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# CONCEPTUALISATION OF URBAN FORM

OF SIBERIAN HISTORICAL CITIES



**RESEARCH SUPERVISORS:**

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PHD thesis



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The city and its heritage are in a constant state of becoming, with new layers being added to the old, creating an increasingly complex urban palimpsests. These palimpsests are different in different locations and have temporal, spatial and disciplinary dimensions, encompassing multiple congruent layers of existence, including urban form, social and cultural forms, narratives, values and histories of place, etc. These historical parts of the city, their buildings, spaces and neighbourhoods, and their associated practices, lifestyles, rhythms and rituals, determine the character and identity of the city. This palimpsest is at the heart of this research.

We build our understanding of the new on something we already know, adding new information to the old. Similarly, continuity in the development of environments is achieved through certain similarities and continuities between old and new - both tangible (e.g. buildings) and intangible (e.g. human relationships). In sum, people need a clear starting point in the unknown in order to become familiar with it and to acquire further information. Especially in an atmosphere of radical change, we still need a starting point for habituation, orientation, familiarisation. The ways of habituation shape the interrelationship between man and his immediate environment. All this can be expressed in **form**.



At the same time, the production of urban form is currently in crisis in many locations around the world and requires the variety of methodologies allowing to meaningfully conceptualise forms. How should this palimpsest, which encompasses congruent socio-cultural and urban forms be studied and methodologically integrated into architectural practice? Process-based typology (Caniggia) provides some answers, but should be further clarified and complemented for the particular location. The notion of form became the starting point and fundamental concept of this work, determining the approaches and 'philosophy' of the entire study. Therefore, this research focuses on the physical and socio-cultural congruent layers imprinted in urban form.

First, this thesis selected the relevant definitions of the notions of form and type, enriching them with philosophical and social dimensions. It then defined and clarified the methodology that, if applied, could potentially provide continuity in the development of urban palimpsest, and enriched it with the interdisciplinary insights. The methodology is then tested and elaborated on the selected case studies of historical foundation cities (the term accepted for these study) in order to answer the question: what is common to all humanity, what is local, and what particular patterns persist over time despite change and transformation, and how? The process of local settlement formation is examined to show how local identities have been formed in the process of formation and transformation, continuously. Finally, an illustrative conceptual design research is presented to demonstrate how the established development principles can be continued in architectural practice.

Usually, Siberian cities are considered as replanned without taking into account the historical continuity. This thesis illustrates that this approach is not fully relevant by showing the presence of a distinct historical continuity. Importantly, the work shows how the transformation of the concept of type, which defined the urban form of the cities under consideration.



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# Introduction

The 20th century brought a host of innovative approaches to architecture and urbanism, as well as revolutionary discoveries. However, many of these have collectively contributed to the interruption of historic values, the identities and specificities of local environments. Quantitative pragmatic positivistic methods have proved insufficient in creating tomorrow's urban heritage as a means of transferring meaning (Waterton and Watson, 2015), as new interventions very often fail to take into account the existing context, values and history of the place. In particular, there is often a lack of in-depth understanding of this process, even within urban heritage practice. In this context, how can we continue to create meaningful and liveable environments that evoke a sense of belonging and identity, growing culturally rich urban palimpsests? There should be an opportunity to develop more holistic approaches to the continuing development of local historic places that engage with local cultures, preserving values and meanings through an analysis of the evolution of place and its interpretation in specific spatial and architectural practices that produce locally specific environments.

There is a wide range of research focusing on historic environments and urban heritage, conservation and restoration practices, while the number of topics within heritage studies is large and growing (Waterton and Watson, 2015). Possible practical approaches to urban heritage are often enshrined in research papers, conservation legislation and conventions such as The Burra Charter (Australia Walker and Marquis-Kyle 2004), English Heritage's Conservation Principles (English Heritage 2008), the Faro Convention (Council of Europe 2009), etc. However, rarely has the balance been successfully achieved in the relationships between old and new, conservation and growth, people and place, often resulting in non-intervention (or museumisation) and radical permanent change (Belova and Schofield, 2022). There is also a wide variety of methods of urban analysis available to architects, potentially providing a scientific basis for their practical interventions. However, the majority of theoretical approaches lack a methodological basis for the transition from analysis to synthesis (Maretto 2014), in order to meaningfully conceptualise historical form for potential use in future projects and to achieve a balance between conservation and development. The method of process-based typology or the Italian School of Urban Morphology (typological-processual approach to urban morphology, typomorphology, originating from the Roman School of Architecture represented by G. Giovannoni, G. B. Milani, S. Muratori and L. Vagnetti, developed by G. Caniggia and others) stands alone in this respect. Caniggia and followers offer a practical approach to urban form that helps to overcome the crisis in building production (Caniggia and Maffei, 2001). The approach has proved effective on many places around the world.

Heritage researchers suggest that the role of habits is crucial, as they reproduce the code of the past and produce models that look to the future. Lynch mentioned Kilpatrick who described the process of perceptual learning: it begins with hypothetical forms that conceptually explain the new stimuli while the illusion of the old forms persists (Lynch, 1990). In effect, we build our understanding of the new on something we already know, adding new information to the old. Indeed, complete chaos with no hint of connection is never pleasant, because people need a clear starting point in the unknown in order to become familiar with it and to acquire further information. Similarly, **continuity** in the development of environments is achieved through certain similarities between old and new - both tangible (e.g. buildings) and intangible (e.g. human relationships). For example, the 'lifeworld' of architecture built over a long period of time is, in Rogers' understanding, a material environment that changes in the course of human activity and yet creates shared values in a continuous and successive movement (Rogers, 1964). In sum, people need a clear starting

point in the unknown in order to become familiar with it and to acquire further information. **Therefore, the apparent, legible or readable city is a pattern of high continuity, in which 'many distinctive parts are clearly connected', and new sensory effects appear without disrupting the basic image of a familiar observer** (Lynch, 1990). Especially in an atmosphere of radical change, we naturally still need a starting point for habituation, orientation, familiarisation. **There is an opportunity to enrich methodologies of form making by means of studies of these continuities and palimpsests in urban environments.**

All of the above is of paramount importance for historical settlements with a complex past that have survived numerous interruptions, such as difficult or dramatic economic, cultural, social or political events and periods, changes of power and ideology. At present, these places are often in search of methodologies capable of bridging existing discontinuities and restoring or revealing their identities in cultural and architectural terms (the pursuit of this objective should be guided by a fundamental research into the safeguarding of local identity in the midst of significant transformative forces such as urbanisation, demographic shifts, etc., while the term identity here never adhering to the radical understandings of this concept, usually referring to the organic preservation of local values and cultural forms). A special place among these historical settlements is occupied by colonial or 'foundational' (the term accepted for this study) cities, often located far from the cultural origins of founding culture and surviving through multiple cultural entanglements. Particular examples of these places can be found, for instance, in post-Soviet or North-American areas. **The urban form of these places should be carefully conceptualised for a successful transition into the architectural practices of the future.**

Siberian cities are unique in this respect. Being born in one of the historical cities of Siberia and having spent more than 15 years in total in architectural practice and teaching architecture, and working with architectural heritage at the Siberian Federal University, the author of this work can confidently state the lack of methods for continuous development of historical environments in this particular context, and methods of transition between research and practice (Belova et al. 2020; Belova et al. 2022). Additionally, due to such peculiarities as the local traditional dominant material (wood) or climate, not many traditional architectural forms have been preserved, while archaeological excavations in the area are the rare exception. Frequent devastating fires and the remoteness from central Russian cities made the number of historical documents, and especially historical maps, very limited compared to, for example, European cities. In addition, the accuracy of these historical maps is often extremely low.

This makes this important historical data on the genesis of the urban form of historical Siberian environments difficult to access, understand and transfer to architectural practice. Therefore, a variety of methods to conceptualise the historical urban form of Siberian foundation cities in the context of the deficit of information is of primary importance. The methods should also be easily transferable to architectural practice.

Numerous studies have been devoted to the history of Siberia and the architectural history of individual cities. The history of Siberian architecture and urban development is well described by Siberian scholars: architectural styles, building techniques, ages of buildings and names of architects, ornaments of traditional buildings and the stages of territorial development (e.g. Tsarev & Zakharchenko, 2017; Gorbachev, 2016; Merkulova & Merkulova, 2013; Gevel, 2012; Tsarev, 2012; Ogly, 1980; Ruzhze, 1966; Aschepkov, 1953). Historians narrated the socio-political events in time (Bykonya, 2013; Tokarev & Blomkvist, 1956). The social processes were described by Siberian ethnographers and historians, and touched by architects to introduce the context of architecture (Gorbachev, 2016; Bagashev, Fedorov, & Fisher, 2015; Bykonya, 2013; Tokarev & Blomkvist, 1956). However, it is difficult to find a systematic conceptualisation of the genesis of local urban form that can be transferred to practice. Finally, Siberian cities are usually considered as replanned without taking into account the historical continuity. This thesis aimed to illustrate that this approach is not fully relevant by showing the presence of a distinct historical continuity.

Moreover, the topic is poorly represented in international scholarship. In contrast, the urban form of, for example, the Canadian foundational cities relatively similar in nature is well conceptualised and can therefore inform the methods of conceptualisation for the Siberian cities through comparative analysis. Also in contrast, the cities of central Russia, such as Moscow, St. Petersburg, or Novgorod are well researched, the urban form is better conceptualised. Moreover, there is a tendency among researchers to generalise the trends found in the cities of central Russia and to project them onto Siberian cities or the Russian periphery in general, which is in fact extremely diverse and therefore deserves a separate detailed study. The questions are How can we conceptualise the architectural and urban environments of historical foundational cities, their forms, meanings and identities, and the conditions for their sustainable development, taking into account their experiential and physical value? What methods allow this conceptualisation in the context of a lack of historical data? How can this historical record be read? How can these issues be addressed in architectural

practice, how can we intervene with an awareness of what we have lived and experienced in the historic city? Caniggian process-based typology is a rich method of conceptualisation of the historical urban form, which operationalises form using the notion of type. The method provides the basic principle of form reading and base terminology, but it is tested on the limited number of locations and is limited in sustaining local cultural identities (Norman Dzwiza-Olsen and Belova, 2023). Therefore, the goal of this research is conceptualisation of an underexplored urban context, relying on the cultural position of urban typomorphology in order to ultimately refine the existing method and better introduce the conceptualised urban form of Siberian foundational cities in the international research and practical community.

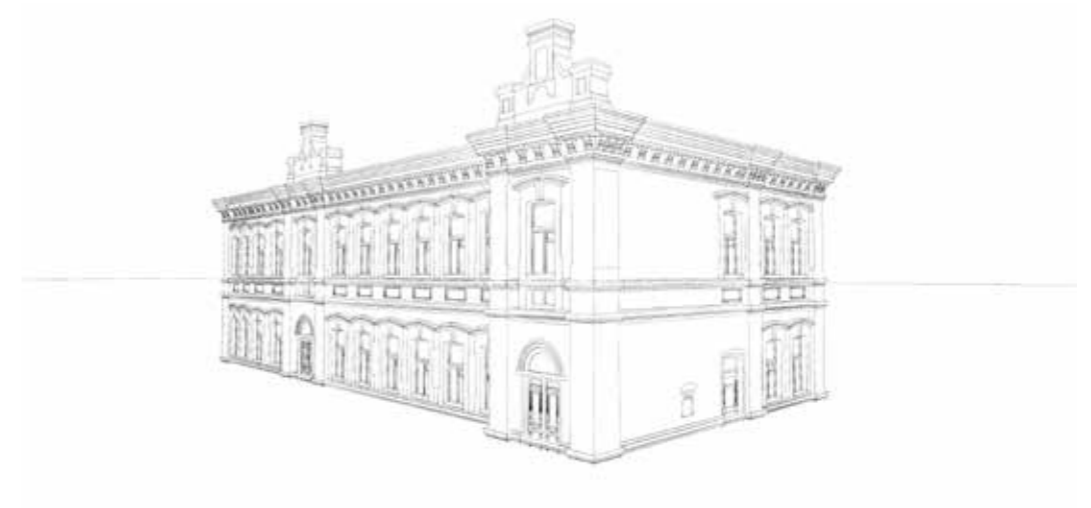
The city and its heritage never simply 'are'. They are in a constant state of becoming, with new layers being added to the old, creating an increasingly complex urban palimpsest. This palimpsest has temporal, spatial and disciplinary dimensions, encompassing multiple congruent layers of existence, including urban form, social and cultural forms, narratives, values and histories of place. However defined, these historic parts of the city, their buildings, spaces and neighbourhoods, and their associated practices determine the character and identity of the city. **This palimpsest is a core idea of the present research.** There is a need to develop a more holistic approach to the sustainable development of local urban identities, incorporating the principles of integrating the architectural heritage and associated values into contemporary life, and incorporating local cultures and identities through an understanding of the evolution of place and specific spatial architectural practices.

