the period from the 1960s to the beginning of the 1990s. Clay bricks, aerated concrete and, claydite concrete are materials widely used in external walls. Later, several special projects were carried out, and construction of reinforced concrete and claydite concrete large-panel buildings predominated.

The Association of Management and Administration of Latvian Housing (AMALH), the largest and most experienced interest group of municipal and private housing management companies, points out that some construction series have already reached their originally projected lifespan. The serial buildings typical of the 1950s and 1960s, the so-called "Khrushchyovkas" and "Brezhnevkas" are technically and morally worn out. Most of the other building types will follow the same fate in this decade and the next. This issue, which affects a large proportion of homeowners, has thus far not been sufficiently addressed in terms of building physics, economics, and social consequences, and appropriate strategies for dealing with it have not been developed (Dzedulis 2020).

After gaining independence in 1991, the construction rate for new homes has never again reached that of the socialist era. Only about 10 percent of all residential buildings were built after 2003. Of the multifamily buildings, only 3 percent were newly built after 2003 (4.4% after 1993). Only buildings constructed after 2015 meet the currently valid thermal requirements, although buildings constructed between 2003 and 2015 come close to meeting them (Ministry of Economics 2015).

Sociodemographic Issues

<u>Low population density</u>
Population density in Latvia at the beginning of 2018 was thirty persons per km². The area of Latvia is 64,600 km², which is practically equivalent to the total area of five smaller EU countries (Belgium, Slovenia, Luxembourg, Cyprus, and Malta): 63,100 km². At the same time, the population of Latvia in 2017 was 1.95 million, whereas the combined population of Belgium, Slovenia, Luxembourg, Cyprus, and Malta was 15.32 million. The number of inhabitants in Latvia is roughly equivalent to that of the cities of Hamburg or Vienna. By 2050, a further population decline to 1.4 million inhabitants is forecast. After Latvia's independence, the housing market changed radically and has remained in an unstable and deformed state for about thirty years.

<u>Deformed housing market: homeowners predominate, rental relationships mainly in the shadow market</u>
Like many former Communist countries in Central and Eastern Europe, home ownership is by far the dominant tenure in the Latvian housing market. The privatization of the housing stock in the 1990s had the result that just over 7 out of 10 Latvian households live in housing that is owned outright (i.e., without an outstanding mortgage or housing loan), which is well above the OECD average of just under 43 percent. Fewer than 9 percent of Latvian households live in owner-occupied housing with a mortgage, which in turn is significantly lower than the OECD average of almost 25 percent.

Meanwhile, Latvia's rental market, consisting of both private and subsidized rentals, is very small from an international perspective, representing around 12 percent of all household tenures; the rental housing makes up on average 28 percent of housing tenures in the OECD. There is, by extension, a sizeable "shadow" rental market in Latvia, though there are no data to indicate the size of this segment of the market. Lithuania, Slovakia, Hungary, Poland, Slovenia, and Estonia have a broadly similar housing tenure structure. With a share of 0.4 percent of the total housing stock in 2016, Latvia has the smallest social housing stock in the EU (8% on average). There are currently 7,000 people waiting for housing.

Housing situation often difficult and in poor technical condition

At the request of the Latvian government, the OECD analyzed the Latvian housing market in 2019 and 2020 and made recommendations for an affordable housing policy.

Latvian households currently do not spend much on housing costs on average. Expenditure on housing and utilities is around 21 percent of the final consumption in Latvia and compares to the OECD average of around 23 percent. However, the low spending masks another challenge: poor housing quality. In many cases, basic sanitation facilities in 2017 are missing. In addition, some 15 percent of Latvian households suffer from "severe housing deprivation." Eurostat (n.d.) defines severe housing deprivation as living in a dwelling with overcrowded conditions in addition to at least one of the following housing deprivation measures: leaking roof, no bath/shower and no indoor toilet, or a dwelling considered too dark. OECD countries with a high rate of severe housing deprivation tend to be dominated by homeowners. In Latvia, nearly 60 percent of the "severely deprived population are homeowners, while 25 percent are renters, either in the private market or in subsidized housing.

Lack of affordable housing limits society

There is another challenge that is not immediately obvious from the typical housing affordability indices: Most Latvians cannot afford a mortgage to buy a home—meaning that many renters cannot afford to become homeowners, and many homeowners cannot afford to move. Across the country, fewer than half of Latvian households could afford a new mortgage on a 50 m² apartment, while only one third could afford a mortgage on a 75 m² apartment. The OECD calls this group the so-called "missing middle" households and sees them facing the following challenges: "The first is that the housing market lacks affordable rental housing alternatives that would typically be available to lower- and lower-middle income households who may not be able to afford a mortgage to purchase a home. The second is that the large share of homeowners (who are ineligible for existing housing support) live in housing of poor quality and are not able to afford the costs associated with maintenance or upgrades" (OECD 2020:51). This results in a situation where around 44 percent of all households (equals 1/3 of population) are too rich to qualify for social housing and the housing benefit, and too poor to afford a mortgage. As a result, the Latvian government is currently working on the issue of housing affordability, planning various programs to increase the supply of affordable housing and completing a reform of the outdated tenancy laws. Another issue related to population decline

and internal population migration from the provinces to the Riga metropolitan region is the vacancy rate of flats. The Housing and Population Census 2011 (CSB 2011) found another factor influencing the structure of the housing stock. One in five dwellings has no permanent occupant or is unoccupied. One challenge will therefore remain: How does one deal with housing stock that is no longer needed and who bears the costs for its removal?

Governmental Targets for Housing Decarbonization

Latvia's medium- and long-term climatic objectives are presented in the National Energy and Climate Plan 2021–2030 (NECP), which also contains information on the housing stock and decarbonization (NECP 2018). This document has priority over the Long-Term Strategy for the Renovation of Buidlings (LTRS). Both documents were submitted to the EU Commission in 2020. The goals to be achieved in the new EU funding period 2021–2027 are included in the National Development Plan of Latvia for 2021–2027 (Latvijas Nacionālajā attīstības plānā 2021–2027, NAP2027).

Latvia intends to achieve climate neutrality by 2050. Policies and measures described in the NECP are focused mainly on the transport and building sectors, as well as on the heating and cooling sector. The implementation of these measures will largely depend on available EU funds, as has been the case over the past decade. This dependency so defined brings some uncertainty into national planning and related subordinate documents.

In terms of the energy efficiency of buildings, Latvia plans to improve the energy efficiency of the entire residential building stock. For buildings, an average heat consumption of 120 kWh/m²/year in 2030 is foreseen for the heating supply. Explicit renovation targets (NECP 2018) are, in particular, the refurbishment of at least 2,000 apartment buildings and at least 5,000 single-family houses by 2030.

Even though the number of multifamily buildings renovated annually has been lower so far and renovation of private single-family houses has only recently been supported at all, this goal seems realistic. However, this will not be enough to decarbonize the building stock by 2050, and it does not adequately reflect the energy-saving potential of the building sector in Latvia. It is assumed that by 2050, due to the age and depreciation of the stock, 30 percent of the residential buildings will no longer be fit for refurbishment. The LTRS and other documents indicate that 30 percent of the building stock is to

be renovated per decade. The necessary investments for all types of buildings by 2050—which, depending on their area, range from €200/m² to €400/m² in consideration of current construction costs—amount to approximately €19 billion. Table 1 shows the financing gap for residential buildings.

Table 1: Funding Gap for Apartment Buildings (source: LTRS)
Total Funding Gap for Residential Apartment Buildings

Variables	Values
Total number and area of apartment buildings	38,600 54.4 million m2
Number and area of apartment houses where it is possible to carry out cost-effective recovery	27,000 37.8 million m2
Cost of energy efficiency improvements and other emergency renovation works	€200/m²
Total financial need	€7.54 billion
Proportion of houses potentially interested in energy efficiency measures	60%
Total investment cost (actual financing needed)	€4.52 billion (60% of €7.54 billion)
Potential funding required over 10 years	€1.5 billion (1/3 of total investment)

For the approach to energy retrofitting, the Latvian government has defined a cost-effective approach based on Article 5 of the European Directive on the Performance of Buildings (EPBD) Directive 2010/31/EU. In practice, this means that 60 to 70 percent of Latvia's housing stock can be renovated in a cost-effective way. This is approximately 25,000–27,000 multifamily buildings, or about 37 million m². The NAP2027 plans improvements to the energy efficiency of 40,000 flats for the current funding period (CSCC 2020), which corresponds to approximately 800 apartment buildings (assuming a flat size of 50 m²). This would result in renovation of 2 million m² in total. It is also planned that 10,000 new apartments will be built each year by 2027 within the framework of the plan. Furthermore, considering that according to surveys 60 percent of the flat

owners are interested in refurbishment with EU cofinancing, 4,860 apartment buildings can be set as the primary target (30% per decade corresponds to 8,100 apartment buildings).

To achieve this primary goal, investments of €1.5 billion would be necessary. In the NAP2027, €163,125 million are indicatively foreseen as available for the renovation of residential buildings. Combined with the same amount of commercial loans, this would result in a financing budget of €326 million. The 10-year financing gaps for private houses (€1.54 billion) and municipal buildings (€1.63 billion), in addition to the technical and socioeconomic challenges, also affect Latvian society.

Latvian citizens cannot rely on an institutionalized housing sector due to mass privatization. Dealing with this situation will occupy society for many years to come and makes the challenges of decarbonizing the building sector seem both an opportunity and a curse. Although it has so far not been considered, the need to regard urban neighborhoods in their entirety and to develop suitable concepts for them comes into play here, both for the sake of decarbonization and for socioeconomic reasons.

Refurbishment Rate

As a result of the mass privatization of housing, the management, care, and maintenance of housing in the country also had to be reorganized. In this protracted process from the mid-1990s to the mid-2000s, relatively little was invested in the renovation of multifamily buildings. The fragmented ownership structure did not allow for holistic renovations and the owners mainly implemented individual measures, especially the replacement of windows and apartment entrance doors. In many cases, this did not significantly improve the energy situation, and these measures were often accompanied by additional structural problems, such as the formation of mold.

State support in a noticeable and continuous approach for more energy efficiency in residential buildings started in Latvia only after accession to the EU in 2004. Due to the complicated situation in the new member states resulting from mass privatization of the housing stock, the EU opened access to EU structural funds and thus made it possible to finance energy-efficient renovations in apartment buildings. For Latvia, this meant ending years of reluctance to support homeowners and paying more attention to the issue of energy efficiency of buildings.

In the first financing period from 2007 to 2013, a first state support program for the refurbishment of multifamily buildings was launched. After several years of preparation for the program, the Latvian Investment and Development Agency (LIAA) finally coordinated the first funding program, which was officially regarded as an initial start so as not to set expectations too high. Of the planned funding of €77.8 million, €63.2 million could be used during the funding period. Of 1,365 project applications submitted, 741 buildings were renovated. The investment costs of the completed projects amounted to €149.7 million.

In the following funding period from 2014 to 2020, the state financing institute ALTUM, established in 2013, took over coordination of the funding program for energy efficiency in residential buildings. The submission of projects was launched in September 2016 and these will be implemented by December 31, 2022. Applications for 989 projects for an indicative amount of €420 million have been submitted throughout Latvia since the beginning of the program in spring 2016. Within the framework of the measure, construction works have been completed in 264 buildings; there are 51 multi-apartment houses in the renovation process, while the other projects submitted are at different stages in the preparation of the project. The Latvian government recently allocated an additional €35 million budget for the renovation of apartment buildings, which will cover the potential gap between the funding periods, and some 138 additional buildings will be renovated.

Consequently, the renovation rate in Latvia is very low despite these efforts. Only about 1,000 apartment buildings have been comprehensively renovated since Latvia's independence and, as can be seen here, mainly only after 2009. The renovation rate in the last ten years was therefore around 2.5 percent, with large annual fluctuations due to the discontinuous provision of subsidies. The annual refurbishment rate is therefore far below 1 percent, and increasing this remains a very big challenge for Latvia in the coming years and decades.

As mentioned above, Latvia has set a target to renovate 2,000 residential buildings in ten years (2021–2030), which corresponds to a renovation rate of 5.2 percent (= 0.52% annually for 38,600 buildings or 0.74% for 27,000). The term "refurbishment rate" is defined in the NAP2027 for the first time ever as a new indicator, for which there is no data yet to allow setting a baseline and target values. For the base year 2021, the target values for 2024 are 2 percent and for 2027, 3 percent (as the share of renewed housing compared to total housing numbers per year). A "renovation wave" for the country is hugely important

economically. This sector clearly requires more attention than before, including a more precise definition of the renovation rate to be achieved.

Energy Efficiency Standards

The energy consumption of the building sector (households) accounts for up to 30 percent of the total energy sector, so the building sector has significant potential for achieving overall energy-efficiency targets. Most existing buildings have a high level of energy consumption, along with a significantly lower thermal performance than could be provided by currently available technologies. Most of these buildings will be in operation for a considerable period, so a complex renovation of these buildings, which would improve their energy efficiency, is important. However, the existing depreciation of residential and non-residential buildings should also be emphasized. According to the data provided by the State Land Service, the total percentage depreciation of residential buildings is 38.9 percent, while the depreciation of non-residential buildings is 41 percent.

Latvian legislation took several years to replace Soviet building standards and gradually raise thermal standards. Only since 2015 have there been stricter requirements for the building envelope. The Cabinet of Ministers Regulation on Energy Certification of Buildings (2013, amended 2015) introduced six energy efficiency classes and defines energy efficiency requirements for renovated buildings. Above the stated treshold level for heating (Class F, above 150 kWh/m^2/year) buildings need energy performance improvement measures.

In April 2014, the requirements of the recast Directive 2010/31/EU were included in the National Construction Standard. This has been followed by a new construction standard (in force as of 2020). The new standard directly incorporates the energy performance requirements (in kWh/m^2/year) for new and reconstructed or renovated buildings. In turn, the objective of the adjusted maximal U values is to eliminate the design of unsafe construction elements.

Figure 1 + 2: A typical Series 104 apartment building from the 1970s before and after refurbishment (more than 60% energy savings). The building in Jelgava was one of the first to undergo complex re-furbishment and received the award in the "The Best Energy Efficient Building in Latvia" competition in 2010.

Source: Knut Höller.

From 2021 onwards, newly constructed residential buildings must be nearly zero-energy buildings and the allowed level of energy efficiency of apartment buildings that are renovated is </= 80 kWh/m²/year (single-family houses </= 90). So far, Latvia has little practical experience with nearly zero-energy buildings, mostly in the form of pilot projects. This development is to be further supported with funding programs. The benchmark for renovated buildings, on the other hand, does not seem very ambitious. In practice, higher savings have been achieved in many cases, which would make even lower target values seem realistic. If the average energy consumption was 165 kW/h/m²/year, then it was, on average, 67 percent lower, or 54 kWh/m²/year after the refurbishment work.

Since 2010, the Law on the Management of Residential Buildings has been in force in Latvia. Pursuant to Article 8 of the law, a "house file" shall be established for each residential building. The house file may be in hard or electronic form and includes technical documentation, such as a technical passport (plans, schemes), project documentation, energy passport and energy plan, and findings from a technical survey of the house. Other information relevant to the administration and management of the residential building may be included in the house file.

There is also Cabinet Regulation No. 907 of September 28, 2010, "On surveying, technical maintenance, current repairs and minimum requirements for

energy efficiency of a residential house," which lays down minimum requirements for ensuring the energy efficiency of a residential building. Pursuant to this regulation, the manager of a residential house is obliged to plan energy-efficiency improvement measures if the average thermal energy consumption of the residential house exceeds the requirements laid down in the regulation.

Especially in residential housing, with its atomised ownership structure, the work of administration managers and providers of maintenance services is very important. Admininistration managers have an increasingly important role to play in the planning and implementation of refurbishment projects. Latvia has taken this into account by introducing compulsory training for administrators and obilgatory qualifications, which is not yet common internationally.

Financing Tools

The main financing instrument for energy refurbishment of residential buildings is a combination of subsidies and commercial loans. The subsidies consist of EU funds (85% majority) and state budget funds. The available budgets are closely linked to the EU structural fund periods. This has so far periodically led to a certain discontinuity in the provision of funds and to a market standstill. As mentioned above, the state financing institute ALTUM is responsible for coordinating the state funding program for the refurbishment of multifamily buildings and for providing the funding. The funding policy itself and the funding program are the responsibility of the Ministry of Economics, while the Ministry of Environment and Regional Development is responsible for the public buildings. It remains a major challenge for the Latvian government, in cooperation with commercial banks, to offer financing that motivates homeowners to make energy-efficient renovations. Ideally, the financing of the refurbishment is possible through the saved energy costs and at the same time the subsidy share is reduced and thus a larger number of buildings are refurbished.

So far, the involvement of private actors in the refurbishment of multifamily buildings, although one of the government's goals, has not worked. The use of ESCOs (Energy Saving Companies) despite various efforts, has not been successful so far, and obviously these are difficult to apply in housing retrofits. In order to motivate homeowners to participate in the state subsidy program for the renovation of multifamily buildings and to overcome the first and essen-

tial hurdle of the application, some municipalities support preparation of the necessary documents, such as the energy audit and the technical project. The cofinancing can be up to 50 percent but not more than €1.75/m². Since the decision to renovate must be made by a majority of all homeowners together in a homeowners' meeting, this support is very important. Another instrument for the municipalities is the granting of tax allowances for owners in renovated buildings.

Policy Tools

The instruments currently used and those that will be used in the future are a mix of investment support, regulation, information measures, and the promotion of research and development. The most important policy instrument in the housing sector is the use of EU funds together with state funds to encourage residents to obtain (mainly commercial) loans to carry out complex energy efficient refurbishments. This instrument will remain the main driver for refurbishment and can be further optimized and adapted by the Ministry of Economics, the financial institution ALTUM, municipalities, and social interest groups—that is, they can work to gradually reduce subsidies, extend maturities, et cetera.

The obligatory "house files," which provide information on the condition of the buildings and are constantly updated, and certain safety measures, such as regular, legally prescribed inspections of the heating and ventilation systems by owners or owners' associations, can contribute to raising awareness among homeowners.

A proven and successful tool is the campaign "Let's live warmer!" ("Dzīvo siltāk!"), launched in 2010 by the Ministry of Economics when the first state support programme for the renovation of multifamily buildings started. The communication campaign, which was developed to promote energy efficiency in buildings in Latvia, also involves industry associations, companies, and experts. In addition to the administrative and organizational issues in respect to applying for projects and managing multifamily buildings, the information campaign also regularly informs people about quality standards, technologies, and the latest developments in building refurbishment. During the campaign's ten years of existence, several conferences, seminars, workshops, discussions, and publications have been organized at national, regional, and local levels. Two-way communication via social networks was established,

enabling direct communication with citizens. The Ministry of Economics organized seminars, conferences, and various discussions, and participated in fairs and exhibitions. The campaign's success can be measured by the steadily increasing number of project applications submitted for funding (Ministry of Economics, n.d.). As part of the campaign, the competition for the "Most Energy Efficiency Building" (Konkursā Energoefektīvākā, n.d.) has been held regularly since 2011, judging buildings renovated in the previous year.

Related Measures

In addition to renovating that part of Latvia's housing stock that can be sustainably renovated, increasing the availability of affordable housing and thus building new apartments and developing a rental housing market are a parallel major challenge for the country.

To expand the housing market on the supply side, more subsidies are required to attract investors for new, energy-efficient (rental) homes, and long-term reform of the rental law must be completed. The Latvian government expects that once the obstacles in the rental market have been removed, around €600 million will be invested annually in new and energy-efficient buildings. New buildings and renovations of social housing are also to be subsidized with state and municipal funds to support low-income people and those on the waiting lists for housing.

The funding and guarantee program for young families to improve access to residential property is to be geared more toward the purchase of energy-efficient apartments. With additional funding, more energy-efficient apartments are to be purchased than previously vacant apartments in the prefabricated buildings.

As part of the national development plan (NAP2027), the increase in the energy efficiency of private houses is to be considered for the first time. Both the legal and financial framework conditions must be created for this.

Conclusions, Challenges, Limitations, Reality of Plans for Decarbonization

The performance of Latvia in respect of housing decarbonization is still modest in consideration of national targets as well as when compared to European in-

dices, but insufficient in view of the goal of net zero emissions by 2050. Latvia continues to manage a difficult legacy that started thirty years ago with the mass privatization of poorly maintained and energy inefficient housing, which led to little progress in improving energy efficiency in buildings until recent times due to years of delay.

In the meantime, the basics have been laid for the mobilization of homeowners on the one hand and the practical implementation of building renovation by companies on the other. To achieve higher volumes and higher renovation rates together with a further deepening of renovation, the inclusion of renewable energy and innovations are necessary given the building sector's already emerging limitations of capacity. For example, the approach of carrying out serial refurbishment with prefabricated elements, which started in Estonia and is also spreading in some countries in Western Europe, would increase the renovation rate while at the same time providing opportunities for the local wood processing industry.

