Experiment in the architecture of Soviet mass housing, 1955–1990

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Thesis submitted for the degree of Doctor of Philosophy in History

Trinity Term 2020

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Short Abstract

This thesis explores professional practices and procedures within Soviet housing production in 1955–1990. The current history of late socialism suggests a mostly conservative view of Soviet public housing, with an emphasis on private flat construction for millions. The phenomenon of Soviet housing has been most commonly discussed within the framework of social history or ideological projection, yet has seldom been considered as part of architectural history, which by contrast has tended to operate within a narrative of singular monuments and exemplary practitioners, leaving standard (‘*tipovye*’) developments largely disregarded. The practice of standardised design is commonly perceived as an undesirable and uncreative activity, which leaves no space for an architect—it is literally considered as the end of architecture. This thesis argues that the architectural story of this understudied ‘bureaucratic modernism’ represents much more creative and influential development in the history of modern architecture as a whole. This thesis focuses on a particular typology—standardised and industrially produced large-panel ‘tower and slab’—which was used to provide over 50 million apartments in the Soviet Union. Looking at the evolution and adaptations of the typology, this thesis introduces complexity to the understanding of practices and procedures involved in standardised production, particularly by analysing the practices of ‘experimental design’: the design of new building types, carried out by scientific architectural institutes. Within post-war scientifically-oriented rhetoric, experiment emerged as an official category of projects intended to be a model for future examination prior to the start of the production of standard designs. A

constant process of experimentation, used to develop new technical solutions or to articulate ambitions to transform society, reveals a hidden diversity beneath the perceived uniformity of Soviet housing. This thesis shows that these experiments, established as a vehicle for innovation, integration, and adaptation of housing, made housing more technically sound and responsive to the findings of sociologists.

Long Abstract

This thesis explores professional practices and procedures within Soviet housing production in 1955–1990. The current history of late socialism suggests a mostly conservative view of Soviet public housing, with an emphasis on private flat construction for millions. The phenomenon of Soviet housing has been most commonly discussed within the framework of social history or ideological projection, yet has seldom been considered as part of architectural history, which by contrast has tended to operate within a narrative of singular monuments and exemplary practitioners, leaving standard '*tipovye'* developments largely disregarded. The practice of standardised design is commonly perceived as an undesirable and uncreative activity, which leaves no space for an architect—it is literally considered as the end of architecture. This thesis argues that the architectural story of this understudied 'bureaucratic modernism' represents much more creative and influential development in the history of modern architecture as a whole.

This thesis focuses on a particular typology—standardised and industrially produced large-panel 'tower and slab'—which was used to provide over 50 million apartments in the Soviet Union. Looking at the evolution and adaptations of the typology, this thesis introduces complexity to the understanding of practices and procedures involved in standardised production, particularly by analysing the practices of 'experimental design:' the design of new building types, carried out by scientific architectural institutes. Within post-war scientifically-oriented rhetoric,

experiment emerged as an official category of projects intended to be a model for future examination prior to the start of the production of standard designs. A constant process of experimentation, used to develop new technical solutions or to articulate ambitions to transform society, reveals a hidden diversity beneath the perceived uniformity of Soviet housing. This thesis shows that these experiments, established as a vehicle for innovation, integration, and adaptation of housing, made housing more technically sound and responsive to the findings of sociologists. Building up an argument from observations concerning actually constructed and functional buildings and urban areas, this thesis not only relies on professional discussions but looks at how projects progressed up to the completed buildings. I draw upon an overview of a large number of case-studies in regions and republics of the USSR beyond Moscow and other major cities, and contribute to existing scholarship by producing a more generalisable picture of housing production in the regions.

This thesis demonstrates that ‘experiments’ turn out to be not only a concern of architects, but involved multiple stakeholders of housing construction: engineers, sociologists and experts, planners and state officials. Each of the three parts of this thesis scrutinises housing from different angles, unpacking the social, technological, and ideological objectives that defined the changing dynamics of housing production. The first part of the thesis approaches our topic from the perspective of institutional history and identifies procedures and key participants of standard housing production, responsible for synchronising architectural design with the

construction industry, regional planning, and standardisation norms. The second part looks at the adaptations of housing in the regions and seeks to frame architecture in the imperatives of the spatial, functional, and social development of the country. Finally, the third part of the thesis discusses social questions underlying the production and distribution of housing, analysing how it adapted to changing professional attitudes towards the family and community.

The first part examines procedures of experimental design to reveal a meaningful cooperation of experts that aimed at synchronising innovations in a complex chain from factory production up to the planning of urban areas. Such a view challenges the prevalent perspective of late-Soviet architecture by re-situating it from a merely architectural discourse into a more complex inter-institutional nexus between economics, state regulations, housing norms, design institutes, and social sciences. This framework allows us to address previously unresearched questions, including: how were architectural designs tied in with the requirements and limitations of the building industry? How were so-called small families and single people housed, when union-wide spatial norms designated private flats only for ‘full’ families? How was the design for collective farm housing informed by long-term regional development plans and the parameters of evolving regional infrastructure? Correspondingly, this part re-evaluates the role of architecture in late Soviet times. The thesis challenges the existing major narrative of the demise of the architectural profession under Khrushchev, which emphasises architects’ creativity and authority. In contrast, it introduces the story of the little-known but often powerful ‘architects

of bureaucracy,' who worked in scientific research institutes and were responsible for the typification and normalisation of Soviet architectural production. In their perception, this thesis argues, standardisation was an integral element in the project of integrating architectural production into a nested and synchronised systems of economic and spatial modernisation schemes.

The second part of the thesis analyses the dynamics of experiment and standardisation in its regional aspect, shifting focus from major cities to the regions and republics of the USSR. Investigating the process of localisation of standard housing for particular territories, I emphasise the role of regional actors, who used experiments to put forward arguments driven by local, national, cultural, and climatic concerns, and I trace how their own domestic architectural vocabularies were reflected in standardised projects. The localisation process raises the question of the dynamics between the ambitions and limitations of standardisation. It emphasises a highly ambivalent dynamism between the centralisation of production and the expansive territories of architectural intervention. Rather than seeing standard housing as merely a top-down imposition that cascaded from Moscow, it emerges as a process that largely relied on peripheral actors. This part of the thesis proposes viewing standard design as a universal language, which facilitated communication among various actors and which did not necessarily suppress but often in fact gave voice to regional participants by recognising their 'experiments' as models for further standardisation and replication. The case of the design of the settlement of Aikhal (Yakut Republic) reveals the limitations of the ambition to

adapt standardise housing to the Far North, and utilises the experiment to produce a systematically different housing scheme. Moving beyond domestic projects, my research also contributes to knowledge about the export of housing overseas. The export of house-building factories to Yugoslavia and Mongolia challenged Soviet architects to experiment with housing design for foreign countries, as well as developing countries of the Global South. These contributions allow us to better understand the dynamics of export, which previously had only been analysed in the scarce material of separate case-studies.

The third part of the thesis traces the evolution of the rhetorics of experimentation in the 1970s, a time when this category was increasingly used by sociologists, demographers, and other social scientists to articulate new planning and design principles. Analyses of social expertise in housing, which marked the shift away from the rigid Thaw-era functionalism of housing, contribute to the discussion about the adaptability of Soviet housing to the socially sensitive post-functionality of the 1970s and the 1980s. The major claim of this section of my study is that professionals continued focusing on experiment as a method of controlled innovation in modernist development and did not confront the logic of the rejection of modernism, prevalent in these years in non-socialist societies.

The concept of experiment as a tool in hands of social scientists served as a vehicle to inform housing projects by social engineering schemes and often contrasting views about the concepts of family and community. In this part of the thesis, I

reveal how through the concepts of ‘social experiment’ and ‘complex experiment,’ housing design was informed by social concepts developed in the adjoining disciplines of economics and pedagogy. An example of a successful housing scheme based on these concepts suggests the mostly conservative view of Soviet urban sociology warrants re-evaluation. Indeed, the example case of ‘social experiment’ suggests that experiments could be seen as form of thought with roots in the revolutionary tradition of forging a new man and in the formation of the new Soviet subjectivity.

By analysing the user knowledge and social expertise emerging in Soviet design and planning institutes, this thesis aims to re-evaluate the current discrepancy in historiography between discourses prevalent in writings of social scientists, which were considered to only rarely exert a direct influence on the process of design and building practices. Building my research on case studies of housing projects that successfully progressed from design to actual construction, I look at the praxis of construction sites as well. I aim, through examples of actually-functioning housing projects, to produce a picture not only of how architects projected housing utopias but also what these projects actually enabled and produced. Importantly, projects discussed in this part of the thesis were made possible during the ‘stagnation’ of the Brezhnev-era, a period conventionally viewed as a grey, unchanging time.

Finally, I conclude by broadening my thesis argument about experiment in the Soviet Union to include a comparative dimension. Comparing experiments in other

disciplines—such as pedagogy, sociology, and economics—allows us to draw a more integrated general conclusion about experiment as one of the few frameworks for innovation and social action in Soviet system, that allowed planners to formulate and implement distinct models of the future.

Acknowledgements

I would like to extend my sincere thanks to all those who helped make this research possible. This thesis won't be produced without support, help and trust of many people. First of all, I would like to thank two remarkable scholars whom I had the fortune to have as my supervisors, Prof. Dan Healey and Prof. William Whyte. This thesis would never be finished without their generous help and advice. They offered valuable comments and invariably supported me during a long and often humbling journey of writing, re-writing and revising my thesis.

I would like to thank people who made it possible for me to go to Oxford. The first debt of gratitude goes to scholars in Moscow, who supported my interest and research in Soviet architecture and history: Anna Bronovitskaia, Olga Kazakova, Keti Chukhrov and Alexandra Salienko. Without their advice, contacts and recommendation letters I would be able to advance my research. Trust and support of Anna Bronovitskaia were especially instrumental in my decision to start a doctoral project. I also want to thank Steven Harris and Daria Bocharnikova, who offered help and advice at the earliest stages of my research in 2015 and significantly facilitated my entrance in academic life. I owe a special debt of gratitude to Elena Minina. Without her invaluable help and encouragement I would not even dare to think of applying to Oxford.

I was equally lucky in Oxford. My years in Oxford were great thanks to brilliant fellow scholars from my faculty, and my wonderful friends, who I was blessed to meet there: Mikhail Nakonechnyi, Ira Roldugina, Mattia Sisti, Christobal Barra, Adam Luptak, Gabriel Watts, Olga Smoliak, Andrei Livitskii, Hosein Hasanbeig, Anthony Kalashnikov and Maria Chekhonadskikh. Thank you for making my stay in Oxford memorable and joyful. Our meeting in the MCRs, pubs, formal and informal halls were among the most memorable experiences of my years in Oxford.

Not least, I would like to recognize the Hill Foundation for financial support, which made the pursuit of my doctoral program possible. The Hill Foundation was more than a funding body but also a fantastic community of scholars, which goes far beyond academic matters. I am extremely proud to be its member. Funding was instrumental in experiencing fantastic years in Oxford and in travelling for academic needs. Oriel College has generously provided travel grants, which allowed me to conduct fieldwork, and attend numerous conferences to present my research in Italy, the USA, Japan, and Estonia. I'm very grateful to the Architectural History Fund of the Oxford History Faculty, which generously funded my field trip to Mongolia and BASEES research funding scheme.

My thesis benefitted from numerous encounters with senior colleagues and peers. I benefited from feedback from the best specialists in the field of Soviet architectural history – Lukasz Stanek, Kimberly Zarecor, Dmitri Zadorin, Elke Beyer. I appreciate the support of Dace Dzagalova, Julia Mannherz and Rossen Djagalov for

reading my texts providing valuable feedback. I am also indebted to Michal Murawski, Nari Shelekpayev, Seyed Mohamad Ali Sedighi and Markus Lähteenmäki, with whom I had a privilege to discuss my research and receive useful feedback.

Hannah Reinhold took over the difficult task of proofreading my Slavic English. She helped me through all the years of my PhD, spending countless hours of her time correcting my misspellings and inserting missing prepositions.

I would also like to acknowledge the assistance of people who helped me in my fieldwork and archival research. My research in Nizhnii Novgorod would not be possible without Ira Maslova. Ekaterina Bukhorova and Ludmila Starostova generously helped me in Ekaterinburg. Vitalii Samogorov and Mikhail Solodilov offered contacts and advice in Samara and Togliatti. Togos Khosbayar provided valuable help, advice and translation during my work in Ulaanbataar. I own a debt of gratitude to the staff of archives and libraries in which I worked, especially to Svetlana Ryzkova in Russian State Archive in Samara. Conversations with Yuri Volchek, Kira Kartasheva, who worked in architectural offices in Soviet years were key in better understanding late-Soviet time. Thank you all very much indeed.

List of abbreviations and Glossary

Academy	Akademiia stroitel’stva i arkhitekury; Academy of Construction and Architecture
GKES	Gosudarstvennyi komitet Soveta ministrov SSSR po vneshnim ekonomicheskim sviaziam; The Committee for Foreign Economic Relations
Gosgrazhdanstroi	Gosudarstvennyi komitet SSSR po grazhdanskomu stroitel’stvu i arkhitekture; The State Committee for Civil Construction and Architecture
Gosstroi	Gosudarstvennyi komitet SSSR po delam stroitel’stva; The State Committee for Construction
KBZh	Konstruktorskoe Buro po Zhelezobetonu*;* Design Bureau for Reinforced Concrete
LenZNIIEP	Leningradskii zonal’nyi nauchno-issledovatel'skii institut eksperimental’nogo proektirovaniia; Leningrad Zonal scientific-research institute for experimental design
MARKhI	Moskovskii arkhitekturnyi institut; Moscow Institute of Architecture
MZhK	Molodezhnyi Zhiloi kompleks; Youth Residential Complex
NIIEP	Nauchno issledovatel'skii institut eksperimental’nogo proektirovaniia; Scientific-research institute for experimental design
NIIOZ	Nauchno issledovatel'skii institut obshchestvennykh zdanii; Scientific-research institute for public buildings
NIISZ	Nauchno issledovatel'skii institut sel’skikh zdanii i sooruzhenii; Scientific-research institute for rural construction
NIIZh	Nauchno issledovatel'skii institut zhilishcha; Scientific-research institute for housing
SAKB, MNIITEP	Spetsial’noe Arkhitekturno-konstruktorskoe buro; Special Architectural Design Bureau. In 1966 renamed in Moskovskii nauchno-issledovatel'skii institut tipovogo I eksperimental’nogo proektirovaniia; Moscow scientific-research institute for typical and experimental design
SNiP’s	Stroitel’nye normy i pravila; Constructive standards and regulations
TsEMI	Tsentral’nyi ekonomiko-matematicheskii institut; Central Economic Mathematical Institute
TsNIIEP im. Mezentseva	Tsentral'nyi nauchno-issledovatel'skii i proektnyi institut zhilykh i obshchestvennykh zdanii im. B.S. Mezentseva;

	Central scientific-research institute for experimental and typical design of public buildings
TsNIIEP Zhilishcha	Tsentral'nyi nauchno-issledovatel'skii i proektnyi institut zhilykh i obshchestvennykh zdanii; Central scientific-research institute for experimental and typical design of housing

A note on transliteration

I have used the Library of Congress system, except for a few well-known names (for instance, Gorky rather than Gor'kii).

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Source: N. Platonova and V. Muzychkin, 'Organizatsiia Seti Zdanii Kul'turno-Bytovogo Obsluzhivaniia Naseleniia v Sel'skoi Mestnosti (po Materialam Obsledovaniia Riazanskoi i Kaluzhskoi Oblastei),' *Obshchestvennye zdaniia*, 3 (1961), pp. 130–31.

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Source: P. Volchek, 'Novye Tipy Zhilykh Zdanii dlia Stroitel'stva v Sel'skoi Mestnosti,' *Eksperimental'noe proektirovanie*, 3 (1960), pp. 12, 15.

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Source: I. Gutsalenko, 'Pokazatel'noe Stroitel'stvo Sel'khozgorodka Sovkhoza "Zaria Kommunizma",' *Sel'skoe stroitel'stvo*, 8 (1961), pp. 15–17.

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Source: B. Akishev, *Krupnopanel'noe Stroitel'stvo iz Detalei, Izgotovlennykh na Zavodakh*

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Source: B. Akishev, *Krupnopanel'noe Stroitel'stvo iz Detalei, Izgotovlennykh na Zavodakh Zhelezobetonnykh i Silikatnykh Izdelii (Seriia 1-467)* (Moscow, 1964), p. 28.

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Source: B. Akishev, *Krupnopanel'noe Stroitel'stvo iz Detalei, Izgotovlennykh na Zavodakh Zhelezobetonnykh i Silikatnykh Izdelii (Seriia 1-467)* (Moscow, 1964), pp. 20, 21, 22, 23, 24, 118.

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Source: TsGANTD, f. R-17, o. 1-1, dd. 548; o. 2-7, d. 1254, l. 14.

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Source: Derek Senior, *Skopje Resurgent: The Story of a United Nations Special Fund Town Planning Project* (New York, 1970), pp. 279–80.

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Source: *Information Mongolia: The Comprehensive Reference Source of the People's Republic of Mongolia (MPR)* (Oxford, 1990), plate 10.

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Source: Photo by author.

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Source: Nina Ovsiannikova, ‘Molodezhnyi Zhiloy Kompleks,’ *Arkhitektura SSSR*, 10 (1978), p. 15.

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Source: Irina Kanaeva, ‘Voprosy Metodiki Sotsial'no-Prostranstvennogo Eksperimenta Pri Sozdanii Perspektivnykh Tipov Zhilishcha’ (Candidate's dissertation, MArchI, 1980), p. 170.

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Source: B. Efremov, et al., *Etazhi Budushchego* (Sverdlovsk, 1986), pp. 174–75.

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Source: Photos by author.

Introduction

Research questions

In 1957, Nikita Khrushchev announced the programme for the construction of public housing, which promised to deliver a private apartment to every Soviet family. As part of this programme, nearly seventy million apartments were constructed in the Soviet Union and a significant part of the population of the USSR was shifted into a new urban environment.[1] The main goal of the housing programme was to deliver economic, compact apartments, based on efficient planning schemes and industrial construction. The modernist tower-and-slab typology of standardised prefabricated housing was placed at the centre of the Soviet housing provision programme.[2] Over fifty million apartments in standardised blocks were constructed in the Soviet Union alone from 1957 to 1984, making it one of the most widespread manifestations of 20th-century architecture.[3]

From its very beginning, Soviet housing provision was extensively studied by scholars and experts in the fields of sociology, politics, and economics.[4] Later,

[1] B.A. Ruble, 'From Khrushcheby to Korobki', in C.B. William and B.A. Ruble (eds.), *Russian Housing in the Modern Age Design and Social History* (Cambridge, 1993), p. 232.
[2] I use the terms prefabrication and offsite construction to mean elements intended for building construction that are produced offsite to a greater degree of finish and assembled onsite. For a critique of the term, see: R.E. Smith, *Prefab Architecture: A Guide for Architects and Construction Professionals* (Hoboken, N.J., 2011), p. xi. See also: R.E. Smith and J.D. Quale, *Offsite Architecture: Constructing the Future* (London, 2017).
[3] For the numbers of housing provision, see: H.W. Morton, 'Housing in the Soviet Union', *Proceedings of the Academy of Political Science,* 35/3 (1984), p. 72. cited in K.E. Zarecor, 'Architecture in Eastern Europe and the Former Soviet Union', 2014), p. 3.
[4] A comprehensive history of provision management and administration of housing has been largely charted by John DiMaio and Gregory Andrusz. A.J. DiMaio, *Soviet Urban Housing: Problems and Policies* (New York, 1974), G.D. Andrusz, *Housing and Urban Development in the USSR* (London, 1984), B. Turner, J. Hegedűs, and I. Tosics, *The Reform of Housing in Eastern Europe and the Soviet Union* (London, 1992).

historians acknowledged the huge scope of the project, and dubbed it as possibly 'the most ambitious governmental housing programme in human history.'[5] More than just being a provision of housing, this social housing campaign was seen as an essential instrument of transforming the everyday life *(byt)* of the Soviet people, invigorating society, and, eventually, contributing to the ultimate goal declared by Soviet leaders—the achievement of communism.[6]

Scholars acknowledge that Soviet public housing fulfilled a significant social function by alleviating the dire housing shortage experienced in the aftermath of World War II, while also avoiding problems such as racial or economic segregation. Yet, the current history of late socialism suggests a mostly conservative view of the architecture of prefabricated housing, with an emphasis on the mechanical construction of flats for millions. Soviet housing blocks were and still are repeatedly criticised for being too small, banal, poor in quality, architecturally uncreative and devoid of soul. The reproduction of standardised blocks, as scholars concluded, contributed to a repetitive, monotonous, dreary, and alienating urban environment. Major Soviet classics referred to Soviet housing as 'an artistic and compositional disaster,' and 'faceless, silicate modernism,' as they lamented the lack of regional or national variety in architectural forms.[7] The stigma around Soviet residential blocks has turned them, perhaps, into the most vilified building

[5] Ruble, 'From Khrushcheby', p. 234.
[6] S.E. Harris, *Communism on Tomorrow Street: Mass Housing and Everyday Life after Stalin* (Washington, D.C., 2013), C. Varga-Harris, *Stories of House and Home: Soviet Apartment Life During the Khrushchev Years* (New York and London, 2015).
[7] S. Khan-Magomedov, 'Khrushchevskii Utilitarizm: Pliusy i Minusy', *Estetika "ottepeli": Novoe v arkhitekture, iskusstve, kul'ture,* 2013), p. 131.

type in architectural history.

The discrepancy between architectural form and the social function of housing has led to some contradictory interpretations in the historiography. For Mark B. Smith, Soviet housing is the 'possible the greatest social reform of modern European history,' yet at the same time, he sees serialised housing production as a symptom of the demise of architecture: 'to some extent, this [mass-produced similitude] was the end of architecture' and 'the final takeover of the profession by construction experts'—literally, the end of architecture.[8] Similarly, Grois agrees that the functionalist prefabrication method was the most ethical way of construction since it offered the fastest and cheapest way to produce as much housing as possible during the severe shortage.[9] Yet the disregard of architecture was, as Grois puts it more broadly, 'a crime against beauty and nature—almost a crime against humanity.'[10] In these accounts, following the ethics of mass production, architecture and the ideals of the architectural profession were sacrificed in expediency of social reform.

Most criticisms of the architecture of Soviet housing arose from its strong standardisation. Due to mass production, Soviet housing production was seen to 'abandon concern for design,' while adapting for the needs of the 'inflexible construction industry.'[11] In the view of Marxist philosopher Henri Lefebvre, due to

[8] M.B. Smith, *Property of Communists* (DeKalb, 2010), p. 113.
[9] B. Grois, 'Panel Houses: Stations on the Way to Utopia', in P.I. Alonso and H. Palmarola (eds.), *Monolith Controversies: Pavilion of Chile at the 14th International Architecture Exhibition* (Germany, 2014), p. 45.
[10] Ibid.
[11] Ruble, 'From Khrushcheby', p. 238.

standardisation, Soviet residential projects failed to create architectural innovations and specific 'socialist space,' and instead the rows of 'audacious apartment buildings' made Lefebvre doubt the existence of communism itself.[12]

Standardised designs have come to be seen as one of the most distinctive features of Socialist modernisation. Soviet urban development relied on extensive catalogues of standardised buildings of various functions and sizes.[13] Original designs were far fewer, and normally reserved to exceptional and highly visible projects. A peculiar division between standard and original designs was one of the most fundamental features that shaped the nature of Soviet architecture and distinguished it from Western modernism.[14] However, most architectural histories deal with unique buildings, using the narrative of individual creativity, while standardised buildings are often not discussed. As Kenny Cupers states, the topic of mass housing 'falls through the gaps in the discipline because mass housing developments are often pervasively global and yet nationally specific: they are seen neither as an expression of local culture nor as products of the canon of "high" architecture.'[15] In the same way, the history of Soviet architecture from the 1950s to the 1980s tends to operate within the narrative of singular monuments and exemplary practitioners, while '*tipovye'* (standard) developments of mass housing are often regarded as products of 'bureaucratic modernism' and placed on the very edge of the domain of

[12] K. Brown, 'Gridded Lives: Why Kazakhstan and Montana Are Nearly the Same Place', *The American Historical Review*, 106/1 (2001), p. 22.
[13] On the practice of standard design, see: M. Drėmaitė, *Baltic Modernism: Architecture and Housing in Soviet Lithuania* (Berlin, 2017), pp. 147-61.
[14] Ibid., p. 27.
[15] K. Cupers, *The Social Project: Housing Postwar France* (Minneapolis, 2014), p. xiv.

architecture.[16]

However, the standardisation of Soviet architectural production does not have to be seen as merely a capitulation of Soviet architecture to the agency of construction experts. The most comprehensive standardisation was defined as one of the major goals of socialist design culture. It was seen not only as a way to achieve economic production but also to deliver housing to distant regions and to introduce architectural diversity by enabling flexible planning solutions suitable for accommodating various types of families. Moreover, standardisation was key in achieving coordination and collaboration between the various actors responsible for housing production, including those in charge of designs and engineering, those providing materials on the ground, and those offering various kinds of expertise. Standardisation was seen as essential in establishing a sophisticated and intricate culture of design and construction, which only retrospectively came to be dubbed as an anonymous and uncreative 'bureaucratic modernism.'

This thesis argues that the architectural story of Soviet prefabricated housing represents a far more creative and influential development in the history of modern architecture as a whole than previously assumed. This study of Soviet housing is focusing on a particular typology, the standardised and industrially produced large-panel 'tower and slab.' Documenting the evolution and adaptations of this typology, this thesis introduces complexity to the understanding of practices and procedures

[16] Ibid., p. 325. See also: 'Architecture and Bureaucracy: Entangled Sites of Knowledge Production and Exchange', *International Conference* (Brussels, 2019)

involved in standardised production. Soviet mass housing typologies were developed in experimental scientific research institutes: large, interdisciplinary institutions which developed designs in a complex nexus between economics, state regulations, housing norms, design institutes, and social sciences. Arguably, the word ‘experiment’ in the name of these institutes was more than just a label. This thesis demonstrates that in this interdisciplinary environment, experiments—established as a vehicle for innovation, integration, and adaptation of housing—made housing more technically sound and responsive to the findings of sociologists. Experimental development was used to design new typologies, develop new technical solutions, and to articulate ambitions to transform society.

Within this focus on experiment, this thesis sees the development of housing not as a mechanical production and distribution of prefabricated blocks, but as a dynamic and constantly evolving process. It emphasises the creative and unpredictable nature of the process of the development of architectural and construction solutions in Soviet housing. I shall argue that Soviet standard housing was not a product originating from the black box of a Moscow-based bureaucracy, nor merely the localisation of global technologies; rather, it was a series of projects developed for particular tasks in a highly competitive environment, through a process of constant experimentation, including the construction and examination of prototypes and models, and constant revisions and amendments of designs based on on-site scrutiny.

Literature review

Over the last two decades, the functionalist architecture that emerged in the Khrushchev epoch has gained broad global recognition. It has been presented in a series of exhibitions and publications concentrating on modernity as a 'cultural' dilemma. Since then, Soviet housing has been regularly featured in architectural exhibitions and coffee-table books alongside 'futuristic constructions,' war memorials, and bus stops.[17] With this broader interest in Soviet architecture, housing holds a privileged position for scholarly research, since it opens a discussion about the relationships between architecture and social, cultural, and political studies, as well as a debate about the history of industrialisation in architectural production. Studies of the last decade have discussed the main technical and architectural parameters of the socialist housing project: housing typologies, apartments layouts, and planning principles.[18] While the main parameters of housing delivery have been discussed, taking a more analytical approach to the architectural, cultural, and social interpretation of Soviet housing is currently open to fierce scholarly debate. Several major narratives can be identified within this discussion.

Starting from the early 1990s, Soviet housing has been analysed in the works of social and cultural historians, with a general interest in socialist material culture. In

[17] K. Ritter, *Soviet Modernism 1955-1991: Unknown History* (Zurich, 2012), F. Chaubin, *CCCP: Cosmic Communist Constructions Photographed* (Koln, 2017). For a more recent exhibition, see: M. Stierli and V. KuliĆ, *Toward a Concrete Utopia: Architecture in Yugoslavia, 1948–1980* (New York, 2018).
[18] See, among others: P. Meuser and D. Zadorin, *Towards a Typology of Soviet Mass Housing: Prefabrication in the USSR 1955-1991* (Berlin, 2015), K.E. Zarecor, *Manufacturing a Socialist Modernity: The Architecture of Industrialized Housing in Czechoslovakia, 1945–1956* (Pittsburgh PA, 2011), J. Maxim, *The Socialist Life of Modern Architecture: Bucharest, 1949-1964* (London, 2018).

the context of the political history of socialism, architectural forms were seen as manifestations of political ideology.[19] In this framework, the ornate buildings with wide boulevards of the Stalin period were juxtaposed with the ascetic and simple rows of micro-districts typical of the Khrushchev era, as material representations of two different regimes—Stalinist imperial power and the egalitarian ideals of the communist ideology of the Khrushchev years.[20] After the transition to the dogmas of functionalism and industrialisation, Soviet housing was seen as 'a material cultural artefact of de-Stalinization,' and an instrument of social reform and modernisation, aimed at forging a new socialist society.[21] Yet, while, the inhabitants of modern socialist urban space became of particular interest to historians, the architectural aspects of housing gained less attention.[22] More often, the architecture of the Thaw was seen as a consequence of authoritarian state politics. For Åman, it was not 'democratic,' despite superficial analogies with the architecture of liberalism, because it was opposed to diversity and pluralism and was 'official, formalised, and mass-produced,' projecting a totalitarian vision of the world.[23] Similarly, when constructed abroad, Soviet-type public housing was seen as even more of a politically-forced endeavour, used to trumpet the achievements of

[19] This trend begun in an influential book by Paperny, which equated architectural froms with political changes: V. Paperny, 'Kultura Dva', *Ann Arbor*, 1985). For an example of the national history of Soviet architecture, see: R. Anderson, *Russia* (London, 2015).
[20] C. Cooke, 'Beauty as a Route to 'the Radiant Future': Responses of Soviet Architecture', *Journal of Design History*, 10/2 (1997), pp. 137-60, S.E. Reid, 'Destalinization and Taste, 1953–1963', ibid., pp. 177-201, V. Buchli, 'Khrushchev, Modernism, and the Fight against Petit-Bourgeois Consciousness in the Soviet Home', ibid., pp. 161-76.
[21] Varga-Harris, *Stories of House and Home*, p. 7.
[22] S.E. Reid and D. Crowley, *Style and Socialism: Modernity and Material Culture in Post-War Eastern Europe* (Oxford, 2000), D. Crowley and S.E. Reid, *Socialist Spaces: Sites of Everyday Life in the Eastern Bloc* (Oxford, 2002), S.E. Reid, 'Khrushchev Modern', *Cahiers du Monde Russe*, 47/1 (2006), pp. 227-68. Among early architectural accounts, see: Ruble, 'From Khrushcheby', pp. 234-70.
[23] A. Åman and R.G. Tanner, *Architecture and Ideology in Eastern Europe During the Stalin Era: An Aspect of Cold War History* (London, 1992), p. 21

socialism and evoking complicity with other regimes.[24]

Kulic sees the roots of that stereotype in the Cold War, which, bound up with the totalitarian paradigm, 'equated state socialism with absolute top-down control.'[25] This stereotype began to be reevaluated in the second half of the 2000s, with a proliferation of studies of housing across the Eastern-European bloc, which revealed a considerable variety of planning approaches and demonstrated that architectural production in the Soviet bloc was far from being as uniform as suggested by the Cold War stereotype.[26] Attempts to internationalise Soviet architecture and place it within the framework of international modernism also contributed to this reevaluation. New studies challenged isolationist views of the USSR, emphasising the role of international technical exchange and the connection between socialist and global urban theories and planning principles.[27] The functional use of space and cost-efficient production of Soviet urban design came to be seen as a product of the application of the ideas of CIAM (Congrès Internationaux d'Architecture Moderne).[28] Similarly, the methods of prefabrication were acknowledged as a product of cooperation with Western experts, or as results of direct technological imports from foreign firms, such as French company

[24] P. Alonso and H. Palmarola, 'A Panel's Tale: The Soviet I-464 System and the Politics of Assemblage', *Latin American Modern Architectures* (New York and London, 2013), pp. 153-69.
[25] V. Kulic, 'The Builders of Socialism: Eastern Europe's Cities in Recent Historiography', *Contemporary European History*, 26/03 (2016), p. 546.
[26] On Estonia, Poland, and Romania, see: A. Kurg, 'Architects of the Tallinn School and the Critique of Soviet Modernism in Estonia', *The Journal of Architecture*, 14/1 (2009), D. Crowley, 'Architecture and the Image of the Future in the People's Republic of Poland', ibid., J. Maxim, 'Mass Housing and Collective Experience: On the Notion of Microraion in Romania in the 1950s and 1960s', ibid.
[27] See: W.C. Brumfield, *Reshaping Russian Architecture: Western Technology, Utopian Dreams* (Cambridge, 1990).
[28] See: E. Mumford, 'CIAM and the Communist Bloc, 1928–59', *The Journal of Architecture*, 14/2 (2009), pp. 237-54.

Raymond Camus & Co.[29] Case studies showed that although they were not necessarily explicit in the public sphere, international contacts and specialist interaction between opposing camps never ceased to exist. Authors concluded that the Iron Curtain was porous, since it did not prevent professional communication.[30] In more recent years, scholarship has also challenged the prevalent metropolitan models of West-East patriarchal relations, where the Soviet bloc and Eastern Europe remained a marginal territory.[31] Instead, Stanek has proposed the framework of parallel processes of world-making, in which Soviet architecture can be seen as one among a number of parallel modernities.[32]

There have also been attempts to situate Soviet housing within a broader transnational history of industrialised architecture. More than two centuries of the history of architecture's engagement with industry is now a well-researched phenomenon.[33] Meuser discusses the rationale behind the industrialisation and mechanisation of Soviet housing delivery as a logical stage of development in this global history.[34] In this framework, Soviet housing is seen as a product of a global

[29] See: N. Solopova, 'La Préfabrication En URSS: Concept Technique Et Dispositifs Architecturaux' (Ph.D. thesis, Paris 8, 2001). On the influence of German experts on Soviet industrial construction, see: P. Meuser, *Prefabricated Housing: Construction and Design Manual. Volume 2: Buildings and Typologies* (Berlin, 2018), pp. 66-67.
[30] See a special issue of the *Journal of Architecture* on the cooperation of agents from different sides of the 'Iron curtain': C. Popescu, 'Introductory Argument: Architecture of the Communist Bloc in the Mirror', *The Journal of Architecture*, 14/1 (2009), pp. 1-6. See also: M. Glendinning, 'Cold-War Conciliation: International Architectural Congresses in the Late 1950s and Early 1960s', ibid.21/4 (2016), pp. 630-50.
[31] C. Popescu, 'At the Periphery of Architectural History–Looking at Eastern Europe' Artl@s Bulletin, 3/1 (2014), p. 2 https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1033&context=artlas.
[32] Ł. Stanek, *Architecture in Global Socialism. Eastern Europe, West Africa, and the Middle East in the Cold War* (Princeton, 2020), pp. 29-33.
[33] For general overviews, see: Smith and Quale, *Short Offsite Architecture: Constructing the Future*, E. Blanchet and S. Zhuravlyova, *Prefabs: A Social and Architectural History* (Swindon, 2018), C. Davies, *The Prefabricated Home* (London, 2005), K. Lloyd Thomas, T. Amhoff, and N. Beech, *Industries of Architecture* (London, 2015).
[34] Meuser, *Prefabricated Housing*, pp. 30-79.

discourse of industrialised architecture, which reached its zenith with the transnational optimism concerning technocratic development in the 1950s and early 1960s. Countries on both sides of the Cold War divide had adopted industrialised building production to address housing shortages. A turn towards mass production in the Soviet Union occurred roughly at the same time as in France and Western Europe; its development paralleled and intersected with similar processes in Europe and in the rest of the world.[35] The uniqueness of socialist housing delivery, from this perspective, lies in the fact that Soviet authorities went the furthest, implementing prefabrication in urban and rural sectors, and in state and departmental construction.[36] In his comparative account, Florian Urban has shown that mass housing was a broader process that demonstrated ample social and ideological flexibility: it served different political purposes and was not limited to particular political projects or the needs of a particular class.[37] Hence, research has shown that prefabricated large-panel housing construction is only stereotypically associated with Socialism; such construction should in fact be seen as a product of universal functionalism in general.[38] Building on this perspective of Soviet construction, this thesis seek to contribute to the growing literature concerning the

[35] B. Le Normand, *Designing Tito's Capital: Urban Planning, Modernism, and Socialism in Belgrade* (2014), p. 7. The architecture of public housing in various countries has recently become the subject of increased historical interest due to its integral role for both citizens and policymakers in the post-war period. On European housing, see: M. Swenarton, T. Avermaete, and D.v.d. Heuvel, *Architecture and the Welfare State* (London, 2015). Y. Allweil, *Homeland : Zionism as Housing Regime, 1860-2011* (London, 2016). On American housing: S. Muthesius and M. Glendinning, *Towers for the Welfare State : An Architectural History of British Multi-Storey Housing, 1945-1970* (Edinburgh, 2017). France: N.C. Rudolph, *At Home in Postwar France: Modern Mass Housing and the Right to Comfort* (New York, 2015).
[36] See: R.T. McCutcheon, 'The Role of Industrialized Building in Soviet-Union Housing Policies', *Habitat Int.*, 13/4 (1989), pp. 43-61. For the comparison of prefabrication technologies in Soviet union and Eastern Europe, see: G. Sebestyén, *Large-Panel Buildings* (Budapest, 1965), J. Sillince, *Housing Policies in Eastern Europe and the Soviet Union* (London, 1990).
[37] F. Urban, *Tower and Slab: A Global History of Mass Housing* (London, 2011), p. 138.
[38] See: I. Rupnik, 'Designing (in) Space-Time - Soviet 'Routed Settlement-Building' and the 'Yugoslav Experiment', 1962', *Le Culture della Technica*, 27 La Prefabbricazione (2016), pp. 101-20.

transnational history of industrialised architecture.

Another stream of historiography has aimed to capture the specifics of physical space produced in the Soviet bloc, asking 'What Was So Socialist about the Socialist City?'[39] Following a 'spatial turn,' initiated by Henri Lefebvre, this stream of scholarship saw Soviet space as a material embodiment and a fundamental component of state politics and the project of building socialism, which implied questions about specific aspects of this production, particularly in contrast to spaces produced by capitalism.[40] Some studies aspired to capture the peculiar traits of Soviet space specifically by highlighting extreme examples of socialist cities as the antithesis of modernism produced in other countries. Kate Brown, by contrast, has described similarities in the modernist spaces produced in different political regimes.[41] After a considerable discussion, most historians have concluded that the peculiarity of socialist urban space is questionable, and that it should rather be seen as another example of a modernist urban environment.[42]

However, in contrast to the view of prefabricated housing as the application of a universal technology, social history has tended to analyse housing projects from a national perspective. Social history has demonstrated that socialist housing districts

[39] K.E. Zarecor, 'What Was So Socialist About the Socialist City? Second World Urbanity in Europe', *Journal of Urban History*, 44/1 (2017), pp. 95-117. See also: S. Hirt, S. Ferenčuhová, and T. Tuvikene, 'Conceptual Forum: The "Post- Socialist" City', *Eurasian Geography and Economics*, 57/4-5 (2016), pp. 497-520.
[40] In his influential book, Henri Lefebvre showed that space can be produced just like any other sort of commodity: H. Lefebvre, *The Production of Space* (1991), 142.
[41] Brown, 'Gridded Lives: Why Kazakhstan and Montana Are Nearly the Same Place', pp. 17-48.
[42] D. Lu, *Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949-2005* (2006), p. 2.

are not indistinctly ‘totalitarian’ or ‘transnational,’ as stereotypes suggest, but rather specific to the place, creating meaningful local national histories and relations between residents and their practices and memories.[43] This research revealed a variety of opposing social conditions in presumably similar prefabricated residential estates and demonstrated that social conflict in prefabricated housing arose not because of the technology or planning principles, but rather because of housing allocation policies.[44] Similarly, the production of an allegedly universal housing block conceals a surprising diversity of professional practices in planning, construction, and managing.[45]

The argument about the peculiarity of socialist production has been further developed by historians working on socialist urbanity, as they argued that priorities, decision-making, and management in Soviet urban design were informed by the command-administrative and planning systems.[46] Due to state planning, socialist city-building practice was, to a greater extent than in the West, linked with general economic planning; master plans of cities were informed by regional plans for the development of infrastructure and industries.[47]

[43] For example, see: E. Rubin, *Amnesiopolis: Modernity, Space, and Memory in East Germany* (Oxford, 2016), p. 9.
[44] K.G. Bristol, 'The Pruitt-Igoe Myth', *Journal of Architectural Education*, 44/3 (1991), pp. 163-71.
[45] Le Normand, *Designing Tito's Capital: Urban Planning, Modernism, and Socialism in Belgrade*, p. 7.
[46] Zarecor, 'What Was So Socialist', pp. 95-117. See also: Hirt, Ferenčuhová, and Tuvikene, 'Conceptual Forum', pp. 497-520.
[47] On Soviet regional planning, see: S.J. Collier, *Post-Soviet Social: Neoliberalism, Social Modernity, Biopolitics* (Princeton, 2011), J.Å. Dellenbrant and M. Vale, *The Soviet Regional Dilemma: Planning, People and Natural Resources* (Armonk, N.Y, 1986), M.K. Bandman, F.E.I. Hamilton, and B.P. Kutyrev, *Regional Development in the USSR. Modelling the Formation of Soviet Territorial-Production Complexes* (Oxford, 1985).

In his groundbreaking book on the city of Magnitogorsk, Stephen Kotkin sketched out a holistic approach, in which management, urban, and industrial development are seen as intertwined in the development of the city. He emphasised the coordination of all elements of industrialisation, urbanisation, and production under centralised administration: 'virtually the entire national economy became state-owned and state-run, technically a single entity.'[48] Historians have attempted to expand this notion of a 'single entity' to Soviet architecture, looking at its relation to planning and administrative spheres.[49] In particular, Lukasz Stanek and I have argued that on the transnational level, the overall aim of socialist planners was the creation of architecture, planning, and construction industries as part of a synchronised and nested system of economic and spatial planning and development in the country.[50] Industrialisation and the use of standard designs enabled the effective integration of architecture with both construction and construction materials industries and, at the same time, facilitated planning.[51] Such a framework encourages us to look at housing development beyond the narrow discipline of architectural history, and instead takes into the account development in the industrial and planning spheres. This approach is especially relevant in studies of industrialised architecture, which, in contrast to the traditional methods of

[48] S. Kotkin, *Magnetic Mountain: Stalinism as a Civilization* (Berkeley, 1997), p. 259.
[49] The intertwining of architecture with planning is conceptualised by Zarecor as the 'infrastructural thinking' and 'socialist scaffold': Zarecor, 'What Was So Socialist', pp. 95-117.
[50] Lukasz Stanek and I conceptualised the specifics of socialist architecture as informed by the principle of comprehensiveness (*kompleksnost'*): this system of architecture was envisaged, designed, and constructed as an integrated part of other territorial systems (infrastructure, production, transport, social services, and green spaces) planned at all scales, from a scale of a single flat, to a microregion, and even to the urban, regional, and national scale. L. Stanek and N. Erofeev, 'Comecon Architecture in Socialist Mongolia: Integration, Collaboration, Adaptation, and Innovation in Ulaanbataar's Housing Projects', in M. Motylinska, C. Bernhardt, and A. Butter (eds.), *Between Solidarity and Business* (forthcoming).
[51] Standard designs allowed for the planning of labour and construction materials requirements. In this respect, technology was seen not as mechanical, but as organisational: Rupnik, 'Designing (in) Space-Time', pp. 101-20.

construction, is an inherently cooperative and integrated process of development, involving technological innovations and managerial strategies, which can 'only thrive in a culture of collaboration' with other industries.[52]

The Soviet vision of prefabricated housing delivery relied on heavy infrastructure and was planned with the corresponding industries for the production and assembly of complete blocks. Housebuilding factories were conceived as central nodes within a network of interdependent industries and institutions in charge of urbanisation. The Soviet housing project as a whole was considered instrumental for the economic development of regions and was often seen as a tool for the colonisation of the distant territories of Siberia and the Far East of Soviet Russia.[53] Such factories for the production of mass-produced public housing, diffused around the country, can be seen as nodes embedded in a general economic development: the 'single entity' of a nested hierarchical state-owned and state-run economic system, discussed by Kotkin.

After two decades of research, a field for the productive study of Soviet housing has now been established. Research has shown that it might be reductive to interpret reforms in the sphere of architectural as merely the result of Khrushchev's intervention. While Soviet prefabricated housing may not be seen as a cure-all solution, it should definitely not be read as history of failure. In her social history of

[52] Smith, *Prefab Architecture*, p. 44.
[53] Mass housing construction as a colonisation tool: M. Kalm, '"An Apartment with All Conveniences" Was No Panacea. Mass Housing and the Alternatives in the Soviet Period in Tallinn', *Architektúra Urbanizmus*, 46/3-4 (2012), pp. 194-207. See also: A. D'Hooghe, 'Siberia as Analogous Territory: Soviet Planning and the Development of Science Towns', *AA Files*, 51 (2005), pp. 14-27.

housing, Varga-Harris has argued that not only the objective of housing, but also the goal of the transformation of every-day life, and the establishment of new socialist aesthetics, declared in Khrushchev's housing campaign, were approximately achieved.[54] Architectural historians have suggested that Soviet housing can be seen as a self-sufficient system, competitive on the international arena when viewed alongside Western solutions.[55] In the words of Elke Beyer, in the mid-1960s, 'Soviet planning concepts were … in demand all around the world as post-colonial strategies of development.'[56] In regards to the Soviet mode of urban development, standardised design can be seen as a tool that enabled the integration of architecture with the planning and construction industries to enable it to benefit from centralised planning and research. Standardised and mass produced Soviet housing presents one of the best opportunities to study this poorly understood system.

It is within such a perspective that this thesis looks at Soviet housing to pose questions about the complexity of architectural engagement with industry on this scale. This thesis views the specifics of architecture and the production of Soviet housing as an intricate web of technical, industrial, and planning systems. To better understand the functioning of this system, it proposes a close scrutiny of professional practices in standardised design, as well as the specifics of institutional setup—aspects that have still up until now gained little scholarly attention.

[54] Varga-Harris, *Stories of House and Home*, pp. 81-98.
[55] Stanek, *Architecture in Global Socialism*, pp. 35-96.
[56] E. Beyer, 'The Soviet Union Is an Enormous Construction Site', in K. Ritter (ed.), *Soviet Modernism 1955-1991: Unknown History* (Zurich, 2012), p. 260.

Architects and experts in Soviet residential projects

In his study of Magnitogorsk, Kotkin argued against the conservative vision of the 'demise of urbanism' under Stalinism and presented the city of Magnitogorsk as a lens for analysing the mechanisms of state socialism.[57] Kotkin revealed the experimental and open-ended nature of the city's planning and construction, in which professional negotiations played a major role. Kotkin's research established a major framework for the study of Soviet cities as sites for the people's participation in the socialist project.[58] Using particular Socialist cities and towns as units for analyses, historians have explored the entanglement of professionals, residents, and state.[59] These studies have demonstrated that professionals played an active role, establishing their expertise.

The basic aims of the industrialisation of construction—brought to the fore with Khrushchev's reforms—triggered substantial change in the architectural sphere and construction industry.[60] Industrialisation meant institutional changes and centralisation of design, institutional, and administrative bodies to effectively coordinate architectural design within this industrial infrastructure. Historians have shown that in the 20th century, strong institutions were integral to this

[57] Kotkin, *Magnetic Mountain*.
[58] Kulic, 'The Builders of Socialism', p. 546.
[59] K.D. Qualls, *From Ruins to Reconstruction : Urban Identity in Soviet Sevastopol after World War II* (Ithaca, 2009), K. Lebow, *Unfinished Utopia: Nowa Huta, Stalinism, and Polish Society, 1949–56* (Ithaca, 2013), H.D. DeHaan, *Stalinist City Planning: Professionals, Performance, and Power* (2013), A. Barenberg, *Gulag Town, Company Town: Forced Labor and Its Legacy in Vorkuta* (2014), Le Normand, *Designing Tito's Capital: Urban Planning, Modernism, and Socialism in Belgrade*.
[60] On the reforms in construction industry, see: DiMaio, *Soviet Urban Housing*, pp. 24-28.

standardisation, the 'normalisation' of architectural production, and its coordination over territories.[61] In the Soviet context, industrialisation triggered massive centralisation and bureaucratisation of institutional structures. By the end of the 1960s, the State Committee for Construction *(Gosstroi)* employed 54,000 people, including 8,000 scientists, 34,000 technicians, and 10,000 experimental plant workers.[62] Large, specialised scientific research institutes became the main units of Soviet architectural production for the years to come.[63] Beissinger described the environment of such institutions as 'over-bureaucratised,' denoting a situation where 'an organisation comes to dominate the environment.'[64] While there is a rich literature concerning Soviet professionals in this bureaucratic environment—including scientists and varied categories of Soviet specialists and intelligentsia—the agency of architects has received significantly less scholarly attention.[65]

The Soviet architectural profession has been predominantly discussed by architectural historians; these accounts often tend to support the romantic creed of architectural creativity, paying attention to individual practitioners. In these accounts, the transition from Stalinist neo-classical to modernist industrial

[61] According to Vossoughian, 'the history of standardisation is thus the history of the institutionalisation, even fetishisation, of normalisation.' See: N. Vossoughian, 'Standardization Reconsidered: Normierung in and after Ernst Neufert's Bauentwurfslehre (1936)', *Grey Room*, 54 (2014), pp. 49-50.
[62] J.R. Wright, *Industrialized Building in the Soviet Union: A Report of the Us Delegation to the USSR* (Washington D.C., 1971), p. 16. *Gosudarstvennyi komitet SSSR po delam stroitel'stva* or *Gosstroi* for short, was the highest Soviet government body responsible for policy, management, and control in the field of construction. It had similar functions to the ministry of construction in other countries.
[63] And more generally, the socialist scientific system: N. Krementsov, *Stalinist Science* (Princeton and Chichester, 1997), p. 20.
[64] M.R. Beissinger, *Scientific Management, Socialist Discipline and Soviet Power* (London, 1988), pp. 134, 253.
[65] On Soviet professionals, see, among others:N. Krementsov, *The Cure : A Story of Cancer and Politics from the Annals of the Cold War* (Chicago and London, 2002), F. Hirsch, *Empire of Nations: Ethnographic Knowledge & the Making of the Soviet Union* (Ithaca, 2005), T. Cubbin, *Soviet Critical Design: Senezh Studio and the Communist Surround* (London, 2019).

architecture is often pictured as the suppression of architects' creative agendas.[66] Housing projects were developed collectively in scientific research institutes.[67] For architects, it meant working with standard designs, and such emergent problems as 'serialised building type' or 'typology.'[68] Architectural historians perceive standardised design as an undesirable and uncreative activity leaving no space for an architect.[69] Historians have presented the practice of standardised design as anonymous production, highly dependant on norms, rules, and regulations rather than individual decisions.[70] In Harris's account, the architecture of Khrushchev-era housing in its entirety emerges from bureaucratic rules, norms, and economic constraints in a rather depersonalised way.[71] As regards to any architectural role, prefabrication was seen as a 'limited playing field,' severely restricting architectural decisions through state-endorsed distribution norms.[72] Yet, more recent research has focused on those architects who ran the system of standardised design. Rupnik has emphasised the role of the 'architects of bureaucracy' in industrial housing delivery in socialist countries; while their role has been described as 'highly determined by state institutes,' it was nonetheless important.[73] More specifically, this role was

[66] D. Bocharnikova, 'Inventing Socialist Modern: A History of the Architectural Profession in the USSR, 1954-1971' (Ph.D. thesis, European University Institute, 2014), pp. 18-22.
[67] On Soviet design institutes, see: Stanek, *Architecture in Global Socialism*, pp. 20-21.
[68] Zarecor, *Manufacturing a Socialist Modernity*, p. 296.
[69] Drėmaitė, *Baltic Modernism*, p. 156.
[70] For example, at the 2008 MOMA exhibition, Soviet housing was unattributed, see: B. Bergdoll, P. Christensen, and R. Broadhurst, *Home Delivery: Fabricating the Modern Dwelling* (New York, 2008).
[71] Harris, *Communism on Tomorrow Street*, pp. 27-110.
[72] V. Molnár, 'In Search of the Ideal Socialist Home in Post-Stalinist Hungary: Prefabricated Mass Housing or Do-It-Yourself Family Home?', *Journal of Design History*, 23/1 (2010), p. 70, Harris, *Communism on Tomorrow Street*, p. 107.
[73] I. Rupnik, 'Building Systems/Building Territory: The Architects Role in Industrialized Housing Delivery', in E.S. Ryan and M. Kiel (eds.), *Building Systems: Design Technology and Society* (London, 2012), p. 89. 'Architects of bureaucracy' is a term introduced by Hitchcock in 1947: H.-R. Hitchcock, 'The Architecture of Bureaucracy and the Architecture of Genius', *Architectural Review*, 101 (1947), pp. 3-6.

described as organisational and managerial.[74] Historians have also discerned particular groups of architects who benefited from Khrushchev's reforms and extended their agency by exercising 'a new technocratic model of practice based on research into new building technologies and materials.'[75] In most accounts, specialists in housing development were pictured as technocrats, fascinated with new technological structures.[76] Hence, as Normand has concluded, an architect in the mass housing sphere 'was no longer an artisan with a particular creative vision that he or she brought into being from concept to construction, but rather a technocrat who worked as part of teams in large state-run offices designing building types.'[77]

Under this hegemony of technocrats, Soviet housing development was seen as a top-down deployment of expertise, resembling the 'rule of experts.'[78] The group of technocrats faced opposition and criticism from another group, which can be defined as 'humanists'. These professionals criticised the Soviet rationalising planning paradigm, opposed presumably bureaucratised practices of housing delivery and searched for a 'human element' in Soviet urbanism.[79] This group consisted of intellectuals, sociologists and architects working with individual

[74] On the question of authorship in prefabricated architecture, see also: Davies, *The Prefabricated Home*, pp. 88-106.
[75] D. Crowley, 'Paris or Moscow?: Warsaw Architects and the Image of the Modern City in the 1950s', *Kritika: Explorations in Russian and Eurasian History*, 9/4 (2008), p. 786.
[76] On Czechoslovak architects, see: Zarecor, *Manufacturing a Socialist Modernity*, p. 84.
[77] Le Normand, *Designing Tito's Capital: Urban Planning, Modernism, and Socialism in Belgrade*, p. 18.
[78] This term was coined by: T. Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (2002). See also: J.C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, 1998).
[79] For this critique, see: A. Alekseyeva, 'Planning the Soviet Everyday: Reimagining the City, Home and Material Culture of Developed Socialism' (D.Phil. thesis, University of Oxford, 2015).

designs. Among them was the famous and well-established Soviet urbanist Viacheslav Glazychev, who referred to newly founded Soviet cities as non-cities (*nedogoroda*), lacking a human aspect.[80] Similarly, among them were architects Aleksandr Brodsky and Il'ia Utkin, who lamented the lack of poetical and sacral in Soviet architecture;[81] and Vladimir Belogolovskii, for whom the state support of 'technocrats' in charge of urban planning and housing delivery was seen to be a 'treachery of the architectural profession.'[82] As they were more vocal in the public sphere than others, this category of professionals contributed significantly to the formation of the prevalently conservative view on Soviet mass housing.

Most historic accounts picture 'humanists' with little or no agency to withstand the pressure of the technocrats in charge of Soviet industry. Being unsatisfied with the actual practice of design and construction, and unable to change it, they tended to work independently, often producing imaginative architectural projects and drawings which were not meant to be implemented in construction. As a result of this dichotomy, most historic accounts focus on utopian projects to picture the major framework of the post-war architectural profession. A purely visionary project NER ('New Settlement Element') modelling the possible future of Communist urbanism became one of the main symbols of the architectural renewal of the Thaw.[83] Similarly, in the eighties, imaginative 'paper architecture,' produced

[80] V. Glazychev, *Glubinnaia Rossiia, 2000-2002* (Moscow, 2003), p. 159.
[81] See: A. Vronskaya, 'Anti-Architectures of Self-Incurred Immaturity: A House-Spirit in a Plattenbau', in V. Kulić (ed.), *Second World Postmodernisms: Architecture and Society under Late Socialism* (London, 2019), pp. 143-59.
[82] F. Novikov, 'Vozrozhdenie Arkhitektury', *Novyi Mir*, 3 (1966), p. 214.
[83] Smith, *Property of Communists*, p. 115. On NER, see: D. Bocharnikova, 'The NER Project: A Vision of Post-Industrial Urbanity from Post-Stalin Russia', *The Journal of Architecture: Urban Planning and*

by an intellectual class of architects who rebelled against this standardisation gained a lot of scholarly attention.[84] As a result of this dichotomy, studies of Soviet professionals focus strongly on utopianism, and view architects and sociologists as trapped between a reticent 'bureaucratic modernism' and utopian fantasies about future housing.[85]

The established narrative concerning Soviet professionals can be defined as that of the opposition between technocrats and humanists.[86] The former are the proponents of efficiency, whose agenda of standardisation benefited from state support and gained the most privileged positions, while the latter—mediums of cultural and social discourse—lost significant ground. However, a range of studies on housing worldwide have questioned such an opposition, arguing that residential design and planning naturally include a range of social and cultural domains.[87] The questions that lie at the root of mass housing design are not only architectural, but also social. The history of mass housing in France and the US has revealed that the most influential critics of mass housing—Jane Jacobs and Henri Lefebvre—were not excluded from this process, but on the contrary, actively contributed to the practice of urban development.[88]

Architecture of Late Socialism, 24/5 (2019). A. Briggs, 'Review on 'the Ideal Communist City' by A. Gutnov; R. N. Watkins', *Technology and Culture,* 12/4 (1971).

[84] I. Avvakumov, *Bumazhnaia Arkhitektura. Antologiia* (Moscow, 2019).

[85] On specialists producing utopian narrative, see: I. Kukulin, 'Alternative Social Blueprinting in Soviet Society of the 1960s and the 1970s, or Why Left-Wing Political Practices Have Not Caught on in Contemporary Russia', *Russian Studies in History,* 49/4 (2011), T. Cubbin, 'The Domestic Information Machine', *Home Cultures,* 11/1 (2015).

[86] This is historians' acknowledgement of these different, often confronting, groups of professionals, working in parallel. Bocharnikova discusses various groups of professionals in modern architecture. See: Bocharnikova, 'Inventing Socialist Modern'.

[87] See: Cupers, *The Social Project*.

[88] The role of Lefebvre in French housing, see: K. Cupers, *Use Matters: An Alternative History of*

Historians have acknowledged the agency of Soviet experts in realising the potential of new construction practices and the restructuring of daily life. Reid has shown that questions of social construction, such as 'everyday life,' were addressed within the interdisciplinary cooperation of a 'cohort of aesthetic experts or taste professionals.'[89] However, the practices of Soviet social scientists were described in quite a different way from those of their Western colleagues, first of all because of their presumably limited agency.[90] Scholarship predominantly deals with Soviet urban critique in a separate realm, without tracing its implications for building practice. Reid and Zaslavskaia describe the practices of Soviet sociologists in the 1960s as mostly affirmative in nature, when the main function was to give 'scientific advice to those who are in power.'[91] The Soviet model of 'citizen-knowledge,' was seen to be an overtly disciplinary one, which 'merely added another layer of subjection and control,' in order to enforce a systematic form of surveillance or mechanism of 'knowledge-power.'[92] The general view is that urban critique in the Soviet bloc did not trigger a serious re-evaluation or scrutiny of the mass housing project comparable to that of the West. This view might have formed be due to a lack of understanding of the complexity of the production of housing in the Soviet context, within the 'bureaucratic modernism.'

Architecture (London and New York, 2013), Ł. Stanek, 'Who Needs 'Needs'? French Post-War Architecture and Its Critics', in M. Swenarton, T. Avermaete, and D.v.d. Heuvel (eds.), *Architecture and the Welfare State* (Abingdon, 2014), pp. 113-32. On Jane Jacobs, see: S. Hirt and D.L. Zahm, *The Urban Wisdom of Jane Jacobs* (London, 2012).

[89] Reid, 'Khrushchev Modern', p. 229.

[90] A. Bikbov and S. Gavrilenko, 'Rossiiskaia Sotsiologiia: Avtonomiia pod Voprosom', *Logos*, 5-6/35 (2002). See also: V. Shlapentokh, *The Politics of Sociology in the USSR* (Boulder and London, 1987).

[91] T. Zaslavskaia, *Societal'naia Transformaciia Rossijskogo Obshchestva* (Moscow, 2002), p. 556.

[92] Reid, 'Khrushchev Modern', p. 251.

The lack of knowledge about the procedures and practices of the design and production of standard designs has contributed to a rather inconsistent image of Soviet housing delivery. Soviet housing delivery was and still is accused of being static, lacking feedback and continuously replicating the same predesigned blocks of questionable quality. The Soviet housing industry's alleged inertia was summed up in such descriptions of it as 'an all-encompassing and self-perpetuating system', 'which no one can stop to this day.'[93] Similarly, in the words of historians, Soviet urban development was established for the production of ideal 'cities of the future,' and was, in words of Collier, 'utterly pathologically unable to do anything else.'[94] Furthermore, the architectural changes in the later period of mass housing construction have received comparatively less attention, and in line with the general view of inertia, Soviet architecture from 1955 to the end of the USSR has traditionally been seen as a consistent period.[95]

Yet more specific histories of industrialised architecture and construction argue against such a narrative. The study by Meuser and Zadorin has uncovered, beneath the perceived uniformity of Soviet mass housing, the multiplicity of technological methods used in the industrial housing construction developed by various institutes, which Meuser terms 'mass housing typologies.'[96] This research reveals the huge

[93] Aleksandr Vysokovskii, cited in Alekseyeva, 'Planning the Soviet Everyday', p. 148.
[94] Collier, *Post-Soviet Social*, p. 112.
[95] Bocharnikova sees the transition from Thaw to Late-Soviet time not as that of 'violent interventions and impositions, but rather as a history of equally important continuities,' maintained by professionals. Bocharnikova, 'Inventing Socialist Modern', p. 13.
[96] See: Meuser and Zadorin, *Towards a Typology*. See also: Sebestyén, *Large-Panel Buildings*.

progress achieved by the housing industry in the thirty years from the 1950s to the 1980s. The geography of Soviet housing also poses questions about the complexity of its development. During these years, public housing was adapted for a variety of diverse regions, from the Baltic Sea to Siberia and the Far East, as well as to foreign countries such as Mongolia and Cuba. In each of these locations, housing delivery raised the architectural and technical problems of finding adequate technical means to address this variety in the regions, as well as to accommodate local lifestyles, socio-economic situations, and ethnic origins. The architectural constraints, limiting the urban fabric to a very homogeneous environment, were features of an early version, which, with the optimistic expansionist goals of Khrushchev, had initially been distributed widely around the country.[97] This first embryonic stage of architectural production, based on a new industrial and economic base, developed over the course of the next twenty years into a far more complex and sophisticated system, allowing a significant layout diversity of prefabricated forms.[98]

The large scale of development, and of the adaptations and amendments involved, encourages us to look at housing design and production not merely as a static and mechanical process, but rather as a continuous process of ongoing development and reevaluation and honing of existing designs. Based on the planning of pre-existing industries as well as newly established industries, the socialist design culture implied an evolving process of constantly advancing design and construction

[97] By the 'early version' I mean the first generation (1958–1963) of industrialised housing construction. See: Meuser and Zadorin, *Towards a Typology*, p. 163.
[98] Ivan Rupnik, 'Mapping the Modular Industry,' in Smith and Quale, *Short Offsite Architecture: Constructing the Future.*

practices.[99] Acknowledging that the narrow architectural view may not be helpful in the analysis of standardised design, this thesis attempts to open the black box of bureaucratic institutions to examine their multi-disciplinary practices, listen carefully to the testimony of sources and participants, and reconstruct the development of Soviet architectural system in its own terms.

Experiment in Soviet architecture

The most widespread housing delivery system, used all over the Soviet Union, the I-464, was developed by the Central Scientific Research Institute for Experimental Design (*TsNIIEP*); and housing typologies (among them, P-44) used in Moscow – by the Moscow Scientific Research Institute for Typical and Experimental Design *(MNIITEP)*.[100] After careful scrutiny of the procedures and practices involved in their development, as well as terms used by professionals, this thesis suggests that experimental design was more than just a label in the name of the institutes, but was in fact a crucial practice for the development of standard designs in Soviet design culture.

In post-war Soviet architectural and construction culture, experimental design and construction became the officially defined method used in the development of standard designs. Experimental prototypes were seen as models intended to be constructed individually and examined prior to the start of production lines for

[99] Stanek and Erofeev, 'Comecon Architecture in Socialist Mongolia'.
[100] N. Erofeev, 'The I-464 Housing Delivery System: A Tool for Urban Modernisation in the Socialist World and Beyond' Fabrications, 29/2 (2019), pp. 207-30, doi: 10.1080/10331867.2019.1611255.

standard designs. Scholars noted that Soviet residential development followed the logic of the development of models. Thinking in terms of types was specific not only to architecture but also to the Soviet modernising project in broader terms.[101] In urban development, this type of thinking was extrapolated on various levels; from the planning of individual apartments, right up to the planning of the whole settlement, everything followed the logic of models.[102] The development of experimental prototypes was considered an especially sensitive matter in this context. Experimental projects ranged from tests of particular engineering solutions, to model apartments and large-scale residential developments involving innovations of various kinds.

Experiment is a term often used in histories of prefabricated architecture, with regards to new technologies and building prototypes. In words of Meuser, the whole first part of the 20th century was an experimental stage in the history of industrialised construction.[103] Soviet architecture shared this genesis, yet, as this thesis argues, its experimental core went even further: it enabled a certain organisational setup of design institutes and supervising bureaucracies and became an important vehicle for innovation. A broad definition made it possible to attach the label 'experiment' to projects emerging from various areas of expertise. Technical specialists used it to test new engineering structures, and new building

[101] Maxim compares type-design with the typification of folk architecture: Maxim, *Short The Socialist Life of Modern Architecture: Bucharest, 1949-1964, Part 3, 'The Village Museum: Displaying/Displacing Rural Architecture'.*
[102] On Tashkent as a model city, see: P. Stronski, *Tashkent: Forging a Soviet City, 1930-1966* (Pittsburgh PA, 2010), pp. 234-46.
[103] Meuser, *Prefabricated Housing*, p. 80.

technologies and materials, and to secure budgets for advanced technological research. Other professionals experimented with the implementation of new design proposals, proposing innovative social programmes and articulating a new vision of socialist everyday life. Some experiments intended to make subtle changes to better adapt projects to housing economics and to general norms, while others sought to challenge the system with interventionist projects, sometimes with a radical social programme. Some experimental projects were developed as part of large, union-wide architectural competitions organised by the central administration for architecture and construction, *Gosstroi*. The label of experiment also enabled the adaptation of technical solutions according to the demands of social experts. Some types of experiments involved residents' surveys and observations of neighbourhood relations, and others involved the participation of residents in the actual construction and running of their residential development. As such, 'experiment' was a way of introducing innovations from various spheres of expertise—architectural, technical, social, and others—into the system of standardised design. Due to the comprehensive nature of industrialised architecture, experimentation was an essential tool for the innovative design to be synchronised with developments in other the spheres of technology, planning, construction, and construction materials. In experimental projects, special funding was reserved to master these innovations and introduce them into mass production.

The emphasis on experimentation in Soviet design institutes established a controlled, but relatively free space for research, development, and innovation.

Within the Soviet bureaucratic environment, the label of experiment limited the scope of projects by setting particular regulations and a temporary status, which could be revoked at any time. While this space could sometimes be used to expand the credentials of architects, it should not be seen merely as a niche for individual freedom. Arguably, the experimental environment established a market for ideas and innovations: an experimental market.[104] Within the bureaucratised central administrative system, this market was driven by experts rather than by top-down instructions. Ideas developed in this environment were later developed into standard projects, and eventually led to the establishment of new urban norms. The focus on experimental development suggests a bottom-up dynamics in Soviet urban development and, in general, narrates a much more unpredictable and creative story of Soviet housing than otherwise expected. The constant process of experimentation, used to develop new technical solutions or articulate ambitions to transform society, reveals a hidden diversity beneath the perceived uniformity of Soviet housing.

Experimentation, as an inherently interdisciplinary method of putting theory into practice, shifted the focus away from architects and brought other stakeholders of housing construction and development process into a single framework; engineers, sociologists, and experts all worked in tandem with architects in developing new standard projects. Social considerations formed a particularly important basis for architects' work. Social scientists sometimes assumed a crucial role in experimental

[104] Similar to the 'markets for inventions' in engineering: M. Harrison, *Guns and Rubles: The Defense Industry in the Stalinist State* (New Haven and London, 2008), chapter 8.

development, mediating between policy-makers, architects and what took place on the ground. Even Glazychev, the most vocal critic of Soviet urbanism—participated as expert in state-sanctioned experimental developments.[105] Instead of seeing 'technocrats' and 'humanists' as contradictory or paradoxical opposites, this thesis proposes that both parties were engaged in a distinctive and dynamic process of experimental development.

The experimental process is a jumping-off point for the exploration of various aspects of Soviet housing. Discussion of experimental housing models in this thesis demonstrates changing attitudes towards family units and community. With the focus on the role of social scholars in housing development, this sheds new light on the domain of Soviet urban sociology in general.[106] The multi-disciplinary understanding of experimentation encourages us to look at experiments beyond the narrow sphere of architectural history, and view them rather as an instrument of innovation in the wider Soviet industry and economy. Chapters of this thesis provide examples from various disciplines showing that that experimentation was established as peculiar way of innovation in various domains of Soviet production, including industry, economy, pedagogy, and sociology.[107] This thesis also demonstrates that the label of experiment was applied to multiple attempts to

[105] Glazychev participated in 'experimental programs' in Tikhvin, Naberezhnye Chelny, and Elabuga, organising the interaction of residents and authorities: V. Glazychev and U. Kondakov, 'Proekty i Programmy', Sait pamiati V.L. Glazycheva http://www.glazychev.ru/projects/projects.htm). See also: V. Glazychev, *Kul'tura Goroda: Problemy Razvitiia* (Moskva, 1988), pp. 7-36.
[106] While there is no monograph study on the history of the Soviet concepts of family, there are some insights in the fields of gender-studies, which has demonstrated that the Soviet family was an evolving concept, actively constructed by the state, ideology, and experts: A. Rotkirkh, *Muzhskoi Vopros: Liubov' i Seks Trekh Pokolenii v Avtobiografiiakh Peterburzhtsev* (SPb, 2011). See also: M. Ilič, S.E. Reid, and L. Attwood, *Women in the Khrushchev Era* (Basingstoke, 2004).
[107] See chapters 7, 8 and the Afterword of this thesis.

modernise the Soviet economy and to try innovative planning and financing of enterprises. Among these attempts were, for example, ‘experimental construction brigades,’ which in the mid-1960s were allowed to work in construction within semi-market conditions. Niches of freedom within the sphere of cinema production were similarly expressed in the discourse of experimentation. ‘Experimental method’ (*v eksperimental'nom poriadke)* thus became an important framework for a wide range of projects of dissimilar nature, enabling new forms of organisation, management, and funding.

The concept of experiment poses broader questions about the nature and character of innovation in Soviet political economy. There has been ample discussion in the histories of economy and technology about the nature and character of innovations in Soviet economy production. Soviet industry has been criticised as inefficient in many respects, as it suffered from an excessively bureaucratised Soviet central administrative system, which historians saw as one of its major limitations. The large body of literature concludes that a lack of innovation was a major cause for the technological lag and general decline of the Soviet economy.[108] Even if many innovations were indeed obstructed by the ineffectiveness of the command-administrative system, Soviet science is also known for effectively achieving progress in the so-called ‘big science projects’ of nuclear science, space exploration, and computer technology. Recent research has demonstrated that definite

[108] J. Dearden, B. Ickes, and L. Samuelson, 'To Innovate or Not to Innovate: Incentives and Innovation in Hierarchies', *The American Economic Review,* 80/5 (1990), pp. 1105-24, R.C. Allen, 'The Rise and Decline of the Soviet Economy', *Canadian Journal of Economics/Revue canadienne d'économique,* 34/4 (2001), p. 866, J.S. Berliner, *Soviet Industry from Stalin to Gorbachev : Essays on Management and Innovation* (Aldershot, 1988), pp. 202-05.

approaches to innovation did indeed exist in the Soviet political economy, while often taking a highly centralised form.[109] This thesis seeks to advance this scholarship by extrapolating findings about the production of the industrialised architecture of Soviet mass housing.

Sources

Experiments in Soviet architectural production lack detailed scholarly attention. This thesis attempts to reconstruct the story of experimental design looking at archival, published sources and oral accounts. Some experiments were conducted as part of architectural competitions and widely discussed in professional press, such as those that will be discussed in Chapters 1, 2, and 7. In other cases, 'experiment' was a term bogged down by technical documentation. The concept of experiment can be reconstructed through the documentation of particular projects (technical drawings, construction site reports, minutes of negotiations, and press accounts), but also through documents that defined the overarching conditions of architectural and construction practice, including planning policies, building norms, construction standards, type projects, and procedures of the division of labour between the actors involved.

This thesis examines the leading Soviet institution for housing design: the Scientific Research Institute for Experimental Design (*NIIEP*, later renamed as *TsNIIEP*

[109] D. Chulkov, 'Innovation in Centralized Organizations: Examining Evidence from Soviet Russia', *Journal of Economic Studies*, 41/1 (2014), pp. 123-39. A specifically institutionalised 'market for experiments' drove scientific and technological development in the country since the 1930s. See: Harrison, *Guns and Rubles*, pp. 210-29.

Zhilishcha).[110] Initially founded in 1958 as an institute for experimental design, with 100 employees, *(Ts)NIIEP* evolved into a central institution responsible for large city planning projects and international projects, with more than 1,700 employees.[111] It not only developed the most prominent housing typologies, but was also in charge of the standardisation of housing on the union-wide level. Placed as it was at the centre of housing design, this institution offers a privileged case for examining the practices of housing development. The thesis also considers the Moscow-based institute for experimental design: Special Architectural Design Bureau (*SAKB*). In 1966, it was renamed the Moscow Scientific Research Institute for Typical and Experimental Design (*MNIITEP*) and established as a leading design institute for housing typologies in Moscow. While experiments conducted by *TsNIIEP* mainly addressed architectural, planning and technical issues of housing delivery, experimentation in *MNIITEP* reveal a different trajectory. Their experiments involved the development of housing with cooperative self-help economy (Chapter 7) and the investigation of residents' participation in housing construction (Chapter 8).

The thesis will also examine the archives of the main administration for architecture and construction. Since 1963, all experimental projects had to be approved by the department of experimental design of The State Committee for Civil Construction and Architecture (*Gosgrazhdanstroi*). This department received thousands of

[110] *TsNIIEP* (Central Scientific Research Institute for Experimental and Typical Design of Housing) was established in 1961 as a central institution for housing standardisation, which had the agency to coordinate the standardisation of housing throughout the USSR.
[111] See statistics of cadres: N. Dykhovichnaia, *Lichnoe Delo. Nachato 1949 – Okoncheno 21.*. (Moscow, 2004), p. 553.

experimental projects from all over the regions of the USSR and its archive reveals how new building types and amendments to housing delivery system were developed.[112] The archives of *TsNIIEP*, from the other side, showed how regional developments were systematised and standardised upon approval.[113] These sources, as well as sources from regional design institutes, reveal that the category of experiment became a powerful instrument within the dialogue between regional actors and central administration.

The focus on a union-wide research institute enables the examination of a wide range of regional projects. I provide an overview of a number of case studies in regions and republics of the USSR beyond Moscow. Research also involved several field trips, and field research in Mongolia and Nizhnii Novgorod. In 2017 I conducted field trips to Samara and Togliatti, followed up by a field trip to Mongolia in 2018 and trips to Korolev and Ekaterinburg in September 2019. I also conducted research in St Petersburg using the documents of Leningrad-based branch of the institute – *LenZNIIEP*. This research allowed me to partially overcome the colonial nature of Moscow-based archives. Investigation into the role of regional actors reveals they played a crucial role in the development; rather than being passive recipients of centralised developments, they actively rearticulated experiments in the periphery to adopt and adapt projects for their own needs.

While archives of the top-level central institution, *Gosstroi*, are well preserved in

[112] RGAE, f. 5.
[113] Archive of *TsNIIEP* is held in RGAS, f. 149; Institute also keeps its own archive.

RGAE, the archives of Soviet design institutes are notorious for having multiple gaps. Few design institutes regularly submitted their files and blueprints to state archives. Many archives were destroyed in the 1990s with the closure of design institutes, but even where design institutes were restructured and continue functioning today, their archives often remain inaccessible to researchers. Thankfully, it was still possible to meet the generations of architects who worked in 1960s–80s. In this thesis, archival research is supplemented with eighteen interviews, which I conducted in 2017–2019. I was able to talk with Aleksandr Anisimov, Kira Kartashova, Valerii Ostretsov, Iuri Volchek—architects and research fellows in various branches of the *TsNIIEP* system. In my field trips to Mongolia, Nizhnii Novgorod, and Ekaterinburg, interviews proved to be important source of information about regional actors. Oral history was especially relevant in reconstructing the history of the Youth Residential Complex (*MZhK*) project, an experiment in self-help housing construction and grass-root management, which left few archival records.

Oral history is known for its many limitations: it raises the questions of subjectivity, narrative, and false memories. However, in this thesis such issues are peripheral given the supplementary role that these interviews served. The primary sources for this thesis are the archives, and the interviews are used to better understand the context of, and better interpret, such archival documents and published sources. Interviews provided a more complete picture of the context of practices, power dynamics, and professional dispositions in research institutes.