It seems that the current pragmatic attention to urban shape should be replaced by a more value-imbuend understanding of form. Reflecting on form, which is always the object of culture, the product of the author's spirituality, and at the same time a collective product, will be useful in transmitting the immaterial ideas and meanings through the material substance of the city over time. The notion of form became the starting point and fundamental concept of this work, determining the approaches and 'philosophy' of the entire study. However, approaches to form can also be reductive and positivistic, including different approaches to urban morphology. Therefore, theory of architecture and philosophy should play a decisive role in the definition of term before the subsequent application of method. The choice of ontology, corresponding to the definition of form and type is crucial in this case. Thus, to complement the methodological reasoning of process-based typology for the particular location, this thesis investigates the evolution of the notion of type and after that



focuses on the analysis of foundational cities, in parallel refining the spectrum of terms and phenomena used in process-based typology. Importantly, the work aimed at showing how the transformation of the concept of type defined the urban form of the cities under consideration differently in different phases of formation.

Particularly, at first, the present work revises the genesis of definitions of the notions of form and type, revealing the philosophical and social dimensions. It then defines, refines and clarifies the methodology for morphological study, that can potentially inform architectural practice to achieve continuity in the development of the local palimpsest. The method is then tested on the selected case studies and elaborated, answering the question: what is common to all humanity, what is local, and what particular patterns persist over time despite changes and transformations, and how? The development of the urban form of the foundational cities, founded around the beginning of the 17th century in different contexts but similar climates, with clear morphological similarities and obvious differences, is the focus of the present research. The formation of local settlements is studied to show how local identities are formed in the process of formation and transformation. Finally, an illustrative morphological reading is presented along with possible interpretation. The parts two and three aimed to demonstrate the potential of the refined method and to reconfirm the effectiveness of Caniggian typomorphology in the underexplored urban context. Due to the necessary and inevitable limitations of research, this study focused on the physical and cultural dimensions of urban form, but can be further refined. The possible complementary studies that should follow are suggested in the conclusions.









LITERATURE REVIEW  
METHODOLOGY  
Theory and philosophy of form



Writers of architectural theory reasonably tend to build on the achievements of their predecessors: *'There exists a mass of impressive studies to refer to in the elaboration of an urban theory, but it is necessary to gather these studies from the most disparate places, then to avail ourselves of what they suggest about the construction of a general frame of reference, and finally to apply this knowledge to a specific urban theory'* (Rossi, 1984, p. 23). In addition, the tradition of explicit theoretical-philosophical contextualisation of research is crucial even in technical, practice-oriented disciplines. However, there is a tendency among architectural scholars to undervalue this tradition, especially when research is practice-based or strictly oriented towards direct practical application. At the same time, authors experience the need for a certain 'common ground' (Taylor, 2013): *'Thinking, (by which we mean philosophy) also helps to understand architecture better by providing theories and categories by which we can conceptualise and analyse architectural phenomena. Architectural forms do not come randomly: how we build is in many ways a response to different or even opposed philosophical approaches.'* (Illies & Ray, 2009, p. 1251). Indeed, theory that starts from a philosophical or broader theoretical framework, rather than adhering to generally accepted methods without questioning them, tends to sound more solid and may have a greater chance of internal consistency. In particular, it was this desire for consistency of argument and judgement that inspired this work to turn to philosophy and broader theory as potentially supportive substrates. In addition, the choice of ontology and corresponding terminology is of undeniable importance and can define architectural writing: architecture can be seen as a project, as an organised or structured pile of materials, as a form that exists in unity with its physical environment, as a culturally and socially constructed phenomenon, etc.

Therefore, first and foremost, FORM was accepted as the fundamental notion and concept for this work, allowing for work with urban palimpsests. Logically, the cultural tradition of urban morphology became the methodological basis. However, there exists a little-founded belief or even stereotype that morphology and in particular process-based typology is formalistic and reductive, perhaps due to the fact that it operates with the concepts of form and type, which have recently acquired negative connotations: '*conviction that Caniggia's methodology of urban analysis and, derived from it, that of the project, are reductionist and incapable of elevating the real to the realm of the mythical, to infuse it with spirituality, and that they condemn the individual to conformity*' (Malfroy, 2021, p. 131). In order to dispel this stereotype and to establish a conceptual frame of reference from the very beginning, let us turn to the analysis of terms, concepts and available frameworks. How to avoid unnecessary reduction? It would be good to start the work on the form with the understanding of the concept and the discovery of the main relative theories, possibly complementary to this fundamental concept, also there is a good tradition to start a research work in this way.

How was the notion of form defined and changed during the development of theory and philosophy (Harries, 1987, 2016; Taylor, 2013; Guyer, 2011; Mitrovic, 2011; Spector, 2010; Illies & Ray, 2009; Sharr, 2007; Haldane, 1999; Moore & Kolb, 1992)? How important is the state of theoretical thought in a given period for the embodied architectural form, or can it be said that architectural or urban form develops according to its independent internal principles? If so, how? Some immersion in the history of the subject would help to answer these questions. In addition, what theories and paradigms might be potentially helpful in answering open questions regarding form, or related phenomena, or in connecting the stages of work of architect hat are difficult to connect, such as form analysis and synthesis, or to build an argument? The overview of how the concept appeared, was interpreted and changed, and what theories were related to it, will help to contextualise, frame and enrich the selected research methodology, will provide the vector of thought and the terminological spectrum, setting the tone for the whole work and helping to build an argument. Ultimately, this framework should bring coherence to the study. At the same time, the following text may provide the reader with a basic overview of important literature or a theoretical basis for further research. Thus, the following pages are devoted to the search for and the clarification of a non-reductive methodology and terminology for working with the palimpsest.





# Critical literature review

How was the notion of form defined and changed during the development of theory and philosophy? How important is the state of theoretical thought in a given period for the embodied architectural form, or can it be said that architectural or urban form develops according to its independent internal logic? If so, how? Some immersion in the history of the subject would help to answer these questions. In addition, what theories and paradigms might be potentially helpful in answering open questions regarding form, or related phenomena, or in connecting the stages of work to architect hat are difficult to connect, such as form analysis and synthesis? The main aim of the following text is therefore to find and select paradigms, theories and concepts related to the key concept of form, and to organise them diachronically. The overview of how the notion and the concept appeared, was interpreted and changed, and what patterns and theories were associated with it it, will help to select the working definition for this work to ultimately contextualise, frame and enrich the selected research methodology. This approach will provide the vector of thought and will narrow down the used terminological spectrum, setting the tone for the whole work. At the same time, the following text may provide the reader with a basic overview of important literature or a theoretical basis for further research.



Today, the concept of form itself is often taken to be somewhat simplistic and reductive, whereas the history and genesis of the concept in philosophy and theory reveal form to be a broad, multifaceted, multi-layered and dynamic concept. The reasoning of the ancient philosophers about form is so profound that it seems difficult for non-philosophers to access. However, even a cursory glance reveals that the concept of form has been considered in relation to other concepts (logical form, form and content, form and matter, etc.). As a rule, the texts of dictionaries and of the history of philosophy in architecture or for architects (Harries, 1987, 2016; Taylor, 2013; Guyer, 2011; Mitrovic, 2011; Spector, 2010; Illies & Ray, 2009; Sharr, 2007; Haldane, 1999; Moore & Kolb, 1992) begin with approximately the same group of authors and themes - a common knowledge that architects all over the world acquire in the academy. For example, Mitrovic suggested the following beginning for the classification of philosophical texts for architects (here, selectively, with an emphasis on form), which can be also found in the works of other authors: he started from Plato and his 'form' or 'idea' (the prototype of things) or 'Eidos' (or idea, or visible form: for Plato, are most common words used to refer to form since he was convinced that forms are necessary for the knowability, or sayability of things in the phenomenal world (Preus, 2015, p. 139)), and Plato's principles (ideal forms are the a priori, transcendental, existing beyond the realm of appearances (Jacoby, 2013)) consistently applied to the architecture of Palladio. The authors continue with Vitruvius and his fundamental work, then mentioning Aristotle's 'essence' ('essentia' literally means 'the to be what is.' (Preus, 2015, p. 153)) and 'matter', and Alberti who based his theoretical considerations on Aristotelian philosophy. Alberti already connected form with meaning: 'In relation to geometry, he claimed that pure forms, like the circle and the square, were closest to the divine; they should therefore be reserved for religious buildings, while less important buildings, such as houses, could have a more casual and Pragmatic Form. Thus, geometry serves to reinforce our sense of propriety' (Illies & Ray, 2009, p. 1206).

There was an obvious pause in the development of the notion and the concept in the Middle Ages, which was filled by the dominant religious worldview, giving the notion of form a theological tone.

Generally, many authors proposed roughly the same periodisation of the pre-modern and early modern philosophical thought related to form, adding certain nuances, the possible connections, or names of thinkers (e.g., authors mention Sir Henry Wotton, Etienne-Louis Boullée, Descartes, Bosse, or Thomas Aquinas: 'the Thomist notion of Form - more exactly, that of the substantial form of a thing (Forma rei). This is what makes a particular object to be the kind of thing it is, constituting its principle of organisation, and in the case of something animate its life. [...] The form of a thing gives it existence, and inasmuch as its existence is an object of value for it or for others it has goodness. Equally, when that existence is affirmed in the mind of a thinker the thing has truth. Finally, when viewed as an object of contemplation it takes on the character of beauty' (Haldane, 1999, p. 13)). Different authors also highlighted certain periods in the timeline (e.g. historicism in philosophy and architecture (Illies & Ray, 2009) or the beginning of modernity associated with the Renaissance). To sum up, even in the early periods, the notion and concept of form (even taking into account the nuances of translation) was mainly of a comprehensive, broad holistic nature, and even architects who used the term often did not limit themselves to the understanding of it as a configuration, shape, outline, object, but in some way attributed to it a conditionality of meaning, a connection with external phenomena or the other notions and concepts. In sum, theoretical and philosophical definitions, considerations and reconsiderations of the concept and notion of form and related concepts in various writings are informative for the present work since they help to avoid the unnecessary reduction and perceive form as an inherently rich concept and a connecting point, opening the door to the other notions, concepts and disciplines.

The XVII-XVIII centuries brought a decisive rethinking of the notion and concept of form, along with the multiple diverse grounds for this rethinking: first, by the late seventeenth century, it became more difficult to explain aesthetic preferences justifying the use of proportions, referring to the harmony of the world (Mitrovic, 2011, p. 69) while the beauty and aesthetics were the basis for the majority of discussions on architectural form. Second, the eighteenth century is primarily understood within the framework of the 'Western European Enlightenment', the era of scientific discovery when the diversity of known thoughts and thinkers,

of new ideas, worldviews and paradigms increased (Guyer, 2011), many of them have been influencing the concept of form and the variety of understanding of notion. For instance, Herder has been influencing with his idea of the Spirit of the Time; Kant's thought has been significantly contributing to the study of cultural forms, he saw the beauty of architecture in light of its functionality, 'an adherent beauty' (in the Critique of the Power of Judgment, 1790) and argued that our aesthetic perception is independent of concepts. It is broadly accepted that that philosophical aesthetics begins with Kant, who also set the stage for the later formalist approach and for constructing comprehensive accounts of architecture (Haldane, 1999, p. 11); Nietzsche (Henri van der Velde refers directly to Nietzsche as a major source of inspiration for his work with his criticism of bourgeois culture, unity of form and content, art and everyday life, public and private identity (Illies & Ray, 2009, p. 1210)) or Hegel contributed to the philosophy of culture and a discourse around cultural form. With Hegel, the notions of form and matter appear thematically in the Logic and belong to the doctrine of essence: 'That unity of essence and form, which confront each other as form and matter, is the absolute ground that determines itself' (cited in Ritter, Gründer, & Gabriel, 2007, p. 1025)). 'Architecture of association, rather than one derived from the authority of the ancients, appears for the first time in the mid eighteenth century' (Illies & Ray, 2009, p. 1207). The period of romanticism appeared at the end of the XVIII century partly as a reaction to the values of the Enlightenment: 'Instead of being interested in that which is shared by all humans, romantics celebrated the individual's membership in a specific collective, such as tradition, ethnicity, race, or age' (Mitrovic, 2011, p. 94), bringing to the foreground such important concepts as tradition and identity, and practically provoked reconsiderations of the form in architecture further beyond beauty. The period also brought the belief that everything is historically, contextually and culturally determined: 'Each culture could adhere only to its own notion of the true and the false, through values that were immanent in particular social and institutional forms' (Colquhoun, 1985, p. 204). The period accelerated disputes around form and content: 'Content means either the given material or, as content, the artist's thoughts and feelings, which can be connected with the material [...] for Herder, Goethe and Romanticism there is a necessary connection between content and form:

*individual content gives rise to individual, organisational, inner form. As with Plotinus, outer form is determined by the inner, spiritual' (Ritter, Gründer, & Gabriel, 2007, p. 976). In sum, the authors of XVII-XVIII cent. provided the ground for a reconsideration of sociality, identity, ethnicity, historical context, tradition in relation to form, which has been reflected in form production in past and present, establishing the congruence of form with other layers of existence. Ultimately, the notion of form could be perceived independently, or conceptualised. Generally, one can speak of a continuous revision of the understanding of notion of form since the XVIII century along with its conceptuality or non-conceptuality, dual concepts form-content, form-matter, etc. This reconfirms the inherent complexity of the notion and a concept of form, the tight connection of the changing concept with the dominating worldviews, and the importance of the choice of relevant definition.*

Since the 17th century, the problem of morphogenesis has been considered from the point of view of evolution and epigenesis or ontogenesis (change of form during the growth of an individual) and phylogenesis (origin of the different forms of organisms). Since the 19th century, the discovery of genetics has led to new perspectives (Ritter, Gründer, & Gabriel, 2007). The nineteenth century was a period in which Charles Darwin explained the regularities in biological organisms through natural selection, an important principle of evolution that has been influencing the understanding of form, also in architecture. Geoffrey Scott's emphasis is the idea that architectural form itself has been developed over time by generations of architects and improved by their successors, which brings the vital notion of continuity in the development of architectural form. The author also believed in the non-conceptuality of architectural form; he developed the formalist approach to architecture in the book 'The Architecture of Humanism' (1914). In the 19th century, architectural theorists began to think about the evolutionary nature of form and introduced types (Quatremère, Durand, Le Roy, Semper). In terms of architectural theory of the period, the authors mention such classic writers as Pugin, Ruskin, Wagner, Viollet-le-Duc and his 'honest' design, or Semper ('To Semper form was a structural-symbolic representation comprehended from within its own immanent material-symbolic formation' (Jacoby, 2013, p. 143)). Sitte (1889) aesthetically

perceived urban form in relation to architecture and its context - an important discussion of the parts and the whole, form-context.