Together with improving access to affordable housing for the population, urban development could receive a new impetus. Integrated urban area development and solutions for buildings that can no longer be renovated and whose owners are abandoning them require optimized approaches that help to use scarce financial resources in a more targeted way. The inclusion of EU funds and the new possibilities offered by the EU Recovery Fund must be used even more consistently for national decarbonization. Ultimately, the national building renovation that is now necessary can potentially give substantial and sustainable impetus to the domestic economy and to local growth.

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12. Property Relationships and Post-Soviet Urban Planning: Three Critical Cases

Alexander Mikhailov and Marianna Shkurko

Introduction

In contemporary Western world cities, the distribution of property rights and clearly established borders between types of tenure serve as a starting point for urban planning. Since urban property owners are assigned the title of stakeholders, it is argued that the "stake" allows them to take part into negotiations and decision-making when it comes to spatial transformations affecting their property, since stakeholders share rights, obligations, and the intention to use their property as an economic asset given and granted by the bundle of rights. The concepts of stakeholders and property owners are relatively new to urban planning in Russia, emerging with the restoration of private property as a legal and economic entity by the 1993 Constitution of the Russian Federation.

With the dissolution of the Soviet Union in 1991, the organization of the state underwent a major and sudden shift toward a capitalist model of governance and economy (Golubchikov 2017). This shift implied the establishment of the institutional infrastructure for private property rights, estimation of market pricing on the assets—namely land, housing, industries, et cetera—and the creation of a strata of property owners via the politics of asset privatization. On the jurisdictional level, this transition to the new modus operandi was sealed with the commencement of a number of laws and legislative acts. However, on the level of daily practice, the adoption of these newly born regulations had been met with a number of obstacles.

In this paper, the issue of institutional transfer (Deeg 1995) is addressed, critically confronting the perceived totality of the institution of private property. It should be noted that we intentionally excluded industrial and capital assets from the analysis and focused on land and housing, since the privati-

zation of the former had been carried out on a nontransparent basis and demands independent inquiry.

Exploring three critical cases, the transition to the standard liberal model of property is examined and the perceived totality of private property as an institution is investigated, following the model of intensifying processes of centralization of urban planning (Zupan et al. 2021). In order to explain the transition to the standard liberal model of property (Hann 2006) and the obstacles it had faced in the process of transfer, we analyzed the cases of Vladivostok, Ulan-Ude, and Vorkuta. Spatial characteristics and socioeconomic situations resulted in the emergence of hybrid formats of property regimes (Canfield 2020). The findings of this research shall contribute to an understanding of the emerging East European countries' problems in the established domains of urban theory and practice.

The city of Vladivostok faced significant increase in the automobilization rate during the early 1990s, which resulted in the current heated contestation of public spaces (Springer 2009) among urban stakeholders. The theoretical underpinnings and empirical evidence from this case analysis shed light on the variety of forms that practices of civil society related to property (von Benda-Beckmann 2006) may take during the process of post-socialist transition. The second case represents a unique phenomenon of so-called "unplanned" suburbanization (Breslavsky 2014), stimulated by rapid growth of unofficial *nakhalovki* [squatter] settlements (Karbainov 2018) in the urban periphery during the 1990s and 2000s. The last case is dedicated to the city of Vorkuta, where dramatic depopulation during the post-socialist period has prompted residents to relinquish ownership of their real estate.

In the first part of the paper, the theoretical and historical grounding for the further analysis is established. The second part of the paper is dedicated to the case analyses, where the specificity of the selected cases is uncovered. The paper ends with the conclusion section, summarizing the findings and stating topical questions for further research.

Private Property in Post-Soviet Russia: Key Concepts, Critical Points, and Criticism

The concept of private property provides a basis for contemporary urban planning. In Western societies, property rights have been long associated with liberal values that provide personal freedoms and act as a basis for the formation

of civil society (see, e.g., Pipes 2000), and therefore they are often called "ownership societies." The right to exclusive ownership is frequently promoted as a desired status quo, since, on one hand, it "provides the basis for efficiency […] by creating the optimum structure of incentives" (Hann 2003) for national economic development and, on the other hand, acts as a source of economic security for households, providing widespread access to economic assets and exerting an equalizing role in wealth distribution (Arundel et al. 2020). Subsequently, under the capitalist economy, the liberal model of property implies the commodification of property rights. Under this paradigm, property owners are treated as rational economic agents that strive to maximize the economic value or revenue of their assets.

This view of property rights is relatively new to the Russian state, since the tradition of exclusive property rights had been disrupted by the anti-egalitarian property regulation of the Soviet period. Despite the existence of a free-market economy and the strata of property owners in the Russian Empire, property rights had never been widespread and instead contributed to the hierarchical structure of the society. Under these conditions, ownership had been the means of wealth accumulation secured by inheritance law. With the establishment of the socialist agenda, the system of private property had been reformed into a system of communal property, proclaiming the state as the one and only stakeholder, and a system of personal property, under which Soviet citizens could acquire and use personal belongings but could not sell them. Another legal novella of the time was the succession ban that prohibited citizens from inheriting land and dwellings. Trudolyubov (2015) argues that the pre-Soviet tradition of property relationships had been eliminated when the generation of owners fled the country and had not been restored until the dissolution of the Soviet Union, and therefore the transition to the market economy required the institutional transfer of private property.

In the transitional period, the system of private property was transferred to the state organization, in which privatization policies played the crucial role. This allowed the authorities to form the strata of property owners and entitle them with a certain bundle of rights and responsibilities. Puzanov notes that one of the core ideas behind the privatization of land and housing was wealth distribution, which provided the owners with economic security and a sense of stability in turbulent times of state reassembly (Puzanov 2018). However, housing privatization did not include privatization of the land beneath large housing estates, thus resulting in a hefty amount of non-subdivided urban land. Despite the high rate of privatization on the national level, the rate varies

greatly on the regional level, where the central and southern parts of the country tend to have higher levels of privatization and ownership than their eastern and northeastern counterparts (Shomina 2018). Verdery (1999) argues that the institutional transfer resulted in the emergence of fuzzy property, where the system is composed of an inseparable mixture of exclusive and collective property rights.

In recent decades, the liberal model of property has been actively criticized by social anthropologists. Their main critique is aimed at this model's claim of versatility, which denies the complexity of property relationships, especially for the countries in the transitional period, and its inability "to grasp the discrepancy between the idea of property (what should be ideally) and the institution of property (what is really going on)" (Hann 2006; Karbainov 2014). Uncovering the cases of informal land tenure in Ulan-Ude and Sochi, Karbainov determines that two major approaches to private-property institution analysis currently dominate the academic discourse and both of them contribute to the perception of property relationships as homogeneous entities (Karbainov 2014). The liberal approach suggests that the imperfection of the legal framework impedes the development of private property to its full potential. On the other hand, civilized approach demands a separate framework for post-socialist property studies as this system drastically differs from the liberal one.

The fundamental shift in the organization of the state challenged the command modus operandi in urban planning, introducing a neoliberal agenda into planning theory and practice. Despite proclaimed municipal independence, federal authorities maintained the leading role in imposing planning goals on regions and municipalities, reinforcing processes of centralization of power and resources via budgetary, tax, and local-government policies. With the adoption of the liberal paradigm, the metaphor of growth has been leading Russian urban development in recent decades.

Concept of Socioeconomic Growth: Major Trends and Local Specifics

The concept of future economic growth has become one of the key approaches in Russian urban planning. A prospective increase of basic socioeconomic indicators, especially absolute ones—population numbers and various indicators of the urban economy—is included in strategic planning documents by de-

fault. For the medium and long term, municipalities' General Plans and Strategies for Socioeconomic Development are often based on the values of indicators that differ significantly from those observed today in reality.

This situation is the result of at least two discourses that have developed in Russian urban planning. First of all, this is a continuation of the Soviet urban planning tradition—it was assumed that a city's General Plan is a tool for planning urban development in the long term, not in the foreseeable future. Secondly, this discourse is stimulated by current governmental policies. The national project Housing and Urban Environment, aimed at improving the comfort of living in Russian cities, has strict targets for the commissioning of residential areas. Particularly, they include:

- Growth of new housing construction levels to 120 million m² annually
- Improvement of housing opportunities for middle-income households (through incentives for mortgage lending)
- Securing a sustainable reduction in uninhabitable housing stock
- Overall increase in the average value of the integral Urban Environment Quality Index of Russian cities by 30 percent and a decrease in the number of cities with low index values by half
- Creation of a mechanism for direct participation of citizens in the process of improving the urban environment, and increase of the share of participating citizens to 30 percent

The result of such discourses is the widespread inclusion of areas for new housing construction and the increased number of residential areas put into redevelopment in municipal spatial planning documents. This has also become one of the important performance indicators of municipal administration teams.

However, the urban development discourse on "growth" does not always correspond to the actual situation in Russian municipalities. There are several main groups of cases in which the policies of growth, together with the non-liberal model of property, contradict or even turn out to be in direct conflict with the goals of urban planning. We shall shed light on them using our three exemplar cases, in which the collision between these discourses and actual socioeconomic tendencies has become critical.

Public Space in a City of Private Property: The Case of Vladivostok

Vladivostok is a city in the Russian Far East with a population of about six hundred thousand people. The city is Russia's key Pacific port, and port functions have always been the basis of its economic specialization.

Speaking in terms of urban planning, Vladivostok is a unique city in Russia. Historically, the city was formed around a seaport, which required access to convenient bays at the southern end of the Muravyov-Amursky Peninsula. But as the city spread, the space convenient for building construction ended, and soon it became necessary to transfer residential construction to the slopes of the mountains adjacent to the city, called "sopki." Subsequently, Vladivostok became the only large city built in the countryside, with most of its residential buildings actually located on the sopki slopes (fig. 1).

Figure 1: Large Soviet and post-Soviet housing estates on the slopes of Vladivostok sopki.

Source: sergeybrut.livejournal.com.

During the Soviet period, the expansion of the city's territory was con-
strained by attention given to projects for the development of sopki slopes. In
the post-Soviet period, the situation has changed. The scarcity of land and the
expansion of the city along the seacoast has led to an increase in the number of
development projects on the slopes and even the tops of the sopki (fig. 2). This
situation has led to a significant increase in infrastructure costs: at the mo-
ment, Vladivostok is the leader in the number of retaining walls within urban
confines and the cost of their maintenance.

Figure 2: Average height profile of urban zoning in Vladivostok.
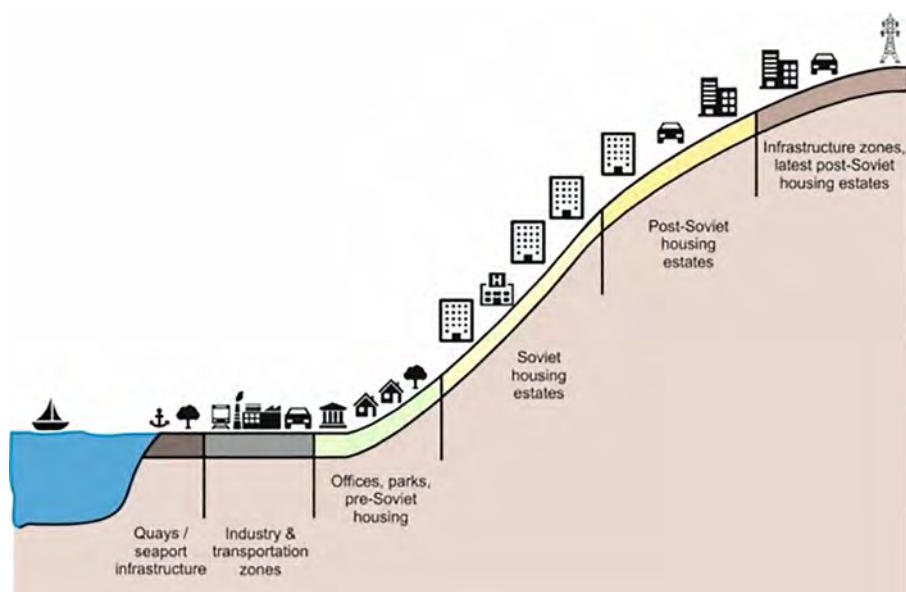
Source: Authors.

The situation was worsened by the influence of another factor: The prox-
imity to South Korea, Japan, and China has meant that in the 1990s and 2000s,
Vladivostok became a key port for the import of cars from these countries to
Russia. Quite quickly, the level of motorization in the city became the highest
in Russia: today it exceeds 600 cars per 1,000 inhabitants, which is commen-
surate with the values typical for the suburbs of US cities (the average level of

motorization in Russia is slightly over 300 cars per 1,000 inhabitants). Owning a private car has become a desirable personal attribute for most of the locals. An attempt to adapt urban transport policy to a high level of motorization has led to degradation of the public transport system (including almost complete disappearance of trams and trolleybuses), degradation of the pedestrian infrastructure, and a decrease in the rate of development of micromobility. In addition, the city budget incurred significant costs for the construction of the infrastructure of highways, bridges and overpasses, and the establishment of parking spaces. At present, the city authorities have decided to rethink the situation involving the level of motorization, viewing it as an important problem of urban planning, but the contemporary consequences of the changes are not yet obvious.

As a result, a significant land use problem arose in the city. The growth in housing construction on the sopki has led to a reduction in the area of places occupied by public spaces and social infrastructure. In addition, construction on the sopki slopes made it impossible to organize full-fledged adjacent public spaces for new housing. The small space that remained unoccupied was mainly used for parking. The situation was aggravated by the undefined status of the adjacent land. As in many other cities of Russia, there was a phenomenon in which the privatization of apartments in residential buildings was not accompanied by the formation of land plots under them. Therefore many houses in the city do not have officially registered land plots, and the ways for their residents to use them legally are strictly limited.

When Supply Does Not Meet Demand:
The Case of the *Nakhalovki* Suburbia in Ulan-Ude

Ulan-Ude is also located in the Russian Far East (southeast of Lake Baikal) and is the capital of the Republic of Buryatia. Presently, the population of the city is slightly over four hundred thousand people. Ulan-Ude became the place where one of the phenomena that is unique for Russian urban planning—uncontrolled individual housing construction on the city outskirts, named *nakhalovki*—emerged. In fact, the *nakhalovki* were an illegal self-seizure of the agricultural land surrounding the city, which at the time of the appearance of the phenomenon (in the late 1990s) had not been used intensively.

Let us take a look of the reason for this phenomenon. There was an extremely unfavorable economic situation in the Republic of Buryatia in the

1990s, which resulted in a decrease in the income of the population and a high level of unemployment. The capital had become the most favorable city in the region in terms of quality of living standards, which has led to a sharp increase in migration (the city's population has grown by almost a third). Nevertheless, the low rates of housing construction, combined with the lack of opportunity for the majority of low-income people from rural areas to buy (or rent) housing, has made it necessary to find a new format of housing. So far, the *nakhalovki* have become the solution.

Figure 3: Housing estates of Ulan-Ude, surrounded by expansive, dense nakhalovki settlements.

Source: gazeta-n1.ru.

Nakhalovki have a number of typical features. For the most part, they represent an "urban" settlement format that is visually easily distinguishable from the other, rural suburbs of Ulan-Ude, which were formed earlier. Nevertheless, it would be difficult to call them the result of "suburbanization"—rather, this process stands on an intermediate position between "classical" and "false" urbanization (fig. 3). A rather low level of life quality has become an inalienable

characteristic of the *nakhalovki*: the unplanned nature of their occurrence has led to a lack of necessary infrastructure in their areas. The completion of this infrastructure will cost the city and adjacent municipalities large investment expenditures in the future. This has not been the only negative externalization of the *nakhalovki*, because their residents' use of cheap coal for heating has led to a deterioration of the ecological situation.

At the moment, the city authorities are paying special attention to *nakhalovki*. During the so-called "dacha amnesty" that took place in Russia in early 2010s, many of them were legalized. Nevertheless, planning and infrastructural problems caused by the spontaneous nature of their emergence, as well as the low rates of their residents' participation in urban life (as noted by researchers), still remain a barrier for solution of this problem.

Not Public, Not Private: Case of Housing Property in Vorkuta

Vorkuta is a city in the north of the European part of Russia, in the Republic of Komi. The population of Vorkuta today is about fifty thousand people, and several tens of thousands more live in the mining settlements adjacent to the city. Vorkuta was founded as a city in the middle of the twentieth century on the grounds of the Pechora coal basin, and from that moment on, the history of the city was inextricably linked with the coal industry.

At the end of the Soviet period, the population of Vorkuta exceeded one hundred thousand people, and taking into account the surrounding settlements, it was about two hundred thousand people. Subsequently, the decline in the economic profitability of coal mining in the Pechora basin and increased competition between coal mining companies as a result of the post-socialist economic transition led to a reduction in production levels and the gradual closure of mines. The population outflow has been the major consequence of this process. It was amplified by other aspects of the city—the harsh climate and Vorkuta's unfavorable media image (the city is widely associated with the Gulag system). Vorkuta has become one of the "classic" examples of urban shrinkage in Russia (fig. 4).

The sharp decline in population has led to a large number of problems in local urban planning. First of all, the decrease in the population required an increase in per capita expenses for maintaining the communal infrastructure, especially heating. This has become a critical problem in the surrounding set-

tlements. Subsequently, this became the reason for even greater depopulation and subsequent resettlement of some remaining residents.

*Figure 4: Abandoned mining settlement of Rudnik, located near the city of Vorkuta.*

Source: Denis Sinyakov, 7x7-journal.ru.

This process resulted in two interrelated problems. Firstly, there is a phenomenon that is unique for Russia, particularly taking into account the Russian context of the implementation of the neoliberal model of private property: Citizens who previously privatized their apartments now want to return their property back to the municipality. This is explained chiefly by extremely high payments for the use of communal infrastructure. The values of residential real estate in the city have hence dropped significantly. The practice of "informal deprivatization" of private property has also become widespread. For example, some residents try to transfer their property to insolvent groups of local inhabitants in exchange for informal compensation.

Secondly, the authorities of the municipality found themselves in a difficult situation in terms of making planning decisions. Not so long ago, subur-

ban settlements were merged with the city into a single municipality. In this regard, on the one hand, the current situation forced the city authorities to support the resettlement of these settlements and inner urban districts that have experienced significant depopulation. On the other hand, the situation observed nowadays contradicts the discourse of "growth" (fig. 5): despite the current circumstances, the urban planning documents of Vorkuta still assume future expansion of the city, but, with rare exceptions, do not offer approaches to solve the problem of rapid urban shrinkage.

Figure 5: Housing construction tendencies in cities of Republic of Komi with population over forty thousand people.
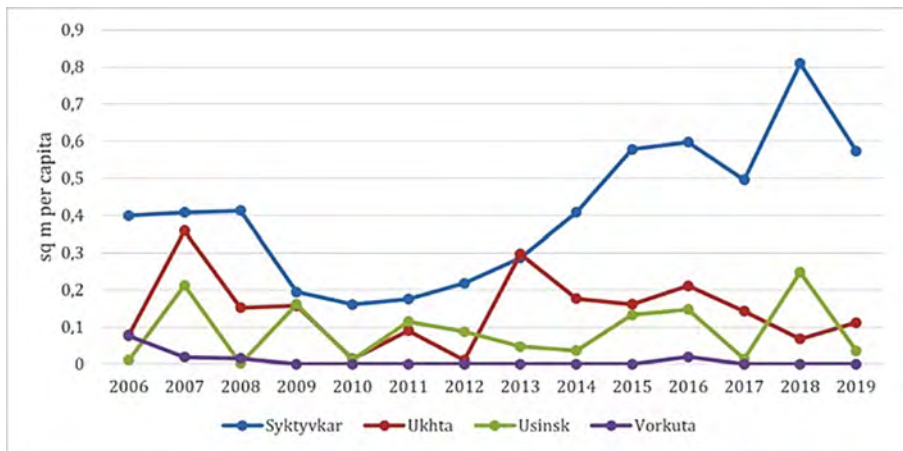
Source: Authors' calculations based on data provided by the Russian Federal Service of Statistics ("Rosstat").

Conclusion

Since the dissolution of the Soviet Union, the organization of the state has undergone significant transformation. The newly established system of private property has been introduced into planning policies and urban development. However, the emergence of fuzzy property aspects has challenged the unifying character of the standard neoliberal private-property model.

The cases analyzed in this paper illustrate the variety of ways in which property might be practiced as a sociological concept. The case of the city of Vorkuta challenges one of the basic ideas of property as an institution—that of ownership being the means of wealth accumulation, thus demonstrating the institution's downside. The case of Ulan-Ude demonstrates the significance of the informal systems for urban development and their spatial consequences for the city in the long term. In the case of Vladivostok, the received practices of ownership demonstrate the interrelation between the processes of enclosure and contestation for public places.

Another idea that in some sense unites these cases is the lack of sensitivity to the local context that is embedded in urban planning policies at the national level. Despite its transition toward a market-based regime, Russia has generally maintained its highly centralized approach toward urban planning, with little room for municipalities to act. Focused on the growth metaphor, this approach suggests that national and local development goals may contradict each other, leaving the local authorities and citizens in limbo.