Chapter outline

This thesis consists of an introduction, three empirical parts, and a conclusion. The introduction establishes the preliminaries of the study, introduces the research questions and the main arguments of the thesis, and identifies gaps in historiography. It defines the object of study: the practices of experimental and standard design, through which architectural scientific institutes developed and produced industrial mass housing. Finally, the chapter explains how the main body of my study proceeds through providing an outline of chapters.

The first main part of the thesis focuses on establishing the central claim of the thesis: that experiment was the multi-disciplinary way to introduce innovations on various levels of the Soviet housing delivery system. It sets the context for the reorganisation of architectural labour with the establishment of an industrial housing delivery system in the USSR in 1956–59 and introduces my main arguments. This initial chapter identifies experimental design as a practice shaped by various aspects of the building industry—including regulations and norms, underlying social questions, and economic considerations—and identifies corresponding types of experiments which frame architectural production within adjoining fields. Various types of experiments are separately discussed in the different chapters which make up this part of the thesis. In conclusion, this first main part of the thesis argues that the practices of experimental design and construction shaped the particular establishment of design institutes in the

(Ts)NIIEP system, and the construction and construction materials industries which functioned in the USSR until 1991.

Chapter 1 discusses multiple experiments involved in the development of an industrial housing delivery system. The chapter traces how, starting from typological research, this development continued through the construction of prototypes, the development of an industrial housebuilding system, and finally actual implementation in mass production. The chapter reveals that it was a dynamic and unpredictable process rather than a straightforward technological transfer. Looking at the development of the 'I-464' housing-building system, the chapter identifies the agency of I-464's main author, Nikolai Rozanov, who expanded his role into that of a powerful 'architect of bureaucracy' due to the success of his technological system.The following chapters discuss further adaptations of this system.

Chapter 2 focuses on a different kind of experiment, which addressed social problems of housing distribution. While most apartments were designated only for extended families with multiple members, the experimental development begun in the 1958 architectural competition aimed at identifying forms and functions of housing for single people. Here, experiment was regarded as the development of suitable buildings prototypes, in a process addressing specific social problems, and included both pre- and post-occupancy scrutiny. This kind of experiment allowed for the framing of architecture within the administrative norms of housing

distribution. Moreover, the chapter demonstrates how, by discussing housing and collective services for single people, architects sought to 'experiment' with the residents' forms of everyday life (*byt*).

Chapter 3 looks at the experiments involved in the construction of rural settlements of collective farms. Here, experiments were used as a mechanism for the adaptation of prefabricated housing for suburban and rural areas, which involved amending typologies for the requirements of collective farm workers, the development of movable technologies, and the use of locally available materials in construction. Designing and planning settlements, professionals experienced more pressure from economic considerations, requirements of infrastructure, and long-time regional development plans. This chapter demonstrates that the category of experiment was seen as an integral instrument for integrating architectural production with the economic development of the region.

The second part of the thesis analyses the dynamics of experiment and standardisation in its regional aspect, shifting focus from major cities to the regions and republics of the USSR. Investigating the process of localisation of standard housing for particular territories, I emphasise the role of regional actors, who used experiments to put forward arguments driven by local, national, cultural, and climatic concerns, and I trace how their own domestic architectural vocabularies were reflected in standardised projects. The localisation process raises the question of the dynamics between the ambitions and limitations of standardisation. It

emphasises a highly ambivalent dynamism between the centralisation of production and the expansive territories of architectural intervention. Overall, this part argues that rather than seeing standardised design and construction as merely a top-down imposition that cascades from Moscow out to the periphery, it was in fact a multi-lateral process, driven by multiple experiments carried out by peripheral actors. The Moscow-based administration aggregated innovations from the periphery and benefitted from regional 'experiments.'

Chapter 4 presents experimental design as a regional practice of 'localisation' carried out by provincial design institutes. Proceeding from the previously discussed building system I-464, examined in Chapter 1, this chapter looks at the adaptations and localisation of the system during its installation in the regions. It analyses the balance of power between regional design institutes and construction administration, and localisation of this building system. Seeing standard design as a universal language that facilitated communication among various actors, this chapter argues that it was not necessarily used to suppress, but often in fact gave voice to regional participants by recognising their 'experiments' as models for further standardisation and replication.

Chapter 5 continues the analysis of centre-periphery relations by shifting attention to the Far North. The case of the design of the settlement of Aikhal (Yakut Republic) reveals the limitations of the ambition to adapt standardised housing to the Far North. Instead, supported by climatic arguments, this experiment gave way

to the creation of a systematically different urban environment to the standard designs developed in the European part of the USSR.

Moving beyond domestic projects, Chapter 6 looks at the challenges of exporting industrial housing design. The export of house-building factories to Yugoslavia and Mongolia challenged Soviet architects to experiment with housing design for foreign countries, including for the developing countries of the Global South. These contributions allow us to better understand the dynamics of export, which previously had only been analysed in the scarce material of separate case studies. Arguably, experimental development in export projects was essential for enabling collaboration with foreign actors at every stage of the process, as well as for training local actors to ultimately take over control of the factories.

The third part of the thesis traces the evolution of the rhetorics of experimentation in the 1970s, a time when this category was increasingly used by sociologists, demographers, and other social scientists to articulate new planning and design principles. An analysis of social expertise in housing, which marked the shift away from the rigid Thaw-era functionalism of housing, contributes to the discussion about the adaptability of Soviet housing to the socially sensitive post-functionality of the 1970s and 1980s. The major claim of this section of my study is that professionals continued focusing on experiment as a method of controlled innovation in modernist development and did not confront the logic of the rejection of modernism, prevalent in these years in non-socialist societies. I will identify two

major contrasting models in the discourse of housing development, which involved low-level residents' participation and top-level planning and rationalisation of the living environment.

Chapter 7 looks at a new type of experiment, the 'social experiment' that emerged at the time as a mode of social engineering. The first model aimed to create a participatory self-management housing economy. Chapter 8 continues this line of enquiry, looking at how the 'social experiment' enabled self-help housing construction in the *Youth Residential Complex* movement, where residents participated in their own housing design, worked at the construction site, and ran and maintained their housing estate after construction. The 'social experiment,' with residents' cooperation and low-level management, functioned as an anti-crisis measure to mitigate the shortages of the late-Soviet economy, but it also provided easier access to the informal economy. The project's history testifies to the deep dependence of late-Soviet industry on informal economy.

Chapter 9, by contrast, focuses on a large-scale, well-funded housing construction project carried out by an international cooperation of major Soviet and East German scientific research institutes. In contrast to the low-level organisation discussed in the previous chapter, this project saw experts embrace more meticulous planning, and aimed to account for individual agency and the complexity of residents' family structure to produce 'personalised' post-functional housing design. This chapter of the third part of the thesis takes experimental urban housing projects as its point of

departure; however, each chapter in this section also reveals the multi-disciplinary nature of the experiments, and traces how each is informed by sociology, economics, and pedagogy.

Finally, my general conclusion widens the scope of my study to pose the broader question of the place of experiment in the Soviet Union in general, and to include a comparative dimension. Comparisons with experiments in other fields, be they pedagogy, sociology, or economics, allows us to arrive at a general conclusion about experiment as a sphere for controlled innovation employed in various Soviet scientific disciplines and spheres. The conclusion demonstrates how the concept of experiment became crucial to carrying out Gorbachev's reforms in the economic modernisation of the country.

Part I. Experimental and standard housing in 1955-1959

Introduction

This first part of my thesis looks at the first four years of the Soviet housing programme, from 1955 to 1959. In 1955, when the aim to industrialise provision of housing was first officially declared, there was no coherent vision of housing delivery industry among planners.[114] Yet by the end of the period, Soviet planners had come up with a clear vision of an industry for the prefabrication of complete houses from factories.[115] In 1959, officials projected the construction of 380 panel factories in the USSR.[116] Establishment of the housing delivery industry on a national scale enabled Soviet officials to include a plan to deliver the grandiose number of fifteen million apartments in the national development of the USSR.[117]

Over four years, Khrushchev's housing campaign progressed from political declarations to a functional industry, producing apartments on an unprecedented scale. These first four years of the housing programme were the eve of industrialisation in Soviet architecture and construction spheres, a time when principal decisions were made that defined all further development of architecture,

[114] 'Postanovlenie TsK KPSS i Soveta Ministrov SSSR Ob Ustranenii Izlishestv v Proektirovanii i Stroitel'stve 4 Noiabria 1955 g.', in B.V. Naryshkin (ed.), *KPSS v Rezolyutsiyakh i Resheniyakh Syezdov, Konferentsyi i Plenumov TsK* (Moscow, 1985).
[115] Such visions of off-site fabrication became prominent in global discourse from the beginning of the twentieth century. See: G. Herbert, *The Dream of the Factory-Made House: Walter Gropius and Konrad Wachsmann* (Cambridge, Mass, 1984). For the most comprehensive overview of the methods of prefabrication, see: Meuser, *Prefabricated Housing*, pp. 30-79.
[116] Kimberly Zarecor argued that all 380 panel factories built by the Soviet Union from 1959 onwards were installed as the result of a direct technological transfer from the French firm 'Raymond Camus and Co': Zarecor, *Manufacturing a Socialist Modernity*, p. 266. I discuss the technological exchanges between Camus and the Soviet housing industry elsewhere: Erofeev, 'The I-464 Housing Delivery System', p.^pp. 207-30.
[117] M. Kostandi, *Novye Tipy Kvartir dlia Massovogo Zhilishchnogo Stroitel'stva* (Moscow, 1959), p. 3.

construction, and housing delivery in the USSR.[118] At the beginning of this period, planners shared no consensus on the type of housing delivery industry required, and they proposed different visions of industry, with varying parameters and roles for architects and other specialists. During this time, myriads of different technologies and design and planning decisions were proposed, scrutinised, evaluated, and discussed in Soviet industrial architecture. It was a time for mastering new methods of design and production as well as new technologies and new architectural styles—as in the words of some participants in these events, it was a time of experiment. The chapters of this part unpack the meaning of these experiments to demonstrate their effect on the developing industry. Each chapter looks at various aspects of the research and development process carried out in these years: the design and development of housing projects, their tests, and their implementation in industrial production.

The process of development eventually resulted in the adoption of normative documents that defined the main parameters of the mass housing industry for the following years. Housebuilding factories constructed in the USSR in the late 1950s and early 1960s were designed to produce prefabricated components that could assemble a particular, limited set of buildings. The development of mass housing in the Soviet Union progressed in stages termed by Meuser and Zadorin as 'generations' of prefabricated buildings; conventionally, this first stage was referred to as the first generation. Each further generation introduced a new housing delivery

[118] D. Zadorin, 'Massovoe Domostroenie v SSSR v 1950–1980-e: Istoriia v Postanovleniiakh', *Massovoe Domostroenie v Rossii* (2016), pp. 53-56.

industry, a new set of block designs and apartment layouts, and was based on a normative document.[119] The chapters of this part demonstrate that a stage of experimental development preceded the development of the first generation of the housing delivery industry. And, likewise, experimental development preceded not only the first stage, but also each subsequent stage of the development of mass construction, each time resulting in the adoption of new corresponding normative documents.

[119] The first generation (1958–1963), the second generation (1963–1971) and the third generation (1971–1980): Meuser and Zadorin, *Towards a Typology*, p. 163. In newer research, Meuser has identified five generations of prefabricated housing: Meuser, *Prefabricated Housing*, pp. 88-89.

Chapter 1. ‘A decade of experiment’ in Soviet architecture: the experimental district of Cheremushki and the development of industrial housing delivery

Introduction

In 1955 a reform against ‘excesses’ in architecture began the transition of Soviet architecture from neo-classicical idiom to modernist industrialised architecture. After this reform, which was also directed against the Stalinist-era architectural establishment responsible for such architectural excesses, many professionals associated with the ‘architecture-as-art’ approach were expelled from the Academy, and their places given to the proponents of ‘architecture-as-science.’[120] The reform was so rapid and radical that historians have referred to it as a complete ‘change of direction’ or a ‘*perestroika* of Soviet architecture.’[121] In the periodisation of Soviet architecture, 1955 was seen a major watershed, and a ‘radical break and rupture.’[122]

The reform involved the symbolic reformation of the Academy of Architecture.

[120] On the reform, see: Anderson, *Russia*, pp. 215-28. See also: ‘Postanovlenie TsK KPSS i Soveta Ministrov SSSR Ob Ustranenii Izlishestv v Proektirovanii i Stroitel’stve 4 Noiabria 1955 g.’, pp. 532-36.
[121] S.V. Bittner, 'Remembering the Avant-Garde: Moscow Architects and the “Rehabilitation” of Constructivism, 1961–64', *Kritika: Explorations in Russian and Eurasian History,* 2/3 (2001), p. 564. On the reform, also see: Anderson, *Russia*, pp. 215-20, K. Zubovich-Eady, 'To the New Shore: Soviet Architecture's Journey from Classicism to Standardization' Berkeley Program in East European and Eurasian Studies Working Paper Series, (2013) https://iseees.berkeley.edu/sites/default/files/u4/2013_8-eady.pdf (18 March 2019).
[122] On Khrushchev, see: R.T. McCutcheon, 'Science, Technology and the State in the Provision of Low-Income Accommodation: The Case of Industrialized House-Building, 1955-77', *Social Studies of Science,* 22 (1992), p. 358. The year 1955 is conventionally considered the beginning of Soviet modernism: Ritter, *Soviet Modernism 1955-1991: Unknown History*, F. Novikov and V. Belogolovskii, *Sovetskii Modernizm: 1955 – 1985* (Ekaterinburg, 2010). On the impact of the 1957 housing decree: Smith, *Property of Communists*, p. 102, R.W. Davies and M. Ilič, ‘From Khrushchev (1935–1936) to Khrushchev (1956–1964): Construction Policy Compared’, in J. Smith and M. Ilic (eds.), *Khrushchev in the Kremlin: Policy and Government in the Soviet Union, 1953–64* (New York, 2011), pp. 212-14. See also the 4 April 1959 Council of Ministers decree, ‘On the development of large-panel housing construction.’

Renamed he Academy of Construction and Architecture (hereafter simply Academy), it was established as the main body for leading and enforcing the new politics of architectural industrialisation. New members—architects with a prevalently engineering background—introduced the discourse of scientific rationalisation and the dogma of functionalism. The central ambition voiced in the meetings of the academy was to rationalise and scientifically ground architectural solutions, and to effectively link them with technical production. One architect, A. Tsitovich, writing about 'Urgent measures for the development of Soviet architecture' to be taken by the Academy in 1957, argued that 'architecture has to be rational and logical on all levels,' and 'logically planned, designed, produced and assembled and linked with the production sphere.' Among others, he quoted architect V. Bazhenov, who asserted that in order to achieve such precision, 'the science of architectural planning' had to be as exact as physics and maths.[123] With the new political priorities, the design and production of public housing became central to architectural discussions framed within this scientific discourse.

The emphasis on a scientific approach to housing design, production, and construction was expressed in the ambitions of standardisation and typification of buildings. One member of the praesidium of the Academy, and a former chief architect of Moscow, Aleksander Vlasov, discussing 'the tasks of Soviet architecture' in 1959, stressed the importance of a 'scientific typology' (*nauchnaia tipologiia*) as an architectural discipline aiming to develop types. Within the focus

[123] RGAE, f. 293, o. 5, d. 61, l. 29.

on standardisation and mass production, Vlasov saw scientific typology as the main 'means to unleash the transformative power of architecture.' According to Vlasov, mass-produced types 'can either contribute to the development of the social process of labour, everyday life, and culture, or, on the contrary, hamper this development.'[124] The typification of housing and public buildings was crucial for the purpose of translating and directing the needs of the Soviet population. The design of types based on needs was seen a question 'of a scientific nature … amenable to calculations.'[125] The function of the Academy was seen as assisting in the creation of an appropriate institutional environment to facilitate the practice of scientific typology. This had to be carried out by specialised multi-disciplinary scientific institutes, which would develop types in cooperation with 'special sciences on labour, everyday life and human life in general.'[126]

Picturing housing delivery as a continuous production based on models, speakers in the meetings of the Academy repeatedly used the metaphor of aeroplane production, 'the most sophisticated and precise industrial production of the time.'[127] Vlasov argued that the task of the Academy was to 'organise design in such a way that models of structures could be compared with the magnificent models we saw on the air parade where Yakovlev, Sukhoi, Lavochkin and others displayed their magnificent models of machines.'[128] How was such a mode of production to be achieved? Of crucial significance for the development of standard designs was the

[124] RGAE, f. 293, o. 5, d. 222, l. 36.
[125] RGAE, f. 293, o. 5, d. 37, l. 21.
[126] RGAE, f. 293, o. 5, d. 222, l. 35.
[127] RGAE, f. 293, o. 5, d. 37, l. 42, 216.
[128] RGAE, f. 293, o. 5, d. 1, l. 63.

so-called process of experimentation. In the very first meeting of the Academy, one speaker concluded that the whole task of the reconstruction of architecture based on industrialisation, which was assigned to the Academy, '*de facto* comes down to experimental work.'[129] From then on, references to 'experiment' were repeatedly voiced by the most prominent architects in Academy conferences. Vlasov referred to experiment as 'a handle (*rychag*), without which science will not develop effectively.' In a similar way, Boris Rubanenko argued that 'without a large-scale experiment we will not solve such a problem as the development of a new type of construction industry.'[130] From the first years of the reform, experiment became a central category in the scientifically- and technically-oriented architectural discourse of standardisation.

It may be informative to provide a brief overview of experimental method in architecture to better understand why it became so central to the 1955 reform. This chapter starts with a discussion of the genealogy of the concept of 'experiment' in Soviet architecture. A focus on experimental method demonstrates a great deal of continuity with the pre-war practice of construction. Analysing the discourses regarding experimentation and standardisation in the Academy, I will question the story of the 1955 reform as a 'radical break and rupture' between neo-classicism and modernism. Instead, I will propose an alternative periodisation for Soviet industrial architecture, demonstrating continuities in architectural practices and procedures of experimental development associated with housing delivery from the

[129] A. Gvozdev in RGAE, f. 293, o. 5, d. 1, l. 7.
[130] RGAE, f. 293, o. 5, d. 37, l. 19.

late 1940s. The second section of the chapter then explores a series of state-led experiments aimed at developing the housing delivery industry in 1955–1959, when with state support, experimental development arguably became the main method of production of Soviet industrial architecture. This section demonstrates that through a series of these interdependent experiments, housing progressed from blueprints to actual implementation in industrial mass production. These experiments included the construction and scrutiny of prototypes, mockups, and models, and constant revisions and amendments of designs based on on-site scrutiny. Finally, the chapter will demonstrate how the practices of experimental development shaped a particular establishment of architectural institutes specialised in experimental design and construction.

A decade of experiment

Historians used the concept of experiment in architecture in numerous different contexts, most often to describe an attempt or trial, or to emphasise architects' creativity.[131] However, experiments in the Soviet architecture of the 1950s lack detailed scholarly attention. For a long time, the category of experiment in Soviet architecture lacked an official definition; various surges of rhetoric introduced it with a different meaning and engendered much confusion in historians' writing. Thus Kristina Rimkutė has seen experimentation as an opportunity for architects to 'profess initiative, activism, and interactions with the international context.'[132] For

[131] For example: M. Bliznakov, 'Soviet Housing During the Experimental Years 1918-1933', in C.B. William and B.A. Ruble (eds.), *Russian Housing in the Modern Age Design and Social History* (Cambridge, 1993), pp. 85-149, C. Gray, *The Great Experiment: Russian Art, 1863-1922* (New York, 1962).
[132] K. Rimkutė, 'Soviet Mass-Housing in Vilnius: Exploring the Consequences of the 1955 Housing Reform

Harris, an experiment in housing production was one method of social engineering in self-help construction with the participation of residents.[133] In other contexts, the tag 'experiment' was seen as a 'canny propaganda tool'[134] or an administrative tool for architects, which helped 'bolster their credentials as specialists—and, sometimes, draw on greater resources.'[135]

The above explanations do not seem to effectively explain the self-defined concept of experiment that emerged in the mid-1950s discussions in the Academy in the context of industrialised architecture. Yet, in this context, the experimental method was relevant long before Khrushchev's reform. In his research on 'laboratory method' in modern architecture, Ivan Rupnik defines experimentation in science and engineering as 'trial and error, within controlled conditions, controlled not necessarily to prevent error but to ensure that error is clearly identifiable.'[136] Rupnik has shown that the scientifically grounded concept of experiment in architecture has its own genealogy, which was related to the history of scientific management. At the beginning of the 20th century, the emphasis upon mechanisation and the exploration of the possibilities of serial mass production informed scientifically managed or 'Taylorised' architecture.[137] In this context, experiment usually denoted

and the Rebellion against Architectural Homogenisation', 2014), p. 183.
[133] Harris, *Communism on Tomorrow Street*, p. 185.
[134] V. Molnár, *Building the State: Architecture, Politics, and State Formation in Postwar Central Europe* (London and New York, 2013), p. 76.
[135] Crowley, 'Architecture and the Image of the Future', p. 77.
[136] I. Rupnik, 'Projecting in Space-Time: The Laboratory Method, Modern Architecture and Settlement-Building, 1918-1932' (Doctoral dissertation, Harvard University, Graduate School of Arts & Sciences, 2015), p. 7, footnote 19.
[137] See: M.F. Guillén, *The Taylorized Beauty of the Mechanical: Scientific Management and the Rise of Modernist Architecture* (Princeton, NJ and Oxford, 2006), M. McLeod, '"Architecture or Revolution": Taylorism, Technocracy, and Social Change', *Art Journal*, 43/2 (1983), pp. 132-47.

the design for a building or technology under consideration for mass production but not yet fully adopted. Since mass production was related to mechanisation and the pursuit of interchangeability, standardisation became crucial in 'Taylorised' architecture. Architects of the Taylor Circle defined experiment as a scientific method aimed at defining new standards, e.g. new designs, norms, and technologies for further repetition. Hence, experimental method was a 'process of standard derivation' through finding effective on-site solutions, and production and management schemes.[138] The specifics of experimental method were located in its practical approach, which was focused on the 'shop floor,' in contrast to the theoretically-oriented architecture produced in architects' offices.[139] Due to its organisational nature, the experimental method in the interwar architectural practice placed architects in the privileged position of managing production and defining the parameters of other disciplines.[140] A brief overview of the history of experimental method in the USSR illustrates how the practice of 1930–1950 informed further reform.

In historic works on Soviet avant-garde, experiment was a widely used concept, yet it tended to signify a radical social programme, rather than industrialisation or mass production.[141] The scientific concept of experiment was introduced into widespread

[138] Rupnik sees experiment and standardisation as two intertwined phases of scientific management in architecture, of what he calls experimental or 'laboratory' method: Rupnik, 'Projecting in Space-Time', pp. 4-5.
[139] Taylor himself related that standards needed to be 'determined through the slow and difficult process of trial and error.' ibid., p. 4.
[140] On the role of the architect in industrial housing production, see: Rupnik, 'Building Systems/Building Territory', pp. 86-103.
[141] The social programme of the architecture of the time of the first Five-Year Plan was described as 'experimentation' not only by historians, but also by the participants of these events. For example, see Ginzburg in V. Buchli, 'Moisei Ginzburg's Narkomfin Communal House in Moscow: Contesting the Social

practice in the 1930s at Stalinist 'grand construction sites,' among them Magnitogorsk and the 'socialist city' (*sotsgorod*) of Gorky Automobile Plant (*GAZ*).[142] In DeHaan's account, the automobile plant *GAZ* and the 'experimental socialist city' designed around it by foreign and Moscow-based modernist architects showed the 'failure of visionary planning'—the inability to implement their projects due to the prevalence of technological and economic problems, the lack of supplies on site, lack of specialists, and poor planning—what she calls the 'agency of material.'[143] The lack of basic building material and the need to account for the unrealistic haste in the plans for the development of the national economy forced local actors to innovate and invent practical solutions. Similarly chaotic ad-hoc conditions were prevalent at most city planning and construction projects of the 1930s.[144] Christina Crawford defines this often chaotic 'practical search' for viable solutions as actual experimentation, which through the 'trial-and-error process and on-site discoveries eventually led to the establishment of new general modes of urban practice and theory.'[145] Crawford attributes the 'intently experimental cast' of Stalinist urban construction to a deep conceptual commitment to Marxist praxis, arguing that the praxis from construction sites in the Soviet periphery drove and eventually redefined metropolitan architectural theory. Similarly, French colonies were described as 'laboratories, admirable experimental terrains' or *champs*

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and Material World', *The Journal of the Society of Architectural Historians*, 57/2 (1998), p. 174. Avant-garde 'experiments' with mass production were less common; see: C. Lodder, *Russian Constructivism* (New Haven, London, 1983), p. 72.

[142] See: Kotkin, *Magnetic Mountain*, DeHaan, *Stalinist City Planning*.

[143] DeHaan, *Stalinist City Planning*, pp. 55-59.

[144] See: I. Kosenkova, *Sovetskii Gorod 1940-Kh-Pervoi Poloviny 1950-Kh Godov: ot Tvorcheskikh Poiskov k Praktike Stroitel'stva* (Izd. 2., dop. edn., Moskva, 2009).

[145] C.E. Crawford, 'The Socialist Settlement Experiment: Soviet Urban Praxis, 1917-1932' (D.Phil. thesis, Harvard University, 2016), p. 11.

d'expérience, for investigating the efficacy of architectural and urban paradigms, which eventually had a significant influence on development in the metropolis.[146] I shall argue that it was not only similar understandings of experiment, but also similar centre-periphery dynamics, that characterised mid-1950s architectural institutions.

This experimental approach did not cease in the 1930s and 40s, but only increased through the intensity of research and the scale of development. Beneath the lavishly decorated, monumental face of Stalinist architecture, significant effort was invested in finding rational, rapid, and cost-effective ways of construction. Experiments involved the circulation of knowledge, testing of foreign technologies, and cooperation with foreign experts. Specifically, this scientifically managed architecture became open to international contacts through the Iron Curtain, and triggered the most remarkable encounters with foreign architects, including Ernst May, Albert Kahn, and Hannes Mayer. Historians showed that these architects influenced approaches to experimentation and standardisation in the Soviet construction industry. Rupnik argues that the introduction of Ernst May's method of 'practical experiment' into the USSR influenced the further vision of the post-war Soviet construction industry.[147] During World War II, and in the early post-war years, experiments that promised the acceleration of temporary housing production,

[146] G. Wright, *The Politics of Design in French Colonial Urbanism* (Chicago and London, 1991), p. 73.
[147] Rupnik, 'Projecting in Space-Time', pp. 376-98. Crawford argues that Albert Kahn influenced Soviet methods of standardisation: C.E. Crawford, 'From Tractors to Territory: Socialist Urbanization through Standardization', *Journal of Urban History*, 44/1 (2018). On Hannes Mayer, see: T. Efrussi, 'Hannes Meyer – a Soviet Architect. Life and Work in the Soviet Union. 1930–1936' (Ph.D. thesis, Kassel University, 2019).

such as low-rises and barracks, were especially supported.[148] Prior to the formation of a specialised institutional base, these experiments were often hectic in nature and dependent on the support of particular officials to secure the required funding, production capacities, and labour. In particular, Khrushchev supported and promoted a number of experiments related to the construction industry from the 1930s onwards.[149] Even before the reform of 1955, Khrushchev, in his position of first secretary of the Moscow Regional Committee, supported architects who were promoting experimental methods of economic industrial housing delivery.[150] As Chapter 3 demonstrates, Khrushchev turned his village of origin into an experimental construction site, aimed at establishing new architectural models, modes of agricultural production, and rural development methods.

A national institutional base for experimental construction began to be formed in 1945 with the foundation of a 'laboratory for experimental building technologies' within the Academy of Architecture.[151] In later years this practice was consolidated with the foundation of institutes specialised in typification and standardisation. The most significant of these, the Scientific Research Institute for Housing (*NIIZh*, later merged with *TsNIIEP*), was founded in 1949 as a central institute for research in

[148] R. Anderson, 'USA/USSR: Architecture and War', *Grey Room*, 34 (2009), pp. 80-103.
[149] In the 1930s, Khrushchev sponsored an experiment to assemble building blocks out of large masonry blocks in Moscow. See: T.J. Colton, *Moscow: Governing the Socialist Metropolis* (Cambridge, MA and London, 1995), p. 354.
[150] In the early 1950s, Khrushchev promoted the construction of two pilot experimental plants, at Krasnaia Presnia in Moscow, and in Lubertsi, and got permission to build them in 1952. N.S. Khrushchev, *Vospominaniia: Izbr. Fragmenty* (Moscow, 1997), p. 369.
[151] These laboratories were designed for research of new materials and constructive innovations: Anderson, 'USA/USSR', p. 92. In the early post-war years, experimental housing districts were put to public scrutiny and discussion of their constructive and planning approach. See: I. Kosenkova, 'Konkurs na Sostavlenie Eksperimental'nykh Proektov Zhilogo Mikroraiona Goroda', *Arkhitekturnoe nasledstvo*, 40 (1996), pp. 177-84.

housing typology.[152] Similar institutes specialised in typical design also emerged in major cities. In this thesis I also focus on the Special Architectural Design Bureau (*SAKB*, later *MNIITEP*), founded in 1951, which reported to the local city hall of Moscow in order to develop standard projects of residential buildings, schools, and hospitals on a city-level.[153] Through these measures, by the late 1940s, experimental method had obtained an institutional base. Research has shown that it was in these years that the institutional and technical base for industrial housing construction was laid.[154]

Within this institutional environment, experimental development became a separate specialisation for Soviet architects and engineers. The most prominent architects in housing design and industrial architecture, Boris Rubanenko, Georgii Gradov, Natan Osterman and others worked in various institutes associated with *NIIZh* and *SAKB*. In Chapters 1, 2, and 4 of this thesis, I will examine the careers of two influential architects who specialised in industrial housing: Nikolai Rozanov and Alexei Zal'tsman (Figs. 1.1, 1.2). The biographies of these two architects reveal many similar characteristics. Both graduated in the 1920s as modernist architects and underwent practical training at construction sites in collaboration with foreign specialists. After 1955, both became central figures in the sphere of housing architecture as recognised experts, Rozanov specialising in prefabrication and

[152] Founded on the basis of the Scientific Design Institute for Mass Buildings, founded in 1939. In 1961 it merged with the Central Scientific Research Institute for Experimental and Typical Design of Housing (*TsNIIEP*). See: RGAS, f. P-149, 1-1, 'Introduction.'
[153] TsGA, f. 321, o. 1, d. 1, l. 2.
[154] On housing construction in 1941–1954, see: N. Bylinkin, P. Volodin, and I. Kornfel′d, *Istoriia Sovetskoi Arkhitektury. 1917-1958* (Moscow, 1962), pp. 242-68.

technical innovations, and Zal'tsman in the social expertise of housing. Both figures demonstrate the techno-scientific dimension that became central to the profession of modernist architects.[155]

Nikolai Rozanov was born in 1904 and from the 1930s onwards he became renowned in the sphere of cost-efficient residential construction.[156] In 1929, after completing his architectural training, Rozanov was sent to the construction site of *GAZ*, the automobile plant in Gorky (now Nizhnii Novgorod). Rozanov was an expert who invented technological methods 'by praxis.' In *GAZ*, under conditions lacking in quality construction materials and even electricity, he invented and implemented technology for the production of two-storey, wood-framed barracks.[157] He built a successful career upon his initial post as a junior architect at the *GAZ* car factory, and soon progressed to become a director of one of the residential sectors in *sotsgorod*. Memoirists compare him with the romantic protagonist of V. Kataev's novel *Time, Forward!* (*Vremia vpered!*).[158] Some of the prefabrication methods developed by Rozanov at construction sites were selected by the Moscow-based *Narkomat* of Construction and later recommended as standard technologies (Fig. 1.3).[159] Experimentation with building materials was a dangerous practice during the Great Terror of 1937-38, when engineering 'errors' (whether genuine errors or not) could easily be regarded as intentional wrecking. Taking the wrong engineering

[155] On the architectural profession in the 20th century in East European context, see: M. Kohlrausch, *Brokers of Modernity: East Central Europe and the Rise of Modernist Architects, 1910-1950* (Belgium, 2019).
[156] Dykhovichnaia, *Lichnoe Delo*, pp. 79-90.
[157] V. Kossakovskii, *Pioner Industrial'nogo Domostroeniia* (Moscow, 1980), p. 19.
[158] See: V. Kataev, *Vremia, Vpered!* (Moscow, 1933).
[159] E.g. the concrete-reinforced hollow gypsum blocks '*RBShch*' developed by Rozanov *et al*. in Sterlitamak: Kossakovskii, *Pioner Industrial'nogo Domostroeniia*, pp. 22-24.

decisions could literally cost a specialist his head: in 1937, when *GAZ* was shaken by major repressions, Rozanov's closest colleague, B. Dugach, was arrested and shot.[160] In construction sites, Rozanov established himself as a specialist capable of delivering desperately needed housing, which, in the conditions of chronic housing shortage, was an extremely valuable skill. Rozanov's approach to housing delivery was comprehensive: he was capable of organising and coordinating the actual process of residential construction 'from the drawing board to the construction.' Rozanov's son Aleksandr Rozanov recalls that this skill endowed his father with good relations with authorities and bureaucrats of different levels.[161] By 1962, had Rozanov worked his way up to assistant director of *TsNIIEP*. We will discuss Rozanov's work in more detail in Chapter 4; for now, we turn to Zal'tsman.

Alexei Zal'tsman was an expert in housing typology and the underlying social questions of industrialised housing production. Zal'tsman was trained in Moscow Higher State Artistic and Technical Workshops (*VKhUTEMAS*) in 1922–1927. In the 1920s, Zal'tsman formed a long-lasting partnership with Boris Blokhin, another architect specialising in minimal housing.[162] In the 1930s, Zal'tsman worked at the 'grand construction sites' in the same way as Rozanov. Upon the arrival of German architects, led by Ernst May, in the USSR, Zal'tsman and Blokhin joined May's

[160] Dykhovichnaia, *Lichnoe Delo*, p. 81. On the repressions at *GAZ*, see: M. Zefirov and D. Degtev, *Vse dlia Fronta? Kak na Samom Dele Kovalas' Pobeda* (2017), Glava 5. Kholokost v avtoprome.
[161] Interview with A. Rozanov, conducted by Author, Oxford (over Skype), 27 January 2018.
[162] Architects designed student towns (*studencheskie gorodki*) with minimal housing, which were completed in the early 1930s in Moscow. See: D. Romodin, 'Studencheskii Gorodok v Annengofskoi Roshche' http://www.sovarch.ru/catalog/object/258/ (26 December 2018), D. Romodin, 'Dorogomilovskii Studencheskoii Gorodok' http://www.sovarch.ru/catalog/object/251/ (26 December 2018), D. Romodin, 'Vsekhsviatskii Studencheskii Gorodok' http://www.sovarch.ru/catalog/object/253/ (26 December 2018).

team and travelled to Magnitogorsk and Gorky.[163] Similarly to Rozanov, Zal'tsman advocated the construction of economic, standardised, and industrialised housing. In cooperation with Blokhin, he started publishing on housing typology from the late 1930s.[164] From the first publications, architects emphasised the need to introduce typologies of 'minimal economic apartments,' which could be used to house separate families separately—a theme that would become central to professional discussion in the late 1950s.[165] Zal'tsman's works on housing typology demonstrate a strong awareness of the actual conditions of the barrack settlements that appeared instead of proper housing for capital development. Zal'tsman called for an acknowledgement of the situation and for the design of housing types suitable for the periphery, in conditions of infrastructural or climatic constraints.[166] In the early post-war years, Zal'tsman emphasised industrial methods of construction as an effective means of lowering the price of housing delivery. In 1946, he wrote: 'we should not think of becoming a temporary companion of industrial methods of construction, but rather of leading this broadest progressive technical movement and winning the seminal, uniting, and creative role of an architect within it.'[167] After the reform, Zal'tsman became a member of the Academy and a leading specialist in *NIIZh*; he was acclaimed as 'an engineering and design genius of standardisation and industrialisation of housing construction working at the Academy.'[168] We will

[163] M. Meerovich, 'Ernst Mai: "Ratsional'noe" Zhil'e dlia Rossii', *Arkhitekton: izvestiia vuzov,* 36 (2011).
[164] P. Blokhin and A. Zal'tsman, 'O Tipovykh Proektakh Zhilykh Sektsii dlia Massovogo Stroitel'stva 1939 Goda', *Arkhitektura SSSR,* 2 (1939), pp. 29-41.
[165] See: P. Blokhin and A. Zal'tsman, 'Tipy Zhilykh Domov i Problema Malometrazhnoi Kvartiry', *Arkhitektura SSSR,* 3 (1940), pp. 4-6, P. Blokhin and A. Zal'tsman, 'Novoe v Tipovom Proektirovanii Zhilishcha', *Arkhitektura SSSR,* 4 (1941), pp. 30–35.
[166] See: A. Zal'tsman, 'Klassifikatsiia Zhilykh Domov', *Soobshcheniia Instituta massovykh sooruzhenii (Moscow: gosudarstvennoe arlchitekturnoe izdatel'stvo Akademii arkhitketury SSSR),* 2 (1943).
[167] A. Zal'tsman, *Osnovnye Arkhitekturnye Problemy Massovogo Zhilishcha* (Moscow, 1946), p. 21.
[168] Bocharnikova, 'Inventing Socialist Modern', p. 126.

discuss Zal'tsman's work further in the next chapter.

The architectural reform of 1955 offered a solid ground for specialists in the experimental method to be promoted into leading positions in the architecture and construction spheres. Like Zal'tsman and Rozanov, many other influential architects, members of the Academy, and advocates of industrialised housing delivery had previous experience at construction sites in the periphery. The reform of 1955 thus triggered mobility from the periphery to the centre, and provided an opportunity for architects specialised in typological research and experimental construction to secure leading roles in the architecture and construction spheres. The main mastermind behind the architectural reform itself, Georgii Gradov, shared a similar trajectory to Rozanov and Zal'tsman, coming to the Academy from provincial construction sites. From his first days in office, Gradov declared 'the need for experiment' and, similarly, the need 'to organise an architect's job so that he spent at least fifty per cent of his working hours at the construction site.'[169]

The focus on experimental method demonstrates a great deal of continuity in the architectural reform of 1955 with the pre-war experience of construction and presents a different story to the master narrative of a 'radical break and rupture' between earlier neo-classicism and later standardisation. While for architects trained in the *beaux-arts* tradition, who worked with architectural styles, this reform often

[169] Gradov studied under Vesnin and Ivanitsky and later worked in the provinces Rostov and Kuznetsk. In 1954, he wrote a letter to the CPSU Central Committee concerning serious gaps in the construction and architectural set-up of the country, which was used as the starting point of the housing campaign. Gradov's personal archival is kept in TsGA, f. 226. On Gradov's letter to Khrushchev, see: TsGA, f. 226, o. 1, d. 85. See also: Solopova, 'La Préfabrication En URSS', pp. 118–24.

entailed dramatic changes in their careers and lives, for those architects who were experts in innovation and scientific management it was nothing but continuity. This continuity is evident in the works of Zal'tsman. From the early post-war years, his discourse involved references to experiment and standardisation as a means of developing industrial structures. In 1964, he wrote that 'it is necessary to get used to the term "model of a residential building," just as we are used to the term "model of an airplane"—it must undergo the same careful design and experimental testing process: for once the model is taken to production, the factory conveyor flow of all components is established for a very long time.'[170] Further, he wrote that 'defining a planning type should be preceded by experimental design, technical and economical research, and experimental field testing.'[171] This rhetoric brings us back to the discussion of experimentation and standardisation that emerged in the architectural discourse after 1955. During the Khrushchev era, architectural journals discussed experimental development in the sense of 'models'—as projects intended to be individually constructed and examined—in contrast to the mass-produced standard designs.[172]

In the rhetorics of Rozanov and Zal'tsman, experiment was related to the practical development of buildings at 'shop floors' followed by their standardisation and typification. In his book, Rozanov relates that the beginning of experiment construction in the country began with the project of a large-panel building using

[170] Zal'tsman, *Osnovnye,* p. 22.
[171] A. Zal'tsman, *Zadachi Arkhitektorov na Sovremennom Etape Zhilishchnogo Stroitel'stva* (Moscow, 1955), p. 7.
[172] D. West, 'Cybersovietica: Planning, Design, and the Cybernetics of Soviet Space, 1954-1986' (D.Phil thesis, Princeton University School of Architecture, 2013), pp. 115-16.

prefabricated components, completed in Moscow in 1948.[173] Proposing the periodisation of Soviet architecture, both Zal'tsman and Rozanov argued that the start of mass-produced industrial housing delivery in 1958 was preceded by a 'decade of experiment,' which began with the foundation of 'experimental laboratories' and institutes for standardised design.[174] A similar periodisation is reflected in the textbook on the history of Soviet architecture issued in 1962, which builds the narrative of architecture-as-science.[175]

While I argue for the continuity of the experimental method, the years of most importance were 1955–59, when experimental construction became the state priority and large funds were channelled into its development. In these years, the city halls of Moscow, Leningrad, and Kiev reserved large territories for experimental construction. In Moscow, Cheremushki became an important site for the practical verification of projects before their inclusion in mass production. Buildings in the 9th micro-region of Cheremushki were constructed as 'experimental prototypes': fully assembled buildings serving as showcases for potential mass production, featuring various construction techniques and construction materials, including bricks, large blocks, and large slabs. A number of experiments of dissimilar nature had been carried out in each of the four phases of experimental development in Cheremushki, which included architectural, planning, and technological developments and empirical sociological studies.

[173] A prefabricated building on Solokinaia Gora by *Gosstroiproekt* (Arch. V. Bogomolov, N. Fukin, eng. G. Kuznetsov): N. Rozanov, *Krupnopanel'noe Domostroenie* (Moscow, 1982), pp. 6-7.
[174] A. Zal'tsman, *Zhilishchnoe Stroitel'stvo v SSSR: Sostoianie i Perspektivy Razvitiia* (Moscow, 1962), p. 104, Rozanov, *Krupnopanel'noe Domostroenie*, p. 17.
[175] See: Bylinkin, Volodin, and Kornfel'd, *Istoriia Sovetskoi Arkhitektury*.

By 1959, experimental design and construction started to gain official status. Experimental construction was understood as a stage in the chain of science, design, and mass production—the process of making new prototypes.[176] Rubanenko defined experiment as 'a method of reliable and specific development of promising types of housing ... an organic part of research in housing.'[177] Experimental construction was included in the plans of research institutes and funded with a specific category of budgets, and continued to increase in scale and intensity until the collapse of the USSR.

To better correlate design construction experiments, and experiments in production, the Academy aimed to create specific design institutes that would have 'experimental factories and centres in subordination.'[178] In 1958, such an institute was founded under the umbrella of the Academy, the Scientific Research Institute for Experimental Design (*NIIEP*).[179] *NIIEP* was structured specifically tackle the disjunction between the architectural and construction spheres. With the institutes' own 'experimental bases' it was designed 'for a closer link with the construction sector.' For the future development of industrial technologies, *NIIEP* formed an 'experimental base,' consisting of a number of experimental laboratories and workshops, which were used for testing new industrial materials and construction

[176] G. Gradov, 'Nauka–Eksperiment–Proektirovanie–Massovoe Stroitel'stvo', *Arkhitektura SSSR,* 10 (1976), p. 5.
[177] I. Dikhter, *Materialy k Dokladu Arkhitektora Ia. Dikhtera na Temu: "Eksperimental'noe i Massovoe Zhilishchnoe Stroitel'stvo v Moskve"* (Moscow, 1967), p. 3.
[178] RGAE, f. 293, o. 5, d. 1, l. 74.
[179] Gosstroi order №12, 17 January 1958, see: RGAS, f. 149, o. 8-6, l. 15, 'Predislovie.'

elements: reinforced concrete, ceramics, and soundproof and heat efficient materials. A number of workshops for experimental design were transferred to *NIIEP* from other institutes.[180] The 'experimental base' included an 'experimental plant' under *NIIEP*: a fully functional factory located in the Moscow region, focused on mastering experimental construction technologies and building materials.[181]

The main specialisation of *NIIEP* was the 'design and actual construction of new experimental types of buildings of different purposes, in order to develop progressive solutions and their introduction into a standardised design.'[182] The organisational structure of *NIIEP* was particularly tailored for research-oriented design practices. Unlike most Moscow architectural institutes, at that time usually housed in studios, *NIIEP* consisted of departments specialised in particular building types (residential high-rises, low-rises, public facilities, etc). Most projects teams also included research fellows alongside architects.[183] In the beginning, the institute had two small rooms with a dozen employees, but over the course of several years it grew to a 2,000-employee institution.[184] *NIIEP* attracted important specialists in industrial construction, including the main masterminds behinds Khrushchev's housing campaign. Alexei Zal'tsman and Nikolai Rozanov joined the institute, and Boris Rubanenko, who supervised the construction of Cheremushki, became the

[180] For example, on 1 June 1958, the experimental-design workshop from *NIIZh* was transferred to *NIIEP* with six employees. See: RGAS, P-149, o. 8-6, d. 1, l. 43.
[181] For example, see the factory report of 1957: RGAE, f. 293 o. 5 d. 98.
[182] RGAS, f. 149, o. 8-6, l. 15, 'Introduction.'
[183] Interview with A. Anisimov, conducted by Author, Moscow, 28 December 2016.
[184] Dykhovichnaia, *Lichnoe Delo*, pp. 38-39.

institute's director.[185] A number of institutes specialised in particular types of typical projects were also formed around NIIEP; the most visible of these was the Scientific Research Institute for Public Buildings (NIIOZ), with Georgii Gradov as director. In 1963, this institutional system was further expanded and renamed as TsNIIEP.

The story of *NIIEP* is especially relevant for the history of the architecture of Soviet housing as presented by this thesis, and *NIIEP* is discussed across many further chapters. In the next chapter and in Chapter 3, I more closely examine the projects carried out in cooperation between *NIIEP* and *NIIOZ*, while Chapter 4 discusses the project after these institutes were transformed into the *TsNIIEP* system. Later projects of the institutes are also discussed in Chapters 4, 5, 6, and 9.

Khrushchev-era apartments (*malometrazhnaia kvartira*): from blueprint to production

The report on 'the state of experimental construction' produced by *SAKB* distinguished five interdependent 'experimental phases' (*stadii eksperimental'nogo stroitel'stva*) in experimental construction in Moscow in 1956-61.[186] Based on these categories, this section of my thesis reconstructs the phases of experimental development of Khrushchev-era industrial public housing. Unpacking the experimental process of Khrushchev-era housing development, this section

[185] Ibid., p. 80.
[186] TsGA, f. 321, o. 1, d. 156, ll. 1-8. On experimental phases, also see: I. Dikhter and D. Sherstneva, *Eksperimental'noe i Massovoe Zhilishchnoe Stroitel'stvo v Moskve* (Moscow, 1973), pp. 19-21.

demonstrates that this development followed an experimental method, as described by Rupnik: the pattern of practical construction, on-site discoveries, and revisions based on these findings.

The first phase of experiment: the organisation of industrialised construction

The first experiment phase, which took place in 1956-57, was defined as the 'development and implementation of standard designs for residential buildings with single-family apartments.'[187] The problem of industrialised construction involved both typological research and the challenges of standardised construction. At this stage of experiment, both of these areas were addressed in practices of experimental design and experimental construction.

The purpose of experimental design was the development of a suitable set of layouts of new single-family apartments. These designs had to be small and economical enough to allow, under given spatial norms, the housing of a single family, in contrast to the communal apartments used in previous years.[188] The family became the central preoccupation in the typological design of minimal housing. The design of Soviet apartments reflected a spatial representation of the assumed needs of the family.[189] Design of types was also informed by the concerns of standardised construction, which had to be rational, durable, and as economic as possible. Hence, the double aim of type design was to ensure the maximum comfort

[187] Ibid.
[188] In the first years, the housing programme provided communal apartments; the emphasis on single-family apartments emerged in 1957. See: Zal'tsman, *Zhilishchnoe Stroitel'stvo*, p. 35.
[189] See: Reid, 'Khrushchev Modern', pp. 230-31, L. Attwood, *Gender and Housing in Soviet Russia: Private Life in a Public Space* (Manchester, 2010), p. 155.

for the family, while decreasing the end-price of housing delivery as far as possible.[190]

The *NIIZh* had been the central Moscow-based institution leading typological research in housing since the 1930s, with Zal'tsman and other professionals in typological research working there.[191] Yet, in the mid-1950s, typological research ceased to be limited to Moscow and took off on a major scale when in 1956 *Gosstroi* issued a union-wide architectural competition for the standard design of a residential building with small-scale apartments.[192] *Gosstroi* promoted such competitions as a way to centralise and coordinate the efforts of architects from regions and republics of the USSR to facilitate the aim of industrialisation of housing delivery in all regions.

The competition's programme required that apartment layouts correlate with the corresponding design of industrial production. The building had to be assembled with 'advanced industrial methods, to achieve the maximum reduction in the number of standard sizes of construction materials, and to provide maximum reduction in the required labour.'[193] The competition triggered a tremendous intensity of typological research into housing in the USSR. Design institutes specialising in typical design entered the competition from as far as Georgia,

[190] Typological research is a well-researched practice. See: Maxim, *Short The Socialist Life of Modern Architecture: Bucharest, 1949-1964, Part 2, 'Type and typification'.*
[191] See, for example, the report by Zal'tsman based on the results of demographic research done by *NIIZh* on newly-built micro-regions in 1950–1956: RGAS, f. P-149, o. 1-1, d. 298, l. 11.
[192] 'A competition for standard designs of 3-, 4-, and 5-storey buildings.' See: RGAE, f. 339, o. 3, d. 247, l. 103.
[193] Ibid, l. 84.

Azerbaijan, and Uzbekistan. A total of 394 projects were submitted to the open part of the competition and another 129 projects to the 'closed' stage.[194] The discussion and analysis of these projects in *Gosstroi* and *NIIZh* became the main arena for the scrutiny of minimal public housing at the union-wide level. As part of this discussion, views concerning apartment layouts and types, building types, and kitchens were articulated.[195] The submitted projects attempted to rationalise the needs of families and the details of their everyday life. Zal'tsman emphasised the social underpinning of this development, which addressed a concern about the future residents: 'An account of family composition became one of the mandatory conditions for designing an apartment. For an architect, the apartment is now filled with specific and live content.'[196]

The evaluation of designs submitted to the competition was not limited to blueprints but also involved the construction of models and prototypes. The best designs were selected to be constructed as full-scale 'experimental models,' both as mocks-ups displayed at construction exhibitions and as habitable demonstration apartments (Fig. 1.4–1.5).[197] Such models of apartments were used to examine the benefits and shortcoming of different layouts, but also to coordinate architectural design with other industries. The small scale of the apartments required the development of new types of furniture and bathroom fixtures, for example.[198] Kitchen units were

[194] 'Itogi Vsesouznogo Konkursa na Tipovye Proekty Zhilikh Domov', *Arkhitektura SSSR,* 11 (1956), p. 1.
[195] For the comprehensive analyses of the result of this competition, see: Kostandi, *Novye Tipy Kvartir*.
[196] Zal'tsman, *Zhilishchnoe Stroitel'stvo*, p. 35.
[197] Eight such models, featuring different layouts, were presented at a construction exhibition in Moscow; see: Kostandi, *Novye Tipy Kvartir*, p. 38.
[198] 'Zhiloi Kvartal №9 v Novikh Cheremushkakh', *Stroitel'stvo i arkhitektura SSSR,* 6 (1956), p. 6.

designed based on a rationalised understanding of housework.[199] The models were used to correlate better apartment design with plumbing and timberwork and to define new standards of these industries.[200] Specialists, whom Susan Reid has termed 'aesthetic experts or taste professionals,' worked with architects and furniture designers on various features of these models, developing standard sets of wallpaper and books on house planning. The cooperative nature of the development, which addressed technical, social, and aesthetic questions in housing design, allowed Reid to describe Soviet public housing as transcending the functionalist imperative, being rather the product of a broader cultural shift towards mass consumption, which she conceptualised as 'Khrushchev modern.'[201] Based on this cooperation, apartment blueprints were continuously revised and redeveloped.[202]

Among the most successful projects of experimental design was a 'Vesnin layout' submitted to the architectural competition organised by *NIIZh* and *NII Gosstroiproject*.[203] In this layout, an apartment had a walk-through room instead of a corridor, which increased the amount of 'living space' and offered a significant reduction in the cost of housing delivery (Fig. 1.8).[204]

Apart from the development of typologies, the first stage of experiment also

[199] This process is also shown in *Pora Bolshogo Novoseliia,* dir. B. Nebylitskii (Film, 1959).
[200] See, for example, development of furniture for apartments: Ruble, 'From Khrushcheby', pp. 244-48.
[201] Reid, 'Khrushchev Modern', pp. 227-68.
[202] Kostandi, *Novye Tipy Kvartir*, pp. 55-56.
[203] See: Rubanenko, 'Itogi Vsesouznogo Konkursa', p. 1. On the Vesnin layout, see: Meuser and Zadorin, *Towards a Typology*, pp. 168–69.
[204] As housing delivery was measured in 'living space,' the Vesnin layout offered more by combining the 'auxiliary' space of hall and corridor with the open room. See: Kostandi, *Novye Tipy Kvartir*, pp. 55-56.

involved developments in standardised construction that addressed fundamental problems of the construction materials industry. The city administrations in Moscow, Leningrad, and Kiev reserved special construction sites for carrying out experiments in construction. In 1956, the Moscow city administration (*Mosgorispolkom*) reserved the land in the former village of Novye Cheremushki in the southwest of the city for experimental construction.[205] Three 'experimental' micro-regions were planned for construction at this site: micro-regions 9 (the most iconic), 11, and 12.[206] The aim of housing construction in the 12th district of Cheremushki was defined as 'an experiment in the organisation of large-block housing delivery and the use of prefabricated components in the construction of housing.'[207] For this development, *SAKB* designed a catalogue of prefabricated components for the construction of housing from large-slab blocks. The institute produced a list of a total of 240 types of standardised prefabricated components required for the production of a single five-storey block.[208] Four Moscow-based factories were assigned to produce these components. The experiments held at these factories involved their 'specialisation and cooperation': each factory began to specialise in a certain range of components from the list. Inter-factory standardisation required the use of unified standards and unified raw materials.[209] Twenty buildings of the same design were constructed in Cheremushki's 12th district using these blocks, and, according to Dikhter, it was here that the method of

[205] *9-i Kvartal: Opytno-Pokazatel'noe Stroitel'stvo Zhilogo Kvartala v Moskve*, ed. B. Rubanenko (Moscow, 1959), p. 3.
[206] On the 9th micro-region, see: Bocharnikova, 'Inventing Socialist Modern', pp. 117-56.
[207] TsGA, f. 321, o. 1, d. 156, l. 1.
[208] 'Zhiloi Kvartal №12 v Novikh Cheremushkakh', *Stroitel'stvo i arkhitektura SSSR*, 8 (1956), p. 3.
[209] Ibid., p. 6.

experimental construction was firmly established.[210] Hence, the outcome of the first stage of experiment was the mastery of experimental design and construction, both in Soviet design institutes and in industrial construction, which, at this stage, existed as two separate spheres.

The second phase of experiment: microregion as a single entity

The second stage of experiment conducted in 1958-59 was defined as the search for 'new apartment design, planning solutions, and new architectural forms for mass housing and services for everyday life.'[211] At this stage, typological research continued in actual on-site construction in the 9th district of Cheremushki. The main task of the development in the 9th district was 'to conduct a large-scale experiment aimed at identifying the most convenient types of apartments.'[212] Model buildings with small-scale apartments were constructed as functional housing to be tested in the field under realistic weather conditions and, equally, with real residents. All 16 residential buildings in the 9th micro-region were developed by different groups of architects; each building in the micro-region featured a different kitchen layout, a different set of apartments, and a different way of organising them into sections (Fig. 1.6a). [213] Due to strict specifications, the residential blocks all outwardly looked alike, but each building was individual in its approach and employed different architectural solutions and construction methods. All buildings featured different sets of apartments designated for different types of families, from the

[210] TsGA, f. 321, o. 1, d. 156, l. 1.
[211] Ibid.
[212] 'Zhiloi Kvartal №9', p. 3.
[213] *9-i Kvartal*, pp. 4-5. See also: Dikhter, *Materialy k Dokladu*, p. 3.

smallest, single-room apartments, to large apartments designed for families of five individuals (Fig. 1.6b).[214]

The second phase of experiment was not limited to the design of single apartments and residential buildings but for the first time, extended to the design of the micro-region as a whole.[215] The 9th micro-region of Cheremushki was planned as a whole, with the free layout of the residential buildings located within greenery. Historians have noted that the planning of a micro-region was itself architecturally and technologically innovative.[216] As West pointed out, the 'experimentality' of the 9th micro-region of Cheremushki was to develop a way of delivering the entire micro-region at once, with all amenities, services for everyday life and infrastructure contained within a single planning unit.[217]

The general layout of this micro-region was designed by *SAKB*; the institute defined the types and sizes of public and residential buildings. At this phase of development, residential blocks were tweaked to respond better to the requirements of urban infrastructure. Zal'tsman saw the final aim of the micro-region planning in social terms, with the aim of creating a new type of community: 'a relatively small number of residents will allow them to break into friendly groups, welded together by the common interests of the organisation of the best form of public services, the

[214] 'Zhiloi Kvartal №9', p. 6.
[215] TsGA, f. 321, o. 1, d. 156, l. 1.
[216] Bocharnikova, 'Inventing Socialist Modern', p. 155. See also: C.E. Crawford, 'Dialectical Housing Landscapes of Socialism: Practice and Theory of Unified Space', in J. Haffner (ed.), *Towards a History of Ecological Housing: Rethinking the Relationship between Landscape and Dwelling* (forthcoming).
[217] West, 'Cybersovietica', p. 120.

upbringing of children, catering, the development of physical education, [and] various forms of satisfying ever-increasing spiritual and material demands.'[218]

The actually constructed model micro-region brought about an opportunity to place the development under detailed scrutiny. The buildings underwent inspection by specialist services, including firefighters and hygienist services. Multiple technical and economic parameters of completed blocks, such as cost per square metre, were analysed as part of post-construction scrutiny. The plan of the micro-region itself was also examined, including the positioning of buildings with regards to noise levels and insulation. The experience of residents in the newly-built housing projects was also recorded. *NIIZh* and *SAKB* conducted sociological surveys and empirical studies of residents' needs in Cheremushki from the completion of the first blocks right up to the end of the 1960s, and produced a large body of research.[219] Some of this research was later published by Iakov Dikhter, who worked in Cheremushki and later made his career as a specialist in experimental construction in Moscow.[220]

The results of such sociological research were a sensitive topic in the Soviet Union, since such studies sometimes revealed unflattering details of the real experience of urban living. They were therefore rarely published openly; however, sociological

[218] Zal'tsman, *Zhilishchnoe Stroitel'stvo*, p. 19.
[219] The scrutiny of the 9th district of Cheremushki was included in the 1958 research plan of *SAKB*. See: TsGA, f. 321, o. 1, d. 91. In 1959–60, *NIIZh* conducted an analysis of more than 100,000 apartments in 42 cities of the USSR: Zal'tsman, *Zhilishchnoe Stroitel'stvo*, p. 48.
[220] See: I. Dikhter, 'Eksperimental′noe Stroitel′stvo Kak Etap Tipovogo Proektirovaniia Zhilishcha (Issledovanie na Opyte Mosk. Stroitel′stva v 1956-70 gg.)' (Candidate dissertation, TsNIIEP Zhilishcha, 1972).

research still offered many insights to professionals in the institutional sphere.[221] Research into Cheremushki revealed a picture that differed from architects' initial visions. Residents were better off, as compared to the general Soviet population. The average family budget was higher and eighteen per cent of families owned cars, as compared to ten per cent of the general populace. Residents' needs were sometimes wrongly predicted, and some public services in the micro-region were not used according to their initial intentions: spaces for the library and club (*kruzhkovaia organisatsia*), for example, were repurposed after occupation.[222] Research also revealed that the new housing was significantly more overcrowded than planned, since almost half the families in the micro-region were 'large,' consisting of five or six members, including members of the older generation.[223] Under the existing norm for housing distribution, even one-room apartments in Cheremushki were sometimes occupied by 'medium-size families' of three or four members. The concern to provide building types to house smaller families and single people triggered a new wave of experimental development, which I will discuss in the next chapter.

Hygienists also contributed to scrutinising the experimental buildings. They demonstrated that overcrowded minimal apartments had insufficient ventilation and kitchens were often insufficiently isolated from the 'living space.'[224] The Moscow sanitary-epidemiological station particularly criticised the Vesnin layout. The open-

[221] Medical research in the USSR had similar specifics. See: K.L. Brown, *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters* (2013), pp. 172-77.
[222] See report on 9th micro-region of Cheremushki: RGAS, f. P-149, o. 1-1, d. 1262, l. 28–38.
[223] Ibid, l. 28.
[224] Zal'tsman, *Zhilishchnoe Stroitel'stvo*, pp. 50-51.

plan apartment was designed for a single 'standard family' of three members, but proved utterly inadequate and cramped under actual living conditions, when the apartment's living room (*obshchaia komnata*) was used a bedroom for some family members. Such non-isolated sleeping spaces in walk-through rooms were little improvement upon the conditions of communal apartments.[225] From the discussions in the Academy, it could be suggested that in the late 1950s, the arguments of economists and engineers concerning economy and efficiency, as well as the need to account for the fulfilment of the agenda to provide living space, were decisive and often prioritised over the concerns of architects and other specialists. The minimum cost of 'living space' in the Vesnin layout made it attractive for bureaucrats. The Vesnin layout was also aligned in an optimal way with various construction schemes and could be implemented with both non-industrial, large-panel, and large-block prefabrication technologies.[226] Further, being suggested by *Gosstroi* for subsequent competitions, this layout became the most widespread in Soviet housing, especially in 1958–63, during the first generation of Soviet prefabricated housing.

The third phase of experiment: experiment in mass production

The model buildings in the 9th micro-region of Cheremushki were constructed as 'experimental prototypes': fully assembled buildings serving as showcases for potential mass production, featuring various construction techniques and

[225] See the discussion of the Vesnin layout in the Academy: RGAE, f. 293, o. 5, d. 37, l. 15.
[226] Rubanenko, 'Itogi Vsesouznogo Konkursa', p. 1.

construction materials, including bricks, large blocks, and large slabs (Fig. 1.7).[227] From the late 1950s, *Gosstroi* made a classification of projects, into which experimental prototypes fell under a particular category (see introduction to Part 2 of this thesis). Innovative in design and planning, these buildings showcased potential for mass production but were not results of the actual realisation of mass production procedures. Their development preceded an established housing delivery industry in Moscow. Industrial technologies used in model buildings were largely imitated and building materials were produced in artisan conditions manually *in situ*. In a few models of large-panel buildings, the slabs were manually produced in open yards and stored in open storage places. In most projects, only separate individual components, such as staircases, were produced in factories, and the overall level of industrialisation was still low.[228] Discussing the development in the Academy, Vlasov said 'Cheremushki is a laboratory experiment and not mass housing construction.'[229] Construction of experimental prototypes predetermined the third phase of the experiment: mass production test.[230] This phase aimed to produce and assemble buildings within an effective technology of housing delivery.

The *Gosstroi* competition of 1956 for the design of small scale apartments required a project complimented by the design of a cost-effective production line; this, however, proved too difficult for many participants. Georgian architects complained that the programme set a problem too difficult to be solved within one institute: 'a

[227] *9-i Kvartal*, pp. 8-10.
[228] Conveyor construction did not function in Cheremushki until the end of the 1950s. RGAE, f. 293, o. 5, d. 221, l. 128.
[229] RGAE, f. 293, o. 5, d. 222, l. 141.
[230] TsGA, f. 321, o. 1, d. 156, l. 2.

group of architects could not handle that amount of work, but only specialised design organisations.'[231] The Georgian architects' complaint almost suggests that the competition was unfair. Despite the egalitarian nature of the competition and the participation of numerous republican institutes, the main prizes were in fact distributed between the major Moscow and Leningrad institutes in direct subordination to the Academy: *NIIZh*, *SAKB*, *Gorstroiproekt*, and *Lenproject*.[232] Most other participating design institutes, located in a *beaux-arts* tradition, were capable of designing buildings, but few had the capacity to design an industrial delivery system. Apart from a few major metropolitan institutes, research into the technological engineering of housing delivery was mainly done by specific institutes with a narrow focus on particular problems within the construction sphere.[233]

The members of the Academy identified this problem as 'the disjunction of architecture and construction.' According to architect A. Tsitovich, the 'irregular state of construction was the result of the fact that architectural design of industrial, civil, and rural structures is conducted in institutes separated from the construction and is carried out by actors of the wrong profession, who lack the qualifications required for the volumetric and engineering organisation of structures.'[234] With the

[231] RGAE, f. 339, o. 3, d. 247, l. 246.
[232] Apart from the Moscow-based *NIIZh*, Mosproject, and Giprogor, a number of republic-based design institutes participated in the *Gosstroi* contest: Kievproekt (Ukrainian SSR), Uzbekgorproject (Uzbek SSR), Tbligorproekt and Giprostroi (Georgian SSR), Kazgiprosel'stroi (Kazakh SSR), and Azgosarkhproekt (Azerbaijan SSR): Kostandi, *Novye Tipy Kvartir*, pp. 66-106.
[233] After the war a number of narrowly focused specialised construction institutes were founded: 'Institute for Concrete and Reinforced Concrete, Glass, Ceramics; Institute for New Construction Materials; Institute for Fine Powdering of Materials.' See: RGAE, f. 293, o. 5, d. 1, l. 69–70.
[234] RGAE, f. 293, o. 5, d. 61, l. 27.

advent of Khrushchev's housing drive, the institutes specialising in technologies, which promised the acceleration of housing delivery, became especially privileged. Apart from major metropolitan design institutes, such as *NIIZh*, a number of institutes with previous specialistations in industrial machinery started housing delivery, among them, *Giprostroiindustriia*. With state support, the eve of the industrialisation of housing delivery triggered unprecedented intensity and variety of research and development, which involved domestic methods of prefabrication, as well as foreign technological transfers.[235] As the third phase of experiment, these technologies had to be linked with the newly-defined types of single-family apartment blocks and meet their spatial parameters.

The experiment held in the 11th micro-region of Cheremushki, adjacent to the 9th micro-region, specifically addressed the problem of finding the most efficient technological construction of buildings. This experiment was aimed at developing industrial lines for the production of particular building types and involved mastering both effective production lines and assembly. In order to facilitate this task, just one experimental prototype, earlier constructed in the 9th micro-region (II-05, by *SAKB* architect A. Petrushkova), was chosen to be implemented in production.[236] All buildings in the 11th micro-region were built rapidly from large-block components, according to *SAKB* design.[237] All steps in the process of

[235] On international cooperation, see: Glendinning, 'Cold-War Conciliation', pp. 630-50.
[236] A. Petrushkova and I. Dikhter, 'Romantik i Praktik Real′noi Arkhitektury: Natan Abramovich Osterman' Arkhitektura i stroitel′stvo Moskvy, 6 (1999) http://www.sovarch.ru/76/ (14 April 2019).
[237] For the discussion of experiments held in districts 9, 11, and 12 of Cheremushki, see: G. Pavlov, *Desiatyi Eksperimental'nyi* (Moscow, 1962), pp. 3–7, Dikhter and Sherstneva, *Eksperimental'noe i Massovoe*, pp. 24–27.

development—from production and transportation to assemblage and the erection of buildings—were tested and scrutinised. With architectural and engineering institutes working together, apartment layouts were once again revised to match specific types of prefabricated components produced by the Moscow construction materials industry.[238] The result of this phase of experiment was a set of standard building types, organised in a so-called series (*serii*)—a range of standard building types based on the same production line.[239]

While experiments in Cheremushki successfully linked architectural design to engineering, they were not necessarily smoothly correlated with the construction materials industry; a lack of required prefabricated components could hinder their production. Moscow's chief architect, Iosif Loveiko, highlighted this as one of the main problems of the construction industry. In an article written in 1956 he argued that standard serial projects in Moscow were developed with standardised prefabricated components included in the *Gosstroi* catalogue; however, these elements were not yet employed in mass production by factories.[240] In other words, no matter how successful architects were in designing experiments, they had difficulties in compelling factories to implement their technologies. Loveiko argued that the construction of experimental prototypes had to correlate with a similar

[238] See, for example, the scheme of producing the components of the K7 building system: Meuser and Zadorin, *Towards a Typology*, p. 178.
[239] By the late 1950s, the industry was established for the production of a particular type of standard building types, organised in a *series*. A Soviet housing *series* did not mean a single standard design but a range of buildings with different functionality based on the same building system. See: Zadorin, 'Massovoe Domostroenie v SSSR', p. 43.
[240] I. Loveiko, 'Eksperimental'noe Stroitel'stvo – Put' k Vnedreniu Novogo, Peredovogo, Progressivnogo', *Stroitel'stvo i arkhitektura Moskvy,* 5-6 (1956), p. 3.

experiment at the factory. He suggested that an 'experimental phase' of 'at least half a year' should be included in the plans and schedules of construction factories. This phase of development had to be appropriately funded and supervised, since to master new prefabricated components not only required time but also carried a large risk of hindering continuous factory production. Within the time frame of an experiment, and in close cooperation with design institutes, factories were thus to master new types of production. Loveiko suggested that 'an experiment should not be considered complete until the possibility of serial production is ensured.'[241] Production facilities and the prefabricated components industry were located in a different jurisdiction, and design institutes rarely had the capacity to design coherent construction industries linked with housing delivery, which added to the problem of this 'disjunction.'[242] If the problems of the disjunction of standard projects with industry were relevant even on the scale of a single city, they were amplified on regional and national scales. Standard projects were even harder to use in long-distance development, since there was a good chance that the construction infrastructure and building materials required for their assembly would not be available locally.[243]

The fourth phase of experiment: off-site prefabrication of buildings

An attempt to achieve better correlation between design and industry was addressed during the fourth phase of experiment, which aimed for 'a sharp increase in the

[241] Ibid., pp. 3-4.
[242] *Gosstroi* coordinated all construction plants in the USSR. See: J. Pallot and D.J.B. Shaw, *Planning in the Soviet Union* (London, 1981), p. 41.
[243] See, for example, difficulties in the use of standard designs in the *sotsgorod* of *GAZ*: DeHaan, *Stalinist City Planning*, p. 137.

degree of prefabrication of housing factory ready products.'[244] This experiment tried to address 'the lack of engagement of science and production.'[245] In order to effectively solve problems with production, by the late 1950s, *Gosstroi* turned to a specific type of prefabrication with the highest level of off-site fabrication. Such an approach marked the technocratic ambition to assemble whole buildings from factory-produced panels. According to this vision, specialised factories would produce all components required to assemble building types in their whole complexity, which was the closest vision to the above-mentioned analogies with aircraft production discussed by the members of the Academy. This approach was effective in joining design with industry, offering economic benefits, and enabling a higher mobility of building types in long-distance developments. Low architectural variability was one of the drawbacks inherent in this technology, since it involved the repetition of a limited set of standard designs.[246]

As part of the fourth phase of experiment, projects that would become the most widespread housing delivery systems were developed. These projects were all systems based on large-panel fabrication and shared many similarities: they did not require the use of a metal frame, and all weight was distributed between the vertical panels of internal walls. The most widespread systems of the first generation were developed and advertised by separate practitioners: I-335 by Lev Iuzbashev, K7 by Vitalii Lagutenko, and I-464 by Nikolai Rozanov. The development of these

[244] TsGA, f. 321, o. 1, d. 156, l. 1.
[245] This problem was identified by Rubanenko at the meeting of the Academy: RGAE, f. 293, o. 5, d. 37, l. 60.
[246] The first generation consisted of so-called 'closed systems,' capable of producing only a small range of separate building types from a factory. See: Meuser and Zadorin, *Towards a Typology*, pp. 136-37.

building systems, sources suggest, was a highly competitive process, carried out in close cooperation with industrial facilities. Securing the right for experimental construction and the 'material base for an experiment' was often difficult for architects, since it required funding, time, labour, and factory production capacities.

One of the first off-site Soviet housing delivery systems, K7, was developed in the 9th district of Cheremushki. In his memoirs, Khrushchev discuses the development of this system, emphasising the role of its chief architect, Vitalii Lagutenko, in promoting the system and securing the support of officials. Khrushchev refers to Lagutenko as 'the first swallow, … the first architect who came to us with his practical ideas.'[247] With the help of the authorities, Lagutenko secured the right to build an experimental prototype of his system in Cheremushki.[248] After analysing the prototype building, Moscow City Council authorised the construction of the whole residential area, using this building system.[249] After revision and redevelopment of building types, Lagutenko's system was implemented in mass production, with the construction of the first specialised housebuilding factory (*kombinat*) in Moscow: a large-scale enterprise, combining all phases of housing production, transportation, and assembly.[250] In 1956–59, the project progressed from design to industrial implementation. While Lagutenko's design was the first to

[247] Khrushchev, *Vospominaniia,* p. 383.
[248] A prototypical building of the K7 system was constructed in the 9th micro-region of Cheremushki (block 14) in 1956.
[249] See: 'Krupnopanel'nyi Dom Novoi Konstruktsii', *Arkhitectura i Stroitel'stvo Moskvy,* 10 (1956), pp. 25–30, A. Bartoshevich and K. Metel'skii, 'Kvartal Krupnopanel′nykh Domov Novoi Konstruktsii', ibid.5 (1958), p. 11.
[250] K. Metel'skii and A. Rumiantsev, 'Ot Eksperimenta – k Seriinomu Stroitel'stvu! Tipovoi Proekt Krupnopanel'nogo Polnosbornogo Zhilogo Doma iz Tonkostennykh Panelei', ibid.10 (1959), pp. 4-6. On K7, see also: Meuser and Zadorin, *Towards a Typology*, pp. 178, and bibliography on p. 449.

emerge and gain prominence, its success was short-lived. Due to poor heat and acoustic insulation, and each building's limited lifespan, the system soon lost its popularity.[251] For this thesis, I will instead focus on a different project, which later became by far the most widespread housebuilding system on the union-wide level: the I-464, developed by Nikolai Rozanov. The I-464 was developed in the periphery, in the provincial town of Vyksa, near the *sotsgorod* of *GAZ*. An account of the development of the I-464 will help illustrate in further detail how the above-mentioned 'experiment at the factory' was established.

Apart from the experimental development in Cheremushki, *Gosstroi* promoted another competition in 1957 on a national scale. It specifically addressed the development of an off-site prefabrication system of residential buildings at the union-wide level. The contest sought to address the problems of creating a coherent technical production line for the proposed building type. The previous typological research was taken into account; in particular, the competition's programme suggested that the previously developed Vesnin layout be used as a model. Further, the building had to be assembled of large-size concrete components, and their production methods needed to provide for the standardisation of all components. An economic evaluation of the whole project had to be submitted, with all indicators calculated per square metre, and together, all the stages of construction up to delivery were not to exceed 1,000 rubles per m^2.[252] The project required the design

[251] See: Dikhter and Sherstneva, *Eksperimental'noe i Massovoe*, pp. 24-27. Institutional reasons, which I will discuss in Chapter 4, also contributed to the decline of Lagutenko's design.
[252] RGAE, f. 339, o. 3, d. 465, l. 16, 52.

and economic evaluation of the factory line linked with the building. Thus the competition *de facto* required the development of a complete factory capable of producing the buildings in their entire complexity. With this contest, *Gosstroi* sought a design for a universal industry that could be installed in the regions and smaller towns, and would enable the implementation of union-wide plans for housing provision.

The I-464 was one project submitted to the *Gosstroi* competition of 1957 by Nikolai Rozanov and the engineers A. Rozenfeld and V. Kocheshkov from *Giprostroiindustria.* Their system was based on domestic developments in industrial housing delivery, as well as on cooperation with the French industrial architect Raymond Camus; I discuss details of these exchanges elsewhere.[253] The prototype building system designed by Rozanov was one of many developed in the competitive environment of the late 1950s. The path to actual implementation in production in the 'over-bureaucratised' Soviet context was arduous and often prematurely abandoned. Similarly to Lagutenko, Rozanov promoted his project '*a proprio motu*' and promoted his system in a highly enterprising manner.[254] In 1957, his system was at the blueprint stage; yet in order to be seriously considered in the competition, building systems had to be presented as 'an experimental prototype': actually constructed buildings, like the ones in Cheremushki.[255] Securing the right for experimental construction proved to be a real challenge for Rozanov. Unlike

[253] See: Erofeev, 'The I-464 Housing Delivery System'
[254] RGAS, f. P-59, o. 1-4, 'Introduction.'
[255] Kossakovskii, *Pioner Industrial'nogo Domostroeniia,* p. 32.

Lagutenko, Rozanov was unable to secure a site in Moscow for an experimental construction. Through his personal connections with the minister of construction, Efim Novoselov, whom Rozanov knew from his time working in Gorky, he was finally able to acquire a mechanical engineering plant and a building site in the small town of Vyksa, near Gorky. For this reason, Rozanov had to move his whole team from Moscow out to Vyksa to carry out his experimental development.[256]

Rozanov and his team spent the whole of 1958 on the construction site in Vyksa, managing the production and construction of the experimental building. Prefabricated components for this building were produced in cooperation with a mechanical engineering plant in Vyksa. For the team at the plant, the experiment was indeed something new, as they had no previous experience in housing construction. Labourers produced most of the prefabricated components for the first experimental building manually, so industrial production was largely only imitated. Slabs were cast using unmechanised casting, which required high labour effort, and workers often had to resort to unorthodox practices. In one instance, the steam required to heat slabs was supplied from a decommissioned locomotive transported to the construction site.[257] The assemblage of the experimental building was carried out by workers without construction qualifications (Fig. 1.10–1.12).[258]

With an actually constructed building, its blueprints, and a detailed description of its

[256] Ibid., pp. 32-34.
[257] Dykhovichnaia, *Lichnoe Delo*, p. 440.
[258] RGAS, f. P-149, o. 1-1, d. 342, l. 8.

production process, the project was then submitted to *Gosstroi*. The experimental building had been produced and assembled largely in improvised and *ad hoc* circumstances. The authors, however, stressed this fact in particular as the main advantage of their system, which, they claimed, was easy enough to be implemented in the periphery, on sites with little previous experience in industrial construction. Upon evaluation, *Gosstroi* identified Rozanov's project as the most economical and easily produced system and awarded it first prize in the competition.[259] The system won the contest due to the 'ease of the construction and the simplicity of the design shape, high degree of manufacturing accuracy, high degree of off-site fabrication, [and] in the development of serial production of machines and industrial equipment … [it also promised] ten per cent lower cost and half the labour costs compared to brick construction.'[260] With the success of the experimental prototype, *Giprostroiindustria* was ordered to develop standardised designs of housing delivery.