The notion and concept of form had been changing significantly in time before the XX century, and this was inevitably reflected in physical, embodied forms. In sum, in the 18th and 19th centuries, architectural form began to change under the influence of newly emerging debates, but not as fundamentally as it was in the following XX century. The revolutionary twentieth century and a modernist period in architecture brought a synchronic diversity of approaches to architectural and urban form that went far beyond aesthetics, as well as a dominating 'conceptual' understanding of form, resulting in the coexistence of different schools of thought and the development of interdisciplinary approaches. The change of the concept of form was dynamic, largely interconnected with the other notions and concepts and could be reductive or non-reductive (e.g. logical form, which is a priori in Ludwig Wittgenstein's *Tractatus Logico-Philosophicus*, etc.). In architectural theory, form was inspired and influenced by various intellectual achievements - from scientific and technological innovations to philosophical views of all times (e.g. Popper is explicitly mentioned in Rowe's 'Collage City') to political ideas (Lefebvre & Nicholson, 1991; Foucault, 1972). Importantly, the new understandings of form often denied connections with the past and became 'purified', future-oriented or ideologically impregnated. A variety of new understandings of form have been influenced by the phenomenological thought of Rasmussen, Heidegger and Norberg-Schulz, among others; by approaches related to linguistics (Alexander et al, Eisenman, Koenig, Jencks, Baird, etc.) and hermeneutic thought of Gadamer or Pareyson, by post-structuralism (Derrida, Wigley), by continental philosophy in general (Pallasmaa). 'Since architecture is syncretic by nature, it has always been influenced by the developments and debates in philosophy. However, the impacts of the philosophy of science on architecture were not apparent until the 1970s, when research became a scope of scholarly investigation at the schools of architecture' (Dağlioğlu, 2016, p. 107). It can be said that it was only in the twentieth century that the emerging reflections on the conceptuality or non-conceptuality of form in architecture, or on the foundations of aesthetic perception, or on the link between form

and content, matter or context, produced not only the most direct, far-reaching or revolutionary embodiments of forms, but also a completely new understandings, considered by many researchers to be a paradigm shift in Kuhnian sense (Kuhn, 1970). In architectural thought, in the XX century, form became confidently and explicitly associated with meanings: 'The question of whether, and if so how, buildings convey meaning is a recurrent theme of both analytical and continental writings as is the issue of the connection between architecture and aspects of the wider culture' (Haldane, 1999, p. 16). At the same time, after the formation of modernism and postmodernism, there have been flat and largely reductive interpretations of form. Concepts such as Sullivan's 'form follows function' and Le Corbusier's (1923) redefinition of architectural form (which he believed should reflect technological achievements) largely define architectures. Several important conceptual 'turns', including 'Spatial Turn' with the term 'space' as a fundamental category of architectural vocabulary (Malathouni, 2013, p. 553) and the 'linguistic turn' could be described among generative ones for architectural form in the 20th century. All the above highlights the necessity of the choice of the definition or the spectrum of definitions, so-called 'semantic cloud', relevant for the selected research question before the beginning of research, this will also bring connection with the other notions and concepts, potentially opening the door to the other related disciplines, which ultimately provide complementary methodologies and philosophies. The next pages will discuss the variety of disciplines and what they can offer to non-reductive form studies.

Fundamentally, this work primarily relies on the cultural position of process-based typology, but should take into account potentially informative relative theories. First, it is safe to say that various strands of language-related theories have had a significant impact on the study of architectural form, and the process-based typology is no exclusion. The 'linguistic turn' in architectural and urban form studies 'encouraged a reading of architecture as an organised system of signs, each with a specific meaning, and with definite 'grammatical' rules for their composition. In this way, a building or a project is seen as a text, which should be read through the instruments of critique' (Djalali, 2017, p. 1287). It seems that linguistics is also one of the most important sources of terminology for

contemporary theory of architectural form: 'Roughly since the 1960s, architectural academics started to introduce the term 'language' into their studies and this consequently resulted in the emergence of a group of terms 'language of architecture', 'language of landscape', and so forth' (Wang & Heath, 2011, p. 399). At present, many authors not only in architecture claim that the ability of the built form to 'speak', to express value and meaning, is the important and even inevitable intrinsic characteristic of architecture. Caniggia described cultural colonisation in the languages of built forms, drawing on similar dynamics in spoken language:

*'Let us take some aspects and concepts from linguistics: the notions of linguistic area, for instance, and notions of the transformational processes of a language. We know from linguistics how the Italian language formed. Even prior to that, the spread of Latin throughout Italy had to take into account the existence of languages and previously localised linguistic areas that differed amongst different peoples. Latin became widespread through its superimposition over local languages and, in turn, was influenced by them to the extent that the Latin of the 5th century BC and the generalised Latin of the 1st century BC differ widely. Generalised Latin had to accept surviving linguistic remnants in the form of dialects or particular local preferences for syntactic and grammatical moods and for vocabulary deriving from pre-existing Latin brought into use locally. This occurred until, with the break up of the empire, local dialects - benefitting from the reduction in trade between one place and another - developed into local languages that can roughly be described as a combination of localised ancient and less ancient generalised languages. We know how a new boom in trade between various areas led to the formation of new generalised languages, the 'Romance' languages, including Italian. However, Italian continues to acknowledge the presence of the whole previous process, reproduced in the form of local dialects that are ready, in turn, to assume linguistic functions should there be a further disintegration of today's Italian nation. Italian, which is not Tuscan, has in turn changed during its expansion, absorbing and remaining influenced by previously existing languages. It can be said that the crisis of language occurs with each moment of expansion or localisation, to a greater or lesser extent. On another scale, it's enough to consider what occurred to the Roman language in contact with the Hellenistic world,*

*and how not just the language but the entire culture was traumatised by its more immediate impact with Greece during the moment of conquest. In the same way, the current crisis of building language can be taken as a crisis of contact between different linguistic areas, specifically within the uniform Western linguistic area, even if it is broken up into dialects by an excess of local behaviour, and areas of other countries and other continents only recently brought into contact with the former.'* (Caniggia & Maffei, 2001, p. 33).

Caniggia's description vividly illustrates how phenomena detailed in related disciplines, in this case linguistics, can inform morphological theory. Similarly, it is possible to describe the development of 'languages' of architectural forms and local identities, through periods of formations and transformations. Important is the claim of the author that the form language of one architect (i.e. individualization of approaches) is not a language and therefore loses its semantic fullness. The fact that authors largely use the concept of language as metaphor and principle, opens the door to the methods offered by language studies as complementary.

Thus, it is important to understand what linguistics consists of and what it can offer as a methodological, terminological and structural framework for this study, which is based on the cultural position of urban typomorphology. Linguists have studied communication, syntax, grammar, meaning, references, metaphors, etymologies, and the majority of these is undeniably a terminological basis for the studies of urban form. The other branch of urban morphology called 'space syntax' (Hillier & Hanson, 1986) can be used as a complementary to typomorphological approach. The so-called 'theory of meaning' includes strands of various theories popular in the twentieth century, more inspired by semantics (J. Locke, Wittgenstein, P. F. Strawson, J. Searle, R. Brandom, J. L. Austin, T. Burge, H. Putnam, etc.). Philosophical semantics (as well as typomorphology) focuses on composition as the principle of the relationship between parts and a whole in sentences as a way to produce meaning: a sentence is understood based on an understanding of its structure in parallel with the meaning of the parts of the sentence (Aronoff & Rees-Miller, 2017). The literary theory emphasizes the methods of understanding a text, tied to hermeneutics, which

deserves a separate attention. Noam Chomsky, a creator of the concept of Generative Grammar (Aronoff & Rees-Miller, 2017; Chomsky, 1969), introduced the principle of generativity - the ability of form to generate other forms, this philosophy is close to the Pareysn's concept of formativity (hermeneutics). Semiotics is the study of signs and symbols, the transmission, reception and meaning, as well as the ways of communication beyond language: in the view of semioticians (U. Eco, C. S. Peirce, R. Barthes, and R. Jakobson, A. J. Greimas, L. Hjølmslev, Tullio De Mauro, Renato De Fusco), everything and everyone communicates (or signifies) continuously, and architectural form is no exclusion (Vilkovskii, 2010). *'The first, key collection in English, Meaning in Architecture, was published in 1969. This was a collection of papers by Reyner Banham, Françoise Choay, Aldo van Eyck, Kenneth Frampton, Alan Colquhoun, Norberg Schulz, myself and others, edited by Charles Jencks and George Baird [...] the liveliest applicators of semiotic into architecture undoubtedly have been such Americans as Robert Venturi himself, Robert Stern and Charles Moore'* (Broadbent, 1980, p. 11). Giovanni Klaus Koenig in his approach, rooted in semiotics, saw architectural forms as signs that prompt spectator behaviour. Umberto Eco offered his 'absent structure', which logically connected the variety of layers of existence, including architecture, language and the others. The authors of the theory of signs and architectural theorists usually refer to Saussure (Barthes, 1972) and his 'Cours de linguistique générale' (1916) - one of the most influential works in language in continental philosophy. The author was sure that facts couldn't be independent of linguistic reality. Linguistic terms can potentially serve as opening the doors from typomorphological method to the disciplines named above, and the spectrum is rich.

Saussure also influenced the other strand of architectural theory and practice called deconstructivism. Derrida (a post-structuralist, deconstructivist) developed his work based on (or opposed to) the views of Saussure, but in his own specific way: deconstructivism is a controversial, but fruitful strand in modern architecture based on 'absolute freedom of reading' (Wang & Heath, 2011, p. 412), while popular authors such as Foucault, or Deleuze can be associated with the ideas 'anything goes' and 'everything is relative'. Indeed, deconstruction defined architecture within different locations and appeared

non unproblematic. At the same time, Eisenman built his theoretical and practical arguments on Derrida's thoughts: architect concluded that the written text is of equal importance as the present thing, or written text (i.e. narratives of place or architectural drawings) can be of similar importance as an actual physical form (i.e. spoken text). Author stated that in an architectural environment, absence can have the same value as presence (e.g. the absence of a building or a void in a place of the former building, etc.). These conclusions are crucial for the understanding of historical built form. Thus, the range of possible research directions within linguistics is wide, but it is important not only to choose the reference approach, which correspond to the research question and goal, but also select the vector of its development. Therefore, it is crucial to note here, for instance, the difference between deconstruction and hermeneutics, since both operate within the texts and interpretation: hermeneutics (Gadamer) sets understanding as the aim of interpretation of a text in its context while for deconstructivism, interpretation primarily generates new texts. Following this logic, in contrast with deconstructivists, typomorphologists in architecture at first try to understand architectural forms in their contexts to later carefully interpret and translate their understandings into new architectural form, aiming to provide continuity for the development of traditional environment. The cultural position of process-base typology is closer to hermeneutics in this respect.

*'Esposito signalled an impasse in the ability of the three dominant post-war trends in philosophy— hermeneutics, critical theory and deconstruction— to describe reality after reducing thinking to language and linguistic conventions'* (Djalali, 2017, pp. 1287-1288). However, Wang & Heath argue that the notion of 'language' in relation to architectural form does not lose its relevance even though the language-related approaches are getting somewhat less popular today. Moreover, it already seems inappropriate to talk about borrowing methods from linguistics, since they are so ingrained in architecture. Additionally, in the era of interdisciplinarity, it can be even difficult to draw the lines between architectural theory and other disciplines. Roland Barthes who wrote 'Responsibility of Forms' (1986), influenced structuralism, semiotics, social theory, design theory, anthropology, and post-structuralism, and is famous for the analysis of sign systems.