In this paper we have attempted to highlight the significance of the anthropological perspective on urban planning in general and property studies in particular. Accompanied by other quantitative and qualitative data, it may provide valuable insights into the fuzzy aspects of the "property" concept and may address the current challenges of urban development in the transitional period.

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13. Strategies for Complex Transformation in Vilnius

Rūta Matonienė

Urban Context, Problems, and Requirements

Vilnius, the capital of Lithuania and its largest city, is now facing the challenge of large housing estate renovation, thirty years after the restoration of the country's independence. Vilnius of today has a territory of 401 km², with 18.4 km² of mass housing estates. The majority of the city's overall population (543,000) live in mass housing estates: 362,590 people.

Vilnius is working on a strategy for sustainable and complex renovation and densification of the settlements while generating a mix of typology and usages in the housing districts of modernist construction. The city is looking for best practices to find solutions for a range of challenges. Chief among them are how to cope with rapidly aging housing stock, the deteriorating quality of apartment buildings and their surroundings, the crisis of local identity, and growing social inequality in large housing estates.

Between 1950 and 1990, Vilnius experienced significant population growth and a resulting strong need to develop large modern housing estates to satisfy the demand for growth in housing. Since 1991, when Lithuania restored independence from the Soviet Union and rapidly moved from a planned economy toward an open market economy, the city underwent a massive shift in housing demand from multi-apartment housing to single-family housing. Between 1990 and 1995, almost the entire housing stock of apartment buildings was privatized flat by flat, though common space in the buildings and around them was considered a common good belonging to no one or everyone. It took the city more than twenty years to come to an understanding that neither the municipality nor anyone else would take care of the common property and that all

responsibility for the buildings' facades, staircase, roof, and area outside would lay on the shoulders of the residence.

During the last thirty years, Vilnius had to adapt urban policies for the growing demand for single-family houses, to control rapid urban sprawl and to ensure sufficient supply of social and infrastructural services. The city administration is still struggling with the consequences of "the wild times" of urban sprawl. At the same time, in the large housing estates, Vilnius must cope with the need for renewal of 6,144 blocks of flats.

Figure 1: Newly renovated prefabricated buildings constructed between 1960 and1970.

Source: Saulius Žiūra.

Renovation of apartment houses is one of the best-explored tools to update the exterior and engineering systems of buildings and to reduce energy consumption and living costs for residents. Yet renovation will not fundamentally change the quality of the living environment. The list of problems in the estates is long; among the most urgent issues are the following: outdated layout of flats; small kitchens; no elevators in 5-story buildings; dilapidated stair-

cases; dull and non-aesthetic facades; low energy efficiency; lack of parking spaces and wild parking in courtyards; overgrown and undermanaged greenery; low quality of sport facilities and children's playgrounds; and uneconomical and monofunctional use of open spaces. While 97 percent of the apartments in large housing estates in Lithuania were privatized between 1990 and 1995, the common space in and around the flats is still considered "nobody's." This lack of ownership has, over time, induced a sense of lost identity and belonging and a lack of ownership feeling. Concluding, one can say the massive privatization challenged renovation process and mistrust in public authorities.

Bringing the population, especially young families, back from the outskirts of the city to in order to densify urban areas is one of the strategic goals in almost every European city, but it is important to plan the needed activities carefully. The municipality must ensure complex urban solutions to ensure that the various neighborhood respect current residents and allow them to stay. Though renovation of the old apartment buildings is likely to be met with mistrust and reluctance, renovation (modernization) of a multistory apartment building might increase the market price of flats by up to 20 percent and reduces the energy costs by 40 to 70 percent. Due to private ownership of the apartments and common areas of the houses, the municipality of Vilnius has no legal preconditions to replace run-down apartment blocks by new, modern construction, and the same is true for the land around the buildings. In Lithuania, the management of vacant, undeveloped land has been transferred to state institutions; consequently, the municipalities do not have the right to build or renew the domestic engineering infrastructure around the apartments until the owners of the dwellings rent the land from the state. The resulting bureaucracy causes serious delays in complex renovation of housing estates, which again raise mistrust and a feeling of ignorance. Clearly, complex replanning of the districts in the search for additional space for new housing should be organized by the municipality, and leadership in this process might build trust and raise awareness. In the case of rebuilding deteriorated houses or supplying them with additional sections, the municipality could sufficiently increase the quality of buildings using external financial resources. The city is responsible for planning the process in a way that does not degrade the existing environment of the residential area.

Today about 60 percent of the city population live in mass housing estates that were constructed between 1945 and 1993 (around 90 percent of all stock). The estates are sufficiently served by public transport and social institutions

and large green spaces are available, thus they meet all the needs of modern life.

Currently, 6144 dwellings built in the 1960s need renovation. The city of Vilnius aims to renovate 50 percent of its old apartment blocks by 2030 and to restore the identity and ensure a sustainable and multifunctional environment in the large housing estates. CO_2 emission per heating season are 22,154 tons. The estates show a diverse picture, but need a lot of attention. The estimated needed investments are €243,467,803.

Goals, Strategies, and Instruments

In order to update the prefabricated housing stock, Vilnius has defined its approach to modernist housing estates, which consists of the following components:

- Complex transformation of the city according to individual guidelines
- Ensuring high quality of life regardless of the area
- Supporting complex renovation

To achieve the city's goal, two hundred dwellings must be renovated per year. But how can one find the best approach for a complex transformation? Vilnius started by mapping and prioritizing large housing estates according to their potential to upgrade and their current quality of life. Then the city produced a series of studies. Individual modernization action plans for various districts were established. Communities with active citizens who were willing to partake in the needed change were integrated into the planning and management of the districts, and the feeling of ownership and belonging rose as a consequence. The studies and citizen participation showed that a good way forward would be controlled densification of large housing estates by mixing urban typologies, functions, and social strata. Against the background of controlled densification, the request for new real estate developments in modernist housing areas became increasingly imperative, especially the need to invest in modernization of the public realm. But also to generate a greater variety of urban typologies (detached housing, rental housing, office/commercial buildings, ground-floor commercial premises, etc.) became more of an issue.

Vilnius made an effort to promote, market, and moderate complex renovation process of large housing estates. The city invested time and human recourses into active collaboration with residents, public organizations, and businesses, and it used municipal funds to invest in the integrated management of residential areas. To access all target groups and to encourage positive changes, the Vilnius City Municipality has established the public company *Let's Renovate the City* [Atnaujinkime miestą] and created several financial assistance programs designed to cofinance the renewal of neighborhoods. The city has invested in green areas, parking lots, sports and recreation infrastructure, bicycle lanes and footpaths, and districts in general. Increasing attention is paid to the development of the residents' sense of ownership and initiative.

The following different organizational and financial instruments have been developed to support the transformation and modernization at all levels.

The national administration, represented by the public company Housing Energy Efficiency Agency, coordinates Multi-Apartment Building Renovation, a modernization program that organizes annual calls for applications to ensure financial support of the transformations.

The municipal administration is represented by the public company Let's Renovate the City. This company represents the owners of apartment buildings and helps to submit applications for renovation. Furthermore it coordinates marketing events and public information activities. Additionally it acts as a competence center for the development of a sustainable living environment in the city of Vilnius and organizes the neighborhood renewal program, which supports modernization of the direct living environment as well as the renovation of residential blocks and flats.

Different financial instruments are used to fund the transformation programs. The renovation of housing estates is mainly financed by long-term loans from the JESSICA (Joint European Support for Sustainable Investment in City Areas) Holding Fund, which is managed by the European Investment Bank. Additionally, the National Urban Development Fund, managed by local banks, supports the efforts. Through all funding programs the financial support reaches up to 40 percent of the renovation costs. These funds are distributed among various positions: Roughly 30 percent (75 percent of the funds) directly supports various investments by the apartment owners to upgrade and renovate the apartment building. Specifically, the state supports energy efficiency measures such as the conversion or replacement of outdated heating and hot water systems, the conversion of ventilation and recuperation systems, new insulation of roof and external walls, renewal or installation of

balcony glazing, replacement of windows, renovation of elevators, and upgrading of common areas. The remaining 10 percent (25 percent of the funds) is used for exceptional measures such as modernization of non-automated heating points, installation of balancing valves, et cetera.

Figure 2: Complex renovation of residential buildings and public spaces managed by Let's Renovate the City.

Source: Saulius Žiūra.

Full compensation is provided for preparation of the renovation project, administration of the project, and supervision of the project's implementation. The state also guarantees privileged credit conditions with a 3% interest rate. Additionally part of the loan is directly financed by the state if the houses will meet the requirements set by the government after the renovation. Along with these programs, the state compensates 100 percent of renovation costs for deprived residents who are entitled to compensation for heating costs.

Requirements to Commence Building Renovation

Different aspects have to be fulfilled to commence the renovation process. First of all, the decision to initiate renovation has to be made by the owners of the apartments and other premises by a majority vote. To receive funds, the owners have to ensure that the energy efficiency class of the building must at least reach the standard C once the renovation is finished. Moreover, the thermal energy consumption must be reduced by at least 40 percent compared to pre-renovation consumption. For buildings of cultural heritage value, the restrictions are not as tight, but nevertheless the energy consumption has to be reduced by at least 25 percent compared to the pre-renovation condition to receive funds.

Actions for Improving the Urban Environment

The city has initiated a number of measures to ensure a high quality of life, regardless of the area or location of the neighborhood:

- Support and promote the sensitive renovation of specific objects or structures that enhance the local spirit of the neighborhood, such as specific landscape elements, landmarks, art installations, and traditional events
- Renovation map: Presents detailed information on the renovation status of buildings (in planning, started, finished), heating class by season, priorities of the quarterly renovation program, breakdown of process by districts and by investments, statistics
- Neighborhood Program: Large housing estates (built before 1993) are divided into small neighborhoods—each with common facilities, courtyards, entrances—and can join efforts by signing joint venture agreements and apply to the Neighborhood Program for financial support (up to €10 / m² of unbuilt common area) for renovation of outdoor space, infrastructure, and greenery. Applicants are required to buy or lease land.
- 100 Green Islands: Program featuring 100 micro-public spaces. Each public space, smaller than 100 m², is supported with €6,000. The spaces are designed and constructed to complement public infrastructure in large housing estates in order to compensate for a lack of space or quality of recreational spaces. Residents design and create the spaces to add vegetation and take care of it.

- Create Vilnius: Program with annual financial support to finance art in public spaces; priority is given to neighborhoods with no or few identifying elements
- Active Vilnius: Program for the renewal of open-air sport infrastructure in the settlements; it also funds short-term rentals of sport and cultural facilities in educational institutions

Figure 3: Street art creates new identity for renovated buildings.

Source: Saulius Žiūra.

Furthermore, the City of Vilnius has initiated additional non-monetary support in order to promote complex renewal of large housing estates. These activities are organized by Let's Renovate the City. Regular meetings with building managers, chairmen of housing associations, and private citizens lead to a better understanding of needs and possibilities. Site visits and promotional campaigns along with pilot and tactical projects help to improve the image outside of the community and strengthen overall perception and understanding of the neighborhoods.

Figure 4: Newly renovated square with public meeting point in Zirmunai triangle area.

Source: Rūta Matoniene.

Hurdles and Lessons Learned

Despite all actions and efforts taken, there is still a lack of speed to reach a critical mass of renovated housing. This is due to several obstacles that need to be overcome. For example, the public company Let's Renovate the City is not legally set up to organize a voting process that prioritizes certain renovations. At the same time, residents and maintenance companies are not able to make a decision themselves, and consequently the decision process is significantly slowed down. Furthermore, the provided financial support of 40 percent is too low to significantly impact the renovation speed and spread. In an opinion pool organized by Let's Renovate the City, residents named three main obstacles for why their building has not been renovated yet:

- The financial situation of my neighbors does not allow it
- Disagreement with neighbors on renovation issues
- Lack of initiative and lack of people starting and driving the process

Active leadership, legal consensus, and adequate funding are the tree pillars that have to support successful renovation processes. The City of Vilnius is working hard to support and lead communities in large modernist housing estates on their path toward a sustainable and excellent living environment.

Figure 5: New sport facilities in Zirmunai triangle area, constructed with EU financial support.

Source: Rūta Matoniene.

14. Reimagining Housing Estates and the Nexus of Planning and Policy

Sasha Tsenkova

Introduction

This contribution focuses on the future of postwar housing estates and provides a compelling rationale for the need to mobilize economic and social capital to reinvent these places into vibrant neighborhoods. The issue is particularly critical for the post-socialist world of cities, where 53 million apartments in large housing estates are the home of 170 million people. These suburbs, planned according to modernist planning principles, were the flagship of socialist housing and planning policies. The paper highlights the importance of housing estates in the spatial structure of post-socialist cities and argues for a strategic approach to their revitalization. It explores some of the challenges of the spatial and social evolution in the housing estates in the context of rapid transition to markets and democracy.

The research views the housing estates as a spatial arena of adjustment where transition imperatives of structural reforms, private sector growth, and fiscal austerity crowded out efforts to maintain housing as an important element of the welfare state. The practical implementation of the reforms across countries, mirrored in their macroeconomic performance and prolonged recessions, resulted in mass privatization of housing in the estates, runaway house-price inflation, deterioration, and nonexistent housing management. In the privatization aftermath, the transformation of housing estates in post-socialist cities is a complex urban challenge that reflects social, economic, and institutional drivers of change in these societies. The final section of the paper outlines an important strategy for the revitalization of post-socialist housing estates that builds on the planning-policy partnership nexus. Recognizing that different housing estates have distinct characteristics, this framework

offers a blueprint for diverse implementation through action planning and the opportunity to transition from ad hoc project-based intervention to strategic management of revitalization programs and plans in post-socialist cities.

Housing Estates in Post-Socialist Cities: Asset or Liability

Post-socialist cities have a very distinct residential environment dominated by a high share of high-density prefabricated multifamily housing built in the urban periphery (Bertaud and Renaud 1997). It makes up 70 percent of all housing in Bucharest, 45 percent in Sofia, and 20 percent in Ljubljana. By comparison, in Western European cities fewer than 7 percent of the people live in housing estates (EAUE 2003). This was the flagship of socialist housing policies of state-funded, highly subsidized provision of public housing for rent or sale. A standardized method of construction, economies of scale, and higher density characterize these uniform urban environments, as shown in Figure 1. These areas also lack retail and employment opportunities, so residents make long commutes to centers of employment. The contrast with traditional housing in the older villages annexed to the urban territory is stark.

At the same time, another characteristic feature of post-socialist cities is the high proportion of home ownership. In most of the capital cities, home ownership exceeds 75 percent; cities such as Tirana have reached 98 percent. While Riga and Prague have been the exceptions, privatization in the last five years has transferred another 50 percent of Riga's stock into private hands. The privatization of public housing in post-socialist Europe involved the transfer of more than three million homes within the first four years of the transition. This was in effect a huge off-budget subsidy because apartments were transferred to sitting tenants for free, in exchange for vouchers or for symbolic payment (Hegedüs et al. 1996; Struyk 2000). In countries where privatization was delayed (Estonia, Latvia, Slovakia, the Czech Republic, Ukraine, and Poland), it was completed in the second phase of the transition reforms and/or left to the discretion of municipalities. In fact, in some of the poorest countries, home-ownership exceeds 95 percent.

Figure 1: Prefabricated and traditional housing in Vilnius.

Source: Sasha Tsenkova.

Given the nature of the housing stock and its dependence on a collective form of management, in the context of rising utility costs, social differentiation, and poverty, post-socialist cities face a serious challenge to sustain the value of their existing housing assets (see Tsenkova 2009; 2014b). Growing social polarization and the elimination of state-funded housing programs underline the pattern of poverty concentration in run-down inner city neighborhoods as well as in peri-urban areas with illegal settlements. These manifestations of social change, equally dramatic in Budapest, Moscow, Belgrade, Sofia, and Tirana, call for a renewed emphasis on public intervention to reverse the spiral of urban decline.

The affordability of housing remains the fastest-growing and most pervasive housing challenge in the region. Housing costs have increased, with significant implications for access to adequate and affordable housing, particularly for low-income groups. Recent studies indicate growing housing inequalities manifested in large shares of vacant housing (even in urban areas with growth pressures) on the one hand, and significant overcrowding in

housing of lower quality, often in the least attractive housing estates on the other (Krapp et al. 2020). Such inequalities reflect the dual nature of local housing markets in which privileged high-income households retain housing as an asset that appreciates over time while others are forced to share small apartments with extended families and relatives. The commodification of the urban housing shifted the burden of housing costs to the individual consumers, so in many post-socialist countries housing costs in relation to disposable income are comparable and even higher than the EU25 average (Eurostat 2020). For most of these countries, utility and heating expenses account for the bulk of the housing costs, whereas a small portion is expended for rent and mortgage payments. The situation is more problematic for single-person and single-parent households in urban areas, where higher prices for housing and concentration of poverty create cumulative disadvantages (Eurostat 2020).

Privatization alleviated the risk of poverty by providing mortgage-free housing to urban residents. This "shock absorber" had a significant impact on the ability to weather the social and economic hardships of the transition, particularly in highly industrialized and urbanized cities where the loss of jobs in state owned industries triggered massive unemployment. In practice, these cities embraced a top-down housing response to urbanization and industrialization during socialism, resulting in a much higher concentration of housing in high-density estates built with prefabricated methods.

The Institutional and Financial Deficit in Housing Management

In the privatization aftermath, the management and rehabilitation of multi-family housing is potentially one of the largest problems facing post-socialist cities, because failure to improve its quality will result in massive structural problems in more than 40 percent of the urban housing stock. Addressing the problems in privatized multifamily housing is related to two significant challenges: institutional and financial (Tsenkova 2012). This task also illustrates the difficulties in mobilizing owners' support for investing in their own housing assets. Essentially, two alternatives emerge. In countries where the legal framework is more effective and governments leverage private investment through subsidized programs, new institutional entities (homeowners associations) are taking charge and asserting effective control over the management of their collective assets. Progress is difficult and the voices of these

new alliances (owners' associations, industry, banks, and NGOs) have gradually improved the available housing programs and made them more effective (Tsenkova 2014b). These are small gains that certainly depend on the local initiative and the social mix in each homeowners association. In most of the cases, however, owners have taken the "exit" option, either improving their own housing space but opting out of collective action, or passively withdrawing from any engagement due to social stress, poverty, or simple disengagement from any responsibilities.

The legal framework for housing privatization of multifamily housing is also critical in shaping these responses. The forerunners in privatization (Moldova, Lithuania, and Albania) were among the first countries to introduce legislation in 1991, but the legal acts governing the management of common properties were introduced a decade later. In most cases, the legal response was reactive rather than proactive, with the Czech Republic being a notable exception. In this case, the establishment of homeowners associations (condominiums) was a requirement for transferring the building, and individual privatization of apartments was not allowed. In most of the other countries, legislation failed to impose any real obligation to take responsibility for buildings and common areas, and homeowners associations exist in less than 20 percent of the privatized housing (Tsenkova 2012). Furthermore, accelerated privatization often transferred ownership of the apartments while municipalities were left with the ownership of buildings, land, and common areas. Mixed ownership is an issue in countries such as Latvia, Russia, and the Czech Republic, where owners and tenants live in the same building (Gruis et al. 2009).

In addition to institutional and legal constraints, the collective form of privatized housing from the past has a critical effect on housing management and quality. Every observer in the region concludes that the deterioration process in parts of the urban stock has reached a critical stage. Panel technologies, which featured prominently in Russia, Lithuania, Bulgaria, Moldova, and Romania, resulted in large-scale developments with demanding requirements for their housing management. Although most urban multi-apartment housing is less than forty years old, its initial quality was not very high. Subsequently, inadequate investment in maintenance along with deferred capital repairs aggravated technical problems with leaking roofs, obsolete installations, faulty elevators, and poor wall insulation (Gruis et al. 2010; Tsenkova 2009). The energy efficiency of the stock is very low and, with the deregulation of energy costs and the elimination of subsidies, households have been faced with dispropor-

tionately high costs for heating, crowding out the ability to invest in housing improvements.

Lack of adequate financing is considered a major constraint. Many owners tend to be asset rich but income poor, and are thus unable to cover the costs of major repairs (Tsenkova 2006). In most cases, multi-apartment buildings have reached this critical stage in the life cycle assessment where a major infusion of capital is needed to bring them back to standards. The buildings have poor quality and the current stream of revenues does not ensure sufficient funds for renovation and improvement of the building envelope or for energy efficiency retrofits. In addition to the institutional challenges to mobilizing collective action, it is difficult to borrow funds for major improvements, particularly for prefabricated housing (see fig. 2). Banks often request that individual owners sign a mortgage or a loan contract, making the process extremely cumbersome and costly (Tsenkova 2009). Very few countries have launched experimental programs to assist in this process (e.g., Latvia, Lithuania, Hungary, Czech Republic, and Slovakia).