The building system designed for off-site mass production differed from the experimental prototype. The mass production of prefabricated components required machines for the moulding of slabs. Several separate attempts to use similar machines were carried out in the USSR, starting in the early 1950s.[261] One design for mechanised moulding machines, developed cooperatively by a Moscow-based Ochakovo concrete factory and a Karacharovo machinery plant, was patented in

[259] RGAE, f. 180, o. 3, d. 391, l. 166.
[260] RGAE, f. 180, o. 3, d. 541, l. 50.
[261] See, for example, such technologies used in Magnitogorsk: *Krupnopanel'nye Beskarkasnye Doma (Opyt Stroitel'stva v g. Magnitogorske)* (Moscow, 1955).

1958.[262] The *Giprostroiindustria* requested these blueprints and sent their specialists to Ochakovo to master the technology (Figs. 1.13 and 1.14).[263] Based on this equipment, the Rozanov system was redesigned and standardised.[264] *Giprostroiindustria* produced guidelines for production and assemblage and blueprints of the equipment of I-464 factories of differing output capacities, from the smallest production line in the form of an open-air yard, to large-scale factories for the production of 280,000 m^2 per annum (Figs. 1.15, 1.16).[265] In 1958, after the high appraisal of the technology by the co-minister of construction, I. Levi, *Gosstroi* recommended the system as a basic technical solution for the implementation of the housing provision plan in the regions of the USSR.[266] Since then, its dispersal over the territory of the USSR was rapid. In 1959 alone, *Gosstroi* ordered the building of 173 housebuilding factories across the USSR, with circa eighty-five per cent of them designed by *Giprostroiindustria*.[267]

The developments of the late 1950s were led by a sense of urgency, with authorities stressing the need to meet plans for housing production. Just six months after the experimental building in Vyksa was assembled, the I-464 system began to be implemented in factories. In the first year, production began in Moscow, Vilnius, Kurgan, and Nizhnii Novgorod. In the first winter, *NIIZh* analysed the experimental

[262] 'Kassetno-Formovochnaia Mashina dlia Izgotovleniia Zhelezobetonnykh Izdelii (№118741)', *Bulleten' izobretenii,* 6 (1959), p. 54.
[263] RGAE, f. 180, o. 3, d. 541, l. 60.
[264] It was first known under the name I-605a series, and later as the I-464. Rozanov, *Krupnopanel'noe Domostroenie*, p. 13.
[265] See: *Ukazaniia po Organizatsii Komplektnoi Postavki, Transportirovke Izdelii i Vozvedeniiu Krupnopanel'nykh Zhilykh Domov Serii I-464 i I-464 a iz Panelei, Izgotovliaemykh Kassetnym Metodom*, ed. Giprostroiindustria (Moscow, 1961).
[266] RGAE, f. 180, o. 3, d. 541, l. 62–63.
[267] RGAE, f. 180, o. 3, d. 391, l. 166.

building in Vyksa and discovered serious flaws: the construction had moisture and frost penetration, which had caused mould (Fig. 1.17).[268] But the system was already being implemented in hundreds of factories. In many cases, production started in improvised 'open yards' before the proper construction of factories.[269] Rozanov later recalled that the challenge had been to submit the project at the peak of the housing campaign in 1958, when factories for industrial provision of housing were planned in regions, but not yet constructed: 'if we slowed down the game,' he remarked, 'everything would have to start from the very beginning.'[270]

The I-464 was one of the most prominent and widespread standard housing projects developed as a result of the 'decade of experiment.' Its installation marked the transition from the experimental period to the period of mass production. Its development was informed by all four experimental phases, which defined the set of apartments in the buildings and their layouts, and the shape of the building, which correlated with the scheme of a micro-region. The final design was developed in the highly competitive environment of the late 1950s and selected by *Gosstroi* out of dozens of other systems. Since it was developed in the periphery, and used regional infrastructure for experimental development, it clearly demonstrates how standard solutions were informed by the 'praxis' found on peripheral construction sites. The I-464 became not only popular but also overwhelmingly prevalent in Soviet urbanisation and swept away a myriad of other,

[268] RGAS, f. P-149, o. 1-1, d. 369, l. 31.
[269] For example, on the implementation of the I-464 series in Moscow, see: S. Maiorov et al., 'Zavod Vypuskaet Detali v Polnom Kompletke', *Stroitel'stvo i arkhitektura Moskvy,* 2 (1959), pp. 3-8.
[270] Dykhovichnaia, *Lichnoe Delo*, p. 83.

often more successful building systems. I continue discussing the use of the I-464 system in the regions in part two of this thesis.

Conclusion

The most widespread standard projects were developed as part of the *Gosstroi* competitions and subsequent development in Cheremushki. All sixteen buildings constructed in the 9th district of Cheremushki became standardised for wider replication. Over the next seven years, these projects alone accounted for fifty-five per cent of the total housing construction in Moscow (Fig. 1.18).[271] The 10th district of Cheremushki also became a prominent site for experimental development in 1963–67. Prototypes first tested in this district were in later years used to deliver 2,500 high-rises or forty-six per cent of total housing construction in Moscow.[272] Apart from testing new technologies and construction methods, the development introduced a 'social experiment,' as a new kind of experiment in social organisation of residential developments, which I discuss in Chapter 7.[273]

The focus on experimental development demonstrates the multi-disciplinary and multi-faceted nature of the development of housing provision. At each phase of experiment, designs were scrutinised and revised. The practice of the development of types was not limited to architects' offices but involved both on-site construction and post-construction scrutiny. The development of building types involved an on-

[271] Dikhter, *Materialy k Dokladu*, p. 7.
[272] Dikhter and Sherstneva, *Eksperimental'noe i Massovoe*, pp. 61-90.
[273] See: Pavlov, *Desiatyi Eksperimental'nyi*, K. Ovsiannikov and E. Baier, *Moskovskii Eksperimnet: Eksperimental'noe, Potochnoe i Unikal'noe Stroitel'stvo v Moskve* (Moscow, 1965).

site experimental process, which included inspections and redevelopment phases. A number of experiments of dissimilar nature had been carried out in each of the four phases of experimental development in Cheremushki, which included architectural, planning, and technological developments and empirical sociological studies. Writing in later years, authors specifically emphasised the feasibility of the 'complex approach' of the Cheremushki experiment: 'the feasibility of the territorial concentration of various types of experiments in a single territory and their implementation according to a unified programme has proven useful.'[274]

Since the completion of Cheremushki in 1956, the construction of 'experimental micro-regions' became a widespread practice in the USSR. Moscow City Council provided large territories, where different design and construction methods were tested under the guidance of the scientific institutes.[275] Experimental construction also became widespread in Leningrad, Kiev, and other cities, as they designated experimental (*opytno-pokazatel'nye*) micro-regions for the same purpose. Experimental micro-regions functioned as models of future living environments, where innovative proposals would be implemented in material form. Experiments in these micro-regions similarly emphasised the 'complex approach,' which was not limited to construction issues, but also addressed social questions. For example, the programme of experiment in the Iugo-Zapad district in Moscow, devised in 1959, stated that 'in contrast to the Cheremushki experiment, where it was mainly the types of apartments and houses that were tested, this [Iugo-Zapad district] is an

[274] Pavlov, *Desiatyi Eksperimental'nyi*, p. 7.
[275] I. Dikhter, *Kvartira Moskovskoi Sem'i* (Moscow, 1984), pp. 22-23.

experiment of a larger scale—it poses problems for the social restructuring of the everyday life of Soviet people, testing organisational forms of collective services.'[276]

Like Cheremushki, these other micro-regions, after their construction, became sites of post-occupancy scrutiny. The archives of *TsNIIEP* hold multiple reports on the social and technological issues of newly-built housing estates.[277] Experimental developments were in fact constantly evaluated and upgraded on the basis of this research. Such practices challenge the conventional view of Soviet housing, according to which social housing was seen as thoughtless mass production, which was only revised in the 1970s with the public critique of modernist housing and functionalist planning.[278] However, we see that through the rhetorics of experimentation, social expertise emerged and was introduced into the process of development from the very beginning of the mid-1950s housing reform. The social questions underlying housing design formed the very basis of architects' work. The empirical nature of this experimental process, with its inter-related phases reliant upon evaluation and feedback, offers a new view on the development of the Soviet housing delivery industry.

From 1959, experimental construction preceded each stage of the development (generation) of mass housing construction and was based on the corresponding

[276] RGAE, f. 5, o. 1, d. 127, l. 25.
[277] For Khimki-Khovrino, micro-regions at Leninsky and Mira avenue, and others, see: RGAS, f. P-149, o. 1-1, d. 1262. On the 10th district in Cheremushki, see: RGAS, f. P-149, o. 1-1, d. 761.
[278] On this public critique, see for example: *Ironiia Sud'by, Ili S Legkim Parom!,* dir. E. Ryazanov (Film, 1976).

normative document.[279] Under the procedures of *Gosstroi,* experimental projects had to be submitted for scrutiny.[280] As the following chapters will demonstrate, architects had more freedom in designing experimental housing. However, by no means all projects were standardised. The question of whether a constructed prototype could be converted into a series or not was of tremendous importance for architects right up to the end of the Soviet era. Paraphrasing the title of an article on one of these projects, when 'the house is built,' the major questions were still 'will there be a series?' (i.e. will it be standardised?), and whether the experiment was successful.[281]

[279] Dikhter, *Kvartira Moskovskoi Sem'i*, p. 22.
[280] RGAE, f. 5, o. 1, dd. 221–222, 314–324, 814–816. See more discussion in Chapter 4.
[281] 'Dom Postroen. Budet Li Seriia?', *Stroitel'stvo i Arkhitektura Leningrada,* 7 (1970), p. 13

Chapter 2. Housing 'small families' and single people

Introduction. Social problems of housing distribution

The main goal of Khrushchev's housing programme was to provide 'economical comfortable apartments for housing *one family* [each].[282] This formula first officially appeared in the 1957 decree on housing, the main document that regulated standard housebuilding.[283] Theoretically, from that point on, families of all kinds were supposed to receive the same level of comfort and floor space per person. However, only specific types of families prevailed in the distribution of housing. Historians have emphasised the specific role of Soviet housing in shaping the structure of an extended family. A family consisting of three or more members of several generations was especially favoured in the housing programme. Such families normally consisted of a married couple, their children, and a grandmother or one set of grandparents. Historians pointed out that such a three-generation household was considered a standard, socially accepted norm, and also was the main model for housing design.[284] Smaller families, such as childless couples, had significantly fewer chances of getting assigned an apartment to themselves.[285] A single person had virtually no chance in the system of distribution.

[282] *Decree №931 'O razvitii zhilishchnogo stroitel'stva v SSSR'*, 31 July 1957.'
[283] K.p.d.s. SSSR, *Stroitel'nye Normy i Pravila. Chast' 2. Razdel 5. Glava 10: Zhilye Zdaniia* (2edn., Moscow, 1958). See also: Meuser and Zadorin, *Towards a Typology*, p. 167.
[284] Reid, 'Khrushchev Modern', pp. 230-31, S.E. Harris, ''We Too Want to Live in Normal Apartments:' Soviet Mass Housing and the Marginalization of the Elderly under Khrushchev and Brezhnev', *The Soviet and Post-Soviet Review*, 32/1 (2005), p. 150, Attwood, *Gender and Housing*, p. 155.
[285] Attwood, *Gender and Housing*, p. 156.

Historians have claimed that single people were excluded from the distribution of apartments by the authorities, and see this fact as a failure of the Soviet project to address the needs of a significant group of the population.[286] However, in this chapter I shall argue that the problem of designing an adequate dwelling for single people became a great concern for architects and planners in the late 1950s, as it became the object of a separate experimental development. Similarly to the projects discussed in the previous chapter, this experiment involved typological research, the production of prototypes, and observations of residents. Yet, as was not the case when designing general apartments, the main concerns in this experimental development were not only about form, construction materials, and construction methods, but also about the actual function of constructed buildings.

In this chapter I discuss experiments to design housing for small families and single people. Starting with the 1958 *Gosstroi* architectural competition for small-family apartments (*malosemeinaia kvartira*), housing small families became a large programme, and included the development of building prototypes and their pre- and post-occupancy scrutiny. From 1958 to 1961, at least 220 buildings were constructed as part of this programme. By the end of this experimental period, some of these buildings were introduced into the mass production. Buildings for small families, known under the popular name of *malosemeiki*, are still present in contemporary post-Soviet urban space. This chapter will be based on an analysis of this contest, and archives and reports of the Moscow Scientific Research Institute

[286] Harris, 'We Too Want', p. 149.

for Housing (*NIIZh*), which scrutinised the buildings, giving some insight about their actual usage.[287]

The case of the development of housing for small families and single people provides a more detailed view of how the scientific discourse of experimentation was used to articulate social expertise. When designing and planning housing for single people, architects operated with demographic variables, referring to varying sources and data of sociological research within the growing body of expertise in the scientific design institutes. I argue that the discourse of experiment allowed professionals to propose alternative and sometimes quite radical social programmes.

Housing single people and small families in the USSR

The question of how to house single people was largely omitted from official discourse during Khrushchev's housing drive. However, given the post-war demographic reality, it was hard to ignore. Being single was a reality for many people: as a consequence of war, women outnumbered men by twenty million.[288] Single people represented a challenging group for the Soviet planning apparatus to quantify: it was difficult to count them, and even to define them. Although the concept of the family had been clearly defined in the census of 1926, demographers still had no clear definition of single people.[289] The first post-World War II census, conducted in 1959, defined anyone who lived alone as single, even if such a person

[287] Archive of *NIIZh* is kept in RGAS, f. P-149.
[288] S.E. Reid, 'Women in the Home', *Women in the Khrushchev Era* (2004), p. 149.
[289] I. Gerasimova, *Struktura Sem'i* (Moscow, 1976), p. 41.

financially depended on a family.[290] For this category, the figures were as high as 19.1% of the total population.[291] But this figure concealed much. More details began to emerge two decades later. In the 1970s demographers distinguished two different categories of single people: single people (*odinokie*) with no relatives, and 'people living alone,' who might have material contact with their families.[292] The first category consisted mostly of elderly people like war veterans, widows, and pensioners. Harris has demonstrated that opportunities for elderly people to be housed in the newly built housing stock were scarce. One way was to share an apartment with family members of the younger generation, assisting them in household tasks.[293] The second category mostly consisted of people younger than thirty years old, such as students, young specialists, and workers. For this group, being outside housing distribution was likely to be a temporary condition, since forming a family could represent a way into gaining a separate apartment. The standard Soviet way of life allocated a short period for young people to be single, since adult life in the Soviet Union was characterised by the duty of marriage and reproduction.[294] However, in the late 1950s, when the projects discussed in this chapter were designed, neither official demographic categories, nor actual figures of the 1959 census, were available to planners.[295] Professionals in architectural design had to use the term 'small families' (*malosemeinye*), which included both categories of single people and families of two, and, sometimes three, members.

[290] Ibid., p. 43.
[291] RGAS, f. P-149, o. 1-1, d. 742, l. 2.
[292] A. Kvasha and R. Rotova, *Demograficheskaia Situatsiia v SSSR* (Moscow, 1976), p. 20.
[293] Harris, 'We Too Want', p. 144.
[294] Rotkirkh, *Muzhskoi Vopros*, p. 66.
[295] Published in 1962. See: *Itogi Vsesoiuznoi Perepisi Naseleniia 1959 Goda* (Moscow, 1962).

Historians have identified several reasons for the exclusion of single people from the housing programme. Demographic politics, up to the time of Brezhnev, were strictly focused on reproduction. Concerned to increase the population after the war, Soviet officials promoted a strict pro-natalist family policy, which legitimised single motherhood and complicated the legal procedure of divorcing.[296] Nakachi interprets the aim of these measures as making reproduction an obligation of all people of fertile age, irrespective of family status.[297] Public housing was an effective instrument in promoting these measures. A private apartment was regarded as a gift, which 'established a reciprocal relationship between households and the state as benevolent provider,' and procreation was an implied obligation that accompanied this gift.[298] In these conditions, not only did the state have no responsibility for housing the single; singleness was a sort of betrayal of the state. The options for single people were few: they could live with their relatives, or in accommodation provided by their employer; in other cases, and most likely, single people were settled in communal apartments or in barracks.

The design programme for accommodating single people began by a direct order of Khrushchev. In his speech at the All-Union Conference of Builders in 1958, Khrushchev stressed the need to provide specialised buildings for single people:

[296] In 1941, Khrushchev imposed a tax on 'bachelor, single, and childless citizens,' following this with a 1944 pro-natalist family law. See: M. Nakachi, 'Population, Politics and Reproduction: Late Stalinism and Its Legacy', in J. Furst (ed.), *Late Stalinist Russia: Society between Reconstruction and Reinvention* (London and New York, 2006), pp. 25-29.
[297] Ibid., pp. 29-30.
[298] Reid conceptualised this idea of apartments as gifts; see: Reid, 'Khrushchev Modern', pp. 149-52.

'we are obliged to seek opportunities to meet the needs of working people in housing as soon as possible—this is now the main thing. So in our modern conditions it is advisable to build some share of residential buildings with a corridor system, similar to that of the hotels. What causes the need for such buildings? Hostels will be our circulating fund (*oborotnyi fond*). First of all, single people and small families need them … For many workers with a small family, it will be convenient to live in houses such as hotels, where the rent includes the cost of cleaning and other services.'[299] The programme was part of the anti-barrack measures initiated by Khrushchev. Historians acknowledge that rapid industrialisation had caused the separation of men and women into 'cities of bachelors' in heavy industry, and 'cities of women' in light industry.[300] Masses of unmarried workers arriving in such towns were settled in sex-segregated hostels or barracks.[301] While the family was primarily linked with reproduction and the upbringing of children, young bachelors—people in their most fertile age—might be seen as national reserves of fertility, but the lack of appropriate accommodation for this latter group could have an adverse effect on reproductive politics. In particular, Lebow has seen the lack of appropriate apartments as one reason for the perceived loosening of traditional sexual morals, what she describes as 'a moral panic.'[302] The accumulation of single people at construction sites was an apparent

[299] Khrushchev's speech is cited in Zal'tsman, *Zhilishchnoe Stroitel'stvo*, p. 22.
[300] P.H. Juviler, 'The Soviet Family in Post-Stalin Perspective', in S.F. Cohen, A. Rabinowitch, and R.S. Sharlet (eds.), *The Soviet Union since Stalin* (London, 1980), p. 232.
[301] D.A. Filtzer, *Soviet Workers and Late Stalinism: Labour and the Restoration of the Stalinist System after World War II* (Cambridge, 2002), pp. 138-9. See also: K. Lebow, 'Kontra Kultura: Leisure and Youthful Rebellion in Stalinist Poland', in D. Crowley and S. Reid (eds.), *Pleasures in Socialism: Leisure and Luxury in the Eastern Bloc* (Evanston, 2010), pp. 124-51.
[302] Lebow, *Unfinished Utopia*, p. 121.

problem for the authorities, who still proposed the same solution—of stimulating marriages at such construction sites—as a way of dealing with this problem. Addressing the 'Moscow youth' leaving for the construction works in Virgin Lands in 1955, Khrushchev stressed the colonising aspect of the unfolding urban politics: 'You are going to master the land with your own work. We don't want to leave this land in a year or two. We need to settle firmly on that land, once and for all. To do this, it is desirable that you get married there.'[303] Adequate housing for both single and married workers was the main bait to convince people to leave for the periphery and to stay there.

In his speech, Khrushchev phrased the problem in terms different to those previously used by architects. Professional views on housing single people at that time were largely informed by Alexei Zal'tsman and other experts from *NIIZh*, who carried out their own research on urban demographics. Since the 1930s, the institute had designed housing types for small families, sometimes on a *proprio motu*, without the sanction of the head administration.[304] As a general solution, the institute proposed diversifying apartment types in mass housing to make them suitable for various groups of residents, including single people.[305] The designs proposed the integration of smaller apartments for single people with general mass housing building types. In 1957, Zal'tsman proposed adding special sections for

[303] Cited in A. Kharchev, *Brak i Sem'ia v Sovetskom Obshchestve* (Leningrad, 1955), p. 77.
[304] RGAS, f. P-149, o. 1-1, d. 206, l. 73. See also the introduction to a report: RGAS, f. P-149, o. 1-1, d. 250. *NIIZh* research into newly built housing in 1958 demonstrated that families of one or two members comprised around twenty-three per cent of the total, and that twelve per cent of 'families' were single people. See: RGAS, f. P-149, o. 1-1, d. 407, l. 38.
[305] *Zhilaia Iacheika v Budushchem*, eds. B. Rubanenko, K. Kartashova, and D. Tonskii (Moscow, 1982), p. 24.

small families: vertical segments, with separate entrances, which could be added to the endings of standard buildings.[306] Another project proposed allocating small apartments on a separate floor of a standard block.[307] Both projects, intended for the cohabitation of single people alongside 'normal' nuclear families, progressed beyond the blueprint stage, since *Gosstroi* granted permission for their experimental construction in Moscow.[308]

Rather than integrating small families into an ordinary living environment, Khrushchev instead suggested settling them into separate, specialised buildings. He stressed the 'transitory character' (*transitnyi kharaker*) of such accommodation, which presumably meant that houses were introduced as a temporary support for people, who were still on their way to forming a fully functional family.[309] Similar hostel-type buildings had been constructed before; they included workers or student dormitories and army barracks, hostels of different types, and boarding houses for the elderly. Such buildings usually had departmental status, were built by enterprises according to needs, and were located on separate sites outside neighbourhoods; therefore they could not be considered as a mass housing type. The Khrushchev housing programme aimed to house the population based on the main category of family status, in contrast to the methods of late Stalinism of using housing to 'organise' populations by effectively tying them to a particular enterprise or specific construction sites.[310] 'Buildings for small families,' as proposed by

[306] RGAS, f. P-149, o. 1-1, d. 250, l. 2.
[307] RGAE, f. 339 o. 3, d. 925, l. 133.
[308] RGAE, f. 339, o. 3, d. 926, l. 2.
[309] Khrushchev, cited in Zal'tsman, *Zhilishchnoe Stroitel'stvo*, p. 22.
[310] Enterprises normally aided their workers with provision of housing: Filtzer, *Soviet Workers*, pp. 91–9. See

Khrushchev, were intended to be a mass-produced building type for a general population, whose status depended on family constitution rather than professional affiliation. Buildings for small families were neither sleeping dormitories (*obshchezhitiia*), nor permanent housing, but were placed in between, as an intermediate or 'transitory' (*perekhodnyi*) type.[311] The categories based on family status, which came to be employed in political discourse, cut through boundaries of class and profession. In officials' rhetoric, small families had not been refused the socialist gift of housing but were rather given separate specialised housing to live in.

Housing design between politics and spatial norms

After Khrushchev's speech, *Gosstroi* officially defined specialised buildings for small families (*doma dlia malosemeinykh*) and introduced them into the new edition of 'Constructive Standards and Regulations' (*SNiP*s), which prescribed separate blocks for small families with rooms of 9–15 m^2.[312] There had previously been no buildings specifically for small families in the USSR, but from now on, they were to emerge in all republics at once. *Gosstroi* organised an all-union architectural competition to 'coordinate the piecemeal efforts' of their design by regional institutes. *NIIZh* was ordered to lead the research, and, together with Alexei

also: M. Meerovich, *Nakazanie Zhilishchem: Zhilishchnaia Politika v SSSR Kak Sredstvo Upravleniia Liud'mi, 1917–1937* (Moscow, 2008).

[311] G. Grudzhis, 'Tipi Zhilishch dlia Molodezhy', *Architectural Zhilykh i Obshchestvennykh Zdanii* (Kiev, 1976), p. 49.

[312] According to *SNiP*, a private sanitary block was optional in apartments, and one toilet could be shared for six apartments. See: SSSR, *Stroitel'nye Normy i Pravila. Chast' 2. Razdel 5. Glava 10: Zhilye Zdaniia*, p. 19.

Zal'tsman, developed the programme of the competition.[313] Zal'tsman described the task as bringing people 'from communal apartments to small but still individual apartments.' Another task was that of ensuring that the state-provided square metres of 'living space' would not be squandered: single people had to receive no more than nine metres per person, similarly to the members of larger families: 'provision of [specialised] apartments for single people would not only improve their living conditions but also offer a way of more economic and efficient use of housing stock.'[314] Republican and regional design institutes were invited to design such hotel-type buildings, 'taking into account the characteristics of the local conditions of life, habits, and construction industry.'[315] For the sake of unification, new building types were to be developed on the basis of existing housing delivery systems. Moscow-based *NIIEP* and *Giprostoiindustria* were ordered to develop buildings for single people based on the I-464 system, which was discussed in the previous chapter.[316]

The design of Soviet housing typologies was informed and regulated by spatial norms and standards. Historians have shown that the all-union Constructive Standards and Regulations (*SNiP*s) defined the main characteristics of housing. *De facto*, *SNiP*s contained a numerical representation of housing, describing both minimal and maximum spatial requirements, and allowing a small window of freedom to fit designs in between these norms. However, following spatial norms

[313] RGAS, f. P-149, o. 1-1, d. 265, l. 3. *NIIZh* led research and analysis into small families. RGAE, f. 293, o. 5, d. 221, l. 69.
[314] RGAS, f. P-149, o. 1-1, d. 1091, l. 87.
[315] RGAS, f. P-149, o. 1-1, d. 265, p.17.
[316] RGAE, f. 339, o. 3, d. 926, l. 106.

was sometimes problematic in housing for single people. *SNiP*s defined a standard for living space: nine metres per person was set universally, for all standardised housing—and, theoretically, for all citizens of the USSR as a principle of the equal distribution of housing. The average for small-scale apartments, developed in the mid-1950s contests, was 27 m^2.[317] Given the norm of nine meters per person, such apartments corresponded to a family of three members (9 x 3 = 27); however, the illogicality of this approach became apparent when architects tried to plan an apartment for two people or a single person of only nine m^2, making it a reduction *ad absurdum*. Apart from spatial norms, architects felt the pressure of economic norms as well.[318] The standard cost of rehousing a person in Moscow in the mid-1950s was calculated at between nine and ten thousand rubles. This budget included all steps of housing provision, 'from the drawing-board to the housewarming,' calculated per person. An average apartment cost 55–60,000 rubles in the mid-1950s, and, therefore, was *de facto* used to house five or six people.[319] Such strikingly depersonalised mathematical calculations were the basis for the production and distribution of housing in the mid-1950s.

As with the architectural competitions for designing apartments for general families that we discussed in the previous chapter, the competition to design buildings for single people attracted a lot of projects from both republican and regional

[317] Kostandi, *Novye Tipy Kvartir*, p. 19.
[318] Housing projects were constantly scrutinised for their cost per square metre. Regional administrations were ordered to define the standard price per square metre and submit it to *Gosplan*. See, for example: *Ukazaniia o Poriadke Opredeleniia Smetnoi Stoimosti Zhilishchnogo Stroitel'stva na 1 kv. m. Zhiloi Ploshchadi. SN 6-61* (Moscow, 1961).
[319] S. Verizhnikov, *Gorod, Dom, Kvartira* (Leningrad, 1967), pp. 48-49.

architectural institutes. In 1959, *Gosstroi* received more than sixty blueprints for this competition, and a flurry of responses and suggestions from all around the union, including from Belarus, Vilnius, Georgia, and other republics.[320] *NIIZh* scrutinised the projects with varying levels of comfort, comparing their economic parameters with standard residential blocks.[321] The experiment followed similar principles to those used in the earlier experiment on standard apartments, and included construction of full-scale demonstration mock-ups (*makety*) of apartments.[322] For the sake of economy, most designs had collective facilities (Fig. 2.1).

Designing a private apartment cheaply, without exceeding living space norms, and providing a personal bathroom and kitchen in such a small place was quite a puzzle. One of the smallest private apartments consisted of ten m^2 'living space' and only an additional 3.5 m^2 for the sanitary block and kitchen (architects N. Osterman, G. Pavlov, A. Shapiro, *SAKB*).[323] Architects proposed a housing complex for small families consisting of two residential blocks linked by an adjoining collective services block. This two-storey service block included a common kitchen, a canteen, a common room, and space for other domestic services. The floors of the residential blocks had a long central corridor with rooms on either side, with as many as forty-four rooms on each floor. To make each private sanitary block small

[320] N. Naumova, 'Doma Gostinichnogo Tipa', *Arkhitektura SSSR,* 7 (1959), p. 49.
[321] RGAS, f. P-149, o. 1-1, d. 265, l. 71.
[322] RGAE, f. 339, o. 3, d. 926, l. 77.
[323] N. Osterman, 'Doma Gostinichnogo Tipa dlia Malykh Semei', *Arkhitektura SSSR,* 8 (1958), pp. 21-24. Also, see discussion of the project in B. Brandenburg and V. Grossman, *Zhilye Doma Gostinichnogo Tipa: Opyt Proektirovaniia i Stroitel'stva* (Moscow, 1960), p. 42.

enough, the toilet was placed beneath the shower; access requiring crossing the shower base. The kitchen was designed as a windowless niche adjoining the sleeping zone (Figs. 2.2–3).

NIIZh conducted post-occupancy scrutiny of the constructed buildings, which revealed that such tiny apartments caused a lot of discomfort for the inhabitants. Some problems arose due to the lack of special small-scale plumbing and compact furniture in the housing industry. The standard sink installed in the bathroom occupied almost all the available space. Furniture sometimes occupied up to eighty per cent of apartment floorspace (Fig. 2.4). The reports suggested designing special compact bath and kitchen equipment, foldable furniture, or even entire 'kitchen-blocks.' There was no space for a fridge and other crucial household appliances. Residents had to cut off part of their beds in order to fit them into the sleeping niches.[324] Carrying out ordinary household tasks was difficult in these apartments. Basic tasks like washing required use of the whole of the apartment and blocked any other activity.[325] Residents often preferred to avoid cooking in their kitchen-niches, which had no ventilation, and instead cooked in the hall, at the balcony, or even in the toilet. As there was no space for kitchen cabinets, residents had to store kitchenware in the toilets.[326] To make things worse, like most of the housing in the USSR, the small-scale apartments were severely overcrowded. Once they were given an apartment, residents, officially categorised as single, often quickly brought

[324] RGAS, f. P-149, o. 1-1, d. 742, l. 41.
[325] RGAS, f. P-149, o. 1-1, d. 1091, l. 73–75.
[326] RGAS, f. P-149, o. 1-1, d. 742, l. 43.

their relatives, dependants, or partners, to join them in the apartment. In some cases, up to eighty-two per cent of the apartments were used to accommodate not one, but two or more people.[327]

Post-occupancy research proved that the desire to apply the same spatial norms for small families as were used for larger families produced an environment hardly suitable for comfortable living. Historians have demonstrated that a particular aim of the Khrushchev housing programme was the provision of a private domestic realm. Domestic space was the subject of intensive public attention and vigorous discussion, and was designed as an autonomous private space, to provide residents with a healthy everyday life (*byt*).[328] The projects submitted to the competition by professionals struggled to provide residents with the maximum of private space. In the projects under discussion, the concept of comfort was reframed in terms of privacy. Even the smallest private accommodation was seen as an improvement compared to the conditions of communal apartments and barracks.

Designing housing with collective facilities for small families

The lack of private space in buildings for small families had to be balanced by collective amenities and serviced blocks in the form of collective facilities such as communal kitchens, laundries, and halls. The rationale for the provision of serviced buildings in the professional discourse was the presumption that small families

[327] RGAS, f. P-149, o. 1-1, d. 742, l. 18.
[328] Varga-Harris, *Stories of House and Home*, p. 85.

needed to be assisted in their daily life, as they were supposedly unable to carry out normal everyday housework due to a lack of time or willingness—something that professionals identified as their 'peculiar trait.'[329] Housework in other, multi-generational families, was normally done by the grandparents, who lived with their children's family and assisted them in household tasks, often 'literally in the position of servants.'[330] Similarly, Rotkirkh noted that the role of grandparents remained invariably important in maintaining households throughout the entire period of socialism.[331] Such conditions were hardly achievable in small families.

In serviced housing, residents were expected to eat in canteens, order takeouts, and use the communal laundry. Apart from considering primary functions, such as communal bathrooms and kitchens, architects also discussed the possibility of service blocks including an extended set of collective services, such as childcare, canteens, functional household services (room cleaning, washing and ironing, and barbers), and common rooms for both planned events and unplanned leisure.[332] Providing all these communal services may sound like an unrealistic ambition. The development of housing for single people began during years marked by a strong resurgence of utopian thinking.[333] In this optimistic atmosphere, urban planners proposed projects with catering and childcare for all residents. In 1959, officials declared, for a short time, the public upbringing of all children in state institutions

[329] RGAS, f. P-149, o. 1-1, d. 206, l. 10; RGAE, f. 339, o. 3, d. 692, l. 15.
[330] Harris, 'We Too Want', p. 144.
[331] On intergenerational assistance, see: Rotkirkh, *Muzhskoi Vopros*, pp. 143-49.
[332] See: B. Brandenburg, 'Zhilye Doma Gostinichnogo Tipa' (Candidate's dissertation, NII Zhilishcha, 1959).
[333] S.E. Reid, 'Building Utopia in the Back Yard: Housing Administration, Participatory Government, and the Cultivation of Socialist Community', in K. Schlögel (ed.), *Mastering Russian Spaces* (München, 2011), pp. 150-51. See also: J.M. Gilison, *The Soviet Image of Utopia* (Baltimore, 1975).

as an official policy.[334] Creating the correct programme of collective services depended on understanding tenants. Problems of the organisation of service blocks and their functioning triggered deeper research into people's needs and raised further discussions among professionals: Which services should be provided for single people? How should single people be supported in their condition? How could they be helped to socialise? And finally, what types of services might help them start a functional family? These questions were addressed in 1958 by a new science, just emerging in the USSR: sociology. During this 'embryonic' period of Soviet sociology, there were no dedicated sociology institutes and sociologic research was carried out in neighbouring disciplines.[335] The architectural institutes *NIIEP* and *NIIOZ* were among the first to conduct such research, where urban sociology emerged in response to the research needs of urban districts, as we saw in the previous chapter.

The questions of housing single people were addressed in 'a programme for experimental design,' devised by Alexei Zal'tsman. The *NIIZh* developed yearly programmes, issued in the form of 'suggestions' to regional institutes, meant to 'coordinate efforts in the experimental design of regional institutes.' The programme was sent to *Sovnarkhozy* throughout the republics, suggesting that local institutes should introduce buildings for single people into their plans for research

[334] See: J. Dunstan, 'Soviet Boarding Education: Its Rise and Progress', *Home, school and leisure in the Soviet Union*, 1980), p. 118.
[335] Shlapentokh refers to 1958–1965 as an 'embryonic' period of Soviet sociology. See: Shlapentokh, *The Politics of Sociology in the USSR*, p. 13. On sociologists in the 1960s, see also: B.M. Firsov, *Raznomyslie v SSSR. 1940-1960-e Gody. Istoriia, Teoriia i Praktika* (St Petersburg, 2008), pp. 326–35.

and development.[336] Buildings to house single people were suggested to house at least 500–600 people each; economically, this was the minimal density to ensure efficiency of collective services.[337] The programme suggested dividing single people and small families into different categories to better understand the actual contingent of residents, their needs, and habits, and to programme common spaces 'in accordance with different compositions of families, their ages and specifics of household management,' and amount of spare time.[338] Consequentially, Zal'tsman suggested separate building types for each of the four categories of single people and small families.

The first category was to include young bachelors, 'unmarried young specialists or workers.' This category mainly 'consisted of workers coming to industrial enterprises.'[339] They were to be housed in dormitories with two to three people in each room, in buildings with canteens and cultural and educational institutions. A second building type was suggested for small families (*malosemeinye*): households consisting of one, two, or three members: childless couples, unmarried parents, or families with members of different generations—families which were not expected to grow in size in the near future. According to Zal'tsman, *malosemeinye* were 'characterised by a high percentage of employment of family members. Housekeeping is particularly difficult for these people, so they are in dire need of maintenance and serviced housing.'[340] An extended set of collective services should

[336] RGAS, f. P-149, o. 1-1, d. 265, l. 3.
[337] RGAS, f. P-149, o. 1-1, d. 1091, l. 65.
[338] RGAS, f. P-149, o. 1-1, d. 298, l. 10–11.
[339] RGAS, f. P-149, o. 1-1, d. 298, l. 10.
[340] Ibid, l. 11.

be organised in such buildings, including canteens and childcare facilities, as well as a children's room. *Gosstroi* received enquiries from regional design institutes, wondering why a family of three should be a subject for specialised housing and not placed in an ordinary standard apartment.[341] *Gosstroi* officials responded that some of these families 'may prefer living in the hostel-type building' due to the specifics of their everyday life (*bytovoi uklad*).[342] The fact that small families were characterised not only by the number of members but by an inability to do everyday housework suggests that this definition was close to what demographers defined as 'incomplete' or 'deviant' families. In the 1970s demographers used this definition to refer to families that did not follow the path of standard 'life cycles,' based on the model of a heterosexual family with children.[343] However, already in the 1950s, families not classified as 'standard' were denied the 'gift' of a private apartment, and were instead housed in special buildings with communal facilities. Serviced buildings for this category of families were considered to be longer-term accommodation, rather than a temporary solution like that for young bachelors.

Two more building types were suggested for senior citizens who lived alone. Rather than assigning them into medical facilities and boarding houses, the programme suggested adding specialised buildings in urban areas. These 'retirement houses' were divided into two subtypes: one, for elderly people who were able to take care of themselves, 'specifically for those who lived in pairs,' and another for infirm

[341] RGAS, f. P-149, o. 1-1, d. 265, l. 33.
[342] RGAE, f. 339, o. 3, d. 926, l. 43.
[343] I will discuss these categories in more detail in Chapter 9.

people, who required additional help; these latter were assigned to boarding houses.[344] In each case, a set of collective services had to be designed, taking into consideration the particular contingent of tenants.[345]

According to the programme, Soviet citizens were divided into such groups, and all except married couples, were subject to a different type of accommodation. Each type of building had to be designed according to the requirement of a relative group and included specialised service blocks corresponding to the needs of residents, designed as closely as possible to meet the needs of different categories of residents. All, except married couples, were subject to serviced housing blocks. Given the transitory character of housing, a person who happened to be unmarried or without family was supposed to move from one specialised form of housing to another, receiving support from the state in completing household tasks and spending leisure time.

One of the first examples of the implementation of this programme on the scale of a whole micro-region was a project conducted in Cheliabinsk by the architects Georgii Gradov and Aleksei Zal'tsman. On 30 July 1958, Cheliabinsk *Sovnarkzov* assigned Traktorno-Zavodskoi district as an experimental construction site, to carry out ‘exemplary construction that will serve a model for mass housing delivery for the next 3–5 years’ (Fig. 2.5).[346] The Moscow-based *NIIZh* and *NIIOZ* (Scientific

[344] Ibid, l. 13-14.
[345] RGAS, f. P-149, o. 1-1, d. 298, l. 12.
[346] See: RGAS, f. 149, o. 1, d. 266, l. 99.

Research Institute for Public Buildings) joined together to design and plan the micro-region. According to the preliminary analysis of the contingent of people on the waiting list, small families constituted thirty per cent of the population. These statistics were taken into account to divide a 7,000-resident district into two parts: seventy per cent of buildings were reserved for standard families and designed with building from standardised housing series (Fig. 2.6).[347] The standard development began construction as a first phase. The second, experimental part, was planned for construction in 1959–60.[348] This part aimed to introduce building types for small families suggested by Zal'tsman. *NIIZh* designed dormitories for young single people, where two to three people of the same sex shared the same space (Fig. 2.7).[349] Small families were each assigned to a private room, with a shared bathroom or kitchen (Fig. 2.8). Single-storey retirement houses were designed for elderly people (Fig. 2.9). Large families of more than five members were settled into prefab cottages. Each apartment had an exit to an adjoining plot of land, 'which is not only a reservoir of clean air but also a place for rest, application of physical labour, and recreation for children.'

Pragmatically, apartment layouts had 'to ensure an equal number of square meters per person for all family types.'[350] Buildings had different heights, from one to eight storeys; separate two-storey buildings adjoining housing units were designed for

[347] RGAS, f. 149, o. 1, d. 266, l. 29–30. Series I-439 and I-447 were used. See: RGAS, f. 149, o. 1, d. 267, l. 34.
[348] RGAS, f. 149, o. 1, d. 266, l. 30–32, 100.
[349] RGAS, f. P-149, o. 1-1, d. 298, l. 12.
[350] RGAS, f. P-149, o. 1-1, d. 308.

collective services.[351] Housing blocks located within a green space formed a single micro-region.[352] With varied building types, the design of the micro-region looked much more versatile in comparison to the Cheremushki-style micro-districts with their repetitive use of standardised residential blocks of the same form. Engineers from *NIIEP* devised a common technical base and a modular system to produce the whole variety of residential blocks from one set of prefabricated components, produced locally in Cheliabinsk region.[353] In multiple publications in the professional press, the project was presented as an alternative to the Cheremushki-style micro-districts with its five-storey blocks.[354]

The design of everyday life services (*kulturno-bytovoe obsluzhivanie*) and public buildings in the experimental Cheliabinsk micro-region was designed by *NIIOZ*, led by its director, the prominent architect Georgii Gradov (Figs. 2.10–11).[355] Gradov is best known for his theoretical book on socialist urban planning *The City and Everyday Life (Gorod i byt)*, which proposed to do away with the individualism of private apartments in favour of collective housing-complexes. Published in 1968, this book was highly influential at the time, and is often cited by historians as a radical attempt to reintroduce avant-garde communal notions as an alternative to micro-region planning.[356] The experimental micro-region in Cheliabinsk became the

[351] RGAS, f. P-149, o. 5-4, d. 13.
[352] Zal'tsman, *Zhilishchnoe Stroitel'stvo*, p. 34.
[353] L. Dubek and B. Shapiro, 'Zhilye Doma dlia Experimental'nogo Stroitel'stva v Cheliabinske', *Eksperimental'noe proektirovanie,* 1 (1959), p. 11.
[354] See: 'Eksperimental'nyi Kvartal v g. Cheliabinske', *Zhilishchnoe stroitel'stvo,* 3 (1958), pp. 25–29, 'Eksperimental'nyi Zhiloi Mikroraion v Cheliabinske', *Arkhitektura SSSR,* 4 (1959), pp. 5–13.
[355] The designs of public buildings developed for Cheliabinsk were published in *Obschestvennye zdaniia*, 2 (1958), pp. 5–67.
[356] See: G. Gradov, *Gorod i Byt* (Moscow, 1968). On Gradov, see: Alekseyeva, 'Planning the Soviet Everyday', pp. 88-113, V. Khazanova, *Sovetskaia Arkhitektura Pervoi Piatiletki: Problemy Goroda*

first project to allow Gradov to articulate his views on social life in socialist cities. Gradov used the status of experimental project to put forward his radical social programme. Responding to the policy of the public upbringing of children, the project featured experimental typologies of the childcare facilities designed to facilitate a fully institutional upbringing. Nurseries, kindergartens, and day or boarding schools were envisaged to offer whole day care for children from birth to adulthood (Figs. 2.12–2.13). With common canteens, age-related specialised housing, and boarding-houses for elderly people, architects intended to liberate residents from their individual households and provide a full range of public support, from birth to the end of life.[357] At any time of his life, a person who happened to become single or a member of a 'small family' would be housed in a specialised public building and enjoy support from the state.

The project led to much discussion in the Academy.[358] Gradov promoted his experimental proposal to extend state support from childhood to pension:

> Comrades, we should provide a child with everything he needs from the day of his birth: he should be born in the maternity ward, [and] there should be a nursery, then a kindergarten, then a boarding school so that children would grow up without knowing any need, and would be properly educated to become good people, worthy workers of our society. When children grow up, they will work in collective farms, in factories, in scientific institutions, and when old age comes, a person will have the opportunity and all necessary conditions for a cultured pension.[359]

While discussing the project in the Academy, Gradov emphasised the experimental

Budushchego (Moscow, 1980), pp. 333-53.
[357] A. Zal'tsman, 'Typi Zhilikh Domov i Kvartir dlia Opytnogo Stroitel'stva', *Zhilishchnoe stroitel'stvo,* 12 (1958), p. 6.
[358] See reportes in: RGAS, f. 149, o. 1, d. 266, l. 79–91.
[359] Khrushchev, cited by G. Gradov in RGAE, f. 293, o. 5, d. 345, l. 137.

status of his project to justify its deviations from norms: ‘we set the task not to fit into existing norms, but to criticise them. This is the purpose of the experiment. If the pilot project does not involve risk, then the experiment itself is meaningless.’[360] Here, we see a different use of experimental development from the cases discussed in the previous chapter. Rather than experimenting with construction through typology, experiment is used as a vehicle for projects of social planning.

In practice, the experimental part of the micro-region faced difficulties in implementation. After completing the first stage of standard housing, the project stalled.[361] At a meeting in the Academy, Gradov complained: ‘Our institute began the experimental design for Cheliabinsk. We were received there with great willingness, but now the hundrum of life begins: in order to design, we need funding, but there is no appropriate article in *Gosplan*. Experiment requires additional costs for construction, but there is no funding.’[362] The experimental part of the project was in fact never implemented in Cheliabinsk. The project nonetheless evolved in the theoretical dimension. In 1961, Gradov published the blueprint as the theoretical idea of a collective micro-region, in which he proposed differentiating housing according to family type.[363] The experimental project was published without specifying any real place of implementation, but rather as a polemic statement proposed as a general urban model. The project laid the foundation for the more developed theory later articulated in Gradov’s book *The*

[360] RGAS, f. P-150, o. 3-6, d. 51, l. 96–97.
[361] D. Navalikhin, 'Chto Zaderzhivaet Stroitel’stvo Microraiona v Cheliabinske', *Na Stroikakh Rossii,* 3 (1960), pp. 34–37.
[362] RGAE, f. 293 5 d. 129, l. 160.
[363] G. Gradov, 'Kollektyvnyi Zhiloi Raion Novogo Tipa', *Obshchestvennye zdaniia* 2(1961), p. 30.

City and Everyday Life. Yet, Gradov was not only an author of polemic statements about communist cities but also, as a director of a major design institute, he was in charge of economically and technically elaborate type designs that were widely used in the USSR. The design of the micro-region in Cheliabinsk could be seen not only as a polemic statement but also as one such elaborate project, based on social expertise and the social categories used by professionals to describe the Soviet population at the time.

Supporting small families and single people through state infrastructure was not merely a Soviet concern, but part of a wider global discourse that emerged in welfare states.[364] The work of the *NIIZh*-based specialists Boris Brandenburg and Regina Mkrtchian on housing with collective services shows that they identify as part of this global discourse. Two major references were the avant-garde social projects and the Western experience of housing single people. In his dissertation, Brandenburg shows a deep knowledge of the avant-garde construction of housing communes, as well as providing multiple references to the organisation of collective services for single people in welfare states, as in Czechoslovakia, Sweden, and the USA (Fig. 2.15).[365]

In the USSR, housing design for single people was highly gendered, showing a strong belief in the natural division of the sexes and a high degree of ‘compulsory

[364] See: I. Anderson and J. Morgan, *Social Housing for Single People? : A Study of Local Housing Policy and Practice* (Stirling, 1997).
[365] See: Brandenburg, 'Zhilye Doma Gostinichnogo Tipa'.

heterosexuality.'[366] Mkrtchian suggested, for example, that single women needed larger kitchens so they could cook, while apartments for men could make do with smaller kitchen-niches, presuming that men are less inclined to cook at home.[367] As Lapidus argued, the concept of the Soviet family rested on an underlying belief of the sexual division of labour and a natural division between roles of partners—so it was reflected in housing design. That was not just a Soviet view; Western housing projects of the same time sometimes displayed even stronger gender assumptions. Western practice of the time.[368]

Apart from Gradov's project, the programme for the experimental design of houses for small families was never implemented on the scale of a micro-region, but separate buildings were nonetheless constructed in the USSR. In 1963 alone, at least 150 buildings for small families had already been constructed, and another seventy were under construction in Moscow.[369] Building types for small families were introduced in the catalogues of types of most popular housing series.[370] They emerged in various regions of the USSR, even in the Central Asian republics, where large families were a distinct historic and cultural phenomenon.[371]

[366] On 'compulsory heterosexuality,' see: A. Rich, 'Compulsory Heterosexuality and Lesbian Existence', *Signs*, 5/4 (1980), pp. 631-60.
[367] R. Mkrtchian, *Praktika Proektirovaniia, Zaseleniia i Ekspluatatsii Zhilykh Domov dlia Malosemeinykh v SSSR* (Moscow, 1968), p. 30.
[368] Discriminating between male and female residents and designing different housing for each group was typical for European practice of that time. The building for single people at the 'Interbau Exhibition' was divided into two sex-segregated blocks: *Opyt Stroitel'stva za Rubezhom: v Stranakh Severnoi Evropy i FRG* (Moscow, 1959), p. 528. Brandenburg provides examples of blocks for single women in Oslo: Brandenburg, 'Zhilye Doma Gostinichnogo Tipa', pp. v. II, figs. 25.
[369] RGAS, f. P-149, o. 1-1, d. 742, l. 3.
[370] Series 446, 445, 444, 464. See: RGAS, f. P-149, o. 1-1, d. 407, l. 26–27.
[371] RGAE, f. 339, o. 3, d. 926, l. 32. On the politics regarding Central Asian families, see: L. Attwood, *The New Soviet Man and Woman: Sex-Role Socialization in the USSR* (Basingstoke, 1990), pp. 4-6.

Research conducted by *NIIZh* in 1964 analysed 1,681 apartments used to house 3,314 people, and provides some insight into how these buildings were used (Fig. 2.16).[372] The age-related categories devised by Zal'tsman were issued in the form of suggestions and employed in the architectural lexicon, yet they tended not to be used officially. Few projects meticulously followed Zal'tsman's recommendations (Fig. 2.15).[373] Most of the buildings constructed were designated for small families (*malosemeinye*) in general, without stating explicitly that they were designed for any particular family type. However, *NIIZh* reports suggest that planners and officials responsible for housing distribution did bear Zal'tsman's categories in mind. For example, while buildings for elderly people were not officially constructed in the USSR, Moscow city administration *de facto* designated to them one of the buildings for single people in the 10th district of Cheremushki. Up to ninety per cent of the residents of this building were over fifty years old, and mostly unmarried women.[374]

The *NIIZh* reports identified issues with the organisation of serviced blocks as the major problem of the experiment. The evaluation of experimental buildings revealed that most service blocks did not operate correctly after construction. In most cases, the city administration could barely secure budgets to properly run common services. Common services required sufficient clients; for normal turnover, a canteen required a minimum of 270 visits per day; yet buying food from

[372] RGAS, f. P-149, o. 1-1, d. 742, l. 4.
[373] See designs for 500–600 and 1000–1200 by Brandenburg: Brandenburg, 'Zhilye Doma Gostinichnogo Tipa', pp. figs. 144, 45.
[374] RGAS, f. P-149, o. 1-1, d. 761, l. 16. See also the 1964 report on housing for *malosemeinye*: RGAS, f. P-149, o. 1-1, d. 742.

the canteen was more expensive than cooking at home.[375] There were no administrative staff in charge of communal services, so communal bathrooms soon became filthy and unsuitable for use. The city administration proved unable to run cooperative shops and canteens in these buildings. Some common spaces were repurposed for storage rooms, while others were converted into additional living space. In one building in Tashkent, a communal shower room was in fact used to house a whole family.[376]

Other problems were caused by residents rather than by failures of organisation. In many cases, to the chagrin of planners, residents were reluctant to use services, even if the services operated well. For example, in Tallinn, the city administration hired thirteen employees to run a canteen in the building for small families, and reserved a considerable budget of 600 rubles per month for their salaries. However, residents of the building tended to prefer cooking individually, finding canteen food expensive and inadequate.[377] According to a survey, more than ninety-six percent of residents of these buildings preferred to eat at home.[378] Similarly, most other living units were not used as architects intended. Improper use, rather than design flaws, was seen as the major problem in these housing developments.

A few experimental projects were, however, evaluated as successful; among them was a 'building for young specialists in Tallinn,' which was functioning 'in full

[375] RGAE, f. 339, o. 3, d. 692, l. 23–24.
[376] RGAS, f. P-149, o. 1-1, d. 742, l. 39.
[377] RGAS, f. P-149, o. 1-1, d. 742, l. 39–40.
[378] Ibid, l. 49.

accordance with the [initial] project.' The building was designed for the employees of local research institutes. According to this project, unmarried residents were assigned to live together in pairs in a single space, but they were free to choose their single-sex partner: 'female friends' (*podrugi*) or 'male comrades' (*tovarishchi*). However, the 'success' of the project was largely due to the departmental status of the building—the building was commissioned, funded, and used by a single contractor, the local *Sovnarkhoz* (Fig. 2.17).[379] The same organisation was in charge of housing residents and running all facilities in the building. Residents were only allowed to stay for a maximum of three years in the building, while waiting for their apartment. During the two years of operation, the administration ensured that families were housed in accordance with the programme. Couples with children were systematically rehoused into standard private apartments.[380] Having a similar professional affiliation and age, the residents had a much more positive experience in their cohabitation and running of communal spaces. The fact that a building designed for specialists was held up as one of the few successful examples demonstrates that underlying class and professional issues had never been overcome, despite Khrushchev's ambitions to achieve egalitarism in housing distribution. Enterprises had considerably more flexibility in organising and funding 'experiments' in housing their employees.

Conclusion: On the 'revitalisation of the avant-garde housing schemes'

[379] RGAS, f. P-149, o. 1-1, d. 742, l. 19–20.
[380] Ibid.

In 1958–1965, the newly built housing for single people and small families was constantly scrutinised and discussed among professionals. Regarding the general evaluation, architects identified several 'external' implications, such as problems of distribution and building use, as a major hindrance to the experiment. The actual residents were selected by local administrations beyond the control of architectural institutes. Architects claimed that the results of the 'experiment' could be objective only if buildings were occupied by the contingent for which they were designed and if affordable public services were provided.[381] The experiment revealed a lack of coordination between designers and local city administration in managing supply and housing, as well as the limited agency of architects in the question of housing distribution. However, in general, *NIIZh* evaluated the provision of such housing as a success, which allowed 'more economical and efficient use of housing stock and state funds.'[382] The *NIIZh* revised and reissued suggestions regarding the design of housing for small families. In particular, the institute recommended avoiding the tiny apartments of nine m^2 discussed earlier in this chapter, and suggested a norm of eighteen m^2 as the minimum for a private apartment. By the mid-1960s, buildings for small families were introduced into the catalogue of sections of I-464 and other popular housing series (Figs. 2.18–19).[383]

In some aspects, buildings with small apartments and collective services and dining rooms resembled the functionality of the constructivist housing communes (*doma-*

[381] RGAS, f. P-149, o. 1-1, d. 1091, l. 79. See also: Mkrtchian, *Praktika Proektirovaniia*, p. 30.
[382] RGAS, f. P-149, o. 1-1, d. 1091, l. 87.
[383] With or without serviced blocks, based on I-464. A building of a combined type, designed by *NIIZh*, was included to the serie I-464 (1-464A-13), as well as series 446, 445, 444. See: RGAS, f. P-149, o. 1-1, d. 407.

kommuny) of the 1920s.[384] In designing housing for single people, architects were well aware of these earlier avant-garde projects.[385] Experimental projects, like the one of Zal'tsman and Gradov, enabled historians to describe the architecture of the later 1950s as an attempt at the 'revitalisation of the avant-garde,' due to the radical ambition of increasing the role of the state in people's lives.[386] As the sources discussed here demonstrate, it was the institualised experimental status of the project that enabled communalised housing to be developed and seriously discussed. Furthermore, there were important differences between avant-garde housing-communes and the projects of the 1960s. While the former intended to induce social changes into society as a whole, the latter targeted a specific group of presumably vulnerable single people, and involved the paternalistic discourse of providing state support.[387] Apart from on rare occasions, such as the 'House of the New Way of Life' which I discuss in Chapter 7, housing projects in the 1960s never aimed to substantially redefine the concept of family.[388] The Soviet family was seen as the primary cell of socialist society and the housing programme gave families the privacy of their own apartment.[389] However, housing for single people was established as a niche where the avant-garde expertise about minimal housing continued to be elaborated, although without the rhetorics about the global

[384] On the architecture of Narkomfin Communal House, see: Buchli, 'Narkomfin Communal House', pp. 160–81.
[385] See, for example: Brandenburg and Grossman, *Zhilye Doma Gostinichnogo Tipa*, pp. 24–28.
[386] On 'revitalisation', see: Bittner, 'Remembering the Avant-Garde', pp. 553–76, A. Kopp, *Town and Revolution* (London, 1970), p. 2.
[387] Buchli, 'Narkomfin Communal House', p. 162.
[388] D. Field, 'Mothers and Fathers and the Problem of Selfishness in the Khrushchev Period', in M. Ilič, S. Reid, and L. Attwood (eds.), *Women in the Khrushchev Era* (Basingstoke, 2004), p. 96. See also: Attwood, *Gender and Housing*, pp. 154–79.
[389] Reid, 'Building Utopia in the Back Yard: Housing Administration, Participatory Government, and the Cultivation of Socialist Community', p. 150. On the paradoxes of public and private life, also see: L. Siegelbaum, *Borders of Socialism: Private Spheres of Soviet Russia* (New York and Basingstoke, 2006), D. Field, *Private Life and Communist Morality in Khrushchev's Russia* (New York, 2007).

restructuring of everyday life.

The project for housing small families started from the benevolent task of bringing these people out of communal apartments and barracks and into the same universal standards enjoyed by standard families. However, the modernist promise of equal living conditions based on universal spatial norms frequently led to adverse results when applied to small apartments. While the Soviet mass housing project was generally able to avoid residents' segregation, buildings for single people often came to function as condensers of precarious living conditions. Both city administration and designers tended to avoid these buildings and their practical usage never became widespread.[390]

The design of communal houses reveals an ambition to control and programme the living environment to shift boundaries between the private and the public spheres. Architects saw building types for small families as a tool that, if correctly used, could lead to desirable results. However, neither architectural institutes nor city administrations had enough agency to run this expensive housing as required. The housing communes of the 1920s had faced similar problems, since once constructed, they proved to be too expensive and impractical.[391] The major question was that of finding a way to guarantee the correct running of buildings during the severe scarcity and housing shortages in the USSR. Chapters 7 and 8 will discuss

[390] Zal'tsman, *Zhilishchnoe Stroitel'stvo,* p. 21.
[391] K. Gerasimova, 'The Soviet Communal Apartment', *Beyond the Limits: The Concept of Space in Russian History and Culture,* 1999), p. 113.

how the concept of ‘social experiment’ was employed to run controlled experiments on community building in housing projects.

The experimental design and construction involved in the development of housing for single people addressed issues of typological research—the construction and evaluation of building prototypes for their further inclusion into the catalogue of standard designs. The development of building types for small families triggered concrete sociological studies, which were carried out by architectural departments as early as the mid-1950s, just when sociology was beginning to emerge in the USSR. Through surveys, professionals accessed the real conditions of people’s life in newly constructed housing. The institutional reports on buildings for single people remained largely unpublished or issued as departmental ‘grey’ literature (*DSP*), however they were known to professionals almost two decades before the first official publications of demographers.

Chapter 3. From Cheremushki to collective farm settlements: experiment in the countryside

Introduction

The Thaw-era modernisation projects were not limited to the provision of urban housing. Khrushchev's politics were also inclined towards large-scale regional programmes and reforms, as well as ambitious rural projects, including the redevelopment of agricultural production and the Virgin Lands campaign, which aimed to construct agricultural settlements in deserted steppe regions. The late-1950s politics of the development of the countryside were characterised by a purely urban understanding of rural development.[392] One of the principal ideological commitments of the Soviet rural policy of the 1950–60s arose from the Marxist dogma of eliminating differences between town and countryside. Policy makers aimed to supplant the formerly complementary relations between cities and villages, with two major implications. First, architects envisaged that collectivisation would allow for gigantic farms that could dramatically increase agricultural production.[393] The dispersed network of these settlements would offer an alternative to overcrowded capitalist urban conglomerates and the 'unproductive and backward' rural areas that sustained them. Second, it called for the formation of a class of 'agricultural intelligentsia,' turning peasants into specialists in industrialised agricultural production and educating them culturally. This task had to be addressed

[392] N. Melvin, *Soviet Power and the Countryside: Policy Innovation and Institutional Decay* (Basingstoke, 2003), p. 53.
[393] Scott, *Seeing Like a State*, pp. 30, 196.

by introducing a material basis for culture in rural areas—by deploying cultural and educational infrastructure in villages. In theory, at least, such settlements required a full range of 'urban-type' services and accompanying living standards. These double aims could be achieved by transforming the villages into agro-cities (*agrogoroda*), highly urbanised settlements with multi-storey buildings, industrialised production, and city centres with public buildings. In the programme of rural redevelopment, these settlements would form a self-sustained network, while outdated traditional villages would be left to fade away.[394]

While this policy dates back to the 1930s, it was under Khrushchev that the concept of agro-cities was introduced into mainstream politics. The enlargement of collective farms was, according to Tompson, Khrushchev's *idée fixe* and he promoted it up to his last days in office.[395] The principle of converting villages into highly urbanised settlements was introduced in the programme of the Communist Party of the Soviet Union and became an official agricultural policy in 1961 (Fig. 3.1).[396] The aim of the programme was to make the entire Soviet population 'urban' in terms of living conditions and services.[397] Apart from housing, the 1959–65 Seven-Year Plan prescribed the delivery of enough nurseries for almost half a

[394] J. Pallot, 'Rural Settlement Planning in the USSR', *Soviet Studies*, 31/2 (1979), p. 217.
[395] W.J. Tompson, *Khrushchev: A Political Life* (New York, 1997), p. 100. Khrushchev's views on agriculture were formed in the late 1940s, when he worked as First Secretary of the Ukraine Regional Committee, imposing collectivisation in Western Ukraine, where the first industrialised rural settlements were created; see: W. Taubman, *Khrushchev: The Man and His Era* (London, 2003), p. 180. On the development of the urbanised agricultural settlement in Kherson region in 1948, see: D.R. Marples, *Stalinism in Ukraine in the 1940s* (Basingstoke, 1992), p. 62, Tompson, *Khrushchev*, p. 101.
[396] Pallot, 'Rural Settlement Planning', p. 216.
[397] R.A. French and F.E.I. Hamilton, *The Socialist City: Spatial Structure and Urban Policy* (Chichester, 1979), p. 74. The officials, however, tended to avoid using the term *agrogorod*, preferring to refer to these developments as 'urban-type centres,' and the phrase 'urban place' was used to cover all settlement types; see: Melvin, *Soviet Power and the Countryside*, p. 47.

million children, and clubs and palaces of culture with a total of 400,000 places.[398]

The need to develop industrial building types for rural settlements of collective farms triggered extensive experimental developments. This chapter looks at two rural settlements, which served as experimental construction sites for the countryside in 1959 and 1964. The first is the village of Kalinovka, located near the Ukrainian border in the Homutovskii region. Kalinovka was Krushchev's own hometown, and under his auspices, it was among the first village to be converted into an industrialised settlement under the new agricultural politics. The second is Zaria Kommunizma in Moscow region, where industrial technologies for rural development were mastered. Architects characterised the development of these settlements as experimental. Contemporary scholarship has dismissed these claims, instead tending to analyse developments like these as harmful high-modernist technocratic experiments, which radically changed the natural way of life in the countryside and imposed an alien, urban living environment.[399] My intention is to bring attention to the agency of architects and planners who participated in such projects and to see what opportunities such projects offered specialists at design and planning institutes.

[398] A. Obraztsov, 'Obshchestvennie Zdaniia Kolkhoznoi Derevni', *Eksperimental'noe proektirovanie,* 3 (1960), p. 20.
[399] James Scott uses one of the urbanised settlements, 'Vechniia Troitsa,' built in the 1930s, to illustrate his high-modernist concept. Scott, *Seeing Like a State*, p. 214. On the late-Soviet architecture of Estonian collective farms, see: L. Ingerpuu, 'Socialist Architecture as Today's Dissonant Heritage: Administrative Buildings of Collective Farms in Estonia', *International Journal of Heritage Studies,* 2018), p. 3, M. Kalm, 'Is Urban Life in the Countryside Good? The Central Settlements of Collective Farms in the Estonian Ssr', *Kunstiteaduslikke Uurimusi,* 4 (2008), pp. 84-87.

The settlements were designed and planed by the first institute which specialised in experimental design: the Moscow-based Scientific Research Institute for Experimental Design (*NIIEP*), previously discussed in Chapter 1. This chapter looks at how, with institualisation, the experimental approach becomes a more complex and multilateral activity. In the design of complete settlements, it included the development of new building types and new approaches to planning. While building types were adapted for the requirements of rural infrastructure and the perceived needs of collective farm workers, they were also informed by the requirements and scale of the infrastructure and by long-time regional development plans.

NIIEP was founded in 1958 as part of the policy of standardisation and industrialisation of residential construction in regions.[400] The particular mission of the institute was to design for regions where standard projects were in short supply. The industrialisation of construction was a union-wide political aim and it was especially difficult to achieve in the periphery, where there was neither a developed construction industry nor strong regional architectural practices. *NIIEP*, and later *TsNIIEP*, were designed as part of the politics of regional development, which I discuss in more detail in Chapter 4. *NIIEP* was effectively banned from development in Moscow and other large cities in order to focus on the provinces.

The article 'A Year in Experimental Design,' published in the journal *Experimental*

[400] *Gosstroi* order №12, 17 January 1958, see: RGAS, f. 149, o. 8-6, l. 15, 'Predislovie.'

Design issued by *NIIEP* in 1959, demonstrates some of the ambitions of the new institute: in its first year, *NIIEP* designed new types of rural buildings, hotels, sanatoriums, shop buildings, and a whole spectrum of residential building types, from village cottages to high-rises (Fig. 3.2).[401] These experimental projects had to be developed in cooperation with other scientific research institutes. As Vlasov described their role, 'the newly founded *NIIEP* should help other design and planning institutes to create high-quality building prototypes. Relying on scientific, methodological assistance from the typological institutes of the Academy, and in cooperation with them, *NIIEP* should help ensure the active participation of all related scientific disciplines, which in one way or another are relevant for the problems of contemporary construction. Experimental construction should access the latest achievements of contemporary science and building physics (acoustics, colour science, or pedagogy in the case of children's institutions).'[402] Hence, in its initial setting, the institute was to serve as a hub, providing the means for experimental design for the entire spectrum of residential construction in both urban and rural regions. This was why *NIIEP* designed its experimental region, discussed in the previous chapter in Cheliabinsk, a town located close to the Urals. During its early years, the institute also designed projects for other towns in the Urals and Siberia: Akademgorodok, Kemerovo, and Kramatorsk. In particular, the institute's mission was to supply designs to completely unindustrialised areas: collective farms, hydroelectric power plant settlements, and rural settlements.[403] The design of

[401] B. Rubanenko, 'God Raboty v Oblasti Eksperimental'nogo Proektirovaniia', *Eksperimental'noe proektirovanie,* 1 (1959), pp. 3–8.
[402] RGAE, f. 293 o. 5, d. 222, l. 43.
[403] See articles by P. Volchek, E. Iokheles, *et al*. in *Eksperimental'noe proektirovanie,* 3 (1960).

the settlement of Kalinovka was the first of such projects.

Experimental design and Thaw-era agricultural policies

Kalinovka was the first 'experimental' collective farm to be built on an urban principle. Located near the present Ukrainian border, in the Homutovsky region, this village had to be converted into a highly industrialised settlement. Kalinovka was one of the poorest villages in the region.[404] In the whole Homutovsky region, roads were scarce and the settlements lacked infrastructure.[405] Sewerage and water supply were present only in the district centre. Out of 192 collective farms in the region, only twelve were electrified. Khrushchev ushered in the development of Kalinovka from his first year in office. The first stage of the modernisation of the village took place in 1954–58 and was carried out by the Scientific Research Institute for Rural Construction (*NIISZ*).[406] When the work began, Kalinovka was home to roughly 1,000 people, who lived in the region's traditional wooden huts (*izby*) with thatched roofs.[407] Architects introduced a club and other administrative buildings and suggested a modernised version of a traditional hut. This was constructed from 'durable materials'—bricks and concrete (Fig. 3.3). Replicating the ground plan of a traditional house, it had a pitched roof, and internal space was organised around a stove. By 1958, fifteen modernised huts were constructed and employed to rehouse peasants. Peasants tended to dislike the quality of construction, which had been carried out by urban specialists, and preferred to

[404] Taubman, *Khrushchev*, pp. 27, 193–95.
[405] The total length of roads in the whole region was only 450 km: RGAS, f. P-570, o. 1-1, d. 33, l. 8–13.
[406] RGAS, f. P-570, o. 2-6, d. 49.
[407] RGAS, f. P-570, o. 1-1, d. 72, l. 109.

disassemble and reinstall the stoves themselves.[408] Carrying out this 'modernisation,' the *NIISZ* continued to promote the general method of rural development that had been in place since the 1930s. In contrast to the policies of the 1950s, the Stalinist collectivisation of the 1930s rarely meant total redesign of the village. Collective farms were founded on the basis of existing villages. Planners normally introduced specific buildings to form the public centre: new 'socialist' building types, such as working clubs or village councils. Modernised private houses were provided to serve as the main 'reward' offered to rural communities in exchange for collectivisation. Practices for developing these typologies were consolidated in 1934 with the foundation of the architectural department for rural construction in the Academy of Architecture.[409] The *NIISZ* followed this tradition.

A fundamentally different, second stage of modernisation began in the region in 1958.[410] Kalinovka was selected as a centre for the complete redevelopment of agricultural production and living environment in the Homutovsky region.[411] Rather than developing just one settlement, the project—developed co-operatively by the economic, agricultural, and architectural institutes—established a plan for the 'radical reorganisation' of the whole region.[412] Moscow-based institutes developed a masterplan for the region and a time-based projection for the duration of its development up to the year 1980.[413] According to the plan, the 196 existing villages

[408] RGAS, f. P-570, o. 2-6, d. 49, l. 6.
[409] V. Kalmykova, *Arkhitektura Sovetskogo Sela* (Moscow, 1975), p. 38.
[410] RGAS, f. P-570, o. 1-1, d. 72, l. 115–34.
[411] RGAS, f. P-570, o. 1-1, d. 72, l. 47–54.
[412] See: RGAS, f. P-570, o. 1-1, d. 33, l. 13–36.
[413] Masterplan by the *TsNIIEP Gradostroitel'stva*, a time-based development plan by the Academy of Agricultural Sciences (*VASKhNIL*), the plan for cultural-recreational development of the territory by *NIIOZ*;

in the region were divided into three categories: nine 'viable' (*perspektivnye*) settlements, twenty villages with temporary status, and the remaining 167 villages as 'non-viable' (*neperspektivnye*). The 'viable' settlements were to grow until they reached the minimal 'rational size'—a population of 2,500—and would then be converted into agro-industrial towns. The 'temporary villages' were planned to be used for no longer than fifteen years, while the 'viable' settlements were still under construction; only temporary structures would be allowed, and capital construction was banned. In the 'non-viable' settlements, all construction was forbidden and these settlements would be left to die out. In the long-term, only nine settlements were to survive. Compared to their original size, the reconstruction implied a 20-fold enlargement of the 'viable' settlements (Fig. 3.4–5). Future settlements had to form a self-sustainable network, with each settlement adopting rationally devised functions and specialisations.[414] Thus, at the second stage of development, Kalinovka was intended to fit into a network of settlements in the Homutovsky region. In addition, to be developed in the first place, it also had to serve as a model for the urbanisation for other villages.

NIIEP was responsible for the masterplan itself and the detailed planning of Kalinovka. The *NIIEP*-based architect A. Obraztsov designed an astonishing ensemble of buildings for Kalinovka's city centre (Fig. 3.6).[415] The settlement plan for 5,000 people was divided into zones corresponding to different functions,

construction types defined by *NII ekonomiki stroitel'stva*, and design of the buildings by *NIIEP*. See: RGAS, f. P-570, o. 2-6, d. 49, l. 35–36.

[414] RGAS, f. P-570, o. 1-1, d. 33, l. 29.

[415] Obraztsov, 'Obshchestvennie Zdaniia', pp. 20–37. See also: A. Vostokov, 'Planirovka Kolkhoznogo Poselka Kalinovka', ibid.5 (1962), pp. 49-58.

including a production zone and residential and recreational areas, organised around a public city centre. The plan made good use of existing green zones ('the major benefit of the country life,' according to Obraztsov), but also introduced man-made 'improvements' to the area: wetlands were drained with an artificial lake and some of the native flora was exterminated with chemical agents. The geometrically-designed city centre contained a square 'where a rally or a demonstration could be held,' and a set of urban-type public buildings: a library, a shop, and a canteen where collective farm workers would eat. A road connected the square to a recreation area, with an outdoor cinema and a lecture hall, a dance floor and a boat dock.[416]

This development was qualitatively different from the approach of *NIISZ,* which specialised in rural development, was led by rural architects and planners, and developed rural building types. These rural experts had been developing a 'scientific basis' for the future of the countryside from the early 1950s.[417] *NIIEP,* in contrast, operated with urban building types and a high degree of industrialisation. By ordering *NIIEP* to take the leading role in development of the settlement of Kalinovka*, Gosstroi* deliberately sent urban-based planners and architects to 'go down' to the countryside, and develop it according to a purely urban understanding of city planning. A major question in the discussion of the masterplan concerned the type of houses that farmers would occupy. Five different masterplans for the residential areas were developed, between which the proportion of pitched roof

[416] RGAS, f. P-570, o.1-1, d. 72, l. 131.
[417] See disserations of A. Peremyslov, L. Budenyj, and V. Ryazanov: Kosenkova, *Sovetskii Gorod*, p. 150.

rural single-family homes varied from one hundred per cent to only three per cent. Officially, farmers had to choose the appropriate option themselves; the task of *NIIEP* was to cooperate with them, to 'assist collective farmers technically, following their will.' Kalinovka's chairman, Vasilii Grachev, members of the local administration, and collective farmers—eighty people in total—were invited to meet with the architects in the Union of Architects in Moscow to present their views on the most appropriate living environment.[418] According to the institutional publication, they came to the meeting firmly intending to insist on traditional detached single families houses. However, they left 'convinced' of the benefits of multi-storey blocks.[419] The basic premise for a dense residential area was that it was a precondition for the development of infrastructure, including water supply and heating and communication systems. Various models and graphs were displayed to convince peasants of the economic viability of the proposed solution.

Persuading peasants radically to change their habitat by accepting apartments in multi-storey blocks is reminiscent of the way in which peasants were originally 'persuaded' to join collective farms in the 1930s.[420] In both cases, appeals to the will of residents could be a subject for speculation but the projects of settlement modernisation were far from being a case of user-led design. In the case of Kalinovka, peasants were persuaded with economic arguments rather than coercion. Housing was part of the deal for securing state investments in the village's

[418] RGAS, f. P-570, o. 2-6, d. 49, l. 24–26.
[419] P. Volchek, 'Novye Tipy Zhilykh Zdanii dlia Stroitel'stva v Sel'skoi Mestnosti', *Eksperimental'noe proektirovanie,* 3 (1960), p. 8.
[420] See: S. Fitzpatrick, *Stalin's Peasants: Resistance and Survival in the Russian Village after Collectivization* (New York and Oxford, 1994).

redevelopment.[421] There is evidence that peasants' agency in choosing the direction for the investments was limited, since it was coordinated by the scientifically-grounded programme devised by a number of design and planning institutes. The peasants were thus convinced by questions of economic interest and promises of the increased fertility of their farm after industrialisation. The peasants of Kalinovka eventually received many benefits from state investments. At the same time, peasants had to participate in often erratic and utopian Khrushchevian projects. Kalinovka's chairman, Grachev, took up the challenge of the 'Riazan miracle' to exceed the meat production plan in 1958–59 and was even awarded the title of Hero of Socialist Labour.[422]

In the final version, all the wooden houses and other developments from previous stages of construction were 'not recommended for preservation,' and were to be demolished in time.[423] However, at that point, there was no convincing practice of high-rise development in rural areas, and *NIIEP* aimed to develop one. Cost-efficient residential buildings were already under construction in the coal industry. A series of four-storey buildings were developed in 1954–55 by a departmental institute of the coal industry (*TsentroGiproShakhtStroi*) to house miners in the Krivbas and Donbas regions of Ukrainian SSR.[424] Their technological expertise,

[421] Construction in Kalinovka was funded by ample state investments: Taubman, *Khrushchev*, p. 12.
[422] N. Khrushchev, *Stroitel'stvo Kommunizma v SSSR i Razvitie Sel'skogo Khozaiistva* (8 vols, Moscow, 1962), 3, p. 392, T. Karimov, 'Grachev Vasilii Vasilievich' http://www.warheroes.ru/hero/hero.asp?Hero_id=18623 (29 December 2018). The 'Riazan miracle' was a scandal, which resulted from promising and then faking the over-fulfilment of the production plan for meat and milk in Riazan Oblast.
[423] RGAS, f. P-570, o.1-1, d. 72, l. 129.
[424] P. Volchek, *Krupnoblochnie i Krupnopanelnye Zhilie Doma dlia Ugolnoy Promishlennosti* (Stalinisk, 1955), 'Centrogiproshahtstroy. Seriia 427', *Arkhitektura SSSR*, 5 (1956), pp. 16–18.

successfully functioning in conditions of scarcity and amidst deindustrialised regions' lack of mechanisation, was noticed by *Gosstroi* and recommended for further implementation.[425] In 1958, the director of *NIIEP*, Boris Rubanenko, invited the institute's whole team of forty-four employees to join the Moscow-based branch of *NIIEP* and to form a new workshop for rural construction.[426] The former architect of *TsentroGiproShakhtStroi,* Pavel Volchek, was placed in charge of the construction of Kalinovka's residential buildings.