Among architectural theorists, Alexander - the father of the pattern language movement (1977); Charles Jencks (1992) - contributor to semiotics who wrote 'Meaning in Architecture' (1969) together with George Baird, who was talking about metonymy, metaphor, ambiguity, in relation to architecture; Geoffrey Broadbent (1980) linked architectural thought with humanities in general; Pellegrino is developing his approach to semiotics in architecture, relying on generative grammar, referring to Prieto, perceiving architectural context as text, an extra information source and a form of 'economy' (2002); Lotman sees architectural form as 'text in the context'; Ikonnikov suggested the system of archetypes, which determine the structure of architectural form and carry cultural meanings that reflect people's values, and which are formed in the collective unconscious, fixed in myths and spatial forms of the man-made environment (the approach conceptually similar to typomorphological); P. Sorokin divided languages of architecture into ideational and visual categories; For Manfredo Tafuri (1973), one architectural language doesn't follow another linearly, they appear in a struggle. This list of authors and views can be almost endlessly continued. Henry Nelson Goodman wrote that also *'the vocabulary of reference and related terms is vast: within a few brief passages from a couple of essays on architecture, we may read of buildings that allude, express, evoke, invoke, comment, quote; that are syntactical, literal, metaphorical, dialectical; that are ambiguous or even contradictory!'* (Goodman, 1985, p. 644). Generally, one of the certain achievements of the twentieth century is that scholars and practitioners have begun to think about architectural and urban form in deeply conceptual terms, often using the terminology and methods of other disciplines, developing combined, interdisciplinary and 'eclectic' approaches, and this will not lose its relevance in the near future. This trend was also evident at the ISUF (International Seminar on Urban Form) conference in 2023.

Researchers in typological-processual approach to urban morphology balance favourably between pragmatic quantitative approaches to form, and more qualitative and philosophical. It is important to detect the underlying or framing philosophical discussion/discourse. Twentieth-century philosophy is usually divided into the analytic and continental traditions, although it is

sometimes difficult to separate or distinguish them. The strength of analytic philosophy is the emphasis on the analysis and on the way of building clear arguments. In contrast, continental philosophy is based in traditional philosophy departments in Europe, focusing on the works of the philosophers of the past. In the analytic tradition, philosophy of language questions the nature of meaning, reference, intentionality, concepts and sentence structure, the relationship of language users to the world and to language, etc. Continental philosophy, usually divided into phenomenological and structuralist (and post-structuralist) approaches, hasn't studied language separately, but as part of phenomenology, structural semiotics, hermeneutics, deconstruction and critical theory, often increasingly using quite 'analytic' way of constructing arguments. Interestingly enough, even the way in which an argument is argued in the certain theory are constructed, and more generally the approach to the text of architectural writings, often depends on the dominant contextual philosophical tradition. In sum, the choice of framing philosophy might be critical, and for process-based typology hermeneutics and, potentially, phenomenology, seem beneficial.

Since the middle of the XX century, architects, and writers in architecture (Rogers (1964), Norberg-Schulz (1980), Zumthor (2006), Pallasmaa (2009), or Holl, Pallasmaa and Pérez-Gómez (2006)) have been inspired by phenomenological thought (Seamon, 2023). The history of phenomenology is rooted in the early nineteenth century when Hegel called his work Phenomenology of Spirit. *'The Greek word phainomenon means 'appearance,' and phenomenology is generally understood as a discipline that studies and describes appearances'* (Mitrovic, 2011, p. 118). The principal founder of phenomenology, Husserl, proposed to bracket the issue of the existence of things, studying experience and the contents of human consciousness. At first sight, the notion of form as such relates to phenomenological thought rather tangentially: *'From some less important - and sometimes terminologically not exactly fixed - meanings of the terms form and matter [...] Husserl's specific form and matter truth problem (developed on the problem of meaning intention and fulfilment) thus led to a partial shift of the traditional confrontations (formulated especially by Kant), which placed substance, sensuousness, perception (Anschauung) on one side and form, understanding, (categorical) thinking on the other'*

(Ritter, Gründer, & Gabriel, 2007, p. 1007). However, phenomenology offers a fundamental understanding of human experience of the world; it does not gather empirical data but instead focuses on the structures of lived experience. Dwelling, home and atmospheres (Bollnow, 2011; Mugerauer, 2008; Böhme et al., 2014), embodiment, environment and lifeworld (Harries, 1988; Seamon, 2013; 2023; Dzwiza-Ohlsen, 2022), actions, affordances, and design (Rietveld and Brouwers, 2016), corners, edges, and surfaces (Casey, 2017), or lines, rectangles, and frames (Sommer, 2016), perspectivity, orientation, perception, movement, familiarity, historicity, and tradition (Dzwiza-Ohlsen, 2022) are under consideration in phenomenology. Husserl is explicitly mentioned in the Saverio Muratori's writings and therefore largely informs philosophical ground of typomorphology. Sylvain Malfroy found Muratorian method implicitly based on phenomenology: 'Even if Saverio Muratori, and, in his wake, Gianfranco Caniggia, remained on the fringes of party politics, it was after all their intention to use their role as architects and urban planners to facilitate the surfacing of civil values buried deep in the fabric of the 'territory' – a concept closely related to Husserl's 'life-world' (Malfroy, 2021, p. 129). There is a variety of evident connecting points between typomorphology and phenomenology, which should be potentially developed in future research (such as the concepts terrain and territory, affordances, place, or typification, see below). Therefore, the connection between phenomenology and typological-processual approach to urban morphology deserves a separate investigation.

In addition, architectural theory has been in crisis as a result of the excessive influence of technology and pragmatic ideas of modernism while phenomenologists introduced the studies of place, perception, identity, atmosphere, meaning and aura (Malpas, 2008a, 2008b, 2012, 2016, 2018, 2020a, 2020b; a, 2021a, 2021b; Griffero, 2010, 2020; Auret, 2019; Lyons, 2019; Casey, 2001), going beyond rational approaches to urban form, beyond quantifiable relationships between members of the urban environment (e.g. following Heidegger's believe in the failure of purely rational use of technology). Particularly, Heidegger's 'being there', 'being-in-the-world' (Sharr, 2007) inspired many architectural writings, such as critical regionalism (approach somewhat relative to typomorphology in

spirit, which strives to overcome 'placelessness' and lack of identity in contemporary architectural form in order to provide an architecture of modern tradition, at the same time rooted in geographical and cultural context, but not in the sense of returning to vernacular architecture, mediating between the global and the local languages instead (Frampton, 1983)), and the author explicitly referred to it. The concept of genius loci (Norbreg-Schulz, 1980) - is one of the most influencing concepts in architecture today, grounded in phenomenology, as the other works of architect Norbreg-Schulz. 'The objects are the order or form of reality. The phenomena are immediately given with form, as manifestations of objects, and this form is their meaning. This does not imply that the objects cause the phenomena. The phenomena have no causes, but appear (present themselves) in a certain order. The meaning of the phenomenon is the context in which it appears. We thus understand that 'phenomenon' and 'object' are two aspects of the same matter' (Norbreg-Schulz, 1968, p. 53). Norbreg-Schulz substantially contributed to the reconsideration of form in architecture claiming that we don't perceive shapes, but meaningful forms, inspiring context-sensitive and place-sensitive architecture (Zumthor, 2005, 2006) and other innovative approaches, going beyond overrationalised perception of form (Harries, 1987, 2016). Phenomenologist Merleau-Ponty was attracted to Gestalt theory, an approach to psychology that explores the structure of perception according to the notion of 'Gestalt,' which means 'form' or 'figure.' Ingarden investigated the issue of what a work of art is (ontological status), saying that the works of architecture are non-imitative, and this type of artworks can be only discovered, rather than created (reminding the old principle: (eidos) come from the verb idein, 'to see' (Preus, 2015)). Finally, the value of the form of architecture is linked with the complex bodily experience (one of the focuses of phenomenology). Gianfranco Caniggia starts his book with the explanation of how our bodily experience is linked with tradition and form. In sum, phenomenological ideas have the potential to positively change and complement the concept and the notion of architectural and urban form, moving towards a more sensible and sensitive concept, insisting on the search for a special experience that cannot be rationalized or articulated in numbers and schemes. However, methodologically it is not quite easy to integrate such an attractive phenomenological thought

further into morphological theory and practice, this needs further exploration.

Researchers in the typological-processual approach even see typomorphology as a branch of hermeneutic thought: 'the morphological view of the city and the territory, like other branches of hermeneutics, is concerned with the illumination of the semantic and ontological depth of the city and the territory' (Malfroy, 2021, p. 136). It is not always easy to distinguish hermeneutic tradition (with interpretation as a core concept) from phenomenology. Clearly, interpretation as a method has always been widely used by architects. Hermeneutics and interpretation are important parts of the continental philosophy of language. One of the most important and known names in hermeneutics was Gadamer: 'Hermeneutics, the discipline that studies methods of interpreting texts, had a long history in German Protestantism, going back to Martin Luther and the early Protestant discussions about various approaches to the interpretation of the Bible; Gadamer made it into a full-fledged philosophical discipline [...] When it comes to studying the philosophical problems of interpretation, Gadamer had a number of important predecessors in Germany, such as Friedrich Daniel Ernst Schleiermacher (1768–1834) and Wilhelm Dilthey (1833–1911)' (Mitrovic, 2011, p. 132). Hermeneutic theory, a theory of the interpretation of texts, introduced the concept of the 'hermeneutic circle': the meaning of a part of a text can be read only in relation to the whole text, at the same time the meaning of the whole text is constructed of the meanings of its parts (Gadamer, 1960). The texts of the past cannot be fully understood and interpreted, because the past contexts are unavailable. The same principle, for instance, the followers of Italian school of urban morphology offer in the methodology of 'reading and interpreting historical urban form', perceiving a piece of the urban fabric as a text in context. Every act of understanding in the hermeneutic circle requires projection, which implies making assumptions about the meaning and revising these assumptions, which means that understanding derives from prejudices. In Gadamer's view, texts should be interpreted not only in their historical context and from the perspective of the interpreting person. In addition to Gadamer, philosopher Luigi Pareyson is known for his 'Estetica. Teoria della Formatività' (Pareyson, 1954), built on the hermeneutics of the Austrian philosopher Ludwig

Wittgenstein (who said that linguistic description is an image of the described, reality - in order to be describable in language - must possess the logical form of language), influenced the studies of art form, introducing formativity as an intrinsic property of form. Pareyson insists on the comprehensive concept of form in art, on the fact that it already contains the laws of development and programs for future forms: 'all works, insofar as they are successful, are forms, endowed with independence and exemplarity [...] The vexed question of formalism and content; something I wanted to avoid, since by 'form' I mean organism, living of its own life and endowed with of an internal legality: a totality that is unrepeatable in its singularity, independent in its autonomy, exemplary in its value, closed and open at the same time in its infinitely encompassing definiteness, pertaining to harmony and secondly, because I was keen to immediately highlight the dynamic character of form, to which it is essential to have a result, or rather the resurgence of a process of formation, for form cannot be seen as such if it is not seen in the act of forming, and at the same time include, the movement of production that is in charge of it and finds its own success in it' (Pareyson, 1954, p. 1). Relying on Augusto Guzzo's conception of life as the invention of form, denying the conflict between form and content, the author proposed the capacious definition of form - a holistic unity of parts in a whole, and therefore inspired this work: 'So that everything is form, a living and defined form, with a centre that by a law of coherence holds the parts together, with a life of its own and autonomous, endowed personal character of each operation of an unrepeatable internal rhythm recognisable in its unmistakable singularity' (Pareyson, 1954, p. 157). Author's philosophical (and methodological) reflections have the potential to comprehend the transit between analysis and synthesis in architectural form, which seems difficult without this philosophical ground.

All of the above points to how voluminous the concept of form is. In sum, the concept of form has been and remains multilayered and sometimes ambiguous in theories, different authors have understood it differently. The understanding of the notion of form and the connectivity of this notion with relative theories and concepts has been affecting the production of physical urban and architectural form. In general, ideas in the development of theory and philosophy are reflected in or coincided to a certain

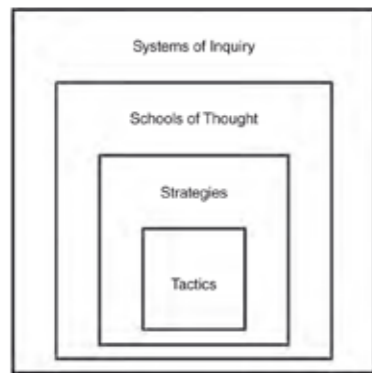
extent with the dynamics of understandings of architectural form. The influence of ideas happened not always directly through specific methods, but often indirectly, rather determining the spirit and mood of the time, or defining a specific cultural context. Moreover, the theories of, for instance, the 19th century continue to be comprehended by modern architects and researchers in their search for methods. Indeed, architectural form has been developed in accordance with its internal laws as well, and it is important to consider both principles. The open questions connected to form or difficult-to-relate stages of work, such as form analysis and synthesis could be possibly filled by complementary theories or 'philosophies' answering similar questions. However, *'one should bear in mind that philosophy should enable architects and theorists to question and examine their theories, rather than provide ready-made answers and philosophical theories to be 'applied' in architectural theory, as has been the case with phenomenological and post-structuralist doctrines in recent decades'* (Mitrovic, 2011, p. 191). After all, the typological-processual approach to urban morphology, which contains at its core so many cultural codes, metaphors and references to related disciplines, and which draws on extensive philosophical scholarship, cannot, by definition, be reductive; moreover, thanks to this quality, the approach seems to invite these disciplines into dialogue, often through similarities in the understanding of concepts and notions. Linguistics, hermeneutics and phenomenology are important complementary theories, but it is also essential to choose the right path within these disciplines. Next, it is necessary to clarify the research methodology chosen, enriching it with the vector of thought and the terminological spectrum, in order to set the tone of the work.