Figures 2.1 + 2.2: Renovation of prefabricated housing in Czech Republic and Hungary.

Source: Sasha Tsenkova, 2013.

In Hungary, the Széchenyi Plan of 2001 aimed to mobilize the nation's resources to improve the energy efficiency of housing estates built of pre-fabricated elements as well as owner-occupied single-family housing. Two programs with a total budget of €55 million provided a 30 percent subsidy towards the cost of energy efficiency retrofits and quality improvements. The subsidy

leveraged substantial private investment and targeted the improvement of energy efficiency parameters of the buildings.

The Czech Republic offers another positive example, despite the small outreach of its panel renovation programs. The government launched two programs aiming at the rehabilitation of panel housing estates since 2001. Low-cost credits and subsidies fund up to 70 percent of the costs, while homeowners, cooperatives, and municipalities provide matching funds. Most of the borrowers (85%–90%) are housing cooperatives and homeowners associations.

Towards Solutions: The Planning and Housing Nexus

The hallmark of the transition was the move to democracy and market economy, signaling major transformations in their economies and urban structure. Within cities, some of the most visible manifestations of the transition made urban politics less predictable, and also socially and economically more conservative compared to during socialist times. Local governments have an important role in shaping investment in urban infrastructure and leveraging private sector involvement through strategic planning, land use planning, and city marketing (Adair et al. 1999; Stanilov 2007). In addition, local governments retained statutory responsibility for providing and maintaining technical infrastructure and urban social services. In most cases, municipalities acquired ownership of the fixed assets of water and sewerage companies, district central heating systems, and public housing (Tosic 2005). At the same time, inflation, subsidy restructuring, and budget cuts raised the cost of urban services dramatically, leading to a growing number of unfunded mandates, particularly in the realm of social responsibilities—with long-term implications for urban residents.

Cash-constrained local governments often resorted to privatizing land, buildings, housing, and other municipal assets. Studies have found that new, market-oriented regimes adopted a laissez-faire approach to planning, resulting in uneven urban development (Tsenkova 2006). The new institutional actors often confront old planning rules, legislation, and policies, but the powerful socialist legacy in land use planning remained embedded in planning legislation and planning practice (Bertaud and Renaud 1997). The institutional transformation is path-dependent and does influence the success and speed of transition. Within the new realities, urban planning was transformed into

a democratic participatory process and the legacy of the socialist top-down approach was dismantled.

The ideological shifts also affected housing reforms. Across post-socialist countries, these housing reforms are far from uniform. They proceeded through "trial and error," focusing on addressing housing market problems rather than strategic intervention (Tsenkova & French 2012). There have been limited attempts to launch more strategic interventions. All countries have housing action plans, strategies, and a myriad of "stop-and-go" housing programs, but implementation is limited and the commitment is inadequate (World Bank 2005).

While privatization of housing was popular in the first wave of the transition, subsequent phases focused on development of an adequate institutional and financial framework and new subsidy programs to make housing more affordable. Most countries rolled out mortgage subsidies to support access to homeownership, while retrofits of multifamily housing was not inevitably a priority. Because the development of housing institutions is path-dependent, it is not surprising that institutional change is inherently slow and an imbalance has arisen between creating markets and establishing appropriate supporting institutions. In the case of housing management, the institutional vacuum was significant—with detrimental consequences for the transformation of housing estates into fully functioning, privately owned entities. Gradually redefining the state and municipal role in housing requires more than their withdrawal from direct housing production, housing management, and finance. The asset transfer proved more complicated due to the collective nature of urban living in the estates, the need for support to homeowners and market agents through a transparent and effective legal system, and sound definition of rules and responsibilities. Due to the special nature of housing, it was also important to facilitate a socially efficient management system, enhancing housing quality, energy efficiency, and affordability to alleviate the social costs of the housing transition.

Revitalizing Housing Estates through Action Planning

In the privatization aftermath, the transformation of housing in the post-socialist housing estates is a complex urban challenge that reflects social, economic, and institutional drivers of change in these societies. The overall transformation of housing estates is far from uniform, but reflects location, market

potential, and people's choices. Typically, estates closer to the inner city, despite being older, are more desirable locations that command higher prices, reflecting consumer choices and opportunities for access to jobs, urban services, and better quality of life. In some cases, proximity to new housing that gentrifies inner-city neighborhoods simply improves the image of the area and has a positive spillover effect. In many post-socialist cities, new housing construction has added subsequent rings to the existing compact urban structure of high-density peripheral estates. A number of studies document a pattern of extensive growth and even urban sprawl driven by higher mobility of urban residents and preferences for single-family living. However, these trends have been more moderate due to limited mortgage lending and the fragmented nature of the housebuilding industry. So far, post-socialist cities do not have a pattern of abandonment affecting housing estates. They retain a social mix attributed to the socialist system of housing allocation but demonstrate the typical filtering process in local housing markets, in which social status becomes more explicitly aligned with housing status (see Tsenkova 2009 for a review of the literature). Thirty years after the start of the transition, many of the owners are not able to sustain the value of their asset due to social constraints such as retirement, lack of employment, or poverty.

In spatial terms, the transition to democratic, market-based governance in housing has facilitated two distinct patterns of spatial restructuring in the housing estates—*ad hoc projects and revitalization*. A considerable growth in the construction of low-rise housing provided by decentralized suppliers, often in attractive locations, has created a new residential landscape. Notwithstanding suburbanization pressures, such developments have started a quiet process of intensification in some of the older housing estates built in the 1960s closer to the inner city, converting underutilized public land into residential uses. This post-socialist restructuring of urban spaces is often associated with private-sector development for more affluent consumers. Urban governments have become more innovative in their efforts to mobilize investment and make some of these areas more attractive, as this creates a social mix. While this is more the exception rather than the rule, post-socialist cities have many good examples of revitalization affecting housing estates, as the example in Figure 3 illustrates. This is one of the many estates in Riga where the municipality has used an area-based approach to provide synergies of different programs. At the small scale, some urban furniture provides much-needed places for community interaction, and urban graffiti by a local artist brakes the anonymity of buildings and is used as a wayfinding design. Housing retrofit programs with various subsi-

dies are used to reverse the spiral of neglect and physical deterioration while improving thermal comfort and eliminating energy poverty. Finally, a redesignation of land use to accommodate new residents in a more ground-oriented housing typology provides population diversity in the estate.

Figures 3.1–3.3: Area-based revitalization of a housing estate in Riga.

Source: Sasha Tsenkova.

The project-based retrofits have gained ground. These are financially supported by various energy efficiency programs, often funded by the European Union or other financial institutions, at times in partnership with local municipalities. Many multifamily buildings have received a major facelift and in some cases additional residential units (see fig. 4).

Figure 4: Retrofit of multifamily housing in the housing estates of Burgas.

Source: Municipality of Burgas.

Bulgaria's National Program for Energy Efficiency in Residential Buildings addresses the problems of owner-occupied housing, targeting energy efficiency retrofits and overall quality improvements. Since 2007, the government has implemented several energy efficiency programs, having started with EU-funding with a 50 percent cofinancing element for eligible energy efficiency improvements. The subsidy was increased to 100 percent to attract homeowners, together with some soft loans for in-house renovations and a requirement to establish a homeowner association. In one of the largest cities in Bulgaria, this has resulted in the improvement of over 250 multifamily buildings.

However, private development, exclusively profit motivated, often leads to conflicts or a simple takeover of public urban land and its illegal use for retail business purposes. While urban planning during socialism has been subject to a devastating critique on the basis that comprehensive plans were neither practically feasible under market conditions nor politically viable, post-socialist cities need to develop a new generation of plans for the housing estates that are action based and capitalize on the synergies of planning and housing intervention. This is a very different type of planning widely implemented in many European cities under estate action and urban regeneration programs. Such plans focus on the area and maximize the opportunity for intensification, conversion of underutilized spaces into other uses, provision of community spaces and services, et cetera. The action plans target existing housing programs such as energy efficiency retrofits, new social housing development, and neighborhood social initiatives into the same estate to achieve greater social and economic impact. While long-term goals and objectives are defined in a participatory manner, the strategy for implementation is more flexible and opportunistic. It can start as small-scale tactical urbanism, with residents and local organizations improving a pocket park, planting trees, redesigning a parking lot, or creating a mural. It can then move into demonstration projects that capitalize on existing housing and urban programs to build confidence in the estate and mobilize homeowners, local businesses, and residents for action and private investment. The implementation is not necessarily easy and can become ridden with conflicts, particularly in areas with competing development needs.

Conclusion: Implementing Planning–Policy Partnership Nexus

An important strategy for change that might be helpful in the revitalization of post-socialist housing estates builds on the planning-policy partnership nexus (Legacy, Davison, and Liu 2016). Nexus thinking transcends traditional policy- and decision-making silos and develops approaches that build synergies across these sectors. Partnerships for affordable housing in cities and neighborhood revitalization are indeed very diverse multisectoral collaborations that leverage real-estate market pressures to promote affordability goals and social mix. Cities often take the lead in managing the planning–design policy nexus as neighborhood rebuilding takes decades and shifting the responsibility to private developers might not work, particularly in the context of gentrification and displacement of lower-income residents. Partnerships need robust and sustained financial support, alignment of planning policies, and institutional commitment to increase the supply of affordable rental housing. Such complexity by design makes statements on "what works" and "what does not" challenging and illustrate the interdependent nature of resilience at the nexus, raising the fundamental questions of how policy might enable systemic resilience. Each city will need to develop its own successful model, based on the resilience of the planning–design policy nexus for affordable housing to respond to growing affordability pressures while emphasizing diversity and social mix (see Tsenkova 2021 for further detail).

The framework for design and implementation of such revitalization strategies is presented in Figure 5. It draws on research carried out in Canada using the experience of major Canadian cities in the context of urban regeneration. The framework can incorporate the existing experience of project-based intervention in post-socialist housing estates as well more strategic area-based action planning to generate a wider range of positive outcomes associated with such projects. Many scholars have opted to organize these outcomes into two broad categories: place-based outcomes and people-based outcomes (Fraser and Kick 2007; Smith 2013). Adopting Chaskin and Brown's (1996) theory for neighborhood change, such place-based and people-based outcomes could be further divided into seven dimensions: physical infrastructure, amenities, housing quality, affordability, human capital, social capital, and economic opportunities.

Figure 5: Framework for design and implementation of revitalization strategies.
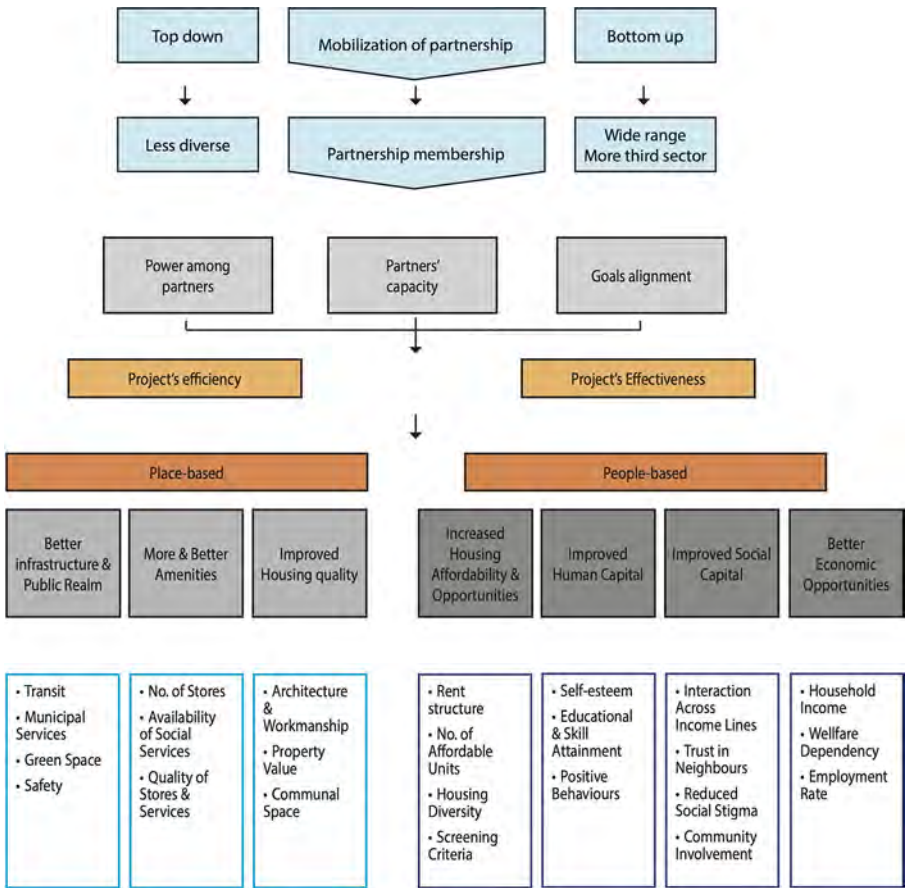
Source: Sasha Tsenkova.

Place-based outcomes are improvements to the physical and built environment and can be measured through indicators such as the amount of investment to improve infrastructure, an increase in the number of retail services, and the quality of the public realm. The physical dimension may include affordable housing stock, appreciation in housing prices, provision of high-quality affordable housing units, and improvement in transport infrastructure. Recently, place-based strategies often rely on quality affordable housing as the agent of change in addition to mixed-income, mixed tenure housing

developments aiming to improve the physical conditions and commercial viability of neighborhoods. Place-based campaigns anchored around affordable housing are led by cross-sectoral partnerships to bring public and private capital into underinvested neighborhoods, turning them into neighborhoods of choice (Joseph and Khare 2020).

People-based outcomes as defined by Katz (2004) are opportunity strategies that focus on expanding the opportunities of low-income households to access quality jobs and school. When organized under Chaskin and Brown's model, people-based outcomes contain the following aspects: affordable housing, human and social capital, and economic opportunities. These outcomes take a lot longer to materialize but are important for community capacity and political strength of area-based intervention. "Human capital" outcomes may include advancement of individual capital such as education, training, and self-confidence. Outcomes that improve low-income individuals' "social capital" include increased level of trust and expansion of their social network. Mixed-income affordable housing generally has greater potential to foster desirable people-based outcomes.

Incidentally, the ability to deliver place-based and people-based outcomes is a function of the stakeholders' overall capacity and their goals alignment. Both place- and people-based outcomes are highly probable if partnerships are made up of capable partners who share the same goals. Fraser and Kick (2007) established that when it comes to generating place-based outcomes, the public and private sector's capacities and goals alignment are more critical than those of the nonprofits and residents, while all stakeholders' capacities and goals alignment are needed to implement people-based outcomes. Ultimately, the efficiency and effectiveness of any project in the area is enhanced, as the whole is greater than the sum of its parts. Current affordable housing partnership models in Canadian cities combine both place- and people-based strategies. These policies emphasize altering the socioeconomic mix of poor neighborhoods and transforming them into communities that are economically integrated and appealing to a wide range of households. Mixed-income affordable housing projects offer affordable housing options to low- and mid-income households with the idea that, as their income improves due to better housing and increased access to jobs, opportunities, and services, they can move up the housing ladder into other housing choices within the same development in a neighborhood that has quality amenities and infrastructure (see Tsenkova 2020).

Recognizing that different points of departure have a considerable impact on choices and revitalization strategies in the housing estates of post-socialist cities, this framework offers a blueprint for diverse implementation through action planning and an opportunity to transition from ad hoc project-based intervention to a more strategic management of revitalization programs and plans in a participatory way.

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Transformation of Large Housing Settlements in Russia and Ukraine

Mass housing districts in Russia and Ukraine are facing diverse challenges. Refurbishment of the building stock, incorporation of new housing typologies, creation of a sustainable mobility system, enhancement of open spaces, and more have to be addressed in order to transform these districts into appreciated neighborhoods. This chapter presents five examples from cities in Russia and Ukraine that offer analysis of the transformation processes occurring in large housing estates.

In their article about the development of the Akademgorodok district in Irkutsk, Russia, Lyudmila Kozlova, Anastasia Malko, and Valery Kozlov highlight the importance of open spaces that, at present, do not contribute to the quality of life, whether for leisure and sport activities, as meeting places, or as additional living space. In the second contribution about Irkutsk, which looks at the Novomelniko district, Maria Tumureeva, Ekaterina Gladkova, and Valery Kozlov examine the impact that federal and regional programs have on the development of public spaces. Russian initiatives are discussed and the extent to which they contribute to creating a comfortable urban environment is examined. Klavdiia Kamalova and Ekaterina Kirichenko likewise identify the disorganized living environment and condition of open spaces as a major problem in Cheryomushki in the Russian city of Krasnoyarsk. Because they still remain a powerful resource, the authors contend that the improvement of open spaces should not been viewed solely from the open spaces themselves, but in dialogue with the typology of the buildings. Transforming the ground floor—such as by integrating public facilities—could foster public life in the adjacent open areas. Lastly, Olga Savytska and Nadiia Dmytrik report in their article about the importance of studying and rethinking the history of the development and transformation of mass industrial housing districts. Their contribution emphasizes the chronology of the development of industrial housing construction in the Cheryomushki and Tairovo districts in Odessa, Ukraine, since only by understanding their characteristics can sustainable transformation be possible.

15. Irkutsk Akademgorodok District—Principles for the Development of Spatial Qualities

Lyudmila Kozlova, Anastasia Malko, and Valery Kozlov

The revitalization of post-Soviet public spaces is a relevant topic for countries of the former Soviet Union. Many courtyards, playgrounds, squares, and parks in cities still retain the attributes and mood of those times. Renovation that takes into account the urban history of the spaces, uses the natural landscape, and integrates modern functions brings new impulses to revitalize the spaces (Kozlova 2017). Scientific workshop on three cities in Germany (Berlin, Dresden, Halle), carried out with the financial support of the Volkswagen Foundation within the project of scientific cooperation among architects and urban planners of Germany, Russia, and Ukraine allowed for study of the positive experiences gained in Germany in the implementation of major programs for the reconstruction of areas of mass panel construction (Engel et al. 2019). Analysis of the German experience made it possible to highlight the main approaches and principles of transformation of public spaces as a socio-spatial framework that forms the planning structure and residential environment of the district.

The project examined six distinctive German neighborhoods built in the period 1960–1980: Fennpfuhl and Marzahn-Hellersdorf (Berlin); Gorbitz and Prohlis (Dresden); Silberhöhe and Neustadt (Halle) (see fig. 1). The identified principles are aimed at improving the relevant spatial qualities: sustainability, identity, and interactivity (see table 1). Sustainability consists of treating the natural areas as the most important value of the open spaces in a residential area. Identity is expressed in preserving the original structure of the residential area and in giving individual expression to individual neighborhoods and the district as a whole by means of art and landscape design. Enhancing the interactive qualities of the neighborhood is achieved by giving a special role to the elements of art (the ability to pass through and read the meanings hidden within); the interaction of private and public spaces via a soft transition from external space to the interior via the intermediate—semi-private and semi-

public conditions; involving residents of the neighborhood to actively partici-
pate in its improvement.

*Table 1: Main approaches and Tools to Improve Public Spaces in Areas of Panel Con-
struction (German Experience)*

Qualities	City Scale	District Scale	Quarter Scale
Sustainability	Green spaces of the dis-trict as part of the green framework of the city	Renaturation	Landscape design
Identity	The uniqueness of public spaces of city-wide significance	Spatial concept for the development of public space in the district	Art and special themes for each living group
interactivity	Inclusion of the district in the system of pedestrian and bicycle routes	Participation	Soft edges and spatial hierarchy

Are these principles applicable to solving the problems of panel housing
neighborhoods in Russia? What problems/conflicts can they solve at different
scales? We will consider the application of these principles to the example of
the Akademgorodok neighborhood in Irkutsk.

Akademgorodok differs from other districts of Irkutsk and it is possible to
identify a number of characteristics that collectively form the district's identity
(Malko and Kozlova 2019): the location of the science city, the planning struc-
ture, the diversity of flora and gradation of green spaces, and the academic
community's social environment.

Figure 1: Interaction of residential areas with adjacent and inner green areas, highlighting the main public axis of the district.
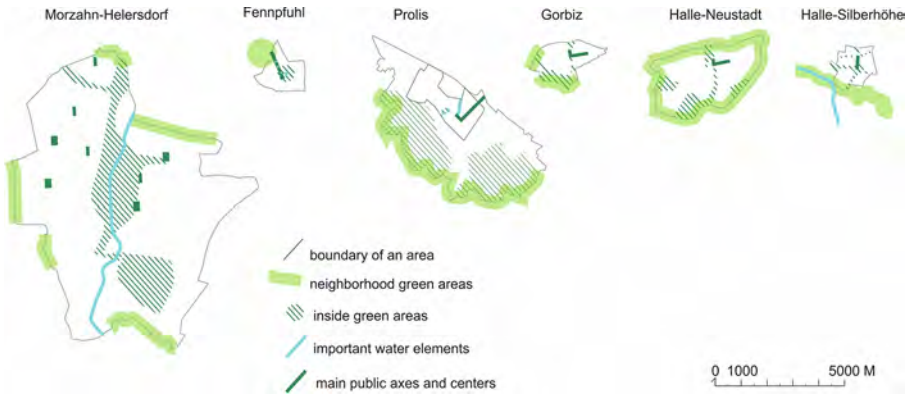
Source: L. Kozlova.