Volchek designed several types of rural apartment buildings for Kalinovka, with the predominance of two such types in particular.[427] The first one, roughly eighty per cent of all buildings, consisted of two-storey multi-apartment rectangular blocks, designed as a new replacement for traditional huts (Fig. 3.7). These buildings consisted of large apartments of four or five rooms, designated for the 'typically large' peasant families of four to six members.[428] Each apartment, both those on the ground floor and first floor, had its own exit to an adjoining plot of land. The land was not intended for private farming but as 'a continuation of living space in nature, an additional kind of comfort, hardly familiar to the city dweller.'[429] Gardens for private agriculture were allowed only outside the settlement.[430] The apartments were closely modelled on urban designs and relied on centralised heating and water supply, but included several 'improvements' to adapt buildings to the reality of rural

[425] RGAE, f. 339, o. 1, d. 1130, l. 281–82.
[426] Dykhovichnaia, *Lichnoe Delo*, p. 113.
[427] Volchek, 'Novye Tipy', p. 7.
[428] According to the research done by the Academy and *NII Selstroi*: ibid., p. 8.
[429] RGAS, f. P-570, o. 1-1, d. 72, l. 126.
[430] Ibid, l. 127.

life. Indoor toilets were replaced with storage rooms (*kladovie*) to store vegetables, while the bathtub was moved into the kitchen to facilitate 'typical rural household tasks,' such as preparing cattle food. The second type of residential building formed the other twenty per cent of the settlement's buildings, and consisted of the four-storey blocks typical for urban settings. These buildings were intended for people who 'didn't want to be associated with a plot of land.'[431] The proportion of such 'rural intelligentsia' was to increase with the expansion of the settlement, according to the plan. Architectural design was aligned with the concept of an evolving settlement; the next section will discuss this correlation in more detail.

Infrastructural thinking in the Soviet countryside

'Urban space' does not equate solely to buildings but encompasses every type of infrastructure, and infrastructure was the major constraint of the project of Kalinovka's redevelopment. The provision of typical urban services in agro-cities was dependent on both hard and soft infrastructure: road construction, centralised plumbing and sewage systems, gas, and electricity. Extending pipelines and networks into the countryside was the project's main economic challenge, and constituted almost a third of all expenses.[432] Settlements required boiler houses, treatment facilities, and power converters, and these had to be not only constructed but also run by specialised personnel. For example, organising the local drainage treatment facility in the collective farm 'Borets' cost 9,600 rubles per month and

[431] Ibid, l. 128.
[432] Production sites: 16 million; residential construction: 12 million; and infrastructure: 10 million. See: RGAS, f. P-570, o. 2-6, d. 49, l. 33.

required eight full-time employees. For a settlement of 1,170 people, it was impossible to cover expenditures of such services.[433] Because of the matter of infrastructure, agro-cities were hardly an affordable project for the regions, and apart from a number of showcase developments, were never realised to a full extent. Infrastructure costs played a huge role in determining principal planning decisions. Just the original nine 'viable' settlements were selected to be preserved for the future, out of the existing twenty-nine collective farms in Homutovka, because in a settlement of 1,000 people the price of the construction and maintenance of public buildings would be thirty per cent higher than in a settlement of 2,500 people.

Kimberly Zarecor has conceptualised this 'infrastructural thinking' to emphasise the significance of urban infrastructure on architectural and urban form peculiar to the Soviet context.[434] The scale of infrastructure informed building design and general settlement planning in Kalinovka. The densely-packed residential space of two- and four-storey buildings resulted from infrastructural constraints—it was a way to make costs manageable. All development in Kalinovka was based on a single document, a 'regional plan,' adopted in 1959. This projection set an agenda for the future expansion of settlements over the next 20 years, up to 1980, in several stages. Kalinovka had to expand 'in a controlled and rational way,' absorbing its neighbouring 'backward' *kolkhozes*, until it reached the 'economically reasonable' size of 5,000 people. The required population of the other eight 'viable' settlements

[433] For an overview of infrastructure costs, see: RGAS, f. P-149, o. 1-1, d. 1162.
[434] Zarecor, 'What Was So Socialist', pp. 95-117.

was approximately 4,000 people.[435] The passage of time was implicit in the project, setting goals free from deadlines for each consecutive stage of development. Settlement enlargement triggered additional infrastructure requirements. For example, given the considerable distances between settlements, peasants were obliged to travel up to eight kilometres to work in the fields. A comprehensive transport network was required to link settlements together and a bus system had to be organised.[436]

As Kalinovka grew, it developed new functions: in 1963, an agricultural college was moved from Kursk to Kalinovka.[437] The plan to introduce higher education into rural areas was related to the project of social transformation contained in the project of agro-cities—its goal was the formation of a class of 'rural proletariat' and 'rural intelligentsia.'[438] The plan predicted a massive re-professionalization of people moving from villages to such settlements. For that purpose, institutes for higher education were deliberately relocated. In 1961 Khrushchev claimed he would move all agricultural authorities of the republic 'from asphalt to the rural area.' Nothing less than the Ministry of State Farms was intended to move to Zaria Kommunizma, another rural settlement, which will be discussed later in this chapter.[439] In official rhetoric, Kalinovka was used as an example of unified space,

[435] RGAS, f. P-570, o. 2-6, d. 49, l. 27.
[436] Ibid, l. 29.
[437] 'Istoriia Tekhnikuma', Kalinovskii Sel′skokhoziaistvennyi Texnikum http://hom-ksht.ru/svedeniya-ob-obrazovatelnoj-organizaczii/istoriya-texnikuma.html (29 December 2018).
[438] Tompson, *Khrushchev*, pp. 96-7. See also: A. Sukharev, *Sel'skaia Intelligentsiia i Ee Rol' v Stroitel'stve Kommunizma* (Moscow, 1963).
[439] *Xxii S'ezd Kommunisticheskoi Partii Sovetskogo Soiuza. Stenograficheskii Otchet* (3 vols, Moscow, 1962), 1, p. 371, W. Taubman, S. Khrushchev, and A. Gleason, *Nikita Khrushchev* (New Haven and London, 2000), p. 123.

designed to encourage social transformation. Publications emphasised—again using similar rhetorics to the collectivisation of the 1930s—that in moving to new apartments, the farmers of Kalinovka voluntarily surrendered their cattle to become common property.[440] Yet, in contrast to pre-war policies of collectivisation, the project was the result of channelling ample resources into a singular showcase development. In parallel with the re-professionalisation of the residents, a settlement had to transform gradually through two stages. Two-storey buildings, discussed earlier, were designed by Volchek for the first stage, and high-rises for the second.[441] The latter were intended to house skilled workers of the 'rural industry,' such as mechanics, technical workers, and veterinarians, as well as the more sophisticated, highly skilled 'rural intelligentsia.' Both building types were based on the same modules and prefab elements. Having established the production line for the first type of buildings, it could gradually be switched over to the second, high-rise type as population growth demanded and residents' lifestyles changed. Over time, as industrialisation progressed, taller buildings were intended to predominate.

Cultural and recreational infrastructure had to catch up with the development and growing needs of future residents. Collective farmers were supposed to have urban standards of healthcare services, access to child-care, and sports infrastructure. They were supposed to rely significantly on communal catering; urban norms were adopted for catering in the region: 40 seats in a canteen for every 1,000 people.[442]

[440] 'Novyi oblik sela Kalinovka' *Za peredovuiu nauku* (21 February 1959) in RGAS, f. 570, o. 2-6, d. 49, l. 3.
[441] Volchek, 'Novye Tipy', p. 11.
[442] Postanovlenie Soveta Ministrov, 'O dal'neishem razvitii obshchestvennogo pitaniia,' cited in N. Vavirovskii and V. Kulaga, 'Kooperativnye Obshchestvennye Zdaniia dlia Ukrupnennykh Kolkhozov', *Obshchestvennye zdaniia,* 1961), p. 136.

Cultural buildings were planned in the settlements as a promise of a better life: a library and a cinema. The need for another set of buildings arose from the social responsibilities towards peasants.[443] Special building types were introduced to care for socially vulnerable people: elderly residents incapable of labour were settled into a boarding house. This corridor-centred building provided accommodation for 65 people with groups of three residents sharing a single room. A dormitory for bachelors and blocks for students and for retired people appeared in Kalinovka. The agricultural college triggered further construction plans: a boarding house for students and a lecturers' block.

The network of children's institutions in the rural areas featured in the policy's rhetoric as a prerequisite for drawing women into social work.[444] Kalinovka, as well as Traktorno-Zavodskoi district in Cheliabinsk, discussed in the previous chapter, were designed at the peak of a short-lived state programme for the institutionalised upbringing of children. Boarding schools with good staff were to be established in pleasant localities.[445] Pointing to the fact that parents now worked far away from their dwellings, Khrushchev suggested building boarding schools for schoolchildren where children could study and live in Kalinovka, 'so that their mothers can be calm and sure that their children are brought up in a cultural setting.'[446]

[443] In the plan of the redevelopment it was declared that upon the collectivisation of private property, peasants would receive monthly salaries, pensions, and social care as state labourers – in reality, it was only under Brezhnev that 'welfare' measures were extended to kokhozniki. See: Fitzpatrick, *Stalin's Peasants*, pp. 313-20.
[444] A. Kharchev, *Brak i Semiia v SSSR* (Moscow, 1979), p. 295.
[445] State-run boarding schools were introduced in 1958 with the purpose of 'the public upbringing of *all* children in state institutions.' See: Dunstan, 'Soviet Boarding Education', p. 118. In 1960, *Gosstroi* approved boarding schools as a suggested type of building for peasant localities. See: RGAS, f. P-150, o. 2-1, d. 428.
[446] N. Khrushchev, *Stroitel'stvo Kommunizma v SSSR i Razvitie Sel'skogo Khozaiistva* (8 vols, Moscow, 1962), 2, p. 526.

Hence, there was a lot of construction to be done at the state's expense in Kalinovka. The settlement with the state monopoly for the development was what James Scott defined as a 'state space.'[447] Rural areas were traditionally places for predominantly privately funded construction. Construction of rural settlements with an urban level of services required that the infrastructure and public buildings, having never before functioned in rural areas, were designed and planned from scratch. These public buildings were designed by *NIIEP* in cooperation with the Scientific Research Institute for Public Buildings (*NIIOZ*). The latter developed the first prototypes of rural public buildings, including the abovementioned boarding houses for students and elderly peasants.[448] Turning now to a more detailed look at the design of a boarding school may demonstrate how the development of public buildings was aligned with the concept of expanding infrastructure implicit in the project of regional development.

Given the economic constraints, planners had to cut spending wherever possible. *NIIEP* proposed two principal solutions to fit the required infrastructure into the budgets. The first solution suggested the division of the construction over the stages of development of the settlement. *NIIOZ* introduced so-called 'buildings of a growing type,' e.g. buildings with plans for future expansions, which could be implemented at subsequent stages of construction with the 'increasing economic

[447] Scott defines 'state spaces' as organised, clearly defined, and easily monitored spaces: Scott, *Seeing Like a State*, p. 188.
[448] RGAS, f. P-570, o. 1-1, d. 72, l. 135–42.

resources from the collective farms.'[449] Architects proposed models with pre-designed options for the expansion of these buildings. One such 'growing-type' building, a boarding school, could at an initial stage function purely as an ordinary school; the project would then proceed into a second stage of construction, in which a sleeping block would be added and additional employees hired to turn the building into a fully functional boarding school (Fig. 3.8).[450] Boarding schools soon proved quite controversial and unpopular, so experts suggested instead the complementing of parental upbringing with 'extended-day' schools (*shkoly prodlennogo dnia*).[451] The project of schools with 'expanding functionality' was a solution compatible with both 'extended-day' and boarding types of schools. The second solution to cut infrastructure costs was cooperation. Architects suggested uniting multiple functions into a single hybrid building, such as administration–rural council, or kindergarten–school.[452] Hybrid public buildings for a city centre evolved in three stages of construction: at the first stage, the building resembled a club with a small auditorium; the second stage added a lobby and a library and converted club facilities into an artists' dressing room, so that the building could be used for performances. The library, at this stage, used the same infrastructure, but had a separate entrance, and effectively worked as a separate institution. Finally, at a third stage, a second, larger hall was constructed, which could be used for sports events or lectures.[453] An architectural contest was held to develop the best designs

[449] N. Platonova and V. Muzychkin, 'Organizatsiia Seti Zdanii Kul'turno-Bytovogo Obsluzhivaniia Naseleniia v Sel'skoi Mestnosti (po Materialam Obsledovaniia Riazanskoi i Kaluzhskoi Oblastei)', *Obshchestvennye zdaniia,* 3 (1961), p. 128.
[450] A. Peremyslov, *Koeffitsient Budushchego* (Novosibirsk, 1968), p. 177.
[451] Dunstan, 'Soviet Boarding Education', p. 119.
[452] Discussion of the types of cooperative buildings: RGAS, f. P-150, o. 2-1, d. 282, 362.
[453] Obraztsov, 'Obshchestvennie Zdaniia', pp. 21, 24.

of the expandable buildings. Out of 15 solutions, *NIIEP* presented the most economical solution of the boarding school, which was then implemented in Kalinovka.[454]

Expanding settlements, the concept of evolving infrastructure, hybrid buildings, and growing buildings were all unusual and ambitious concepts unlikely to be realised in practice. They also demonstrate that expansion and social transformation was not just a rhetorical construction, but a planning reality, which architects had to take into consideration in their designs. Economic limitations and the requirements of various types of infrastructure called for a creative response from architects.

How successful was Kalinovka as a living environment, when it was completed? There is ample discrepancy between official rhetoric and the oral evidence. On the official level, Kalinovka was widely commemorated as a great success. Khrushchev often referred to Kalinovka in his speeches. He called Kalinovka a 'Laboratory for the Restructuring of Agricultural Production'[455] and used it as a showcase to advertise his agricultural politics: 'Let the skeptics contemplate Kalinovka. If the majority of farms match this village's extraordinary pace, we will successfully solve the task we have set for ourselves.'[456] Planners were similarly proud of their job: 'Kalinovka came to prominence as the all-union laboratory of cutting-edge techniques of agricultural production. … The settlement was the country's first

[454] RGAS, f. P-149, o. 1-1, d. 415, l. 26.
[455] Khrushchev, *Stroitel'stvo Kommunizma (Vol.3)*, p. 404.
[456] Taubman, *Khrushchev*, p. 306.

collective farm where living standards on the cultural and community levels did not differ from the best urban designs.'[457] They referred to experimental rural settlements as 'schools, not only for rural architects, but for planners and employees of scientific research institutes.'[458]

The oral evidence reveals another side to the story: that the class of 'rural intelligentsia' never formed and agriculture never came to be fully industrialised. According to memoirists, upon arrival from Kursk, employees and students of the agricultural college found half-finished buildings with no water supply.[459] One of the *NIIEP* architects who designed Kalinovka's city centre, Aleksandr Anisimov, recalls various difficulties due to the failures of infrastructure to perform as planned. For a long time there was neither indoor running water nor sewers in Kalinovka. Residents had to organise primitive toilets in backyards, which emptied into cesspits; they drew their water from water pumps, also located outdoors, and lifted it in buckets up to the fourth floor of residential buildings. To make better use of the bathing rooms with no water supply, peasants' calves and small cattle stayed inside their apartments during the winter. All citizens of Kalinovka, including people with higher education, largely relied on private agriculture and had to organise private gardens in order to sustain themselves.[460] Such a 'grey zone' of semi-legal, self-organised gardens was a typical way of resisting the poverty resulting from full-

[457] Vostokov, 'Planirovka Kolkhoznogo Poselka', p. 58.
[458] Gutsalenko on Zaria Kommunisma: I. Gutsalenko, 'Pokazatel'noe Stroitel'stvo Sel'khozgorodka Sovkhoza 'Zaria Kommunisma'', *Sel'skoe stroitel'stvo,* 8 (1961), p. 15.
[459] 'Istoriia Tekhnikuma'.
[460] Interview with Anisimov, conducted by Author, Moscow, 28 December 2016.

time *kolkhoz* participation.[461] The lack of storage rooms, sheds, and spaces where one could dry and wash clothes made for high levels of discomfort for farmers. In addition, private plots of lands were located far from the residential blocks, which made gardens vulnerable to theft (Fig. 3.9).

Despite failing to provide an adequate living environment, Kalinovka functioned as a testing site for new designs and engineering solutions. The 'experimental-demonstrative' (*experimental'no-pokazatel'nyi*) status of the settlement implied the development of new approaches in planning, architectural design, agricultural production, and rural development. The purpose of experimental planning was declared as to 'test the possibility to create large residential districts in rural conditions.'[462] Planners emphasised that the goal was not to create a single, 'privileged' settlement, but rather a programme suitable for the whole region. Right after construction, the Kalinovka buildings and living environment were analysed and discussed in multiple institutional reports for further 'generalisation of the experience.'[463] The masterplan of a settlement, 'tested' in Kalinovka, was standardised as a project for 'a typical settlement of 2,000 people (400–500 farm households).'[464] It was established as a model for all other 'viable' settlements in the Homutovsky region.[465] The region's development projection required source

[461] J. Lévesque, '"Into the Grey Zone". Sham Peasants and the Limits of the Kolkhoz Order in the Post-War Russian Village, 1945-1953.', in J. Fürst (ed.), *Late Stalinist Russia: Society between Reconstruction and Reinvention* (London, 2006), pp. 103-19.
[462] Vostokov, 'Planirovka Kolkhoznogo Poselka', pp. 56-57.
[463] For example, the report 'Experience of demonstrational construction in the Homutovsky region,' in RGAS, f. P-570, o.1-1, d. 72.
[464] Obraztsov, 'Obshchestvennie Zdaniia', p. 21.
[465] RGAS, f. P-570, o. 2-6, d. 49, l. 30.

data to plan multiple infrastructural parameters for future expansion. The actualised redevelopment of Kalinovka supplied this practical data, crucial in setting new long-term development plans. Kalinovka was used as a model, where the 'problems of the transformation of other collective farms are worked out.'[466] Various parameters of infrastructure, such as power consumption or radio-signal strength were also analysed in Kalinovka. Of particular importance were the budget estimation and the planning of funding allocation. The total construction cost of Homutovsky region was estimated as 912 million rubles, which was hardly an affordable price for other settlements.[467] Kalinovka's example was investigated for its potential to diminish the state's involvement in similar future projects and to attract investments from collective farms themselves, making further redevelopments economically self-sustainable.[468] No less important was the collection of sociological data and farmers' opinions about these experimental living environments. The sociological department at Novosibirsk University, one of the earliest of its kind, carried out sociological research in Kalinovka.[469] Tatiana Zaslavskaya, who worked in Kalinovka, was among the first sociologists studying the countryside in the USSR. She carried out multiple surveys that uncovered a growing dissatisfaction with the Soviet countryside among peasants, and especially people with a higher education.[470] Finally, experiments in boosting agricultural

[466] RGAS, f. P-570, o. 2-6, d. 49, l. 29.
[467] RGAS, f. P-570, o. 2-6, d. 49, l. 29.
[468] According to the plan, the collective farms had to be able to self-fund the whole redevelopment in 1971–1980, see: RGAS, f. P-570, o.1-1, d. 72, l. 149–51.
[469] T. Zaslavskaia, *Sotsietal'naia Transformatsiia Rossiiskogo Obshchestva: Deiatel'nostno-Strukturnaia Kontseptsiia* (Moscow, 2002), p. 43.
[470] P.R. Josephson, *New Atlantis Revisited: Akademgorodok, the Siberian City of Science* (Princeton, NJ and Chichester, 1997), pp. 239, 32-43.

production with new chemical fertilisers were held in Kalinovka.[471]

The aim of the experimental construction in Kalinovka was to develop standard rural designs.[472] Although unusual in being rural, the same logic was at work as in the urban experimental districts that we saw in Chapter 1. There were no previous practices or standard projects of multi-storey and semi-detached residential houses for rural areas. Kalinovka became the testing site for a whole spectrum of new types of rural buildings—industrial, residential, and public.[473] Various features in the general layout of buildings and various articulations of apartment layouts were used to test layout and sanitary equipment.[474] Experimental construction offered architects significantly more freedom than highly regulated typical design. For example, kitchens in Kalinovka apartments surpassed the normative urban dimensions of six m^2. This was justified by the need to prepare cattle food—a task, which, according to architects, required several people to work together in the same kitchen. Architectural comments accompanying experimental projects often included references to the specifics of the residents' lifestyle or family structure. These comments were employed as rhetoric to justify design deviations. Experimental prototypes were later evaluated for their technical, fireproof, and sanitary conditions, as well as 'economic justifiability.' Some types of buildings, such as two-storey housing blocks, were discontinued; others were later

[471] Tests of a number of new chemical fertilisers and their effects on harvests were carried out in Kalinovka fields. See: I. Peive, *Khimiia v Sel'skom Khoziaistve* (Moscow, 1964), p. 126, V. Klechkovskii, *Agrokhimiia* (Moscow, 1967), p. 19.
[472] See: Obraztsov, 'Obshchestvennie Zdaniia', p. 20.
[473] RGAS, f. P-570, o.1-1, d. 72, l. 135.
[474] Volchek, 'Novye Tipy', p. 11.

standardised and widely used in the Soviet countryside.[475]

The Dawn of Communism state farm: starting mass production

Since the project of agro-cities required that multiple settlements be constructed, prefabrication was considered an effective way to organise their production. All residential, public, and industrial buildings in Kalinovka were to be built with prefabricated components.[476] A number of prefabrication methods were devised for construction in Kalinovka. However, during construction in the Homutovsky region, prefabs were unavailable. According to a long-term plan, industrial building systems were to be introduced at the second stage of development (between 1965 and 1980).[477] In the late 1950s, prefabrication systems were introduced in the major cities of Moscow, Leningrad, and Kiev. However, there was still no established practice of prefabrication in rural areas of the USSR. Installing five-tonne tower cranes and transporting prefab blocks was unfeasible in the undeveloped Homutovsky region, where even roads were lacking. In contrast to the initial plan, all experimental buildings were built out of brick. The prefabrication system was first introduced in the next major project of the department of low-rises of *NIIEP*: the settlement of the state-farm Dawn of Communism (Zaria Kommunizma, or simply 'Zaria' for brevity), in the Moscow region.

[475] According to Aleksandr Anisimov, the project of a rural shop which he designed for Kalinovka was converted into a particularly widespread standard project in the Soviet countryside.
[476] Buildings were designed on the basis of a single range of prefab elements from the catalogues of a local design institute based in Kursk (*Kurskii Oblproject*), and components of *Kurspromstroimaterialy* were used as a technical base. RGAS, f. 149, o. 5-4, d. 74, l. 3.
[477] RGAS, f. P-570, o.1-1, d. 72, l. 138; Obraztsov, 'Obshchestvennie Zdaniia', p. 36.

The settlement of Zaria was planned for 3,100 people, including five hundred employees of the industrial-agricultural sector and others working as farmhands.[478] The settlement was designed in 1960 and progressed to construction in 1962–67.[479] The main experiment in Zaria was in the unfolding of an 'industrial base' for the urbanisation of the countryside—the organisation of continuous straight-line construction of the whole settlement.[480] The development of the settlement of Zaria demonstrated how the lessons of Kalinovka were implemented in standard production (Figs. 3.10–11).

In the development of Zaria, the problems with the infrastructure misperformance, which sabotaged the planners' vision in Kalinovka, were taken into consideration. Rather than relying on the concept of evolving infrastructure, the project took care of the provision of infrastructure right up to the project's completion. A significant sum of ten million rubles was invested to deliver it, and proximity to Moscow made it easier to supply infrastructure lines.[481] Rather than triggering a process of transition in an existing village, the settlement's design reveals the ambition to create the entire urban environment from scratch, in an act of complete design. In general, Kalinovka was a pet project of Khrushchev's, in which designers closely followed his views on the urban development of industrialisation and intense production. By 1963, it became obvious that the so-called 'leaps forward' in meat and milk production, as well as experiments in intense production and fertilisation,

[478] P. Volchek, 'Gorodok Sovkhoza "Zaria Kommunizma"', *Arkhitektura SSSR,* 1 (1962), pp. 37-41.
[479] RGAE, f. 180, o. 3, d. 3067, l. 3.
[480] RGAE, f. 180, o. 3, d. 3067, l. 4.
[481] Gutsalenko, 'Pokazatel'noe Stroitelstvo ', p. 17.

had failed to improve the state of agriculture.[482] A more systematic approach was taken in Zaria, which was based on the 'generalisation of experimental experience'—meetings with residents, the collection of data on the usage of blocks, and observations of everyday life in Kalinovka.[483] This more scientific approach may have resulted from the weariness with Khrushchev's erratic projects. In Zaria, rather than taking commands from Khrushchev, technocrats from a number of specialised institutes were in command of design and planning, which was done in a systematic and integrated approach.[484]

Serial projects required industrial technological production lines for prefabricated components. The main problem in establishing mass production in the countryside was in establishing an adequate construction industry, taking into account the scarce access to building materials and other constraints typical to the countryside. The heavy large-panel system I-464, discussed in Chapter 1, operating with five tonnes of prefab elements, turned out to be hardly suitable for rural areas. The lighter system I-467 was developed instead by *NIIEP* in cooperation with the Design Bureau for Reinforced Concrete (*KB po Zhelezobetonu or KBZh),* especially for small and medium-scale settlements. Such a system had greater mobility and a simpler production line that could be implemented through a relatively inexpensive upgrade of existing concrete factories. Technology was installed and tested in

[482] Taubman, Khrushchev, and Gleason, *Nikita Khrushchev*, pp. 128-33.
[483] See the report 'The conclusion on a series of projects for residential and production buildings for construction on collective farms,' in RGAS, f. P-149, o. 1-1, d. 415.
[484] After the dissolution of *NIIEP* in 1961, the project was transferred to *Mosgrazhdanproekt*. *KB po zhelezobetonu*, *Rosgiprosel'stroi* and *Mosoblstroi* also participated in design and construction. See: RGAE, f. 180, o. 3, d. 3302, l. 5.

Domodedovo, near Moscow, in 1959 (Figs. 3.12–14).[485]

While individual construction in Kalinovka allowed various apartment layouts to be tested, in Zaria, a standardised rural apartment was developed based on the prefabricated housing delivery system. P. Volchek designed standard rural blocks in 1962, including cellars for storing vegetables, pickled foods, and other household goods. Apartment halls had special drying chambers, where farmers could dry laundered clothes after a day at work. A special machine was designed to help them clean muddy rubber boots.[486] However, in general, this standardised rural apartment was much closer to urban models rather than the experimental buildings in Kalinovka. Adaptations included mainly movable household equipment, while structural adaptations were minimal and did not change the general apartment layout.[487] It may also be suggested that after the experiment in Kalinovka, planners tended to avoid creating hybrid rural-urban space and would rather provide purely urban building types. New apartment types relied on the urban models, and urban norms. The types of transitionary buildings developed by Pavel Volchek in Kalinovka were discontinued.

Experience from the construction in Kalinovka also revealed the need for the consolidation of the elements of various building types. In most urban building systems, public buildings normally relied on different production lines, which

[485] 'Panelnoe Domostroenie na Base Sushestvyushekh Zavodov', *Arkhitektura SSSR*, 2 (1959), pp. 12-14.
[486] RGAE, f. 180, o. 3, d. 3302, l. 22.
[487] This was due to the technical and spatial constraints of the building system, with load-bearing walls and the inherent 'Vesnin configuration' of the apartments. On Vesnin layouts, see: Meuser and Zadorin, *Towards a Typology*, p. 169.

differed in modular size, allowing bigger apertures. In the case of rural development, each settlement would rely on just one factory, so the task was to produce a complete urban environment, in all its complexity, from a single factory line. This involved the unification of previously developed building types, which became one of the main concerns of *NIIEP*. The I-467 was developed as a building system, which allowed maximum unification of all elements. The catalogue of components of I-467 included the whole spectrum of public buildings, which was a complex construction task.[488] In cooperation with the engineering department, *KBZh,* these buildings were now translated into the 'language' of a prefab system—the same modular system and construction standards. Along with residential blocks, building types for 'small families,' discussed in the previous chapter, were included in the catalogue of building types.[489] The first large-panel crèche and boarding school was designed and built in Zaria.[490] These buildings were assembled of standardised panels used in residential buildings and required just three additional prefabricated components to be produced (Fig. 3.15).[491]

The entire settlement of Zaria was assembled from a single factory line: a settlement centre and four-storey residential buildings were designed according to a single module and with a limited set of prefabricated components. Ninety-six per cent of all components used in the settlement's construction were produced in a

[488] S. Zmeul, 'Unifikatsiia Sbornikh Elementov Jilikh Domovi Zdaniy Kulturno-Bytovogo Naznacheniia', *Arkhitektura SSSR,* 7 (1960), p. 33.
[489] A block for small families for 264 people and a 40-apartment block combined with a consumer service.
[490] B. Akishev, *Krupnopanel'noe Stroitel'stvo iz Detalei, Izgotovlennykh na Zavodakh Zhelezobetonnykh i Silikatnykh Izdelii (Seriia 1-467)* (Moscow, 1964), pp. 127-35.
[491] RGAS, f. P-149, o. 8-6, d. 7, l. 31–32.

single concrete plant. Such technology had a high mobility and could easily be installed in other regions. Panel modules were developed to maximally utilise factories' moulding equipment.[492] The resulting residential blocks had minimal differences from their urban prototypes. The residential area was built up by regular rows of four- and five-storey blocks grouped around the city centre at the intersection of the main roads. The settlement had straight roads, an artificial landscape design, and asphalted streets. Trees were planted along the pavements. As described by a Moscow newspaper:

> Four-storey large-panel residential buildings... A square with a Lenin monument. This is the centre of the town. Here is a hotel, a shop, a dining room. Nearby a polyclinic, club, school, boarding school, kindergarten. Not far off is the stadium. And all around there is nature and flowers. Although it really exists, do not try to find this city on the map! It's not actually a city but a state farm, 'the Dawn of Communism.'[493]

The settlement resembled a typical urban micro-district; however, it was a single, detached instance of urban space, located in the countryside, surrounded by fields and intended for people who worked on the land (Fig. 3.16). The complex engineering of this building system was laid out not to make a peculiar rural environment, but to bring a typically urban setting—a micro-region with a complete infrastructure—to the countryside, 'from asphalt to the rural area,' for the convenience of collective farm workers (Figs. 3.17–3.18). The similarity to urban standards and infrastructure is what the architect and author of popular science books, Aleksander Peremyslov, most emphasised in describing Zaria:

> The first apartment we visited had two rooms. A family of three members lived

[492] RGAS, f. P-149, o. 5-4, d. 85, l. 2.
[493] 'Zaria Kommunizma – Gorod v Derenve', *Izvestiia*, 166 (16 July 1962), p. 3.

> there: Victor, a mechanic of agricultural machinery, his wife Tamara, a brigade leader of the field team, and their nine-month-old daughter, who is brought up in a nursery. This apartment does not differ from any other in Moscow, or, say, in any district of the city. The same 28 square meters of living space: the same small kitchen with a gas stove and a column for heating water, the same bathroom.[494]

The final product of the institute was not just the settlement itself, but the supply of agricultural construction with standardised projects and masterplans. Typology I-467, first tested in the experimental construction of Zaria, later became widespread for small- and medium-sized settlements. The model's economic efficiency made it a real asset for the development of similar settlements across the vast territory of the RSFSR.[495] The system's universality, which facilitated the construction of whole settlements—including schools, hospitals, kindergartens, and commercial facilities—from a single production line, made it popular in the periphery: in Tiumen', Tomsk, and Surgut. By 1977, 41 factories in the USSR operated with the I-467 building system. Soviet visionaries had long dreamed of the rapid industrialised construction of urban utopias throughout the vast undeveloped territories of the country. Housebuilding factories rapidly disseminated across the most distant regions of the Union's territory and have been termed by Alexander D'Hooghe as 'civilising devices.'[496] The experimental construction of Zaria Kommunizma was an important step in this direction. Peremyslov finishes his story about Zaria by emphasising the 'magic' of a high-tech prefab city growing in the middle of nowhere:

> The sun, unusually bright for the middle of October, lavished the area generously.

[494] Peremyslov, *Koeffitsient Budushchego*, p. 135.
[495] Meuser and Zadorin, *Towards a Typology*, pp. 225-33.
[496] D'Hooghe, 'Siberia as Analogous Territory', p. 14. On mass housing construction as a colonisation tool: Kalm, '"An Apartment with All Conveniences" Was No Panacea. Mass Housing and the Alternatives in the Soviet Period in Tallinn', pp. 194-207.

> Soft shadows on the buildings seemed blurred. Pale-dark and brownish-pink ends of residential buildings turned into white facades. The colour white predominated everywhere. White City! That's how we remembered it, our first agro-city![497]

The need to develop prefabs for rural areas triggered deep institutional changes in *NIIEP*. Apart from the aforementioned merger of *NIIEP* with a departmental institute of the coal industry, other departments for movable prefab solutions were founded. Experiments included the use of reeds and straw in prefabrication, the development of 'wood concrete,' and wood-fibre concrete slabs for the Virgin Lands programme.[498] Further projects included plans for a future development of 'mobile prefab factories,' which could be transported by rail to regions for the construction of hydroelectric power plant settlements.[499] The project was under development until the 1970s and provided prefabs for three settlements in Siberia and the Far North (Figs. 3.19–3.20).[500]

In 1959, while working as a director in *NIIEP* and construction supervisor in Kalinovka and Zaria, Boris Rubanenko published one of the most famous books about Soviet modern housing, *9-i Kvartal*.[501] This book, discussing the experience of construction in Cheremushki, served as an important didactic tool for architects all around the union for 'adopting the experience' of industrialised housing delivery. When the book was published, Rubanenko and other prominent specialists in mass housing were in command of developing technologies for sending Cheremushki-

[497] Peremyslov, *Koeffitsient Budushchego,* p. 135.
[498] Volchek, 'Novye Tipy', p. 17.
[499] 'Eksperimental'nyi Proekt Poselka Pri Konakovskoi Gres', ibid., pp. 39-47.
[500] See the settlements of Konakovskaoi, Burshtynskoi, and Zeiskoi i Saianskoi hydroelectric stations constructed by mobile factories: RGAS, f. P-149, o. 1-1, dd. 937, 3229.
[501] *9-i Kvartal*.

type micro-regions to rural regions of the USSR. Analyses of *NIIEP* institutional practices demonstrate that the micro-region was a model not only for urban sites; scientific and research institutes invested tremendous effort into transporting these urban forms to suburban and rural areas also, where it was replicated, using movable technologies and locally-available materials.

Conclusion

Both Kalinovka and Zaria received considerable press coverage upon construction. The settlements were constructed to serve as experiments, demonstrating that collectivisation could be successful—and officials used them to advertise their planning policies. However, agro-cities were hardly an affordable project for the regions: in both Kalinovka and Zaria, authorities had to simply write off the millions in debt incurred by the construction.[502] These settlements also served as testing grounds for the latest engineering, planning, and construction solutions. A detailed look at the history of Kalinovka's and Zaria's planning demonstrates the method of two-step experimentation in standardised construction—first, construction of individual prototypes, and second, their implementation in a catalogue of building types. *Gosstroi* recommended a masterplan of Zaria and its building types to serve as models for collective farm settlements located in proximity to towns and industrial centres.[503] The method of standardisation, discussed on the level of particular buildings in the previous two chapters, was now

[502] Taubman, *Khrushchev*, p. 12. Initial construction cost in Zaria was 10 million rubles:Gutsalenko, 'Pokazatel'noe Stroitelstvo ', p. 17. Construction in Zaria required additional subsidies: RGAE, f. 339, o. 3, d. 1104, l. 117.
[503] RGAE, f. 180, o. 3, d. 3302, l. 4.

implemented on the wider level of the settlement.

Regional development through construction of experimental settlements continued in the 1960s. In 1968, the Party ordered the foundation of 224 new experimental collective farms, at least one settlement in each region.[504] Like Kalinovka and Zaria, these settlements served as 'experimental-demonstration' construction, engineering, planning, and construction solutions.[505] The strategy of typification and multi-storey development of rural areas continued for almost two decades.[506] It was critically re-evaluated only in 1978, with the critique of standardisation, and a return to wooden low-rise houses. However, the idea of such a mode of development did not disappear. In 1980, the principle of agro-cities emerged once again. Surprisingly, now it was proposed for export—to Mongolia, as a mode of rural development already mastered and worked out in the USSR.[507]

While the first Soviet collectivisation in the 1930s had a huge general impact on the peasantry, it had little practical impact on the rural living environment.[508] While production was a top priority, construction of residential developments was a secondary consideration. The main living environments during collectivisation continued to be small- and medium-sized villages comprised of traditional rural

[504] Decree of the Central Committee of the Communist Party 1968, No. 728, 'On the regulation of construction in rural areas.'
[505] V. Artemenko, *Planirovka Sel'skikh Raionov i Naselennykh Mest* (Moscow, 1975), p. 34. See also: R. Bagirov, *Eksperimental'no-Pokazatel'nye Sela Nechernozemnoi Zony Rsfsr* (Moscow, 1976).
[506] In 1968, mainly urban series were used for the countryside: '*Kakimi domami zastraivat' sovkhoznye poselki?*' in *SiAL*, no. 8, (1968), pp. 6–10.
[507] D. Maidar and D. Piurveev, *Ot Kochevoi Do Mobil'noi Arkhitektury* (Moscow, 1980), p. 188.
[508] Kosenkova, *Sovetskii Gorod*, p. 146.

buildings.[509] Collective farms were founded on the basis of existing villages, and in most cases only specific building types were introduced, e.g. 'socialist' kinds, such as 'palaces of culture,' working clubs, or village councils.[510] Architectural designs involving the complete redevelopment of rural settlements were mainly visionary in style.[511] In most cases, such projects never made it far from the planning stage. Ample construction in 'concrete and brick' took place in a few exemplary collective farms.[512] The 'second collectivisation,' introduced under Khrushchev's auspices, on the contrary, generated significant new material form in the countryside. The state politics for rural urbanisation were supported by industrial building systems, engineered to deliver rapid and cost-efficient construction. Two-storey residential blocks spread into almost every village that was a centre for agricultural enterprise.[513] Those buildings are still present and dominate the contemporary landscape of the post-Soviet countryside. The impact that this early 1960s project for countryside redevelopment, which began in Kalinovka, had on Soviet rural landscape is huge.

[509] M. Levin, *Sovetskii Vek* (Moscow, 2008), p. 131.
[510] Practices for designing these new typologies were consolidated in 1934 with the foundation of an architectural department for rural construction in the Academy of Architecture.
[511] For example, the 1935 project by Ivan Leonidov in Kalmykova, *Arkhitektura Sovetskogo Sela,* p. 51.
[512] For example, Zernograd, built in the late 1930s. In press discussion of this settlement, the term 'agro-city' was coined. See: I. Verezubov, 'Agrogorod', *Stroitel'stvo Moskvy*, 5 (1939), pp. 5–6.
[513] E. Bogdanova, 'Antropologiia Derevenskoi Dvuhehtazhki, Ili k Voprosu o Neudavshihsia Proektah Vlasti', in T. Shanin (ed.), *Krestianovedenie: Teoria. Istoriia. Sovremennost'. Uchenie Zapiski* (Moscow, 2005), p. 351.

Part II. Centralisation and territories in housing production, 1963–1971

Introduction

The most evident and remarkable fact of the Soviet mass housing programme was its totality. Industrial housing emerged not only in major cities but also in towns in the periphery and in rural settlements.[514] The 1957 Decree on Housing committed the Party and government to the 'final solution of the housing problem during the next ten to twelve years' on the scale of the whole country. *De facto*, the Soviet state took the commitment to provide housing not just for the poorest but for all Soviet citizens and found itself in the unprecedented position of being responsible for the housing of 250 million people spread across the extremely diverse territory.[515] Considering the vast geography of the country and variety of the population, the families eligible to receive an apartment were hugely diverse in terms of their contingency, lifestyle, socioeconomics, and ethnic origins. Many regions lacked basic construction industry and skilled labourers. A diversity of social and geographic conditions and technological infrastructure represented a challenge for the centralised Soviet economy, which operated through centralised planning and mass production. The problem was that of finding adequate architectural and technical means to address this variety in the regions. Part II of this thesis addresses the geographical complexity of housing design and construction in the regions and republics of the USSR, as well as in the overseas

[514] Smith, *Property of Communists*, p. 121.
[515] DiMaio, *Soviet Urban Housing*, p. 2.

projects, carried out in 1963–1971. It looks at experiment not just as a concern of major metropolitan institutes, but considers the adoption of experimental practice in the regions, on a local level, by regional actors.

The architectural projects discussed in the previous part of this thesis were developed at the eve of the industrialisation of housing delivery. At that time, industrialised construction was limited to the largest cities, such as Leningrad, Kiev, and Cheliabinsk, with few exceptions, such as the settlement of Zaria Kommunizma. The proportion of all state and co-operative housing erected using large-panel prefabrication in the Soviet Union was no more than 1.5 per cent in 1959.[516] However, in the following years, this situation changed. By 1965, after a massive industrialisation of the construction sphere, the amount of prefabricated housing dramatically increased to fifty-six per cent throughout the USSR.[517] In the 1980s, the USSR had approximately 500 housebuilding factories operating and Western observers reported that 'not less than half the industrialised housing construction of the world is carried out in the USSR.'[518]

The emphasis on the production of housing in the regions was entwined with Soviet regional policy. The Soviet government defined the fundamental goal in the struggle against regional inequalities as a commitment to eliminate differences in levels of development. Housing factories were included in a standard 'kit' of industries,

[516] Davies and Ilič, 'From Khrushchev to Khrushchev', p. 222.
[517] Ibid.
[518] There were different types and degrees of prefabrication in housing production; see: McCutcheon, 'The Role of Industrialized Building', p. 44.

which were seen by Soviet planning apparatus as basic requirements to achieve the equalisation of development and living conditions between regions. An important goal of late Soviet geopolitics was to 'eliminate disproportions' in levels of development between regions by investing heavily in the development of Siberia and Asian republics.[519] Similarly, housing was central in international power relations, as Chapter 6 highlights. Political emphasis on industrialised housing led to a rapid expansion of industry; factories for the production of prefabricated components rapidly disseminated across the most distant regions of the USSR, up to the permafrost regions of the Far North, to the Far East and the steppes of Kazakhstan.[520] Soviet housing was also sent abroad, to Mongolia, Cuba, Vietnam, and other countries. As a result of these actions, the prototypes of multistorey buildings, buildings for small families, and for rural areas, discussed in the previous part of this thesis, were applied by the thousand in these diverse locations.

The resulting prefabricated residential blocks had utilities, running water, sewer facilities, and central heating. Historians believe they can be seen as an active instrument of modernising social reform, which often changed the traditional way of life in the regions, introducing 'alien' dwelling types that disrupted 'the visual and structural harmony' of traditional villages.[521] In the expansionist goals of the Soviet state, housing was used as a means of mobilisation and social control, enabling officials to attract and keep people in desired locations.[522] Yet the huge

[519] On Soviet regional planning, see: Pallot and Shaw, *Planning in the Soviet Union*, p. 55.
[520] On mass housing construction as a colonisation tool: Kalm, '"An Apartment with All Conveniences" Was No Panacea. Mass Housing and the Alternatives in the Soviet Period in Tallinn', pp. 194-207.
[521] Molnár, *Building the State*, p. 82.
[522] Drėmaitė, *Baltic Modernism*, p. 147. See also Meerovich, *Nakazanie Zhilishchem*, R.N. Taaffe, 'Soviet

scale of Soviet housing construction, its rapid expansion over a wide and diverse territory, and its ability to adapt to a variety of climate, social, and seismic conditions, testify to the success of the project, at least from a technical point of view. The Soviet state established a specialised institutional system for housing development and channeled huge investments into its research and development programme, which was evaluated by foreign observers as one of 'the largest in the world.'[523]

The institutional system designed for standardisation and industrialisation of construction, which was established in the 1950s, was reoriented to the periphery of the country in the early 1960s. In 1963 *Gosstroi* and 'relevant authorities in the republics' were given full control over virtually all major construction works and pursued a 'unified technical policy.'[524] The State Committee for Civil Construction and Architecture (*Gosgrazhdanstroi*) was formed as an administrative unit within *Gosstroi* in charge of the entirety of 'civil construction' in cities, settlements, and rural areas of the USSR. *Gosgrazhdanstroi* was responsible for co-ordinating research in the sphere of industrialised construction, as well as supervising the production of construction plants at all-union level.[525] Regional design institutes from now on had to approve standard type designs and 'major individual projects'

Regional Developement', in S.F. Cohen, A. Rabinowitch, and R.S. Sharlet (eds.), *The Soviet Union since Stalin* (London, 1980).

[523] According to the Director of the US Office of Standards Policy in 1969: McCutcheon, 'The Role of Industrialized Building', p. 54.

[524] See: 'Postanovlenie Soveta Ministrov SSSR ot 21 Avgusta 1963 g. № 903 'Ob Uluchshenii Proektnogo Dela v Oblasti Grazhdanskogo Stroitel'stva, Planirovki i Zastroiki Gorodov'' http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=ESU&n=19835&dst=1000000001&date=28.04.2019 (28 April 2019). See also: *Postanovlenie TSK KPSS i Soveta Ministrov SSSR,* 11 Jan 1963, '*O sovershenstvovanii upravleniya kapital'nym stroitel'stvom*.'

[525] See: Pallot and Shaw, *Planning in the Soviet Union*, pp. 34-42.

with this central administration. One of the most radical aspects of the Soviet reform was an attempt to ban individual design in housing architecture. From 1 January 1964, an individual housing construction was only allowed in 'exceptional cases,' upon the permission of *Gosgrazhdanstroi*.[526] In most cases, regional administrations were obliged to use standard projects. By 1975, seventy per cent of public housing produced in the USSR was standardised.[527]

In order to promote architectural standardisation in the regions, in 1963 a number of specialised design institutes were formed in subordination to *Gosgrazhdanstroi*: the system of Central Research and Design Institutes (see Table 1). This hierarchical system was responsible for leading 'a unified technical policy' in all spheres of design and planning on the scale of the country. In 1961, *NIIZh* and *NIIEP* merged into the Central Scientific Research Institute for Experimental Design of Housing (*TsNIIEP Zhilishcha*, henceforth *TsNIIEP* for short) 'to focus the efforts of the Academy on the development of scientific research and experts in the field of large-scale housing construction, as the main direction of the housing construction industry.'[528] The institute inherited its structure from *NIIEP* (see Chapter 3), which placed a major focus on research and experimental design and construction.[529] This rapidly expanding institute was given agency to coordinate the standardisation of housing throughout the USSR. To coordinate development in each region more

[526] 'Postanovlenie № 903 ot 21 Avgusta 1963 g.'.
[527] Andrusz, *Housing and Urban Development* p. 160.
[528] See: RGAS, f. P-149, 'Introduction.' *TsNIIEP* was formed in 1961 in subordination to the *Academy* and in 1963 was placed under the authority of *Gosgrazhdanstroi*.
[529] Initially, it consisted of three departments: research, experimental design, and standard design. On the reorganisation of the institute, see: 'Research Report for 1961,' RGAS, f. P-149, o. 8-6, d. 7, l. 4–5.

effectively, the institute established regional branches (so-called ‘zonal institutes’) in Kiev, Novosibirsk, Tbilisi, and Tashkent, each charged with coordinating research in their respective regions. The consolidation was intended for the centralisation of research and development, but, as the following chapter demonstrates, zonal institutes also served to decentralise research and development away from Moscow to the regions.[530]

After the 1963 reforms, experimental design and construction were officially defined and gained a legal base. *Gosgrazhdanstroi* established an infrastructure for typical design in the regions. It supervised the use and adaptation of standard designs and sanctioned the development of new housing types through experimental design when standard designs were unavailable. *Gosgrazhdanstroi* issued regulations that defined the underlying financing, economic, and planning procedures for experimental development.[531] This ‘statement on experimental construction’ listed residential and public buildings and other structures, as well as whole districts and micro-regions as possible objects of expenditures. Experiments could address construction and technical problems as well as the organisation of progressive everyday life in a micro-region for the best comfort of residents.[532] Republics and regional departments of *Gosstroi* devised plans for experimental construction for the institutes based in their regions and reported annually to

[530] On the reform and *TsNIIEP*, see: Meuser and Zadorin, *Towards a Typology*, pp. 267-69.
[531] See the ‘statement about experimental construction’ in RGAE, f. 5, o. 1, d. 124, l. 110–17. RGAE, f. 5, o. 1, d. 314, l. 5. Revision of 1964, RGAE, f. 5, o. 1, d. 320, l. 96–113; Revision of 1967: RGAE, f. 5, o. 1, d. 813, l. 185; RGAE, f. 5, o. 1, d. 814, l. 386–420. See also: 'Metody Ekonomicheskoi Otsenki Ob”Yektov Eksperimental’nogo Stroitel’stva', *Arkhitektura SSSR*, 4 (1971).
[532] RGAE, f. 5, o. 1, 314, l. 5.

Gosgrazhdanstroi on the implementation of these plans.[533] As they were defined on an all-union level, the practices of experimental development were extrapolated to the regions. Republican and regional administrations were encouraged to establish experimental micro-regions in their territories. Similarly to Cheremushki (see Chapter 1), these developments served as building sites for local prototypes of standard designs. Experimental micro-regions, such as Žirmūnai in Vilnius, or Vostok-1 in Minsk, served as important showcases of innovative mass housing design, which were visited by multiple delegations and awarded with state prizes.[534]

According to the conventional narrative, the highly centralised nature of standard design work reformatted the centre-periphery relations in the sphere of architectural production, strengthening the role of the Moscow-based bureaucracy.[535] However, using the examples of separate case studies in Soviet republics, architectural historians have demonstrated that industrial architecture was not merely forced by the Moscow administration onto 'unwilling [*local*] architects,' but rather revealed their internal ambitions to cooperate and develop their own technologies.[536] In this part I aim to reveal a more complex picture of centre-periphery relations during the establishment of industrial housing delivery in the regions. Using experimental

[533] For example, the report on the implementation of the plan of experimental construction in 1966: RGAE, f. 5, o. 1, d. 810, l. 18–23; Experiments were classified into themes: the table 'the implementation of the plan for experimental design by organisations of the Committee, republic-based *Gosstroi*s, ministries, and departments on the subject and scope of work:' RGAE, f. 5, o. 1, d. 810, l. 22-23. The general plan for standard and experimental construction had to be agreed with the central administration for experimental construction of *Gosgrazhdanstroi*. For example, RGAE, f. 5, o. 1, d. 122, l. 147.
[534] On Vilnius, see: Drėmaitė, *Baltic Modernism*, pp. 166-67. On I-464 in Minsk, see: D. Zadorin, *Architectural Guide. Minsk* (Berlin, 2018), pp. 401-09, 24-27.
[535] For example: G.D. Andrusz, 'Housing Policy in Soviet Union', in J. Sillince (ed.), *Housing Policies in Eastern Europe and the Soviet Union* (London, 1990), p. 255.
[536] Zarecor, *Manufacturing a Socialist Modernity*, p. 266. See also: Molnár, *Building the State*.

housing development as a lens, I shall contribute to the discussion of the changing architectural roles of regional actors in housing development. The following chapters discuss various types of experiments in the Far North, Mongolia, and other territories, carried out in cooperation between Moscow-based administration *Gosgrazhdanstroi*, *TsNIIEP* institutes, and regional actors. Since 1963, all experimental projects had to be approved the Department of Experimental Design of *Gosgrazhdanstroi*. It received thousands of proposals for experimental projects from all over the USSR and its archive reveals how new building types and amendments to housing delivery systems were developed.[537] The archives of *TsNIIEP*, from the other side, show how regional developments were systematised and standardised upon approval.[538] These sources, as well as sources from regional design institutes, reveal that the category of experiment was used as a powerful instrument within the dialogue between regional actors and central administration.

[537] RGAE, f. 5.
[538] The archive of *TsNIIEP* is held in RGAS, f. 149; TsZhA.

Chapter 4. I-464 building system: industrialized housing delivery as a multilateral project

Two hundred I-464 housebuilding factories in the regions

In 1974, *Architektura SSSR* reported that the name of the architect responsible for building more dwellings than anyone else in the USSR was Nikolai Rozanov.[539] We encountered Rozanov in Chapter 1 of this thesis. Rozanov's achievement resulted from a single prefabrication system of his design, the I-464, which was developed in a series of architectural competitions in the late 1950s. This serial project quickly became the most widespread housing delivery system in the USSR due to its economic and technical characteristics. In less than two decades, it provided 100 million m^2—roughly 2.4 million dwellings.[540] Since the early 1960s, factories for the I-464's production spread rapidly into even the most distant regions of the USSR, from Tallinn and Riga to Iakutia and Vladivostok (Fig. 4.1).[541] By 1963, there were more than 200 factories in the USSR operating with the I-464 building system (see maps in Fig. 4.2).[542] Fifty of these plants were installed in 'virgin lands' and green field sites to provide housing for collective farms and rural settlements.[543] Most industrial housing exported by the USSR to the countries of Eastern Europe and the Global South—among others, to Afghanistan, Mongolia, and Cuba—were also based on the I-464 system, as Chapter 6 will show. Via industrial building

[539] 'Nikolai Petrovich Rozanov', *Arkhitektura SSSR,* 12 (1974), p. 41.
[540] The number of dwellings was calculated by the author, given that in 1958 the average area in a newly built apartment was 41 m^2: Sillince, *Housing Policies in Eastern Europe and the Soviet Union*, p. 254.
[541] V. Girskii, V. Golubev, and A. Shteinberg, *Zavodskoe Proizvodstvo Krupnopanel'nykh Domov* (Moscow, 1967), pp. 3-4.
[542] Ibid. See also a map of I-464 factories: *RGAS*, f. P-59, o. 5-4, d. 695, l. 1.
[543] RGAE, f. 180, o. 3, d. 541, l. 49.

systems, such as the I-464, socialist housing rapidly disseminated in the socialist world, emerging in urban areas as well as in rural settlements and green field sites. Most of these factories functioned up to the end of the Soviet Union in both urban and rural areas, not only adding to the surrounding architectural landscape but also fundamentally transforming the notion of 'urban' itself, in a process that Schmid called 'planetary urbanisation.'[544] In what follows, I will examine in closer detail how the installation of these factories changed the role of the metropolitan and regional actors involved in housing design. Arguably, with its installation, the I-464 was no longer limited to Nikolai Rozanov, nor Moscow-based institutes. Rather, it was transformed into the product of a multilateral development, driven by multiple experiments and carried out at the local level.

For Rozanov's team, the changes following the expansion of his system were significant. Initially, the founding institute, *Giprostroyindustria* was responsible for the building system and for developing most of its amendments and modifications. To coordinate installation and adaptations of the I-464 over the territory of the USSR, responsibility for the building system was in 1961 transferred to a new institution: *TsNIIEP*. *TsNIIEP* secured the right to coordinate frameless large-panel buildings, including the I-464 building system, 'after a fierce struggle' with other institutions. Rozanov moved to *TsNIIEP* and soon advanced to the position of an assistant director of the institute.[545] In his new position, Rozanov received the

[544] See: C. Schmid, 'Journeys through Planetary Urbanization: Decentering Perspectives on the Urban', *Environment and Planning D: Society and Space,* 36/3 (2018), pp. 591-610.
[545] Dykhovichnaia, *Lichnoe Delo*, pp. 17-18. In 1961 Rozanov became a director of Architectural Design Bureau 1 (*Arkhitekturno-konstruktorskoe buro* 1) and later, by 1964, an assistant director of *TsNIIEP*. *Giprostroiindustria* still cooperated with *TsNIIEP*, mainly on the technical side of the developments of the I-

power associated with the status of a high official: his expert evidence was normally required for approval of numerous regional amendments of the system of his design (Fig. 4.3). Due to the success of the building system, Rozanov expanded his role, moving from a specialised expert in industrial construction to a member of the Soviet technical elite, the so-called 'nomenklatura,' and later he became a 'personal pensioner' entitled to exclusive goods and services.[546] The I-464's primary success, due to the *Gosstroi* support of its underlying technological method, was therefore consolidated through the backing of the powerful central institution for housing design. Authors of the main rival housing building systems, Lagutenko among them, (see Chapter 1), by contrast worked in design institutes that reported to the local city halls of Moscow (*Mosproekt*), which placed them in a comparatively weaker position. It was not long before their systems were unable to compete with the union-wide scope of the I-464, coordinated by *TsNIIEP*.

In the 1960s, the I-464 was more than a separate serial project; it had become the common standard for the design and planning of industrial housing delivery. When developing other serial projects, architects often had to compare their economic and technical parameters with the I-464. For example, designing an essentially different experimental settlement of Aikhal in the permafrost region (analysed in the next chapter), architects were obliged to produce a version with I-464 blocks, even if such blocks could not be used in such climatic conditions. The design served for

464 system.

[546] 'Nomenklatura members' were high officials entitled to certain goods and services; 'personal pensioners' were retired nomenklatura members still entitled to certain goods and services. See: M.S. Voslenskii, *Nomenklatura: Anatomy of the Soviet Ruling Class* (London, 1984).

comparative reasons, indicating the normative costs of development, with which the parameters of the experimental buildings were compared.[547]

Changes in the regions associated with the installation of the system were significant as well. With the construction of the factories, regional administrations received a tool enabling them to account for the completion of the housing provision plans. However, the usage of this tool also limited the abilities of architects to develop independent solutions. The economic benefits of serial housing production came into effect only when factories operated at full capacity. Central bureaucracy actively used the argument of 'the unused capacities of a factory' to force regional actors to adopt standard industrial projects based on the panel technology.[548] Since the installation of the system in the regions, local design and engineering institutes were often forced to operate with the I-464, rather than developing their own solutions. The expansion of the I-464 edged out not only major rivals, such as Lagutenko's system, but also a myriad of smaller building systems developed in the republics and regions.

The implementation of centralised technology raised concerns about localisations—adaptations of the system to the great diversity of local conditions. The system's installation at most of the 200 plants required adaptations that ensured structural stability on various soils and under varying seismic conditions, as well as the design of climate-suitable adaptations. This resulted in hundreds of separate

[547] See: RGAE, f. 5, o. 5, d. 115, l. 120.
[548] See, for example: RGAE, f. 339, o. 3, d. 2302, l. 36.

modifications—construction solutions, changes to building height, and varying façade and internal layout articulations. As part of his unpublished research, Dmitrii Zadorin has identified more than five hundred modifications of the I-464.[549] Neither *TsNIIEP* nor any other Moscow-based design institute was capable of designing and supplying all these variations; rather, they were developed locally in the periphery, by local actors. These multiple modifications of architectural and technological nature were developed in the procedures of experimental design and construction, held on a regional level. Yet, even though such wide use of a single project shows centralisation, it also forces procedures of experimental development in the regions. In constrast to the common view of historiography, which tends to depict regional actors as passive recipients of metropolitan pre-designed solutions during industrialisation, a focus on experimental development may offer a new view of them as actors, who gained technologies they were able to actively adopt and adapt to their local needs.

The process of the localisation of the I-464 system involved experimental design and construction. Regional design institutions could develop experimental designs of new building types suitable to specific local needs based on the I-464 prefabricated components. For example, the design institute for rural construction, *Giprosel'stroi*, designed a low-rise building type for settlements and rural areas based on the I-464. This two-storey 'suburban' building type was adapted to be heated with solid fuel and had basements for storage of firewood.[550] Another design

[549] See footnote 15 in Meuser and Zadorin, *Towards a Typology*, p. 25.
[550] RGAE, f. 5, o. 1, d. 122, l. 73.

institute, *Uzgosproekt*, based in Tashkent, in cooperation with *TsNIIEP* adapted the I-464 to produce single-storey five-room cottages with backyards in Uzbekistan (Fig. 4.4). Since all regional housebuilding factories were coordinated by *Gosstroi*, any amendments to the system had to be agreed with the Moscow-based administration. Within this new institutional system, projects were labeled as 'experimental' to get them passed by Moscow for further standardisation and use in mass production. Given this, experiment became an inevitable in the process of standardisation of mass produced buildings. But it also provided opportunity to use it as a rhetorical tool in many cases, as we will see later in this chapter.

Experimental designs were submitted to the Moscow-based administration for experimental design, *Gosgrazhdanstroi*, which ensured that proposed buildings adhered to spatial and economic standards, as well as to sanitary and fireproofing standards. *TsNIIEP* supervised the development of housing types and often assisted in developing the engineering aspects of these designs, translating them into the 'language' of the building system, by producing detailed technical blueprints based on the modular and technical parameters of the building system. As in the case of the first experimental building in Vyksa, *Gosgrazhdanstroi* would then authorise the construction of experimental building prototypes (see Chapter 1). Upon scrutiny of this prototype by multiple commissions and administrations, *Gosstroi* would sanction the standardisation of the new building types. At the end of this process, which would sometimes take over a year, the final designs would be included in the catalogues of standard designs for given regions, which would finally allow their

mass production.[551] *TsNIIEP* specialists scrutinised experimental developments in the regions, and assembled new approved types and technologies into their own catalogues of standard building types associated with the system.[552] Scrutinising multiple experiments carried out in the provinces, *TsNIIEP* served as an aggregator of these low-level design initiatives, authorising acceptable modifications for further use. This approach was different from that of its predecessor, *NIIEP,* which was designed to provide designs to the regions, as we saw in the previous chapter. With each new successful experiment, the I-464 building system grew more varied and adaptable to various social, soil, and climate conditions. In what follows I look at two cases of the adaptation of the system in the regions, in which experimental development was intended to establish new standard designs.

Experiments concerning building stability

One of the main concerns over the use of the I-464 was ensuring structures' stability on various types of soil. The development of subsidence- and seismic-proof modifications demonstrates the balance of power between the centre and periphery agents in the experimental developments. Soils in the Kryvbas region of East Ukrain were prone to groundwater-related subsidence.[553] Sanctioned by the Ukrainian *Gosstroi* and funded from budgets for experimental development, *TsNIIEP* was ordered to develop a method to make the I-464 system stable on

[551] See, for example, the I-464 building types used in Kiev, Ukraine: *Al'bom Pasportov Tipovykh Proektov Zdanii i Sooruzhenii, 1960-1961* (Kiev, 1961).
[552] See: 'I-464' in *TsZhA.*
[553] Subsidence is the sinking of the Earth's surface in response to geological or man-induced causes. See: 'Subsidence', Encyclopaedia Britannica, https://www.britannica.com/science/subsidence (10 January 2019).

subsiding soil. Structural stability was ensured by construction of a special basement, which involved ground excavation, soil vibration, and strengthening of structures with a reinforced concrete frame. An experimental model of a building with such a basement was constructed in Dnipro (the nearest administrative centre to Kryvbas), on a special testing site, which, as a part of this experiment, was flooded to better test the structural stability.[554] Upon evaluation, *Gosstroi* approved the method and suggested the modification named I-464АП for 'mass application,' which included production at the factory in Kryvbas.[555]

However, after installation, this technology met strong resistance at the local level. Engineers of the local construction company *Krivorozhzhilstroi* came to be strictly against the centrally developed generic solution, finding it too cumbersome and ineffective in local conditions. In a publication in a local newspaper, a senior engineer of *Krivorozhzhilstroi*, O. Zasedatel', recapitulated the multiple flaws of the I-464 system, which, he argued, was developed by specialists who knew nothing about local specifics. The overriding priority for Kryvbas would be to give up on using the system as fast as possible.[556] In cooperation with the Kharkov design institute, *Krivorozhzhilstroi* developed their own housing delivery system, with a different architecture and different method of ensuring stability over subsidence: the structure was supported with piled footings. Zasedatel' argued that this local method was better suited for the region, ensured better stability, and was twice as cheap as

[554] RGAE, f. 5, o. 1, d. 289, l. 27-28.
[555] See *TsZhA*, inv. 28n282, '*I-464АП-1: 5et. krupnopanel'nyi zhiloi dom na 40 kv. dlia stroitel'stva na prosadochnikh gruntakh*', 1962.
[556] O. Zasedatel' and I. Fal'ko, 'S Pozitsii Neitraliteta', *Rabochaiia gazeta* [Kiev] (15 October 1963), p. 2. in RGAE, f. 5, o. 1, d. 289, l. 30.

the generic solution provided by the centre. However, local engineers had little support in promoting their system. A budget for experimental construction of a prototype, which would serve as proof of the viability of their method, was secured after 'an arduous fight with research employees from *Gosstroi.*' Yet, approving a new building system, which meant undergoing a variety of tests and securing the approvals of fire, sanitary, and other commissions of the Moscow bureaucracy became an impossible task for such provincial design institutes; nor it was feasible to convince the local administration to retool the gear at the factory, which was already set up for the production of the I-464. Zasedatel' lamented that the Ukrainian *Gosstroi* was not willing to support the experiment of local colleagues, and instead watched the struggle between Kryvbas and Moscow 'from the standpoint of [passive] neutrality.'[557]

In the wake of this conflict, Nikolai Rozanov addressed the issue in his expert evidence sent to *Gosstroi*. He refused to support the protest and argued that concerns with basement structure could not be the reason to change the system, since the I-464 was flexible enough to incorporate any technical solutions. Moreover, 'based on foreign experience,' *TsNIIEP* was developing basements with pile footings, similar to the one proposed by the Kryvbas engineers. Rozanov argued that Zasedatel' did not want to agree with either domestic or foreign practice, but rather 'wanted to build poor but peculiar.'[558] The root cause of the conflict seemed to be in the opposition of two building systems, since Kryvbas

[557] Ibid.
[558] RGAE, f. 5, o. 1, d. 289, l. 27–29.

specialists were reluctant to develop amendments to the I-464 system, and insisted on the effectually different technology of their own design. Ultimate control over the technology implemented at a local factory left the final decision in the hands of Moscow, which never allowed alternative development. The struggle of Zasedatel' against *TsNIIEP* is reminiscent of Vladimir Dudintsev's novel, 'Not by Bread Alone' *(Ne Khlebom Edinym)*—the tale of an engineer who is opposed by bureaucrats in seeking to implement his invention—that became a literary symbol of the Thaw.[559] As we saw in Chapter 1, Rozanov was once in a similar position, struggling to prove the feasibility of his designs to *Gosstroi*, but now acted from the side of the bureaucrats; his expert evidence carried authority to ban the rival development.

Both control over regional housebuilding factories and budgets for experimental development were essential tools of the central construction bureaucracy to promote their 'unified technical policy.' Centralisation of architectural production in the early 1960s eliminated many independant regional architectural practices and instead created a network of institutes, specialised in adopting and adapting standardised designs and systems, such as the I-464.[560] These policies reduced the possibilities for regional actors to develop independent systems. The case of Zasedatel' is indicative of the resistance such measures encountered at the local

[559] V. Dudintsev, *Ne Khlebom Edinym* (Moscow, 1957).
[560] Urban Design Institutes for residential and public buildings appeared in most cities with industrialised construction industries. These institutes were responsible for leading a 'unified technical policy' and using standard projects (*grazhdanproekt or -gorproekt.* E.g: *Gor'kovgrazhdanproekt, Cheliabgorproekt*, *Uzgorproekt*). On *Kazakhproject*, see: T. Baituleshova, A. Tatygulov, and E. Ozoling, *Ot Proektnoi Kontory Do Proektnykh Institutov: Iz Istorii Proektirovaniia Zhil.-Grazhd. Str-Va v KazSSR* (Alma-Ata, 1980), p. 25.

level; similar attempts to reject the I-464 system in favour of local development were quite common.[561] For many regional architects, it meant dramatic changes to their independent careers. In comparison with an independent development, work with standardised designs was described by architectural historians as neither a desirable nor a creative bureaucratic activity.[562] However, as we will see later in this chapter, standardised designs allowed regional actors to participate in and contribute to large-scale multilateral architectural and construction projects.

The research into stability on subsiding soil, to which Rozanov referred in his report, offers an interesting comparison to the developments of Kryvbas specialists. The Riazan'-based construction enterprise *Riazan'zhilstroi* conducted such research in their region. In cooperation with specialised research institutes, it developed four different types of groundwork to adapt the I-464 system for use on subsiding soil.[563] Among these various technologies of ensuring building stability, piled footings, similar to the ones proposed by Kryvbas specialists, were tested. In contrast to Kryvbas proposals, however, this research was supported by *Gosstroi*; the institute received funds for experimental development and assistance from a number of institutes specialised in construction science.[564] As part of the development, *Gosstroi* authorised the construction of twenty-five experimental buildings in Riazan', each featuring a different type of groundwork.[565] The purpose of this

[561] See the case of Iakutsk in Chapter 5.
[562] Drėmaitė, *Baltic Modernism*, p. 156.
[563] RGAE, f. 5, o. 1, d. 122, l. 138–39.
[564] Developed by *Riazan'zhylstroi* in cooperation with *TsNIIEP* and *NII Osnovanii i podzemnyikh sooruzhenii*. RGAE, f. 5, o. 1, d. 122, l. 142–46.
[565] RGAE, f. 5, o. 1, d. 122, l. 147.

experiment was to present these various methods for scrutiny and comparison to determine the best solutions for mass production. Financed by state budgets for experimental construction, this centrally-sanctioned experiment conducted in Riazan' was incomparably larger than the development in Kryvbas. However, even this joint research and development project had to be carried at the local level. Experimental construction was subject to the local factory and local soil and climate conditions, and was carried out in cooperation with regional design institutes and construction firms, and, correspondingly, local actors. As this chapter shall argue, participation in state-sanctioned experiments like these may also have bolstered the credentials of such actors.

The seismic-proof modification of I-464 illustrates how regional development was coordinated within the network of *TsNIIEP* institutes. Due to the multiple earthquake areas in the USSR, seismic safety of building structures was a central topic in the discussion of industrial housing. The feasibility of installing the I-464 building system in the regions largely depended on its capacity to withstand earthquakes. In 1959, the *Giprostroiindustria* developed the first seismic modification (I-464S) in collaboration with a select group of engineers and experts.[566] A participant in this project, the engineer Gigla Chanukvadze, remembers that it soon became unfeasible to carry out this work in Moscow.[567] The factories located in seismic regions themselves became a decisive factor in the transfer of the

[566] Rozanov, *Krupnopanel'noe Domostroenie*, p. 89.
[567] Gigla Chanukvadze, an engineer from *GruzGiprogorstroi,* Tblisi, specialised in seismic stability of buildings, and took part in the development of the seismic modification I-464S in 1959. Interview with G. Chanukvadze, conducted by Author, Tbilisi (over Skype), 20 May 2018.

seismic variant development from Moscow closer to the place of production. In the early 1960s, research on seismic adaptations of I-464 began separately in cities located in highly seismic areas of Uzbekistan, Azerbaijan, and Kazakhstan. Each department established their own seismic laboratories and received factories for use in experimental construction. Infrastructure, research facilities, local laboratories and departments' own capacities to develop experimental buildings were designed to enable local experimental research and development (*eksperimental'no-issledovatel'skaia i proektnaia deiatel'nost'*). In 1960 Alma-Ata-based *Kazgorproekt* carried out 'an experiment in adaptation of the Vyksa project [the I-464 building system] for the city of Alma-Ata.' This adaptation involved strengthening the building system to withstand a seismicity of nine points on the Richter scale.[568] Similar research was carried out in Uzbekistan and Azerbaijan. Upon evaluation and comparison of various seismic safety structures developed by these departments, *Gosgrazhdanstroi* approved a technology of *Kazgorproekt* and 'suggested' it for all seismic regions of the USSR under the name I-464AS.[569] In 1966, the city of Tashkent was devastated by a terrible earthquake that destroyed most of the city's old buildings. After this earthquake, the zonal institute in Tashkent became the main centre for researching seismic stability of buildings, and received a significant budget for seismic research tests. In 1967, *Gosstroi* allocated an impressive amount of almost one million rubles to perform full stability tests of the I-464 buildings, which included controlled dynamite explosions near models to simulate

[568] Baituleshova, Tatygulov, and Ozoling, *Ot Proektnoi Kontory Do Proektnykh Institutov*, p. 38.
[569] RGAE, f. 5, o. 1, d. 122, l. 199.

earthquakes.[570] The Tbilisi-based *TbilZNIIEP* institute also grew into an important centre for research in seismic stability, with ample technical facilities and its own doctorate training.[571] Within a decade, the institutes in Alma-Ata, Tashkent, Tbilisi, and other cities had developed more than thirty separate seismic modifications of the I-464, varying in their levels of seismic stability, building height, and architectural features (Figs. 4.5–6).

Nikolai Rozanov praised the earthquake-resistant modification I-464AS, developed in Kazakhstan, as the first seismic-stable large-panel housing building system in the world.[572] Combining the ease of installation and production with its seismically stable structure, the I-464AS became an especially important export product. It was installed in Yugoslavia after the earthquake in Skopje and in Cuba after Hurricane Flora in 1963. Due to seismic activity in Mongolia, Soviet housing exported there was also based on this system. The export enabled international contacts and exchanges among the Caucus-based institutes, which developed the technical side of the system. After the earthquake in Skopje, specialists came to *Kazgorproekt* for training (*perenyatie opyta*).[573] Similarly, Cuban engineers were sent to *Kazgorproekt* to be trained in the construction and assembly processes of the buildings.[574] Specialists in seismic research from Tbilisi worked in Mongolia and

[570] RGAE, f. 5, o. 1, d. 813, l. 151.
[571] See: M.A. Mardzhanishvili and G.R. Sadagashvili, *Krupnopanel'noe Stroitel'stvo v Zakavkaz'e* (Tbilisi, 1984).
[572] Rozanov, *Krupnopanel'noe Domostroenie*, p. 89.
[573] Baituleshova, Tatygulov, and Ozoling, *Ot Proektnoi Kontory Do Proektnykh Institutov*, p. 45.
[574] P. Alonso and H. Palmarola, 'Tropical Assemblage: The Soviet Large Panel in Cuba', in E. Medina, I.d.C. Marques, and C. Holmes (eds.), *Beyond Imported Magic: Essays on Science, Technology, and Society in Latin America* (Cambridge, Massachusetts, 2014), p. 166.

had established contacts with foreign colleagues on both sides of the Iron Curtain.[575] A focus on the research and engineering involved in the I-464 system offers a different story to that of regional actors loosing their independence with the politics of standardisation in architecture and construction. In contrast, as we have seen, the developments of regional actors were included into a larger and more complex system of architectural production. In global socialism, it created a wealth of connections, such as those between Yugoslav, Cuban, and Kazakhstan architects and engineers—an aspect that I discuss in further detail in Chapter 6.

The volume of research and development carried out as part of the localisation of building systems testifies that the use of standard projects was much more than simply the distribution of pre-designed solutions. Technologies of the I-464 system were developed as part of adaptations in the periphery, using regional infrastructure, regional productions capacities, and research budgets. Experiments were inseparable from local infrastructure and construction industries, local climate, and local social conditions. Arguably, the installation of the I-464 system in factories reversed the dynamics between experimental and standard: standard designs did not cascade from Moscow down to provinces, but, on the contrary, were extrapolated from regional experimental practice. This was reflected in an official definition of experimental development issued by *Gosstroi* in 1967, which emphasised that experimental construction had to be done 'in an actual material environment' (e.g.

[575] From 1978 to 1986, *TbilZNIIEP* cooperated with Stanford and other US universities for the development of seismic-stable housing for the US. Interview with Chanukvadze, conducted by Author, Tbilisi (over Skype), 20 May 2018.

on a local level).[576]

Even if Moscow-based administration and design institutes coordinated the process of localisation, in the mid-1960s, command of the I-464 building system was not limited to a single practitioner or design institute, but was being developed by a number of separate research institutes in Ukraine, Georgia, and Kazakhstan. This multilateral mode of use and development distinguishes the I-464 system from its prototype, the French building system engineered by Raymond Camus, which was limited to a single private firm.[577] The multilateralism in the development and use of I-464 allows us to look at the system beyond the dichotomies between centre and periphery. Instead, multilateral development enabled more horizontal, periphery-to-periphery, power dynamics in terms of collaboration and coordination. Chapter 6 also demonstrates that such collaboration was not limited to the USSR, but was also characteristic for international projects. The next section of this chapter will demonstrate that localisations included not only technical amendments, but also involved the building architecture itself.

Experimental construction in Akademgorodok

Apart from technical issues, the other major type of localisation of the industrial housing systems was the development of new building types based on the catalogues of I-464 prefabricated components. During the 1960s, architectural

[576] RGAE, f. 5, o. 1, d. 813, l. 187.
[577] Erofeev, 'The I-464 Housing Delivery System', pp. 207-30.

institutes designed building types for various climates, types of urban development, and social conditions. In addition to housing, a whole range of shops and public buildings were developed based on the components of the building system. *TsNIIEP* assembled these new types into the catalogue of standard building types and introduced them into mass production during major technical 'upgrades' of the housing delivery system. The first major upgrade of the system, 'I-464A,' was developed in 1962, introducing a spectrum of new building types, upgraded construction techniques, and an extended number of apartment layouts (Fig. 4.4).[578] In later years, the system underwent more revisions and upgrades, which added new types to the catalogue, such as nine-storey high-rises.[579] The case study of the development of new building types in Akademgorodok reveals that the questions of adaptations and experimental development were used for architectural, and sometimes political, means.