# Methodology



Architectural research often occupies an intermediate position between humanities and technical sciences or gravitates towards one of the poles. Moreover, as a rule, there is a division into many subdisciplines, at least in large strokes - into architecture and urbanism, this division has significant negative 'side effects' in practice. To complicate everything further, one should better remember the fact that architectural theory is usually practically oriented. In contrast, remembering all the above, the given work perceives architectural environment (meaning a unity of architectural and urban form) as an integral phenomenon and rather gravitates to humanities, being engaged in the search for qualitative non-reductive methodologies. Consequently, it required framing theories and methodological basis capable of embracing historical urban form in all its layers and internal complexity.

The preservation of continuity in the development of architectural and urban palimpsest is complex since it contains a number of methodological problems that are difficult to solve, operating solely within the urban form, such as the transition between analysis and synthesis phases, or the work with the semantic layers of form, for instance. A certain methodological survey was needed. A literature review has shown that some of the problems are better methodologically resolved within the complementary disciplines. Consequently, using logical argumentation, it is possible to clarify and complement the methods of urban morphology with the approaches used in related theories. Specifically in this work, the achievements in philosophy in general and language studies helped to clarify the terminology and research strategy, works in hermeneutics allowed for the clarification of the methodological transit between the phases of analysis and synthesis. The wide variety of methodological achievements in linguistics helped to specify relations of morphology, syntax, semantics, etc.



2.

How to work with methods in architecture? How to select the proper methodology? There is a variety of methodologies within the theory of architecture and quite a lot of attempts to summarise them (Linda n. Groat and David Wang, 2013). Even the confronting ones quite often have a lot in common and can be potentially complementary, which significantly broadens the horizons of research. The book of Linda n. Groat and David Wang stands alone, it covers a wide variety of methods and make the potential work with methods more systematic (Fig. 2). When it comes to architectural methodologies, Rowe, a thinker and influencer in the theory of architecture, proposed his methodological considerations for program and paradigm, where by a program he means: 'A definite plan or scheme of any intended proceedings: an outline or abstract of something to be done'; and it is in this sense that the word program has penetrated the architectural vocabulary' (Rowe, 1996a, p. 9), while paradigms for the author are 'universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners' (Rowe, 1996a, p. 9). Author questions the radical totality of, in his opinion, confronting doctrines, indicating the impossibility of genuine intrinsic novelty of the resulting solutions of each: 'On the one hand, the procedures are too flat and empirical and, on the other, they are too exalted, too idealist, and too a priori [...] In the first case, the future is to be no more than a prolongation of the present (surely intolerable) and, in the second case, both present and future are to be no more than a continuation of the past (surely no better)' (Rowe, 1996a, p. 10). The author suggested dialectical inter-animation compensating for the incompleteness of two doctrines referring to Marx, Aquinas and the Talmud. In a similar vein, summarising the architectural research

methods in their comprehensive book for architects and researchers specialised in architectural methodologies, Groat and Wang proposed the principle of nested frames for the methodological framing of research (fig. 2), according to which the highest level and the widest frame within the framework is paradigm or the system of inquiry (nature of reality, knowledge, and being), emphasising the inevitability of framing by paradigm - explicit or implicit (Linda n. Groat and David Wang, 2013), while strategy and tactics can encompass certain programs. Apparently, even the term 'paradigm' different authors understand differently: 'One of the great advantages of Kuhn's paradigm is that he defines it in something like 21 different ways; among other things he suggests that the 'notion of style in the arts' could become much clearer if we saw styles themselves as paradigms. The history of architecture obviously is a catalogue of changing styles, Egyptian to Greek to Roman and so on. Within each of these there are what we might call 'sub-paradigms' such as: the work of individual architects, particular building types and so on.' (Broadbent, 1980, p. 12). Adhesion to the school of thought in Groat and Wang is not so important, but the presence of strategy and tactics (or, in the other words, program) the authors consider necessary and inevitable. Thus, the selection of a combination of strategy and tactics (composed in the program) of research along with ontological position and terminological basis seem primary, this combination would be enriched by the framing school of thought or/and paradigm. Additionally, the notion of a paradigm, due to its depth and comprehensiveness, will appear several times throughout the given study.

Authors consider the victory of the modernist movement in architecture with its purity from the layers of the past to be a classic paradigm shift according to Kuhn (Kuhn, 1970), accompanied by 'purification' - the loss of important semantic layers and the denial of the past. However, 'The crucial point about all this is that an architectural paradigm that the Modern Movement was supposed specifically not to symbolize turns out to have been fraught with symbolism' (Broadbent, 1980, p. 12). Therefore, this study seems to run counter to this winning paradigm since it appeals to meanings and the significance of the historical process in the urban environment. The notion of form - the starting point and the core notion of this work is logically connected to morphological studies, but is

not completely identical with them. Rossi said: 'the reality I am concerned with here is that of the architecture of the city - that is, its form, which seems to summarize the total character of urban artefacts, including their origins. Moreover, a description of form takes into account all of the empirical facts we have already added to and can be quantified through rigorous observation. This is in part what we mean by urban morphology: a description of the forms of an urban artifact. On the other hand, this description is nothing but one moment, one instrument. It draws us closer to a knowledge of structure, but it is not identical with it' (Rossi, 1984, p. 23). This opens the horizon for complementary studies. In contrast to pure modernism, the Typological-processual approach to Urban Morphology (a selected school of thought) strives for continuity with the past, proposing at the same time methods to make explicitly modern architecture. It considers the urban environment diachronically with multiple flows of information, human beings and resources that are formative, trying to occupy a balanced intermediate position between radical preservation and radical change.

This striving for internal comprehensive connectedness of things or holistic and profound all-embracing views encompassing different spheres of life is nothing new. Rossi used the term locus for his all-embracing perception of form: 'The locus is a relationship between a certain specific location and the buildings that are in it. It is at once singular and universal. The selection of the location for any building, as also for any city, was of primary importance in the classical world. The 'situation' the site - was governed by the genius loci, the local divinity, an intermediary who presided over all that was to unfold in it. The concept of locus was also present at all times for the theoretician of the Renaissance, even if by the time of Palladio and later Milizia its treatment took on an increasingly topographical and functional aspect. In the writings of Palladio, one can still sense the living presence of the classical world, the vital secret of a relationship between old and new. More than just a function of a specific architectural culture, this relationship is manifest in works like the Villa Malcontenta and the Villa Rotonda, in which it is precisely their 'situation' which conditions our understanding. Viollet-le-Duc, too, in his efforts to interpret architecture as a series of logical operations based on a few rational principles, admitted the difficulty of transposing a work of architecture from

one place to another. In his general theory of architecture, the locus participates as a unique and physical place. More recently, a geographer like Sorre could suggest the possibility of a theory of spatial division' and, based on this, postulate the existence of 'singular points.' The locus, so conceived, emphasizes the conditions and qualities within undifferentiated space which are necessary for understanding an urban artifact. Along similar lines, Halbwachs, in the last years of his life, concerned himself with the topography of legendary places. He argued that during different periods holy places have presented different physiognomies, and in these can be found the images of the various Christian groups who constructed and situated them according to their aspirations and their needs' (Rossi, 1984, p. 103). Muratori and Caniggia introduced the concepts of territory and terrain relative to the Husserlian concept of the 'lifeworld'. Thus, for meaningful work with form, recourse to comprehensive notions of structures in which all elements are related seems inevitable.

Mitrovic said that in Herder's opinion, 'history is the march of God through nations; the spirit of laws, times, customs, and arts is a result of divine intervention. The idea of the Spirit of the Time, Zeitgeist, that fascinated modernist architectural theorists originates from Herder's philosophy of history.' (Mitrovic, 2011, p. 99). However, in contrast, the core character of urban form is dynamic, and process-based, assuming the history of transformations, which is why it is of diachronic nature. The central idea of this study is closer to the notions of 'place' or 'genius loci' (Norberg-Schulz, 1980) in this respect, and is inspired by it. In the discussion around the notion of place Casey cited Malpas, talking on interdependence of elements within the place as a structure: 'Given the nature of place as a (somewhat loose) assemblage of diverse elements, the only thing that can prevent place from being refulgently chaotic is, for Malpas, its possession of a structure that holds these elements together' (Casey, 2001, p. 229). The concept of place, however, rather provides a worldview than more concrete methods. The authors' discussion around place sounds both phenomenological and system-based: 'But these microstructures of place, so well depicted in Malpas's discerning descriptions (where in he shows himself to be an excellent phenomenologist when he wishes to be), are themselves incorporated within what

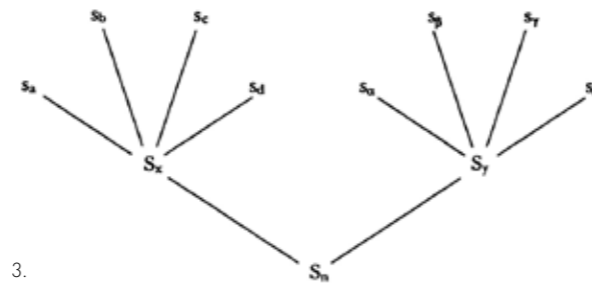
Figure 1. Aero-photo map of Krasnoyarsk 1967 (<https://kosmosnimki.ru/>)

Figure 2. The methodological practices of strategies and tactics are framed by broader systems of inquiry and schools of thought (retrieved from 'Architectural research methods' by Linda Groat and David Wang. Full citation is listed in the bibliography).

he calls the 'complex but unitary' continuation of any given place. This more capacious unity, however, is said to be only another structure, as in the claim that all particular traits of place have 'to be understood as embedded within the more encompassing structure of place' (Casey, 2001, p. 229). Umberto Eco with his 'La struttura assente' suggests the existence of  $S_n$  structure, which in a way defines the variety of phenomena within a certain society or location, which is present, but inaccessible. Since system-based views are undeniably relevant and therefore popular to describe urban processes in their complexity, many authors rely on or mention them in their theories. Eco mentioned anthropology, which studies the language code of a particular community at an early stage of development, reducing it to a more general underlying code of different languages; than studies relationships in this community, also reducing them; finally, it turns to the structure of their village, on the base of these three studies tries to identify the 'settlement code'. Eco explores how this type of ontology could work, trying to apply his considerations to culture in general and architecture in particular, emphasising that the concept is more complex in practice (Eco, 1968):

'Suppose that we have identified the structure of a certain language, we will denote it  $S_a$ . Then – the structure of kinship relations in the village where this language is spoken. Let's call this kinship structure  $S_b$ . Finally, let's assume that we were able to identify the structure that regulates the spatial organization of the village. Let's call it  $S_c$ . Obviously, these are surface structures, and some similarity can be found in them to the extent that they are implementations of a deeper structure, let's call it  $S_x$ . So, the question is as follows: if I discover some new phenomenon that can be described in the same terms  $S_a$ ,  $S_b$ ,  $S_c$ , then I will have no choice but to establish the presence of a fourth surface structure  $S_d$ , for which the deep structure  $S_x$  will appear as a set of rules for its transformation into  $S_a$ ,  $S_b$  and  $S_c$ . If, on the contrary, I have a new phenomenon described in terms of the  $S_d$  model, homologous to the possible models  $S_a$ ,  $S_b$  and  $S_c$ , then the latter will no longer be reduced to  $S_x$ , but to a new  $S_y$  model. In turn,  $S_x$  and  $S_y$  can also be considered as manifestations of the deepest structure of  $S_n$ , as shown in the following figure.'

Urban typomorphology use the notions 'coexistence' or 'coincidence' to talk about the relation of the development of Urban Form to the social and cultural context, avoiding



3.

also to define these relations as cause-effect' (more relevant to quantitative programmatic approaches): questions about causality may seem too straight-forward when talking about urban forms to have a role in causing things to come into being or events to happen even though it was proved that architectural objects to some extent or in some way influence behaviour, and much of morphology-based design is predicated on it. In sum, many theories offer comprehensive views or paradigms, which can potentially inform and inspire this study, offering ontological basis and terminology, but often they do not offer concrete practical methods, or are too specific to describe such a complex phenomenon as the historical environment. In contrast, Urban morphology is a school of thought dealing with urban form in a more holistic sense. Particularly, the typological-processual approach to urban morphology or typomorphology (originating from the Roman School of Architecture represented by G. Giovannoni, G. B. Milani, S. Muratori and L. Vagnetti, developed by G. Caniggia and the others) differ favourably in this sense (Maretto, 2014), providing applicable methods. The system-based views typomorphology inevitably shares, seeing the city as an organism, which consists of interrelated components or 'nested' concepts of different scales: 'We could object that we are looking for something (an order) that perhaps does not exist; we could sustain that these objects are disorderly, varied and that our work is nullified a priori; that we want to arbitrarily apply a system of laws that is not implicit in the objects themselves, an imposed order. Let us counter this for two reasons: buildings co-exist and each building has an antecedent' (Caniggia & Maffei, 2001, pp. 55-56). Considering the possible intrinsic synchronic connectivity of different layers of existence, urban typomorphology operates within its own domain - urban form, relying on the diachronic formative process.