Location and Planning Structure

Akademgorodok is located in the southwestern part of Irkutsk in the Sverdlovsky district, on one of the main arteries of the city, Lermontov Street, surrounded by a large forest area and in close proximity to the Angara river (fig. 2). The area is home to a population of 12,000 people, covers 234.5 hectares, and has a density of 51 people per km². Akademgorodok is a compact formation with parallel zoning and is located in an area with a slight slope to the Angara. The microdistrict is divided into three functional zones on different sides of Lermontov Street: *scientific and educational*—a territory of scientific schools and institutes surrounded by greenery; *residential*—between the main road and the river, forming the silhouette of the left bank development; and *recreational*—on the banks of the Angara.

First of all, Akademgorodok is a science city designed inside the city structure, which distinguishes it from other science cities designed outside the city. A distinctive feature of Akademgorodok is its implementation of a typical urban planning concept of the mid-twentieth century: free planning in the placement of scientific and educational institutions in a park area.

Figure 2a: Location of the Akademgorodok district in the structure of the city.

Source: A. Malko.

Figure 2b: Scheme of residential development of the district.
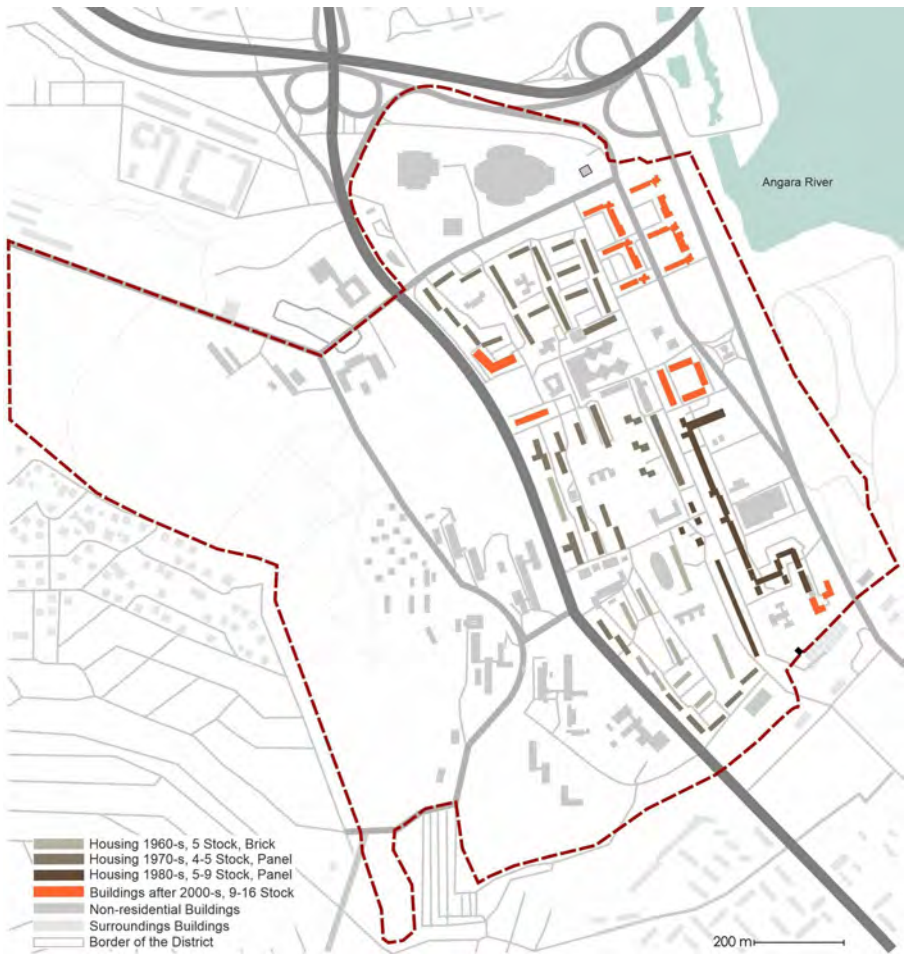
Source: A. Malko.

The area is built in the form of residential groups that were placed along the line of the main street, Lermontov, in the first stage and along the coastal area in the second stage. At the same time, it is possible to note the different configurations of residential groups from each other and from other areas of the city. Each of them has its own distinctive features: the *southern residential group* is distinguished by the openness and flow of residential spaces formed by its closed-line construction, the *middle residential group* is characterized by its "cluster placement" of houses around a socially significant object (school, kindergarten), and the *northern residential group* was built in accordance with the features of the descending topography, which imparts dynamism and forms the silhouette of the coastline. This variety of configurations, combined with the permeable structure of the courtyard spaces, contributes to good legibility within the neighborhood. However, the area is actively undergoing densification with high-rise buildings, which may lead to the loss of the established configurations of residential groups. At this point, the northern and middle residential groups are already affected.

Green Spaces and Sustainability

Green areas are one of the main assets of Akademgorodok. It differs from other districts of Irkutsk in the variety of green spaces. Rare species of plants were brought in. Among them are allées of linden and larch trees, blue spruces brought by special order from America, white lilac, alpine currant, Manchurian walnut, Rugosa rose, Far Eastern species of Maak cherry, Japanese elm, Mongolian oak, Manchurian ash, and others (Starshinina 2005). In addition, it is possible to identify special types of greenery that are characteristic of the area and help form its identity (Landeshauptstadt Dresden 2015, 2017): there are boulevards of trees with large crowns and low shrubs that frame courtyards. It is possible to trace a peculiar gradation of spaces from the forested massif on the upper part of the slope through landscaped boulevards and residential yards to the open space of the Angara river shoreline.

The district reconstruction project of 1970–1980 included two wide internal pedestrian boulevards that formed a connection between the forest and the shoreline, but their formation as a strong perpendicular relationship was never implemented. During the development of the microdistrict, new public functions were built mainly along Lermontov Street, which weakened the planned dominant role of the pedestrian axes. Additionally, access to the coastal space, which is cut off from the area by another roadway (Starakuzmikhinskaya Street), is currently difficult. As a result of this, the coastal zone is almost unused by residents. There is practically no improvement of the space along the bank of the Angara river; there are no walking paths and getting close to the water is very inconvenient. It is also difficult to access the forest area from the opposite side of the district and the adjacent new public center of citywide significance (library, Ice Palace). Existing crosswalks are often inconveniently located, resulting in traffic violations by campus residents and little use of landscaped areas. Because of these problems, the need for a perpendicular connection is obvious.

An analysis of German neighborhoods of mass housing showed the presence of a strong pedestrian axis in each of them. The moto for the reorganization of the Fennpfuhl district (Berlin) was "living in nature in the center of the city." The district's planning concept, which has survived since its inception, is a green pedestrian axis that penetrates the district and connects two major parks: Volkspark Prenzlauer Berg outside the district and Fennpfuhl Park within it (fig. 3). There are similarities here to Akademgorodok, where a potential pedestrian axis could link a large, forested area and a coastal space. Public functions in the Fennful neighborhood are concentrated along the axis, contributing to a clear, healthy, and safe public realm. Thanks to the functional diversity with stores, cafes, and playgrounds, plus minimal landscaping for maintaining the green axis concept, the pedestrian street is being actively used again since 2011. It is noteworthy that the axis has retained its functional richness despite the subsequent creation of several shopping centers along the traffic arteries.

Figure 3a: Comparison of the main public axes and centers of the districts Akadem-gorodok (Irkutsk) and Fennpfuhl (Berlin, see figure 3b).
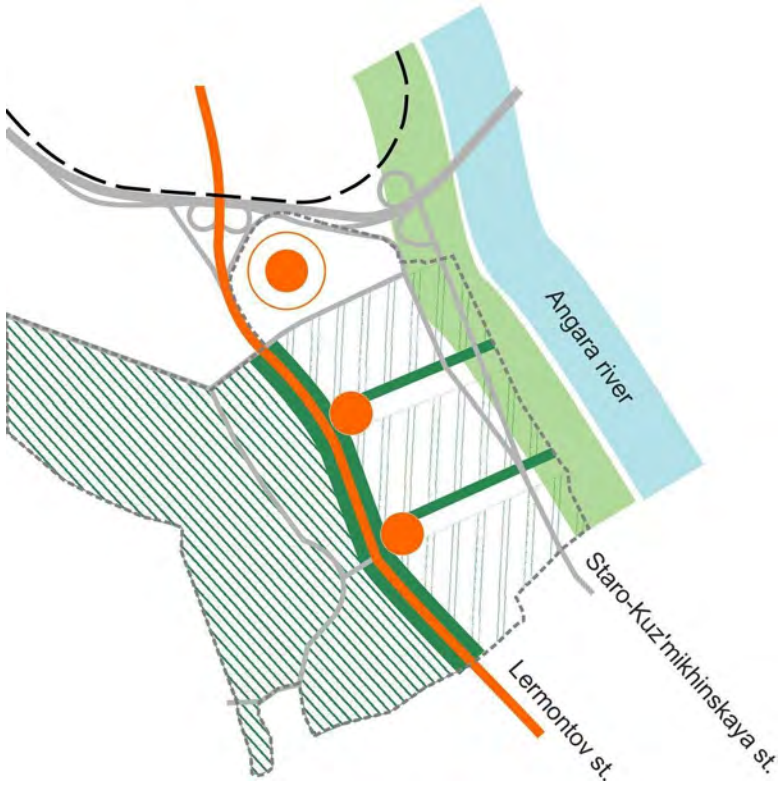
Source: L. Kozlova.

Figure 3b: Comparison of the main public axes and centers of the districts Akademgorodok (Irkutsk, see figure 3a) and Fennpfuhl (Berlin).
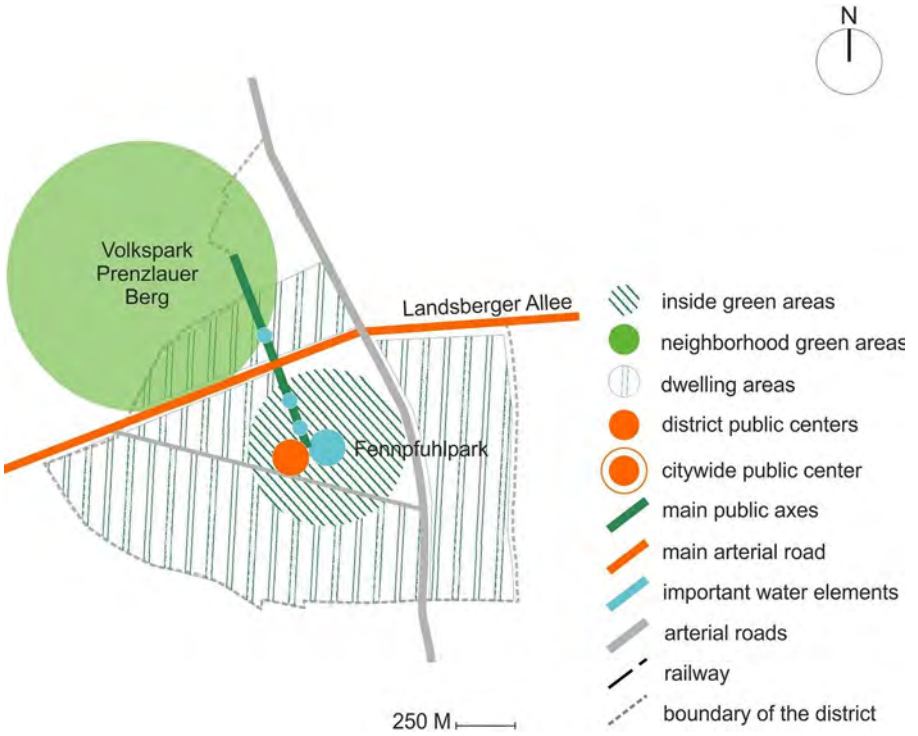
Source: L. Kozlova.

Social Environment and Interactivity

Interactivity refers to the degree of people's involvement in the active life of the neighborhood and the processes taking place in the public space. Consequently, processes need to happen, and participation in them needs to be possible, desirable, and encouraged. Thus, the inclusion of elements of art, sports, or children's play equipment in a transit street space changes the quality of that space, inviting people to stop and linger in it. Involving people in the active life of the neighborhood through the possibility of interaction with the environment and its elements has a positive effect on the vitality of

public space. The reciprocal combination of public and semi-public spaces is a necessary component of pedestrian shopping streets of district significance (pedestrian streets in the districts of Fennpfuhl (Berlin), Halle-Neustadt, etc.). The quality of interactivity also refers to the possibility of transforming areas through discussions and interaction with the inhabitants of the city. This discussion and participation in the creation of space evokes a sense of belonging and responsibility in the future users of the space.

The public functions of Akademgorodok concentrated along the arterial roadways now dominate over the intra-block functions. At the intersection of the arteries, a citywide community center has been built, including a library and two ice arenas. At the intersection of the main planning axis and the two pedestrian boulevards are centers of district significance: the administrative center of Akademgorodok and the social and cultural center. Good infrastructure—comprising kindergartens, schools, an "Experimentarium," where physical experiments are demonstrated for children, and a library—is provided for children of middle- and high-school age. Nevertheless, a few problems can be noted, primarily the lack of functions for people middle and older age and the lack of entertainment functions (restaurants, cafes, movies, etc.). The introduction of these functions on the pedestrian axes could help revitalize them.

In the areas studied in Germany, semi-public spaces are used to revitalize the central public spaces of the neighborhood—the main public axes and centers. Such spaces include cafes, cinemas, a shopping center, and other public functions. They are defined as public spaces with some entry restrictions and a commercial orientation. The saturation of the district center with semi-public spaces and the nature of their interaction with public spaces significantly affect the intensity of the use of both. Jan Gehl (2010), an architect specializing in the study and improvement of public spaces, introduced the concept of "soft edges," emphasizing the importance of activating boundaries to make space more livable. The organization of boundary space with "soft edges" according to the principles of *flow*, *transparency*, *permeability*, and *interaction* can significantly improve the quality of public space (Kozlova 2014). The technique of "overflow," when goods "move" outside a store or business into the public space of the street, is particularly effective on main public street: cafes have street tables, and a building's ground floor coincides with the level of the sidewalk, creating a smooth transition from outdoor space to indoor space.

The identity of panel neighborhoods is shaped not only by its physical form, but also by the social environment. In many neighborhoods, entire generations have grown up there and a strong community has formed, for whom these

neighborhoods primarily have sentimental value. In this regard, participatory development is a particularly important tool in the development of residential areas.

Participation is a phase of urban design work involving the end users in discussions of project ideas. Since 1999, Germany has had a federal program called the "Social City" (Soziale Stadt), which aims to help stabilize and strengthen economically, socially, and structurally weak residential areas. The main goal of this program is to improve the social cohesion and integration of all population groups.

The "Quartiersmanagement" is responsible for the coordination of the various activities (recreational, educational, sports, etc.) and partisan processes in the community; it supports new and existing citizen initiatives (unions, organizations, etc.) and coordinates the activities of the departments within the city administration. This kind of management is often handled by one person, on whose activity the social atmosphere of the entire district depends. In the Halle-Neustadt district, for example, as the result of a project seminar held by the International Building Exhibition (IBA) in 2010 that aimed at the intensive involvement of residents in the use and creation of spaces, projects that have made a significant contribution to the cohesion of residents and the quality of life were realized—a skate park, an open-air gallery, and design of the square on Tulpenbrunnen. The active involvement of neighborhood residents in the design process allowed people to participate directly in the improvement of public spaces, which transforms the awareness of space for all into a space for everyone.

In the Marzahn-Hellersdorf district of Berlin, active work has been undertaken with residents not only on the improvement of open spaces in the district, but also on the renovation of buildings and apartments. The wishes and comments of the residents influence how the process is organized. In this way, the district successfully implemented such an important aspect for the residents as the absence of cars in the yards. The courtyards are green oases for quiet pastimes and children's games. In addition to considering the wishes expressed in this constructive dialogue, restrictions for the residents themselves were also introduced, such as forbidding them from adding glazing to balconies, for both technical and aesthetic reasons.

Participatory design in the Prohlis district (Dresden) that aimed at reorganizing the courtyard space and recreating the natural framework of the areas, supported by the Social City program, made it possible to:

- consider the interests of residents of all age groups
- avoid conflicts in the use of space at the design stage
- provide an additional opportunity for people to meet and get to know their neighbors
- involve the direct users of public space in its improvement, thus contributing to the formation of a personal attitude toward the space in each participant

Due to the high concentration of academic institutions in Akademgorodok, a strong scientific and academic community has been formed that cares about its neighborhood and undertakes initiatives for the development and improvement of the area, which is of particular intangible value. In recent years, there have been several activities of note, making it possible to begin the process of modernizing public spaces. On the initiative of the scientific and academic community and funded by voluntary donations from residents and employees of scientific institutions who are not indifferent to the history of Akademgorodok, a square of science was created with a memorial to commemorate the Irkutsk scientific institutes of SB RAS, designed in the shape of a globe that rests on eleven columns symbolizing the institutions, each with the name of an institution and its date of foundation. The paving of the site is in the form of a labyrinth—as a symbol of the search for scientific knowledge (Velyakina 2018). This monument not only contributes to the formation of a comfortable urban environment, but also strengthens its identity.

Further, as part of the federal program "Comfortable Urban Environment," a number of courtyard spaces were renovated. Each courtyard renovation project became the object of a competition, subject to open voting by the city's residents to evaluate the project proposals. Any citizen of Irkutsk from the age of fourteen could vote, either at specially designated places or online. In the Sverdlovsk district, where Akademgorodok is located, the largest number of Irkutsk residents voted and Akademgorodok took first place in terms of resident participation, which once again emphasizes the active and cohesive urban community (Irkutsk City Administration 2018). Citizen participation in the federal program is one of the first areas of building a real dialogue to solve the problems of urban development and come to a common consensus. However, when comparing the German and Russian approaches to participatory design, there is, in most cases, a more formal approach in Russia that imposes a set of necessary activities without taking into account the merits of the case for example the procedure of Public Hearing organized from municipality

(Potapova 2015). In Germany, however, various types of citizen participation have been developed; these also include an informal approach aimed more at building a dialogue between residents and the city administration (Tab. 2). This (informal) approach involves several stages: the first stage is to inform citizens about the planned processes; the second stage is a joint consultation, that is, residents can already pose their questions about certain aspects; the third stage sees even more active involvement of residents; and the fourth stage comprises designed forms of cooperation, that is, resident participation in the subsequent stages of the planning process (VHW 2012).

Table 2: Types of citizen participation.

100 % ↑ 0%	Goals of Citizens Participation		examples
	↓	↓	↓
	Formal	Informal	
	Decide	Cooperation	Working groups, round tables
	Agreement	Co-design	Meditation
	Listen	Consultation	Questioning, comment, public, discussion event
	Inform	Information	information's session, Internet site

Source: A. Malko (based on *Hinweise und Empfehlungen zur Bürgermitwirkung in der Kommunalpolitik*, VHW—Bundesverband für Wohnen und Stadtentwicklung e. V.).

At present, the open spaces in Akademgorodok are almost unused for temporary events that could activate the spaces, be they festivities, such as city or neighborhood festivals, or other events. Germany has developed a system of events throughout the year, which activate the main spaces of the neighborhood and create "impulses" that keep the neighborhood alive all year round (wine festival, Christmas market, family fun fair, Easter celebration, etc.). The public spaces of the district are not very active at the moment; events are mostly held only on anniversaries and on New Year's Eve.

Figure 4: Akademgorodok, areas where renovation was carried out as part of federal programs and the active participation of scientific institutions

Source: A. Malko.

Conclusion

Akademgorodok has retained a number of characteristics, such as its location in the city, its planning structure, and the variety of green spaces. Nevertheless, at the moment, many identity-forming features are poorly legible and require development activities for the sustainable evolution of the area and the preservation and enhancement of its identity. There is no general scenario for the development of public space in the area at the moment. Spot development of individual spaces within the framework of federal programs or other initiatives leads to a fragmented perception and often disrupts the integrity of the urban environment, rather than improving its overall quality. Akademgorodok has a stable green framework that is little used. To improve the situation, it is necessary to establish the interactivity of space, which creates the prerequisites for its use through, for example, participatory design.