Akademgorodok was a scientific town in the Siberian boreal forest founded in 1957 as a satellite of Novosibirsk. The founders of Akademgorodok—among them, a high-ranked member of the Academy of Science, Mikhail Lavrentev—under patronage from Khrushchev, intended to create a world-class scientific centre there.[580] Similar to Kalinovka, discussed in the previous chapter, Akademgorodok was a privileged construction site, with ample state budgets channelled into it, and

[578] See: N. Rozanov, 'Tipovye Proekty Krupnopanel'nykh Zhilikh Domov Serii I-464a', *Arkhitektura SSSR,* 8 (1962), pp. 5-13, A. Rozenfeld and V. Kocheshkov, 'Uluchshat' Konstruktsii Krupnopanel'nykh Zdanii', *Stroitel'stvo i arkhitektura Moskvy,* 8 (1962), pp. 20-21.
[579] S. Sarkisov and E. Zil'bert, 'Krupnopanel'nye Doma Serii I-464 Povyshennoi Etazhnosti', *Zhilishchnoe stroitel'stvo,* 11 (1963), pp. 9-11.
[580] Josephson, *New Atlantis Revisited*, p. xiiv.

the participation of Moscow design institutes and high-status architects. A special enterprise, the Office of Capital Construction of the Siberian Branch of the USSR Academy of Science, was created for the construction. Anatolii Ladinskii, the Stalin prizewinner for his work on the Palace of Culture and Science in Warsaw, became chief engineer in charge of construction.[581] The Office of Capital Construction coordinated the work of two Novosibirsk-based design institutes: *Sibakademproekt* and *Novosibgrazhdanproekt*, together responsible for architectural design and planning, in cooperation with Moscow-based design institutes, among them *TsNIIEP* and *GiproNII.* In order to account for the hasty construction plans, a special construction enterprise was created, *Sibakademstroi*, which employed almost 19,000 workers, including members of Komsomol and military servicemen.[582]

Being a highly subsidised showcase project, Akademgorodok offered an opportunity for architects to propose innovative architectural projects and implement their visions of the ideal socialist urban environment. The system of cultural and social services in the town was based on the theoretical development of Georgii Gradov, and architects from *NIIEP* whom we met in Chapters 2 and 3. This planning scheme aimed to deliver on the socialist promise by greatly extending public services in residential areas to provide residents with everything they needed. Each micro-region designed in Akademgorodok had its own miniature 'cooperative

[581] During 1959–1976, he was the chief engineer of the Office of Capital Construction of the Siberian Branch of the USSR Academy of Sciences (Novosibirsk).
[582] *Sibakademstroi* employed up to 19,000 people, including more than 2,500 servicemen: *Rossiiskaia Akademiia Nauk. Sibirskoe Otdelenie: Istoricheskii Ocherk*, eds. E. Vodichev, S. Krasil′nikov, and V. Lamin (Novosibirsk, 2007), pp. 168-70.

centre,' with a service unit and shops, a canteen for 100 people and a takeaway, a consumer services centre, a hairdresser, post office, a savings bank, and a communal laundrette.[583] In the town centre, A. Obraztsov *et al.* designed experimental typologies of cooperative buildings, a stylish modernist shopping centre with a glass facade, with a restaurant and a club (Fig. 4.8).[584] Like other construction sites of innovative architectural projects, Akademgorodok became a site for sociological scrutiny and research.[585] Sociologists refered to Akademgorodok as a 'social experiment,' meaning an innovative material environment, which meant to infuse a particular social structure—a concept discussed further in Chapter 7.[586] Even if sociological research had revealed that the actual level of supply in the town fell behind the initial optimistic visions of planners, residents still enjoyed higher living standards there as compared to central Russia.[587]

Housing in Akademgorodok was similarly highly privileged, and class issues underlying the distribution of housing were particularly evident in its design. The promise of better housing was used as a key bait to convince members of the scientific and technical elite to quit Moscow institutes and move out to Siberia.[588]

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[583] A. Obraztsov, 'Sekrety Akademgorodka', *Nash sovremennik,* 4 (1965), pp. 110-11. See also: G. Nagorianskii, 'Akademgorodok, Ego Doma I Magistrali', *Iunyi Tekhnik,* 6 (1963), pp. 33-35.
[584] A. Ikonnikov, *Sovetskaiia Arkhitektura Shestidesiiatykh Godov* (Moscow, 1972), pp. 154-55, Peremyslov, *Koeffitsient Budushchego,* p. 80.
[585] On research in Academgorodok, see: K. Kartashova, *Obsluzhivanie Naseleniia Zhilyh Kompleksov Krainego Severa* (Moscow, 1972), p. 40.
[586] *Sotsial'nye Problemy Zhilishcha,* ed. A. Kharchev (Leningrad, 1969), pp. 109-10.
[587] On research in Academgorodok, see: Kartashova, *Obsluzhivanie Naseleniia,* p. 40. On company towns and privileged distribution, see: Brown, *Plutopia,* pp. 133-40.
[588] O. Marchuk, *Sibirskii Fenomen: Akademgorodok v Pervye Dvadtsat' Let: Vospominaniia* (Novosibirsk, 2007), p. 10.

Young employees and workers were often given no more than a room in the block for single people, yet for some of them this was a great improvement compared to the wooden barracks typical for most construction sites of that time.[589] Standard I-464 residential blocks with small-sized apartments were used in Akademgorodok as middle-class housing, accommodating specialists and research fellows.[590] Professors and senior fellows received apartments in more comfortable Stalin-era building types made out of brick with up to five-room apartments, larger kitchens, and a higher ceiling. Such buildings were normally no longer used in mass construction in the USSR after the campaign against 'excesses in architecture.' The leading scientific employees and the members of the Academy of Science received even better accommodation—they were housed in cottages, that is, houses, not apartments.[591] A whole district of pitched-roof cottages with two-storey apartments was constructed in Akademgorodok. The cottage of the president of the Siberian Branch of the Academy of Sciences, Mikhail Alekseevich Lavrentiev, was designed with a 'gothic roof' and as many as ten rooms (Fig. 4.9a).[592]

The cottages constructed in Akademgorodok were an exception, sanctioned by a direct order of Khrushchev.[593] Khrushchev also directly ordered the replacement of bricks with prefabricated technologies in construction of the town.[594] In 1962, the I-

[589] N. Pritvits, 'Ia Znaiu, Gorod Budet! Iz Dnevnika Aborigena Novosibirskogo Akademgorodka.', *Nauka v Sibiri*, 19 (2355) (17 May 2002), p. 5.
[590] A. Lozhkin, 'Akademgorodok. Sud'ba Utopii' Proekt Rossiia, 48 (2008) https://alexander-loz.livejournal.com/123023.html (29 March 2019).
[591] *Gosstroi* held a competition to develop these cottages. RGAE, f. 339, o. 3, d. 828, l. 101.
[592] Marchuk, *Sibirskii Fenomen*, pp. 65-66.
[593] Ibid., p. 65.
[594] Josephson, *New Atlantis Revisited*, p. 15.

464 housebuilding factories began to produce panel housing for Akademgorodok and Novosibirsk.[595] The design of industrial housing had to be adapted to the specifics of local housing distribution, and this task became the main focus of the experimental design and construction carried out by the Office of Capital Construction in 1962–65.[596] During these years, it designed and constructed a number of experimental building types for local needs based on the I-464 housing delivery system.

One such type was an industrial cottage, developed to replace earlier cottages made of brick. Designed out of the prefabricated components of the I-464 system, it required just one non-standard component to be produced at the factory (Fig. 4.9b).[597] Each prefabricated cottage was designated for two families and divided into two sections of roughly eighty square meters each, with separate entrances. Some families received the whole cottage, with a total space of 160 m^2, which was a luxury even by the standards of closed distribution in the Soviet Union.[598] Between 1962–64, twelve cottages were constructed, forming a district in a pinery.[599]

Novosibgrazhdanproekt also designed a number of multistorey residential buildings

[595] The total annual capacity of all housebuilding factories, projected in the Akademgorodok in 1959, was 715,000 m^2 of 'living space' per year. RGAE, f. 339, o. 3, d. 828, l. 92.
[596] RGAE, f. 5, o. 1, d. 673, l. 67.
[597] RGAE, f. 5, o. 1, d. 673, l. 73. RGAE, f. 339, o. 3, d. 828, l. 101.
[598] Although the cottage was divided into two separate sections due to its structure of load-bearing walls, some residents joined the two sections together by carving out a doorway in the internal wall. See: Marchuk, *Sibirskii Fenomen*, p. 43.
[599] RGAE, f. 5, o. 1, d. 673, l. 68.

based on the I-464 housing delivery system. Building types included amended dormitories and 'buildings for young specialists,' which also were more comfortable than the standard buildings for single people, which we saw in Chapter 2.[600] For the needs of senior research employees, building types with 'enhanced comfort' were developed. Apartments in these buildings were similar to Stalin-era types; they had up to five rooms, large kitchens and halls, and other 'improvements.'[601] All these buildings were presented as results of experimental design (*opytnogo proektirovaniia*), to be assembled with the prefabricated components of the I-464 system.[602] These typologies used existing prefabricated components to assemble new structures. The authors of the project critiqued the standardised Vesnin layout's highly unpopular measure to increase living space by merging the corridor with the living room (see Chapter 1) and developed an alternative.[603] Development of these buildings followed procedures of experimental design and construction. First, each building was constructed as an experimental prototype. It was then scrutinised through an 'obligatory discussion' with the representative of the housebuilding factory. After construction, each blueprint was revised, and amended with mistakes corrected. Amended models were also constructed and underwent similar procedures of scrutiny. In 1962–65, fifteen buildings with apartments of different types were constructed in Akademgorodok.[604]

After the demise of Khrushchev, Akademgorodok lost some of its initial privileged

[600] Three types of young specialists dormitories were designed by *Gipronii.* Ibid.
[601] Designed by *Novosibgrazhdanproekt.* Ibid, l. 65.
[602] RGAE, f. 5, o. 1, d. 673, l. 67.
[603] Ibid, l. 64.
[604] RGAE, f. 5, o. 1, d. 673, l. 67–68.

status. The housebuilding factory in Akademgorodok was centrally coordinated by *Gosstroi,* which ensured that housing production was standardised and normalised. In 1966, *Gosstroi* sanctioned an upgrade of the gear of the local housebuilding plant, with an updated system 'I-464A,' developed by *TsNIIEP*. However, for the local administration, the upgrade was not so desirable; it not only cost 500,000 rubles, but it would also set the factory back to producing general 'economical apartments.'[605] Anatolii Ladinskii expressed resistance to these measures, and instead proposed the implementation of an alternative locally developed upgrade. All building types, cottages, dormitories, and multistorey buildings with enhanced comfort, previously constructed as experimental models, were assembled in a catalogue of building types of a serial project, called 'Siberia.' In order to be standardised and implemented at the factory, which provided housing not only to Akademgorodok but also to the neighbouring Novosibirsk, the system had to be authorised by Moscow-based administration and was submitted to *Gosgrazhdanstroi* for scrutiny.[606]

Featuring large-scale apartments, the 'Siberia' modification explicitly contradicted the requirements of the all-union construction rules (*SNiPs*). However, the project was supported by high-status officials and senior academics, among them, the secretary of Novosibirsk's regional party committee, Fedor Goriachev, and Anatolii Ladinskii. In his letter to *Gosstroi*, Goriachev suggested abandoning the generic principle of housing distribution based on 'living space per person' in favour of a

[605] Ibid, l. 63.
[606] Ibid, l. 69.

new ‘per family ratio.’ He asked for a review of the method of planning, accounting, and financing of housing construction, based on the number of apartments rather than square metres—to adopt ‘the method, which is used in most foreign countries.’[607] The project, thus, challenged the main principle of Soviet apartment distribution.[608] Ladinskii argued that the apartment types of the ‘Siberia’ set were ‘required for the particular categories of workers’ in the region.[609] The project thus acknowledged that there were families in the USSR who required spacious apartments instead of the usual social standards. As memoirs about life in Akademgorodok suggest, minimal apartments were, in fact, sometimes inappropriate in the town, and the local administration would have to assign two neighbouring apartments to a single family.[610] The large apartments of ‘Siberia’ thus aimed to facilitate housing distribution by altering housing norms in the region.

In the case of ‘Siberia,’ amendments to the I-464 system were not only architectural, but also part of a political question lobbied by the powerful elite and the regional administration. Yet, from the point of view of the *Gosgrazhdanstroi*, Siberia was a heretical proposal, contradicting the basic norms of housing distribution. The *Gosgrazhdanstroi* issued expert evidence from *SibZNIIEP*, which described the project as violating the norms and ‘conflicting with the politics of technical progress.’[611] It was thus rejected in favour of a generic upgrade, I-464D, which was

[607] RGAE, f. 5, o. 1, d. 673, l. 85.
[608] Timothy Sosnovy noted in 1959, ‘The USSR is the only country in the world where housing is measured in square meters of living space per person rather than in terms of apartments or number of occupants per room.’ Cited in Harris, *Communism on Tomorrow Street*, p. 54.
[609] RGAE, f. 5, o. 1, d. 673, l. 65.
[610] Marchuk, *Sibirskii Fenomen*, p. 34.
[611] Report of N. Panteleev, *SibZNIIEP*: RGAE, f. 5, o. 1, d. 673, l. 128–137.

installed in Novosibirsk in 1968. Given the command of factory production in the region, the Moscow-based *Gosgrazhdanstroi* held the function of supreme supervision, and as such was responsible for ensuring adherence to economic and spatial standards. As a powerful centralised institution, through centralised upgrades it forced normalisation of building types, monitored the purity of architectural language, and distinguished acceptable building-types from heretical ones. Even the influence of the powerful political and scientific elite of Akademgorodok was not enough to implement a non-normative project in their own factory. A standardised building system thus became a powerful tool to deliver norms to the regions and ensure their compliance with them.

Even with the support of powerful officials, the Office of Capital Construction had not been able to lobby their designs into mass production, yet they still were able to construct a number of buildings as 'experimental prototypes.' This status allowed significant deviations, such as exceedances of spatial norms, as we have seen. Since guidelines normally prohibited the replication of experimental buildings, each constructed building was slightly different in layout.[612] Archival sources suggest that such use of the label of experiment was quite common at the local level. In Tashkent, for example, the experimental micro-regions addressed 'mastering air-conditioning en masse,' which could indicate an intention to create a district with better technically equipped housing.[613] In the 1960s, using the discourse of techno-

[612] *Gosgrazhdanstroi* normally denied requests for the *pryvyazka* (repeated use) of experimental projects. See, for example: RGAE, f. 5, o. 1, d. 122, ll. 66, 73.
[613] RGAE, f. 5, o. 1, d. 122, l. 35.

scientific knowledge, the regional administration often pursued its own goals in producing more comfortable housing.

Within Soviet construction bureaucracy, experimental construction was reserved as a field for controlled innovations, where it was possible to deviate from technical and spatial rules. Experimental construction was financed from the regional budgets of *Sovnarkhozy* and regional design institutes had more control and freedom in using them.[614] In both cases discussed in this chapter—of the Ryazan subsistence-stable buildings and the enhanced buildings of Akademgorodok—regional actors were able to secure resources for the construction of models but faced problems at the stage of standardisation. Before standardisation, experimental types were placed under the close scrutiny of multiple expert commissions, and could be easily cancelled at any stage. Yet, within this category, the Soviet construction industry thus reserved a certain amount of freedom for regional actors. In the case of Akademgorodok's development, the label of experimentation was used as one possible way to circumvent the general norms of housing design to deliver more comfortable housing. In Stalin-era housing architecture, large residential towers with apartments for the elites may have included many innovations, but tended not to be referred to as experiments.

Conclusion

[614] On Sovnarkhozy, see: N. Kibita, *Soviet Economic Management under Khrushchev : The Sovnarkhoz Reform* (London, 2013).

The experiment with industrially-produced cottages was short-lived and has not tended to be replicated in urban Soviet Russia.[615] Such cottages, however, appeared in southern republics and became relevant in export projects, with sometimes impressive architectural qualities (see Chapter 6). The proved the feasibility of architectural adaptations of the I-464 system beyond the idiosyncratic multistorey block (*khrushchevka*). Yet, domestically, the I-464 system was installed in hundreds of plants and soon gained a reputation of being an architecturally inflexible system that contributed to the architectural uniformity of the urban fabric of socialist cities. Despite the architectural ambition to add variable building types, in general the I-464 system was still characterised by a high level of uniformity. Most buildings produced with the I-464 system throughout Soviet countries rarely departed from the shape of the rectangular multistorey block. However, that was not due to a lack of architectural experiments. One perceived factor responsible for this was the system's technical characteristics, which placed major limitations on the architecture of resulting structures. The housing shortage (which was never completely solved in the USSR) forced an economically-driven programme of housing provision which, matched with the highly regimented environment of Soviet construction industries and a bureaucratic force for standardisation, contributed to the uniformity and a disregard of architectural aesthetics.

Already in the mid-1960s, the *TsNIIEP* perceived the rigidness of the I-464 as one of its major problems and constantly worked to increase the systems' flexibility in

[615] According to Kartasheva, Akademgorodok was a unique cottage development in the USSR. Interview with K. Kartashova, conducted by Author, Moscow (over Skype), 16 November 2017.

later developments. Upgrades issued by *TsNIIEP* in the 1970s introduced significant structural changes to the building system. One modification, known initially as I-464M, was later distinguished into the separate typologies 90 and 121, which offered more room for design variability, various facade articulations, and a greater range of internal apartment layout variations (Fig. 4.10).[616] While these upgrades introduced significant improvements to the system, in practice they were rarely implemented at the factories. Such upgrades required installation funding and time investments for the retooling of factories, which often represented an impossible task for the slowing late-Soviet economy. The vast majority of the factories producing prefabricated components was established on the eve of the industrialisation of housing delivery in the early 1960s, and many of these plants held to the previously mastered—and now obsolete—technologies, ignoring new developments.[617]

[616] See: N. Rozanov, 'Krupnopanel'nomy Stroitel'stvy v Sibiri i na Dalnem Vostoke – Vysokoe Kachestvo', *Arkhitektura SSSR,* 12 (1981), pp. 36-38.
[617] According to Allen, the difficulties involved in retooling old plants were one of the major causes for the general decline of the late Soviet economy. See: Allen, 'The Rise and Decline of the Soviet Economy', p. 866.

Chapter 5. Experimental and standard housing in the Far North

Introduction. Soviet housing projects at Montreal 'Expo'

In the 1967 international exhibition 'Expo' in Montreal, the Soviet Union featured an astonishing architectural project. It was a model of the settlement 'Aikhal' designed for a diamond mining company in a sub-polar region of Iakut Autonomous Soviet Socialist Republic (the Iakut Republic) (Fig. 5.1). This region is marked by winter temperatures reaching -50°C, months of darkness, and permafrost. In the project exhibited, all the residential and public buildings of the settlement were united, via insulated hanging galleries, into a single complex with its own artificial climate. By creating an internal space completely isolated from the outer environment, the project aimed to create the illusion of being a habitat located in a temperate climate, rather than in permafrost. The project attracted a great deal of attention in both the Soviet and foreign press.[618] The Soviet press depicted Aikhal as a 'settlement-palace,' where 'shrubs, flowers, [and] vegetables will grow all year round under a glass dome … in the light of the electric sunshine, there will be no polar nights.' A Japanese journalist reported: 'Glass galleries will maintain a constant temperature of 15–18 degrees, residents of the city will be able to get to work or to a cinema in light summer clothes regardless of the outside

[618] Beyer, 'The Soviet Union Is an Enormous Construction Site', p. 257. The Architecture of the Soviet pavilion was itself quite remarkable, see: A. Ortenberg, 'The Soviet Pavilion at Expo 67 in Montreal: The Power and the Limits of a Symbol', in A. Aronova and A. Ortenberg (eds.), A history of Russian exposition and festival architecture: 1700-2014 (London, 2018), https://bodleian.ldls.org.ukI.

temperature.'[619] Aikhal was one of those futuristic projects for which Soviet architecture of the 1960s is famous. Even today, such projects systematically attract the attention of researchers.[620] Even if such projects were rarely implemented, for architectural historians they symbolised an advanced and progressive stream of Thaw architecture, which gave room to architectural creativity and individual expression.

Unlike other similar projects, the Aikhal settlement was not simple designed but was also actually constructed, although its construction only took place twenty years after its original design, and according to a significantly modified form. However, at the year of the Montreal exhibition, the actual practice of urban development in the Soviet North was different to the approach presented by the Aikhal project. Instead of high-tech 'settlement-palaces,' Soviet development in the Far North mostly involved the construction of prefabricated mass housing. Aikhal was featured at the peak of a victorious crusade of industrial housing delivery to the Far North, when Soviet industry was actually delivering residential areas to the Far North packed with standardised rectangular blocks, which had little in common with the model of this futuristic settlement. Along with mass housing in general came Soviet Russia's unique approach to the colonisation of the distant northern territories with large-scale densely populated settlements. As a result of these

[619] Okada Iasukhiko at Mainity, Tokyo. Cited in *Za Rubezhom*, 14 (1966), in Eduard Putintsev's private archive: http://eduard-putintsev.ru/aihal_international (8 August 2019).
[620] See, for example: E. Kalemeneva, 'Gorod pod Kupolom: Sovetskie Arkhitektory i Osvoenie Krainego Severa v 1950-1960-e Gody', *Bulletin Des Deutsches Historisches Institut Moskau: Konstruiruia "Sovetskoe"? Doklady Nauchnoi Konferentsii Studentov i Aspirantov, 20 - 21 Aprelia 2012 Goda* (Sankt-Peterburg, 2013), pp. 93-108.

policies, the Soviet Union built the largest cities in the Arctic—such as Murmansk, Norilsk, and Vorkuta—with population and urban densities similar to major cities in temperate latitudes (Fig. 5.2).[621] The colonisation of remote lands in extreme arctic conditions through mass housing became a uniquely Soviet approach, and significant progress was achieved by mastering it.[622] Along with Aikhal, standard mass housing was presented in the Montreal 'Expo' as one of the crucial achievements of Soviet industry.[623] Here we deal with two distinct types of modernisation of the Far North: the heavily insulated standard housing, and experimental projects such as the settlement of Aikhal with its artificial climate. How were these two modes of development correlated? Were they the constellations of different kinds of thought, the work of different professional groups? Does Aikhal represent the opposition of a creative minority against the bureaucratic machine of mass housing production? This chapter addresses these questions, looking at the dynamics between the practices of experimental and standard design, and argues that these two seemingly different projects are in fact closely interlinked.

Both the settlement of Aikhal and mass housing were designed by the same institutions, as a cooperation between the central *TsNIIEP*, its zonal branch *LenZNIIEP*, and regional architectural and construction practices. This chapter

[621] A. Bond, 'Urban Planning and Design in the Soviet North: The Noril'sk Experience', *Soviet Geography,* 25/3 (1984), pp. 150-51. In 1991, the total population of the Russian North peaked at 9.8 million. T. Heleniak, 'Out-Migration and Depopulation of the Russian North During the 1990s', *Post-Soviet Geography and Economics*, 40/3 (1999), p. 159.
[622] According to Jull, significant progress in construction and planning for the Far North was achieved in the USSR particularly through standard housing. M. Jull, 'Toward a Northern Architecture: The Microrayon as Arctic Urban Prototype', *Journal of Architectural Education,* 70/2 (2016), p. 221.
[623] Beyer, 'The Soviet Union Is an Enormous Construction Site', p. 257.

scrutinises the construction of the settlement of Aikhal, as well as the delivery of mass housing in various northern cities, in particular Norilsk, Magadan, and Iakutsk.

The cities of Norilsk, Magadan, Iakutsk and Aikhal are located thousands of kilometres apart from each other in significantly different climatic conditions (see map in Fig. 4.2). Yet, from the perspective of planners, all these cities belonged to the same zone: the Far North.[624] According to the modern definition, the Russian North encompasses as much as seventy per cent of the country's territory, stretching from Saint Petersburg to Vladivostok.[625] Yet it is the least developed territory of the country. The North was first officially defined in the 1960s. The notions employed by experts in the policies of 'mastering of the North' were informed by the works of Samuil Slavin.[626] Slavin defined the 'northern zone,' including a subzone of the 'Far' or 'Extreme' North (*Krainii Sever*), by its 'location to the north of long-standing settled and economically developed areas of the country; remoteness from large industrial centres; harsh climatic conditions, which make economic and social development difficult; and greater expenditure of resources for exploitation and development. (Fig. 5.3).'[627] The definitions of both zones were based on political-economic criteria rather than climatic conditions. The zones demarcated the

[624] The first climatic zone was defined based on physical environment and was slightly different from the zoning used by planners, yet in both delineations, the cities of Norilsk, Magadan, and Iakutsk belonged to the same area (compare maps in Figs. 5.3 and 5.4).
[625] L. Kaganovsky, 'The Negative Space in the National Imagination: Russia and the Arctic', *Arctic Environmental Modernities* (2017), p. 170.
[626] Heleniak, 'Out-Migration and Depopulation', p. 204.
[627] S. Slavin, *The Soviet North: Present Development and Prospects* (Moscow, 1972), pp. 38-39. There was no uniform definition of the North, and those definitions based upon physical or climatic criteria contradicted political-economic and administrative definitions. See: M. Bradshaw, 'The Russian North in Transition: General Introduction', *Post-Soviet Geography*, 36/4 (1995), p. 197.

territories designated for the development and correlated with the 'northern bonuses' (*severnye nadbavki*), added to salaries as the main incentive for workers from the more temperate latitudes of the Soviet Union to move and settle in the North. Zoning was also relevant in the construction industry. 'The first climatic zone,' was first introduced in the 'Construction Standards and Rules' (*SNiPs*) of 1958, which and largely correlated with the North.[628] For simplicity, in this chapter, I use the term 'Far North' to refer both to the zone as defined by Slavin and to the 'first climatic zone' used in the construction industry.

With its extreme climate, scarce infrastructure, and physical remoteness from the European part of the USSR, the Far North was the subject for Soviet state's expansion in its *mission civilisatrice* of 'internal colonisation,' in Etkind's terms.[629] Settlement building and industrialisation in the North were shaped by a multi-faceted policy of 'mastering' (*osvoenie*) of the North.[630] Magadan and Norilsk were founded during one of the peaks of these efforts in the 1930, which corresponded to the establishment of the Gulag system. Norilsk, located in permafrost tundra beyond the Arctic Circle, had strategic importance as the most militarised of the Soviet polar cities.[631] Magadan, a Far-Eastern port, was established on a green-field site in

[628] The territory of the USSR was divided into four main climate zones and five sub-zones; among them, zones with moderate, hot, harsh continental, and 'severe' climate. *SNiPs* prescribed that 'residential buildings have to be designed according to the climate and daily needs of the population of each zone.' Construction standards and rules included guidelines regarding the adaptation of housing for the different regions of the USSR. See: SSSR, *Stroitel'nye Normy i Pravila. Chast' 2. Razdel 5. Glava 10: Zhilye Zdaniia*, p. 6.
[629] See: A. Etkind, *Internal Colonization: Russia's Imperial Experience* (Cambridge, UK, Malden, MA, 2011).
[630] Bradshaw, 'The Russian North in Transition', T. Armstrong, *Russian Settlement in the North* (Cambridge, 1965), pp. 125-71.
[631] See: S. Ertz, 'Building Norilsk', in P.R. Gregory and V.V. Lazarev (eds.), *The Economics of Forced Labor : The Soviet Gulag* (Stanford, CA, 2003), pp. 127-50.

a remote gold-producing region, to be the 'Capital of the Gulag.'[632] Both Norilsk and Magadan rapidly grew into the largest cities in the Far North, constructed and run by means of forced labour. Even through they were the most important northern urban centres, they lacked rail or road links with the 'mainland' (*materik*), so goods were often transported by air or river barge, during navigation seasons only. In the 1930s, both cities were mostly designed from Moscow offices, with romantic Stalinist architecture, resembling the designs and city plans used in temperate latitudes. Nordlander describes Magadan as a figurative Petersburg-on-the-Pacific in Soviet times.[633]

Khrushchev's policies triggered a second major 'assault' (*nastuplenie*) on the Far North, which began after 1956. The industrialisation related to the exploration of nonferrous metals and minerals led to the foundation of new towns and rapid expansion of existing cities in the Far North. Gulag-towns run by slave labourers were transformed at this stage into 'company towns,' in the words of Barenberg, through a rapid injection of new labourers—among them, migrant workers and Komsomol volunteers.[634] Yet there were many material remnants of the Gulag, and in the 1960s most of the population of these towns still consisted of former prison labourers.[635] The situation was different in Iakutsk, a city in Iakut Republic, Eastern

[632] D. Nordlander, 'Capital of the Gulag: Magadan in the Early Stalin Era, 1929-1941' (D.Phil. thesis, University of North Carolina, 1997). See also: P. Grebeniuk, *Kolymskii Led: Sistema Upravleniia na Severo-Vostoke Rossii, 1953-1964* (Moscow, 2007).
[633] Nordlander, 'Capital of the Gulag', p. 11.
[634] See Barenberg's account of the town of Vorkuta: Barenberg, *Gulag Town*.
[635] See the memories about the reconstruction of Norilsk camp before the arrival of Komsomol members: L. Nazarova, 'My, Molodye Arkhitektory, Ne Sdavalis′ i Sviato Verili Lozungu "Vse Vo Imia Cheloveka, Vse dlia Blaga Cheloveka"', in G. Kasabova (ed.), O vremeni, o Noril′ske, o sebe… (5; Moscow, 2005), http://www.memorial.krsk.ru/memuar/Kasabova/05/Nazarova.htmI (31 March 2019). For the 'heritage' of the Gulag in the Far North, see: D. Healey, 'Nasledie Gulaga: Prinuditel'nyi Trud Sovetskoi Epokhi Kak

Siberia, which was founded in the seventeenth century as a port on the Lena River. It is the second coldest city in Russia, located in a zone of extreme subarctic climate, while at the same time experiencing warm summers due to the harsh continental climate. The town consisted predominantly of wooden pre-revolutionary structures with almost half of the urban population consisting of indigenous people, Iakuts and Evenks. In the 1960s, Norilsk, Magadan, Iakutsk, and other major cities in the North became subjects for the implementation of the 'unified technical policy,' which stipulated industrialisation of the construction sphere for the production of mass housing (see introduction to the previous chapter). Housebuilding factories associated with the I-464 system were installed in each of these cities to produce prefabricated components for mass housing (see map in Fig. 4.2). Among these towns, Aikhal represented a different type of development—it was a smaller, company town, founded to explore a diamond deposit in Iakut Republic in 1961 by the diamond-mining company *Iakutalmaz*.[636] Departmental towns like this were often more privileged and planners often had more leeway to propose non-typical projects.[637]

An important aspect of the Soviet strategy of 'mastering the North' was its ambition to create a permanent population of northerners that would live in the area and explore its resources. Development strategies involved encouraging migration of workers from temperate latitudes to the Far North, retaining them there, and

Vnutrenniaia Kolonizatsiia', in A. Etkind, D. Uffellmann, and I. Kukulin (eds.), *Tam Vnutri: Praktiki Vnutrennei Kolonizatsii v Kul'turnoi Istorii Rossii* (Novoe literaturnoe obozrenie, 2012), pp. 684-728.
[636] See: V.M. Dvorak, *Urui, Aikhal* (Moscow, 2001).
[637] See: Brown, *Plutopia*.

struggling against their outmigration. While the task of creating this permanent population was addressed in economic terms, it involved the idea of inhabitants' comfort and wellbeing. The promise of comfort in prosperous cities where workers could live higher than the middle class in exchange for tolerating a harsh climate was central to the project of mastering the North.[638] In the view of Soviet planners, comfortable settlements, with spacious apartments, a full spectrum of every-day public services, and a high level of 'beautification' were seen as a key prerequisite to encourage people to settle in the Far North.[639] The promise of comfort was especially explicit in the urban environment of departmental towns, which normally had more funds for development.[640] Moreover, in accordance with the pro-natalist policies of the Soviet state (see Chapter 2), planners argued that an indigenous northern population would be created if women were provided with a material environment and services that were supportive of giving birth in the North.[641] Residential blocks and public facilities were seen as an instrument of colonisation and also of the symbolic transformation of the former Gulag labour camps into 'ordinary' Soviet cities.[642]

The demarcation of climatic zones had a profound effect on the design and planning of the Far North. After 1963, architectural design, urban planning, and the development of construction industry in each zone was assigned to specialised

[638] Compare this with the 'nuclear Big Deal' in the cities of the Soviet atomic program: ibid., pp. 133-40.
[639] V. Ianovskii, *Chelovek i Sever* (Magadan, 1969), pp. 38-41.
[640] On departmental privilege, see: Brown, *Plutopia*, pp. 133-40.
[641] Ianovskii, *Chelovek i Sever*, p. 33.
[642] On the changes in urban policies in the Far North, see: E. Kalemeneva, '"Povorot k Cheloveku" v Proektakh i Praktike Urbanizatsii Krainego Severa SSSR v 1950-1960-e gg.' (Candidate's dissertation, Higher School of Economics, 2019), p. 81.

'zonal' institutes of the *TsNIIEP* system.[643] In 1963, The Leningrad-based Zonal Scientific Research Institute for Experimental and Typical Design of Housing (*LenZNIIEP*) was put in charge of the first climatic zone. Its mission was the coordination of urban planning and the development of 'economic and comfortable housing and public buildings' throughout the Far North.[644] *LenZNIIEP* had to supervise the practice of standard design in the Far North to 'summarise the experience of the construction and design work in the zone,' to further develop standard designs based on this experience.[645] During the 1960s, the employees of the institute conducted multiple research trips and inspected various areas of the Far North. In terms of architecture and construction, the remoteness and diversity of conditions in the Far North make it problematic to implement the 'unified technical policy.' In contrast to the unified approach to urban development discussed in the previous chapter, a systematically different approach to architecture and urban development in the Far North was required, based on different urban and housing norms. Based on *LenZNIIEP* archival materials, this chapter shall first provide a brief overview of the practice of standard housing construction in Norilsk, Magadan, and Iakutsk, and then proceed to examine experimental projects.[646]

Standard housing: the I-464 housing delivery system as part of the strategy to

[643] Within this system, the Moscow-based *TsNIIEP* was in charge of the European zone; the Tashkent-based *TashZNIIEP* focused on the hot southern zone.
[644] TsGANTD, f. R-17, o. 1-1, d. 591, l. 5. *LenZNIIEP* was founded on the base of the Leningrad Design Institute of the Academy of Architecture, which was previously responsible for the development of the North. See: Kalemeneva, 'Povorot k Cheloveku', p. 103.
[645] RGAE, f. 5, o. 1, d. 317, l. 2.
[646] The archives of *LenZNIIEP* are kept in TsGANTD, f. R-17.

master the Far North

As we have seen, the Soviet approach to urban development saw architecture, planning, and the construction industry as part of a synchronized and nested economic and spatial planning and development of the country (an aspect I discuss in the thesis introduction). Industrial housing delivery in the Far North was entwined with the broader strategy of 'mastering'—the general plans for the economic and industrial development of the region. Soviet regional economic development established industry as the primary urbanising force, and the planning of cities and settlements was coordinated by a region-wide economic plan.[647] The urbanisation of the Far North took place largely in response to the development of industry around natural resource extraction in an economically viable way. *LenZNIIEP* was part of a broader institutional system for the planning of the Far North. The leading planning institute of this system, Leningrad-based *Lengiprogor*, developed long-term regional development plans, which stipulated the creation of new industrial hubs, which integrated housing, industry, transportation, and long-term planning schemes for economic growth.[648] In 1966 *Lengiprogor* devised a plan (*skhema raionnoi planirovki*) for the Iakut Republic, including Aikhal and Iakutsk in a nineteen-year plan for the region's infrastructural development.[649] *LenZNIIEP* contributed to the regional planning of the zone's construction industry by including

[647] On Soviet regional planning, see: Collier, *Post-Soviet Social*, Dellenbrant and Vale, *The Soviet Regional Dilemma: Planning, People and Natural Resources*, Bandman, Hamilton, and Kutyrev, *Regional Development in the USSR. Modelling the Formation of Soviet Territorial-Production Complexes*.
[648] On Giprogor institutes, see: M. Meerovich, 'Giprogor: Organizatsiia i Liudi' (20 May 2014) https://archi.ru/russia/54884/istoriya-otechestvennogo-gradostroitelstva-giprogor-1929-1932-gg (24 November 2018), M. Meerovich, 'Giprogor: Idei i Metodologiia' (27 May 2014) https://archi.ru/russia/55034/istoriya-otechestvennogo-gradostroitelstva-giprogor-1929-1932-gg (24 November 2018).
[649] The plan for economic development (*skhema rayonnoy planirovki*) of YASSR up to the year 1985. See TsGANTD, f. R-17, o. 2-6, d. 1195, l. 14.

plans for provision of housing into these comprehensive planning schemes. The location of house-building factories and the 'identification of their economic feasibility' was crucial in long-term planning for the region.[650] This plan stipulated the establishment of large-scale northern cities and the rapid provision of industrial mass housing. Factories or prefabricated housing were projected for all the large urban centres of the Far North (Figs. 5.5–7).[651]

Yet in the early 1960s, during the installation of the first housing delivery factories in the Far North, there was not enough knowledge about the performance of industrialised housing in permafrost conditions. In the absence of specifically northern housing prototypes, planners attempted to adapt standard housing typologies for northern conditions.[652] In 1961, *Giprostoiindustria* was ordered to amend the I-464 system for harsh climate and permafrost. The Kiev branch of the institute, which had no previous experience in such developments, designed a prototype for permafrost and ironically, tested it, constructing a model in Kherson in Ukraine, near the Black Sea coast.[653] The prototype had minor construction differences from its temperate-climate prototype: it used thicker wall slabs and building materials with better insulation, and had no balconies.[654] This modification was named I-464M and recommended as the standard solution for the Far North. It

[650] For housing planning in the Far North by *LenZNIIEP*, see: TsGANTD, f. R-17, o. 1-1, dd. 548; o. 2-7, d. 1254–56.
[651] TsGANTD, f. R-17, o. 1-1, dd. 548; o. 2-7, d. 1254, l. 37.
[652] A. Iastrebov, 'Osvoenie Krainego Severa i Problemy Stroitel'stva', *Problemy Severa*, 10 (1964), pp. 21-30.
[653] S. Akbulatov, 'Razvitie Krupnopanel'nogo Stroitel'stva v Raionakh Rasprostraneniia Vechnomerzlykh Gruntov', ibid., p. 33.
[654] On I-464M, see: TsGANTD, f. R-17, o. 2-5, d. 1117, l. 25.

was first installed in Norilsk, which, as it was the polar city of most military value, thus had priority in the development of a construction industry.[655]

As the previous chapter demonstrated, metropolitan practitioners were often unsuccessful in pre-designing standard solutions for later application in the periphery; rather adaptations were better delegated to regional practitioners. The design of permafrost modification followed a similar logic—local practices based in the Far North attempted various ways of redesigning the system at the site, adapting it for local conditions. For example, Norilsk architects developed a special foundation, which raised the I-464M building up on pilings to prevent melting of the permafrost beneath the structure (Fig. 5.8). In contrast, Magadan architects attempted to use the seismic-stable modification I-464ASP to help buildings resist soil deformations on permafrost, even without pilings.[656] Similarly to the development of the seismic-stable modification of the I-464, discussed in the previous chapter, the development of the permafrost version of the building system soon became a decentralised multilateral project.

In the early 1960s, architects' primary concern over the localisation of industrial housing in extreme climates were issues of a technical nature, such as the stability of structures built on permafrost, and methods of insulating buildings. Apart from the required structural changes, standard housing in Norilsk and Magadan mostly

[655] Production started in 1963: TsGANTD, f. R-17, o. 2-2, d.479, l. 21; G. Ol′, *Planirovka i Zastroika Zhilykh Kompleksov Krainego Severa* (Leningrad, 1968), pp. 17-18.
[656] Production started in 1964–65. See: TsGANTD, f. R-17, o. 2-5, d. 1116, l. 29; TsGANTD, f. R-17, o. 1-1, d. 548, l. 5.

replicated the types of apartments used in temperate climates of the USSR. Inspections carried out by *LenZNIIEP* professionals in the selected towns in the North revealed the clash between these models and the reality of conditions in the Far North. The I-464 was ill-suited for severe climates due to poor joint hermetization and insufficient thermal insulation. The narrow form of industrial residential blocks made it particularly difficult to insulate staircases, which were prone to frost penetration, leading to freezing and the subsequent explosion of heating radiators.[657] Moreover, analyses of the 'exemplary' newly-built settlements with presumably the 'highest living standards in the Far North,' in Vorkuta and Norilsk regions, revealed that the actual living conditions still lagged behind the desired level. Residential buildings were covered in mud, paving was often missing, and public services did not work properly.[658] The settlements did not deliver the declared promise of a comfortable life in the North (Fig. 5.9).

According to *LenZNIIEP* reports, the policies of the industrialisation of housing delivery degraded residential architecture. Much better housing for permafrost was designed by the architectural practices based in Norilsk and Magadan prior to industrialisation, back in the 1940s. In these residential blocks, staircases were located in the core of the building, together with kitchens, and living rooms formed the inner perimeter (Fig. 5.10). Such a layout formed a wide block with an insulated core, which proved to provide much better insulation of auxiliary spaces (Fig.

[657] The poor performance of typical projects was obvious to both local administration and planners. See the report about the installation of industrial construction in the Far North, 1962: TsGANTD, f. R-17, o. 1-1, d. 548, l. 5. On I-464 in the North, see also: V. Litskevich, *Zhilishche i Klimat* (Moscow, 1984), p. 162, Ol′, *Planirovka i Zastroika*, p. 49.
[658] TsGANTD, f. R-17, o. 2-6, d. 1191, l. 25.

5.11).[659] *LenZNIIEP* suggested adapting large-panel industrial housing for these wide layouts. However, implementing 'wide-type buildings' would mean undergoing a long process of experimental development. Wide-type buildings hardly fitted the actual spatial norms of small-scale apartments; dark kitchens were often critiqued due to their less sanitary conditions.[660] This possible design involved redefinitions of norms, on-site experimental construction, and development of new technological lines—a process that, if successful, would normally require several years of development. The planners found themselves in a zugzwang: to enable regional development plans, industrial housing would be a better mass housing type than the primitive wooden huts and barracks widespread in the Far North. However, once launched, housebuilding factories could hardly be re-formatted for improved production, so they continued to produce the same type of housing unsuitable for local conditions. Planners complained that what was needed, prior to industrialisation, was the proper experimental development of typical projects.[661] This process required significant investment of time and money, but housing was urgently required in the Far North.

Experimental development: devising new norms for the Far North

The use of industrial housing delivery systems in the Far North was applicable to larger urban centres, which had the construction industry and infrastructure for it, but could hardly be used in the development of smaller northern settlements. The

[659] Ol′, *Planirovka i Zastroika*, pp. 48-50.
[660] For this criticism of dark kitchens, see: RGAS, P149, o. 1-1, d. 742, l. 44.
[661] TsGANTD, f. R-17, o. 2-2, d. 479, l. 9.

North offered a large field for innovative architectural design and housing planning. Discoveries of resources and minerals, and the development of oil and gas in the North, necessitated the construction of remote workers' settlements, with limited transport access and scarce infrastructure. From 1963, *LenZNIIEP* established a special department ('Sektor Severa') concerned with 'the problems of the North' for prospective architectural and urban developments.[662] This department was in charge of urban planning, research into building materials, and construction and transportation methods. The institute undertook to develop separate norms for the Far North, stressing the uniqueness of the region as underdeveloped, with huge distances between settlements, and conditions that 'require significant deviation from the general all-union norms.'[663] While the development of legal norms was delayed until the 1970s, the agency over the northern zone gave the institute far more room to develop experimental projects than other institutes of the *TsNIIEP* system.[664] A number of *LenZNIIEP* architects—Tatiana Rimskaia-Korsakova, Valentin Tankaian, and Galina Ol'—forged a path as specialists in northern architecture and city planning. Curiously, this field of expertise was largely dominated by female experts.[665]

Architects from the 'Sektor Severa' focused on the design of the experimental

[662] See the structure of *LenZNIIEP* by 1963: TsGANTD, f. R-17, o. 1-1, d. 591, l. 12. On Sektor Severa, see: Kalemeneva, 'Povorot k Cheloveku', p. 120.
[663] TsGANTD, f. 17, o. 2-2, d. 418, l. 5.
[664] In the 1960s, *LenZNIIEP* published northern norms in the form of 'suggestions,' which had no legal power: *Pravila i Normy Planirovki i Zastroiki Naselennykh Mest Krainego Severa: Proekt* (Leningrad, 1960).
[665] The proportion of women staff reached almost fifty per cent in *LenZNIIEP*. On the role of Soviet female experts, see: E. Kalemeneva and J. Lajus, 'Soviet Female Experts in the Polar Regions', in M. Ilič (ed.), *The Palgrave Handbook of Women and Gender in Twentieth-Century Russia and the Soviet Union* (London, United Kingdom, 2018), pp. 267-83.

projects of the institute.[666] Some of these projects offered radical alternatives to both existing design and planning solutions in the Far North. For example, in 1963, architects proposed an alternative way to master the North, with the use of zeppelins instead of ground cargo transportation. Planners suggested that with the use of cargo-zeppelins, just two large-scale house-building factories could serve for the urbanisation for the whole of the Far North.[667] These proposals were seriously discussed, and drew on economic justifications by geographers and other experts.[668] Air transportation stipulated the use of lightweight elements, and aluminium and cable-stayed structures. These high-tech elements resulted in the design of pneumatic domed structures and other fantastical architectural designs.

Scholars noted that such projects were, to a great extent, informed by foreign designs for arctic towns. Among them, a Canadian project, Frobisher Bay, was a particularly frequently mentioned design.[669] In the Thaw-era tendency of 'opening the Iron Curtain,' the *LenZNIIEP* architects not only enjoyed access to foreign publications, but were also directly ordered to research and summarise 'foreign practices of construction in the North, in Sweden, the Netherlands, Finland and other countries.'[670] However, there were limitations to the usefulness of foreign designs. The Soviet method of mastering the Far North with mass settlement contrasted with the policies of these foreign countries, which largely relied on the

[666] See: Ol′, *Planirovka i Zastroika*, p. 57.
[667] TsGANTD, f. 17, o. 2-2, d. 479, l. 149.
[668] TsGANTD, f. 17, o. 2-2, d. 479, l. 167–69.
[669] Kalemeneva, 'Gorod Pod Kupolom', pp. 103-04.; Frobisher Bay was widely mentioned in Soviet publications, for example: Ol′, *Planirovka i Zastroika*, p. 99, Kartashova, *Obsluzhivanie Naseleniia*, p. 96.
[670] RGAE, f. 5, o. 1, d. 317, l. 2–3.

extraction of resources in smaller, temporary workers' settlements.[671] Lightweight domed structures were more suitable for these latter temporary settlements than for the Soviet plans for densely populated urban areas. The institute's experimental designs were therefore not intended to serve the majority of Soviet assaults on the North, and were designed primarily for smaller settlements. Soviet planners criticised these futuristic designs as serving 'the departmental interests [of mining enterprises], while ignoring key factors of the general national-economic plan for mastering the North.'[672]

The views of the *LenZNIIEP* architects on residential building types differed from the current policies of mastering the Far North with mass housing. Architects openly criticised the practice of transferring standard buildings across from temperate climate designs as part of the strategy of colonising the Far North with mass settlements. Rather, as an optimal typology for the North, they proposed a housing complex that combined residential areas with recreational facilities and conservatories in a single whole. The idea of a northern housing complex was formulated in the late 1950s and from then on was outlined in numerous publications. In an article by Ioffe in 1962, such a complex was proposed as having an artificial climate, covered galleries, and windows facing internal gardens.[673] (Figs. 5.12–13).

[671] Jull, 'Toward a Northern Architecture', p. 215.
[672] Ianovskii, *Chelovek i Sever*, p. 21.
[673] A. Ioffe, 'Chto Mogut Dat' Severu Sovremennaia Nauka i Tekhnika', *Problemy Severa*, 6 (1962), p. 95.

Soviet architectural practice often preceded theory and most literature about housing complexes was published by the *LenZNIIEP* and the *TsNIIEP* architects, climatologists, and sociologists in the 1970s.[674] In this literature, the idea of a housing complex received further elaboration based on climatic arguments. A northern housing complex would protect the community again the harsh climate, inhospitable environment, and strong winds. The housing complex was described using the metaphor of a ship withstanding a storm.[675] Further, the complex, as potentially separate from the wider infrastructural network, was seen as a single architectural-spatial organism, a semi- or fully-self-sustaining system.[676] The leading *TsNIIEP* specialist in climate research, Vladimir Litskevich, named aesthetic and economic integrity as one of the main characteristics of the northern complexes. He defined integrity as 'an organic unity of the composition of the internal space, acting as the antithesis of the vastness of the expanses of the North.'[677] The idea of a complex as a semi- or completely autonomous organism determined its design—housing in the complex integrated all necessary public services in a single unity.

This idea of a self-sustainable complex, containing all necessary cultural and social services and a communal environment, resembled the housing blocks with collective services designed for accommodating single people and young Komsomol members (see Chapters 2 and 7). In the case of the northern 'housing-

[674] Among others, Pozdniakov, Litskevich, and Kartasheva published on housing complexes.
[675] Ianovskii, *Chelovek i Sever*, p. 89.
[676] Kartashova, *Obsluzhivanie Naseleniia*, p. 5. See also: A.F. Antonov, *Leningradtsy – Krainemu Severu* (Leningrad, 1983), p. 9.
[677] Litskevich, *Zhilishche i Klimat*, p. 162.

complexes,' architects' aspiration was to ensure the well-being of residents in the harsh climate. Northern architecture was a niche that allowed Soviet architect to search for new architectural language when presenting these projects. The resulting structures were often characterised by a lucid contemporary architectural language, often resembling the architecture of Reyner Banham's megastructures.[678] Based on these references, the project of a 'housing-complex' for 1,000 residents and an artificial climate, designed in 1963 by *LenZNIIEP* for Norilsk, looked like a stark alternative to the actual practice of mass housing construction in the city (Fig. 5.12). Some experimental projects were not necessarily developed for actual implementation, but were rather initially intended for international exhibitions.[679] Being high-tech representations of the policies of the mastering of the North and an affirmation of the technical superiority of the Soviet system, such projects generated a lot of publicity, as in the case of Montreal 'Expo,' discussed in the beginning of this chapter.

The discussion of housing complexes also introduced psychological arguments. According to the *LenZNIIEP* architect Pozdniakov, the design of a housing complex had to address 'psychological needs for protection against the harsh environment.'[680] Designs were therefore based on notions of the psychological constitution of northern communities, which were believed to require by nature more contact and interaction than others: 'Sociologists and medical workers believe

[678] See: R. Banham, *Megastructure: Urban Futures of the Recent Past* (London, 1976).
[679] Kalemeneva, 'Povorot k Cheloveku', pp. 159-61.
[680] P. Pozdniakov, *Zhilishche Novogo Tipa dlia Severa* (Leningrad, 1978), p. 41.

that with severity of climate, isolation from cultural centres, and lack of information, people experience a lack of emotional load and an increased desire for collective communication.'[681] Litskevich refers to housing complexes as both social and climatic experiments.[682] The housing complex, in theory, had to compensate for the negative psychological and physical effects of the harsh climate. It would both offer protection and facilitate the co-habitation of a northern community.

While the concept of the housing complex was based on the understanding of the North as a physical environment, it was not necessarily well aligned with regional development plans. A discussion of a book by Galina Ol' and Tanakian with an overview of housing complex designs provides insight into the contrasting views of architects and planners.[683] *LenZNIIEP* experts on housing and construction in the North, Iastrebov and Platonov, who reviewed the book, critiqued housing complexes as unrealistic, idealistic proposals: '[the book] does not distinguish between a proposal for actual on-the-ground construction and a 'fantasy' about an imaginable theoretical residential district.' The main criticism centred on the book's lack of economic justifications for the designs. Yet the authors saw their approach as arising from a natural division between professional spheres: 'economic considerations are not within the architect's purview, … the actual organisation of construction in the North is so unsatisfactory at the moment that addressing this question will require a different book.'[684] 'We propose not the method of

[681] Ibid., p. 40.
[682] Litskevich, *Zhilishche i Klimat*, p. 162.
[683] Discussion of Ol′, *Planirovka i Zastroika*. in TsGANTD, f. 17, o. 1-1, d. 707.
[684] TsGANTD, f. 17, o. 1-1, d. 707, l. 15–72.

optimisation, but the method of optimism.'[685] Not only did housing complexes meet with resistance from planners, but they also failed to please the regional administration, who, according to Tanakian, were not necessarily happy about architectural experiments: 'covered galleries are what architects dream to construct, but they are something that we do not need; give us living space and everything will be fine.'[686] Architectural ambitions to create an experimental living environment with covered galleries gave rise to a NIMBY issue. Instead of experimentation, local administration and construction agencies wanted housing. Many experimental residential areas discussed in this thesis (see Cheremushki, Chapter 1, Gandan in Ulaanbataar, Chapter 6, and Meshcherskoe Ozero, Chapter 9) were accompanied by better funding and were normally welcomed by the local administration. However, experiments with radical proposals, such as Traktorno-Zavodskoi district in Cheliabinsk (Chapter 3), which saw the housing of people in various types of boarding houses, met similar resistance. In the final edition of the book, the authors were forced to include remarks about the patchy and subjective character of experimental developments:

> To date, experimental design reflects a subjective approach to a particular problem; it develops spontaneously, is conducted without scientifically sound programs, and sets itself ambiguous and diverse tasks. In fact, not all experimental proposals are supported by sociological studies or laboratory tests.[687]

Hence, by the mid-1960s, Soviet professionals had developed two distinct proposals for housing in the Far North: one based on standard mass housing delivery and the other on experimental projects. Mass housing was closely linked with the industrial

[685] TsGANTD, f. 17, o. 1-1, d. 707, l. 68.
[686] Ibid.
[687] Ol′, *Planirovka i Zastroika,* p. 57.

production of prefabricated components, was coordinated by the plans of economic development, and was influenced by planners. Experimental projects fell into the zone of architectural expertise; as we have seen, specialists in other fields questioned the competence of these proposals. Experimental projects were not well aligned with other territorial systems according to their complex mode of development and they were not always adapted to the constraints of the construction industry, as was the case with standardised prefabricated housing. Both standardised and experimental types of development reveal contrasting views on the development of the North. The first prioritised the comprehensive development of the region, whereas the second sought to develop housing schemes that prioritised residents' physical and social well-being. In the 1960s there was no consensus about these projects even among the specialists of *LenZNIIEP*.

As we saw in the previous chapter, during the 1960s experimental housing design in temperate climates was closely related to the practice of actual construction, and rarely resulted in architectural forms systematically different from standard prototypes. In the case of the Far North, the gap between experimental and standard forms was significantly greater. The experimental category was used here not just to amend but to completely reject the practice of actual construction, in order to instead articulate the visions of an ideal housing type. Driven by ambitions to compensate for the conditions of harsh climate, architects proposed structurally different projects for experimental development. In experimental projects, using the vocabulary of modernist architecture, architects rearticulated the notions of the

emotional and physical comfort of the residents, which were previously expressed in romantic Stalinist architecture.

Instrumental arguments to support these projects were based on the climatic characteristics of the Far North. The inclusion of climatic zones into normative documents had a profound impact on housing production up to the end of the Soviet period. Given the bureaucratic difficulties of approving amendments to standard designs in the regions, climate effectively became one of the main arguments for developing non-standard architectural designs—in other words, to run experiments with more autonomy and freedom. As Kartashova explains, the notion of climate largely shaped research on housing in *TsNIIEP* institutes; the institutes had two major scientific departments, one concerned with 'the prospective problems of housing'—i.e., social problems (discussed in Chapter 9)—and the other concerned with climatology.[688] Like *LenZNIIEP*, the zonal institutes located in Southern Zones also had significant freedom in using the experimental category as an instrument to introduce new concepts—such as national or psychological arguments—into architectural discourse.[689]

By the end of the 1960s, *LenZNIIEP* developed a number of experimental settlement projects, and 'housing complexes,' each differing in design, planning, building materials, and infrastructure.[690] Many of these housing complexes were

[688] Interview with K. Kartashova, conducted by Author, Moscow, 26 March 2018.
[689] See, for example, experimental housing in Tashkent: P. Meuser, *Seismic Modernism: Architecture and Housing in Soviet Tashkent* (Berlin, 2016).
[690] For an overview, see: 'Kak Zastraivat' Naselennie Mesta Krainego Severa?', *Arkhitektura SSSR,* 3 (1966), 'Gradostroitel'stvo na Krainem Severe', *Arkhitektura SSSR,* 3 (1968), Ol′, *Planirovka i Zastroika*, pp. 57-68.

unfeasible in terms of actual implementation, and were instead presented as polemic statements. However, their publication and the discussion surrounding them could be seen as an even more important symptom of the Thaw than the actual construction that took place. The discussion of experimental projects signified an important shift of professional views to incorporate concepts of comfort and the needs of the residents of northern towns into the modernist architecture and urban environment. Reports stressed the need for a 'real experiment,' which would allow for the inspection of residents' behaviour in the environment of a complex.

Aikhal and Iakutsk: implementing housing projects in the Iakut Republic

According to the plan for comprehensive industrialisation of the Far North, 1963 would see the construction of a housebuilding factory for the production of I-464 in Porkovsk, near Iakutsk. The factory was to deliver industrialised housing for the Iakut Republic. At that time, an architectural landscape in the republic was just emerging. Khrushchev's housing drive introduced the first design institute, *Iakutproekt*, to Iakutsk.[691] Its main purpose was the adaptation or 'tying in' (*priviazka*) of standard designs for local conditions. *LenZNIIEP* assistant director Murav'ev visited the institute in 1960 and reported on the unsatisfactory outcome of this practice: 'the tying in of standard designs in an extreme climate is impossible and requires complete redevelopment of the projects… issues with infrastructure are quite different… it is impossible to use standard projects in the North.'[692] Murav'ev

[691] TsGANTD, f. R-17, o. 1-1, d. 482, l. 13.
[692] Ibid.

recommended investing in the development of a regional architectural sphere for on-site design instead of relying on pre-designed solutions. The local administration was similarly unhappy with the need to use standard projects. During the installation of the Porkovsk factory, planners from the Iakut department of *Gosstroi* stirred up great resistance to standardised housing delivery. In a letter to the Moscow administration, N. Sukhanov, the chief of construction and architectural administration of Iakut Republic, wrote:

> We were forced to use standardised projects and to adapt them to northern conditions. We had to completely change the construction aspect, but are forced to leave the same layout, which does not take into account the specifics of local life. … The 'Norms and Rules for the Construction of Northern Areas' developed by the leviathan Academy provides an unqualified and ill-conceived concept of the Far North. The authors of the project only occasionally and superficially visited one or two zones of the Far North, and were of course unable to conduct deep scientific analysis and supply competent generalising conclusions. We bluntly reject this plan of densities. … Architectural planning specifications are drawn up at the minimum limit of permissible norms, which is absolutely abnormal for the North. The ventilation does not work due to condensation. People need space to keep their vegetable stocks due to the lack of greengrocers in the region. People have a lot of footwear due to changing temperatures.[693]

Attempting to resist Moscow-designed types and concepts of development, planners demanded to amend the norms for the Far Northern region.[694] Iakut planners proposed the experimental project of Aikhal, which would serve to establish norms of development for a subarctic climatic zone, which also included the city of Iakutsk.[695] They requested *Gosstroi* permission to conduct an experimental development in Aikhal, and a budget of 20,000 rubles to design an essentially new type of urban project.[696]

[693] RGAE, f. 5, o. 1, d. 122, l. 176–79.
[694] The authors criticised *LenZNIIEP* norms: *Pravila i Normy (1960)*.
[695] RGAE, f. 5, o. 1, d. 122, l. 174–76.
[696] RGAE, f. 5, o. 1, d. 122, l. 191.

As we have seen in the previous chapter, resistance to standardised blocks on the part of regional planners was not unusual. Requests for experimental developments were also common, but most revolts against norms and standards were unsuccessful. *Gosstroi* vigorously deterred, in particular, any deviation from spatial norms while scrutinising requests. Yet in the case of Aikhal, permission for a non-normative project was granted. There could be several reasons for such permission. First, the existing practice of long-distance design in the Far North had demonstrated that norms devised in Moscow were in fact often not useful when applied to local conditions.[697] Second, and even more importantly, Aikhal held a departmental status, and the construction of the settlement was funded by the departmental money of a wealthy diamond-mining company, and only partially by the state fund for experimental construction.[698] Such departmental projects often had a privileged status, and allowed more freedom in development, which might have contributed to the experiment's acceptance. While I will not elaborate on every detail of the Aikhal project, for us, it is particularly interesting because of its implications for northern urbanism and mass housing.[699]

Iakut planners wanted to develop a project locally in their regional design institute, *Iakutniiproalmaz*, rather than rely on the centre. In the 1960s, the local architectural

[697] Ertz, 'Building Norilsk', p. 140.
[698] RGAE, f. 5, o. 1, d. 286, l. 27.
[699] On the design and planning of Aikhal, see: E. Putintsev, 'Kompleksnaia Kontseptsiia Severnogo Gradostroitel'stva: I Klimaticheskii Raion Strany' (Doctoral dissertation, MARKhI, 2005), pp. 116-20, 54-59.

landscape in the Iakut Republic had just started to emerge.[700] *Iakutniiproalmaz*, based in Mirnyi, was founded in 1961 as a departmental institute in subordination of the Iakut diamond-mining company. This institute was staffed with young Moscow Architectural Institute graduates and overseen by senior Moscow-trained chief architect Nina Bant.[701] Architects commanded from Moscow for temporary trips worked with local Iakut architects in the *Iakutniiproalmaz*. The journalist of 'Iunost' created a romantic image of the employees of the institute, for example:

> Gosha Germogenov. Gifted person. Iakut. Studied in Moscow. Like all Iakuts, a hunter. Collects jazz classics: Armstrong, Brubeck, Clayton. Scrabble. Quick-tempered, but ungrudging.[702]

The journalist described the whole institute working and living together as a commune: 'Architects hunted in the boreal forest together, went on canoe hiking trips, drank spirits, and wore high boots of dog fur, traditional for the region.' From 1963, this young architectural team started to be given large-scale projects of designing and planning mining towns and settlements in the region. Among these projects were micro-regions in the diamond-mining town Mirnyi (population 30,000) and smaller settlements of Aikhal and Udachnaia (populations around 4,500).[703] Effectively, *Iakutniiproalmaz* was put in charge of large-scale design and planning projects. The employment of a departmental institute in regional design and planning indicated a shift from the centralised politics of mass housing out to

[700] The Iakut Union of Architects was founded in 1964. See: 'V Souze Arkhitektorov SSSR', *Arkhitektura SSSR*, 4 (1964), p. 64.
[701] Ibid. Also see recent archival research of *Iakutniiproalmaz*: Kalemeneva, 'Povorot k Cheloveku', pp. 155-57.
[702] P. Bozhenko, 'Rozhdenie Aikhala. K Istorii Sozdaniia Arkhitekturnogo Proekta Goroda. Iakut. ASSR.', *Iunost'*, 11 (1965), p. 82.
[703] On Mirnyi, see: RGAE, f. 5, o. 5, d. 115; on Udachnaia: RGAE, f. 5, o. 1, d. 286, l. 140.

the regions, and the inclusion of regional actors into this process.

The settlement of Aikhal was first sketched by *LenZNIIEP* in 1963, as one of the previously discussed experimental proposals. In the first sketch, a domed structure was linked via insulated passages with circular residential towers (Fig. 5.14).[704] *Iakutniiproalmaz* attempted to develop a more detailed design to match it with the actual capabilities of the construction industry. The resulting design looked more pragmatic; the domed structure was swapped out for a rectangular public services building and residential blocks received a more familiar appearance (Fig. 5.15). Yet the project was still informed by an idea of uniting the entire structure into a single organism. Residential buildings were linked by insulated passages to a central structure with service areas that resembled a shopping centre. It significantly surpassed union-wide norms.[705] Not only were apartments in the settlement larger, but the delivery of services was also significantly higher than normative. All-day kindergartens and canteens were planned for the settlement, which could, if necessary, provide catering to all residents.[706] In addition to the normative set of public buildings, the settlement had many extra facilities: a sports hall, a conservatory, and additional space for food and medication storage.[707] The general design of Aikhal suggested that planning decisions were largely informed by *LenZNIIEP*'s concepts of housing complexes. The protection of the diamond-mining enterprise and a right to surpass norms allowed the *Iakutniiproalmaz* to

[704] S. Odnovalov and M. Tsimbal, 'Arkhitektura Naselennykh Mest s Iskustvennym Klimatom', *Problemy Severa,* 10 (1964), p. 100.
[705] 'Zhiloi Kompleks dlia Krainego Severa', *Arkhitektura SSSR,* 6 (1963), pp. 26-29.
[706] RGAE, f. 339, o. 6, d. 3176, l. 176.
[707] RGAE, f. 5, o. 1, d. 286, l. 18.

move the idea of a housing complex beyond sketches to a detailed design project.

The participation of young collectives of architects in large-scale construction projects was one of the most visible aspects of the Thaw. But how was a small regional team able to design whole settlements? The *Iakutniiproalmaz* had no capacities for developing the project without external cooperation. In the case of Aikhal, the institute cooperated with a number of specialised *TsNIIEP* institutes, which took on the technical and economic considerations of the project. The project is demonstrative of how this collaboration went. The *TsNIIEP* institutes for residential and school buildings, as well as *LenZNIIEP*, assisted with the practical development of detailed blueprints for the public and residential buildings.[708] The distribution of the budget demonstrates just how much cooperation was involved: while the *Iakutniiproalmaz* received 4,000 rubles from state funds for the project, the *TsNIIEP* received another 16,000 rubles for its contribution to the significantly more fundamental aspects of research and development.[709]

The regional design institute *Iakutniiproalmaz* officially led the project. The architects from Iakutia travelled to Moscow for 'consultations' in which they would act as the representatives of the local context, aware of the local needs and climate conditions. *Iakutniiproalmaz* agency is apparent in the confrontations with metropolitan experts. For example, architects were able to resist *LenZNIIEP* suggestions concerning the economic optimisation of the construction base of the

[708] Ibid, l. 39.
[709] RGAE, f. 5, o. 1, d. 286, l. 46.

project, which suggested transportation of large-panel slabs.[710] Instead, a markedly different approach was adopted—construction materials were produced locally, from raw materials available in Aikhal.[711] Developing a local construction industry was a long-term and costly enterprise. This research and development project took place in cooperation with Moscow engineering institute *VNIIstrom* in 1965. An innovative construction plant was designed to produce prefabricated components and porous insulating construction materials from the locally available sand deposits in Aikhal.[712] Experimental development enabled the participation of major architectural and engineering scientific research institutes in the project.

Cooperation with *TsNIIIEP* in experimental development allowed the architects to put forward their findings in typological research. Residential buildings in Aikhal were planned according to the previously discussed wide-type layout. In the five-storey buildings developed by the architect Belolubskii, the entire inner perimeter was given to living rooms, while kitchens were placed within the building in second-level space.[713] The ground floor of the residential blocks was reserved for public and collective services. Several buildings could be linked together with an insulated gallery, uniting the structures of the settlement into a single unit with an artificial climate. The housing complex, united with collective services, invited comparisons with the earlier discussed housing-communes, as a reporter put it: ‘In social terms, their [architects from Mirnyi] house-city is nothing more than a

[710] Ibid, l. 115.
[711] See: RGAE, f. 180, o. 3, d. 7124, l. 1.
[712] Technology was developed in cooperation with *VNIIstrom im Budnitskogo.* The construction plant in Aikhal opened in 1970. See: RGAE, f. 180, o. 3, d. 7124, l. 16–31.
[713] Ibid, l. 14. See also: Putintsev, 'Kompleksnaia Kontseptsiia', p. 207.

gigantic urban commune: common life, common rest, common work, etc.'[714] Hence, experimental development enabled the implementation of the concept of a housing-complex, as well as including other developments of scientific design institutes, such as residential buildings with wide layouts.

The experiment enabled the participation of large metropolitan institutes in the development. Yet, for regional actors, 'experiment' was actually used to facilitate national policy. *Iakutniiproalmaz* submitted their experimental projects to *Gosstroi* in the form of a sketch and a blueprint, supported by a commentary grounding the purpose of the experiment:

> The purpose of the [experimental] region in the Far North is to provide all conditions for a normal life, fruitful work, and the spiritual and physical development of the residents, e.g. to develop a dwelling which would completely compensate for living in the harsh climate. It will significantly help with a painless acclimatisation of the population from temperate regions, and will help the full development of the indigenous population, which is the ultimate goal of this experiment.[715]

Regional architects built their argument upon two intertwined discourses: first, that of the comfort of the residents and their protection against the climate, and second, that of the *mission civilisatrice* of mastering the Far North. Being a comfortable permanent construction, it would help establish a northern population to permanently inhabit the region, despite extreme conditions. While in the case of housing complexes for single people, social arguments were used to ground projects, in the case of Aikhal, the climate was used as the main justification of the

[714] Bozhenko, 'Rozhdenie Aikhala', p. 84.
[715] RGAE, f. 5, o. 1, d. 123, l. 73.

experiment in *Gosstroi*.[716]

The experiment was also used to justify the development's departure from norms. The head of *Gosstroi*, Vladimir Kucherekno, remarked: 'The construction of a project in an extra severe climate is *de facto* an experiment, which will allow the practical checking and clarification of the project … [and] the later introduction of these techniques into the practice of construction in the special conditions of the Far North.'[717] The project—with its extended services and larger flats—significantly exceeded normative budgets and was financed on its real outturn costs. Given its experimental status, the project was approved by *Gosstroi* with an actual price for construction, rather than the normative one.[718] In the case of Aikhal, the experiment justified the privilege of an increased budget against *Gosstroi*'s economic scrutiny. It allowed architects, and not economists, to be kept in the centre of the development and allowed them to advance their views on prospective—but not necessarily economic—solutions.

However, the overall importance of the experiment may not be limited to just offering opportunities to architects. Arguably, the experiment also provided a common ground for professionals of many different backgrounds—architects, planners, engineers from Moscow and Leningrad—as well as for regional actors to coordinate their actions in the development of a new urban model. The settlement of

[716] RGAE, f. 5, o. 1, d. 286, l. 2, 12.
[717] RGAE, f. 5, o. 1, d. 286, l. 9.
[718] The settlement of Aikhal was included in the plan for experimental construction for 1966–1970. See: RGAE, f. 5, o. 1, d. 286, l. 124.

Aikhal was a product of multilateral development, which included typological research, developments in the construction industry, research into wind- and snow-protection, research into the stability of structures on permafrost, and the development of innovative construction materials from locally available materials. Aikhal was a wholistic model at all levels: from the levels of planning and the typology of residential blocks, up to and including an innovative construction industry. The project involved new planning schemes and the establishment of a local construction industry. Due to the difficulties involved in establishing industrial production, implementation of the project stretched over several decades. The plant began operating in 1970, and delivered the first residential blocks in 1980, almost twenty years after the start of its design (Figs. 5.18). Developing a new urban model on all levels of 'infrastructural thinking' makes this project similar to the rural settlement of Zaria Kommunizma, discussed in Chapter 3. Yet, while in the latter case, the forms of housing were closely regulated, in the case of Aikhal the experiment enabled the unusual design of a 'house-complex.'

Kucherekno's argument about Aikhal as a model of northern urbanism was more than merely rhetorical. Once designed, Aikhal actually became a model for other workers' settlements in the Iakut Republic. *Gosstroi* authorised the repeated usage of the Aikhal project in the settlements of Mirnyi, Deputatsky, and Udachnaia.[719] According to architect Eduard Putintsev, one of the authors of the project, the viability of the wide building type was first proved in the experimental construction

[719] TsGANTD, f. R-17, o. 2-6, d. 1191, l. 32. Also see discussions of these projects: RGAE, f. 5, o. 1, d. 286, l. 39.

of Aikhal.[720] Wide-type residential buildings were standardised as a series and later implemented in Udachnaia, another company town constructed for diamond extraction, located 76 km from Aikhal.[721] The factory in Aikhal provided building construction materials for both settlements.[722] In later years, Aikhal served as a model for mining settlements and company towns. These departmental projects fell into a separate typological category of northern urbanism with their own genealogy. Yet, as the last part of this chapter argues, the experiment in Aikhal had implications on mass housing production in the wider Iakut Republic as well.

The most important result of the experiments, research, and development work of *LenZNIIEP* was the revision and refinement of design norms and planning principles for the first climatic zone. In this aspect, northern experimental development was similar to the Moscow-based experimental development of Cheremushki, discussed in Chapter 1, which eventually resulted in the adoption of new normative documents, defining the main parameters of standardised mass housing in the following years. The 1971 edition of *SNiPs* included many amendments regarding the North. The spatial norm for 'living space' was increased to 14–15 m^2 per person. The height of the ceiling increased to the level of three metres. More storage and auxiliary spaces could be added in standard projects. Architects could additionally surpass the norms by another ten per cent.[723] The *SNiPs* of 1971 signify a change in the general understanding of northern cities.

[720] Putintsev, 'Kompleksnaia Kontseptsiia', p. 120.
[721] Ibid., pp. 207, 29.
[722] RGAE, f. 180, o. 3, d. 7124, l. 4.
[723] Litskevich, *Zhilishche i Klimat*, p. 139.

They were no longer seen as 'ordinary' cities, basically the same as urbanism in a temperate climate, but rather were assessed according to new norms, which claimed that the territory was different, with more space and better housing. In the 1980s, Soviet planners even discussed that northern norms could be increased up to 25–30 per cent.[724] While these deviations were grounded in the specifics of climate and social life in the North, scholars have instead seen the increased northern norms as privileges. Thompson has argued that with better accommodation, better services, and salary bonuses, northerners enjoyed luxuries normally reserved for the Soviet nomenclatura. Northern settler society in the late Soviet era came to be seen as a vast and geographically distinct zone of closed distribution and privilege—'one of the most expensive formations of privilege the Soviet leadership ever sanctioned.'[725]

In the 1970s, based on the new norms, *LenZNIIEP* was finally able to introduce housing blocks with a wide layout into mass production. They were implemented in a revised version of the northern modification of the system I-464VM (Fig. 5.16-17).[726] Similarly to the Aikhal designs, rooms were more spacious, while staircases and kitchens were placed in the core of building for better insulation. Buildings were raised on pilings and connected together with galleries including infrastructure and communications. Technology allowed the joining of several blocks into one complex with covered passages. These features were first successfully implemented

[724] Ibid., pp. 167-68.
[725] N. Thompson, *Settlers on the Edge: Identity and Modernization on Russia's Arctic Frontier* (Vancouver, 2008), p. 40.
[726] TsGANTD, f. R-17, o. 2-6, d. 1174, l. 70.

in the experimental development. Similarly, many other research findings concerning the insulation qualities of building materials were subsequently used in standard projects. *LenZNIIEP* designed a factory production of the I-464VM system with keramsit as an insulation material, for implementation in the Iakutsk factory in 1970.[727] Prior to the factory upgrade, experimental housing prototypes were produced in Bratsk and transported 3,700 km to Iakutsk by road. The factory finally began production of I-464VM mass housing in 1971.[728] Mastering standard housing delivery in the Iakut Republic took almost a decade of experimentation with layouts, insulation performance of building materials, and other issues (Fig. 5.19).

From all this, we can see that specific arguments provided the rationale for northern experimental projects. Stressing the zone's inhospitability was first used to gain the necessary autonomy for experimental designs, which differed more systematically from temperate-climate prototypes. The project of Aikhal introduced the notion of comfort into the discussion of northern urbanism. In the 1970s, amended urban norms allowed the extrapolation of the notion of comfort in mass housing to the whole northern zone. Although the idea of comfort was first re-introduced by architects, it eventually became the factor that united them with the planners' group. Thus it became a key concept in the final goal of the politics of mastering and permanently settling people in the North and preventing their out-migration.

[727] A typical project of the I-464 factory, based on keramsit, was proposed for Pokrovsky. See: TsGANTD, f. R-17, o. 2-6, d. 1195, l. 26.
[728] Pozdniakov, *Zhilishche Novogo Tipa*, p. 138.

Conclusion: Experimental and standard housing as two ways to 'master' the Far North

Once started in 1971, the production of the I-464 housing in Iakutsk continued until 1993, and delivered 220 buildings. The Pokrovsk housebuilding factory contributed to a large urban layer of housing in the city of Iakutsk and even today, one sixth of the population of the city live in these buildings.[729] In comparison to the volume of mass housing construction, the settlement of Aikhal was a relatively small project. The settlement was constructed only in the 1980s and only in an altered form. It lacked covered galleries, and in many other aspects was much more 'down to earth,' than the prototype displayed at the Montreal exhibition. The Iakutsk-based architect Klim Turalisov wrote that 'paradoxically, all the experience in northern urban development arose from standard design rather than experimental projects.'[730] This chapter claims that this experiment did in fact influence standard development. Even if the actual construction of Aikhal was delayed, the project triggered research, development, and media discussion. Its experimental status offered the possibility of funded research and development, which had implications for mass housing delivery in the Iakut Republic.

Experimental design was also a more efficient way of interacting with the regional architects based in Iakutia, compared with the practice of standard design. As the example of the development of a 'wide building type' demonstrates, many features

[729] See: N. Platonova, 'Povrezhdaemost′ Konstruktsii Tsokol′noi Chasti Krupnopanel′nykh Zdanii Serii 1-464vm v g. Iakutske' Estestvennye i tekhnicheskie nauki, 6 (2013) https://rucont.ru/efd/498293 (13 June 2019).
[730] K. Turalysov, 'Kontseptsiia Gradostroitel′nogo Osvoeniia Krupnogo Severnogo Regiona v Ekstremal′nykh Klimaticheskikh Usloviiakh' (Doctoral dissertation, Iakut university, 1997), p. 18.

first implemented in the experimental development later emerged in standard projects as well. Similarly, hundreds of other findings in regard to wind and snow protection were later included in a single comprehensive program of northern urbanism. The development of an appropriate northern standard housing, carried out by the zonal *TsNIIEP* institutes, played a crucial role in this process. On closer inspection, the zonal institute served as an aggregator of these low-level design initiatives, and experiments were instrumental in this dynamic. *LenZNIIEP* thus gathered successful developments and issued standardised projects. By 1983, based on experimental research and development, *LenZNIIEP* developed six other mass housing series, which were used to deliver most of the industrial housing in the Far North.[731] It synchronised the production of housebuilding factories by issuing 'upgrades' of building systems, which introduced new features. Northern serial projects developed by the institute in the 1970s offered much higher architectural flexibility, various façade articulations, and more flat layout variations, compared to the 1960s solution.[732] As they were implemented in many factories in the northern zone, some typologies are still in use in housing construction today.

[731] Antonov, *Leningradtsy – Krainemu Severu*, p. 16.
[732] In the 1970s, seventy-three urban standard projects were developed for the North. See: Turalysov, 'Kontseptsiia Gradostroitel′nogo Osvoeniia Krupnogo Severnogo Regiona v Ekstremal′nykh Klimaticheskikh Usloviiakh', p. 73.