Further, it is important to select the characteristics and

parameters of form in order to operationalize further the chosen methodology and define the strategy and tactics of research. First, typomorphology believes that urban forms are the product of the collective deep and inherited understanding (so-called 'spontaneous consciousness') that guide different authors allowing to create urban forms, which are relatively different, but united by intrinsic similarities and together compose urban 'texts' with the internal 'profound' logic. Similarly to this guiding profound logic, Pareyson mentioned formativity as an inscribed ability of form to produce other forms (Pareyson, 1954). The intrinsic generativity is also the main characteristic of Chomskian Generative Grammar - the ability of text to generate other texts and sentences. Pellegrino relies on the Chomskian concept of derivation tree claiming that syntax and morphology are the aspects of the grammar that apply to architecture in the generation of new forms (Pellegrino, 2011). Being a modification of the structuralist theory of linguistics, according to Chomsky (Chomsky, 1969), generative grammar is a system of rules that can form the exact combinations of words, which are characteristics of grammatical sentences in a certain language (or urban form in a given place in case of urban environment), emphasising generativity of text - the ability to generate new text; the author argues that structuralism has missed such intrinsic feature as inner creativity. Generative grammar studies a hypothesised 'innate grammatical structure', and essentialist Chomsky believed that syntactic structures are 'acquired' by children from 'universal grammar' (Chomsky, 1969). Perhaps if the idea of a genetic predisposition to certain forms - in a language or a city - is not taken too literally, one can find it reasonable. However, the spirit of this work is still closer to phenomenological and hermeneutic views: For instance, Pareyson's 'Estetica' (Pareyson, 1954) offers formativity - a characteristic of the art form, which can be helpful if the broader context or historical data are missing (the direct access to 'profound logic' is unavailable): the rules inscribed or imprinted in urban form help to generate new forms. Typomorphology offers operational conclusions related to formativity - it explains how the presence of certain architectural forms or parameters of form might have a formative effect on the genesis of the subsequent form (for instance, the appearance of 'specialised' building may cause the polarization or specialisation of the surrounding urban form). The idea of formativity of Pareyson is potentially able

to 'elegantly' enrich methodology, providing a framework for better transition from analysis of form to synthesis, making methodology slightly more operational: knowing that the form already contains a implicit program capable of generating new forms, one can try to read and interpret these programs.

Second, it seems inevitable to perceive the urban environment as a system consisting of elements. The relations between layers or elements of the system can vary and could be thought of as 'relativity.' 'That is, both hold that, contrary to empiricism, the meaning of a thing consists not in the thing itself but in its relation to other things.' (Hattenhauer, 1984, p. 72). System-based approaches may assume the hierarchy of interconnected layers or levels. For instance, Moudon sees the urban system as a nested structure of interrelated elements (Moudon, 2019). Urban typomorphology introduces the principle of connectivity as a vital principle for the application of morphological codes (Caniggia & Maffei, 2001), Dalla Negra introduced the notion of 'connective tissue' concerning urban fabrics (Dalla Negra, 2015). Eco even describes the possibility of existence of a fractal-like type of structure: as the message becomes more complex, it can reveal the certain 'isomorphism' of all levels of the message; likenesses of the rhythmic order echo with likenesses at the denotative or connotative levels. The author depicts a network of isomorphic correspondences that composes the specific code (Eco, 1968). In sum, architectural theories admit that the core principle of a settlement system is that all its elements are interconnected, and it is vital to determine, and define this connectivity before any operations with the system, or interventions. 'The context is taken into account differently. In this way, being interpreted by the architect, the context is not only able to act on the project, on the text that forms the buildings, but in return, the text of the project act on the context, in the sense that it determines the neighbourhood measures of the adjacent setting up (for example of the future adjacent setting up), that's to say the co-text, what is by the side of the text' (Pellegrino, 2002, p. 97). Concerning an element of the system, other elements can be considered as an interconnected context. From the point of view of Eco, the existence of (absent) structure determines the similarity of the logic of the development of distinct things as intrinsic connectivity. If one changes one thing in the context,

Figure 3. The The principle of 'absent structure' by U. Eco (retrieved from 'La struttura assente' (Eco, 1968). Full citation is listed in the bibliography).



everything else moves (Eco, 1968). The relationships between elements and the whole or in-between elements can be also defined by articulation in linguistics. Eco claims that semiology is capable of recognizing in the way of articulation of signifiers certain principles corresponding to mechanisms of thinking, unchangeable for all cultures and civilizations, and, consequently, to assume that each message contains an indication of how it should be read, thanks to the immutability of articulation mechanisms (Eco, 1968). Thus, at the operational level, it is important to determine the elements of the system and try to detect the connections that exist between the elements, 'connective tissue' or the ways of articulation.

Next, Eco stated that since reality is unknowable, the only way to know it is to change it, and this claim on the cognitive power of transformation converts structural models into operational tools (Eco, 1968). The processes, which are named 'transformations' in generative linguistics, are used to produce new sentences on the base of the existing ones. Louis Hjelmslev developed transformational algebra. In his book 'Aspects of the Theory of Syntax,' Chomsky presented the idea that each sentence has two levels of representation: a deep structure (core relations) and a surface structure (follows the phonological form of the sentence very closely, via transformations). Caniggian morphology uses the term 'transformation' in the meaning of 'operation' or 'change' which can, for example, develop type and its position in a hierarchy. The concept of 'transformations' in the theory of generative grammar assumed that transformation can, for instance, turn active sentences into passive ones, raise the subject from the secondary to the main clause, convert statement to question, etc. (Chomsky, 1969). It is said that the purpose of the concept of transformations is in increasing the descriptive power of context-free grammar, transformations reveal hidden information. Pareyson said that form can be understood or 'read' better in its sequence of changes (Pareyson, 1954). Levi-Strauss refers to Saussure's concept of structure, saying that communication is a system that is held together by internal connectivity, which could be studied along with its features by studying its transformations. In urban morphology, transformations of type are crucial since they can define and reveal the character of development: '*Dalla Negra (Dalla Negra, 2016) call the town rather as the 'place of transformations'*

*that is better suited to explaining both the complexity of historical urban fabrics and the dynamics process of form, even of the simplest of the contemporary settlement, that seem the casual juxtaposition of elements, put in the city of our time. It goes beyond the pure idea of 'work of art' because it is an unfinished form but in progress. It is the formal synthesis of a collective work of a humanized space, composed, organized with types, urban fabric and 'connective' systems'* (Carlotti, 2021). Generally, urban typomorphology perceives the city as an organism that appeared as a result of natural selection (similar to Charles Darwin's) and diachronic transformations. In a broader sense, architectures are the result of ages of transformations and natural selection: '*The world's best architects spent their lives adapting and improving them [shapes], trying to find the right relationships between parts.*' (Mitrovic, 2011, p. 91). Transformations reveal important properties of systems. Thus, historical information is inscribed in urban tissue: the role of urban form concerning the whole city structure as a key to understanding the logic of a dynamic process can be revealed by the studies of transformations. Urban form grammar is a consequence of transformations, and a description of the history of the part of the territory, the result of formative phases and transformative periods (Caniggia). Thus, the susceptibility to transformations is one of the most operationalizing properties of form.

Next, after defining the ontological position, theoretical framework and the main parameters, the strategy and tactics of the research should be selected, also using complementary theories.

## How to learn urban language?

Next, it is important to clarify the possible research strategy. Researchers in typomorphology (Carloti, Strappa and the others) offer the strategic combination of reading and interpreting urban form, which should be discussed in detail. Thus, reading itself, in the sense of understanding the present form (and the past form imprinted in the present) as a system with its codes and components, can indeed be based on iterative and comparative experience and practice. Caniggia emphasised that in order to be able to read, one should know the language (Caniggia & Maffei, 2001). Methodologically, Caniggia's writings offer languages of particular built environments (or 'urban books') and codes, the study of which is based on an understanding of the internal process of their formation, providing a logical basis for further study of other codes, or potentially allowing further readings and interpretations for architects in the design process. The author emphasise that in order to work with a particular urban environment, it is essential to know the 'language' of that very environment, implicit in the process of its creation: *'tools, the right code for our interpretation, must enable us to understand how buildings were produced but also when and how they changed, rebuilding the system of interrelated notions existing before the building in its builder's mind as a product of experience, civil culture and rebuilding the system of progressive changes, largely induced by other builders at a later stage and differing in experience and culture. This is synonymous with understanding the type and typological process.'* (Caniggia & Maffei, 2001, p. 55).

If one were to study a hundred maps, one would probably find several patterns and similarities and be able to draw certain conclusions - to reveal the language comparatively, this is the power of comparative reading. In addition, an important role is also played by the study of other precedents of 'reading' with the identification of the methodological apparatus and the principles used by the author of the precedent. Next, having studied the basic theory on which the precedents are based, and which provides the basic codes and patterns, one can understand the patterns in the studied form even more deeply, and ultimately be able to integrate one's research into a more comprehensive

theory, as well as practically rely on the conclusions drawn by colleagues. The books in urban typomorphology provide the basic theory and a variety of such precedents, a basic linguistic code (Oliveira, 2021; Strappa, Carloti, & Camiz, 2016; Caniggia & Maffei, 2001). However, as mentioned above, the ability of complementary theories to provide a logical or philosophical apparatus cannot be overestimated. Pareyson, for example, offers an important philosophical framework in his theory of formativity, which would facilitate reading. The author is certain that the art form (and architecture is part of it) already contains the programme of formativity (Pareyson, 1954) and that the process of its formation can be read. Indeed, urban form contains imprints of the history of its development, readable, if not in the physical form itself, then in its interpretations, such as maps and other images. This makes it possible, at least, to formulate hypotheses and research questions, or to get an idea of how it came about, for example, when the original historical archival material is not available.

Next, one component of the methodology of 'reading and interpreting urban form' is, obviously, reading (in fact, inseparable from interpretation) - the term strongly associated with meaning comprehension and semantics. Thus, how this 'reading' should happen in the case of urban form and in what sense 'reading' as a research tool is different from 'reading' the text (basically a comprehension of the meaning)? Which knowledge can facilitate this comprehension? How to reveal and learn the basic code or language of form?

First, the study of meaning and meaning comprehension in language studies are two different things. The so-called theory of meaning in linguistic theory distinguished two separate strands, one of which said that grammar is the abstract semantic system, and another considers the socio-cultural context, emphasising that it would be a mistake to mix these approaches in one study. This should methodologically inform the study of urban form meaning. Additionally, discourse and semantics were separated from syntax by Zellig Harris, who excluded semantics from structural analysis, and this is also important. Chomsky said, *'it is possible that natural language has only syntax and pragmatics'* (Chomsky 1995, p. 26). Later essentialists included semantics in their studies. Similarly, in the studies of urban form, it is methodologically better to focus first

on the revealing the linguistic codes and 'reading' of the form itself with its principal characteristics, understanding the elements and rules of their connectivity - 'grammar' and 'syntax', principles of formation and transformation, not trying to comprehend or 'grasp' the meaning, without the consideration of semantics and cultural context. This would be methodologically correct, even if quite limited. It is then possible to convert this 'grammar' and 'syntax' into some sets of codes and rules based on the study. In urban planning practice, there is a long tradition of creating design codes and design guides, which ideally should be based on this studies of form language and reading. However, such design codes and guides are not a panacea in themselves, handling them requires professionalism in interpretation, as well as, inevitably, parallel semantic and contextual studies.

Thus, it turns out that grammatical and syntactic studies are not sufficient to continuously build a rich 'meaningful' form, not considering semantic components. Eco said that the fact that architectural form can be described by employing a geometric code does not mean that architecture as such can be reduced to geometric code (Eco, 1968). The author provides the following example: if the ideogram of the Chinese language and the word of the Italian language consisting of phonemes can be equally translated into the categories of decibels in a radio translation, it doesn't mean that Chinese and Italian are based on the same code; any physical phenomenon can be reduced to a molecular or atomic code, but this doesn't eliminate the use of different means when analysing a mineral and an artistic masterpiece (Eco, 1968). Moreover, successful architectural 'text' is rarely a simple implementation of code (artistic structures differ from simple linguistic ones in this way): even if not meaningless, it is not always well-integrated, and doesn't always convey 'artistic' messages. Indeed, it is important to separate structural analysis - grammar and syntax - from any semantic studies, without mixing them within the same episode of research, but it seems impossible to avoid semantic studies in general.