Based on our analysis of the German experience, three principles can be noted, and these are also applied in the Akademgorodok area. These are (1) participatory design; (2) design proposals to create a unified framework of green spaces in the city, which accordingly includes an abundance of green spaces; and (3) the formation of unique centers of citywide significance on the periphery of the district. Such principles as renaturalization and creation of a special theme for each neighborhood are not relevant for this particular district due to its unique configuration of residential groups and rich landscape diversity. In order to develop the spaces of the neighborhood, it is important to focus on the application of the following principles:

- Incorporating the neighborhood into a citywide system of connected networks of interactive green routes that invite active lifestyles (walking, sports, play, celebrations, etc.). This principle relates directly to the citywide urban planning policy on the development of public spaces and contributes to the creation of a healthy and attractive urban environment that invites residents to walk and take part in sporting activities.
- The creation of a unified spatial concept for the development of public spaces in the neighborhood. This principle will help to avoid localized solutions to improvement or include them in an overall scenario, making it possible to maintain the legibility and identity of the neighborhood.
- The use of landscape design as the main tool will emphasize and enjoy one of the main assets of the neighborhood—its variety of landscaping.

- The development of a functionally diverse system of nodes of social activity on the pedestrian boulevards with the application of the tool of soft boundaries and spatial hierarchy will activate the connections between the two main natural treasures of the district—the forest and the Angara riverbank.

In achieving the goal of creating an attractive and lively public space in the neighborhood, it is necessary to improve the qualities of identity, sustainability, and interactivity.

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16. The Future of the New Past: Changes in Public Spaces in the Novo-melnikovo District in Irkutsk

Maria Tumureeva, Ekaterina Gladkova, and Valery Kozlov

Introduction

The dynamics of change in large cities, caused by changes in social and economic life, urban mobility, and changes in the living environment, act as catalysts that affect the transformation of the physical environment of cities, neighborhoods, and the existing housing stock. Modern trends of change in the residential environment of large cities are accelerated and caused by a pandemic: a growing interest in health and well-being, the need for contact with nature, and the emergence of new forms and functions in the densely built-up space of large residential areas. At the same time, these trends have caused partial disappointment with places of concentration of people and flows (public transport, busy streets, etc.). This brings us back to a discussion about the limits of population density and the complexity associated with the fact that almost all jobs and services are located in megacities and large regional centers. The events of recent years have brought about changes in the way of life of cities and have drawn attention to the quality of open urban space, which has made it necessary to determine the prospects for the planning and development of the city.

A consistent series of restrictions in society has increased the focus on the development of open spaces and nature, as well as on their importance for physical and mental health. New living conditions in the city have allowed some families to question their way of life and open up new opportunities. Choosing where to live and work, finding calmer rhythms, reclaiming personal time and space, taking care of oneself, and enjoying the small pleasures available in a neighborhood context are all possible. What factors can we activate to make

neighborhoods attractive? How can neighborhoods be made more livable by providing new accompanying health and environmental conditions? How can the living environment and territory be made more convenient by using new types of public space?

The planning and spatial concept for construction of the residential area Novomelnikovo was based on the principles of combining industrialization with the artistic environment of residential complexes. The metaphorical idea of the relationship between natural and urban principles is supported by artistic elements that have survived from the time of design and implementation. Novomelnikovo includes two microdistricts separated by large landscape boundaries and terrain relief.

The transformation of the Pervomaisky microdistrict in recent decades has revealed the significant potential of its spatial and planning structure: the concentration of commercial objects and the placement of services on the main roadway and near transport hubs. It is noteworthy that the commercial and social attractiveness of the microdistrict's central street has increased, despite the creation of new shopping centers on transit routes. The analysis of this microdistrict sheds light on the practice of developing public spaces of various urban scales and locations. The primary elements of public space are large planning axes and flowing spaces of residential courtyards, which contribute to the formation of a healthy and safe living environment. From the point of view of ownership, all the spaces of the microdistrict remained municipal at the design, construction, and operation stages—which, due to a lack of funds, determined the simplicity of their organization and arrangement.

The public spaces of the Pervomaisky microdistrict currently have a number of problems associated not only with the moral and physical aging of the housing stock, but also with a large number of unformed open spaces, which are often unstructured and "nobody's" property. In the existing microdistricts, in some quarters, there is practically no clear differentiation between private and public spaces. In modern realities, the public and courtyard areas of residential developments are often disorganized: these areas are occupied by parking lots, garages, kiosks, or are simply abandoned. This raises the question: How can the attractiveness and accessibility of the existing interconnection of public spaces in the microdistrict be improved?

In the last decade, various national and municipal programs aimed at creating a comfortable urban environment have been implemented. In the administrative regions as well as in large and small cities, experience has been accumulated in their implementation, which is of particular importance for urban areas of mass settlement and is one of the priority tasks of modern urban planning.

Methods, Models, and Materials

In the dynamics of social and economic changes, the importance of public and open spaces increases. They become key structural elements of the urban environment, especially for areas of mass housing. Their inhabitants experience a polarization of relations between public and private, and the desire to develop the uniqueness of the residential area as a whole and of specific yards.

The urban planning conditions of the existing open architectural spaces of the analyzed area of a mass housing district comprise three levels of residential environment: the "frame" of the residential area, the microdistrict "fabric", and local elements. In 2016, at the initiative of the President of the Russian Federation, a large-scale project titled "Formation of a comfortable urban environment" was established (Ministry of Building of Russian Federation, 2016). And since 2017, the all-Russian competition "Best Municipal Practice" has been held (Government of Russian Federation, 2016). In Presidential Decree No. 204 from 7 May 2018 "On national goals and strategic objectives of the development of the Russian Federation for the period up to 2024", the need to increase the urban environment quality index by 30 percent was noted, and thus a project of the same name was implemented (Ministry of Building of Russian Federation, 2019). In addition, the "Public Initiatives" program was implemented in the Irkutsk region, aimed at improving settlements (Government of Irkutsk region, 2017). All these programs are aimed at creating conditions for improving the quality and comfort of the urban environment by combining the planning and implementation of a set of priority measures in the annual improvement of cities and by involving the population in the implementation of these programs.

Figure 1: Scheme of implemented programs in the Pervomaisky microdistrict.
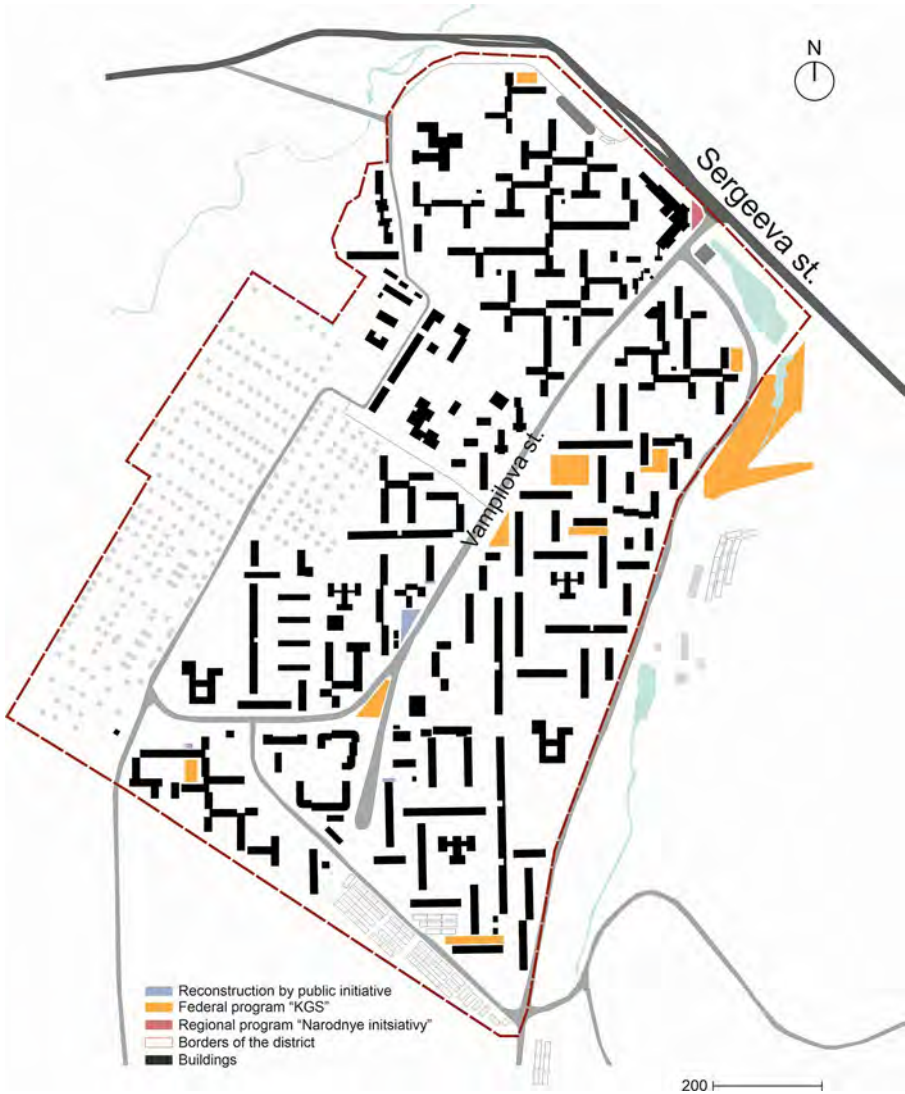
Source: E. Gladkova, M. Tumureeva, 2021.

*Figure 2: Square named after Vampilov in the Pervomaisky microdistrict.*

Source: R. Malinovic, 2020.

In Pervomaisky, one of the largest residential microdistricts of Irkutsk, several improvement projects have been implemented in recent years in selected public and courtyard areas as local objects of the living environment (fig. 1). Over the past few years, a number of projects for a comfortable urban environment have also been implemented in Irkutsk, most of which were implemented in peripheral residential areas and were based on a functional approach to design. For example, within the framework of the national project "Formation of a comfortable urban environment," Vampilov square, which is an amphitheater overlooking the playground, was landscaped in 2017. On the wall of the heat pumping station located on the premises of the park, graffiti was painted—dedicated to the work of Siberian writer Alexander Vampilov, after whom the main transport and pedestrian axis of the district was named. Such objects make up the microdistrict fabric of the living environment (fig. 2). In 2019, the improvement project "Pad Dolgaya" was developed between the Pervomaisky and Universitetsky microdistricts (fig. 3). The natural area with dynamic topography and large open spaces, through which the Demyanovka river flows, is a framework of green spaces in the Novomelnikovo residential area. The main urban planning goal of the project was to preserve the threatened landscape that unites two residential neighborhoods. It included work

on asphalting the pedestrian zone, installing small architectural forms, erecting lighting poles, construction of an information stand, and landscaping. An analysis of changes in public spaces was made in order to identify new typologies of construction in the modernist neighborhood and spatial adequacy, as well as to ask what aesthetics can contribute to the growing question of urbanization, flexibility, and quality in the processes of transformation and contraction that allow and characterize the renaissance of the city.

Figure 3: Fragment of the implemented Dolgmaya Pad project.
Figure 4: Model, M 1:2000, Irkutskgrazhdanproject, 1985.
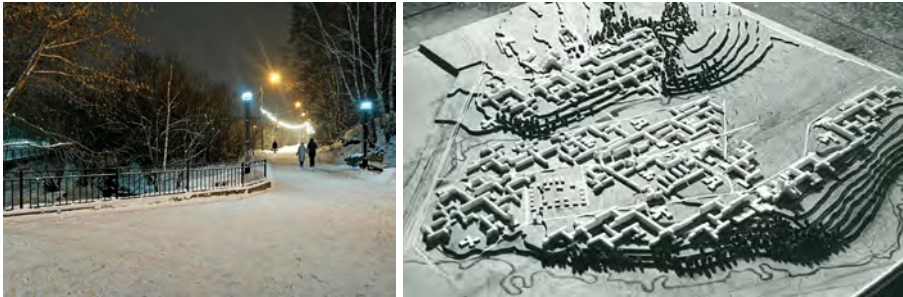
Source: E. Gladkova, 2021.
Source: Archive of N. Zhukovskiy

The project of building large residential complexes as microdistricts reflected the social ideas of the development of complexity and rationalization of construction technology. To provide a solution, measures were taken that significantly reduce the unit cost of an apartment: a reduction in the living area of each apartment and in the range and size of auxiliary premises; a decrease in the height of premises; a transition to standard design and industrialization of construction and installation works; the use of 4–5 story residential buildings in the development of economic viability for the city, making it possible to do without elevator equipment, garbage chutes, et cetera. Projects for the rationalization of buildings and effective use of the territory included methods of creating blocks of buildings using inserts between houses, which achieved the effect of a closed residential courtyard with children's playgrounds and recreational opportunities for adults and with appropriate landscaping and paving. Residential buildings with brick facades were given sculptural treatment with

the inclusion of panels, plastered surfaces, or open concrete elements. There were various interpretations of traditional balconies, loggias, bay windows, and attics. These architectural techniques significantly expanded the palette and appearance of residential groups.

An analysis of the practice of changes to public places in the Pervomaisky microdistrict proves that the structural forms of public space, determined at the stage of the project, are perceived regardless of what functions are placed in them. They are described by more or less regular morphological changes that have nothing to do with semiotic meanings. The identities of the places of social activity in the microdistrict were sacrificed during the development phase to the benefit of global manufacturing standards and new industrial materials and technologies. Despite the fact that the implemented programs and projects have improved the overall qualitative characteristics of both public and courtyard spaces of the microdistrict, they have been implemented on a piecemeal basis, forming a living environment according to the principle of local fragments. The implemented courtyard projects, for the most part, are reduced to laying out children's play equipment, asphalting parking lots for cars, and arranging lawns. In the projects' implementation, the fragmentation of the improvement is notable, a concept or strategy for the development of public spaces is lacking, the allocated funds for the implementation of creative projects are insufficient, respectively, and the improvements generally suffer from low quality. For example, in the description of the priority project "Formation of a comfortable urban environment," no definitions of "urban environment" and "comfort" are given, nor any description of the prospective planning, functional zoning, or development (Minshinin, 2018). In addition, insufficient attention is paid to supporting small and medium-sized businesses: no shopping streets or objects of attraction for residents are created, and no bike paths are provided (Voloshinskaya, 2019). As a result, there are problems associated with the uncertainty of funding (Dmitrieva, Ipatova, 2018). There are problems in organizing interaction with the population (Terskaya, Cherevko, 2019), including a low turnout for public discussions of improvement projects: only a third of the population of Pervomaysky participated in the design and implementation of the improvement projects.

The projects do not pretend to conclusively define all issues of public space design in their current form. It is a guideline for everyday use to represent a future binding standard for the selection of artistic elements of public space. At the same time, fewer and fewer urban design principles are coming to the forefront as concrete, viable options for the use of various paving surfaces and

outdoor furniture. Evaluation of the experience of public space development in the microdistricts of individual cities in recent decades has been proposed as a means for compiling a "transitional collection" of standards for upgrading public places on a regular basis. Separate standards cover different types of buildings and areas with diverse equipment. The provisions of the standards are accepted as the basis for the development of specific projects and requirements for the economics of using the spatial resources of microdistricts, taking into account the costs of production and maintenance.

Results and Discussion

Living in mass housing, a unique form of urban life, makes it possible to look in a special and even more meaningful way for opportunities for the spatial densification of buildings and the metamorphosis of the transformation of open spaces, which must be explored. Public spaces can be defined as new centralities and can be defined for their morphological design and perception. The planned project seeks to provide innovative contributions in three areas: (1) theoretical debate about the modern Siberian model of public spaces in the microdistrict; (2) practical application of mixing used; and (3) integrative perspective in the areas of politics, strategy, and social activity in the microdistrict context. Prefabricated residential complexes have a specific character in planning (modernism) and architectural form (industrialism). At the same time, industrial construction has its own logic and leads to certain rules for its transformation.

Federal and municipal large-scale initiatives taken to create an improved, comfortable urban environment and aimed at the development of new projects for public and courtyard areas reveal the potential for adaptability and social activity of a microdistrict's inhabitants. The implemented programs have a number of positive and negative aspects. The adjacent microdistricts of Pervomaisky and Universitetsky have a pronounced difference in topography, which influenced the planning and layout of their buildings. The topographic characteristic of the place was used in projects for the detailed planning of the microdistricts: in contrast to the picturesque landscape of the area, a clear orthogonal planning structure was proposed for the buildings; the placement of high-rise buildings at high elevations enhanced the architectural contrast and expressiveness of the housing complexes' appearance.

Figure 5a: Comparative analysis of the planned 1970 project and the current state of microdistricts in 2020.

Source: M. Tumureeva, 2020.

Figure 5b: Comparative analysis of the planned 1970 project and the current state of microdistricts in 2020.

Source: M. Tumureeva, 2020.

At the same time, large open spaces along the stream have long remained unoccupied and empty, with significant recreational potential.

The structure of the planning framework for the adjoining microdistricts has a general principle of development of buildings along a main axis with residential buildings in different positions in relation to this axis (inside—on the periphery). Axial spaces presently establish the prerequisites for the intensive development of new commercial functions with a pronounced difference in the polarization of such buildings. The main ideas of the planning connection of the two microdistricts, laid down when the project was planned in the 1970s, are the pedestrian axis that connected the two microdistricts (figs. 4, 5). The main pedestrian axis, starting as an open passage with a developed service system at Universitetsky and Pervomaisky, began in the community center of each of the microdistricts. As envisioned, this alignment was to be actively "saturated" with sports and recreation facilities for both residential areas in Pad Dolgaya, along with service facilities. Therefore, when considering the concept for the development of public spaces in today's residential areas, one should take into account the planning decisions laid down by the initial planning schemes as the formation of the identity of the environment (fig. 6). A new typology of public spaces in microdistricts must aim to respond to the question of what spatial typologies for urban life can and will arise in microdistricts, and which ones can answer the high aesthetic and functional requirements of today's society. What new typologies in the current neighborhood can offer spatial and aesthetically adequate responses to the growing demand for urbanization, flexibility, and environmental quality that characterizes the renaissance of public spaces in our neighborhoods?

An analysis of the practice of implementing municipal improvement programs for the Novomelnikovo residential area, including the Pervomaisky and Universitetsky microdistricts, has made it possible to identify the basic forms of the local environment of residential mass development: linear spaces at the district, microdistrict, and local levels and compact spaces belonging to various residential groups. All these spaces integrate the activity of the population of diverse social groups among the inhabitants of the microdistrict. The systematic empirical analysis of changes and their social and spatial consequences remains insufficient and does not integrate numerous assessments made about microdistricts of mass housing. We are seeking to close this gap in research by studying general patterns and specific trends of spatial, social, economic, and political changes in Irkutsk and their impact on the living conditions of residents in four key areas: (1) changes in the labor market, (2) accessibility of services and the comfort of the living environment, (3) self-organization and participation of the population, and (4) environmental sustainability.

Figure 6: Reconstruction of the boulevard with the proposed location of the Living Lab.

Source: E. Gladkova, 2020.

Based on the analysis of the prevailing morphotypes as basic units of residential development consisting of a compact group of buildings and allocated in the space of the microdistrict, residential units are determined based on the compactness and site density and spatial connectivity (fig. 7). Subsequently, we studied the current meanings of the typology and identified the basic morphotypes of mass development that were applied by specific designers. In order to understand the typology of the public spaces of the microdistrict, enough material was collected to take another step in assessing the potential for changing public spaces of different scales. At the same time, the analysis of each basic morphotype and yard space should be divided into three sections: context, structure, and form of housing. It is necessary to note an additional component, which, in our opinion, is inevitable: time, which is encountered in any scientific or project activity.

Figure 7: Morphotypes of the district.
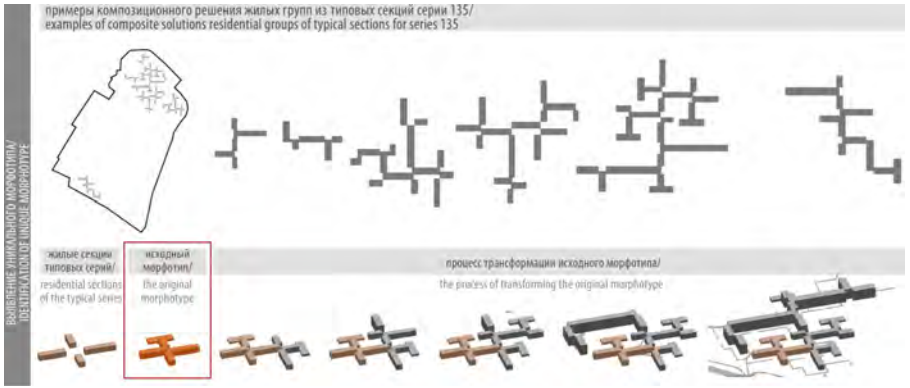
Source: Student Kishchenko, 2019.