Chapter 6. Soviet housing goes global: residential development and architectural cooperation in Mongolia

Introduction

In the early 1960s, Soviet housing went global. Within the international cooperation brought about under the geopolitics of the Cold War, Soviet diplomacy was characterised by ample investments in terms of donations of technical assistance to the Second and Third World countries.[733] Among other projects, aid was provided for the development of public housing overseas. Rather than focusing on a design of individual single-family houses, Soviet planners promoted the export of house-buildings factories that would continuously produce standardised housing. Control over housing production through prefabricated systems was used as one of the key instruments in winning political influence in the Eastern Bloc states, as well as in some Third World countries. By 1964, the Soviet Union had constructed housebuilding factories in Romania, Hungary, Afghanistan, Yugoslavia, Mongolia, and Cuba, and another was under construction in Ghana.[734] The Soviet government also seemed prepared to share expertise about housing development with the countries of what is today considered the 'Global South,' and was in various stages of negotiation with Brazil, Kenya, Egypt, India, Ceylon, and Ethiopia.[735]

The export of housebuilding plants took many different forms. In the case of

[733] For a recent overview, see: J. Mark, A.M. Kalinovsky, and S. Marung, *Alternative Globalizations: Eastern Europe and the Postcolonial World* (Bloomington, 2020).
[734] RGAE, f. 339, o. 3, d. 2318, l. 5.
[735] RGAE, f. 5, o. 1, d. 838, l. 63.

capitalist Third World countries, these exchanges took the form of technological transfers. In decolonising countries, such as Afghanistan, or Soviet satellite states, such as Mongolia, the export was justified by the underlying logic of development. As we have seen earlier in this thesis, in the Soviet Union itself, housing development was integrated with the economic and spatial planning and development of the country. Similar dynamics marked the export of industrial architecture in Mongolia.[736] The Soviet Union created a specific set of tools, institutions, and practices for the export of complex industrial architectural and construction projects.

In order to create a suitable institutional infrastructure for transnational developments, a specialised 'department for overseas industrial construction' was founded within *Gosgrazhdanstroi*. In close cooperation with export administrations, the Committee for Foreign Economic Relations (*GKES*) and Technoexport, it coordinated export projects. Yet the USSR never had a specialised design institute for international projects. Instead, these projects were distributed among specialised institutes. The main institute in charge of housing design for foreign countries was *TsNIIEP,* compelled by *Gosstroi* to become the 'chief organisation' (*general'nyi proektirovshchik*) for all prefabricated housing export projects. The institute formed a hundred-employee-strong department for 'studying and centralising the foreign experience, and the economics of housing,' developing housing designs, and coordinating the technological lines of overseas factories.[737]

[736] Stanek and Erofeev, 'Comecon Architecture'.
[737] RGAE, f. 5, o. 1, d. 139, l. 155, l. 178–80.

Based on the cases of Soviet exchanges with Yugoslavia, this chapter first shows how Soviet prefabricated housing was adapted for export. It argues that the delivery of Soviet housing overseas was not the result of a merely mechanical transfer of standard projects, but rather involved specific adaptations and localisation each time, shaped by the peculiarities of the local context and distinct relationship between the cooperating sides. A closer examination of the case of Mongolia then offers a view of a more systematic approach to the development, in which Soviet activities focused not only on long-distance development, but also on the export of institutions and practices of experimental development. The chapter, thus, presents experimental development as a transnational practice.

Skopje: Designing housing for export

Most exports of housing projects negotiated in the early 1960s were based on the I-464 building system (Fig. 6.1). Being the most popular system domestically, it also became the main Soviet technological knowledge for export projects. The multiplicity of export projects and diversity of social, technical, political and climatic conditions in recipient countries presented a plethora of challenges to professionals in adapting the system for use abroad. The provision of housing in tropical countries, such as Ghana, raised concerns about housing prototypes for hot climates, which became a Soviet variant of 'tropical architecture.'[738] Developing

[738] On Soviet housing in Ghana, see: Stanek, *Architecture in Global Socialism*, pp. 35-96. On tropical architecture see: J.-H. Chang, *A Genealogy of Tropical Architecture: Colonial Networks, Nature and Technoscience* (London, New York, 2016).

countries, among them Mongolia, presented different challenges: residential blocks produced in these countries had to be adapted for the scarce urban infrastructure and sometimes assembled without skilled workforce, as discussed below in this chapter. In such countries as Chile or Vietnam, production of housing also raised political tensions created by the presence of the actors from the Western Cold War bloc.[739] Export of the system to Yugoslavia, as a nation that positioned itself 'in between' the two Cold War blocs, is especially indicative of how specialists from *TsNIIEP* projected amendments required to convert the I-464 into a global building system, not limited to the Socialist world.

In 1963, the 'Russian factory' (as the I-464 plant was nicknamed) was donated to the city of Skopje in Macedonia, after a devastating earthquake that killed over 1,000 people and left as many as 200,000 homeless (Fig. 6.2).[740] The reconstruction of the city was demonstrative of the multipolar support by both Cold War blocs, which provided specialists and technical and material help. After the earthquake, Yugoslavia received support from a total of eighty-eight countries from both sides of the Cold War divide, including Bulgaria, Croatia, Denmark, Finland, France, Germany, the United Kingdom, USA, and USSR. The general Skopje reconstruction plan was orchestrated by the UN, and a group of Japanese architects with Kenzo Tange in chief famously won the right to develop the master plan of the

[739] See: P. Alonso and H. Palmarola, 'A Panel's Tale: The Soviet KPD System and the Politics of Assemblage', *AA Files,* 59 (2009), pp. 30-41, C. Schwenkel, 'Spectacular Infrastructure and Its Breakdown in Socialist Vietnam', *American Ethnologist,* 42/3 (2015).
[740] K. Mirchevskaia and L. Iancheva, 'Pomoshch' Sovetskogo Soiuza v Vosstanovlenii Skop'e Posle Zemletriaseniia 1963 G ', *Rossiia (SSSR) i Makedoniia: Istoriia, Politika, Kul'tura 1944-1991 gg.* (Moscow, 2013).

reconstruction of Skopje, foreseen to accommodate 70,000 people.[741] The Russian factory was presented as an emergency solution for the reconstruction, which would start delivering housing in less than one year.[742] It was installed in parallel with no less than a dozen Western building systems, including French and Swedish systems used in the country.[743] Delivering housing for non-socialist countries side-by-side with western architectural organisations challenged Soviet planners to make Soviet housing delivery competitive as an industrialised housing delivery system. The head of *TsNIIEP*, Boris Rubanenko, particularly stressed the need to develop a whole system, competitive with widespread Western building systems, particularly the French Camus system and the Danish Larsen-Nielsen system.[744] Comparing the I-464 to these western models, the main concern of Soviet architects was their own system's rigidity:

> In the USSR, house-building factories functioned with a rigid specialisation and standardisation, which was not acceptable in capitalist countries, since customers' requirements varied according to context. That is why the Camus system was producing various building types, from single storey buildings up to fifteen-floor towers, and various sizes of dwelling types.[745]

Similar building types were discussed with a view to organising them in marketing catalogues towards export promotion. For Skopje, Rozanov's team designed the

[741] On design and planning in Skopje, see also: M. Lozanovksa, 'Kenzo Tange's Forgotten Master Plan for the Reconstruction of Skopje', *Fabrications*, 22/2 (2012), M. Lozanovska and I. Martek, 'Skopje Resurgent: The International Confusions of Post-Earthquake Planning, 1963–1967' Planning Perspectives, (2018), doi: 10.1080/02665433.2018.1423636.
[742] Mirchevskaia and Iancheva, 'Pomoshch' Sovetskogo Soiuza v Vosstanovlenii Skop'e Posle Zemletriaseniia 1963 G ', pp. 117-18.
[743] D. Senior, *Skopje Resurgent: The Story of a United Nations Special Fund Town Planning Project* (New York, 1970), pp. 35-37.
[744] RGAE f. 5, o. 1, d. 838, l. 80–81. By 1966, Camus had about sixteen factories abroad: two in Algeria, two in West Germany, two in Austria, three in Great Britain, two in Italy, one in Spain, and one in Japan. Y. Delemontey, 'Le Béton Assemblé: Formes Et Figures De La Préfabrication En France, 1947-1952', *Histoire urbaine*, 20/3 (2007), p. 26.
[745] RGAE, f. 5, o. 1, d. 139, l. 150.

prototypes of detached cottages based on the system (Fig. 6.1b).[746] These one-storey buildings had a flat roof and could be produced from the prefabricated components produced at the Soviet factory in Skopje. Similar low-rise housing and modern cottages, which also used the prefabricated components and construction principles of the system, would be later designed as export prototypes for other countries such as Afghanistan.[747] These new export designs show the increasing concerns of Soviet architects about the architectural rigidity of the system and their ambition to find alternatives to the idiosyncratic Soviet housing model of the multistorey residential tower block used domestically. The development of housing prototypes for export was discussed in the Department for the Overseas Industrial Construction of *Gosgrazhdanstroi*. Similarly to the Department for Experimental Design, its functions were to scrutinise, test, and approve new building typologies.[748] Although production of housing for export closely followed domestic procedures of experimental design, the terms used in export projects were not necessarily the same.

Chapter 4 demonstrated that the I-464 housebuilding system was not limited to a single institute or firm, but is rather best understood as a multilateral project developed by a variety of actors based on shared expertise. Housing projects for export were similarly discussed in terms of multilateralism. *Gosstroi* sought to redistribute export projects among Moscow-based and regional design institues.

[746] 'Nikolai Petrovich Rozanov', p. 41.
[747] 'Zhiloi Kompleks v Kabule', *Arkhitektura SSSR*, 10 (1965), p. 56.
[748] See reports of the department: RGAE, f. 5, o. 1, dd. 139, 838, 978.

While *TsNIIEP* designed housing for Skopje, the Moscow-based *Mosproekt* designed housing typologies and residential areas for Mongolia, and the Leningrad-based *Lenproject* designed Ghanaian housing, adapted for the local social conditions and hot arid climate.[749]

Not only architectural design but also industrial engineering of housing delivery was developed in a multilateral way by regional Soviet engineering institutes and housebuilding factories, as they led experimental development for export projects. *Gosstroi* officials actively used regional construction infrastructure to distribute export developments across republics and regions. For example, the engineering plant *Strommashina*, in the city of Kokhma in the Ivanovo district of Soviet Russia, was ordered to develop the equipment for the Ghanaian and Cuban I-464 factories. Using the machinery developed by *Strommashina*, a Moscow housebuilding factory assembled the model of the Ghanaian building in its premises before export.[750] The experimental model was scrutinised by multiple agencies, prior to being given authorisation for export.[751] Only after construction of the experimental prototype was the hardware for the factory packed and prepared for export for Ghana. In the case of Skopje, the experimental development took place at the Vilnius factory in present-day Lithuania. Vilnius offered the most compelling and pertinent example of high architectural and construction quality in the micro-regions Žirmūnai and

[749] *Mosproekt* projects are discussed in this chapter. On the design of building in Ghana by *Lenproekt*, see: RGAE, f. 339, o. 3, d. 1820, l. 4. On Ghanaian housing, see: Stanek, *Architecture in Global Socialism*, pp. 35-96.
[750] See: RGAS, f. 149, o. 1-1, d. 1102, l. 3.; RGAE, f. 5, o. 1, d. 838, 9.
[751] RGAE, f. 5, o. 1, d. 140, l. 43. Experimental construction cost 40,000 rubles: RGAE, f. 339, o. 3, d. 1820, l. 258.

Lazdynai assembled on the I-464 base.[752] Vilnius was therefore chosen to produce an important commission of 'technical assistance' to Skopje, which had to serve as an international showcase of Soviet industrial housing production. The Vilnius plant carried out the experimental construction of a model building for Skopje on its premises, including localisation of the architectural design and technological amendments of the system.[753]

The procedures of experimental development, the construction of export prototypes, and their testing and further approval were established as a general practice for most export projects. *Gosstroi* officials insisted that experimental checks of the equipment became a necessary measure prior to the export of any industrial housing project.[754] They argued that such 'export experiments' should be included in plans and properly financed.[755] As we have seen in the previous chapters, domestically in the USSR a process of adaptation—which sometimes involved the construction of experimental prototypes—was normally carried out by local agents at local factories. In contrast, in the case of export development in the early 1960s, experimental development took place in the USSR prior to export.

In the case of export projects, the role of housebuilding plants was not limited merely to the development of experimental prototypes but also involved offering technical assistance in localisations and the training of specialists. For example, as

[752] Drėmaitė, *Baltic Modernism*, pp. 147-79.
[753] RGAE, f. 5, o. 1, d. 336, l. 67.
[754] RGAE f. 5, o. 1, d. 139, l. 186.
[755] Ibid, l. 179.

part of technical assistance offered to Skopje, the administration of the housebuilding factory in Vilnius took on responsibility for offering technical assistance upon the implementation of the design locally in Skopje, and for the training of Yugoslav cadres. The Vilnius factory was to serve as a functional model of the on-flow production for Skopje. In 1964, specialists of all professions required for housing construction, up to superintendents, underwent training in I-464 production at the Vilnius factory to master the processes of industrialised construction. Another eight Yugoslav architects studied standardised design and planning in the *TsNIIEP* in Moscow.[756] The set-up of the 'Russian factory' in Skopje was assisted not only by Latvian specialists from Vilnius but also by engineers from Minsk (now Belarus). Such transnational specialist teams also assisted housing delivery in Mongolia and Cuba.[757]

The setup of the plant in Skopje took eleven months and the factory delivered the first building in 1964, on the anniversary of the earthquake.[758] A year later, when the factory had delivered more than a dozen buildings, Yugoslav personnel fully mastered the technology and the factory began to operate independently of Soviet support. Housing assembly and finishing were to be carried out by Yugoslav construction organisations.[759] The architectural components of residential developments—such as district planning, adaptations, and the tying-in of

[756] RGAE, f. 5, o. 1, d. 336, l. 8; RGAE, f. 339, o. 3, d. 2107, l. 21, 168.
[757] RGAE, f. 339, o. 3, d. 2318, l. 93.
[758] RGAE, f. 5, o. 1, d. 838, l. 6.
[759] The Macedonian firm 'Beton' was in charge of constructing the factory, and 'Pelagonia' was contracted to master the technology and fully undertake the assemblage of the residential blocks. See: RGAE, f. 339, o. 3, d. 2107, l. 106.

buildings—were all completed by Yugoslav design institutes. The Karpoš residential district, with blocks delivered from the 'Russian factory,' was integral to the master plan of Skopje.

Design and engineering institutes and housebuilding factories, which participated in export projects represented conduits for the movement of specialists, technologies, and housing designs between various parts of the Soviet World, among them Moscow, Minsk, Vilnius, and Alma-Ata. While the central administration—*Gosstroi* and *TsNIIEP*—monitored and processed innovations, adaptations, and design proposals, these developments occurred in a decentralised way in design and engineering institutes in various countries. By systematising these developments, *TsNIIEP* converted the I-464 system into a tool for transnational urbanisation, and this capacity was supported by the regional modifications, as well as regional factories, associated with the I-464, which played a crucial role in the development of export projects. Such export enabled Nikolai Rozanov to describe his system as a global project, emphasising its technical adaptability: 'housing designs for Ghana, Yugoslavia, and Cuba developed in the most difficult seismic and climate conditions demonstrate that the I-464 system can be used to implement any possible planning solution.'[760]

Among other export projects, the organisation of housing delivery in Skopje was considered by *Gosstroi* officials as one of the most successful export projects, in

[760] RGAE, f. 5, o. 1, d. 289, l. 28.

terms of the quality of production.[761] Yugoslav planning authorities seemed to be similarly happy with the plant in Skopje, referring to it as an 'extraordinarily good prerequisite' for the reconstruction of the city after the earthquake.[762] However, housing provision in neutral Eastern Europe became a highly politicised matter; when they acquired access to Western technologies, the Yugoslavs discontinued any kind of professional collaboration with the USSR, to the discontent of Russian partners. The factory halted housing production in 1967.[763] This did not mean that the factory was abandoned; it was later relaunched with upgraded equipment, provided by Yugoslav actors without the help of the Soviet Union. Apart from relying on the model of the five-storey block, local architects also proposed alternative designs of housing based on the prefabricated components produced at the factory. These included designs of low-rise residential developments (Fig. 6.3a).[764] By 1972, the factory gear was upgraded for an open system of prefabrication allowing the delivery of more diverse residential blocks (Fig. 6.3b).[765] The housebuilding factory in Skopje continues functioning in the city even today and its story is an interesting subject for further research.

A housebuilding factory in Mongolia: establishing housing production in a developing country

[761] RGAE, f. 339, o. 3, d. 2312, l. 70.
[762] Senior, *Skopje Resurgent*, p. 281.
[763] RGAE, f. 5, o. 1, d. 838, l. 7. On the Russian factory closure and the development of other prefabrication systems in Yugoslavia, see: Rupnik, 'Designing (in) Space-Time', pp. 101-20.
[764] See Fig.23 in Senior, *Skopje Resurgent*.
[765] *Karpoš: Osnovni Pokazateli na Proekti za Montazhni Kruponaelni Stanbeni Zgradi Izraboteni Od F-Ka Karpoš* (Skopje, 1972).

Soviet plans to provide international technical assistance, which stipulated the construction of housebuilding factories abroad, were not fulfilled to their full extent. Socialist international policies were often challenged by Western players within the contestation brought about by the Cold War. Soviet officials lost control of the Skopje factory, as we have seen, and the factory in Ghana never operated as intended. In this context, several aspects make the Mongolian housebuilding factory unique among export projects. It was among the first factories built by the USSR abroad, and was also unique in terms of the scope of its production. In contrast to most of the decolonizing countries in the Global South, where Soviet architects worked during the Cold War, Mongolia's alliance with the Soviet Union was rarely challenged. The factory opened in Ulaanbaatar in 1963 and operated continuously for thirty years, until 1992, and contributed more than eighty per cent of urban housing in the capital, in fact laying the base of the modern city of Ulaanbaatar (Fig. 6.4).[766] Hence, Mongolia offers a privileged site for the study of the dynamics of architectural practices associated with industrialised construction in overseas projects. A focus on this export project offers a view on the long-term consequences of the export of a housebuilding factory, and its implications on the professional roles of actors involved in the process of design and production of housing at both sides.

Socialist countries played a key role in the urban development of Mongolia during

[766] Providing a total capacity of 280,000 m^2; see *Information Mongolia: The Comprehensive Reference Source of the People's Republic of Mongolia* (Oxford, 1990), p. 214.

the Cold War.[767] At the beginning of the 20th century, Mongolia was one of the most isolated countries in the world: livestock-herding nomads comprised the overwhelming majority of its 1.5 million population, there was almost total illiteracy, and lacked financial organisations and other institutions of modern states. The capital, Ulaanbaatar, historically emerged as a nomad settlement formed of movable dwellings—felt yurts, organised around monasteries (Fig. 6.5).[768] Yet during the Cold War, Mongolia became one of the major outposts of socialist cultural investment and technical assistance due to her two mighty neighbours—Soviet Russia and China—competing for influence on the country. Mongolia received ample 'technical assistance' from both of these countries in the 1950s and the early 1960s. In 1962 Mongolia joined the Council for Mutual Economic Assistance (*Comecon*) as the first non-European country and started received multilateral support from the Eastern-European member countries of this organisation. With this international assistance, Mongolia underwent a rapid process of development and urbanisation, aimed at propelling the country 'from feudalism to socialism, bypassing capitalism' (Fig. 6.6).[769] These policies included industrialisation and urbanisation, the collectivisation of herds, and increased sedentarisation of the local population.[770] Ample plans for the provision of public housing was one of the key aspects of these modernising reforms.

[767] I discuss the engagements of socialist countries in Mongolia in more detail elsewhere: Stanek and Erofeev, 'Comecon Architecture in Socialist Mongolia'.
[768] See: V. Tkachev, *Istoriia Mongol'skoi Arkhitektury* (Moscow, 2009), Chapter 6. See also: D. Maidar, *Arkhitektura i Gradostroitel'stvo Mongolii* (Moscow, 1971), N. Tsultem and D. Bayarsaykhan, 'Arkhitektura Mongolii', 1988).
[769] S. Bira, *Mongolia's Road to Socialism* (Ulan Bator, 1981), p. 8.
[770] On the sedentarisation of nomads, see: A. Thomas, *Nomads and Soviet Rule: Central Asia under Lenin and Stalin* (London, 2018), pp. 15-23.

The only challenge to the Soviet hegemony in Mongolia was the influence of the People's Republic of China, before Mongolia broke up its relationship with China in the wake of the Sino-Soviet split. Housing was a crucial player in the resulting tension for control over the territory. Especially in the early 1960s, when the Soviet factory was built, urban development projects in Mongolia were carried out in an atmosphere of tough completion over political control by the Soviets and the Chinese. 'Winning the influence over production of housing was crucial in Cold War international urban development projects,' says Yurii Volchek, whose father, Pavel Volchek, designed housing for foreign countries in *TsNIIEP*.[771]

In the 1950s, the Chinese took on obligations to build twenty-five economic objectives, among them factories, apartment buildings, and a power station.[772] Among other commitments, the Chinese agreed to build the residential micro-region in Ulaanbataar (Fig. 6.7).[773] Soviet architects observed the construction of this project:

> In one night, the planned site for the construction of the residential area is fenced and a security guard installed at the gate. Only then does construction begin. Buildings are not put into operation as they become ready, but rather mothballed until the entire district is completely ready, including the landscaping, greenery, and outdoor amenities. Then, in one night, the fence is removed and the whole residential area, all cleaned and freshly painted, is solemnly transferred to the Mongolian side. The requests of city authorities for the delivery of buildings as

[771] Pavel Volchek developed housing for Vietnam, Mongolia, and other countries. Interview with I. Volchek, conducted by Author, Moscow, 26 July 2018.
[772] On Chinese involvement in Mongolia, see: G. Ding and C.Q.L. Xue, 'China's Architectural Aid: Exporting a Transformational Modernism', *Habitat International*, 47 (2015), p. 137. See also: S. Radchenko, 'New Documents on Mongolia and the Cold War', *Cold War International History Project Bulletin*, 16 (2007), pp. 341-446.
[773] Micro-region 5, See: RGAE, f. 5, o. 1, d. 687, l. 73.

they become ready are not accepted.[774]

The donation of such gifts rather resembled military operations, aggressive not only towards the rival side, but even towards the Mongolians. No contacts during the development were permitted, as all labour was carried out by the foreign workers. In order to carry out construction work in this micro-region, as well as in the other Chinese projects, more than 10,000 Chinese labourers were sent to Mongolia by 1960, 'free of all cost, as evidence of [Chinese] friendship.'[775] In the context of a competitive development of urban space, Soviet authorities saw prefabricated housing delivery not only as a prerequisite for social reform, but also as an effective tool in the struggle for control of the country over the Chinese, whose construction methods mostly relied on brick and mortar, and never on industrial production.[776] Yet adapting and localising a factory for the local conditions proved to be a much more complex task than simply building with non-industrial methods.

The Soviet factory constructed in Ulaanbataar was a standardised project of a plant for the production of I-464 housing, developed by *Giprostroiindustria*. It was among the first Soviet factories to be constructed abroad and its adaptation was long and complex. Constructed in 1962, the factory stalled after delivering just one building and left four others unfinished.[777] The attempt to export unmodified Soviet standard projects proved unfeasible and the system required serious technical

[774] RGAS, f. P-149, o. 1-1, d. 3238, l. 22.
[775] R. Rahul, *Afghanistan, Mongolia, and USSR* (New Delhi, 1987), p. 60. More than 10,000 Chinese labourers worked in Mongolia by 1960: R.A. Rupen, *The Mongolian People's Republic* (Stanford, Calif., 1966), p. 53.
[776] The Chinese never developed a construction industry in Mongolia comparable to the Soviet housebuilding factory.
[777] RGAE, f. 5, o. 1, d. 139, l. 149; RGAE, f. 339, o. 3, d. 2302, l. 36.

modification. Even if Soviet housing delivery in Mongolia relied on the idiosyncratic housing model of a multistorey residential block, it still required adequate localisation for the specificity of Mongolia, including adaptation to the seismic and climatic conditions as well as to the local soil.[778]

Similarly to the cases discussed above, the process of experimental development of housing models took place in Moscow. In the case of Mongolia, this process took more than three years. On the second revision, Moscow-based *Mosproekt* re-designed the whole system of housing delivery, and re-engineered and adapted it for the Mongolian realities. In this Mongolian modification, 'I-464UB,' building types and flat layouts were adapted for de-industrialised space: blocks were amended for the use of solid fuel cast-iron stoves, for example, to cope with Mongolia's lack of centralised infrastructure.[779] Building types were developed and tested domestically. For the actual field tests of industrial building types, planners considered establishing a site for experimental construction in Siberia—Ulan-Ude—which had 'similar conditions' to Mongolia.[780] Only in 1965, after the evaluation of the whole process, was hardware for the production of these newly-designed Mongolian buildings, including 270 tonnes of equipment, shipped to upgrade the factory. Installed with the help of Soviet experts *in situ*, it finally gave a way to mass housing delivery in Mongolia.

[778] Both seismicity and soil subsidence were specific to Mongolia. Technical amendments included a fitting of the system for seismic conditions and the local temperature gradient. RGAE, f. 5, o. 1, d. 522, l. 55.
[779] Designed by *TsNIIEP*: RGAE, f. 5, o. 1, d. 139, l. 85, 111; RGAE, f. 339, o. 3, d. 2302, l. 70. Gas and central heating were less common than electricity in urban construction in the 1960s in Mongolia.
[780] RGAE, f. 5, o. 1, d. 139, l. 173.

The export of the housebuilding factory to Mongolia closely followed the procedures for export projects discussed earlier in this chapter. Both the factory itself and relevant building types were all pre-designed, tested, and packed for export in the USSR, and exported and installed with Sovet labour.

Like China, the Soviet Union provided specialists and labourers for their technical assistance projects due to the lack of a local workforce in Mongolia. The factory setup was carried out by Soviet technical advisers ('specialists'). To cover the gaps in construction, *Gosstroi* involved military labour. Together with the supply of technical aid, the USSR also increased its military presence in Mongolia with up to 50,000 Soviet troops stationed in the country by 1966.[781] The organisation of housing delivery also involved the training of military cadres in construction trades. Ludmila Samsonova, a specialist from Leningrad who worked in one of the military organisations, remembers how their brigade mastered the implementation of typical housing projects for both military and civil needs. Soldiers and labourers lived in separate military settlements, isolated form the local population, and carried out all the work independently from the locals.[782] The main construction organisation operating in Mongolia, *Gosmontazhspetsstroi*, employed soldiers to carry out the entire complex of construction and assembly work and to deliver finished buildings 'on a turnkey basis.'[783] The technocratic simplicity of the I-464, which achieved

[781] Rahul, *Afghanistan, Mongolia, and USSR*, pp. 65-67. Observers wrote that the role of these labours in the economy of Mongolia was decisive: R.A. Rupen, *Mongols of the Twentieth Century* (2 vols, Bloomington, 1964), p. 327. See also: S. Radchenko, *The Soviets' Best Friend in Asia: The Mongolian Dimension of the Sino-Soviet Split* (2003).
[782] Ludmila Samsonova worked in 1985–1988 in the military unit '73 939'. Interview with L. Samsonova, conducted by Author, Oxford (over Skype), 18 June 2018.
[783] In 1965, no less than 5,000 military labourers employed by *Gosmontazhspetsstroi* worked in micro-

prominence in the regions of the USSR, also made it possible for unskilled labourers to carry out construction abroad.

With the factory finally operating, the Soviets were able to carry out large-scale urban development projects in Ulaanbaatar. By the end of the 1960s, they had constructed a number of densely populated housing estates (micro-regions 12, 13, 14, and 15) in the eastern part of Ulaanbaatar (Fig. 6.8).[784] Prefabricated housing rapidly spread throughout the country. The newly founded industrial towns of Darkan and Erdenet, and settlements Baganur and Khutul, as well as smaller state farm settlements were now constructed using prefabricated housing. By 1975, with Soviet technical assistance, no less than 570,000 m^2 of housing was delivered, which resettled much of the country's 1.5 million strong population.[785] With this ample housing provision, urbanisation, and a pro-natalist policy, the population of the country almost tripled over the period 1950–1989.[786]

The Soviet efforts to introduce an industrialised system of construction contrasted with the Chinese-designed buildings in Ulaanbaatar largely built by means of non-industrial construction methods. The Chinese 'architectural aid' included the construction of significant dominant buildings in Ulaanbaatar of high architectural

regions 12 and 15 of Ulaanbataar, in Darkhan and Choibalsan. See: RGAE, f. 339, o. 3, d. 2302, l. 37, 123.
[784] The development is known as the 'Russian district' even today. A. Mikhalev, '"Russkiii Kvartal" Ulan-Batora: Kollektivnaia Pamiat′ i Klassifikatsionnye Praktiki', *Vestnik Evrazii*, 2 (2008), pp. 7-28.
[785] A. Davaa, 'Osnovnoi Rychag Razvitiia Stroitel'nogo Proizvodstva MNR', *Ekonomicheskoe sotrudnichestvo stran-chlenov SEV*, 2 (1977), p. 50. The second plants opened in 1971 in Darkhan and Erdenet. Later, in the 1970s and 80s, one more plant was installed in Ulaanbaatar.
[786] M. Rossabi, *Modern Mongolia: From Khans to Commissars to Capitalists* (Berkeley and London, 2005), p. 32.

quality, designed for the tastes of the new Mongolian elite: a state department shop, a mountain residence, and a Bayangol hotel.[787] Even today, these individual buildings are seen as important landmarks in Ulaanbaatar. Soviet efforts, by contrast, mostly focused on introducing standardised buildings. Industrialisation and mechanisation of building in off-site facilities in a de-industrialised country required the development of a national industrial complex, as well as construction and construction materials industries. In order to effectively operate, the housebuilding factory was integrated with plants for the production of raw materials and construction materials, such as cement, iron, and wooden components. The Soviet Union's technical assistance was also decisive in the creation of Mongolia's construction industry. More than 150 production facilities constructed with Soviet assistance between 1961 and 1973, among them mining facilities and processing plants based on mineral raw materials, as well as infrastructural projects in towns, including the new industrial towns of Erdenet and Darkhan.[788] The housebuilding factory was seen as a cornerstone of this system.

The long-distance transnational approach adopted in the installation and running of the housebuilding factory, in which architects, engineers, planners, and workers were predominantly Soviet, was used as a short-term measure during the installation

[787] The Chinese also built luxurious accommodation for state guests: the 'Bogd Khan Mountain Hotel,' in 1959 and the 'Bogd Khan Mountain Guesthouse,' in 1960 (by the Beijing Industrial Design Institute). On the Chinese involvement in Mongolia, see: Ding and Xue, 'China's Architectural Aid', p. 137. See also: Radchenko, 'New Documents on Mongolia and the Cold War', pp. 341-446. On micro-region 5 in Ulaanbataar: RGAE, 5-1-687 1966, l. 73.

[788] For an overview of Soviet technical assistance, see: L. Luuiuugiin, 'Pomoshch' Bratskikh Stran v Uskorenii Razvitiia i Povyshenii Effektivnosti Ekonomiki MNR', *Ekonomicheskoe sotrudnichestvo stran-chlenov SEV*, 1 (1977), pp. 25-30.

of the factory and construction of the first micro-regions. In the long-time perspective, Mongolian actors had to catch up with this new infrastructure. In later years, the operation of the factory, workforce, and architectural, planning, and engineering labour was increasingly delegated to Mongolian actors. Through increasing collaboration, the aim was to eventually transfer control over housing production to local actors. In a paper co-authored with Lukasz Stanek, I have argued that collaboration between Soviet and Mongolian actors was one of the guiding 'imperatives' in the process of the socialist urbanisation of Mongolia.[789] Chapters 4 and 5 point out that such collaboration was indispensable in regional applications of the housebuilding system. In what follows, I argue that the similar process of the transfer of experimental development was critical in the effective production of industrialised housing architecture in Ulaanbataar. An effective use of industrialised construction required not only new 'hardware,' but also 'software'—a whole set of institutions and corresponding practices—to be established in the country, as the following section will demonstrate.

Industrial housing production with an international collaboration: transferring experimental design to Mongolia

In 1974 Orony Tleichan, Mongolian minister for the construction and construction materials industries, addressed the *Comecon* meeting in Prague. Tleichan appreciated the huge scale of the assistance of the Soviet Union and other *Comecon* countries for Mongolia, but his address emphasised the local agency of Mongolian

[789] Stanek and Erofeev, 'Comecon Architecture in Socialist Mongolia'.

institutions.[790] This presentation followed the discourse of Soviet international development, which stressed collaboration as its core premise and the defining experience of socialist internationalism.[791] Such collaboration had ideological, practical, and economic motives and took many different forms.

The provision of complete buildings and ensembles by the Soviets (as in the case of 12th mico-region) as turn-key projects was one mode of collaboration reserved for highly-visible buildings. While this type of provision was preferred by Mongolian officials, the Soviets insisted on the involvement of Mongolian cadres in the process. They required that Mongolians participate in the provision of resources, and above all labour. For Ulaanbaatar's house-building factory, for example, Mongolia agreed to provide up to sixty-five per cent of the labourers.[792] Beyond political and ideological objectives, the imperative of collaboration was also motivated economically—the Soviet Union did not have the capacity to run such large facilities as the housebuilding factory with its own labour. Diminishing the role of costly Soviet technical advisers and visiting specialists and instead preparing local specialists was considered one of the most important methods of Soviet assistance in Third World countries.[793]

[790] Gerhard Kraft, *Die Zusammenarbeit der Mitgliedsländer des RWG auf dem Gebiet der Investitionen* (Berlin, 1977), 29.
[791] *Comecon* vision of development, see also: C.f.M.E. Assistance, *Comprehensive Programme for the Further Extension and Improvement of Co-Operation and the Development of Socialist Economic Integration by the Cmea Member-Countries* (Moscow, 1971).
[792] RGAE, f. 339, o. 3, d. 2100, l. 65.
[793] A.M. Kalinovsky, *Laboratory of Socialist Development: Cold War Politics and Decolonization in Soviet Tajikistan* (Ithaca, NY, 2018), pp. 105-10.

Accordingly, by the 1960s, Soviet and Mongolian officials discussed a number of steps to train and involve Mongolian actors in various stages of the housing delivery process.[794] Among these steps was an agreement signed by the head of the Mongolian *Gosstroi* D. Maidar and the head of the Soviet *Gosstroi* I. Novikov in 1965, which stipulated that the Soviets would train local construction cadres. This involved the opening of training centres at Mongolian construction sites and at the factory itself, with courses of up to half a year for the main building trades. According to an inter-governmental agreement, no less than half of the employees at the factory ought to be Mongolians; the construction and assembly process would also be internationally split, with the creation of joint Soviet-Mongolian brigades, staffed with qualified Soviet instructors.[795]

Collaboration with Mongolian labourers rarely went smoothly. Soon *Gosstroi* identified a barrier to the employment of Mongolians: collaborative practices often had a disruptive effect on production. Joint Soviet-Mongolian brigades were able to account for only forty per cent of even favourable norms.[796] This ineffectiveness of collaboration and the labour shortage were evaluated as the major problem with housing delivery. The challenges of collaboration notwithstanding, the involvement of Mongolian architects, engineers, and planners in Soviet-assisted projects consistently increased between the 1960s and the 1980s.

[794] RGAE, f. 339, o. 3, d. 2302, l. 161-64, 273–79.
[795] RGAE, f. 339, o. 3, d. 2302, l. 66, 219.
[796] RGAE, f. 339, o. 3, d. 2100, l. 66.

Apart from questions of the organisation of labour, the architecture of prefabricated buildings and industrial engineering also raised concerns about the collaboration in design and planning. Mikhail Posokhin, chief architect of Moscow and head of the design institute *Mosproekt II*, visited Ulaanbataar with a Soviet delegation in 1966 and confirmed concerns that the lack of collaboration would make it difficult to effectively use the factory. After inspection of Soviet architectural work in Ulaanbataar, he was not impressed. Writing to *Gosstroi*'s department for overseas construction, he unfavourably compared the Soviet residential blocks with the Chinese 5th micro-region. He pointed out the monotony of the Soviet residential development, engendered by the limited variability of building types produced by Soviet housing delivery, and the poor quality of construction when compared with the Chinese development. He also critiqued the architectural designs of Soviet buildings: 'The Soviets are still producing outdated buildings with cast-iron stoves, while even the dwellers of the yurts are nowadays using electric stoves.'[797]

The long-distance development overseen by the Soviet side proved to be relatively rigid in terms of architectural variability. The process involving improvements, amendments, and upgrades of panel technology proved problematic to conduct without a centre for local coordination, and until the 1970s, housing combines produced a very limited set of multistorey residential block with cast-iron stoves.[798] In form, the Soviet 'gift' and the Cold War realities of the 1960s had resulted in the monotony of the urban landscape. Similar concerns over the inflexibility of

[797] RGAE, f. 5, o. 1, d. 687, l. 73–80.
[798] I-464-6UB developed by *Mosproekt*. RGAE, f. 5, o. 1, d. 521, l. 45.

prefabricated technology were also expressed in Skopje, as well as in domestic projects.[799] Methods to introduce greater architectural variability became the central concern in the professional discussion of industrial housing architecture.[800]

Soviet architects actually attempted to innovate with the design of prefabricated housing for the Ulaanbaatar factory; amendments included new articulations of façades and balconies, and tower heights that varied between nine and twelve storeys.[801] However, aligning these developments with the delivery system already functioning in the country proved problematic.[802] Each minor amendment required long field trips by specialists, a costly process of experimental development, and a long process of approval. The production of housing in Mongolia with Soviet technical assistance also proved inflexible to local specifics, since the greatest volume of construction with Soviet help was carried out in the 'turn-key' method of developments. In such projects, professionals based in the USSR led the development, while the roles of Mongolian actors were limited to the provision of territorial, geological, and engineering data, and site exploration.[803] This long-distance mode of development using the building system proved to obstruct the process of technical improvements and amendments, as well as that of architectural

[799] On Skopje, see: Rupnik, 'Designing (in) Space-Time'
[800] For example, see Leningrad's approach to achieve variability: N. Matusevich, *Orientiry Mnogoobraziia: Blok.-Sekts. Sistema Proektirovaniia i Tendentsii Razvitiia Massovoi Arkhitektury* (Leningrad, 1976). Also, see Chapter 9 of this thesis.
[801] RGAE, f. 5, o. 1, d. 843; d. 842, l. 212, 233. I-464-6UB developed by *Mosproekt*. RGAE, f. 5, o. 1, d. 521, l. 45.
[802] RGAE, f. 5, o. 1, d. 139, l. 173.
[803] Such cooperation involved Mongolian actors travelling to Moscow-based institutes to provide data for projects. See: Interview with D. Bat, conducted by Author, Ulaanbataar, 10 April 2018. *Mongolstroiproekt* provided 'design and surveying' materials for micro-regions 7, 13, 14, and others. RGAS, f. P-850, o. 9-4, d. 250, l. 148.

innovation.

Soviet assistance became decisive in the creation of architectural and construction infrastructure in the country. Most administrative and planning organisations and institutes for the design and training of Mongolian cadres underwent rapid devolvement during this decade. To facilitate transnational communication with the Soviet bloc, the Mongolian planning apparatus closely followed Soviet models. The central role in architecture, planning, and construction was held by the Mongolian *Gosstroi* (the State Committee for Construction)—a similar institution to the USSR's *Gosstroi*. Major Soviet organisations also established branches in Mongolia; this was the case with the Soviet *Gosstroi,* the *Gosgrazhdanstroi,* and the *GKES*.[804] These administrations were assisted or directly run by Soviet advisors.

In the 1970s, Soviet-Mongolian engagements came to be increasingly focused on architectural collaboration, which required the establishment of specific institutions. The Mongolian State Design Institute emerged from a string of organisations established with the close assistance of the Soviets. Since the 1930s, Mongolian planning institutions had played an increasing role in the production of drawings; they employed a growing number of Mongolians and accelerated the standardisation and typification of plans. By the 1960s, the State Design Institute employed more than 500 people, including over 150 foreign specialists and experts, above all from the USSR and *Comecon* countries (Fig. 6.9).[805] Upon his visit,

[804] D. Bat, *Zurag Tosol* (Ulaanbaatar, 2016), p. 58.
[805] Ibid., p. 196. Interview with Dagshigdorj, 10 April 2018, Ulaanbataar.

Posokhin proposed bringing the institute even closer to the Soviet model, sending Mongolian colleagues an organisational blueprint of a 'typical' design institute for 700 employees.[806] Soviet assistance to the institute explicitly included the training of Mongolian architects and engineers. Mongolian graduates were offered scholarships to study architecture in the Soviet Union, getting acquainted with the Soviet practice of architecture, planning, and construction. This was also the initial aim of the establishment of the School of Architecture at the University of Mongolia in Ulaanbaatar (1973). The curriculum of the architectural school was modelled on the five-year specialist training offered by Moscow State University of Civil Engineering; teachers underwent training in Moscow University and students were sent to Soviet construction sites for practical experience.[807]

Among the Soviet architects who worked in *Mongolstroiproject* in the 1960s was Volia Kossarzhevskii, a high-status Moscow architect, the laureate of numerous state prizes, and an employee of *TsNIIEP im. Mezentseva*, an institute specialising in public buildings. One of the first projects developed by Kossarzhevskii in Mongolia was the 15th micro-region of Ulaanbataar.[808] In contrast to most earlier residential developments, this project was designed in Mongolia itself. The role of the Mongolian Design Institute gradually increased in transnational exchanges, from its original provision of merely territorial, geological, and engineering data, and site exploration[809]—as was the case with Ulaanbataar micro-region 12—to a

[806] RGAE, f. 5, o. 1, d. 687, l. 76.
[807] B. Dambiiniam, 'Arkhitekturnoe Obrazovanie v MNR', *Arkhitektura SSSR*, 9 (1979), pp. 15-17.
[808] RGAE, f. 5, o. 1, d. 687, l. 70a.; See also the report on V. Kossarzhevskii: RGAS, f. 149, o. 1-1, d. 3238.
[809] *Mongolstroiproject* provided Soviet design and planning institutes with 'design and surveying' (*proektno-izyskatel'nye*) materials, RGAS, f. P-850, o. 9-4, d. 250, l. 148.

leading role in the design of micro-region 15.[810]

The design of micro-region 15 explicitly demonstrates how the practice of experimental development was finally transferred to the Mongolian side. Similarly to the general Soviet practice, most of the public building in micro-region 15—among them, a stadium, cafes, and schools—were applications (*tying-in*) of standardised projects. The use of standardised projects under the supervision of Kossarzhevskii was aimed to transfer specific practices to Mongolian colleagues (Fig. 6.10). Soviet standardised projects where advertised in printed booklets (Fig. 6.11).[811] Importantly, in addition to the standard housing blocks already mastered by the factory, micro-region 15 reserved up to ten per cent of its capacity for 'experimentation'—which meant the mastering of new industrial construction methods, building materials, or industrial standard projects.[812] While in the early 1960s, the Soviet side would carry out experimental processes domestically prior to their implementation overseas, by the next decade these processes were transferred to Ulaanbataar. The transfer of the practice of experimental design to Mongolia and to conduct it in collaboration with Mongolian professionals marked an important step in facilitating the implementation of new building types and making prefabricated housing more adaptable and varied.

[810] RGAE, f. 5, o. 1, d. 687, l. 70a. Also see a report of Merzhanov about Kossarzhevskii in: RGAS, f. 149, o. 1-1, d. 3238. To assist the formation of the institute, in 1966, *Gosstroi* provided *Mongolstroiproject* with model structure of a typical Soviet design institute for 700 employees, design standards and rules, a normative schedule of prices, and normative workload standards for architects and planners.
[811] See the report of Merzhanov about this exhibition: RGAS, f. 149, o. 1-1, d. 3238, l. 29–33.
[812] For example, an experiment in the Ulaanbataar housebuilding factory was in mastering the use of perlite in construction, 'in analogy with the experience of Irkutsk concrete plant' RGAS, f. P-850, o. 9-4, d. 250, l. 149–51.

The fruits of the cooperation between Mongolian and Soviet actors are best visible in Gandan district in Ulaanbaatar. In 1971, Soviet officials expressed an intention to develop this large-scale housing estate, designed to house 'a hundred thousand workers of science, technology, and culture' as a gift commemorating the fiftieth anniversary of Mongolia's socialist revolution.[813] The project was intended to be an explicit showcase of the Soviet housing programme in Mongolia and to introduce new planning methods and innovations to the Soviet housing delivery system.[814] The design of the district featured a higher residential density, better public services, and unconventional planning of the territory. Gandan was divided into four sub-units and eleven 'residential complexes,' organised around the Gorky Street, which cut across the centre of the development. Architects actively used arguments about 'artistic expression, and uniqueness of architectural character' to avoid merely standard designs.[815] Buildings types included cottages in the eastern part of the micro-region, adjacent to the ancient monastery.[816] Individually designed residential towers were used to create an accent on the central Gorky Street (Fig. 6.13).

The development of Gandan district evolved in several stages and each one introduced new building types and technical upgrades of the housing delivery system. In that sense, it resembled the experimental districts constructed in the

[813] RGAE, f. 5, o. 5, d. 116, l. 109. The final design was devised by Moscow-based *Mosproekt* and *Giprogor*. RGAE, f. 5, o. 5, d. 116, l. 109. For commission documents on Gandan (micro-regions 3 and 4) see: NAM f. 288, o. 1, d. 1017, l. 2–5. On Gandan, see also: RGAE, f. 5, o. 5, d. 116, l. 73–78.
[814] A. Krippa, L. Vrangel', and I. Sogomian, 'Zhilishchnoe Stroitel'stvo v MNR', *Arkhitektura SSSR,* 9 (1979), pp. 29-30.
[815] *Giprogor* archive, SPd-287, l. 5.
[816] *Giprogor* archive, SPd-287, l. 7.

USSR, although in overseas projects such terms as ‘experimental’ tended not to be used. The first stage, which started in 1975, was preceded by an upgrade of the gear of the Ulaanbaatar housebuilding factory, to enable the construction of towers of up to twelve floors. New housing layouts were developed collaboratively by Soviet and Mongolian architects. The apartments included larger kitchens, additional storage rooms, and special balconies adjoining the kitchen. In such a peculiar layout, balconies were used to freeze meat supplies during the winter, as herders in Mongolia would slaughter their cattle in the late Autumn (Fig. 6.12).[817]

The second stage of the development of Gandan district began in 1979. This included the construction of the spine of Gandan district—the ensemble of Gorky Street, the main shopping street of the city’s west end, providing a wide range of services and facilities. Based on the building system, *TsNIIEP* produced a unique type of residential tower with remarkable architectural qualities. The building was shaped like a shamrock, with nine-floor wings formed of three branches, connected by a central part towering over twelve floors. Retail outlets were located on the ground floor. Three such buildings, erected over Gorky Street, formed a shopping street with a single row of facilities. Furthermore, one of the most distinct traits introduced with the factory’s upgrade was the inclusion of ornamental slabs based on studies of traditional ornamental motifs and architectural heritage in Mongolia, carried out by Soviet and Mongolian scholars in the 1970s.[818] The ends of buildings

[817] Layouts were designed in cooperation by agents from *Mongolstroiproject* while the final technical blueprints were produced by the *TsNIIEP*. Interview with Bat, conducted by Author, Ulaanbataar, 10 April 2018.
[818] For an analytical study of such ornaments, see, for example: Maidar and Piurveev, *Ot Kochevoi Do Mobil'noi Arkhitektury*, pp. 41-50.

facing Gorky Street were decorated with sculptural shapes with generic ornamental motives (Fig. 6.14).

The architecture of the residential areas constructed in Ulaanbataar with Soviet assistance from the 1960s to the 1980s reflects the development of Soviet prefabrication systems and housing typologies. Initially, five-storey buildings were predesigned in Moscow and assembled and shipped to Mongolia. Micro-regions 12 and 15, built in the 1960s, started with five-storey prefabricated blocks, and were later extended by nine- and twelve-storey towers. They were equipped with social facilities distributed according to a normalised system of catchment areas, and occasionally included unique buildings. By the 1970s, urban and apartment layouts became more innovative, as testified by the Gandan district, laid out along the Gorky Street with five twelve-storey buildings on the shamrock plan connected by a lower building that housed shops and services. In contrast to the previous pre-designed solution, in the case of Mongolia, the practice of experimental development was exported to the country, which enabled a more flexible use of the building system and the production of more diverse structures.

Cooperation between Soviet and Mongolian actors resulted in advances in the technology, typology, and morphology of housing. Various housing types developed are depicted in the picture by S. Luvsangombo, Dep. Minister of State Construction of Mongolia (Fig. 6.15). After their implementation in Gandan, new building types

went into mass production and were widely used in Ulannabataar and Erdenet.[819] National motifs borrowed from this repository became a natural accompaniment of Soviet-led modernisation in Mongolia in later years.[820] The requisite retail outlets, and cultural and entertainment institutions developed alongside the growing apartment blocks were often designed in the form of a dome or the shape of a yurt (Fig. 6.16).[821]

Given all these characteristics, Gandan resembled Soviet experimental micro-regions (such as Cheremushki, which we saw in Chapter 1), where new industrial housing projects were brought into circulation at the housebuilding factories. Even if, according to official documents, Gandan was not declared to be an experiment, it followed the Soviet domestic practices of residential constructions, which were used as construction sites for new experimental prototypes and methods of construction. In Mongolia, as in the USSR, experimental developments were used for the localisation of large-panel technologies and their adaptation to local specifics, and to introduce new building types, which, after standardisation, would disseminate throughout the country. This draws us to the conclusion that Soviet urbanism in export replicated not only Soviet forms of housing and public buildings but also the practices and procedures specific to the Soviet domestic context. In order to effectively use housebuilding factories and other Soviet construction infrastructure, a whole institutional system had to be installed in the country, which

[819] *TsZhA*, inv. 2620 '92-07С-1-УБ', inv. 2131 '92-016С-1-УБ.'
[820] Standard housing design also introduced a wide array of national ornaments in the form of mosaics or sculptural ornamental slabs, such as on Darkhan residential buildings.
[821] For example, the universal shop in micro-region 19.

then enabled experimental and standardised design in the country. The specific architectural practices allowed the creation of effectively localised industrial architecture.

Conclusion

By 1976, *Mongolstroiproject* mastered the whole complexity of residential planning and started designing its own residential developments in Ulaanbataar in parallel to the Soviet-led projects. Using the Soviet housing delivery system, Mongolian actors designed micro-regions 5, 6, and 19.[822] The results of this Soviet-Mongolian cooperation are clearly seen in Mongolia today. Socialist-era public and administrative buildings still serve as important architectural landmarks of Ulaanbaatar and residential districts with prefabricated housing spread from the centre to the outskirts of the city. Due to the limited availability of wood, the Mongolian architectural landscape is thus dominated, to this day, by two clear layers: that of the '*gers*' (traditional felt *yurts*), and that of the slabs of Soviet prefabricated housing (Fig. 6.17).[823]

In 2018, I visited the housebuilding factory in Ulaanbaatar, which stalled in the wake of the collapse of the Soviet Union. After more than twenty-five years of inactivity, the factory, equipped with machinery from a German manufacturer, is now being reopened to produce prefabricated components for a new programme of

[822] J.Zukhaa. 'Barilgyn zoorag tösöl' [Construction Drawing] *Unèn*, 308 (22 December 1976).
[823] A.C. Diener and J. Hagen, 'City of Felt and Concrete: Negotiating Cultural Hybridity in Mongolia's Capital of Ulaanbaatar', *Nationalities Papers*, 41/4 (2013), pp. 622-50.

social housing provision. The design of housing types is still done in cooperation with *TsNIIEP.* In 2017, the institute designed new large-panel residential building types to be produced at the factory. They still include ornaments and decorative slabs with references to Mongolian 'national motifs' (Fig. 6.18).

Stalinist 'national in form, socialist in content' monumental neoclassicism came to become a common denominator for all socialist worlds, or a *lingua franca* of socialist architecture, in the words of Grieg Castillo.[824] During the Thaw, the vocabulary of industrialised architecture established a similar *lingua franca,* as the chapters of this part of my thesis demonstrate. This technical 'language' facilitated communication between architects and technical specialists in local and trans-regional developments who designed, planned, adapted, and coordinated architectural and construction projects. Effective use of the *lingua franca* of industrial architecture involved more than compliance with certain stylistic characteristics. Since industrial architecture required coordination with planning, construction industries, and economic planning, it involved multiple agents from various fields of expertise: architects and technical specialists, as well as officials from city administrations.[825] In particular, it enabled and facilitated periphery-to-periphery expert interactions and increased mobility of experts between Vilnius,

[824] G. Castillo, 'Peoples at an Exhibition: Soviet Architecture and the National Question', in T. Lahusen and E. Dobrenko (eds.), *Socialist Realism without Shores* (Durham, 1997), p. 91. On Modular design as a *lingua franca,* see also: L. Blagojević, 'Modernism of Scarcity: Architect Milan Zloković and Debates on Industrialization of Construction in the 1950s and 1960s', *Le Culture della Technica,* 27 La Prefabbricazione (2016), pp. 85-100.

[825] In an article co-authored with Lukasz Stanek, we conceptualised this specific Soviet approach as embodying the 'systemic' or 'complex' character of Socialist architectural production. See: Stanek and Erofeev, 'Comecon Architecture in Socialist Mongolia'.

Skopje, Irkutsk, and Ulaanbaatar, as the cases discussed in this chapter have demonstrated. The adaptability of the Soviet housing provision system and collaboration with local stakeholders made the system attractive to be expanded in the different socio-political context in the Global South, thereby questioning the grand narrative of the sluggish and ever-declining performance of the export industries of the Soviet bloc.

Part III. Mass housing and social sciences in 1969–1991

Introduction

The final part of this thesis discusses the experimental housing projects completed from 1969 to 1991, during the period of Brezhnev's leadership up to the end of perestroika. Soviet architectural production never abandoned experimental design and construction, and these remained the main methods for the development of industrial housing production, becoming especially relevant in the latter part of the twentieth century.[826] Similarly to those projects discussed earlier in this thesis, experimental buildings and whole micro-regions were designed and constructed to serve as models, and were used to test new typological designs, planning schemes, and construction and management approaches. These experiments were centrally planned, funded, and included in the five-year plans for the Soviet Union's national economy.[827] To understand the changing purpose of these experiments, it is important first to contextualise them within the wider discussion concerning late Soviet social and architectural history.

Historically, the period under scrutiny has commonly been referred to as 'stagnation' due to its persistent economic shortages characterised by 'huge black marketeering' and 'phenomenal waste'; it was also 'increasingly dependent on key

[826] Experimental development preceded each stage (or generation) of mass housing delivery. Dikhter, *Kvartira Moskovskoi Sem'i*, p. 22.
[827] M. Posokhin and Ia. Dikhter outline the development of experimental construction in Moscow: M. Posokhin and L. Dubek, *Eksperimental'nyi Zhiloy Rayon Chertanovo-Severnoye* (Moscow, 1976), pp. 9-11, Dikhter and Sherstneva, *Eksperimental'noe i Massovoe*.

foreign imports.'[828] Delays and shortages, as well as the general ineffectiveness of Soviet planning apparatus, had adverse implications in the sphere of construction. State construction companies were unable to hold workers and encountered difficulties in acquiring materials at a time when everything, even bricks, were in short supply. Late Soviet *dolgostroi* (lengthy construction projects) dragged out for decades. One symptom of this stagnation was the growing sphere of the unofficial, especially alongside an increase of 'shortage economy,' a term which János Kornai used to describe the systematic shortcomings of a centralised system of manufacture and distribution.[829] In the sphere of construction, it appeared in various unofficial practices, such as 'illegal self-building' (*nakhalovka*), or the involvement of unofficial construction brigades (*shabashniki*), which, in some regions of the USSR, accounted for more than half of all construction contracts.[830] The tolerance of a shadow economy was part of the 'little deal' agreed by the Soviet state facing shortages; authorities turned a blind eye to certain non-socialist methods employed by citizens to improve their personal well-being.[831]

Recent scholarship has shown that despite these economic problems, 'stagnation' should not imply that no development took place in the period.[832] The time of Brezhnev was also a time of peak research and development, and scientific

[828] S. Kotkin, *Armageddon Averted: The Soviet Collapse, 1970-2000* (Updated edn., Oxford, 2008), p. 66.
[829] See: J. Kornai, *Economics of Shortage* (Amsterdam and London, 1980).
[830] N. Erofeev, 'Shabashniki', in A. Ledeneva (ed.), Global Encyclopaedia of Informality, Volume 3 (London, 2020), http://www.in-formality.com/wiki/index.php?title=Shabashniki_(USSR,_Russia)I (17 September 2019). On 'rogue construction,' and 'illegal self-building,' see: Le Normand, *Designing Tito's Capital: Urban Planning, Modernism, and Socialism in Belgrade*, pp. 147-88.
[831] On the shadow economy and this 'little deal,' see: J.R. Millar, 'The Little Deal: Brezhnev's Contribution to Acquisitive Socialism', *Slavic Review*, 44/4 (1985), pp. 694-706.
[832] D. Fainberg and A. Kalinovsky, *Reconsidering Stagnation in the Brezhnev Era: Ideology and Exchange* (Lanham, 2016), p. vii.

exchanges in specific spheres of industry and science.[833] Arguably, the industry of housing construction was one such high-priority sphere. During the twenty years of stagnation, much research and development in the construction sphere was carried out, such that the Soviet Union attained a scale and complexity of fabrication unseen in the Western world.[834] An important research and development project in the housing industry involved the development of a new approach to standardisation based on 'open typification' (*tipizatsiia*). Early approches to system building, adopted in such systems as the I-464, saw the production of a certain set of standardised building types out of the factory. The new approach instead intended to introduce a modular industry, in which interchangeable prefabricated components, rather than entire buildings, were produced at factories. Institutes in Moscow, Leningrad, and other cities developed various approached to *tipizatsiia*, aiming to allow architects to assemble more diverse types of structures from prefabricated components while maintaining the virtues of mass production and cost-efficiency.[835] Seeking flexibility and individual approaches in industrial design, these projects sought to find ways to retool the large-panel housing industry for a more flexible and sensitive post-functionalist urbanism. I discuss one such project

[833] See: N. Klumbytė and G. Sharafutdinova, *Soviet Society in the Era of Late Socialism, 1964-1985* (Lanham, 2014). Also see Krylova, who questioned the heterogeneity of the narrative of stagnation: A. Krylova, 'Soviet Modernity: Stephen Kotkin and the Bolshevik Predicament', *Contemporary European History*, 23/02 (2014), pp. 167-92.
[834] Ivan Rupnik, 'Mapping the Modular Industry,' in Smith and Quale, *Short Offsite Architecture: Constructing the Future.*
[835] On the 'third generation' of prefabs: Meuser and Zadorin, *Towards a Typology*, pp. 340-45. See also, on the development of volumetric components in Leningrad: Matusevich, *Orientiry Mnogoobraziia*. Smith and Quale, *Short Offsite Architecture: Constructing the Future*, *Chapter 4. Mapping the Modular Industry.* In 1982, *Gosstroi* defined the practice of experimental design, based on the catalogues of volumetric prefabricated components. See: *Eksperimental'noe Stroitel'stvo Zhilykh i Obshchestvennkh Zdaniii iz Unifitsirovannykh Izdeliii Edinogo Kataloga* (Moscow, 1982), 3. Historians describe the specifics of architectural design based on standard components through the analogues of a child's Lego set or the Tetris computer game. Meuser and Zadorin, *Towards a Typology*, p. 136, Bittner, 'Remembering the Avant-Garde', p. 560.

in more detail in Chapter 9.

The urban design and architecture of late socialism has recently received much scholarly attention.[836] In the vocabulary of architectural history, the period under scrutiny is often referred to as post-modernism, corresponding to a general disillusionment with the functionalism of the late 1950s and the 1960s. Post-functionalist architecture shifted from an emphasis on egalitarianism and universalism to individual expression, a 'turn to history,' and the development of more socially-sensitive urban models.[837] Historians highlight the growing institutionalisation and professionalisation of architectural practice at that time. In the multidisciplinary environment of scientific research institutes, architectural and planning practices became increasingly informed by the scientific disciplines of mathematics and cybernetics, as well as social sciences.[838] The domain of expert knowledge was consolidated in the post-Stalinist period with the advent of the doctrine of the 'scientific-technical revolution.'[839] This scientific-technical revolution encouraged the strengthening of 'scientific management,' in which new methods in sociology, statistics, and social forecasting became especially influential in defining the vision of social transformation. Historians thus concede that the architecture of socialist postmodernism should not be seen as merely an

[836] V. Kulić, *Second World Postmodernisms: Architecture and Society under Late Socialism* (London, 2019). See also the special issue 'Urban Planning and Architecture of Late Socialism,' edited by Daria Bocharnikova and Andres Kurg, *The Journal of Architecture*, 24/5 (2019).
[837] Ibid. See also: F. Urban, *The New Tenement* (London, 2017), Chapter 1: The New Tenement.
[838] D. Bocharnikova and A. Kurg, 'Introduction: Urban Planning and Architecture of Late Socialism', *The Journal of Architecture*, 24/5 (2019), pp. 595-98. The history of Soviet architectural institutions still largely remains a gap in scholarship.
[839] E.P. Hoffmann, 'Soviet Views of "the Scientific–Technological Revolution"', *World Politics*, 30/4 (1978), pp. 615-44, D.R. Kelley, *The Politics of Developed Socialism: The Soviet Union as a Post-Industrial State* (New York and London, 1986).

architectural style, but rather as a ‘comprehensive approach to social engineering and spatial planning.’[840] In a similar way, experimental projects of the time became increasingly multidisciplinary, and, as the following chapters demonstrate, were informed by complementary scientific disciplines.

[840] Bocharnikova and Kurg, 'Introduction', p. 594.

Chapter 7. A social experiment in self-managed housing: The House of the New Way of Life

Introduction

Most accounts of the architecture of Soviet housing mention an outstanding project in the 10th district of Cheremushki: the 'House of the New Way of Life' (*Dom novogo byta* or *DNB*) (Fig. 7.1).[841] This residential project, realised in 1964–1971, revitalised the long-standing Soviet concept of communal housing, in that it projected new, alternative forms of social and private life and means of socialisation for residents. Apartments in the *DNB* were tiny, with no kitchens and only hotplates for 'episodic cooking.' The reduction of private spaces was balanced by collective facilities, such as halls for communal dining and childrearing. The building also provided other benefits, such as a cinema and club halls, and storage rooms with communal vacuum cleaners, which were even featured in Soviet films.[842] All such services were designed to help families cut down the time they spent on housework (Fig. 7.2). However, the complex never actually operated in the way it was designed to. In 1972, when the *DNB* was almost completed, Moscow City Hall decided to abolish the experiment with communal housing and turned the building over to the Moscow State University. The project came to be seen as a romantic scheme that failed to achieve its ambitious goals due to its ideological and reductive design. Rather than seeing the project of the *DNB* as merely a failed utopian project, this

[841] This project was discussed by Soviet authors in the professional press, by publicists, and in several major western accounts: DiMaio, *Soviet Urban Housing*, pp. 78-81, Andrusz, *Housing and Urban Development* p. 123, Colton, *Moscow*, pp. 529-31, V. Buchli, *An Archaeology of Socialism* (Oxford, 1999), pp. 148–49, Bittner, 'Remembering the Avant-Garde', pp. 573-74, Anderson, *Russia*, pp. 226-28.
[842] *Liubit' Cheloveka,* dir. S. Gerasimov (Film, 1973).

chapter will focus on the practices involved in the project and the concepts developed and articulated as part of it. The project triggered prolific elaborations and discussions of concepts of the family and cooperation, articulated through the concept of experiment. The project demonstrates the transformation of experimental development into a novel type. Defined as a social experiment, the project was developed by architectural experts, but also enabled the participation of an interdisciplinary team of sociologists, philosophers, and social scientists. Theorised to be an organisational social engineering project, this experiment became important in defining methods and approaches of the emerging science of urban sociology in the Soviet Union.

The peak of the Thaw in the early 1960s was marked by the reinvigoration of ideology, a return to Marx's writings, and a strong resurgence of utopian thinking.[843] Historians have acknowledged the unrealistic ambitions of the Seven-Year Plan and the Third Party Programme (the Communist manifesto) to change social relations and goals for economic development.[844] The Third Party Programme, adopted in 1961, re-energised the drive toward communism by transforming everyday life through collectivism, participatory government, and 'socialist democracy.'[845] As we have seen in Chapter 3, ideas of creating housing with communal facilities gained a strong stimulus in this atmosphere. Academic Stanislav Strumilin, who critiqued the concept of the nuclear family and instead

[843] Reid, 'Building Utopia in the Back Yard: Housing Administration, Participatory Government, and the Cultivation of Socialist Community', pp. 150-51. See also: Gilison, *The Soviet Image of Utopia*.
[844] Taubman, Khrushchev, and Gleason, *Nikita Khrushchev*, p. 156.
[845] On communist morality, see: Field, *Private Life*.

emphasised communal childrearing, received the support of state officials and of Khrushchev himself. In 1964 Strumilin elaborated his vision of the living environment of the future, where he radically saw the individualism of private apartments as a barrier to communist solidarity, and instead envisaged people of the communist future living in sanatoriums (*zdravnitsy*), buildings that contained all necessary services for health, culture, sports, leisure, and childrearing.[846] The design of the *DNB* responded to these trends and was influenced by Strumilin himself, as we will see later.

The *DNB* project arose from a series of architectural competitions for a 'housing complex with collective services,' which took place in 1959–1964 and attracted major Moscow architectural practices.[847] The blueprint of the *DNB* gained recognition in the 1964 all-union competition, directed by the *TsNIIEP*.[848] According to the contest's programme, the housing complex had to be understood as a dwelling enabling a communist everyday life (*byt*). The programme stated its task as the interpretation of the Communism manifesto into architectural theory (Fig. 7.3).[849] The project of the *DNB* also contained multiple references to the Communist manifesto. The design of each of the housing sectors (e.g. sport, healthcare, catering) was justified with quotations from the manifesto concerning

[846] S. Strumilin, *Nash Mir Cherez 20 Let* (Moscow, 1964), p. 133. For Strumilin on families: S. Strumilin, 'Family and Community in the Society of the Future', *Soviet Review*, 2/2 (1961), pp. 3-29.
[847] Kanaeva mentions the 1959 contest, directed by N. Osterman and Udlanis, and the 1962 contest, directed by A. Ovchinnikov. See: I. Kanaeva, 'Voprosy Metodiki Sotsial'no-Prostranstvennogo Eksperimenta Pri Sozdanii Perspektivnykh Tipov Zhilishcha' (Candidate's dissertation, MArchI, 1980), p. 6.
[848] The Moscow-based institutes *TsNIIEP*, *MNIITEP*, *Mosproekt*, and others participated in the contest. See: RGAS, f. P-149, o. 1-1, dd. 773, 774.
[849] RGAS, f. P-149, o. 1-1, d. 739, l. 1a.

the development of the respective field. For example, quoting the plan of the expansion of a preventive medical check-up programme in the USSR, architects included a health centre within the housing compound to offer medical supervision; it would 'monitor health and ensure that timely health assessment is compulsory for all residents, monitor their daily regime, healthy and therapeutic nutrition, and supervise their sport activities.'[850]

The resulting project, as presented in *Arkhitectura SSSR*, consisted of two residential blocks with additional sport, cultural, medical, and catering facilities. It was strikingly similar to Strumilin's image of the sanatorium as a basic type of mass dwelling. Strumilin himself ideologically supported the project, and it was under his auspices in particular that the project found its way to actual design and construction by the Moscow Scientific Research and Design Institute of Typology and Experimental Design (*MNIITEP*).[851] As an architectural institute for standard design, it attempted to implement Strumilin's idea of a 'sanatorium' as a mass building type and fit it into the Soviet mass housing industry.

In Chapter 1, we discussed the development of the 9th microregion of Cheremushki in 1956–58 by the *SAKB* institute. The *DNB* was designed by the same institute, which in 1966 was renamed as the Moscow Scientific Research and Design Institute of Typology and Experimental Design (*MNIITEP*), and constructed in the 10th

[850] N. Osterman and A. Petrushkova, 'Zhiloi Dom-Kompleks s Obshchestvennym Obsluzhivaniem', *Arkhitektura SSSR,* 7 (1965), pp. 16, 26.
[851] Interview with V. Verkhovin, conducted by Author, Moscow, 5 August 2017. The role of Strumilin is also mentioned in Osterman and Petrushkova, 'Zhiloi Dom-Kompleks', p. 14.

district of Cheremushki. In 1961, this area was reserved by Moscow City Hall as the main experimental construction site in Moscow for testing the second generation of experimental projects. This micro-region consisted of twenty-three separate buildings, each with a different experimental task.[852] Most of these experiments were of a technical nature, concerning the testing of various construction solutions.[853] In particular, *MNIITEP* tested in this micro-region the design of their own housing delivery system, based on large-panel prefabricated components, which focused on nine- and twelve-storey tower buildings.[854] Residential blocks of various types with different apartment layouts and auxiliary structures were constructed to demonstrate the capacities of this new building system. The *DNB* was designed out of the same large-panel components, and consisted of two tower blocks joined by an adjacent service block.[855]

The *DNB* was, thus, one of many experiments carried out in the 10th district of Cheremushki. It was designed and built using state funds for experimental construction and was mentioned in publications alongside other experiments developed by the institute.[856] Its experimental status placed it within the Soviet bureaucratic system and construction industry. As demonstrated in Chapter 1, this status also implied that the project was understood as a model for replication and ensured it was subjected to economic and technical scrutiny. Not all of the

[852] Micro-region planning was carried out by the *MNIITEP* and the *NIIEP*. RGAS, f. P-149, o. 1-1, d. 761, l. 4.
[853] Dikhter and Sherstneva, *Eksperimental'noe i Massovoe*, pp. 61-90.
[854] Housing delivery system '1MG-601.'
[855] TsGA, f. 321, o.1, d. 277, l. 52; Blocks of D type were used: TsGA, f. 321, o.1, d. 277, l. 18; d. 235, l. 2.
[856] Dikhter and Sherstneva, *Eksperimental'noe i Massovoe*, p. 232. According to the institutional budget, the experiment cost was 5,999 rubles: TsGA, f. 321, o.1, d. 386, l. 43.

experimental buildings in the 10th micro-region passed the test. Under scrutiny, several buildings proved to be faulty or uneconomical to produce and their experimental status was revoked.[857] This would be the case for *DNB* as well.

The purpose of the *DNB* experiment was defined as to 'test a new building type made up of one- and two-person apartments without kitchens and with advanced forms of public services.'[858] Chapter 2 demonstrated that housing for 'small families' (*malosemeinye*), was a common subject of experimentation in the 1960s. Thus the purpose of such an experiment was understood across all levels of the housing delivery bureaucracy. Chapter 2 also showed how the main problem with housing for 'incomplete families,' as identified by architects, arose from building usage rather than building design. Architects concluded that it was scarcity and overpopulation, issues with apartment distribution, and residents' neglect of public services that led to the failure of many of these projects. The *DNB* was intended to mark a step forward in this direction—from the beginning, the project was designed with a meticulously elaborate social and economic programme that would ensure its proper running. According to this programme, the experiment's purpose was to create a specially designed communal environment, which would encourage residents to change their social relations. Furthermore, the project was not designed for a specific group of tenants sharing a family status (as was the case with most houses for singles at that time), but for a mixed group, which was expected to voluntarily assume responsibility for living in a communal way. In this way, the

[857] RGAE, f. 5, o. 1, d. 317, l. 10.
[858] TsGA, f. 321, o.1, d. 234, l. 48.

DNB significantly differed from other, more conventional, technically-oriented experiments carried out by *MNIITEP* in the 10th micro-region.

Natan Osterman, in his article 'Social problems of experimental construction,' criticised the unwillingness of architects to address 'larger social problems.' He proposed distinguishing three categories of experimental construction, differing in 'forestalling distance': first, experiments for immediate implementation; second, experiments for implementation in the near future (3–5 years); and third, experiments for implementing over a period of 15–20 years. The *DNB*, according to Osterman, fell into the last category, which addressed presumed forthcoming social changes. Osterman refers to the *DNB* as 'a social experiment, built out of the standardised prefabricated elements.'[859] It is particularly in this rhetoric of social engineering that scholars have noted a revitalisation of the avant-garde discussion about socialist housing. But even if the *DNB* design resembled avant-garde housing, in the 1960s it was not enough to provide a purely architectural program; the project also needed to be supplemented with a coherent economic and technical programme. *MNIITEP* developed the technical construction side on its own, while developing the economic part in cooperation with other institutes.

Scholarship on the *DNB* project has a strong tendency to present it as a masterpiece orchestrated by Natan Osterman.[860] Yet what was especially innovative about the

[859] N. Osterman, 'Eksperimental′noe Zhilishchnoe Stroitel′stvo i Sotsial′nye Problemy', *Arkhitektura SSSR*, 9 (1969), p. 30.
[860] For example, see: Buchli, *An Archaeology of Socialism*, pp. 148–49.

DNB was that it arose not only from Osterman's architectural ambition to design collective housing, but also from a strong underlying scientific basis. The social programme of collective housing was developed in collaboration with the Institute of Philosophy of the Academy of Sciences of the USSR.[861] The prognostic investigation into the future of daily life involved fifteen research institutes, six chairs of higher educational institutes, and seven branches of the boards of the Moscow State Committee—'in all more than 150 persons.'[862] 'We invited economists, pedagogues, lawyers, philosophers, and catering specialists,' wrote Osterman.[863] The project led to what may represent the largest body of research on a single housing complex; and these studies were presented in numerous publications, the first of which was an exceptionally long, 24-page article in the main Soviet architectural journal *Architectura SSSR* by Osterman and his wife Petrushkova.[864] The research-oriented approach of the *DNB* was what set the project apart from those of the previous generation of architects, such as Georgii Gradov and Alexei Zaltsman, who, in developing their housing complexes for single people, relied primarily on their own expertise alone (see Chapter 2). The *DNB* experiment, by contrast, included significant theoretical elaborations and a re-articulation of the concept of experiment.

'Formative social experiment'

Natan Osterman referred to the *DNB* as a 'social experiment.' Where did this term

[861] G. Osipov, *Sotsiologiia v SSSR* (2 vols, Moscow, 1966), 1, p. 63.
[862] DiMaio, *Soviet Urban Housing*, pp. 78-81.
[863] Osterman and Petrushkova, 'Zhiloi Dom-Kompleks', p. 14.
[864] Ibid., pp. 13-37.

come from? Soviet scholars have stressed that the initiative to conduct the 'social experiment' of the *DNB* came from architects themselves.[865] However, Soviet architectural production normally lacked such a category of social experiment. It is therefore important to examine these terms more closely to see how they entered architecture, and how their use in this field was informed by their meaning in other disciplines.

The concept of a 'social experiment' emerged and proliferated in the 1960s in pedagogic and socio-economic literature.[866] Ryvkina, one of the main theoreticians of the experimental scientific method, defined a social experiment as a method of investigating the reaction of a social group to certain internal or external factors: 'A social experiment is conducted by a study group. An experimental programme is implemented by a human group; this group, under scrutiny, is the object of the research. While the experimental programme is being implemented, this group continues to perform its main functions, which may or may not coincide with this programme.'[867] Thus an experimental group is both a subject and an object of the experiment. Ryvkina understood a social experiment to have a 'formative (*sozidatel'nyi*) element'—the implication arising from an experiment on a human group, which, in this method, is of particular importance for a researcher. According to Ryvkina, a researcher could not only observe the group undergoing the experiment from the sidelines, but could also manage 'dynamic social processes,

[865] A. Kupriian, *Problema Eksperimenta v Sisteme Obshchestvennoi Praktiki* (Moscow, 1981), p. 101.
[866] V. Skatkin, 'Sozidatel′nyi Pedagogicheskii Eksperiment— Metod Nauchnogo Pedagogicheskogo Issledovaniia', *Doklady Akad. ped. nauk RSFSR,* 3 (1960), pp. 5-8.
[867] R. Ryvkina, *Sotsial'nyi Eksperiment* (Novosibirsk, 1968), pp. 53, 28.

making sure that the group evolves in the right direction.'[868] Sociologist Gennadii Osipov described social experiment as the most complex and responsible sociological method: 'it gives practical verification and confirmation of the scientific hypothesis … at the same time, social experiment requires the greatest responsibility from sociologist, and reasonableness and foresight in his work, since "human material" is incomparably more expensive than any other material for scientific experiments.'[869] Historians have noted the tendency of social engineering in Soviet social sciences; Haber points out that Soviet sociologists 'perceived themselves as social engineers, with a mission to transform their objects of research' rather than to scrutinise them.[870] Mona Claro relates this tendency to a broader trend in which Communist ideology was seen as 'essentially performative rather than descriptive.'[871] Social experiment thus could be seen as a performative method of social engineering established within these Soviet ideological frames.