Architects like to discuss the meanings of architectural forms. Students in architecture throughout the world necessarily write various papers on the critical readings of buildings and spaces, searching for references, metaphors, meanings, connotations, etc. A lot of publications on

the topic of architecture and language are devoted to the meanings of objects, based on case studies, relying on the texts of philosophers and theorists of architecture (Pereira & Caló, 2016; Macarthur, 2014; Rowe, 1987, 1996a, 1996d, 1996c, 1996b). Being efficient exercises for writers-architects, practically, such texts often give a fish instead of a fishing rod for readers. A wall in an architectural environment, as a rule, means protection and limitation, and this denotative code is relatively stable. However, the same wall can change its connotative codes, for instance, over time, and the wall of a destroyed building, still limiting the space, would symbolize certain events in memory, being a memorial or artefact, or referring directly to a bygone architectural culture. Symbols of power are transformed simply into witnesses of a cultural epoch and can refer exclusively to their time, and this list of examples can be continued. However, from an operational point of view, everything in the semantic universe is not quite clear or too unstable to rely on.

Thus, architects tend to study signs in a built form and explore symbols, denotations, and connotations. The exploration of the semiological universe should be better started with the definitions of basic notions and concepts, and an understanding of their interrelations. Eco explained the relation between a symbol and a thing (referent) as a reference, or the information that the name communicates to the listener; while the connection between the symbol and the referent is doubtful, the connection established between the symbol and the reference is direct, mutual and reversible (Eco, 1968). *'The symbol, according to Hegel, offers a natural connection, intrinsic between a signified and a signifier, putting at stake simultaneously a direct Form and an abstract notion. The symbol incarnates already of a natural way the values it is supposed to represent. The sign, in contrary, is situated in an extrinsic relation between a certain signified and its signifier, characterizing the arbitrary nature of the linguistic sign, is based on the conventions of a culture. According to de Saussure, the language is a system composed of signs that produce meaning. The sign doesn't set in relation a thing and a name, but a concept and an acoustic image'. [...] The sign is thus the knowledge of a concrete reality that evokes an other reality in accordance with a natural or artificial connection'* (Pellegrino, 2002, p. 94). In the Saussure's view: *'the sign consists of a signifier and a signified. The*

two occur together and are separable only abstractly. The signifier is that which conveys meaning. The meaning is the signified. The signifier is the form; the signified is the message' (Hattenhauer, 1984, p. 72). Wang & Heath explained: 'concepts 'signifier' and 'signified' were proposed by Saussure to explain the two aspects of a sign. Signifier implies the external expression of a sign, and signified indicates the internal content of a sign.' (Wang & Heath, 2011, p. 401). Both complex concepts of sign and symbol can be found in urban form systems, which are extensively discussed by architects. In the form studies, for Quatremere, 'This dialectic between type and model highlights an important shift in signification. Type is the idea signified, the sign, and the model the signifying, incorporating the representation of the sign, its sign-ness, and becoming in imitative terms its 'image' or duplicated representation. In other words, type is organisational and strategic, the model structural and tactical' (Jacoby, 2013, p. 125). Eco said that signified in some semantic theories is not a referent, but a denotation of a certain symbol. Denotation could be a whole class of things that exist in reality and are covered by this representation, while connotation is a set of qualities attributed to a thing. In this case, denotation is the extensiveness of the concept, the connotation coincides with its intensity. Signifiers can be described without considering the meanings attributed to them, signified can be modified depending on the code of reading. As can be seen, the relations between the notions in semiological universe are complex and not straightforward, that is why cannot be converted to the all-embracing formula, deserve separate studies and will not be the focus of this research.

Eco also makes a distinction between the repertoire of symbols, a code and a lexicode: the repertoire is a list of symbols; the code defines a system of their differences and oppositions, and the rules for their combination; the connotative lexicode is built as a system of meaningful oppositions (it may not include the rules of combination, referring to those established by the main code), it attributes other meanings to the signified denotative code, using the rules of articulation provided by code (Eco, 1968). Often, in the process of semiological research, according to Eco, it is necessary to assume a code where in reality there is only a lexicode, or to consider as a lexicode that, in essence, is a repertoire; lexicodes and repertoires are

based on a more fundamental code. If the amplitude of semantic fluctuations is reduced and can be exhausted by the main denotative code, then at the level of connotations, fluctuations are carried out in a very wide spectrum (Eco, 1968): bold metaphor, irony, allusion, detailed comparison - all these can lead to misunderstanding. While denotative codes can be quite easily distinguished, more stable, obey strict rules and are strong, connotative lexicodes are changeable, weak, often depend on who is speaking, their description is always more or less approximate and is associated with a certain risk (Eco, 1968). Eco provided a convincing illustration of the way how connotation may occur: the connotative meaning is born precisely when the signifier and the signified form a pair that becomes the signifier of the new signified; the connotation is provoked not only by the signifier but turns out to be the transformation of the former signifier and the signified into a new signifier; it may be that this connotation will give rise to a new one, in which the already newly formed sign will completely act as a new signifier. Therefore, the author said, while the original denotative values are set by the code, the meanings depend on secondary codes, or lexicodes, which are not inherent to all, but only to some part of the native speakers; and so it goes right up to the extreme case of poetic speech when we first encounter a completely unusual connotation, a bold metaphor, an unexpected metonymy and the addressee must cope with the context itself to understand the meaning of the proposed image, which, however, does not prevent a poetic find, if it is successful, from gradually entering everyday life, becoming the norm, turning into a lexicon for a certain group of native speakers (Eco, 1968). 'The crucial feature of Saussure's one type of sign is that we have to learn it. Or, rather, we have to learn the relationships between his signifier and his signified. We learn that a particular letter on paper represents a certain sound, that a particular grouping of letters makes a certain word, that this word, according to the dictionary definition, refers to a certain thing, or at least 'carries' a certain meaning. And that goes for all the words of a language, which is why we all have difficulties with those foreign languages which we have not had the time or the inclination to learn.' (Broadbent, 1980, p. 20) This again refers us back to the need to study the language of form as paramount.

Thus, studying the meaning of an architectural form along

with the process of its 'reading' after studying grammar and syntax, it is 'safer' to talk about denotative codes. It is obvious that several elements of the constructed form are made for a specific purpose or explicitly to observe a certain ritual. The fence for everyone indicates restrictions or affordances. The elements of the religious architectural form are designed by their form to guide behaviour, to designate its scenarios. 'Drama, like the secular rituals of modern society, is the rhythmic repetition that reminds us of what our behaviour should be. By giving consent to architecture, we dramatize our attitudes and convictions. The various theatres of human acts, such as stadiums, bedrooms, churches, classrooms, bars, and banks, allow us to question or re-affirm our personal and collective values and to inculcate them in others. Insofar as ritual is dramatized and linguistic, it is rhetorical, for architecture is partly a store of rhetorical conventions. [...] In other words, the structures arranged by humans into communicative forms become rhetorical when their signifieds influence behaviour' (Hattenhauer, 1984, p. 74).

The 'risky' or 'shaky' semantic layer in this work would include certain considerations and limited discussions about references, denotations and associations of the detected grammar and syntax, possibly avoiding discussions in terms of cause-effect relations (also remembering that the pro-system is unachievable, the only thing one can do is to focus on the internal logic of the given system). Thus, it is important to set the limitations of the research and avoid discussions about the exact nature, roots or meaning of the particular code if the exact 'etymology' is unknown. Identification of certain, known or highly possible influences or references would be enough to enrich understanding. Additionally, poetic symbolic connotative 'strokes' can informatively 'decorate' a stable grammatical structure, considering the limitations of their use, but they should hardly be the purpose of the given study.

For example, it cannot be said today (since no direct evidence has been found) that the turrets of Siberian fortresses directly signify what they signified in Roman fortresses, that they refer to Roman fortresses, or that they have identical functions, even with some physical resemblance, since there is no direct connection between a symbol and a thing / a referent, the connections are

in a much more subtle relationship. Furthermore, the exact etymology is not established in the research. A specialist in European fortification, for instance, can make a mistake by studying the fortifications of other peoples and cultures without a deep understanding of their cultural context and the exact connecting events between these cultures. And the physical similarity of the form can be deceptive. It is also easy to make a mistake in reasoning about the origin of these or other forms, jumping to the conclusion that later forms on one continent are descended from earlier ones on another, when there is no evidence of a link or at least the awareness between the cultures. The origin of both could be determined by the laws of objective physics or the logic of certain processes that are uniform for the entire globe. Speaking of denotation and connotation, in the case of the Siberian fortress, for example, one can refer to a whole class of fortresses (denotation), the fortress (type) of which is a collective image, and the denotation of which can be the concept of defence or protection. However, when 'reading' the urban form, one can use the concept of a directly known 'reference', talk about the similarity of forms, suggest connotations or specify the means or code of this reference, and keep this in mind during the operational processes.

As can be seen, the whole semiological universe and the principles of its organisation and theories of meaning should undoubtedly be taken into account in the process of 'reading' urban form; knowledge of the principles of the formation of signs, symbols, connotations, etc. is important. However, the connections between things in the sphere of the meaning of form are too fragile, and this forces one to rely more on the tools in the arsenal of philosophy or art for learning this language, reading and interpretation. For this reason, this work is less interested in deciphering or discussing the meanings of architecture, nor does it pretend to search for a 'formula' of intentionally creating meanings. Rather, the aim is to find a way for continuously recreating a possibly meaningful, integrated architectural form that reproduces the existing continuity with the possible intrinsic form meanings and codes. However, artistic meanings, according to Pareyson, can and should emerge as a 'side effect' in the process of formation. 'What you should try to accomplish is built meaning. So, get close to the meaning and build' (Aldo van Eyck, Team 10 Primer, p. 7).

It is also important to consider the social and cultural context of urban form, but in the separate episode of research. Pareyson, in his theory of formativity, also cautions against focusing too much on the context or history of the subject; the author says that one should turn to the context or history of the subject after analysing the form as such, perhaps to verify the relevance of codes and properties already found in the 'reading' (Pareyson, 1954). Thus, the researcher interested in the meaningful reading of urban form should be interested in a certain contextualisation - the simultaneous processes in social and cultural systems to increase awareness, but it is important to distinguish these types of research questions, which can be studied simultaneously or diachronically, but separately, importantly without seeking cause-effect relationships.

In addition, in order to find a tool that is suitable for transfer to operational practice, but at the same time preserves the capacity for a holistic approach, it can be assumed that the grammatical units themselves should become more capacious, or some of the capacious theories should become somewhat more operationalised. So, to return to the textual analogy, to increase the likelihood of getting a meaningful sentence, you can take a letter as a unit and try to make sense of it (if we are talking about architecture, the units will be structural or functional elements, for example, the beam). The letter can be special and encompass some certain symbolic meaning in itself, and this is a specialised letter (e.g. Greek letters in maths), the analogy in architecture can be a specific door of special shape leading to a special room. The probability of getting a meaningful sentence would be insignificant. Alternatively, you can take a word or even a phrase as a unit (a building or a group of buildings or a type of building or a block), such a unit a priori contains the meaning and the connections inherent in it. Or one could look at this word or phrase with its etymology, which would provide even more meaning. The probability of creating meaning increases even if only the laws of grammar and syntax are used at the operational level of text creation, without direct operations with meanings. In a word, to create meaning using only grammar and syntax, one should use units, which are already meaningful. There should be an operationalising concept in urban form studies, such as the concept of type: *'The function of language or, more precisely, the structure*

*of rhetoric - the effective and persuasive use of language to relate content and form - is recurrent in all type theories'* (Jacoby, 2013, p. 4). This concept needs to be handled with particular care, firstly by defining the meaning of the notion before its application in methodology, as there have been a variety of definitions of type (see below). The nature and outcome of the methodology may depend directly on the definition. Jacoby's work is informative from the point of view of the evolution of the concept of type in architecture, and provides several operational conclusions that can effectively inform and complement the design and research methodologies based on type: *'One can therefore interpret three theories of type that emerge in the first half of the nineteenth century as corresponding to the first three principles and the canonical order of rhetoric and poietic composition: inventio, dispositio, and elocutio'*. (Jacoby, 2013, p. 4). Alternatively, for example, according to Eco, when it comes to architectural codes, they are often typological codes (directly semantic), since there are such configurations in architecture that openly indicate their meaning (Eco, 1968). Caniggia constructed such a typological code in his work (Caniggia & Maffei, 2001). At the same time, Norberg-Schulz said that it is important that the symbols of the descriptive system are simple: *'A system of symbols must consist of elementary symbols which signify the elementary properties of the higher objects'* (Norberg-Schulz, 1968). A separate section is therefore devoted to terminology and the definition of the smallest meaningful unit. So, in our descriptive system there are still elementary units such as elements of building systems - windows, walls, doors, etc., but in order to achieve a readable environment it is perhaps important to group them not into other simple systems - some buildings that are not subject to decoding - but into more complex systems - types that already have holistic systems of meaning packed into them. Importantly, the irreducible meaningful unit should be defined individually for each individual case.