Conclusions

Irkutsk, like many cities in Russia, has its own experience in creating a comfortable urban environment and has its own interpretations of the prospects and implementation of national programs. As a historical city, Irkutsk has, from the outset, aimed at using the social and spatial potential of the place and its technologies for the creation of its new microdistricts in the second half of the twentieth century on the periphery of the historical city. Thus, the microdistrict of a large Siberian city serves as a model in the research. However, long-term changes associated with postindustrialism, shifting population structures, and the declining welfare of the state, have an impact on Siberian cities. These changes, to varying degrees, affect the economic, political, and social development of cities: government initiatives at different levels have the same impact as structural factors, activating the ability of local institutions to cope with new social needs and problems. Against this background, this research project has focused on changes and their consequences in Irkutsk since 1990. Due to its history in the use of public spaces of microdistricts integral to the urban development of Irkutsk, the experience of Pervomaisky is an exemplary model of a Siberian city. Large Siberian cities and their microdistricts are historically characterized by the development of social activity, high quality of life for the region, and economic competitiveness. Community

spaces in the neighborhood were encouraged by accessibility, support for forms of democratic community participation, recognition of diversity, and reduction of socio-spatial inequalities.

Analysis of the impact of federal and regional programs on the development of public spaces in the panel microdistricts of Irkutsk revealed problems associated with the lack of a unified concept for the improvement of interconnected public spaces, and the implemented projects to create a comfortable urban environment have been reduced to fragmentary interventions; no apparent attempts to attract commercial business investments have been made in the microdistricts. To this day, the function and appearance of public spaces remain a mirror of the urban community. They reflect social values and patterns, commonalities and differences, and the degree of independence and freedom of each. They reflect the basic ideas about living together in the city. The principles of organizing open architectural spaces in the structure of a city require taking into account all factors that influence the organization of space, along with factors that influence the formation of one or another type of existing living environment. Despite the lack of a general concept for the development of public spaces, the implemented project for the Pad Dolgaya improvement connects the two microdistricts and preserves the natural landscape of the area, establishing the prerequisites for the creation of a large planned connection—a pedestrian boulevard. In order to implement a successful project, it will be necessary to take into account the attraction of small and medium-sized businesses, functionally fill the space, create centers of attraction, and involve local residents in the design process.

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17. The Present State and Perspectives of Development of Cheryomushki in Krasnoyarsk

*Klavdiia Kamalova and Ekaterina Kirichenko*

Figure 1: Location plan.
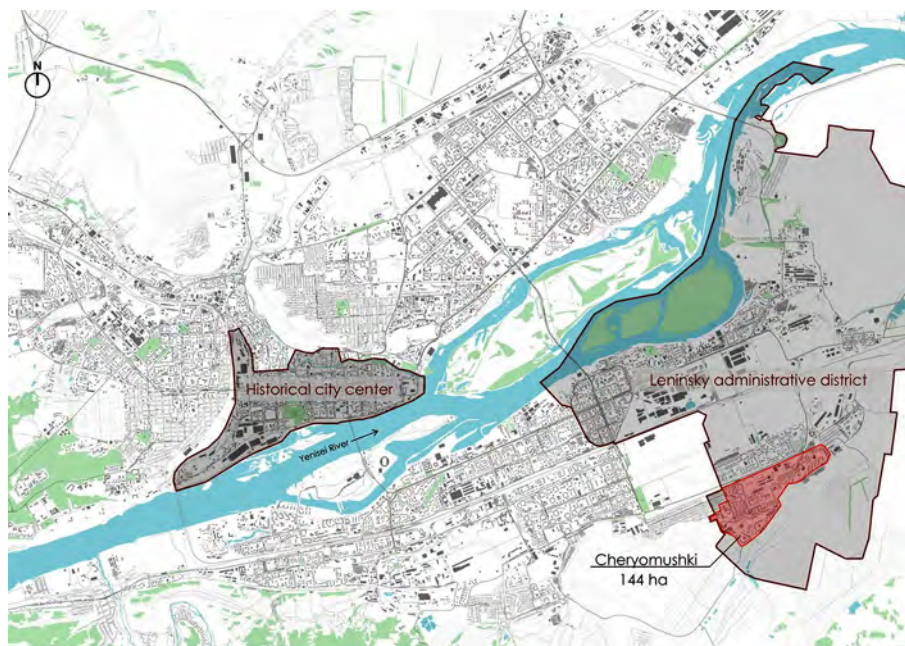
Source: Klavdiia Kamalova.

Krasnoyarsk ranks third in the Russian Federation in the number of pre-fabricated housing areas. There are about 50 microdistricts and most of them were constructed in the period from 1960 to 1991, with the peak of development before 1969. Cheryomushki is one of the oldest areas of mass housing estates in

Krasnoyarsk. It is located in the Leninsky administrative district at the eastern border of our city (fig. 1). Today it occupies an area of 144 hectares, which is 3 percent of the territory of Leninsky, and it contains about 20 percent of all its residential buildings.

Figure 2: Building layout, 1960–1980.
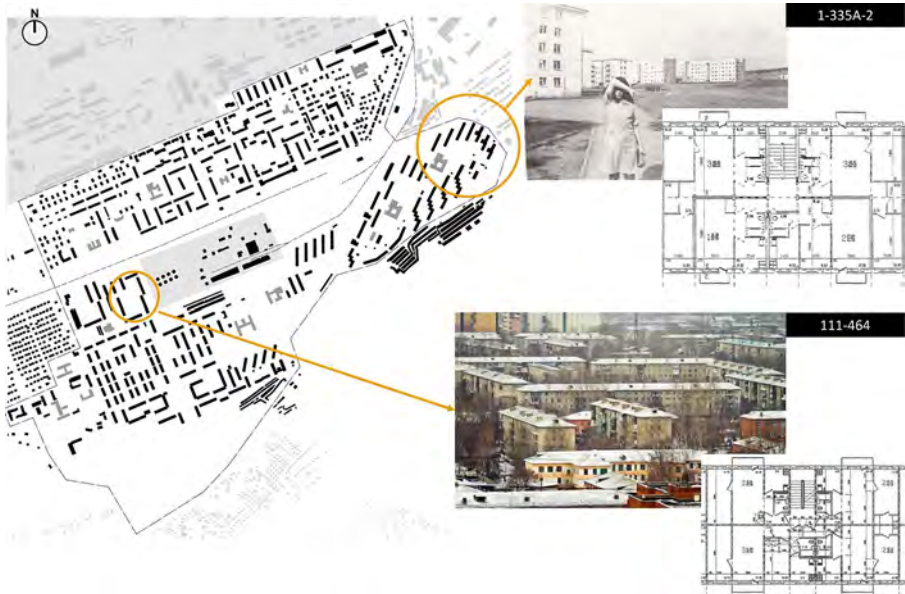
Source: graphic by Ekaterina Kirichenko; photos by unknown photographer *(left)*, Sergey Filinin *(right)*.

The territory's development began in 1944 with a two-story housing settlement for workers. However, the main period of construction (fig. 2) was from 1960 to 1980, with the majority of residential buildings consisting of five-stories and belonging to the first generation of mass housing. The development of this territory by prefabricated houses began in 1970. In 1978, the first master plan was designed by the institute Krasnoyarskgrazhdanproekt, consisting of seven microdistricts around a public core with social, cultural, and sport facilities. The public core was not implemented. After the 1980s, only two large microdistricts were built here (fig. 3). Subsequently, and to this day, there has been no further construction activity besides two residential panel buildings.

Figure 3: Building layout, 1980–2000.

Source: graphic by Ekaterina Kirichenko; photos by Klavdiia Kamalova *(left)*, Sergey Filinin *(right)*.

As an outcome of field surveys conducted of the area, very diverse open-space morphological structures (fig. 4) were identified. Dependent on their unique planning organizations, various forms of development by residents have developed. We identified six distinct elements of the residential layout, which includes 158 housing units in all. They can divided into four types, based on the morphology of the buildings and their functional principles (figs. 5–8).

Figure 4: Diagram of morphology of Cheryomushki residential areas.

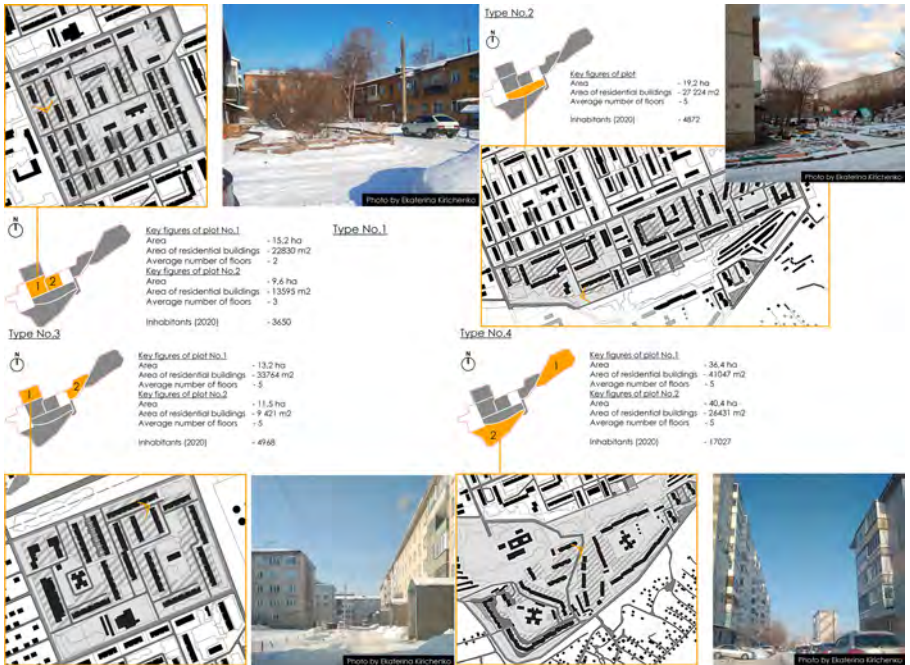Source: graphic by Klavdiia Kamalova and Ekaterina Kirichenko.

Type No. 1 is two- and three story village for workers. The main problem in how its territory functions stems from close spacing of the buildings rows, which led to a lack of courtyard spaces due to cramped conditions. Currently, these adjunct areas are not functioning. The landscaping focuses on the entrance groups and contains flower beds and small playground elements.

Type No. 2 includes blocks that fill in the gaps between the rows of residential buildings from the previous period. These integrated buildings were originally intended to form residential groups, but their close location to the low-rise houses also deprived it of space.

Type No. 3 is characterized of the openness of its territory. This allowed improvement of the sanitary and hygienic qualities of the residential structures, but led to an amorphous character.

Type No. 4 began to take shape in the mid-1980s and continues today. The territories of this period are characterized by high-rise buildings, which yielded large open courtyards. The main problem of such freely organized residential estates lies in the fact that the land belongs to everyone and no one at the same time.
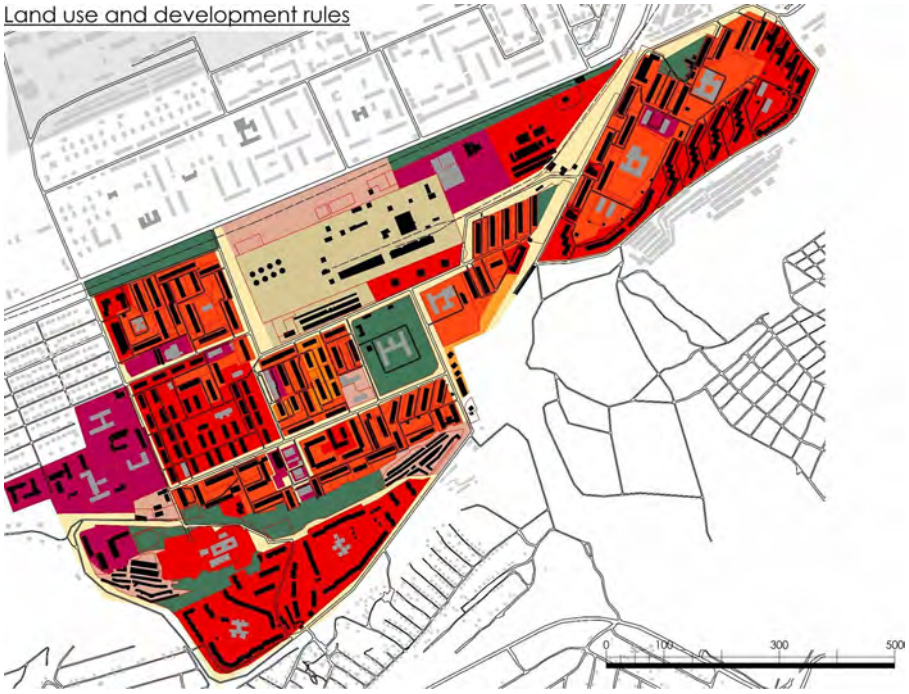
Figures 5–8: Fragments of planning elements.

Source: graphics by Ekaterina Kirichenko and Klavdiia Kamalova; photos by Ekaterina Kirichenko, 2021.

Figure 9: The current scheme of rules of land use and development.

Source: graphic by Klavdiia Kamalova and Ekaterina Kirichenko, based on open data from the Krasnoyarsk administration.

The unorganized living environment of the Cheryomushki district is characterized by dependence on the following points: (1) the lack of a hierarchy of open spaces and the limited ways of using open space; (2) the lack of territorial responsibility for the residents' collective property and the self-appropriation of fragments of collective property for private use; and (3) the spontaneity of the development of unbuilt land for parking zones, nonstationary garages and kiosks, household functions, et cetera. Based on the current situation of land use (fig. 9), it is becoming increasingly urgent to appropriate the areas of the microdistricts according to the principles used for the formation of the residential area, so that it functions as an additional part of the housing itself and consists of squares, streets, and alleys where the everyday household and recreational needs of the population are met.

Assets:

1. Humanly scaled green spaces. Open spaces with a landscape of rich greenery on a human scale are a most valuable and unique element that should become a "bridge" between courtyards and community.
2. Permeability of space. Modern methods of reconstruction (including our case study of the German and Dutch experience) are aimed at the revitalization of space, partly by marking the boundaries of areas of different ownership.
3. Varied levels of public and private space. According to Finnish experience, open common areas can be divided into several categories of at least four types: private, semi-private, semi-public, and public.
4. Functionally determined ground floors. The ground floor should be taken as a functionally determined part of a block, formed under the influence of the social and spatial environment and receiving its functional content in a particular place (socio-functional, urban, socioeconomic, geographic, etc.).

According to our study, residential areas of mass panel housing are currently at the stage of spontaneous self-development and self-preservation. Nevertheless, the housing estates of the period 1950–1970 contain a powerful resource for the development of the city, one that depends on planning open and public spaces. These spaces, with current land-use intensity values of 0.1 instead of the desired 1.5, should be viewed as an important component of a comfortable and high-quality living environment.

18. Development of Mass Housing Districts in the Second Half of the Twentieth Century: Cheryomushki and Tairovo in Odessa

Olga Savytska and Nadiia Dmytrik

Introduction

The particularity of the current stage in the development of Ukrainian cities is associated with the need to carry out large-scale measures to reconstruct and determine the further development of territories developed in the twentieth-century period 1958–1991, when residential construction of so-called *khrushchevki* (in reference to their Khrushchev-era origins) was carried out in the 1960/70s using industrial methods. Among the large cities of Ukraine, Odessa is the leader in the proportion of khrushchevki: there are more than one thousand such buildings, accounting for 20 percent of the urban population and 18 percent of the housing stock. At the moment, in world practice, there are two directions for the modernization of such properties—either the total demolition of existing buildings and new construction on the one hand, or, on the other, the preservation and careful reconstruction of the residential buildings, functional planning elements, and beautification and landscaping elements. In Ukraine, there are isolated examples of the reconstruction of residential buildings and adjoining lands that are to a certain extent in a natural state. The development of a general program for the reconstruction of these areas is very relevant today, both for Ukraine in general and for Odessa in particular. To make the right decisions, it is necessary to carry out a comprehensive analysis of residential areas, with the involvement of specialists from different specialties and fields of activity. Studying the history of the formation of residential areas of this period and their transformations at the present stage will also contribute to the adoption of competent decisions on their further development.

Analysis of the Literature

The theoretical basis for this study comprises fundamental works in the development of mass industrial housing construction, along with essays and scholarly articles on the topic by Ukrainian, Russian, and German specialists.

Scientific and methodological studies in the field of modernization of areas of mass residential development from the 1960 to the 1970s are described in the works of B. Engel (2019), V. Kozlov (2019), and M. V. Bivalina (2007). Regeneration issues of the living environment in multistory buildings in the 1970/80s are disclosed in the work of O. Ya. Chabanyuk (2003). The experience of renovating areas of mass residential development in Germany is considered in the works of M. G. Meerovich, A. V. Malko, L. V. Kozlova, and E. A. Gladkova (2017). The issues of organizational and technological modeling of the reconstruction of residential buildings of the first mass series are considered in the work of T. M. Dubelt (2021). The development of panel housing construction in the Cheryomushki area of Odessa is partially revealed by such authors as M. G. Meerovich and N. Antonyuk (2018), M. Meyzerskiy (n.d.), I. Kucherenko (2012), and V. I. Timofeenko (1983).

Research Methodology

The methodological basis of the research is an integrated approach involving consideration of the research object as an element of a single urban planning structure. To solve the problems posed in this study, the following methodology was applied:

- The method of historical and genetic analysis was used to identify the features of the development of panel housing construction in Odessa
- Comparative analysis of design and graphic materials (master plans and plans of panel housing construction, archival documents) was used to determine the method of renovation, compare results, and identify the transformational features of the areas of panel construction in Odessa
- Deductive and inductive methods were used for generalization and complex systematization of the data obtained as a whole
- The graphic and analytical method was used to identify transformations of the study areas

- The method of visually observing and photographing the territories was used to identify the current state of the residential areas of Cheryomushki and Tairovo in Odessa

Stages of Development of Mass Industrial Housing Construction in the City of Odessa

In the postwar years, the issue of providing Soviet citizens with living space arose with urgency in the country. The housing stock before the Second World War was about 4 million m². During two and a half years of occupation, German-Romanian invaders destroyed hundreds of residential buildings with a total area of over 1 million m² (Persikov 1964). After the war, the main focus was on restoring and reconstructing the existing housing stock with improved planning and landscaping. However, a decree "On the Development of Housing Construction in the USSR" was issued in 1957, marking the beginning of the All-Union construction of residential buildings using the industrial method. Odessa was no exception. For example, if we compare the residential area of new construction in 1945 (taken as 100%) with that of later years, by 1966 it had increased by a factor of more than eleven (Weinstein et al. 1967). Achievement of such results was made possible by the automation of engineering and technological processes of construction and the use of standard projects with reference to local design conditions. Analysis of the existing buildings and literary and archival materials made it possible to reveal the following chronology of the development of industrial housing construction in Odessa.

Stage I (1958–1963)

This first stage is characterized by the appearance of 4- to 5-story panel buildings with limited living space. The intention is to erect buildings in a few months. Construction is carried out during this period mainly from local materials. The first such houses appear in the city center in the years 1958–1960. These are the so-called *protokhrushchevki*, resembling khrushchevki externally, but different in content. Examples of these are the Г-shaped buildings on the corner of Richelievskaya and Uspenskaya Streets, as well as the House of Artists on Bolshaya Arnautskaya. In terms of layouts they are closer to the "Stalinist" buildings, and, moreover, they have high ceilings of up to 3 m. Taking into account the tightness of urban development in Odessa, many houses

are equipped with a passage to the courtyard. On Polskaya Street, for example, there is an arch and a basement in the house, which were built, as a rule, of limestone. There are about twenty buildings of this kind in the city center and the district of Moldavanka—and, most of all, along Uspenskaya Street. The first block dubbed "khrushchevka" in the city is the building commissioned in 1958 in Bogdan Khmelnitsky Street (Meyzerskiy, n.d.). During this period, selective development of areas is carried out in the central part of the city and other areas that suffered during the Great Patriotic War. A residential area named New Arcadia (Novaya Arkadiya), which is sometimes called old Cheryomushki, appeared in the area of the second transit station on Bolshoy Fontan. And in 1961, the formation of a new residential area began. It was known as the "Southwestern" housing estate, which residents would later call Cheryomushki. Construction was carried out according to standard projects using shell stone, bricks, and large-block products until, in 1963, the Odessa housebuilding plant was created.

Stage II (1964–1974)

That period was characterized by the commissioning of reinforced-concrete factories (concrete goods) and housebuilding factories (HBF), which marked the beginning of industrial panel housing construction in Odessa (Goncharuk 2004). In 1966, the Council of Ministers of the Ukrainian SSR approved the master plan for the development of Odessa for the project period (20–25 years). One of the main provisions of the master plan was to bring housing closer to the places of employment (Golovin, Sharapenko, and Tandarin 1967). In 1968, the formation of the Cheryomushki district was completed, as was the development of new residential areas: Chubaevka, Dmitrievka, the settlements named after Tairov and Kotovsky, and others. The period is also characterized by an increase in the height of buildings. Along with five-story buildings, nine-story panel khrushchevki buildings, and nine-story brick buildings that are similar to them in appearance, individual projects appear, and in general the palette of projects expands. Single 12- and 16-story buildings are erected, mostly of a tower type (typically in the form of individual projects). Buildings are erected of reinforced concrete prefabricated materials; brick and limestonde are used in rare cases.