In the 1960s, social experimentation was intertwined with the concept of a collective. The specific Soviet mode of arranging human groups can be summed up in reference to the basic social unit of Soviet society, conveniently transliterated into English as *kollektiv*.[872] Kharkhordin defines *kollektiv* as 'a group where interpersonal relations are mediated by the socially valued and personally

[868] Ibid., p. 48.
[869] Osipov, *Sotsiologiia v SSSR*, p. 108.
[870] M. Haber, 'The Soviet Ethnographers as a Social Engineer', *The Soviet and Post-Soviet Review*, 41/2 (2014), p. 219.
[871] M. Claro and R. Kramer, 'Interpreting the World or Changing It? The "Woman Question" and the "Sexual Question" in Soviet Social Sciences', *Clio*, 1 (2015), p. 43.
[872] O. Kharkhordin, *The Collective and the Individual in Russia: A Study of Practices* (Berkeley, CA and London, 1999), p. 7.

significant content of group activity. To become a collective, a group has to serve general interests as defined by wider society.'[873] Collectivist discourses became increasingly influential during the Thaw and were used in Khrushchev's reforms of de-Stalinisation to repudiate coercion and establish a social policy based on collectivism.[874]

Practically, social experiments were implemented in pedagogic and economic spheres. As an example of the former, Ryvkina mentions the famous pedagogic 'experiments' of the rehabilitation of juvenile offenders by Anton Makarenko, discussed in his *The Pedagogical Poem*. In economics, the aim of an experiment might be, for example, 'the expansion of the independence of a *kollektiv*' or the creation of 'economic incentives' for better labour.[875] In the latter case, one social experiment was run at a collective farm, with the idea of creating a particular economic system to 'motivate collective farm workers to work without assignments and without strict control, with no micromanagement, so they would be driven by the sense of satisfaction arising from a job well done.'[876] Such socio-economic experiments were seen as a way to optimise production under the command economy. Experimentation in general was seen as a search for 'the benefits of the socialist system.'[877] From these practical examples, it is evident that social experiments, in the theory of the 1960s, were conducted on particular human groups

[873] Ibid., p. 88.
[874] Field, 'Mothers and Fathers', pp. 96-97.
[875] Ryvkina, *Sotsial'nyi Eksperiment*, pp. 62-65. See also: A. Reyner, *Provedenie Sotsial'no-Ekonomicheskogo Eksperimenta* (Tallin, 1977).
[876] A. Kupriian, *Metodologicheskie Problemy Sotsial'nogo Eksperimenta* (Moscow, 1971), pp. 147-48.
[877] Kupriian, *Problema Eksperimenta*, p. 87.

under the supervision of experts. *Kollektivy* implemented this experimental programme upon themselves, creating new subjectivity and new types of social relations.

One of the authors of the *DNB*, Irina Kanaeva, published a PhD shortly after the completion of the project, showing how this concept of experimentation was applied to the *DNB*. Kanaeva referred to the *DNB* as a 'social-spatial formative experiment.' She described it as a specifically designed environment for families 'interested in creating a co-habitational collective, based on self-sufficiency and self-governance.'[878] It is only after the building construction and the housing of residents that the main experiment, consisting of two stages, begins. In the first stage, the complex turns into a 'laboratory' for the investigation of types of cooperation. Based on the data of these observations, the aim of the second stage of the experiment is to develop a viable model of cooperative housing, which could then be applied elsewhere.[879] Such a project, she argued, was innovative; in architecture, and especially in housing construction, there was no existing legislation appropriate for social experiments.[880] *MNIITEP* cooperated with economists and lawyers to develop a legal support structure for their experiment.[881] The implementation of a social experiment in architecture thus triggered the development of a supporting theoretical, institutional, and legal base.

[878] Kanaeva, 'Voprosy Metodiki', p. 75.
[879] Ibid.
[880] Ibid., p. 91.
[881] TsGA, f. 321, o.1, d. 361, l. 7–9.

As Chapter 2 demonstrates, the *DNB* was not the first serviced housing to be created in the USSR; previous projects had already been designed for 'small families' (*malosemeinye*). These projects were justified by the norms of housing distribution, yet according to the ambition of egalitarian provision of public housing, they were designed for any Soviet household which could be classified as 'incomplete' in terms of family structure. Yet in contrast to these other projects, the *DNB* was designed for a particular group of residents, distinguished not by their family structure but by their moral qualities. The authors intended to house 'a special contingent of persistent, conscious citizens who positively manifested themselves in everyday life, and for whom "the charter of the builder of communism" became an accepted standard of conduct.' Residents would be chosen not merely on their need for housing, but also on the basis of their interest in the organisation of a co-habitational *kollektiv*. The *DNB* project therefore manifests an experiment to turn Soviet housing—which was regarded as a basic socialist gift to a Soviet person—away from society as a whole and instead towards particular *kollektivs* of deserving people.

The prospective needs of a *kollektiv* were the main subject of the research leading up to the project. *MNIITEP* produced detailed elaborations, graphs, and tables depicting the daily life and needs of residents (Fig. 7.3). To better access the needs of a collective, the authors initiated what became one of the first Soviet attempts at resident participation. In cooperation with Komsomol (*VLKSM*)—the Soviet mass organisation for young people, dedicated to instilling communist attitudes in

youth—architects formed a focus group of young Komsomol members, representing potential future residents, who expressed their wishes about ideal housing in meetings with the architects.[882] Cooperating with Komsomol in housing for the communist future presumably explains who the intended residents were meant to be—those who represented true communists, the best people. The members of Komsomol who formed the focus group wanted the building to have gardens, a dance floor, a swimming pool, saunas, and a rooftop solarium—all considered fantastic luxury by Soviet standards. Ideologically, all these bonuses could be provided only under particular conditions and with certain extra responsibilities. Residents would live in flats with highly reduced private space, and would have to run most services with their own labour, to make the complex less dependent upon paid staff. More than two thirds of all the operators of building services would be volunteers from among the residents. According to Osterman and Petrushkova, elderly residents with medical backgrounds could volunteer as nurses. The coaching staff and workers in the cultural sector would all be volunteers as well.[883] Cooperation and residents' devotion to the common goal were seen as a basic vehicle for improving the economy of housing with extended services. Hence, ideologically, the multiple privileges of the *DNB* were seen as an economically justifiable benefit, unleashed by a *kollektiv* in a specially designed environment.

Soviet scholars distinguished various forms of *kollektiv*, formed around work or leisure; among these they also conceptualised a category of co-habitation collectives

[882] Osterman and Petrushkova, 'Zhiloi Dom-Kompleks', p. 14.
[883] Ibid., pp. 26, 28, 30.

(*bytovye kollektivy*), where people shared their everyday facilities and housing. Co-habitation collectives emerged at the apex of collectivisation in the late 1920s, and soon faded from official rhetoric, substituted by the Stalinist discourse of individualisation.[884] The concept was only reintroduced in architectural discussions in the early 1960s. The theoretical club in the Union of Architects became one of the main arenas for this theoretical discussion, and saw the participation of several famous theorists of socialist housing, among them Natan Osterman.[885] *Kollektiv* was the key theme in such discussions of housing. For example, Platonov considered that managing 'disorganised people' in a housing complex would represent an impossible task. He suggested instead that tenants should be assigned to a *kollektiv* of no more than 2,500 people and housed in separate residential complexes, so that such household collectives 'could be controlled.'[886] This discussion is indicative of an ambition to control social processes through a collective.[887] Similarly, the *DNB* had to be controlled by the union of tenants—an organisation that candidates would have to join prior to being housed in the complex. While not stated directly, references to *kollektiv*-building are also clear in the description of the functions of the *DNB* residents' union. According to the programme, the union would be formed from a hierarchical structure of departments organising residents in smaller collectives formed around various aspects of everyday life. All the building's auxiliary services, such as sports and cultural sections, would be run by these

[884] Kharkhordin, *The Collective and the Individual*, pp. 84-85.
[885] Khazanova, *Sovetskaia Arkhitektura*, pp. 345-46.
[886] *Informatsionnyi Bulleten' SA SSSR: gradostroitel'stvo i Sotsiologiia* (1968), 14, p. 21.
[887] Social control and the instillation of 'appropriate' behaviour was seen as one of the main functions of Soviet collectives. See: Shlapentokh, *The Politics of Sociology in the USSR*, pp. 130-38, Kharkhordin, *The Collective and the Individual*, pp. 279–302.

collectives. Assigned into such sections, residents would offer each other assistance in childrearing, practicing sports, and cultural entertainment. The co-habitation network was not only seen as a community of consumption, but also of labour: they would 'work for the public interest, on a voluntary basis, on the principles of comradeship, as well as the training of self-righteousness and the overcoming of the conservatism of everyday life.'[888] According to the *DNB* programme, joining *kollektivs* would enable children to spend their time more productively: '[they] could be organised into a communal-household collective, to participate in dealing with specific socially useful tasks and labour, along with some personal entertainment. For example, Timurite teams (*timurovtsy*) will be able to carry out assignments for the elderly, help them, monitor cleanliness in public places, and care for the landscaping and improvement of the building.'[889]

Relations between the family and the community were further developed in the project of the *DNB*. According to the programme, the *DNB* was designed to help the social adaptation of 'the family of the future,' which was assumed to be, most probably, a 'nuclear-egalitarian family.'[890] This assumption correlated with major trends discussed by Soviet demographers in the 1970s, as they mention that the egalitarian nuclear family, with its less specifically gendered roles, would likely become a predominant type.[891] Soviet sociologists addressed the problems of

[888] E. Zuikova, *Byt Pri Sotsializme* (Moscow, 1976), p. 185.
[889] Osterman and Petrushkova, 'Zhiloi Dom-Kompleks', p. 21. The Timurite movement was an altruistic youth volunteering movement in the Soviet Union, promoted via the mass youth organisations of the Little Octobrists and Young Pioneers.
[890] TsGA, f. 321, o. 1, d. 386, l. 39.
[891] Kharchev, *Brak i Semiia v SSSR*, pp. 347-48.

egalitarian family dynamics. Iankova, in her research on family relations and community life, concluded that even if the significance of kinship was growing in general, the general dynamics of young egalitarian families led to increasing atomisation. Correspondingly, she suggested two types of 'assistance' to be provided to such a family: the perfection of a services system and household cooperation, as well as 'purposefully' strengthening cooperation and self-help.[892] Cooperation, according to Iankova, would help to 'overcome the psychosis of a separate apartment and its atomisation.' Subsequent scholars have similarly drawn attention to an increased reliance on older generations and interfamily cooperation in addressing the growing stagnation-era shortages in Soviet times.[893] The *DNB* could be seen as an attempt to validate the increasingly major role of this unofficial cooperation in Soviet society, which was evident to architects. Reviewing the project of the *DNB*, *TsNIIEP*-based expert K. Krasil'nikova describes an experiment demonstrating neighbourhood cooperation as the most 'deserving' of implemention in actual construction: 'an experiment actually conducted in real life will help to make more correct conclusions than any other experimental work performed on paper.'[894]

De facto, there were many privileged 'collectives' of nomenclatura workers, of high-status specialists in the Soviet Union, whose members had access to housing with enhanced comfort. In contrast to this privileged housing, the *DNB* was

[892] Z. Iankova, *Gorodskaia Sem'ia* (Moscow, 1979), pp. 142, 71-73. See also: Z. Iankova and I. Rodzinskaia, *Problemy Bol'shogo Goroda: Opyt Sotsiologicheskogo Issledovaniia* (Moscow, 1982), p. 29.
[893] Rotkirkh, *Muzhskoi Vopros*, pp. 143-49.
[894] TsGS, f. 321, o. 1, d. 314, l. 129, 52.

directed, at least at the design stage, against departmental-based segregation. Presented in the media as an official experiment in mass housing, it had to be sufficiently ideologically grounded in order not to be seen as an act of favouritism. The concept of cooperation was instrumental to prove that the *DNB* was not just a privileged household 'with Finnish saunas,' but a model of social and economic organisation that could be replicated. According to Kanaeva, the *DNB* was the experimental model of a social structure that would allow its authors to evaluate how it, as a prototype, 'catches on' (*prizhivaetsia*). However, the experiment of the *DNB*, based on cooperation, was primarily dependent on the role of residents, who had to invest their time and effort into activities of general and communal interest. In this way, the experiment of the *DNB* rested on an assumption about how society would be in the future. Practically, this meant there were particular difficulties in finding appropriate residents: how should deserving residents be selected, and how should they be supervised?

How to form and supervise a collective?

In 1969, Natan Osterman wrote that people were eager to live in the *DNB*: 'there are numerous letters from workers who are asking to be housed in the Cheremushky residential complex, despite the fact that today they occupy quite well-equipped apartments.'[895] Similarly, *Literaturnaya Gazeta*, which offered its pages for discussion of the project, received hundreds of letters from people willing to

[895] Osterman, 'Eksperimental′noe Zhilishchnoe Stroitel′stvo i Sotsial′nye Problemy', p. 30.

participate in the experiment.[896] It is difficult to objectively evaluate the willingness of the candidates, since it may simply have resulted from the desire to get a room—any room—at a time of chronic housing shortage. As analysed by Zuikova, the practical difficulties in choosing residents for the *DNB* were exacerbated due to contradictions and inconsistencies in the programme.[897] According to the *MNIITEP* 'recommendations for the selection of residents,' the collective of the *DNB* had to be formed of people of different ages, of intellectual and physical workers (or unofficially, 'classes'), living and interacting together. However, the social stratification of residents caused problems. In spite of all the economic optimisation, the house was still expensive to live in. Rent for the services was high and buying food in the canteens worked out approximately sixteen per cent more expensive than cooking at home.[898] Zuikova points out that higher rent could suit the demands of high- to middle-class residents, but undermined the ideological proposition that all house staff should live in the complex in full parity with other residents. A more systematic problem stemmed from the concept of cooperation. A housing economy based on relations of responsible dependency between residents was difficult to define legally. The rate of participation and cooperation was also a difficult parameter to measure. Moreover, the idea of actively participating residents contradicted the concept of the family, where various members could have differing degrees of social activity and willingness to work for a 'common interest.' Further, the requirement that all members of the collective participate in community services

[896] L. Zhukhovitskii, 'Byt' Li DNB?', *Literaturnaia gazeta*, 3 (14 January 1970), p. 3.
[897] Zuikova, *Byt Pri Sotsializme*, pp. 186-99.
[898] I. Zhuchok and E. Zuikova, 'Dom s Privilegiiami', *Literaturnaia gazeta*, 2 (8 January 1969), p. 11.

contradicted the principle of voluntarism.

A ‘social experiment’ required an authority to manage its dynamics. *MNIITEP* struggled to maintain control over the experiment and to keep apartments out of the grasp of the departmental sector. However, as a design institute, *MNIITEP* had no agency for managing social engineering projects, and questions of housing distribution lay beyond the reach of architects. The institute was only capable of producing ‘suggestions’ for selecting residents and ‘research plans for concrete sociological scrutiny of the residents.’[899] The maximum allowed by the experimental status was to push the budget to deliver the complex’s furnishing and interior design.[900] The *DNB* was a novel type of experiment, and the existing institutional system struggled to deal with it. Its construction was fully financed from the funds for experimental construction, but there were no precedents of experimental buildings that required separate funding for the implementation of their experimental programme.[901]

In 1969, the *DNB* was almost complete; the project had reached the stage that would usually end with the delivery of the building to its owner. However, it turned out that there was no organisation interested in taking responsibility for the project’s real implementation.[902] The role was offered to Komsomol and *ZIL* (a Moscow-based car factory), but both organisations rejected it, conceiving the experiment as

[899] TsGA, f. 321, o. 1, d. 314, l. 127.
[900] TsGA, f. 321, o. 1, d. 234, l. 54.
[901] Kanaeva, 'Voprosy Metodiki', p. 75.
[902] Kupriian, *Problema Eksperimenta*, p. 73.

an unnecessary responsibility for housing people in ambiguous small apartments with no kitchens. As it was conceived for a vaguely defined collective of 'the best people,' the experiment even did not guarantee housing to the members of these organisations.[903] This led to the abolishing of the experiment and the conversion of the building to a student dormitory of the Moscow State University.

The completed building of the *DNB* was therefore mostly used to house students. The social experiment was still implemented, yet on a very limited scope. Only two floors were reserved for the experiment, where selected lecturers and staff of the University were housed in small apartments without kitchens. A special sociological laboratory was established in the *DNB* to observe their life in the complex. Services were run by the university instead of through cooperation and voluntarism. Hence the problems of building a collective were not solved; similarly, the programme of self-financing cooperation was not implemented. The *DNB* never became a full-fledged formative social experiment or a 'house-laboratory' for the investigation of cooperation, as envisioned by Kanaeva, and was instead converted into an experiment for inspecting a limited number of families in a collectivised environment. This research was led by Ivan Slepenkov, professor of the Faculty of Scientific Communism and the head of the Sociological Laboratory in the *DNB*. Located among the apartments of the *DNB*, this sociological laboratory was affiliated with the Department of Scientific Communism of the Moscow State University; it conducted research and surveys among the residents and published

[903] Interview with Verkhovin, conducted by Author, Moscow, 5 August 2017.

the results in the departmental journal. Vladislav Verkhovin was among the employees of this sociological laboratory, and participated in concrete social studies.[904]

Verkhovin's discourse is marked by an aversion to the project's communal ethos. Verkhovin remembers that most of the residents and employees of the laboratory were uninterested in the communal services and wanted ordinary flats instead. Being himself a scholar of scientific communism, Verkhovin published unflattering results of the *DNB*'s concrete social analyses, which revealed residents' extreme displeasure with their accommodation.[905] Verkhovin claims to have published his research without the consent of his department, with the help of the famous architectural critic Viacheslav Glazychev. The *DNB* faced substantial criticism from the intellectuals of the subsequent architectural community, who criticised the project for lacking a social and economic basis, and for being ideologically biased. It is not hard to understand why the *DNB* met with such criticism. The emphasis on active, participatory collectivism was a discourse utilised in the early years of Khrushchev's reform, yet the *DNB*, growing out of this discourse, was only constructed almost a decade later, in the 1970s, when the ideological maxims of co-housing had almost completely vanished. By the time the building was completed, most of the proponents of housing complexes were only marginal voices in the architectural community. The story of Georgii Gradov's dismissal is demonstrative

[904] Both Slepenkov and Verkhovin were employees of the Sociological Laboratory of the Department of Scientific Communism of the Moscow State University.
[905] V. Verkhovin, 'Nekotorye Rezul'taty Analiza Konkretno-Sotsiologicheskikh Issledovanii v Komplekse DNB (Dom Novogo Byta)', *Problemy Teorii Sovetskoi Arkhitektury* (Moscow, 1975), pp. 37-44.

in this respect: while he was an instrumental figure behind Khrushchev's reforms, and the promoter of radical views concerning social organisation, by the mid 1960s he had been almost completely rejected by the architectural establishment.

Conclusion

Despite the evident shortcomings, the social experiment of the *DNB* had important implications on the development of Soviet urban sociology. Both *MNIITEP* and *TsNIIEP* established social research departments. Many of the participants in the *DNB* project— K. Krasilnikova, Irina Kanaeva, and Nina Ovsiannikova—became important experts in social problems of housing, working in *MNIITEP* and *TsNIIEP* (see further discussion in Chapter 9). Arguably, the project of *DNB* was among the first to be developed by the separate emerging discipline of experimental design in Soviet sociology. This discipline had some similarities with the Western discipline of experimental sociology.[906] After his social research in the *DNB*, Ivan Slepenkov made his way further into this field, teaching the course 'Social experiment: principles, methods, organisation' in Moscow State University.[907] The Sociological Laboratory of the Department of Scientific Communism, which supervised the experiment with the *DNB*, in later years carried out social and economic experiments, some of which I discuss in the afterword of this thesis.[908]

[906] For an overview of general trends in the twentieth century in the use and perception of experimental design, see: A. Oakley, 'Experimentation and Social Interventions: A Forgotten but Important History', *British Medical Journal*, 317 (1998), pp. 1239-42.
[907] 'Slepenkov Ivan Markelovich', Letopis′ Moskovskogo universiteta http://letopis.msu.ru/peoples/5543 (5 December 2018).
[908] In particular, at the Moscow automobile manufacturer *AZLK*. See: V. Aleksandrov, *Problemy Sotsial'nogo Razvitiia Kollektiva Sotsialisticheskogo Promyshlennogo Predpriiatiia* (Moscow, 1973).

The story of the *DNB* demonstrates that the discussion of communal housing was not abandoned in the years of late Socialism. Soviet architects tended to refer to Soviet intellectual tradition rather than to the practices of international modernism. As we have seen, the theory of 'social experimentation' stood in sharp contrast to the approaches of Western urban sociology of the 1960. In contrast to the rather more analytical methods of their Western colleagues, Soviet sociologists perceived their mission as the transformation of their objects of research rather than their examination.[909] This performative aspect of sociology and the rhetorics of social change and self-transformation have often been evaluated critically. Western observers criticised this approach as outdated, using the ideological and no longer productive terminology and concepts of the 1920s.[910] Some scholars have even seen sociology as totally incompatible with the official Soviet ideology of historical materialism.[911]

Yet, close scrutiny of the methods used by Soviet sociologists may reveal more than just failed attempts to replicate Western concepts. In their own terms, Soviet sociologists used the term experimentation to describe the peculiarity of Soviet design practices. This included not only experimnetal development in industrial construction but also the planning and running of social experiments.

[909] Haber, 'The Soviet Ethnographers as a Social Engineer', p. 219.
[910] Andrusz compares the terminology used by Soviet sociologists with the concepts of R. Park. See: Andrusz, *Housing and Urban Development* p. 215.
[911] G. Osipov and L. Moskvichev, *Sotsiologiia i Vlast': Kak Eto Bylo na Samom Dele* (Moscow, 2008), p. 14, A. Bikbov and S. Gavrilenko, 'Rossiiskaia Sotsiologiia: Avtonomiia pod Voprosom', *Logos*, 5-6/35 (2002), pp. 1-25.

Akademgorodok, which we discussed in Chapter 4, for example, was planned according to an innovative concept of the 'three-tier system of public services.' It was seen as an experimental site for the practical implementation of this experimental model, and a site for further scrutiny and analysis of its implications.[912] Writing about this development, Zh. Arkhangel'skaia named experiment as a crucial socialist method of urban development.[913] The next chapter demonstrates that the social experiment of the *DNB* had actually formed a foundation and enabled further viable urban projects. A housing estate based on these performative schemes could indeed be productive and offer a reevaluation of the failure-centric perspective still prevalent in historiography.

[912] On research in Academgorodok, see: Kartashova, *Obsluzhivanie Naseleniia*, p. 40.
[913] *Sotsial'nye Problemy Zhilishcha*, pp. 109-10.

Chapter 8. ‘Experiment on Ourselves’: self-help construction, and resident-managed housing in the era of late socialism

Youth Residential Complex: resident-managed housing

The 1978 documentary ‘Experiment on Ourselves’ (‘*Eksperiment na Sebe*’) shows young employees of scientific research institutes working as construction workers on a construction site in Kaliningrad (now Korolev, Moscow region) assembling a large-panel housing estate (Fig. 8.1).[914] Their housing complex differed from the general large-panel standard residential blocks: it consisted of two residential towers, joined together via a block with collective services (Figs. 8.2–3). The documentary shows residents making good use of this block, organising music events, pumping iron in the gym, and running childcare centres with their own labour. In the film, the participants of the project argued that their housing complex was not only the solution to the housing crisis, but also an experiment in cooperation and grassroots organisation. The discourse surrounding construction of this housing design explicitly states the transformative power of architecture: ‘In the housing complex we have constructed, we are conducting an experiment on ourselves,’ claimed the leader of the project, Stanislav Sinitsa. ‘Preparing for holiday celebrations brings us together, [and] we become close,’ added another resident, Kosanin. ‘When we started, we had a dream: to have a whole new life, to communicate with comrades, to be friends with neighbours.’[915]

[914] *Eksperiment na Sebe*.. dir. I. Zhukovskaia (Film, 1978).
[915] Ibid.

This housing estate, the so-called Youth Residential Complex (*Molodezhnyi Zhiloi Kompleks* or *MZhK*) was constructed in Korolev from 1974–78. Sanctioned and aided by the government, the complex was built through self-help methods (residents' participation in construction). While they were assisted by a limited number of construction specialists, most of the work was done by the residents themselves. The project did not end with the construction of just one housing complex in Korolev, but continued into the 1990s with other housing estates. The second *MZhK* was constructed in Sverdlovsk (now Ekaterinburg, Ural region) in 1977–1982.[916] Peaking during perestroika, the *MZhK* project grew into a mass movement, with more than 700 self-built complexes constructed in total.[917] By 1990, each major city of Soviet Russia, Belarus, and Ukraine had *MZhK* districts, providing housing for as many as several million young people in total. While in many aspects these complexes differed from one another—they often lacked collective service blocks and resembled districts of standard housing—each project made use of some form of resident participation. The scale of the project testifies that the experiment that began in Korolev should be seen not just as making up for a blind spot in state-led housing construction, but rather as project which led to a whole separate housing movement.

This chapter looks at the *MZhK* project in its own terms, asking what an

[916] T. Ovcharenko, *Molodezhnye Zhilye Kompleksy* (Moscow, 1990), pp. 19-20.
[917] V. Gorlov, *Zhilishchnoe Stroitel'stvo v Moskve: Slozhnost' i Protivorechivost' Razvitiia (1946-1991 gg.)* (Moscow, 2009), p. 343.

'experiment on ourselves' actually meant and what kind of work, both practical and ideological, it involved. Other experiments discussed in this thesis were designed and conducted by professionals; in the case of an *MZhK*, residents themselves were placed in the centre of the experiment. The practices of self-help, in which residents built housing with their own labour, were also not unique to the project. Aided self-help construction was a global trend in the twentieth century, widely used to provide housing to low-income residents.[918] In the USSR, self-help was used in the late 1950s in the form of the 'people's construction movement,' where workers constructed basic dwellings.[919] In later years, housing construction involved various forms of 'unprofessional labour,' for example, the participation of soldiers in Mongolia, as we saw earlier in this thesis (see Chapter 6). In the late 1960s, the lack of workforce represented one of the major problems at both Korolev and Ekaterinburg construction sites. The 'experiment on ourselves' can thus be seen as both a practical way to overcome these difficulties, and as an investigation into the possibilities of socialist cooperation.

This chapter demonstrates that the *MZhK* project was a logical continuation of research into and development of the 'social experiment' discussed in the previous chapter. Examining the case of the *MZhK* in Ekaterinburg, the chapter aims to produce a picture not only of how architects projected housing utopias but also what these projects enabled and produced. While archival evidence of this movement is

[918] R. Harris, 'Slipping through the Cracks: The Origins of Aided Self-Help Housing, 1918-53', *Housing Studies*, 14/3 (1999), pp. 281-309, P.M. Ward, *Self-Help Housing: A Critique* (London, 1982).
[919] Harris, *Communism on Tomorrow Street*, pp. 154-56, DiMaio, *Soviet Urban Housing*, p. 109.

scarce, participants and researchers contemporary to the project created a large body of literature on the project's main features, which were discussed at the time of its running. However, there are surprisingly few recent critical studies of *MZhK*s.[920]

The previous chapter discussed the model of a self-managed housing complex in the 'House of the New Way of Life' (*DNB*) project. That social experiment, based on collective activism, never actually functioned as envisaged, due to the lack of community-building mechanisms in the sphere of architecture and housing production. Yet, in the USSR there was an organisation that practised community-building on a large scale: the Komsomol (*VLKSM*). Komsomol had its own long-standing experience of organising labour on construction sites. From the 1930s onwards, Komsomol undertook and directly supervised large construction projects, the so-called 'All-Union Komsomol Pacesetting Projects' (*Vsesoiuznaie Komsomolskaie udarnaie stroiki*)—from Magnitogorsk blast furnaces to the Baikal–Amur Mainline, with a half-million-strong population of Komsomol workers.[921] In these projects, Komsomol was responsible for the organisation of labour and the political activities of participating workers. Working with youth and students, who lacked professional skills and were often prone to various forms of 'deviant behaviour,' Komsomol's primary task was professional education, the strengthening of labour discipline, and the fostering of workers' morality. Komsomol developed a strong system for fostering labour control among its members based on mechanisms

[920] A few exceptions are: Gorlov, *Zhilishchnoe Stroitel'stvo*, pp. 336-53, V. Gorlov, 'Youth Residential Communities in the USSR – the Authorities' Real Achievement in 70-80s', *Bulletin of Moscow State Regional University. Series: History and Politic Sciences*, 5 (2016), pp. 110-16.
[921] Kotkin, *Magnetic Mountain*, pp. 89-90, C. Ward, *Brezhnev's Folly: The Building of BAM and Late Soviet Socialism* (Pittsburgh, PA, 2009).

of promotion and exclusion; this included both material rewards and the use of 'promethean language' in Ward's terms—the discourse of collectivism, self-transformation, and self-sacrifice for the 'moral control' of workers.[922] In this discourse, members of Komsomol were described as the 'military vanguard' in a battle for the common goal of socialist economic development. Komsomol construction sites were described as 'laboratories of socialist development'—sites of practical experimentation, in other terms.[923] As we have seen in Chapter 1, the Komsomol construction sites in Magnitogorsk and *GAZ* were described as trial-and-error experimental sites for planners and architects; this was also true for workers. These social-engineering mechanisms became a crucial base for the social control of the *MZhK* project. Komsomol also offered an answer to the question of where to find deserving residents for the complex; if there was one community that could represent the society of the future, it was Komsomol members, officially portrayed as morally and ideologically upright and hardworking Soviet citizens.[924]

In 1969, while the *DNB* was under construction in the 10th district of Cheremushki, Komsomol made a separate attempt to implement a similar social experiment of its own in Korolev. The story of the Korolev's housing complex is narrated by the leader of the project, Stanislav Sinitsa.[925] Sinitsa was a 28-year-old specialist in aviation, a member of Komsomol living in the scientific town of Korolev in

[922] Ward, *Brezhnev's Folly*, p. 48.
[923] Ibid., pp. 17, 43-48. On collectivism at construction sites, also see: M. Rozhanskii, 'Prakticheskii Idealizm: Eiforiia Kollektivizma na "Udarnoi Stroike", 1950–1980-e gg.', *Chelovek i Lichnost' v Istorii Rossii, Konets XIX–XX Vek: Materialy Mezhdunarodnogo Kollokviuma* (Saint Petersburg, 2012), pp. 576-97.
[924] S. Fitzpatrick, *Everyday Stalinism: Ordinary Life in Extraordinary Times: Soviet Russia in the 1930s* (Oxford, 2000), pp. 35-36.
[925] Interview with S. Sinitsa, conducted by Author, Korolev, 5 April 2018.

Moscow region. Although married, he was housed in a single room in a departmental dormitory, which he had to share with his wife. Chapter 2 discussed the difficulties faced by many newly-weds in finding appropriate accommodation. In 1969 the secretary of Komsomol, Boris Pastukhov, through a personal acquaintance, proposed to help Sinitsa with his housing situation. Pastukhov offered him participation in an experiment: 'Any kind of unplanned residential construction [bypassing the queue] could not be discussed.' The project had to be an 'experiment' with 'ideological novelty and value for society.'[926] According to Sinitsa, Pastukhov gave him a charter of the *DNB* and proposed that he implement such a project in his own town on behalf of Komsomol. In that way, Sinitsa testifies to a direct connection with both projects. Turned over to Komsomol, this collective housing in Korolev with the 'elements of a new way of life' received a solid organisational base but also became a project of departmental housing. Based on the experience of Komsomol construction brigades (*stroiotriady*), and defined as an experiment, the project gained a stronger base.

The *MZhK* had many things in common with the *DNB* project. Both were housing complexes with serviced blocks designed by *MNIITEP*.[927] They were similar in design: both consisted of two residential towers joined together via a service block. Collective services in Korolev *MZhK* included numerous public spaces designated for libraries, clubs, recreation rooms, a sports hall, amateur groups (rocket model

[926] N. Dorozhkin, 'Chto Nam Stoit Dom Postroit", Nezavisimaia gazeta (08 April 2015) http://www.ng.ru/style/2015-04-08/16_mzhk.html (29 November 2018).
[927] After the death of Nathan Osterman, the project was led by Georgii Pavlov, head of the 10th workshop. N. Ovsiannikova, 'Molodezhnyi Zhiloy Kompleks', *Arkhitektura SSSR,* 10 (1978), pp. 14-15.

club, auto-motor club, radio club, and others, as well as women's and children's clubs), household services, a medical centre, administrative premises, and other facilities.[928] Both projects demonstrate their authors' materialist thinking; they reveal the belief that specially designed space could trigger new forms of social relations. Both projects sought to create a collective environment that would foster cooperation and active participation. The purpose of the *MZhK* experiment, as defined, was to create collectives of friends, like-minded people, and good neighbours. These collectives would further increase the labour and social activity of their members, and would 'conduct a wide range of activities to strengthen their political, educational, cultural, and sporting activities.'[929]

However, there were important differences between the two projects. The *DNB*'s communal ethos was reduced in the *MZhK*; ideas of communal catering were abandoned. In contrast to the dormitory-type apartments of the *DNB*, the *MZhK* contained ordinary apartments with kitchens and normative living space. The programme of the *MZhK* had several important amendments on the subject of accommodating a collective of residents: only Komsomol members could reside in the complex. As seen in the quote from Pastukhov above, the label 'experiment' was used as a rhetorical tool to bypass the official policy of equal housing distribution in order to benefit members of Komsomol. In the *MZhK* project, a number of conditions had to be met by future residents. They would have to take upon themselves all the difficulties of organising and supervising the project from the

[928] Ibid.
[929] Gorlov, *Zhilishchnoe Stroitel'stvo*, p. 344.

drawing board right up to apartment distribution. Future residents would also have to participate in the actual construction process with their own labour, using materials and equipment provided by the state. The *MZhK* no longer had to adhere to a particular programme of collectivist conduct, which was pre-designed by the authors of the project; rather, collectivism would be formed during the self-help construction. After the construction, a collective would develop the programme of the 'experiment,' tailored for residents' particular needs and capabilities. According to the *MZhK* programme, each collective would separately determine in which areas, and how, they would cooperate.[930]

The *MZhK* project thus fused architectural ideas of a cooperative housing complex with Komsomol's community-building methodology. Discourses of collective activism, which informed the project, were prevalent during the Khrushchev-era Thaw but underwent a change in the late Brezhnev years. In the late Soviet era, the image of the devoted builder of communism transformed into the image of a pragmatic Soviet citizen, seemingly obedient to the norms but corrupt and pursuing individual interests whenever possible.[931] Historians have shown that in late Soviet times, participants in state ideological projects often expressed antagonism and resistance to the authorities and were mainly interested in personal gains.[932] I will now discuss this transformation, looking at the construction of the second *MZhK* complex in Ekaterinburg.

[930] Ibid.
[931] See the portrait of 'Homo Sovieticus' painted by Aleksandr Zinoviev: A. Zinoviev, *Homo Sovieticus* (London, 1985), p. 282.
[932] See, among others: Kotkin, *Magnetic Mountain*, pp. 198–237, Fitzpatrick, *Everyday Stalinism*, pp. 132–38.

The *MZhK* housing estate in Ekaterinburg was the second complex of the Youth Residential Complex movement, constructed in 1977–1986. The project provided apartments for a total of 3,180 residents. It included 9- and 16-storey tower block housing, as well as a full complement of public buildings in the micro-region, including six services blocks, kindergartens, and nurseries (Fig. 8.4).[933] The whole complex was constructed, supervised, and managed with residents' participation. The project represented a departmental housing estate delivered through the cooperation of five participating enterprises, among them scientific research institutes and construction enterprises.[934] Future residents of the project had to be both specialists and workers in these enterprises and members of Komsomol.[935] Participation in the project started with an internal 'socialist competition' held at their workplaces in each of these institutions.[936] Participants competed by outproducing each other or engaging in voluntary activity. Their level of participation was measured in symbolic units (points) and only those who earned the most points were allowed to receive the one-year leave from their jobs necessary to join the construction brigades and work full-time at the construction site.[937] The points system of evaluation was a typical practice of socialist competitions, yet, as we will see, in the *MZhK* project it turned into a crucial

[933] Ovcharenko, *Molodezhnye*, pp. 19-20.
[934] The participants included Sverdlovsk housebuilding plant and two research and manufacturing associations: *NPO avtomatiki imeni N. Semikhatova*, and *NPO 'Vektor,'* as well as the Ural Polytechnic Institute and the Ural Scientific Centre. See: A. Ivanov, *Eburg* (Moscow, 2014), p. 33.
[935] According to Vladimir Popov, membership in Komsomol was not compulsory but non-members were unlikely to succeed in 'socialist competitions.' Interview with L.a.V. Popovy, conducted by Author, Ekaterinburg, 12 September 2019.
[936] On socialist competitions, where workers competed to outproduce each other, see: Filtzer, *Soviet Workers*, p. 232.
[937] G. Karelova, *Molodezhnyi Zhiloi Kompleks: Opyt, Problemy, Perspektivy* (Moscow, 1987), p. 20.

currency, which upon the construction of the complex could be converted into a tangible material result—apartments of various sizes and comfort levels.

Placing future residents in charge of the construction and management of a whole housing estate considerably increased their influence. The residents formed the active union (*aktiv*) of the *MZhK* responsible for the general management of the project (see Fig. 8.5a). The union was a registered entity responsible for running and maintaining the complexes.[938] The union included a 'social sector,' which reported on the process of the experiment, a sector of competition in charge of counting points, and a housing sector, which assigned housing to members.[939] Most members of the predominantly male collective were responsible for construction and management, while a few women were in charge of social aspects and the 'social programme of the experiment.'[940] While residents of Korolev's *MZhK* could organise collective services only inside their residential buildings, in Ekaterinburg, residents' agency extended to the whole micro-region. The Ekaterinburg *MZhK* experiment was intended to 'vest the *MZhK* collective with the right of centralised leadership of all the economic activities of the socio-cultural institutions located on the *MZhK*'s territory.'[941] *De facto*, the city hall delegated to the collective the authority of coordinating public services for the whole district of 3,180 residents. Such an unusual scale of low-level organisation is demonstrative of the changing purpose of the project: from its origin as an experiment controlled by authorities, it

[938] I. Prikhod'ko, *Molodezhnye Zhilye Kompleksy: Pravovye Voprosy* (Moscow, 1988), p. 31.
[939] TsDOOSO, f. 198, o. 7, d. 224, l. 5, 11.
[940] Two leading sociologists in the team were Galina Karelova and Marina Beduleva.
[941] M. Rachevskaia, *Stroim MZhK* (Moscow, 1989), p. 9.

switched to a form of self-management with little external control.

The *MZhK* union undertook organisational work for the first two years of the project prior to the beginning of construction, which included managerial and legal development, and architectural design of the project. The union contracted professionals required for the development of the project. Some professionals worked on the basis of a barter relationship, in exchange for an apartment, similarly to other participants. Ten per cent of apartments in the housing complex were reserved for hired specialists, among them, architects. A group of eleven architects was formed in the state design institute to design the project.[942] The project was given to 'the most privileged workshop of the local design institute.'[943] In contrast to the first *MZhK* in Korolev, no deviation from the shape of standard multistorey residential towers was discussed.[944] However, architects were given the opportunity to design individual structures for all the public buildings of the project. Thus the buildings for clubs and sport, and children's playgrounds, were all designed as individual projects.

The so-called Komsomol construction brigades carried out all the complex housing construction ('*komsomol'sko-molodezhnyi stroitel'nyi otriiad*') (Fig. 8.7). Such brigades were formed of about thirty people, with certain specialisations—from major infrastructural work to the finishing of apartments. Each brigade contained

[942] 4th workshop of the *Gosproekt* institute.
[943] Interview with M. Goloborodskii, conducted by Author, Ekaterinburg, 9 September 2019.
[944] For the residential blocks, the large-panel housing series 141 was used.

professional construction specialists, who helped others to master their new jobs.[945] Many participants had previous experience in Komsomol construction sites. The main difference between Komsomol construction brigades and cadre workers was that their work was evaluated based on results, rather than norms. Working according to the so-called *khozraschet* method, construction brigades were described as 'self-regulating and self-policing entities which punished the tardy and the lazy and which replaced the fear of sanctions from above with a sense of collective responsibility.'[946] Boris Yeltsin, later president of Russia, who at the time held the post of the first secretary of the Sverdlovsk Party, had been promoting construction brigades in Ekaterinburg since 1982, and praised it as a new standard of work management: 'The team is responsible for everything—this has become a new moral [norm].'[947] Yeltsin's personal support was crucial in making the *MZhK* experiment happen.[948]

Formally, the 'warriors' were employed at the local housebuilding factory.[949] Novices received three months of training to develop skills in various construction trades.[950] They also received a salary, which was no more than half the normal wage of construction workers. Yet they had to work twice as hard, and up to twelve hours a day. Some participants continued working at their former job, and came to the construction site for a second shift. Construction involved a great deal of overtime

[945] V. Smirnov, 'Etazhi Nadezhdy', *Sovetskii Zhurnalist [Ural State University]* (14 December 1984), p. 1.
[946] L.R. Aron, *Boris Yeltsin: A Revolutionary Life* (London, 2001), p. 66.
[947] B. Yeltsin, 'Novizna Sil′na Podderzhkoi', *Izvestiia*, 187 (5 July 1984), p. 3. See also: Aron, *Boris Yeltsin*, pp. 66-68.
[948] Ivanov, *Eburg*, pp. 31-35.
[949] TsDOOSO, f. 5793, o. 1, d. 95, l. 62.
[950] Smirnov, 'Etazhi Nadezhdy', p.^pp. 1.

work, which was officially defined as *subbotniki* (unpaid voluntary work campaigns, normally held on Saturdays). In the *MZhK*, *subbotniki* were held not only on Saturdays but also on most other days and sometimes late at night. The initial condition of the project was to deliver the first residential block by the end of 1980. According to one of the participants, this happened at the expense of many sleepless nights at the construction site.[951]

Beyond the architectural sphere, the *MZhK* can be seen as an experiment with the organisation of labour. In a broader context of the economic and managerial reforms of the mid 1960s, it was not unique. In 1965, Soviet premier Aleksei Kosygin announced reforms aimed at modernising the Soviet economy.[952] In particular, they involved measures to address the ineffectiveness of labour caused by control over wages. The discourse of the reforms similarly emphasised experimentation, as they sought to introduce experimental methods of planning, financing, and raising labour productivity. They were referred to as 'organisational' or 'economic experiments.'[953] Organisational experiments, intended at rationalising and stimulating greater efficiency of labour, were based on the notion of self-managed collectives of workers, and introduced an economic interest. One of the experiments employed in the sphere of construction, the 'Zlobin brigade system'—named after the leader of the first brigade to initiate the system—implied personal responsibility

[951] Interview with V. Pakhomov, conducted by Author, Ekaterinburg, 8 September 2019.
[952] W.J. Tompson, *The Soviet Union under Brezhnev* (Harlow, 2003), pp. 64-9, P. Hanson, *The Rise and Fall of the Soviet Economy: An Economic History of the USSR from 1945* (London, 2003), pp. 101-08.
[953] See: B. Arnot, *Controlling Soviet Labour: Experimental Change from Brezhnev to Gorbachev* (Basingstoke, 1988), pp. 105-96, S. Otsu and V.B. Ramzes, *Sovetskii Rynok Truda: Analiz Iaponskogo Spetsialista* (Moskva, 1992), pp. 161-71.

of workers for the schedule and quality of construction. The experiment was intended to tackle workers' 'lack of discipline,' unproductive practices of planning, and embezzlement of supplies and building materials, typical for late Soviet construction sites. The experiment introduced a results-oriented evaluation system of bonuses, paid only if workers could economise, and sought to demonstrate that brigades motivated by the bonuses would be able to work without assignment or micromanagement, and would discipline each other to get the job done on time.[954]

These experimental methods discussed had much in common in terms of their foundation and shared many aspects with the 'social experiment' we examined in Chapter 7. They were similarly dependent on collectives of active members, who would be willing to achieve productivity and product quality, motivated by economic incentives and other kinds of benefits. Earlier experiments related to the *DNB* formed an important base for the emergent discipline of social experimentation. The Sociological Laboratory of the Department of Scientific Communism, which supervised the experiment with the *DNB*, carried out experiments in 'social planning' with the purpose of developing and incorporating 'the social development plan' for the collective of workers.[955] By the 1970s, the base for social and economic experimentation expanded further, with the foundation of specialised institutions for conducting and scrutinising experiments. The Institute of Sociological Research (*ISI*) of the Academy of Sciences formed a special 'sector for social-economic experiments,' intended to 'scrutinise the behaviour of

[954] On the Zlobin brigade system, see: Arnot, *Controlling Soviet Labour*, pp. 202-37.
[955] At the Moscow automobile manufacturer *AZLK*. See: Aleksandrov, *Problemy Sotsial'nogo Razvitiia*.

collectives in experimental conditions.'[956] In repeat analyses and revisions of method, the experiments developed methods of labour organisation, which came to be known after the name of their authors: *shchekinskii*, *zlobinskii*, and others.[957]

At the early stages, these experiments proved to be effective. With a strong financial stimulus behind their work, Zlobin brigades were able to significantly outpace construction by state enterprises. Each of these experiments originally promised far-reaching changes in the economy. The Party and the government extolled the labour collectives and covered the course of the experiment in detail: 'Learn best practices!' 'Let's take the *shchepkin* method!' Such official support led to a rapid extrapolation of the experimental methods, as other enterprises were willing to participate. The number of enterprises participating in the *shchepkin* experiment grew exponentially: from 630 in 1972, numbers almost doubled to 1,200 over the course of five years.[958] Similarly, Zlobin brigades proved to be a viable strategy, and by 1972, 800 brigades were operating on Zlobin lines.[959] Both experiments led to the expansion of self-sufficiency and economic accountability of enterprises, known as *khozraschet* economy.[960] In this context, Komsomol carved out its own niche for result-evaluated work, which was used to conduct the *MZhK* construction.

'Experiment on oneself'

[956] N. Alekseev, *Ekonomicheskii Eksperiment* (Moscow, 1987), pp. 8-9.
[957] Ibid., p. 6.
[958] Otsu and Ramzes, *Sovetskii Rynok Truda*, p. 161.
[959] Also known at that time as *khozraschet* brigades: Arnot, *Controlling Soviet Labour*, p. 207.
[960] On *khozraschet* economy, see: M. Ellman, *Planning Problems in the USSR: The Contribution of Mathematical Economics to Their Solution 1960-1971* (Cambridge, 1973), pp. 181-84.

The purpose of the *MZhK* project was not just to provide housing but also to build a collective.[961] The experiment was intended to bring together people with common interests and trigger new social relations among them: 'A new community with a qualitatively new structure of relations—everyday life corresponding to the ideas of the progress of a socialist society along the road to communism.'[962] The sociologist Vishnevskii defined this experiment as a 'do-it-yourself (*samodeiatel'nyi*) experiment,' emphasising the practical function of self-transformation: 'The process of continual self-creation is at the basis of a do-it-yourself experiment. The subject and the object of the experiment are the same—participants are testing ideas on themselves. The collective is formed during the experiment, and not prior to it.'[963] Apart from the film 'Experiment on Ourselves' which we considered at the beginning of the chapter, the project received ample attention from media and resulted in a flow of publications, interviews, and discussions. The participants and organisers of *MZhK*s actively re-articulated this understanding of self-creation, using the discourse of experimentation as the main justification for their activities. The motto of the Ekaterinburg project was 'We build a house and a house builds us.'[964] While most of the experiments discussed in this thesis were designed and conducted by professionals, in the case of the do-it-yourself experiment of the *MZhK*s, it was residents who actively re-articulated and shaped the experiment. How sincerely should such claims be understood? Was it a struggle against social

[961] I. Prikhod'ko, *Molodezhnye Zhilye Kompleksy: Org.-Pravovye Vopr.: Spravochnik* (Moscow, 1990), pp. 22-23.
[962] G. Karelova and A. Aulov, 'MZhK – Sotsial'noye Tvorchestvo Molodykh', *MZhK – Sotsial'nyi Eksperiment* (Arkhangel'sk, 1988), p. 8.
[963] I. Vishnevskii and V. Popov, 'By the Hands of the Collective', *Soviet Sociology*, 26/1 (1987), pp. 17-18.
[964] Rachevskaia, *Stroim MZhK*, p. 5.

alienation or a 'performative shift'—a phenomenon that Yurchak has described as 'the act of performing using appropriate language associated with ideology.'[965] Was the experiment itself really relevant for the participants, or did it merely represent a means to improve their housing conditions?

There is evidence that for many Komsomol members, participation in the experiment was primarily driven by the practical goal of improving their own material status, rather than by the idea of taking part in an ideal communist building project.[966] Historians emphasise the antagonism of participants in state ideological projects and their resistance to the authorities.[967] Yet recent studies also suggest that many Komsomol members did actually strongly identify with communist ideology and were deeply engaged in collective work.[968] For those members, an appeal to the discourse of experimentation could be seen as a way of 'speaking Bolshevik,' in Kotkin's terms, in achieving their goals of securing apartments. Architects, for example, used the discourse of experimentation to articulate their architectural vision of socialist housing. The design of the main public building of the *MZhK* district was particularly striking. Designed in the form of a futuristic structure with a tower supported by bracing wires, it was not likely to be constructed, and was rather was used for the representation and promotion of the project (Fig. 8.8). These

[965] A. Yurchak, *Everything Was Forever, until It Was No More: The Last Soviet Generation* (Princeton and Oxford, 2006), p. 25.
[966] Up to forty per cent of residents of the Korolev *MZhK* exchanged their apartments after receiving apartments in other buildings. See: Ovcharenko, *Molodezhnye*, p. 14.
[967] See, among others: Kotkin, *Magnetic Mountain*, pp. 198–237, Fitzpatrick, *Everyday Stalinism*, pp. 132–38.
[968] G. Tsipursky, 'Conformism and Agency: Model Young Communists and the Komsomol Press in the Later Khrushchev Years, 1961–1964', *Europe-Asia Studies*, 65/7 (2013), pp. 1396-416.

designs were even presented abroad, at the international architectural biannual Interarch exhibition in Sofia in 1983 (see Fig. 8.9). Architectural designs were accompanied by a similar appeal to the experiment's social program: 'We are a team of neighbours, friends, and like-minded people. The *MZhK* is a harmony of natural and artificial forms. This is an example of the organisation of a living environment. This is an experiment, scientifically based, socially organised, and carried out by youth.'[969]

Most members of the *MZhK*s that I have spoken to claim that the 'socialist competitions' and participation in labour-intensive construction did indeed represent an effective mechanism of creating responsible collectives. Each construction brigade was responsible for delivering their assignments; otherwise, they threatened the whole project.[970] Moreover, the building process was itself a collective endeavour. Each brigade had their own barrack, which served as a workshop for the construction process and a communal space for meals and relaxation, where the workers worked, ate, and rested together (see Fig. 8.7b).

However, not everyone was welcome to participate in this collective drive. The level of participation of each member in the project, both managerial and physical, was evaluated through the awarding of points. Points were crucial for all members to succeed in their final goal of receiving an apartment. The amount of points determined the fate of all members. For most participants, the points system

[969] *Interarch-83: World Biennale of Architecture* (Sofia, 1983), pp. 140-41.
[970] Interview with Sinitsa, conducted by Author, Korolev, 5 April 2018.

required constant overcommitment and left many participants behind in the competition. Participants had to work twice as hard as regular workers, often spending more than twelve hours at the construction site.[971] Only the most active workers were invited to take new assignments, which provided them with new points: 'In order to succeed, we had not only to work well, but to always be in the first ranks. … Fanaticism was indispensable for all of us.'[972]

Participants remember a constant feeling of uncertainty over the outcome of the experiment. They never knew whether they would get an apartment or whether their efforts would all be in vain. A point-based economy also left much room for cheating. Since points were assigned internally at the level of enterprises, the process was not transparent.[973] The system of points was explicitly gendered to benefit male workers. Not only were more points assigned for physical work, but the knowledge about assignments that provided a sufficient amount of points also circulated predominantly in the networks of male workers. Good relations with foremen were crucial.[974] As Marina Beduleva explains, women were not always welcome to participate in *subbotniki.* Female participants were able to secure points running collective services and through organising events, which was by contrast a predominantly female sphere.[975]

[971] Interview with Pakhomov, conducted by Author, Ekaterinburg, 8 September 2019, Interview with S. Ermolaev, conducted by Author, Ekaterinburg, 9 September 2019.
[972] Interview with Pakhomov, conducted by Author, Ekaterinburg, 8 September 2019.
[973] Ibid.
[974] Interview with Popovy, conducted by Author, Ekaterinburg, 12 September 2019.
[975] Interview with M. Beduleva, conducted by Author, Ekaterinburg, 10 September 2019.

Such uncertainty, alongside the difficulties in construction and the exhaustive pace, decimated the number of participants. Some assignments were considered just too difficult. The micro-region was located in rocky terrain, and the provision of infrastructure required particularly difficult rock extraction. Stuck on one such task, as much as a third of the members of a construction brigade ended up leaving the project.[976] In total, thirty-seven per cent of the participants of Ekaterinburg *MZhK* dropped out, even if they had no alternative housing available.[977] Counting all members who participated in the project at any stage, only one in ten participants made it to the end of the project and received an apartment, according to some estimates.[978] While the experiment was a collective endeavour for some, it left many others behind in the competition. For this latter group, it represented nothing but frustration and time lost on 'voluntary' and unpaid *subbotniki*.

The experiment enabled a peculiar residential environment. Apart from housing, a wide network of communal services was actually constructed in the district: nurseries, playgrounds, clubs, and a school (Fig. 8.10). The main public facility, first designed and shown at the Interarch meeting in 1983, was also constructed, yet in the shape of a sports complex. In comparison to other districts, the *MZhK* ensured much better public services in their district. Yet, most important events were organised by the residents' union. The *MZhK* union was registered as a cooperative, which gave it agency to organise large-scale events in its district: festivals, or music

[976] TsDOOSO, f. 198, o. 7, d. 224, l. 8.
[977] B. Efremov et al., *Etazhi Budushchego* (Sverdlovsk, 1986), p. 41.
[978] N. Turina, 'Gruppovoi Portret s Domom', *Izvestiia* [Moscow], 190 (9 July 1985), p. 3.

concerts, were held in a self-made open theatre (see Fig. 8.12b). Most work involved in these events was self-organised. Apart from state-run facilities, some services, such as sports clubs, were run by residents themselves. The residents were especially proud of their cooperative children's room, which involved participatory work by mothers from the district—we saw articulations of a similar concept in the previous chapter (see Fig. 8.11). Arguably, apart from mere privilege in distribution, the *MZhK*s provided their members with efficient tools for self-help. 'Do-it-yourself' practices were widespread among the last Soviet generation. Self-made gyms, clubs, and various types of studios proliferated semi-officially in the Soviet urban fabric.[979] The *MZhK* movement thus enabled and facilitated grassroots organisation in the local district.

Engaged in self-organised activities, participants in *MZhK*s produced a unique culture, including a flow of amateur poetry and prose, and pictures and drawings, often of quite mediocre quality. It was typical for my respondents to show me self-made albums, newspapers, and publications, which depicted various collective activities held in their district, from concerts and festivals to joint camping trips (see events in Fig. 8.12, albums in Figs. 8.14–15). Undoubtedly, for many members, the *MZhK* represented primarily a shortcut to securing an apartment. Yet, even for those participants, it was difficult to avoid participation in collective events. The memories of some of my respondents are marked by an aversion to the communal ethos of the project and its predominantly male culture, which included collective

[979] A. Golubev, 'Elemental Materialism: Objectifying Power and Selfhood in the Late USSR, 1961–1991' (D.Phil. thesis, 2016), pp. 62-93, 172-91.

visits to the baths (*banias*), playing guitar, and singing folk songs.[980]

Changing notions about the role of the *MZhK* collectives is evident in the literature of the mid 1980s. A stronger focus on collectivism as a practical way of organising everyday life and leisure is evident in the discussion of the first two experimental complexes. The community-building ethos shifted from the organisation of collective leisure activities to the collective ability to coordinate more basic maintenance tasks. *MZhK* residents had to deal with a variety of urban problems on their own. As one of my respondents recalls, 'We realised that we had to do everything ourselves.'[981] One example is particularly demonstrative of the problems faced by *MZhK* residents in Ekaterinburg:

> One Sunday in spring, groundwater damaged the power cable [and the neighbourhood lost electricity]. By the evening it became clear that no one would fix it. So the next day, on Monday, the kindergarten would not be able to operate—this was an emergency. What to do? Yevgeny Korolev, chairman of the *MZhK*, simply asked: 'Can we fix it?' And so, until four o'clock in the morning more than seventy men from a 213-apartment building were digging up the damaged cable in the rain. In terms of maintenance service, just a trifle remained—connecting the cable's broken ends. The work week began as usual.[982]

This story of urban citizens digging a hole in their own backyard to carry out major infrastructural repairs is a strange one. None of its elements seems typical. Is it about the failure of urban services during the perestroika? Is it about a struggle against social alienation and an alternative path of modernisation?

[980] Interview with Ermolaev, conducted by Author, Ekaterinburg, 9 September 2019.
[981] Karelova, *Molodezhnyi Zhiloi Kompleks*, p. 22.
[982] Ibid., p. 37.

Self-help and the informal economy

Some of my respondents argued that the project was, first of all, a practical solution to overcoming the housing shortage impasse during the severe shortages of the late Soviet economy. In the words of the foreman of a construction brigade, Vladimir Popov, there was a practical side to the experiment: 'Bureaucrats did not like fantasies. The experiment was a practical necessity for both administration and participants. The city was accountable for the housing delivery plan and participants wanted their apartments as well.'[983] Popov emphasised the practical rather than the ideological meaning of the experiment, but did not deny its purpose—it was still an experiment in socialist cooperation.

The housing shortage had never been solved in the USSR and it was especially evident in Ekaterinburg in the late Soviet era. Due to the growing ineffectiveness of the central administrative system, regional administration was not always able to fulfil the plan for housing provision, even when it had the required industrial capacities and sufficient funding.[984] While the city administration was in theory responsible for housing construction, in practice this task was increasingly outsourced to enterprises, which constructed housing to distribute apartments among their employees.[985] These enterprises were sometimes partially assisted by state firms to build their own housing, but could also take upon themselves the

[983] Interview with Popovy, conducted by Author, Ekaterinburg, 12 September 2019.
[984] The city hall of Ekaterinburg experienced problems with 'under expenditures' (*nedoosvoenie*) of funds. See: A. Kirillov and G. Kaeta, *"Pervaia Zhizn'" Borisa Yeltsina* (Ekaterinburg, 2011), p. 233.
[985] In Ekaterinburg, housing was provided mainly through the workplace. Aron, *Boris Yeltsin*, p. 98. On departmental housing in the USSR, see: DiMaio, *Soviet Urban Housing*, pp. 156-60.

whole complexity of housing delivery in the *khozraschet* method of construction.[986] The *MZhK* project, similarly run by state enterprises, was understood to be an instance of departmental construction, where the state normally had little control.

The self-help construction and residents' participation introduced by the experiment was intended to mitigate the lack of workforce, which represented one of the major problems at Ekaterinburg construction sites. To overcome these constraints, construction companies made use of 'volunteers,' soldiers, and *spetskontingent* (prisoners' labour).[987] Tellingly, even large state enterprises, such as Sverdlovsk's housebuilding factory, had to hire *shabashniki* (moonlighting brigades who undertook illegal or semi-legal contracts) to unofficially cover gaps in construction.[988] The use of illegal workforces by large state companies testifies to the deep and chronic dependence of the late Soviet industry on the informal economy. In general, the informal economy in construction accounted for more than half of all construction contracts in some regions of the USSR.[989]

With a significant reward for labour, *MZhK*s provided efficient support for the collective to work harder. Even if many participants opted out, those remaining were motivated by a greater interest in the end result—their apartments. In comparison to cadre builders, an *MZhK* gave rise to a different attitude to work: 'No

[986] *Khoziaistvennyi Sposob Stroitel'stva* in I. A. (ed.), *Bol'shoi entsiklopedicheskii politekhnicheskii slovar'* (2004).
[987] According to Kirillov, 'thousands' of prisoners worked at industrial constructions in Ekaterinburg, see: Kirillov and Kaeta, *Pervaia Zhizn'*, p. 233.
[988] TsDOOSO, f. 5793, o. 1, d. 97, l. 64. On *shabashniki*, see: Erofeev, 'Shabashniki'.
[989] Ibid.

one would smoke or play dominoes if there was no concrete, brick, or equipment—they would find building materials at all costs.'[990] Pakhomov remembers: 'We received the hardest jobs, which no one else was willing to undertake.' As already mentioned, the *MZhK* district was located on rocky terrain, which made the construction of basements and provision of hard infrastructure a particularly difficult task. The city hall had previous been unable to find contractors willing to carry out construction in this area.[991] Speaking to journalists, *MZhK* participants described themselves as rationalizers; as one reporter described, 'It was not experience, but rather an active life position that was a critical element in the decision whether a person would join the *MZhK*.'[992] The *MZhK* brigades not only constructed their own housing but also worked for the public good. That included the 'economic modernisation' of the whole Sverdlovsk housebuilding factory, which reportedly allowed a saving of more than 10,000 rubles.[993] How could the participation of young, mostly unprofessional workers help modernise production so effectively?

The knowledge of how to get materials 'at all costs,' for which Komsomol construction brigades were praised, could refer to a broader late Soviet trend: direct access to the unofficial sector of construction, which at this time became rampant. In the late Soviet era, grassroots management became especially efficient, as it facilitated access to the unofficial sphere—alongside an increase of 'shortage

[990] Karelova, *Molodezhnyi Zhiloi Kompleks*, p. 31.
[991] Interview with Pakhomov, conducted by Author, Ekaterinburg, 8 September 2019.
[992] V. Rungis, '"Kirpich" na Forvatere', *Sobesednik* (9 February 1986), p. 5.
[993] Ibid.

economy.' Both construction and distribution of housing involved a variety of informal practices of *blat* (the use of personal networks for getting things done).[994] One participant remembers that the *MZhK* union had at least forty subcontractors, each of whom delivered construction materials, equipment, or services under various forms of such quid pro quo agreements.[995] One of the members of the *MZhK* union, Sergei Khoroshilov, was directly responsible for establishing relations with subcontractors. Due to his role of 'punching' commitments out of the subcontractors, he earned the nickname 'Udar' (which translates as 'strike' or 'punch').[996] Professional construction workers even sometimes earned points for 'borrowing' equipment or directly stealing building materials from their official places of work.[997] Arguably serving as mediators for official enterprises, *MZhK* members facilitated their access to the informal sector. The deep involvement of Komsomol members in these informal practices testifies to the fact that in the USSR, the official and unofficial spheres strongly complemented each other—an aspect of the situation which scholarship on late Soviet housing often neglects.[998]

According to Yuri Volchek, for many participants, the *MZhK* represented a school for learning 'how to get things done' efficiently during times of dire shortage.[999]

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[994] Ledeneva defines *blat* as an exchange of 'favours of access' in conditions of shortages and a state system of privileges. A.V. Ledeneva, *Russia's Economy of Favours: Blat, Networking and Informal Exchange* (Cambridge, 1998), p. 36. On the shadow economy in the automobile market, see: L. Siegelbaum, 'Cars, Cars, and More Cars: The Faustian Bargain of the Brezhnev Era', in L. Siegelbaum (ed.), *Borders of Socialism: Private Spheres of Soviet Russia* (New York and Basingstoke, 2006), pp. 87-103.
[995] Interview with V. Kondratiev, conducted by Author, Ekaterinburg, 8 September 2019.
[996] Interview with Pakhomov, conducted by Author, Ekaterinburg, 8 September 2019.
[997] Ivanov, *Eburg*, p. 34.
[998] A. Bailey and A. Ledeneva, *Global Encyclopaedia of Informality, Volume 2: Understanding Social and Cultural Complexity* (London, 2018), p. 3.
[999] Interview with Volchek, conducted by Author, Moscow, 26 July 2018.

The ‘graduates’ of this school developed an important set of skills, which included finding required materials and securing permissions and funding. The team was in charge of the whole process of construction, from the groundwork to the finishing of apartments. Later, some construction brigades turned into collectives of skilled work gangs, able to carry out construction and maintenance tasks on their own, who found further employment in unofficial or semi-official spheres of the Soviet economy.[1000] Practices of mutual help and the use of practical knowledge in obtaining goods and services in short supply proved crucial in the conditions of scarcity in both official and illegal construction spheres. In her research on informal economy, Ledeneva highlights the ambiguous nature of Russian informality, which is subversive, but may also be supportive of state projects.[1001] In the case of the *MZhK* project, informal economy supported the state-defined socialist goal of the construction of housing with collective services.

The evidence suggests growing autonomy in the *MZhK* movement. While still using the discourse of experimentation when it was useful, participants of the project seem to increasingly pursue their own interests. The union of the *MZhK* developed into a municipal political force, able to promote its interests while maintaining an unusual level of autonomy from the city hall. In 1984, when authorities tried to allocate some of the apartments in the complex to high-status managers of participating enterprises, who had not actually participated in the process of

[1000] Ibid. My interviewees, Vladimir Pakhomov and Anatolii Romashev, former ‘warrior’ of the *MZhK*, in later years worked in the private sector of construction.
[1001] See: Ledeneva, *Russia's Economy of Favours*.

construction, residents strongly objected. They started a campaign, petitioning letters to Boris Yeltsin, signed by the representatives of 120 families: 'What will happen to the social experiment if random people, who did not graduate from the *MZhK* school of life, pop up in our district? What will the 1,500 candidates of the *MZhK* think when they see people who have not competed in the house? How will this affect their faith in the *MZhK*?'[1002] The letter sounds almost threatening. By the end of perestroika, their influence grew even further, since it started to represent a political force, and they were able to participate in demonstrations in favour of or against local politicians. Tellingly, an *MZhK* member, engineer Alexander Mikh, was able to organise private cable television in the district—reportedly, the first such project in the USSR. Among other shows filmed in the local studio, the team also started airing political analyses.[1003] Even after the two decades in which the project of the social experiment first unfolded, it offered unexpected results: instead of providing controlled community-building, the project transformed into an almost autonomous grassroots movement, which strengthened communities to endure the failures of the late Soviet economy.

As we have seen in this thesis, experimental development was initially intended to establish a space for controlled innovation. The experimental category was intended to limit the scope of innovation by setting particular boundaries and a temporary status, which could be revoked at any time, so that experiments could be safely cancelled. Apparently, this was not necessarily the case with the *MZhK* experiment,

[1002] TsDOOSO, f. 61, o. 49, d. 150, l. 11–12.
[1003] Interview with Popovy, conducted by Author, Ekaterinburg, 12 September 2019.

which led to uncontrolled development in the final Soviet years.

From a controlled experiment to self-managed urbanism

Similarly to other housing projects discussed in this thesis, the *MZhK* project progressed in two stages: an initial experimental development followed by a second stage of mass production and standardisation. The experimental stage lasted during the construction of Korolev and Ekaterinburg complexes, and sought to demonstrate the project's resiliency. According to Galina Karelova, a participant of Ekaterinburg *MZhK* and now a deputy chair of the federation council, the task of the experiment was 'to prove the possibility of creating an essentially new housing type without any special preferential terms. The experimental building could be replicated based on the progressive construction base of Moscow and Leningrad.'[1004] During the experimental stage, a legal base for the self-help construction was largely missing, and personal connections and direct support of state officials were crucial in filling the legislative void. In the first ten years of the project, the *MZhK*s were not listed in official documents, and the construction was *de facto* illegal, not framed under any economic structure at all.[1005] The rhetorics of experimentation were also of paramount importance in filling the legislative gap, and crucial in securing the budget and permissions required for the development.[1006]

However, the *MZhK* experiment was praised as a success by most observers.[1007] As

[1004] Karelova, *Molodezhnyi Zhiloi Kompleks*, p. 24.
[1005] Turina, 'Gruppovoi Portret s Domom', p.^pp. 3.
[1006] Ivanov, *Eburg*, p. 31.
[1007] Ovcharenko, *Molodezhnye*, p. 20.

with other successful experiments in housing, it underwent the process of standardisation to allow for replication. The legislative base was developed in 1986, when the *MZhK* was supported by the 27th Congress of the Communist Party.[1008] In the same year, the official charter of the *MZhK* was released.[1009] The *TsNIIEP* was assigned as the lead organisation for studying *MZhK*.[1010] The institute issued 'recommendations' for the architecture, construction, and running of *MZhK*s in both urban and rural areas.[1011] Social scientists developed recommendations for social, cultural, and pedagogical work in the serviced blocks.[1012] Direct guidelines for the management and organisation of 'socialist competitions' were published, solving legal and economic issues.[1013] With this package of documents, the project became a mass movement, which rapidly spread throughout the country. Architecturally, the *MZhK* could be built using standard projects. Galina Karelova defines the *MZhK* as a 'non-standard living environment built out of standard [prefabricated] components,' exactly repeating the original definition of social experiment by Natan Osterman mentioned in the previous chapter.[1014]

The *MZhK* movement thus reveals clearly how the project of self-managing

[1008] Ibid., p. 7.
[1009] The charter was approved by the USSR *Gosstroi, Gosplan, Goskomtrudom, Miniust, Stroibank, Minzhilkomkhoz* RSFSR, VTSSPS, and TSK VLKSM on 16 June 1986. See: 'Polozheniye o Molodezhnom Zhilom Komplekse', *Sb. Normativnykh Dokumentov* (Sverdlovsk, 1986).
[1010] Ovcharenko, *Molodezhnye*, p. 6.
[1011] *Rekomendatsii po Proyektirovaniyu, Stroitel'stvu i Ekspluatatsii Molodezhnykh Zhilykh Kompleksov* (Moscow, 1986), *Rekomendatsii po Proektirovaniiu Sel'skikh Molodezhnykh Zhilykh Kompleksov* (Moscow, 1988).
[1012] V. Zhukov, *Pedagogika MZhK* (Moscow, 1988). See also: Ovcharenko, *Molodezhnye*.
[1013] *Metodicheskie Rekomendatsii po Organizatsii Sotsialisticheskogo Sorevnovaniia Kandidatov v Chleny Molodezhnogo Zhilogo Kompleksa za Pravo Byt' Boytsom Komsomol'sko-Molodezhnogo Otriada Mzhk* (2edn., Leningrad, 1988), Prikhod'ko, *Molodezhnyye Zhilye Kompleksy*, S.N. Eshanov, 'The Young People's Housing Complex Requires Budget Allocations', *Soviet Sociology*, 26/1 (1987), pp. 4-7.
[1014] Karelova, *Molodezhnyi Zhiloi Kompleks*, p. 24.

cooperatives began in the 1960s and was introduced into mass construction in the 1980s. The first model of self-managed housing, the *DNB*, which we examined in the previous chapter, was seen as a model for society as a whole. In the 1970s it mutated into a model for Komsomol members. Instead of following the original goal of a universal and egalitarian concept of *kollektiv*, the projects turned to serve particular communities. Kukulin's analyses reveal that, as part of a larger trend in late Soviet times, notions about meaningful relationships between people shifted to smaller groups rather than embracing society as a whole.[1015] Instead of focusing on the 'failure' of the project after the completion of the *DNB*, we might instead talk about a shift in the experiment's meaning.

At the stage of standardisation, evidence suggests growing pragmatism in the movement, and by the late 1980s, the rhetorics of experimentation had been almost completely abandoned. Housing complexes often lacked collective services and differed only slightly from general standard housing blocks. The members still had to pay for their housing by working at construction sites, but sometimes this could involve merely working in the construction industry, rather than working directly on their own housing project.[1016] Instead, the *MZhK* movement was described as a practical solution to overcoming the housing shortage impasse. The *MZhK* started to be seen primarily as a shortcut for solving the housing problems of young families,

[1015] Kukulin, 'Alternative Social Blueprinting in Soviet Society of the 1960s and the 1970s, or Why Left-Wing Political Practices Have Not Caught on in Contemporary Russia', p. 66. On different types of communities, see Slavic Review collection 'Redefining Communities in the Late Soviet Union,' *Slavic Review*, 74/1 (Spring 2015).
[1016] Participants of *MZhK* Butovo in Moscow payed for their apartment, working at various jobs, for example, producing paint. Interview with N. Pelipeshin, conducted by Author, Moscow, 30 March and 26 September 2018.

who otherwise had to wait in the queue for years or even decades. Gurko directly names the *MZhK* as 'a new kind of assistance to the young family.'[1017] In 1990, even an official reference book refers to the *MZhK* as an alternative to despair and a solution to gridlock.[1018] The *MZhK* was a solution for younger people, and allowed for investment in labour rather than money. Bestujev-Lada even proposed extrapolating the practice globally: 'it would be reasonable for all young people of both sexes after graduation or military service to work for some time at construction sites, and on their wedding day, they would receive the keys to their honestly earned apartment right in the registry office.'[1019]

The *MZhK* could be seen as the outcome of more than thirty years of intellectual history of housing with collective services, discussed above in Chapters 2, 5, and 7. The projects of the late 1950s suggested the provision of serviced housing for small families and single people by a significant extension of infrastructure at the expense of the state. Realising those projects to their full extent turned out to be unfeasible for economic reasons. Yet in the project of the *DNB,* extending the responsibilities of residents themselves, and organising them into a 'neighbourhood collective,' was proposed as a way of diminishing the state's role. This chapter demonstrates that in the long-term perspective, this experiment organising housing with collective services evolved in an unpredictable direction. It eventually resulted in the training of collectives of skilled work gangs, able to carry out construction and maintenance

[1017] T. Gurko, M. Matskovskii, and V. Solodnikov, 'A New Kind of Assistance to the Young Family', *Soviet Sociology*, 26/1 (1987), pp. 20-23.
[1018] Prikhod'ko, *Molodezhnye: Org.-Pravovye Vopr.*, pp. 20-21.
[1019] I. Bestuzhev-Lada, 'MZhK Kak Ob"ekt Sotsial'nogo Proektirovaniia', *Metodologiia Sotsial'no-Pedagogicheskogo Proektirovaniia MZhK* (Samara, 1991), p. 6.

tasks on their own. Vested with efficient tools for self-help, the role of such collectives became increasingly important in the sphere of construction during the shortages of perestroika.

Chapter 9. A complex experiment: an 'intensified' residential environment

Complex experiment as a comprehensive method of micro-region design and planning

The chief architect of Moscow, Mikhail Posokhin, wrote in 1976:

> How to build towns aimed towards the future? … In their search for modern solutions, architects have engaged in proven experimental design methods. … Experimental construction was tested by several generations of projects, which were later standardised. During their implementation, powerful integrated house-building factories were constructed. … In the context of the development of socialism, experimental housebuilding attained a new scope. While at the first stage, experiments were aimed at testing separate experimental buildings, now experiments targeted enormously bigger problems—creating the residential space of the future and solving complex social issues, so that they correspond to people's lifestyles at the opening of the third millennium.[1020]

In Posokhin's rhetoric, new types of experiments went far beyond the issues of construction, and aimed to create a systematically innovative residential space—a model for the future. Posokhin was referring to Northern Chertanovo, one of several 'experimental residential complexes' (*Eksperimental'nye Zhilye Kompleksy* or *EZhK*) under construction in Moscow.[1021] In the 1970s, experimental districts once again emerged in the country and started to be discussed in the press. To provide a brief overview of this phenomenon in Moscow, I will briefly outline the context for the evolution of the concept of experiment.

[1020] Posokhin and Dubek, *Eksperimental'nyi Zhiloy Rayon*, pp. 4-5.
[1021] Sometimes referred to as *OPZhR* (*Opytno-pokazatel'nyi zhiloi raion*) but I will use the term *EZhK* for both types.

In the 1970s, the planning of new housing estates increased in size and complexity. Since 1971, residential districts with the target population of 20,000–50,000 people became fundamental units of urban planning in Moscow. More than seventy per cent of housing units in these districts consisted of standardised towers of either five, nine, or twelve storeys planned according to the micro-region principle.[1022] Experimental residential complexes differed in architecture in planning from these standard mass-housing districts, which served immediate needs for housing. They were located in specially reserved areas of the city, and were sometimes smaller, with a population of just several thousand people. Apart from Northern Chertanovo, the category of Moscow *EZhK*s also consists of a number of well-known Moscow residential areas, such as Lebed' and Troparevo. The picturesque character of these ensembles, their better and more spacious flats, and enhanced services and non-standard planning schemes, sharply distinguished them from micro-regions with standard housing.[1023] They were referred to as 'residential complexes,' which architects defined as 'a system of a holistic architectural and spatial organisation of housing, public services, and external environment.'[1024] A residential complex stood for a separate, unique, and often privileged urban area, in which architecture of housing was closely tied to public services. One of the pragmatic aims of such comprehensive design was facilitating the implementation of services and ensuring their proper running. In late Soviet times, the provision of public social infrastructure was often delayed, and its management was a rampant problem that

[1022] Colton, *Moscow*, p. 488.
[1023] Anderson, *Russia*, pp. 253-59.
[1024] *Eksperimental'nye Zhilye Kompleksy v SSSR i GDR: Stadiia: Programma Kompleksnogo Eksperimenta (Predproektnaia)* (Moscow, 1977), p. 23.

frequently resulted in overcrowding and queues.[1025]

Often featuring shops of higher class and prices, these housing developments represented a departure from the principle of classlessness, revealing instead certain trends of social stratification that emerged in the late Soviet society.[1026] They were often built for the 'deserving members of socialist society'—cultural and technical *intelligentsia* and military officers. While these mass estates were not explicitly housing designed for the elite ('nomenklatura'), who received even better housing, they were distributed mainly among the 'departmental queue'—to the employees of institutes, companies, sports teams, and military personal. In Moscow and other cities, housing was provided mainly through the workplace in late Soviet times.[1027] Such housing was sometimes accompanied by clear privileges. This privilege was especially blatant in the Moscow experimental district Lebed'.[1028] Located in a beautiful area of Moscow, on a shore of the Khimki water reservoir, and surrounded by parks, the complex featured better apartments and a unique architectural design; all these features marked it as elite housing. Most importantly, the complex was distinguished by its separateness from the outer urban fabric. Four tower blocks were united on the ground floors with a closed stylobate. The openness of the inner

[1025] N. Chernyshova, 'Consumers as Citizens: Revisiting the Question of Public Disengagement in the Brezhnev Era', in D. Fainberg and A. Kalinovsky (eds.), *Reconsidering Stagnation in the Brezhnev Era: Ideology and Exchange* (Lanham, 2016), pp. 3-20.
[1026] On the sociology of privilege in Moscow housing, see: Colton, *Moscow*, pp. 494-518. On privileged housing in the GDR: F. Urban, *Neo-Historical East Berlin: Architecture and Urban Design in the German Democratic Republic 1970-1990* (Farnham, England and Burlington, VT, 2009), p. 203. On luxury in late Soviet society, see articles in: D. Crowley and S.E. Reid, *Pleasures in Socialism: Leisure and Luxury in the Eastern Bloc* (Evanston, 2010).
[1027] In 1988, the departmental queue in Moscow constituted three-fifths of the total city queue: Colton, *Moscow*, p. 495.
[1028] A. Bronovitskaya et al., *Moscow: A Guide to Soviet Modernist Architecture 1955-1991* (Moscow, 2018), pp. 134-38.

yard, typical for Soviet micro-regions, was replaced here with an elevated structure containing a closed territory with shops and services exclusively for residents. The coming and going of residents was monitored by 'concierges' (*dezhurnye*). The complex was managed through a separate agent—the Directorate of Tall Houses, which was initially founded in 1952 to manage the Stalin skyscrapers.[1029] In Lebed,' the exclusive consumerism and closed territory resembled the 'gated communities' in non-socialist contexts.