Stage III (1975–1980)

This stage is marked by the fact that since 1975, khrushchevki buildings were excluded from the construction plans. Now the standard number of stories is nine. For an expressive skyline and higher building density, tower-type residential buildings of 12-, 14-, and 16-stories are used. Such buildings, which dominate urban planning, appear on Cheryomushki and complete its final formation. Attention is paid to improving the comfort of apartments. The architecture of residential buildings acquires regionalism. The Kotovsky settlement expands, and the Tairovo settlement develops as the "Southwestern" housing estate. During this period, the first experience of erecting buildings using the sliding formwork method appears in Odessa.

Stage IV (1981–1991)

During this period, along with panel housing construction, monolithic reinforced concrete buildings are erected using the sliding formwork method, but their percentage of the total residential construction is small. Since 1980, there has been substantial use of 12- and 16-story buildings for new development. There is an increase in the norms of areas; the transition from standard to individual projects begins, and the design of multi-room apartments (up to 5 rooms) is underway. Similar changes have taken place in projects ever since the USSR State Construction Committee approved a program for the period 1980–1990 for the design of experimental residential buildings of a new type with improved hygienic and operational qualities and with elements of public services. During these years, new series of 16- and 12-story buildings OG-16 were developed for Odessa. Due to their compactness, the 16-story building series was used quite often, particularly on vacant plots amid buildings from the 1960s. It should be noted that this series is found only in Odessa and the surrounding area.

After 1991, over the course of several years, buildings whose construction had begun before the fall of the USSR with use of the industrial method were completed, and in parallel with this, widespread construction began on individual projects using the method of sliding reinforced concrete formwork (fig. 1). The reinforced concrete products plant and the housebuilding plant gradually ceased their work.

Figure 1: Development of the general plan of Odessa over time.
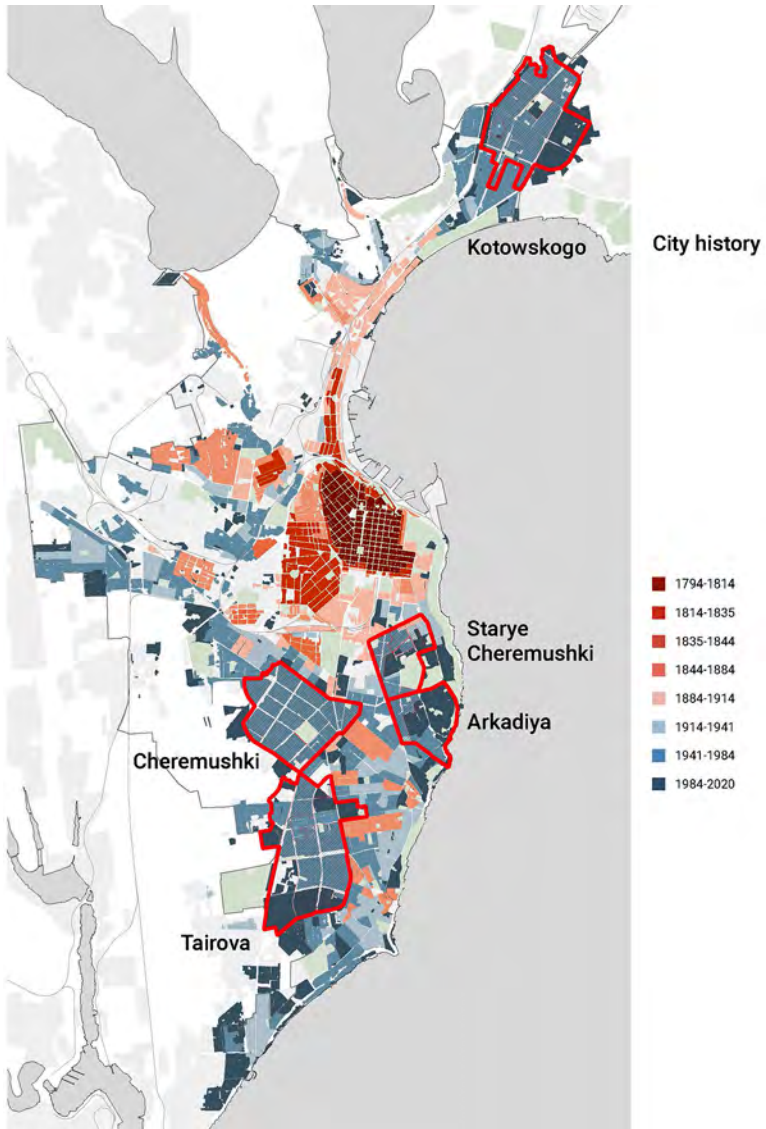
Source: compiled by T. Rumilets and A. Shupliakov.

Figure 2: General plan of the Cheryomushki district, the Tairovo settlement, and the Yuzhny district.
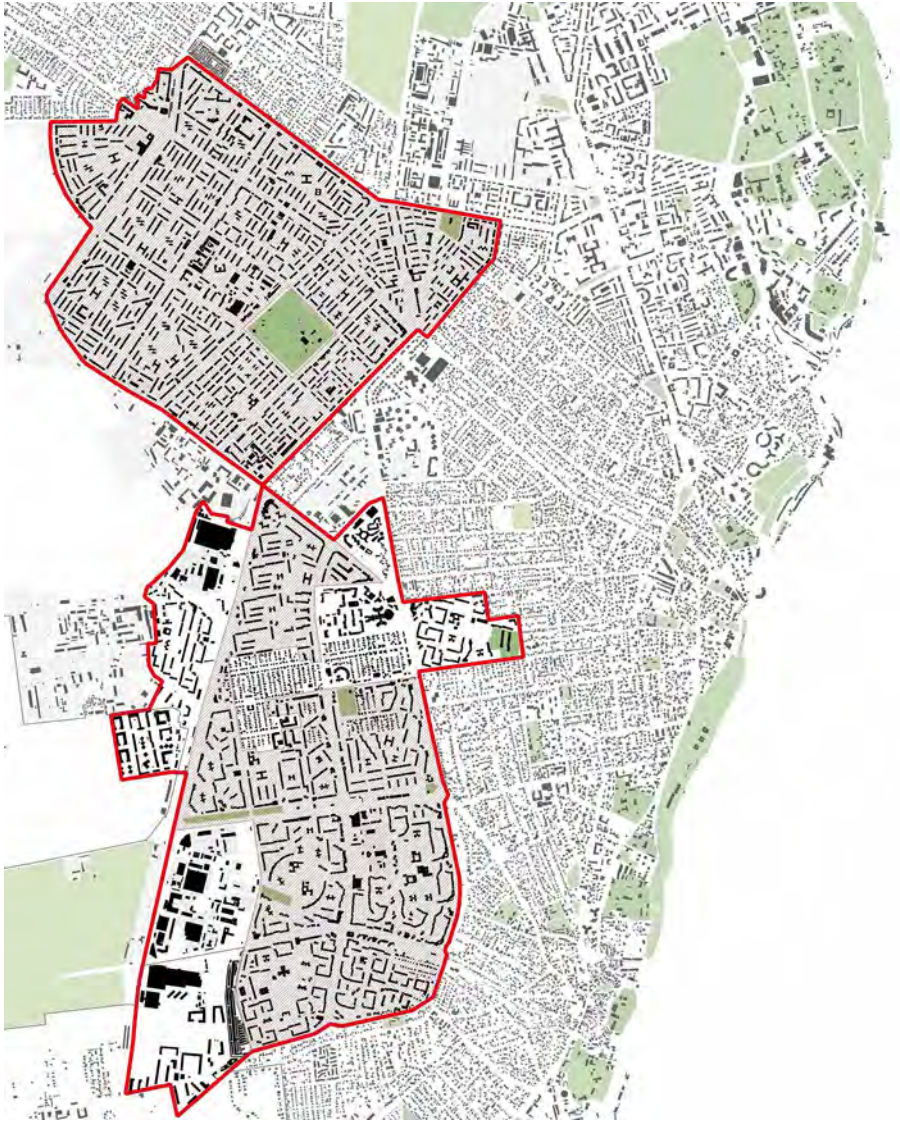
Source: compiled by T. Rumilets and A. Shupliakov.

Developmental History of the Cheryomushki District (Southwestern Region)

The district was largely constructed from 1961 to 1968, reaching its final form in the early 1980s (fig. 2). The new southwest residential district covered an area of 500 hectares with an estimated population of 124,000 people and was subdivided into five subdistricts, each of which consisted of three to six microdistricts with an area of 14–35 hectares each. The scientists E. Vainshtein, G. Topuz, N. Shapovalenko, M. Savulkin, N. Milgram, L. Chazova, and A. Krainev took part in Cheryomushki's development (Weinstein et al. 1967). The new district was initially a territory free of buildings and devoid of basic utilities. There was only a water main; there was no wastewater system, electricity, or gas. The master planning of the new housing estate began from scratch—that is, by establishing the engineering needs. By 1963, a gas pipeline was connected to supply natural Shebelinsky gas (*Znamya kommunizma* 1960).

This was initially a suburban steppe territory that was intended in the nineteenth century for grazing and was later used as a shooting range for small military units as well as for the execution of sentenced prisoners, both before the 1917, and before and during the Second World War (Kucherenko 2012). The first stage of construction of the largest residential area in Odessa at that time consisted of three blocks, which consisted of five-story buildings with a total area of 82,000 m² for forty, sixty, and eighty small apartments for family settlement (*Znamya kommunizma* 1960). The first buildings appeared near Lyustdorf Road itself, along the tram line and further along Cosmonauts Street. Later, local residents called these houses "Old Array," in contrast to the "New Array" extending from Novoselov Street (now Academician Filatov) to 25th Chapayev Division Street (Kucherenko 2012). Development consisted of panel buildings of the All-Union (Moscow) project 1–464, but due to delays in putting the house-building plant into operation, the first houses were built of local materials.

Then the so-called "military town" appeared at the third station on the Black Sea road, bounded by the streets Pilotchikov (later V. Tereshkova) and Aerodromnaya (now Cosmonaut Komarov Street), ending with the first school in Cheryomushki (№ 33) and the Promsvyaz plant. As the main formation of the area was underway, there was a precast concrete plant on the site of the future Cosmonauts Park (today Gorky Park) and part of Varnenskaya Street. On the odd side of Pilotchikov Street was a cornfield. There was a large garden near School №33. In the mid-1960s, the even side of V. Tereshkova Street was built

up and the streets Varnenskaya, Academician Filatov, General Petrov, and Cosmonauts appeared.

Finally, in 1967/68, the main construction of the southwest district was completed, which then offered about 900,000 m² of living space. Furthermore, work on the improvement and construction of urban dominants in the form of residential buildings of 12- and 16-stories, industrial enterprises, research institutes, educational and preschool institutions, medical facilities, consumer services, and so on was carried out in this area until the beginning of the 1980s. In 1966, a park honoring the cosmonauts (today Gorky Park) was created according to plans by the architect N. G. Milgram on an area of 19 hectares. In 1969, the construction of the Moscow cinema for 800 spectators began, and the first 12-story building in the district was built. In 1974, the construction of a covered market for 210 trading places was completed (architect G. I. Tarasyuk). From 1970 to 1972, an 11-story building for the Institute Ukrkolkhozproekt was built on Cosmonauts Street, and from 1973 to 1975 the Institute Ukryuzhbiosynthesis was constructed. In 1972, a building was erected on 25th Chapayev Division Street by the Credit and Finance College, and in 1981, a truly grandiose ensemble (by local standards) of three 16-storied buildings was built on Varnenskaya Street. And this is not a complete list of buildings erected in this period (Kucherenko 2012; Persikov 1964; Dovzhenko and Dyachenko 1978).

The population of the residential area had grown from 50,000 inhabitants at the beginning of 1965 to 140,000 in the 1980s. At present, due to the decrease in the population and intracity migrations, the population is 120,000. Nowadays, architecture presents itself mainly in the form of typical five-story buildings of the period 1961–1975, interspersed with typical residential buildings of 12-, 14-, and 16-stories dating from the 1980s. The park is named after V. I. Gorky. The interior areas, although built up with garages, are still quite spacious and well planted (fig. 3). Unfortunately, in recent years there has been chaotic demolition of individual buildings and development of the district with residential buildings of an increased number of stories, which leads to a disruption of the historically established urban planning fabric to its detriment, creates burdens on the existing infrastructure networks, and violates the continuity of cultural codes.

Figure 3: Cheryomushki district, Odessa. Aerial views.

Source: D. Dokunov.

Developmental History of the District Named after V. E. Tairov

The district was largely constructed from 1968 to 1977, reaching its final form in the early 1990s (*Vechernyaya Odessa* 1976; Dovzhenko and Dyachenko 1978) (fig. 4b). The residential area named after V. E. Tairov covers a territory similar in size to the Cheryomushki residential district, and the settlement was designed by N. A. Shapovalenko, M. L. Savulkin, and V. I. Labunskaya. However, the first projects for the future settlement were born in various workshops back in 1964/65 and were laid down in the General Plan of 1966. These projects were developed by a group of architects led by Grigory Lebedinsky. The area is located on the lands of the Institute of Viticulture and Winemaking named after V. E. Tairov (Timofeenko 1983).

Figure 4a: Tairovo district. Aerial view of the new residential development.

Source: photo by D. Dokunov.

During the construction period of this area, newer series of buildings were developed concurrently, including 9-story houses made of bricks and panels, whose appearance led to a change in the Tairovo settlement's development plan, which was already being implemented. This village was mainly built with 9-story multisectional panel buildings of the OG-94 series, the 87th multi-section brick series, and panel series 1–464-a. The new district was originally supposed to be built with 5-story buildings. The 9-story panel buildings with which they began to build up the village differed little from the khrushchevki, as they belonged to the same series in version 1–464D. They were arranged in straight rows, dividing the space into huge courtyards. The architects aptly dubbed such a development with identical buildings a "logging" site and then, when leaving for the construction site, proudly said: "I'm going logging!" (*Reporter* 2012).

Figure 4b: Tairovo district. General view.

Source: photo from https://myod.info/wp-content/uploads/2019/03/tairova-kievskij-rajon-620x371.jpg.

In the late 1970s, a complete transition to new series was carried out. The 87th series was intended for construction using bricks or concrete blocks and became the primary series for constructing buildings economically. In Odessa, most of the buildings in this series are brick. In 1975, such houses already existed at the beginning of Akademik Korolev Street. In the same year, a microdistrict of "departmental residential buildings" emerged, built mainly using the 87th series around the perimeter, with many hostels in the center (between Ilf and Petrov Streets and Marshal Zhukov Avenue).

The main construction within the boundaries outlined by the general plan was completed in 1977, yet the district continued to grow, developing the adjacent territories for new microdistricts. In 1977, construction of the Shkolny microdistrict by the Ministry of Defense began on the site of the old pilot settlement. Here, the OG-94 and OG-16 series were used, as well as a special Ministry of Defense series, but the main part of the microdistrict was formed using the projects of the 87th series.

In 1985, the formation of the Vuzovsky microdistrict began at the fifth station on Lyustdorf road, whose name remained from the idea to build a student town here. The area was developed with buildings of the late version of

the 94th series and was distinguished by compact buildings with rectangular, almost closed courtyards. The plan called for the creation of an exemplary area here. On an area of 30 hectares, it was planned to build houses with 2,976 apartments, along with two schools, two kindergartens, a supermarket, a grocery store, several cafes, a post office, a consumer services complex, and boiler plants, as well as twenty playgrounds for adults, twenty for children, and fifteen sports grounds. Unfortunately, the plans were not fully implemented (Reporter 2012) (figs. 5 a, b).

Figures 5a + b: Vuzovsky microdistrict, Odessa. Aerial view, fragment (left), general layout scheme (right).

Source: photo (a) from https://odesskij-dvorik.ua/wp-content/uploads/2014/09/0_6ed9b_2e1b86bc_orig .jpg; diagram (b) by T. Rumilec and A. Shupliakov.

An analysis of the envisioned master plans and existing buildings allows us to conclude that, unlike the Cheryomushki district, many ideas were not implemented during the construction of the Tairovo settlement, namely: green boulevards inside microdistricts, inner yard solutions and landscaping, and series and configurations of residential buildings on separate plots. This was due to controversial issues that arose during the resettlement of residents of private buildings during the establishment of the district: some quarters with individual residential buildings could not be resettled, and they still exist to this day. The situation was also influenced by the rapid development of the typology of residential buildings of mass construction, for which it was necessary to make adjustments to the project at the construction stage. The calculation of parking spaces in parking lots at the project stage was carried out without tak-

ing into account the possibility of each family acquiring a car, which led to the chaotic construction of indoor garages. After the 1990s, the green boulevard along Academician Glushko Avenue gradually turned into a chaotically formed market.

Developmental History of the Area "Southern Array"

The main construction of the area was carried out from 1978 to 1991, but the formation of the area continues today (fig. 6). Construction of the "Southern Array" was carried out according to the planning of architects M. L. Savulkin, V. V. Ilyashenko, and N. F. Evangelidi with the predominant use of series 94 and 87. This area is located south of Glushko Street, behind the Tairovo settlement, and is its continuation. From 1978 to 1985 the first stage of the "Southern Array" was completed, covering the area between Glushko Avenue and Williams Street. In 1987, a 9-story residential building of the Kislorodmash plant was built on the street named after Korolyov, which completed the formation of the Tairov Square. During the period 1987–1989, the outskirts of the "Southern Array" were actively built up. During this time, a radial composition of residential buildings was erected using the 94th series, in the center of which are two schools and a kindergarten. The courtyard formed there is considered the largest in Odessa.

An analysis of the envisioned master plans and the existing development allows us to conclude that the ideas of the architects and urban planners were also not fully implemented in this area. For example, when planning a microdistrict between Architectural and Williams Streets, the designers envisaged a large pond within the microdistrict, but these plans were not realized (Reporter 2012). By 1991, only half of this territory had been built as originally planned, while the rest of the territory was built with modifications and deviations from the original decisions. After 1991, the housebuilding plant produced the last panels needed to complete the construction of the buildings that had been started, after which time it was closed down, because industrial construction in Ukraine was terminated. Furthermore, the buildings were being constructed of bricks, often according to the designs of the 87th series; block buildings were also erected in small numbers; and there was a transition to technologies using monolithic reinforced concrete. For example, from 2004 to 2008, several large complexes made of monolithic reinforced concrete were commissioned on Williams and Architectural streets. The developers were pri-

vate companies, and the investors became the future tenants of the building under construction.

Figure 6: Yuzhny district, Odessa. View of Glushko Avenue.

Source: photo from https://dumskaya.net/pics/4/picturepicture_5546403184531_18800.jpg.

Today, the construction of residential buildings continues in the "Southern Array," but the design priorities have changed radically. The foremost priority is now the profit from the sale of apartments, which leads to the construction of exceptionally tall high-rise buildings and a reduction in the distance between buildings, which in turn leads to a significant reduction in the share of the site alloted to each person, results in the failure to comply with the conditions for residential premises to be exposed to the sun, and creates parking problems for private vehicles. Also, the issues of consumer services are not resolved, and a burden is created on existing schools and kindergartens because new ones are not being constructed. The issues of the general composition of the microdistrict and its lack of permeability in the presence of a tendency to enclose the adjacent territory with fences are not being resolved. One of the main provisions of the General Plan of 1966, to bring housing closer to places of employment, has ceased to be relevant, so the priorities have shifted toward improv-

ing the quality of the area, communication with other areas, proximity to the sea, green areas, comfort, and the size of apartments. It should be noted that the above problems are typical for all areas where new residential buildings are being built—not only in Odessa, but also in all of Ukraine.

Conclusions

The history of mass housing development by the industrial method in Odessa demonstrates how—in the very short time of thirty-three years—the housing stock of the city was increased several fold, providing its citizens with separate apartments. Since the reinforced concrete products plant and the housebuilding plant were put into operation with a delay, the first five years of residential construction on Cheryomushki proceeded according to standard designs using local materials (limestone brick), which increases their service life and the possibility of reconstruction in comparison with panel buildings.

An analysis of the existing development and design solutions allows us to assert that, unlike the Tairovo and Yuzhny districts, the Cheryomushki district was built almost completely in accordance with the plans of its designers and embodies the ideals of Soviet urban modernism. In recent years, there has been chaotic demolition of individual buildings in the Cheryomushki district and development of the district with residential buildings of an increased number of stories, which leads to a disruption of the historically established urban planning fabric to its detriment, and creates burdens on the existing infrastructure networks. Assessment of the existing housing stock from the period of mass industrial housing construction shows that the most prevalent are the following series in Odessa: large-panel houses of the series 1–464, 1–464-a, 1–464D, and 1–480A; buildings with brick walls of the series 87; multisection panel series OG-94; and 16- and 12-story buildings of the series OG-16. An analysis of the envisioned master plans and the existing development allows us to conclude that during the construction of the settlements named after Tairov and Yuzhny, many ideas were not implemented into reality. Cartographic and field studies have shown that the surveyed areas have largely preserved the infrastructure laid down in the projects, which has undergone transformations and now requires rethinking.

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