In the 1970s, gated communities became widespread globally in both socialist and non-socialist countries.[1030] Soviet experimental districts were in many ways similar to such communities. However, one important difference was that their design was associated with the development of the housing delivery industry. Experimental districts were associated with various questions of industrial housing delivery, as this thesis demonstrates. In the 1970s, Moscow experimental districts were used to develop a specific approach to prefabrication—a 'unified catalogue of prefabricated components' that made up a modular industry, in which interchangeable prefabricated components were designed to allow architects to assemble diverse types of structures from standardised components.[1031] In each of the developments, Lebed', Troparevo, and Chertanovo, various stages of the development of this industry were mastered and demonstrated. The entire complexity of forms contained

[1029] The Directorate of Tall Houses led construction of Chertanovo: Posokhin and Dubek, *Eksperimental'nyi Zhiloy Rayon*, p. 15.
[1030] On gated communities in Soviet and post-Soviet Russia, see: S. Lentz, 'More Gates, Less Community? Guarded Housing in Russia', in G. Glasze, C. Webster, and K. Frantz (eds.), *Private Cities. Global and Local Perspectives* (London and New York, 2006), pp. 206-21.
[1031] On the Moscow catalogue of prefabricated components, see: I. Volchek and R. Saruzanian, 'Shagi Eksperimenta', *Arkhitekturnoe Tvorchestvo SSSR* (Moscow, 1977), pp. 75-81.

in Lebed' residential complex was assembled out of this 'unified catalogue of prefabricated components.'[1032] It was therefore seen not just as a privileged development, but as a 'non-standard living environment made out of standard components'—similar to Natan Osterman's definition of social experiment cited in Chapter 7.

The method of the design of residential complexes had certain specifics. In his overview of experimental construction in Moscow published in 1973, *MNIITEP*-based architect Iakov Dikhter classified 337 experiments, ranging from architectural experiments in the design of building types, to planning experiments and construction and organisation experiments. He distinguished 'complex experiments' as a separate category, which involved a combination of two or more specific experiments in one development.[1033] These complex experiments were related to the ambition to solve multiple problems of various origins as part of a single development. Similar goals were pursued since the mid 1950s, when city halls began to designate specific districts for experimental construction (see Chapter 1).

Dikhter describes such an approach as 'complex experimental method,' or 'complex architectural-construction experiment.'[1034] In the 1970s, the design of complex experiments went beyond solving construction tasks, and was often supported by the rhetoric of development of models for future urbanism, in categories similar to

[1032] On Chertanovo, see: Posokhin and Dubek, *Eksperimental'nyi Zhiloy Rayon*, pp. 4-5.
[1033] Dikhter and Sherstneva, *Eksperimental'noe i Massovoe*, p. 15.
[1034] Ibid., Dikhter, *Kvartira Moskovskoi Sem'i*, pp. 22-23.

those expressed by Posokhin in the quotation above. As in the previously discussed 'social experiments,' architectural design in these projects would often be supported by a conceptual 'experimental programme,' which provided suggestions about housing distribution, proper usage of services, and other issues.

The complex experiment was thus seen not only as a method of rationalising housing provision, but was also aimed at providing a wholistic approach to the design of a living environment with public services, ensuring its timely implementation and running. The discourse of experimentation prioritised public services and shifted the emphasis from basic functionalism to more socially sensitive questions concerning the residential environment and territorial planning; these questions lay, respectively, in demographers' and sociologists' areas of expertise. Similarly to the social experiments discussed in previous chapters, the development of a complex experiment went beyond the expertise of architects. Complex experiments involved the participation of sociologists and demographers, who articulated programs through a discourse of rationalisation and comprehensive organisation. Working within the institutional refuge of the *TsNIIEP* and other design institutes, these experts' work added complexity to the views concerning the structure of the family and its dynamics. Further, I look at how the understanding of identity and family was informed by social sciences, and the implications of this understanding for a built environment.

This chapter seeks to unpack the concept of 'complex experiment' and evaluate the

professional practices that constituted this method. To what extent was the 'experimentation' of the 1970s just a label used to enable privileged development? Or was it actually a genuine model for future standardised industrial projects? To discuss these questions, I focus on a 'complex experiment' implemented cooperatively by the Soviet Union and East Germany in 1976–1990. My main interest is in the Soviet side of the project, and I leave the German side of this collaboration as a subject for further research. In the first section of this chapter, I aim to unpack the discourse of 'intensification' and see how it was informed by the social sciences. In the second section, I discuss how experiment became a vehicle to implement these theoretical programs in the built environment in the experimental residential complex in Gorky (now Nizhnii Novgorod). I claim that in the 1970s–1980s professionals continued to focus on experiment as a method of controlled innovation in high modernist developments, and did not confront the logic of crises and the rejection of modernism prevalent in these years in non-socialist societies.

Magdeburg–Gorky Residential complexes: sociological and demographic expertise and the discourse of 'intensification'

In 1976, Soviet and East German (GDR) officials signed an agreement to cooperatively conduct a large-scale international experiment, which foresaw the joint construction of two residential complexes: Meshcherskoe Ozero in Gorky (USSR, now Nizhnii Novgorod) and Neu Olvenstdet in Magdeburg (GDR).[1035] The

[1035] See: *Eksperimental'nye Zhilye Kompleksy v SSSR i GDR: Stadiia: Programma Kompleks. Eksperimenta* (Moskva; Berlin, 1976).

overall purpose of the experiment was to establish 'scientific principles for the development of housing in the Socialist world' for the years 1986–1990. A new type of industry had to be developed as part of the project, which was intended to take into account demographic, geographic, and national issues.[1036] The scale of this international project was massive. On the Soviet side, the *TsNIIEP* took a central role in the development, alongside six other research institutes; five further institutes were assigned on the part of the GDR. The experiment was thus intended to be carried out in several stages: first, as theoretical elaborations, research, and development, which took three years; then the design of an innovative industrial building system; and finally the construction of the district, which began in 1979 and continued until the early 1990s. A great deal of research was conducted and numerous scientific conferences took place as part of this project, which took twenty-four years to complete construction.

According to Kira Kartasheva, the leading sociologist of the *TsNIIEP* and a participant in the project, Nizhnii Novgorod was selected as the experiment location under the auspices of the Minister of Culture, Pyotr Demichev.[1037] In late Soviet times, Nizhnii Novgorod was a closed military city with a rapidly increasing population that specialised in the production of submarines. The three local housebuilding factories operated with the I-464 building system. Even with the ample production of housing at these factories, city officials were unable to solve a

[1036] K. Kartashova, *Nauchno-Tekhnicheskoye Sotrudnichestvo Stran-Chlenov SEV v Oblasti Zhilishchnogo Stroitel'stva* (Moscow, 1979), pp. 12-13.
[1037] Interview with Kartashova, conducted by Author, Moscow, 26 March 2018.

rampant 'housing question.' In 1975, 74,700 families were classified as being 'in severe need in housing' (*ostronuzhdaushchiesia*), including 66,000 families living in barracks, basements, and other 'unsuitable premises.'[1038] Planners' response to this housing crisis was to increase the cumulative capacities of the existing housebuilding factories.[1039] As a result of these actions, the local landscape was heavily dominated by I-464 housing. Yet in 1974 this technology was considered outdated and was officially discontinued by the *TsNIIEP*. The obsolescence of the massive industrial infrastructure created during the Thaw-era expansionist politics became a burgeoning concern in the Brezhnev years. Robert Allen identifies the difficulties in retooling old plants as one of the major causes for the general decline of the Soviet economy.[1040] The project of the *EZhK* was designed as housing for the departmental queue in Nizhnii Novgorod, intended for the employees of three institutes and organisations.[1041] It was not just another solution to the housing crisis but also a chance to add more variability and introduce a new type of production in the city.

Meshcherskoe Ozero, the site designated for the *EZhK*, was located in the western part of the city. The location on the rise near the riverbank was visible from a distance and important for city planning. From 1970, architects from the Nizhnii Novgorod-based architectural institute *Gor'kovgrazhdanproekt* designed a number of residential areas adjoining the site reserved for the *EZhK*.[1042] Local architects

[1038] RGAE, f. 5, o. 5, d. 47, l. 168.
[1039] Ibid.
[1040] Allen, 'The Rise and Decline of the Soviet Economy', p. 866.
[1041] Interview with Kartashova, conducted by Author, Moscow, 26 March 2018.
[1042] The *EZhK* was surrounded by micro-regions 1–6 and 9–11, See the general plan of the area in:

strove to acquire permissions for individual developments in the area before the beginning of the Soviet-German cooperation. They proposed individual developments or 'experiments' in this area, which would serve as an architectural dominant of the city skyline.[1043] However, their 'experiments' were largely not implemented. The maximum that *Gosstroi* allowed was the use of nine- and twelve-storey towers from the catalogue of I-464 standard building types to create a dominance, which was little different from standard micro-regions.[1044] The hands of the local architects were tied by the necessity of using standardised housing designs. In this context, the project of the *EZhK* was a remarkable alternative to the general practice of residential construction in the town. The experiment offered new technological methods and a way of avoiding the otherwise strictly regimented use of standard housing. Housing in the *EZhK* was based on the 'perspective norms' planned for 1986 of nineteen m^2 per person, which was a clearly privileged development in comparison to the general practice of housing construction.[1045] However, the *EZhK* was designed by Moscow-based architects and left local actors with only limited agency. Participating architects from Nizhnii Novgorod were relegated to secondary roles, in which they oversaw the improvement and design of adjoining parks and other features.[1046]

GASDNO, f. 20, o. 1-4, d. 289, l. 3.

[1043] See projects of micro-regions 1 and 5: GASDNO, f. 20, o. 1-4, dd. 238, 284.

[1044] GASDNO, f. 20, o. 1-4, d. 238, l. 18. Discussion the plan of Meshcherskoe Ozero in *Gosstroi*: RGAE, f. 5, o. 5, d. 47, l. 205–16.

[1045] D. Shiwotow, 'Zur Projektierung Des Wohnungsbaus in Gorki', *Architektur der DDR*, 27/10 (1978), p. 622.

[1046] The exception was the architect Bastyrev from *Gor'kovgrazhdanproekt*, who worked as part of the *TsNIIEP* team. See the designs of parks and communal areas in: GASDNO, f. P-20, o. 1-4, dd. 289, 410.

In 1977, the *TsNIIEP* published research conducted as part of the Soviet-GDR cooperation in a 435-page-long 'Experimental Program' outlining the ambitions of the project.[1047] According to this document, the project's main purpose was to 'give scientific credence to, and design and implement, experimental residential complexes that would meet the social organisation of dwelling in a developed society with a level of comfort, maintenance, and technical equipment meeting the requirements of the next stage of housing construction; and comprehensively check, over the course of the experiment, new architectural and technical solutions and their social and economic effects.'[1048] The project consisted of twelve 'complex experiments,' defined as large-scale research and development projects, each including more specific experiments. In total, the project incorporated around 50 separate experiments concerning architecture, territorial planning, facade articulation, and technical issues.[1049] In a moment, I will discuss the reasons underlying the intention to accumulate so many experiments in a single development, but first I will focus on the initial two 'complex experiments' carried out in project: the first regarding territorial planning and the second concerning the design of residential buildings.

By presenting the territorial planning of the complex as an experiment, planners placed a strong emphasis on the project's organisation of public services. The programme stated that 'the residents of the complex would not only receive their

[1047] *Eksperimental'nye Zhilye Kompleksy (1977)*.
[1048] *Eksperimental'nye Zhilye Kompleksy (1976)*, p. 7.
[1049] *Sotsial'nye Problemy Arkhitektury Zhiloi Sredy* (Moscow, 1984), p. 14.

private apartments but the whole territory with improved facilities.' The role of the state here was defined not merely as offering 'the one-off provision of essential living conditions but the constant maintenance of residents' everyday life (*byt*).'[1050] The experiment was thus intended to define spatial structures for 'all types of human activity within a residential compound,' and to find ways of 'stimulating this activity in the desirable direction, which corresponds the socialist way of life.' A variety of progressivist techno-scientific discourses were used in the description of this experiment. The end goal of the experimental environment was to rationalise and 'intensify' the main life-cycle processes. The goal of intensification was to save residents' time, offer housekeeping shortcuts, and enable more time for leisure, self-education, childrearing, and 'socially useful activity.'[1051] The ambition of rationalisation was based on sociologists' determination of the needs of individuals, as well as the needs of a family structure.

Allowing several years for the elaboration of social questions prior to progressing to architectural design and construction, the experiment addressed the problem of the discrepancy between the actual practice of construction and the ideas of sociologists who often had to work on a *post facto* basis, analysing already constructed developments (see Chapters 1 and 2). The long-term development and well-funded research that preceded the development of industry design and construction, sought to change these dynamics and to put sociologists, rather than economists, at the

[1050] *Eksperimental'nye Zhilye Kompleksy (1977)*, pp. 23-25.
[1051] *Eksperimental'nye Zhilye Kompleksy (1976)*, pp. 10-29, 38.

head of the development.[1052] Kira Kartasheva recalls that never before had her department enjoyed such freedom to design housing layouts in line with their ideas: 'Dmitrii Zhivotov, the chief architect of the residential sector of the project, told us that he would be able to design any type of flat possible.'[1053] The *EZhK* stood out by giving *carte blanche* to sociologists to advance their understanding of a residential environment in an actually developed project.

The *(Ts)NIIEP* significantly expanded during the 1960s and 70s. Initially founded in 1958 as an institute for housing design with 100 employees, by 1981, it had evolved into a central institute responsible for large-scale city planning and international projects, with more than 1,700 employees.[1054] *Gosstroi* entrusted the institute to lead several 'grand construction sites'—among them, the industrial city of Togliatti, which was designed and constructed in less than a decade (1967–1976) to accommodate a population of 700,000. Lewis Siegelbaum described the methods involved in the design of these gigantic *tabula rasa* developments as 'technicist, scientific and intellectualised' high modernist planning.[1055] Globally, the 'rule of experts' in the functionalist planning of the twentieth century relied on enhanced social expertise and assumptions about residents' needs.[1056] In the *TsNIIEP*, social questions fell within the competence of the Sector of Sociological Research of the

[1052] Scientific conferences were planned in 1977 and 1978 to discuss social issues before the start of construction.
[1053] Interview with Kartashova, conducted by Author, Moscow (over Skype), 16 November 2017.
[1054] See statistics of cadres: Dykhovichnaia, *Lichnoe Delo*, p. 553.
[1055] L. Siegelbaum, 'Modernity Unbound: The New Soviet City of the Sixties', in A.E. Gorsuch and D.P. Koenker (eds.), *The Socialist Sixties: Crossing Borders in the Second World* (Bloomington, IN, 2013), pp. 70, 75.
[1056] On needs, see the collection: Cupers, *Use Matters*.

Typology and Standardisation Department (henceforth Sociological Sector). According to Rubanenko, the Sociological Sector had to 'find tools to translate the social parameters of family life into the architectural and construction parameters of the organisation of this activity in the living cell and back.'[1057]

Several generations of professionals contributed to the sociologic research in *TsNIIEP*. The first generation was represented by architects specialising in typological research, among them, Alexei Zal'tsman, whom we met in Chapters 1 and 2. Kira Kartasheva belonged to the second generation of sociologists. She joined *TsNIIEP* in 1959 and participated in the design of cooperative buildings in Akademgorodok, and later, in housing design for the Far North (projects discussed in Chapters 3 and 5). Among the specialists of this generation were Regina Mkrtchian and K. Krasil'nikova, who researched projects of serviced housing and the problems of housing 'small families' (Chapters 2 and 7).[1058] As we have seen in these chapters, since the late 1950s, the institute had the capacity to conduct sociological research and professionals were well aware of the real use and distribution of housing.

In 1968, Kartasheva was appointed head of the newly founded department of 'sociologic studies of housing' in *TsNIIEP*—what later became the Sociological Sector.[1059] Shlapentoch describes the mid 1960s as the 'golden age of Soviet

[1057] *Zhilaia Iacheika*, p. 6.
[1058] See: K. Krasil'nikova, 'Zhilye Doma-Kompleksy s Obshchestvennym Obsluzhivaniem' (Candidate's dissertation, TsNIIEP Zhilishcha, 1966), Mkrtchian, *Praktika Proektirovaniia*.
[1059] E. Fedorov, 'Kira Konstantinovna Kartashova', *Arkhitectura SSSR*, 3 (1979), p. 3.

sociology,' when many sociology departments emerged in the USSR and Soviet sociologists were finally able to publish their works.[1060] Even at this time, however, the autonomy of sociology as a discipline was questioned.[1061] According to Zaslavskaia, while sociology in general was still considered harmful and dangerous, there was an agreement that 'specific social studies' (*konkretnye sotsial'nye issledovaniia*) were necessary and useful.[1062] Most such studies were specifically oriented toward practical aspects of the social studies of Soviet families, leisure time, and 'time-budget studies.' While the sociologists of the 1960s—among them Gordon, Iadov, Kon, and Levada—significantly developed the understanding of Soviet society, their research rarely took into account the urban aspect of life. Kartasheva remembers that the aim of the Sociological Sector was specifically to address this gap by specialising in urban sociology. The department thus aimed to provide a link between architects, sociologists, and demographers, offering an analysis of the implications of built environments on social relations.

The Sociological Sector began offering systematic postgraduate education in urban sociology. In 1977, Kira Kartasheva started teaching the first course in urban sociology in the USSR, entitled 'Social principles of architectural design,' a course she continues to teach in *MARKhI* even today, more than forty years later.[1063] A younger, third generation of professionals—Zabruskova, Kiianenko and Ovsiannikova, who defended their candidate's dissertations in *TsNIIEP* in the

[1060] Shlapentokh, *The Politics of Sociology in the USSR*, pp. 33-39. On sociologists in the 1960s, see also: Firsov, *Raznomyslie v SSSR*, pp. 326-35.
[1061] See: Bikbov and Gavrilenko, 'Rossiiskaia Sotsiologiia', pp. 1-25.
[1062] Zaslavskaia, *Sotsietal'naia Transformatsiia*, p. 20.
[1063] Interview with Kartashova, conducted by Author, Moscow (over Skype), 16 November 2017.

1980s—thus received more fundamental education than the previous generation.[1064] These scholars published on the social implications of mass housing and residential built environments but were officially regarded as professionals in architecture and city planning. The Sociological Sector was thus one sociological department where, according to Frolic, social scientists were able to work 'disguised as architects, philosophers, ethnographers and city planners.'[1065] However, the work of the Sociological Sector on the sociology of housing nonetheless gained prominence, and its research was quoted by professional demographers.[1066]

Due to the lack of professional sociological education, the group of scholars in *TsNIIEP* developed their own methodologies. Importantly, scholars received a powerful regional infrastructure in the *TsNIIEP* system of zonal institutes (such as *LenZNIIEP*; see Chapter 5), which was helpful in conducting concrete sociological research throughout the territory of the USSR. This well-established hierarchical institutional system with branches in the republics and regions provided scholars with a picture of a variety of Soviet urban populations beyond Moscow. Kartasheva recalls that:

> … in the Moscow-based institute, we could do large-scale research involving regional institutes in Leningrad, Riga, or Ekaterinburg. Each zonal institute would participate in concrete demographic and sociological research. With our sanctions, they received data directly from housing management offices (*ZhKKhs*), which had

[1064] M. Zabruskova, 'Zhilishche Dliia Semei iz Dvukh Chelovek' (Candidate's dissertation, TsNIIEP Zhilishcha, 1980), K. Kiianenko, 'Tipologicheskie Osobennosti Gorodskikh Kvartin dlia Prostykh (Nuklearnykh) Semei s Det'mi' (Candidate's dissertation, TsNIIEP Zhilishcha, 1983), N. Ovsiannikova, 'Arkhitekturno-Prostranstvennaia Organizatsiia Sredy Dosuga v Zhilishche' (Candidate's dissertation, TsNIIEP Zhilishcha, 1990).
[1065] B.M. Frolic, 'Soviet Urban Sociology', *International Journal of Comparative Sociology*, 12/4 (1971), p. 234.
[1066] See, for example: Iankova, *Gorodskaia Sem'ia*, pp. 6-7.

all the details of all the individual tenants.[1067]

During the 1970s, among other sociological departments, *TsNIIEP* scholars almost completely dominated the field of Soviet urban sociology. The main body of research of the Sociological Sector was summed up in multiple publications, and in particular by a book entitled *The Living Cell in the Future* (*Zhilaia Iacheika v Budushchem*).[1068]

Analysis of these sociological works shows an increasing complexity in the development of 'user knowledge.' The concept of 'the family' was central for such Soviet 'user knowledge' in design and planning. Harris argued that since the Thaw, 'the family' was the one social group that 'cut across all other social divisions.'[1069] 'The family' as the 'unit of daily life and consumption' (*bytovoe, potrebitel'skoe soedinenie*) was also central to the Soviet planning apparatus.[1070] The basic distinction between 'complete' and 'incomplete' families, which underlay the distribution of housing in the late 1950s and the 1960s (discussed in Chapter 2), received further elaboration in these works. Focusing on 'the family' as the main distinction within housing distribution, *TsNIIEP* scholars drew an increasingly complex picture, trying to apply the concept to the Soviet population. By 1971, *TsNIIEP* acknowledged the need for fifteen different types of apartments, depending on family structure, in contrast to the ten types officially introduced in the norms. During the 1970s, the institute tended to extend the number of apartment types even

[1067] Interview with Kartashova, conducted by Author, Moscow (over Skype), 16 November 2017.
[1068] *Zhilaia Iacheika*. See also: *Zhilishchnoe Stroitel'stvo v SSSR*, ed. B. Rubanenko (Moscow, 1976).
[1069] Harris, *Communism on Tomorrow Street*, p. 12.
[1070] Collier, *Post-Soviet Social*, p. 81.

further, stressing the diversity and complexity of family structure and the corresponding design of housing types.

The institute introduced numerous apartment types for 'complex families,' small families, and elderly people, justifying them by their specific and varying family structure. In the 1960s, professionals operated with the term 'small families' (*malosemeinye*) to distinguish single people and families of two people from the 'normal' nuclear family, as we saw in Chapter 2. The category of 'small families' was reclassified in the 1970s. At this point, demographers assigned single people and childless couples to specific family types, which were defined as as 'deviant.' Soviet demographers operated with a standard model of the path of an individual's life, which evolved though a certain 'life cycle'—a sequence of stages in a person's life, in which they differed in function and role, following such events as marriage, childbirth, and others.[1071] The concept was based on the model of a heterosexual couple with a natural division of roles between partners. Demographers Gerasimova and Vasilieva both suggested defining families that did not follow the path of these standard 'life cycles' as 'deviant' (*otkloniauschshausie*). All single people, apart from young singles (*nesemeinaia molodezh'*) were classified as 'incomplete' families, under the broader category of 'deviant' families.[1072] The fact that professionals were explicitly operating with the concept of 'normal' as opposed to 'deviant' families revealed the high degree of 'compulsory heterosexuality' in their

[1071] E. Vasil'eva, *Sem'ia i Ee Funktsii* (Moscow, 1975), pp. 83-84.
[1072] Gerasimova, *Struktura Sem'i*, pp. 22-23.

thinking.[1073] The use of these categories suggests a great level of continuity with the previous practice; although professionals did develop a more complex taxonomy, it was still based on the categories used previously.

Typological research in *TsNIIEP* addressed these changing concepts. For example, special typologies were developed for families with members of different generations. The typologies proposed for such families resembled a fusion of two different flats with separate entrances in a single entity. Such a complex layout effectively allowed two flats to be considered as a single unit in the bureaucracy of housing distribution.[1074] The sector conducted experimental tests of housing for elderly people with special services and personnel.[1075] Kartasheva recalls that in an attempt to conceive of the Soviet population in terms of differentiated family categories, employees of the Sociological Sector distinguished five hundred possible types of families, which between them required seventy-four different types of apartment.[1076]

Observing the dramatic effects of the fast injection of labourers into Togliatti and other industrial cities, *TsNIIEP* scholars discussed ‘demographic waves,’ and argued that demography could not be studied statically. An understanding of the dynamics

[1073] Rich, 'Compulsory Heterosexuality', pp. 631-60.
[1074] 'Novyi Tip Gorodskogo Zhilishcha dlia Semei iz Trekh Pokolenii', *Arkhitektura SSSR*, 9 (1979), pp. 44-49. See also: V. Durmanov, 'Tipologiia Kvartir Dliia Semei s Pozhilymi Roditeliiami' (Candidate's dissertation, TsNIIEP Zhilishcha, 1978).
[1075] P. Rudakov, ‘Tipy Zhilishch dlia Liudei Preklonnogo Vozrasta na Poslednii Etap Stroitel′stva i Perspektivu’, in B. Brandenburg (ed.), *Tipologiia Massovykh i Spetsializirovannykh Tipov Zhilishcha* (Moscow, 1978), p. 83.
[1076] Interview with Kartashova, conducted by Author, Moscow (over Skype), 16 November 2017.

and the evolution of 'the family' was informed by sociologists, and primarily by the work of the famous sociologist Leonid Gordon and his concept of 'life cycle stages' (*etapy zhiznennogo tsykla*).[1077] *TsNIIEP* scholars researched these dynamics as applied to housing. According to this research, during the forty-three years of the life of a 'typical (average) family,' their housing spatial requirements changed eight times and each time required relocation.[1078] Platonov, a *TsNIIEP* specialist in typological research, wrote: 'accounting for family structure and its possible evolution allows us to develop apartment types that would have been convenient for many years, despite some changes in the family occurring during this time.'[1079] *TsNIIEP* sociologists eventually distinguished seven life cycle stages of the family, which they proposed to address in planning.[1080] In the view of these experts, housing distribution under the command economy would have to provide a flat not just once, but would also have to further exchange it when a family moved into a new 'life cycle stage.'

The social expertise of *TsNIIEP* was informed by the discourse of a mature socialist identity (*lichnost'*).[1081] The 1970s saw a shift in sociology towards this *lichnost'*, which was projected into housing design as well.[1082] Mikhail Posokhin stressed that architects involved in housing construction had to 'care for every family, every

[1077] L. Gordon, V. Klopov, and E. Gruzdeva, *Etapy Zhiznennogo Tsikla i Byt Rabotaiushchei Zhenshchiny* (Moscow, 1972). See also: Vasil'eva, *Sem'ia i Ee Funktsii*, pp. 81-100.
[1078] *Zhilaia Iacheika*, p. 60.
[1079] Gerasimova, *Struktura Sem'i*, p. 23.
[1080] *Zhilaia Iacheika*, pp. 62-63.
[1081] See discussion of *lichnost'* in Kharkhordin, *The Collective and the Individual*, pp. 184-89.
[1082] On the new generation of sociologists—Grushin, Iadov, Zdravomyslov, and Shubkin—see: H. Pilkington, *Russia's Youth and Its Culture: A Nation's Constructors and Constructed* (London, 1994), p. 71.

citizen who lives in a residential complex. … Each family should be able to obtain their required flat layout. Assume that one of the family members is a musician or a scientist who needs an isolated working room.'[1083] *TsNIIEP* expertise employed Iankova's classification of families, which apart from factoring in a family's structure and members' age, also took 'lifestyle' into account.[1084] Hence, the sociological and demographic research of the *TsNIIEP* unveiled a complex picture of the social questions underlying housing distribution. Summarising the aforementioned points, in 1978 Kartasheva wrote that housing should be planned, taking into consideration the socio-demographic characteristics of the population and of families, as well as the peculiarities of everyday life and the value orientations of *lichnost'.* Since these variables were not static, housing should be planned as a flexible organism evolving over time.[1085]

The programme of the Soviet-German *EZhK* was devised by the Sociological Sector and informed by the concepts described above. Theoretically, the development's planning took into account a fantastic number of variables, including family types and their dynamics. The design of the *EZhK* had to be based on the 'spatial interpretation of the characteristics of the everyday life of *lichnost'*, given its evolution over the life cycles.'[1086] Designing for actual residents and taking family dynamics into consideration increased the overall complexity of planning,

[1083] Posokhin and Dubek, *Eksperimental'nyi Zhiloy Rayon*, pp. 28, 35.
[1084] Iankova, *Gorodskaia Sem'ia*, p. 184.
[1085] K. Kartashova, 'Sotsiologicheskie Issledovaniia Zhilishcha Kak Osnova Ego Prognozirovaniia', in B. Brandenburg (ed.), *Tipologiia Massovykh i Spetsializirovannykh Tipov Zhilishcha* (Moscow, 1978), pp. 21-22.
[1086] RGAS, f. 149, o. 1-1, d. 1389, l. 9.

which had to be addressed with cybernetic computation.[1087] With cybernetics, architects sought to address all necessary data about the prospective residents, which would take into consideration the whole complexity of social, economic, and technical parameters in order to design typologies in the best interests of the complex's residents.

The discourse of intensification was formed by the projection of residents' needs beyond their apartments and into the environment of the residential complex as a whole. In the pursuit of an ambition to 'rationalise the main life cycle processes,' intensification would be achieved by taking housekeeping shortcuts and simplifying main processes (such as meals, healthcare, and childrearing), thus boosting labour productivity and amplifying spare time. Informed by the wider discourse concerning everyday life (*byt*) under socialism, intensification reflected an ambition to base the economy on time rather than on a surplus economic product. Late Soviet times thus saw the proliferation of 'time-budget' studies as a measurement of human behaviour, which gained prominence in the works of Leonid Gordon.[1088] Based on Gordon's works, the architecture of the *EZhK* intended to enhance residents' 'off-work time' (*vnerabochee vremia*), e.g. time spent on household obligations, personal needs, and leisure (Fig. 9.1). Intensification in the *EZhK* relied on the availability of services and high-tech technology and automatisation. This technological futurism was expressed in automated dispatching services, automated

[1087] *Eksperimental'nye Zhilye Kompleksy (1976)*, p. 38. Actual calculations were carried out in *TsNIIEP*: RGAS, f. 149, o. 1-1, d. 1586.
[1088] See: L. Gordon, *Chelovek Posle Raboty: Sots. Problemy Byta i Vnerabochego Vremeni* (Moscow, 1972). See also: J. Zuzanek, 'Time-Budget Trends in the USSR: 1922–1970', *Soviet Studies*, 31/2 (1979), pp. 188-213.

mail delivery to residents' flats, and a system of pneumatic waste disposal, which would automatically propel waste to a single recycling facility.[1089] In this liberating view, technology was believed to unleash human creativity, comradely assistance, and leisure activity.

In contrast to the method of 'social experiment,' discussed in Chapters 7 and 8, the rhetoric of *TsNIIEP* scholars focused on interpreting existing social structures rather than engineering new ones. The works of Leonid Gordon and other professional demographers and sociologists interpreted communist society in terms of diversity rather than homogeneity, arguing that, 'to the extent that every family is unique, its household is adjusted to the habits, tastes, and temperaments of its members.'[1090] In housing design, the tendency for personification and a concern with individualism were expressed through the ambition of rational and systematic comprehensive planning.[1091] Housing design was perceived as a rule-based parametric system, aimed to account for the diversity of residents and their underpinning social conditions, expressed in techno-scientific discourse. Architectural historians have attributed this rule-based architectural design to a global phenomenon of architectural structuralism. Architectural structuralism emerged in the 1960s, yet in non-socialist societies, already by the 1970s, it had been mostly swept away by the values of individuality introduced by postmodernism.[1092] The project of the *EZhK*

[1089] *Neue Wohnkomplexe in Der DDR Und Der UdSSR: Gemeinsame Veröff. Der Projektmaterialien U. Wiss.-Techn. Grundlagen Der Planung U. Projektierung Der Neuen Wohnkomplexe in Magdeburg (DDR) Und Gorki (UdSSR)* (Berlin and Moscow, 1987), p. 179.
[1090] Sociologists L. Gordon and E. Klopov, cited in G. Lapidus, *Women in Soviet Society: Equality, Development, and Social Change* (Berkeley, 1978), p. 244.
[1091] On late Soviet techno-scientific discourses involving cybernetics, see: West, 'Cybersovietica'.
[1092] T. Valena, T. Avermaete, and G. Vrachliotis, *Structuralism Reloaded: Rule-Based Design in*

may suggest a different trajectory in the Soviet context. The discourses of architects from the central Moscow-based institute for housing design demonstrate that Soviet experts in the 1970s did not confront the logic of the rejection of modernism prevalent in these years in non-socialist societies. Rather, they were confident in designing and planning adequate housing for mass production in the command economy.

Implementing a complex experiment in Nizhnii Novgorod

According to Valery Ostretsov, the architect of the *EZhK* in Nizhnii Novgorod (and now a chairman of the board of the *TsNIIEP*), the central aim of the Soviet-German cooperation was to develop a systematically new housing delivery system that could be used to upgrade housebuilding factories in both countries.[1093] Cooperation with the GDR had to address problems with upgrading the GDR factories. There were no less than twenty-two '*Plattenbau*' housebuilding factories associated with Soviet technologies in the GDR.[1094] While in the 1970s, Western Europe and US urban experts became increasingly sceptical about large-panel prefabrication, the Soviet Union and its main allies continued to produce housing industrially. Ultimately, the experiment needed to demonstrate that the large-panel housing industry could be retooled for the flexibility required by post-functionalist urbanism.

As noted in the introduction to Part 3 of this thesis, Soviet architects and engineers

Architecture (Stuttgart, 2011), pp. 14-15.
[1093] Interview with V. Ostretsov, conducted by Author, Moscow, 26 August 2018.
[1094] Ibid.

developed an approach to standardisation (*tipizatsiia*) based on modular industries, in the hope of allowing the design of buildings with unique architecture while maintaining the procedures of off-site fabrication. As part of the *EZhK* project, the *TsNIIEP* developed its own project of a modular industry, which was more ambitious than previous developments. The project of the Architectural-Construction-Technological System (*AKTS*) was a highly flexible system, which would be implemented on the scale of the whole country. In contrast to previous developments, which each had their own building code, the *TsNIIEP*'s ambition was to establish a single building code at the union-wide level.[1095] There were hundreds of housebuilding factories in the USSR, each adapted to local climatic and seismic conditions. The idea behind *AKTS* was to introduce a single modular industry, which would synchronise regional factories, creating a uniform 'material-technical base' over climatic zones. This infrastructure would allow the production of unique, localised architectural designs of both residential and public buildings based on the uniform catalogue of prefabricated components. The system was designed to facilitate long-distance production of architectural designs and offer better interdisciplinary and transregional coordination in their implementation. Being adapted for different climatic zones, *AKTS* was thus envisaged as a project for an industry on an all-union scale or, counting overseas developments, even a worldwide scale.[1096] As it was a universal modular system, it was opposed to the previous approach of designing singular experimental housing complexes, which

[1095] *Arkhitekturno-Konstruktivno-Tekhnologicheskie Sistemy Krupnopanel'nogo Domostroeniia (AKTS KPD)* (Moscow 1984), p. 4. See also: *Osnovnye Polozheniia Arkhitekturno-Konstruktivno-Tekhnologicheskikh Sistem (AKTS) Krupnopanel'nogo Domostroeniia* (Moscow, 1983).
[1096] Litskevich, *Zhilishche i Klimat*, pp. 39-40.

we discussed in the beginning of this chapter.[1097] The ambition to design a comprehensive industry could be justified by the broad institutional geography of the *TsNIIEP*, and previous experience with the I-464 system, discussed in Part 2 of this thesis. The system was projected for mass implementation in 2000 and the *EZhK* in Nizhnii Novgorod was its experimental test.

The *TsNIIEP* developed a particular experimental housing typology, the E-600, to address the complexity of the *EZhK*'s social programme.[1098] E-600 was designed as a large-panel building system based on the *AKTS* principles. It consisted of a large catalogue of prefabricated components designed for maximum flexibility of the resulting buildings (Figs. 9.2, 8.3). The system was used to create the most meticulously planned living environment in the history of Soviet housing design. Its application in the *EZhK* was based on demographic and sociological requirements, as well as concrete demographic situations. Kartashova organised meetings and surveys of the future residents of the development—people on the housing waiting list—to identify their 'family structures' and perceived needs.[1099] Dmitry Zhivotov designed numerous apartment types according to a complex classification with twenty-three types of families, depending on structure, marital status, and number and sex of children.[1100] Alongside the apartments for 'complete' families, the catalogue also listed 'transitory' dwelling types for single people and newlyweds with a certain range of communal facilities. There was a special housing stock

[1097] See critique of housing complexes: *Eksperimental'nye Zhilye Kompleksy (1977)*, p. 15.
[1098] See the blueprints in *TsNIIEP* archive, inv. 2628, 2646, 2844, 2687.
[1099] Interview with Kartashova, conducted by Author, Moscow, 26 March 2018.
[1100] *Neue Wohnkomplexe*, pp. 199-200.

reserved for elderly people and invalids. A separate set of buildings with large flats were designed for 'complex' households with members of three generations living together. Such apartments provided private spaces for different generations, as well as common space where the entire family could gather.[1101] Addressing concerns about the dynamics of family across life cycle stages, the *TsNIIEP* developed apartment types with movable internal walls, so that future inhabitants had absolute freedom in shaping rooms for their need.[1102] For example, for a family with two children, architects suggested dividing a room at night with a movable wall and removing it during the day. Yet the perceived complexity of social structure created redundant material implications, since as many as sixty-eight separate dwelling types were designed and examined as part of the project.

The discourse of intensification of the residential environment was also built upon a solid technological and systematic base of standardisation. The systematic approach in design went beyond residential blocks to the whole residential area. The district was designed according to a uniform modular system, with full standardisation of reinforced concrete, wood, and steel components. All housing was based on 650 individual industrially prefabricated component types; the whole district required around 1,000 component types in total.[1103] With such total standardisation, the project of the *EZhK* demonstrates the *TsNIIEP* experts' commitment to normification as a way of enhancing planning and centralised distribution. The

[1101] *Eksperimental'nye Zhilye Kompleksy (1977)*, p. 177.
[1102] RGAS, f. 149, o. 1-1, d. 1871.
[1103] *Neue Wohnkomplexe*, p. 220.

district was envisaged as scientifically organised and rationalised by comprehensive systematic planning. The *TsNIIEP* continued such planning even into a period when the inefficiencies of the command economy were obvious to both specialists and the general public alike. Discussing similar architectural and design projects, Diana West suggested that in the late Soviet times, professionals often used techno-scientific discourses as camouflage, which helped promote their projects and shelter them from hostile criticism.[1104] Yet, this might not be the case in the *EZhK* project. The efforts invested in this project suggest that professionals did not just consider it to be rhetorics, but rather held a genuine ambition to implement a scientifically grounded structure in actual construction.

The residential development of the *EZhK* was relatively sophisticated in terms of architectural quality (Fig. 9.6). Structures of different sizes formed united residential areas located on the shore of a lake. Housing for complex families consisted of apartments with terraces and private plots of land. The residents of the first floor had access to their apartments through their own private gardens. Architecturally, this development had clear references to Neave Brown's Alexandra Road estate in London. While typologically resembling this famous brutalist residential estate, the fundamental difference in the *EZhK* was its systematic design and production linked with industry. The development was perceived as a model that could be replicated elsewhere.

[1104] West, 'Cybersovietica', pp. 7-11.

As mentioned earlier, the *EZhK* project included more than fifty separate experiments. These experiments concerned architecture, territorial planning, façade articulation, and technical issues. They were organised into four clusters: (1) the architecture and planning of the district, beautification, and utilities; (2) housing design, construction, and typology; (3) the architecture and typology of public buildings; and (4) the technology of housing delivery and the management of the construction process.[1105] Developments which involved significant research within these groups were organised into twelve 'complex experiments.'[1106] Each complex experiment consisted of several more specific experiments, and implied the need for fundamental research and development. The work involved in these experiments was carried out by large interdisciplinary groups of specialists, often drawn from various institutes.

The implementation of the *AKTS*-based modular building system was one of these complex experiments, involving the design and construction of a specialised housebuilding factory. Fourteen engineering companies in Nizhnii Novgorod, Moscow, Leningrad, and Kiev participated in the development of non-standard equipment for this factory.[1107] In late Soviet times, transdisciplinary cooperation on such a scale was rarely possible without being sanctioned and coordinated by top officials. Studies on the Soviet economy identify the scarce incentives to produce

[1105] *N-Tekh Itogi Vnedreniia v Stroitel'stvo EZhK v Gor'kom i v Massovoye Stroitel'stvo Rezul'tatov Sovmestnykh s GDR Rabot. Doklad ot SSSR* (Moscow, 1988), pp. 5-11.
[1106] *Sotsial'nye Problemy Arkhitektury Zhiloi Sredy*, p. 14.
[1107] W. Lebedow, 'Zur Investitionsvorbereitung Des Großplattenwerkes Für Den Experimentalwohnkomplex in Gorki', *Architektur der DDR*, 27/10 (1978), p. 628.

technological innovations as one of the major weaknesses of this period.[1108] Yet experiment, in late Soviet times, was established as a systematic, funded, and interdisciplinary method of introducing industrial innovation.

Such instrumentalisation of experiments in the project of the *EZhK* was not limited to the sphere of architecture and construction. The third 'complex experiment' regarded research and development in the socio-pedagogical sphere, headed by *TsNIIEP*, for educational buildings with the aim of developing new types of schools, pre-school institutions, and facilities for further education. The institute designed innovative typologies of all educational buildings based on the 'latest research in pedagogical science,' in cooperation with educational, paediatric, and health institutes. Instead of traditional pre-school facilities, the institute proposed implementing 'combined' or 'cooperated' facilities uniting both nursery and kindergarten in a large cooperative complex.[1109] Such combined facilities facilitated the sharing of common halls and allowed additional space for new services, such as preparatory sections for school.[1110] For schooling, the institute proposed an experimental 'high capacity school complex' for 1,600–2,352 students, as the most economical and productive solution. This building combined two schools with 30 classes and 1,098 pupils each, connected by a shared school centre with administrative, medical, and school facilities.[1111] Construction on a school named after the German communist writer Erich Weinert began in 1983 and was completed

[1108] Hanson, *The Rise and Fall*, pp. 20-21, Allen, 'The Rise and Decline of the Soviet Economy', pp. 866-67.
[1109] See: Gradov, 'Nauka–Eksperiment–Proektirovanie–Massovoe Stroitel'stvo', p. 6.
[1110] A. Grischin, 'Probleme Der Projektierung Von Gesellschaftlichen Bauten', *Architektur der DDR,* 27/10 (1978), p. 625.
[1111] Ibid., pp. 625-27.

in 1987. This school occupies a total territory of 36,983 m^2, making it the largest school in Russia even today (Fig. 9.7c).[1112]

The tendency of gigantism in these experimental typologies corresponded to ambitions for the intensification and rationalisation of education processes. Importantly, their development in *TsNIIEP* was closely related to the development of corresponding amended schooling programs.[1113] Special programmes were developed for nurseries, which intended to introduce parents' participation into the process of upbringing. The relation between 'experimental' architectural typologies and educational programs is a subject for further research; however, looking more broadly at the history of Soviet education, similar dynamics between experimental and standard school education are evident in the late Soviet period. Experimental schools, which used non-standard curricula, formed a separate category. In the 1950s there were 40 experimental secondary schools in the USSR, coordinated by the Academy of Education.[1114] According to Kukulin, Maiofis, and Safronov, educational experiments in the USSR were 'one of the few opportunities for social action that made it possible to form an author's model of the future. … School-pedagogical experiments were niches for many socially active and creative people who, in the conditions of democratic societies, could have found for themselves different forms of self-realization and become politicians, social activists,

[1112] 'Opisanie Obrazovatel′noi Organizatsii' https://school176.edusite.ru/p368aa1.html (25 November 2018).
[1113] The *TsNIIEP* for educational buildings designed schools following school curricula: e.g. the institute reported it was unable to design a school for Mongolia, since the curriculum for this country was not yet developed. See: RGAE, f. 5, o. 1, d. 843, l. 47.
[1114] 'Eksperimental′nye Shkoly', Pedagogicheskii entsiklopedicheskii slovar′

journalists, or businessmen.'[1115] Hence the discourse of experimentation was not specific to the architectural and housing industry in the USSR but present in the sphere of pedagogy as well.

The ambitions of the authors of the *EZhK* in Nizhnii Novgorod went far beyond the development of a single district. Being established as a site for the test of experimental methods, the district functioned as a showcase of architectural and technical innovations at the international scale. The delegation of GDR architects and engineers, who participated in the German side of the project, visited the factory and the site in 1985 (Fig. 9.4).[1116] Visits of international delegations to the sites of experimental construction became common practice on the level of *Comecon*.[1117] The organisation widely promoted the 'exchange of experience in experimental construction' as a way for coordinating research and development in the construction sphere.[1118] Joint international experiments in the sphere of construction also became widely used in international cooperation. Apart from the Soviet-German experiment, there were also joint Soviet-Polish and Soviet-Romanian experiments.[1119] The reciprocal influence of Soviet and German urban expertise in the *EZhK* project, as well as the exchange of Soviet, Polish, and

[1115] *Ostrova Utopii: Pedagogicheskoe i Sotsial'noe Proektirovanie Poslevoennoi Shkoly (1940-1980-e)*, eds. I. Kukulin, M. Maiofis, and P. Safronov (Moscow, 2015), p. 11. As an example of an institualised experimental education, the authors emphasise the phenomenon of 'special schools for gifted children focused on mathematics' (*shkoly s matematicheskim uklonom*), which emerged during the Thaw. See M. Maiofis and I. Kukulin, '*Matematicheskie Shkoly v SSSR: Genezis Institutsii i Tipologiia Utopii*,' in Ibid, pp. 241–316.
[1116] See photos in GASDNO, f. 29, o. 3, d. 944.
[1117] The Council for Mutual Economic Assistance was an economic organisation that existed from 1949 to 1991 under the leadership of the Soviet Union. It comprised the countries of the Eastern bloc along with a number of communist states elsewhere in the world.
[1118] *Comecon* commission for construction: RGAE, f. 302-2-481, l. 129, 132–33.
[1119] Kartashova, *Nauchno-Tekhnicheskoye Sotrudnichestvo*, pp. 11-12.

Romanian insights in other projects, is likely to have been significant and to have had a lasting effect to the present day; yet this is an area that still requires more in-depth research.

The whole process of the construction of the *EZhK* took over fifteen years. The housebuilding factory was completed only in 1985 (Fig. 9.5).[1120] The first building in the district was delivered in 1987, while other buildings were completed after the collapse of the Soviet Union. Not everyone in the queue was able to get an apartment. The collapse of the planned economy undermined initial plans regarding the distribution of apartments. Further, infrastructure and public services were constructed in a less ambitious manner than in the initial design. The use of the district in post-Soviet times also diverged from the initial logic of designers; the private plots of land designed for 'complex families,' for example, were used to build private extensions in a plurality of methods of vernacular architecture (Fig. 9.9b).

After the completion of the *EZhK,* the architectural community in Nizhnii Novgorod gained a new type of prefabricated system at their disposal, which came to be the main alternative to the I-464. Designing residential projects, architects would often develop two variants of their designs, one with I-464 blocks and one with panels from the experimental factory.[1121] The distinction between the two types of panels—those of the I-464, which marked the eve of Soviet industrial

[1120] Factory no. 4. See photos in GASDNO, f. P-29, o. 3, dd. 934, 936, 939, 943.
[1121] For example: GASDNO, f. P-20, o. 1-4, d. 284, l. 2.

construction, and those of the E-600, the last industrial project—is visible in the town to this day. Curiously, another alternative to the standard public housing development in Nizhnii Novgorod was also a 'social experiment'—a self-help project Youth Residential Complex (*MZhK*), constructed in Nizhnii Novgorod during perestroika.[1122] The buildings of the *MZhK* were assembled with panels produced in the experimental factory.[1123] The buildings adhere to the comprehensive all-union modular system *AKTS*, which was however never fully implemented.

Conclusion

The experimental district Meshcherskoe Ozero, still under construction in 1992, was the last large-scale experimental housing development conducted by the *TsNIIEP* in Soviet times. Significant progress can be observed when this last project is compared with the I-464, developed on the eve of industrialisation. As the last residential project of the *TsNIIEP*, the *EZhK* demonstrates a consistency in the theory of urban development. Until the end of the Soviet period, the *TsNIIEP* showed a commitment to functionalist modernist design and planning. In the time of 'stagnation,' when the inefficiencies of the command economy were obvious, the *TsNIIEP* succeeded in designing remarkable developments using funding for experimental construction. With visible top-down power dynamics, experiments established an important niche to conduct relatively liberal research and development, and enable an otherwise unfeasible level of interdisciplinary

[1122] On the *MZhK*, see: 'Na Chernigovskoii Ne Khuzhe, Chem v Londone', *Zhilishchnyi vopros* [Nizhnii Novgorod], 9 (26) (18 June 2012).
[1123] GASDNO, f. P-20, o. 1-4, d. 284.

cooperation. The *EZhK* also reveals consistency in terms of theory about social structure; research for the project included earlier findings and categories developed by the institute during the period examined by this thesis. None of the categories regarding family structure were abandoned; rather, concerns about geography and social questions were also introduced to create a single coherent system.

Architecturally, the residential area of *EZhK,* as I mentioned earlier, resembled the brutalist residential estates of the 1950s and 60s. But in contrast to such estates, the *EZhK* was designed on the basis of a coherent industrial foundation. The architecture of the *EZhK* continued to be interpreted as an integrated part of other territorial systems (including the building industry, infrastructure, social services, and green spaces) and as part of social planning. The *EZhK* in Nizhnii Novgorod was understood not as a single residential development, but as a model for a serial standardised project, meticulously described and supported by a complete list of elements required for its production and guidelines for its assembly. Based on the results of the experiment, the *TsNIIEP* produced methodological guidelines for the design and planning of the residential areas and the development of the new standards.[1124] In this sense, this 'complex experiment' can also be seen as the fulfilment of a model of experimentation followed by standardisation. The project was intended to serve as a model for the urbanism of the future, even if this future never arrived. The ambitious project of modular industry was unsuitable for the fragmented and atomised post-Soviet urbanism.

[1124] *Neue Wohnkomplexe*, pp. 272-73.

This case study suggests that in late Soviet times, the main problem was not the lack of experiments but the inability to implement them in industry. As in the example of Nizhnii Novgorod, the continued production of the outdated I-464 system indicates the rigidness of industrial housing delivery in this period. In spite of significant progress during the thirty years of research and development, lots of factories were still associated with those technologies developed at the very dawn of the industrialisation of the construction industry. The Soviet housing industry ignored many innovations in favour of holding on to previously mastered technologies.

The projects discussed in this and the previous chapters reveal two very different trajectories in the evolution of experimental housing. The project of the *EZhK* was articulated in progressivist techno-scientific discourses inspired by cybernetics, which were strikingly different from the collectivist utopia of 'social experiment' discussed in Chapters 7 and 8. Both approaches seek to address imbalances endemic to late Soviet economic decline. The first relied on meticulous planning; the second on self-help and the diminished role of the state. Both projects reveal the interdisciplinary nature of the category of experiment. In the afterword, we will analyse experiment—beyond architecture and construction—in more detail.

Conclusion and afterword: What was the experiment in the late Soviet Union?

Based on a number of case studies, this thesis shows that the term ‘experiment’ was attached to various projects of dissimilar natures. Experimentation, as a category with technical underpinnings, included the mastering of new industrial construction methods, the solving of technical problems, and the testing of new building materials and prefabricated components. As an architectural practice, experiments were related to typological research into the design of new building types and appropriate typologies for various groups of population and various families. Experimental buildings constructed as prototypes were placed under professional and public scrutiny which involved, and served as models for, pre- and post-occupancy studies. Further, experiments went far beyond the development of singular buildings and involved the much wider planning of micro-regions, or even of complete settlements. The designation of special sites for experimental development shows an ambition to concentrate multiple experiments of various types in one location. Such ‘experimental micro-regions’ sometimes functioned as real-life experiments, where social processes were placed under sociologic scrutiny. Based on observations and internal criticism of experimental prototypes, subsequent standard projects were tweaked and improved. In the late Soviet period, while maintaining and expanding the previous developments, experiments gained a new meaning, and turned to address the social aspects underlying the distribution and maintenance of housing. Professionals attempted to experiment with effective planning schemes, as well as with forms of public services and residents’ everyday

life (*byt*). The discourse of experimentation was used to explore participatory practices in housing construction, and actively involve residents in the running of their own residential development. In the hand of sociologists, the experimental method was articulated with the language of positivist science, and gained a theoretical basis and elaborated methodology.

Following the discussion of these various projects, it is informative to identify more general conclusions about the specifics of experimental practice. What was the role of experiment in the late Soviet Union? Some of the discussed aspects of experimental development look pervasively global. From the beginning of the 20th century, experimentation was seen to be an important method of development in industrialised architecture as a whole. In the words of Bergdoll, at the core of the history of prefabricated architecture is '*experiment*, born from the union of architecture and industry.'[1125] It was in this context of industrialisation and the pursuit of cost-efficient solutions, that Khrushchev's 1955 reforms brought experiment to the fore of the spheres of architecture and construction. Yet, experiment should not be seen merely as the application of global practices of modernist architecture to the Soviet context. Rather, Soviet experimental practice gained quite peculiar specifics due to the socialist economic and political-administrative system.

With the priorities of cost-efficient and rapid industrial construction introduced by

[1125] Bergdoll, Christensen, and Broadhurst, *Home Delivery*, p. 12. also cited in Smith, *Prefab Architecture*, p. 3.

Khrushchev's reforms, large budgets were channelled into experimental construction. From the individual practices of the 1930s, experimentation evolved into an institutional activity and shaped a particular institutional setup of scientific experimental design institutes, which functioned in the USSR until 1991. These design institutes, operating in tight connection with the construction industry and economic and planning institutions, remained the main units of Soviet architectural production. Special budgets channelled into these institutes for experimentation and planning placed the practice of experimentation in a privileged position. Within the Soviet institutional system, experiment came to be established as a crucial vehicle for innovation and problem-solving. It enabled increased planning, conceptualising, testing, mastering, and implementation of innovations in Soviet design culture. Due to the pervasiveness of the institutional setup of scientific design institutes, experimentation shaped production in the Soviet architecture and construction industry to a far greater extent than in foreign countries.

Innovations in the industry required long-term investments but did not necessarily offer definite results. Sometimes professionals deliberately used the rhetoric of experimentation to create initially singular enterprises that were expensive and highly customised. Some examples demonstrate a more pragmatic use of such rhetoric to bypass state norms. This evidence suggests not only a level of individual defiance against the system, but also signals the niches of autonomy created within it. It confirms that the market of innovation was run by experts from different spheres. Such experts conducted a relatively liberal discussion under the label of

experimentation on various levels. Experiments are often discussed predominantly in specialised terminology, used by professionals; however, the ‘social experiment’ we examined in Chapters 7 and 8 was prolifically discussed in the public sphere, as it was given detailed scrutiny in the press. In these publications, experimentation was instrumentalised as a vehicle for the discussion of the socialist way of life. Chapters 4, 5, and 6 demonstrated that not only metropolitan but also regional actors sometimes found themselves in favourable positions within the discussion around experimental projects.

The concept of experimentation has often been used by architectural historians to emphasise the revolutionary nature of architectural projects. Evidence presented in this thesis, on the contrary, suggests that experimentation in Soviet design practice was neither radical nor revolutionary, rather had an aim to develop and expand existing system of housing delivery. The eventual goal of any experiment was the definition of norms and the establishment of standardised or typical solutions. Despite the fact that some experiments were considered failures and cancelled, the general findings presented in this thesis support the argument that the practice of experimentation most often led to standardisation. Experimental prototypes of various types extended the catalogues of standard designs. Even the social project of participatory construction and maintenance of housing was eventually converted into a standardised kit of manuals intended for further replication.

Diverse types of experiments were used to revise, amend, and complement the

existing set of standardised solutions. Most experiments sought to introduce new elements into the existing system, and by doing so, reinforce the system, rather than to propose its cardinal alternative. This thesis has revealed multiple path-dependencies between new experimental models and previously developed projects and technologies. In this way, experimentation in Soviet architecture should not be seen as an attempt to break with existing practice and dismantle the existing system. Rather, it was an evolving and balancing method of problem solving. We have seen in this thesis that new industrial production lines for housing were developed in such a way as to facilitate the upgrading of existing housebuilding factories. Sociological notions about families, introduced in experimental housing projects in the 1970s, built upon and expanded concepts from the 1950s. In regional experiments, a major point of experimental practice was in the emphasis upon the adaptability of Soviet housing delivery for any given location. Experimentation in Soviet housing was meant to make the system of housing delivery technologically more adaptable, architecturally more diverse, and adaptable for various climates and social conditions, while at the same time maintaining coherent visions of industry, planning, and architectural standards and norms.

In this thesis, experiment has been discussed as an integrated approach to development, which took into account the specifics of those spheres adjacent to architecture: planning, economics, and the construction industry.[1126] The envisaged aim of the Soviet project was to develop a total system of production within the

[1126] More generally, on prefabrication as integrated practice: Smith, *Prefab Architecture*, chapter 3.

Soviet system, adaptable to any regional and social condition, specifically differences in labour and infrastructure. It was never seen as a static goal, but rather as a constantly evolving system. This thesis claims that the development of Soviet housing took place through a constant process of experimentation. The Soviet architectural and housing delivery spheres never abandoned experimental method as their main method of housing development.[1127] Even during the final years of the Soviet Union, scientific experimental institutes continued to work on future models of housing and the housing delivery industry, even if this future never came. Despite the slowdown of the late Soviet economy, the experiment in housing development only increased in scale and complexity.

The final two chapters of this thesis have emphasised the interdisciplinary nature of experiments held in the sociological and pedagogic spheres and highlighted the fact that experimentation was not limited merely to the architectural sphere. A focus on experiment may have been an effective way to strive for development and innovation within the command-administrative system in other disciplines too. The afterword that follows now considers the wider context of such a discourse of experimentation beyond the spheres of architecture—in the economy and in industrial and cultural production. Looking at secondary sources, books, and press, I will advance several general conclusions about experiment in the late Soviet Union.

[1127] Dikhter demonstrates that experimental development preceded each stage of the development of mass housing delivery. Dikhter, *Kvartira Moskovskoi Sem'i*, p. 22.

Afterword: last Soviet experiments

Kosygin's reforms were inspired and devised by professionals in scientific economic and mathematics institutes, who proposed solutions for the modernisation of planning procedures, through a better study of society, and more complex planning based on programming, systems engineering and computation. The Moscow-based Central Economic Mathematical Institute (*TsEMI*), among other institutes, formed dedicated 'experimental laboratories', which focused on research in theoretical economics. This institutional environment created a safe space for professionals to test various types of economic levers and to simulate market economies in a controlled virtual environment. By these means, research projects pledged to create incentives in order to increase labour productivity.[1128] The institutional environment also came to be a safe space in which topics such as 'profit', 'value', 'bonuses', 'credit', and 'market'—ideas highly feared by Marxist economists—could be introduced and discussed.[1129]

Not only did the reforms offer opportunities for economists and mathematicians; they also had practical implications. Experimental methods of planning, financing, and raising labour productivity could be translated into action, as solutions to address practical economic and organisational problems. Beginning in the mid-1960s, Soviet officials designated experimental status to enterprises in various

[1128] On the role of *TsEMI* in Kosygin reforms, see: Ellman, *Planning Problems in the USSR*, pp. 181-84. See also: A. Katsenelinboigen, *Soviet Economic Thought and Political Power in the USSR* (New York, 1980).
[1129] See: G. Cadioli, 'Soviet Economic Thought and Economic Policy in the 1940s: Influence on 1950s-1960s Reforms' (D.Phil. Thesis, University of Oxford, 2018).

spheres of industry, allowing them to deviate from the general norms of the nonmarket economy.[1130] For example, an 'experiment' held in the Shchepkin plant sought to boost labour productivity by intensifying the work process.[1131] The main idea of this experiment was to create a particular system of 'economic incentives' and higher wages for the workers. After releasing a number of workers, the enterprise distributed the surplus budget among the remaining workers, who 'took responsibilities to work with more determination'.[1132] This experiment was thus allowed to surpass the general norm of equal wage distribution. Similar 'economic experiments' were run at several Soviet enterprises and collective farms, which allowed them to set prices for their production and redistribute part of the profit among their employees.[1133] Experiments meant that the enterprises became economically accountable and were able to manage internal investment decisions. Yet, the label of experiment limited their scope by setting particular boundaries and a temporary status, which could be revoked at any time.

Kosygin's experiments were not limited to economics; they similarly emerged in cultural production. Film director Grigori Chukhrai proposed to introduce *khozraschet* self-sufficiency schemes into cinema production, where the studio would receive funding based on the popularity of its films, rather than on the planned number of films produced. Securing support from Kosygin, Chukhrai

[1130] See experiment at Shchewchenko chemical works: M. Harrison, 'Economic Growth and Slowdown', in E. Bacon and M. Sandle (eds.), *Brezhnev Reconsidered* (Basingstoke, 2002), p. 61. Some of the experiments, elaborated in *TsEMI* gained a direct translation into action: Ellman, *Planning Problems in the USSR*, p. 125.
[1131] Arnot, *Controlling Soviet Labour*, pp. 105-96, Otsu and Ramzes, *Sovetskii Rynok Truda*, pp. 161-71.
[1132] On *shchepkin* method, see: Otsu and Ramzes, *Sovetskii Rynok Truda*, pp. 161-71.
[1133] On Bol'shevichka and Maiak experiments, see: Hanson, *The Rise and Fall*, p. 96.

launched the Experimental Creative Association, with increased independence, and funding based on the popularity of their production and right to contract film directors.[1134] Results were swift. The Experimental Creative Association produced the most popular films, which soon became classics of Soviet cinematography, such as the 'White Sun of the Desert' (dir. Vladimir Motyl, 1969). The general meaning of the experiment in cultural production was quite similar—it offered space for a certain measure of increased independence, subject to further evaluation. The closure of the experimental studio in 1968, after the increasing censorship of its production, testifies to the ease with which authorities could suspend experiments despite their success.[1135]

While Kosygin's attempts to reform the Soviet economy were short-lived and ended with the 'Prague Spring' in 1968, the experimental methods outlived this initial ambition. Despite the generally more conservative course of Brezhnev's economic politics, experiments soon became widely used as a method to address the deficiencies of the planning system. Discussion of how to make the Soviet economy profitable was led in terms of experimentation.[1136] English economist Bob Arnot even referred to the experimental method as the 'the only way' available for Soviet authorities to introduce economic changes.[1137] Over the course of the 1970s, economic experiments increased in scale. Experiments that had begun as ways to

[1134] N. Markov, 'Experiment in the Soviet Cinematography: Experimental Creative Association (1965-1976)' Genesis: Historical research, 1 (2018), doi: 10.25136/2409-868X.2018.1.23742 http://en.e-notabene.ru/hr/article_23742.html (3 March 2019).
[1135] Ibid.
[1136] C. Miller, *The Struggle to Save the Soviet Economy: Mikhail Gorbachev and the Collapse of the USSR* (Chapel Hill, 2017), pp. 79-84.
[1137] Arnot, *Controlling Soviet Labour*, p. 261.

pursue effective organisation of labour and introduction of market incentives at several enterprises were soon extrapolated to major Soviet companies, even such giants like industrial chemical works and AutoVAZ, one of the major car factories of the Soviet Union.[1138] Instead of focusing on individual enterprises, Soviet authorities proposed reserving specific territories, and sometimes whole regions, where special economic conditions would be set under the label 'experiment.' These 'new territorial units' for intended for the economic-social development of the economy.[1139] Such experimental zones resembled Chinese free economic zones, and this was not coincidental; Miller has shown than Soviet economists scrutinised Chinese strategies with great interest, to incorporate market mechanisms into the socialist economy. Under Deng Xiaoping, Chinese authorities launched far-reaching market-economy reforms, similarly aiming at increasing the rights and economic independence of enterprises.[1140] Not only were the aims of Chinese reforms similar to the intentions of Soviet politicians; they were also expressed in the similar terms of economic experiments. The 'willingness by the leadership to experiment' was the leading and constant factor of Chinese economic reforms, according to Ellman.[1141] For example, the purpose of the 'Sichuan experiment' was 'to create a more flexible system of management for the enterprises, to strengthen the discipline of contracts, to provide material stimulation to the workers, to reduce cost, [and] to increase profit.'[1142] Sichuan Experiment had similar development to Soviet economic

[1138] On the experiment at Shchewchenko chemical works also see: Harrison, 'Economic Growth and Slowdown', p. 61.
[1139] For example, 'new territorial units' in Poti, Georgia: A. Nikitin, 'Distsiplina Eksperimenta', *Pravda* (28 February 1983), p. 2.
[1140] Miller, *The Struggle to Save*, p. 84.
[1141] M. Ellman, 'Economic Reform in China', *International Affairs*, 62/3 (1986), p. 424.
[1142] Miller, *The Struggle to Save*, p. 84.

experiments – self-managed was first introduced at several selected factories in the region, and later expanded to hundreds, and then thousands of enterprises.[1143] Hence, it may be possible to generalise that economic experimentation was specific not only to Soviet reforms but was a global method of modernisation of nonmarket command economies.

Taking a step back, all Soviet experiments—the special economic zones, independent cinema production, self-sustainable collective farms, 'scientifically organised and planned' labour collectives, and schools with non-standard curriculum which we saw in the previous chapter—were portrayed as experiments not only in professional discourse but also in the public sphere. Experiments were prolifically discussed in the Soviet press. In each case, experiments were elaborated by economists and other professionals, and agreed with the party and administrative bosses on various levels who could carve legal niches in which the experiments could be performed. 'Experimental method' (*v eksperimental'nom poriadke)* became an important framework for a wide range of projects of dissimilar nature, enabling new forms of organisation, management, and funding. In contrast to semi-official economic zones and activities within the shadow economy, experiments were officially sanctioned and had strong official attention. They were discussed at various levels in both public and professional domains—in Soviet media and press, and dedicated conferences. Professionals in the disciplines of social and economic

[1143] By 1980, seven per cent of all enterprises in China had been given economic independence: ibid. See also: W. Kasper, 'Note on the Sichuan Experiment', *The Australian Journal of Chinese Affairs*, 7 (1982), p. 164.

experimentation became key figures in such discussions, publishing research articles that addressed such questions as, ‘to what extent has the responsibility of labour collectives increased during the experiment?’[1144]

Discussions in the ideological sphere raised questions about the extent to which economic incentives, profitability, and other features of ‘market socialism’ could be ideologically justified. Sceptics claimed that experiments benefited some and disadvantaged others, and also puzzled some enterprises which were ‘confused by the abundance of their rights.’[1145] Participants of experiments were criticised for receiving high wages and other ‘anti-socialist’ benefits, which contradicted Marxist morality.[1146] Promoters of experiments, on the contrary, trumpeted them as Marxist methods, a ‘search for the benefits of the socialist system.’[1147] An abundance of reactionary rhetoric, argued that experiments only increased inequalities, by offering an overprotected environment (*teplichnye usloviia*) to particular enterprises.[1148] While experiments were not the only way for workers to increase their pay—there were many other possibilities present in semi-official economic zones and activities within the shadow economy — experiments stood out due to the fact that they were officially sanctioned and garnered strong attention. Other observers emphasised experiments as ways to translate scientific developments into everyday life, in line with the deep Marxist conceptual commitment to praxis.[1149]

[1144] Alekseev, *Ekonomicheskii Eksperiment*, p. 8.
[1145] 'Krupnomashtabnye Experimenty', *Pravda* (23 November 1983), p. 2.
[1146] Arnot, *Controlling Soviet Labour*, pp. 204-6.
[1147] Alekseev, *Ekonomicheskii Eksperiment*, p. 4.
[1148] Nikitin, 'Distsiplina Eksperimenta’, p. 2.
[1149] With was pointed out by Crawford: Crawford, 'The Socialist Settlement Experiment', p. 11.

One reporter even claimed that ‘it is necessary to accelerate the transformation of such sciences that deal with management—such as economics, sociology, and law—into experimental ones, with corresponding tasks and equipment’.[1150]

In 1983, Soviet authorities went further in using the method and decided to hold a ‘large-scale experiment’ (*krupnomasshtabnyi eksperiment*). This experiment was devised simultaneously for sixteen enterprises in five spheres of industry: two union ministries and three republican enterprises of heavy and transport engineering in Soviet Ukraine, Belarus, and Lithuania.[1151] In all these enterprises, the experiment intended to create a single economic environment with ‘conditions for the initiative, creativity, [and] independence of workers.’[1152] Specialised institutions and a special committee were created within Gosplan to manage the experiment.[1153] From this point on, experiments gained separate administration on a higher level of the Soviet planning bureaucracy, responsible for managing, financing, and assessing the risks associated with the implementation of experiments and their scrutiny.

Initially, most experiments produced positive results. However, in a longer-term perspective, their impact was considered rather disappointing. Experiments often failed to deliver the substantial far-reaching changes in the economy that they had promised, and could neither substantially change nor solve the deep defects of the Soviet economy.[1154] Arnot analysed Soviet experiments and found them inherently

[1150] Nikitin, 'Distsiplina Eksperimenta’, pp. 2.
[1151] 'Krupnomashtabnye Experimenty’, pp. 2, D. Shnukas, 'Pervye Shagi', ibid. (8 January 1984).
[1152] Alekseev, *Ekonomicheskii Eksperiment,* p. 5.
[1153] Ibid., p. 9.
[1154] S. Clarke, *The Formation of a Labour Market in Russia* (Cheltenham, 1999), p. 22.

unstable and contradictory: 'their logic was at odds with the principles of the planning mechanism and the implementation ultimately undermines individual enterprise performance.'[1155] Resistance from ministers, enterprise managers, and workers added to the failure of some experiments. The zone of an experiment, no matter how large, still had clear boundaries and enterprises which felt more comfortable not taking risks, could refuse participation. Ways of extrapolating experimental principles to the economy as a whole were widely discussed in the early 1980s. In 1983, the head of one of the Soviet enterprises, V. Astafiev, argued that 'experiments had to be carried out not only in selected zones of the industry, but in general, on the scale of the whole country, and in all spheres of the economy.'[1156] Arnot agreed with this view, suggesting that an experiment had to be introduced simultaneously at all plants, 'so no enterprises could escape it.'[1157] But was it possible to conduct an experiment on the scale of the whole country? Arguably, political changes in the further years opened such opportunities.

On 10 March 1985, Mikhail Gorbachev was elected as the Communist Party General Secretary. As part of his programme, he declared the need for radical political and economic reforms. These reforms, known as perestroika, became the major and the last effort to rejuvenate the Soviet economy. Gorbachev's reforms advocated new initiatives to modernise the Soviet economy by introducing a legal framework for the semi-market economy. His reforms were strongly influenced by

[1155] Arnot, *Controlling Soviet Labour*, p. 3.
[1156] 'Krupnomashtabnye Experimenty', p. 2.
[1157] Arnot, *Controlling Soviet Labour*, p. 257.

earlier modernising efforts, and were, in the words of some historians, a re-run of Kosygin's reforms of 1965.[1158] Gorbachev expressed his economic measures in terms of experimentation, in his own words, as a logical continuation of the previous economic experiments:

> We put considerable hopes into the economic experiment started in 1983 at enterprises under two union and three republic ministries. This experiment involved expanding the rights of the enterprises and increasing their responsibility for their production. The results were satisfactory, and in July 1985 we decided that beginning in 1986, we would extend the system to all enterprises and organisations in certain industries (machine-building, light industries, food, meat and dairy industries, fishing and local industries and services), and eventually, beginning in January 1987, to industry as a whole.[1159]

Thus articulated, the reforms of Gorbachev might be seen as an attempt to perform a full-scale experiment of the kind earlier proposed by Astafiev. Perestroika also implemented many initiatives, prepared and tested as part of earlier experiments on the scale of a whole country. Self-accounting enterprises, service companies, and *de-facto* private businesses were legalised under the guise of 'cooperatives.'[1160] Work of labour collectives outside of state-owned enterprises was decriminalised, and they were encouraged to seek allowances to supplement their salaries in the market environment.[1161] Even experiments in cinema associations received a fresh start during perestroika. After several years of planning, Soviet cinema was reorganised based on the principles of the experimental cinema associations founded during Kosygin's reforms.[1162] As we saw in Chapter 7, the initiative of self-help housing construction also expanded from singular experiments to a mass

[1158] Hanson, *The Rise and Fall*, p. 197.
[1159] M. Gorbachev, *Mikhail Gorbachev: Memoirs* (London, 1997), pp. 286-87.
[1160] Miller, *The Struggle to Save*, p. 87.
[1161] Alekseev, *Ekonomicheskii Eksperiment*, p. 3.
[1162] Markov, 'Experiment in the Soviet Cinematography'.

movement. In general, perestroika introduced autonomy for enterprises and individuals that was unprecedented by Soviet standards.[1163]

Perestroika was an effort by a small minority consisting of Gorbachev and his allies.[1164] Implementing reforms, they faced strong resistance from the party and the country's political elite, since far from all members were in support of reformist measures. Political power in the USSR was hyper-centralised in hands of the political elite and disseminated through state institutions, Leviathan ministeries, and the coercive apparatus of the KGB. Despite the fact that Gorbachev faced rivals in centralised political power, he sought to support his initiatives by popular backing, introducing freedom of speech into the politics of *glasnost* and, on the other hand, by decentralisation of power and a 'behind-the-scenes weakening of the party apparat power' in order to gain more leeway.[1165] Yet, there never was a consensus among professional of how to reform Soviet economy.[1166] The promise of perestroika of a transition to a socialist market economy raised some practical and ideological questions. There was no coherent and convincing vision of how to transform the performance of the Soviet economy. Some reformist initiatives were blocked by the central party, partially by conflicting interests of the regional elite. A 'fundamental reform' of Gorbachev became *de-facto* composed of different and often conflicting economic strategies, which received support from the leadership. Hanson has stressed the 'trial-and-error' and patchy character of these initiatives,

[1163] Kotkin, *Armageddon Averted*, pp. 64-65.
[1164] A. Brown, *Seven Years That Changed the World: Perestroika in Perspective* (Oxford, 2007), p. 17.
[1165] Kotkin, *Armageddon Averted*, p. 76.
[1166] Brown, *Seven Years*, p. 13.

which again evokes comparison with the 'experimental measures' of earlier years.[1167] Far from all such 'trials' had been successful. Evaluating the first two years of his reforms, Gorbachev wrote in his memoirs:

> The economic situation improved slightly in 1985–6. … This success was encouraging, but reality soon caught up with us. At the beginning of 1987, there was a serious drop in production: industrial output fell by six per cent compared with December 1986, mainly in machine-building and light industry. However, the metallurgical and chemical industries were also experiencing problems. The 1987 Plan was in danger of collapsing like a house of cards.[1168]

Like other attempts to run experiments in the Soviet economy, Gorbachev's reforms were at first encouraging, yet failed to deliver long-term improvements. On the contrary, the 'full-scale experiment' of Gorbachev's led to some unforeseen destabilising effects on the economy which brought chaos to the country. Large structural reforms had been unsuccessful, as ageing Soviet political elites, enterprises, and ministries proved unwilling and unable to modernise. Smaller, partial efforts created an unstable and contradictory economic situation, which led to increasing inflation and monetary pressure. Abolished wage control resulted in disproportionate rises in income for some enterprises, to the detriment of others. Destabilisation of the economy soon caused disruptions in supplies and severe shortages, comparable to the wartime situation.[1169] Economic involution opened doors for the self-enriching of the few and the impoverishment of the many. By the end of the decade, it emerged, as surprise for many, that these efforts had led not to reform, but to a complete dissolution of socialism, the destruction of the main

[1167] Hanson, *The Rise and Fall*, p. 192.
[1168] Gorbachev, *Mikhail Gorbachev*, pp. 290-91.
[1169] Kotkin, *Armageddon Averted*, p. 67.

pillars of the regime, and collapse of central Soviet state institutions.[1170]

The Soviet Union collapsed in December 1991. In his book on the subject, Stephen Kotkin asks: how did it happen that the powerful Soviet elite permitted the peaceful dissolution of their own country? Due to the hyper-centralisation of the system, the Soviet political elite possessed huge power. This high party elite, the 'true believers' committed to the construction of Communism, would surely never allow the collapse and disintegration of the country. According to Kotkin, Gorbachev, also a true believer, nevertheless found himself engaged in a 'virtuoso, yet inadvertent liquidation of the Soviet system, … which few appreciated for what it was.'[1171] Arguably, Gorbachev reforms started with well-known for Soviet authorities and presumably safe 'experimental methods.' The centralised Soviet system tended to resist large-scale reforms. However, it allowed experiments and had an expanding institutional framework for carrying them out, as this thesis has demonstrated. The last Soviet experiment, 'unintentionally destroyed the planned economy, the allegiance to Soviet socialism, and, in the end, the party, too.'[1172]

[1170] Ibid., p. 81.
[1171] Ibid., p. 3.
[1172] Ibid.

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Giprogor archive	Archive of the Giprogor institute, Moscow
NAM	National Archives of Mongolia, Ulaanbaatar
RGAE	Rossiyskiy Gosudarstevenniy arkhiv economiki; Russian State Archive for Economy
RGAS	Rossiyskiy Gosudarstvenniy arkhiv, filial v Samare; Russian State Archive, Samara branch
TsDOOSO	Tsentr dokumentatsii obshchestvennykh organizatsii Sverdlovskoi oblasti; Document Centre for Social Organizations for Sverdlovsk oblast', Ekaterinburg
TsGA	Tsentral'nyi gosudarstvennyi arkhiv nauchno-tekhnicheskoy dokumentatsii Moskvy; Central State Archive of Scientific and technical documentation, Moscow
TsGANTD	Tsentral'nyi gosudarstvennyi arkhiv nauchno-tekhnicheskoy dokumentatsii Sankt-Peterburga; Central State Archive of Scientific and technical documentation in St. Petersburg
TsZhA	Archive of the Central scientific-research institute for experimental and typical design of housing, Moscow

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