Thus 'reading' in the given work, firstly, follows the detection of grammatical and syntactical codes in the form (learning language), together with the study of formations and transformations following the methods of the Italian school of urban morphology. Secondly, some denotative and relatively stable connotative strokes can enrich the grammatic structure. Thirdly, the study of various

cultural context and possible references should inform the semantic layer of the given work. Type is chosen as a meaningful unit of grammar. In his book (1968), Umberto Eco proposed the principle that describes how codes (cultural, architectural, linguistic, etc.) work, based on his 'La Struttura Assente': code is a structure that acts as a fundamental rule in the formation of specific messages; codes can be compared with each other on the basis of a common, more comprehensive code (Eco, 1968). Thus, different or relative codes, grammars and syntaxes can be compared on the basis of their intrinsic characteristics, possibly dictated by a common code. Two settlements can be compared on the basis of morphological similarity for a detailed study of further similarities and differences, and in this case the similarities will probably speak of a common code specific to a wider cultural area, and perhaps to humanity as a whole, and individual features will show local meanings and identity. In addition, different settlements on different continents, for example, can be studied on the assumption that if they share a similar context - geomorphological, cultural, climatic, and developed at the same time - they may share a similar morphological code. Maps, archival documents and architectural drawings are operationally useful as a written history of the city: *'Many researches on urban morphology on the sense and significance of form, recognize in the cadastral drawing the storytelling of the plural lithic history of the city'* (Marrone, Pezzini, 2005, p. 9). *They investigate about the representation of the city to understand the logic and choices that have contributed to settle the present-day form of the built space'* (Pellegrino, 2006, p. 20). Indeed, details of development that are invisible in the physical substance of the city may be more visible in its graphic representation.

## How to read and interpret form?

Often the approaches offer the transition from analysis to synthesis, or from idea to realisation, which are still rather unnecessarily simplistic, or too abstract and therefore require facilitation. Architects have discovered the use of a diagram as a means of making such a transition, and this diagram may contain all the necessary data about functions, technologies, and relationships between parts and the whole. These diagrams are often transformed into software for architects. However, this approach might be risky if taken too directly as a formula, ready-made solution or as a panacea, a replacement of the artistic interpretation. That is why there is a constant search for the balancing more 'poetic' approaches. Even the concepts of analysis and synthesis can be too pragmatic and therefore misused: 'A real 'analysis', at least in the specific meaning of the term is a: 'study method that proceeds from the particular towards the general by breaking up an organic whole into parts; in philosophy, any logical operation that proceeds through a sequence of distinct concepts to achieve a synthesis, where elements analysed gather together in units' (the Italian Language Dictionary). An analysis, therefore, is the mere listing or a numbering of data taken from reality, which is ineffective in expressing a synthesis. On the contrary, a synthesis of the whole remains indispensable in representing the entirety of an organic reality to us' (Caniggia & Maffei, 2001, p. 205). Jacoby instead supports the approach relative to Pareyson's formativity, using this pair analysis-synthesis: 'This simultaneous analytic and synthetic procedure could be applied to all stages of design and was a practice essential to the progressive development of a project. Architectural design was then a discursive process of hermeneutics and transcription' (Jacoby, 2013, p. 311). One could say that there should always be a kind of irrational component in such transit: 'Real creative activity, of course, transcends the repetition of known reproductive schemata. Generally, it must be characterized as a deviation from 'normal' behaviour, and important artists rarely find immediate recognition. But the deviations should not be accidental' (78, (Norberg-Schulz, 1968). This balancing between programmed and accidental is in the core of art formation. Apparently, at the moment of a complex nonlinear transit between 'reading' the past

form and 'creating' or discovering a new form, it would not be possible to avoid referring to philosophy and art (Pareyson). Type theories might be also complementary: 'Architectural theories, especially those relying on their systematising of disciplinary knowledge on typological concepts, persistently refer to the classical fundamentals of discourse: logic (dialectic), grammar, and rhetoric. For a rational abstraction of ideas and their translation into form by design, type presumes dialectics but in practical terms requires grammar—the mechanics of a language—and rhetoric—the utilisation and adaptation of language' (Jacoby, 2013, p. 4).

It has always been the concern of artists and researchers to support and facilitate the difficult process of searching for art forms with means and procedures. In an attempt to facilitate the process of invention or discovery, architects write various essays on the critical interpretations of existing buildings and spaces: this type of exercise trains critical thinking and metaphorical associations. Goodman provides the example: 'The ascription of certain properties to a building in such cases is metaphorical and does not amount merely to its being literally false, for metaphorical truth is as distinct from metaphorical falsity as is literal truth from literal falsity. A Gothic cathedral that soars and sings does not equally droop and grumble. Although both descriptions are literally false, the former but not the latter is metaphorically true' (Goodman, 1985, p. 646). Basically, such essays offer literal textual interpretations of 'architectural texts', suggesting meanings of projects and built forms; they are great for developing the architect's figurative thinking as an artist. However, interpreting works of arts, it is crucial to know the limitations of such an interpretation: 'we are seldom utterly at a loss to interpret a prehistoric or other work when virtually nothing is known of the artist or his intentions. But the main fault I find in this view lies in its absolutism rather than in the particular test of rightness specified. A work of art typically means in varied and contrasting and shifting ways and is open to many equally good and enlightening interpretations. At the opposite extreme from such absolutism is a radical relativism that takes any interpretation to be as right or wrong as any other. Everything goes if anything does. All interpretations are extraneous to the work, and the critic's function is to strip them off' (Goodman, 1985, p. 648). Gadamer suggested in his 'Truth and Method'

that interpretations of the past text are hardly possible without the past context, which is usually unavailable (Gadamer, 2006). In the end, not all architectural forms are intentionally made to mean something, or the meaning might be lost or hidden in the past: 'Because of semantic shift, it is impossible for us to reconstruct completely what an architectural form signified for its originators. To do so, we must reconstruct much of their ethos and world view, a process that rhetorical critics know is crucial but seldom perfect' (Hattenhauer, 1984, p. 73). In general, however, hermeneutics can largely inform the process of interpretation in urban form studies, while researchers consider the typological-processual approach in urban morphology as a branch of hermeneutics (Carlotti, Malfroy).

Some architectural theories and practices use methods of cultural deconstruction on the way to creating a new form, such as critical regionalism (Frampton, 1983). Critical regionalism, in contrast to deconstructivism, focuses on the preservation of the integrity and specificity of local cultures as well as the maximum integration of new forms. However, the results of literal reconstruction after deconstruction can be also risky and controversial, which has already been mentioned ('anything goes'). Since the approaches to architecture in the twentieth century, relative to the linguistic, often based on deconstruction or positivist analytical-synthetic tools, appeared quite problematic, it is important to remember the difference between Hermeneutics (Gadamer, Pareyson) and deconstructivism (Derrida, Deleuze). Pareyson's hermeneutic approach to the art form has significant value for the process of reading and interpreting in urban form. This work, therefore, relied on the essence of his writing, with the aim of informing and facilitating future readers and interpreters. Process-based typology offers an approach to the interpretation of urban form that emphasises this understanding: 'Interpreting building structures means understanding and making use of the logical tools and structures of the built environment characterising a cityscape; in other words, understanding the components of a man-made complex. Such composition consists of various buildings produced at different times and with varying shapes, functions, and dimensions. Around us we can see a whole series of different houses, streets, churches, fields, etc., in turn consisting of elements on a minor scale - walls, rooms,

floors, fences, etc. - or summed up on a large scale in the form of towns, villages and countryside. The main purpose of interpretation is to understand whether, behind apparent fortuitousness, there is a harmonious system enabling the various different objects forming our environment to co-exist and succeed one another in time, to vary, adapting each time to a certain degree of unity and to cooperate: organic unity' (Caniggia & Maffei, 2001, p. 55).

Thus, the authors refer to the need to read and understand past forms in order to interpret and discover new ones to achieve unity, integrity and continuity. It is safe to say that the design of a new form in the historic environment is always a difficult task. If the core idea of such a design is to find the 'implicit project in the urban form' (Carlotti, 2021), then methodologically Eco's principle of the process of art restoration can be conceptually relative to the larger substance such as the historic city as an object of restoration in a metaphorical sense. Eco claims that the art of restoration consists in deducing the missing parts from the surviving parts of the message (in a historical urban environment, the site of intervention could be considered the missing part, while the whole environment is a message). The author acknowledges the objective impossibility of precise deduction, because in his message the artist always goes beyond the traditions and techniques of his time. The restorer, like the critic, specialises in revealing the hidden rules and idiolect of a work of art or structural pattern (i.e. learning language or code and 'reading') (Eco, 1968). Pellegrino supported similar idea: 'one may wonder how this stability of the conformation of the signifieds remains, while that of the signifiers changes, as the first and second functions displace; how, for example, an archaeologist architect can determine the form of a crumbled building from incomplete fragments while not knowing the precise location and the usage of origin' (Pellegrino, 2006, p. 213). The historic environment can therefore be seen as the object of restoration in all types of intervention, from minor landscape restoration to new buildings. This means that the existing form contains all the necessary instructions for future forms in a broader sense - be it a work of art, a historical environment or a building. According to W. Baumeister, works are pre-existing ideas, while material, motif, artistic vision and artist are of secondary importance (Ritter, Gründer, & Gabriel, 2007). Thus, many authors said that the signal that provokes the

appearance of the form already contains all the necessary information for new formation: 'Concreteness, to say completeness of the cue means to say that it is already a whole, albeit only in a germinal form, and if at present it does not contain all the parts and aspects and elements of the form, it nevertheless already evokes them, claims them, anticipates them, prepares them, suggests them and attracts them' (Pareyson, 1954, p. 109). The work of an architect within the historical built form is therefore to read the existing form within its synchronic physical context and interpret it in his or her architectural forms. For instance, in the traditional form of settlements, it is clearly visible that each vernacular house is simultaneously a kind of instruction, which provides information on how to build another new house in this settlement: 'The language of buildings is a way of participating in, 'interpreting' and 'producing' buildings themselves, integrated in a system of spontaneously conventional notions common to users and for builders within the same cultural area' (Caniggia & Maffei, 2001, p. 32). Pareyson said that the art form acts as an active shaper in the process of formation rather than existing as finally formed: 'During the production process, the form, therefore, there is and there is not: there is not, because as formed it will only exist when the process is complete; there is, because as forming it already acts when the process has begun. [...] The form, anticipated by the attempts that tend to realise it, then becomes the law of organisation of the process that, by succeeding, leads to it; so that formation, in this respect, is actually a process unambiguous and unfeasible beyond a certain point, i.e., an organic process, in which the form itself, before existing as a realised work, acts as the law of organisation' (Pareyson, 1954, pp. 59-61). 'This dialectic relationship is enabled by the fact that data analyses relating to needs are to be found already summarised in existing structures in the form of 'organisms' (Caniggia & Maffei, 2001, p. 205).

Caniggian position in this respect is close to the view of Pareyson in relation to the art-form: to read means to understand the form in its process, in its complexity and context, to see in it the potential program of its creation, taking into account the personality of interpreter: 'In the figurative painter, for example, it is not possible to distinguish the hand from the eye nor the eye from the hand, i.e., the way of forming from the way of seeing nor the way of seeing from the way of forming. He figures as

he sees, but down he sees by forming and constructing; his figuration is claimed by his vision, but his vision is already forming [...] In its concrete and total individualisation, the starting point already contains, if only because it suggests or imposes them, the elements of the formative process from which the work is to result' (Pareyson, 1954, p. 251). That is how the author defines the term of interpretation: 'interpreting is such a form of knowledge in which, on the one hand, receptivity and activity are inseparable, and, on the other hand, the known is a form and the acquaintance is a person. No doubt interpretation is knowledge - Indeed, there is no knowledge for man except as interpretation, as will result from the following - because to interpret is to grasp, to grasp, to interpret, penetrate. Now, the concept of interpretation results from the application of knowledge of two principles that are fundamental to a philosophy of man: firstly, the principle that all human activity is always both receptivity and activity, and secondly, the principle that all human activity is always personal' (Pareyson, 1954, p. 153). Pareyson talks about aesthetics and art form, but his reasoning is perfectly applicable to this study and the form in architecture. In Gadamer's view, texts are interpreted from the perspective of the interpreting person: 'Gadamer's description of the hermeneutic circle assumes that every act of understanding requires projection—making assumptions about the meaning of what is said and then, by means of the hermeneutic circle, revising these assumptions. Such projections— and with them our understanding of the meaning of a text—always derive from our prejudices' (Mitrovic, 2011, p. 133). In Pareyson's view, 'when speaking of interpretation, one immediately thinks of a possessive adjective: my interpretation, your interpretation, his interpretation, which emphasises the fact that the interpretation is always someone's' (Pareyson, 1954, p. 152). The process of interpretation can also rely on philosophical research in the field of phenomenology, which focuses on first-person experience and close to hermeneutics. Authors inscribe in forms their internal cultural process: the whole spiritual life is formative. Urban morphologists of the Italian school assume and allow a certain degree of subjectivity in process of reading and interpreting urban form. The very act of reading urban form can be considered a formative act if made as a part of pre-project activity of the architect, it cannot guarantee the presence of content or meaning, but contribute to this. Thus, Pareyson considers interpretation as a dynamic

process that includes both the figure of the author of the work and the figure of the one who is engaged in reading the form - both of them are interpreters (Pareyson, 1954, p. 12). Each person, interpreting a work of art, creates a new edition of it.

Caniggia offered 'interpretation by reconstructing the processes of formation' (Caniggia & Maffei, 2001, p. 205). Similarly, Pareyson's form is strictly inseparable from the process of its creation: 'First of all, it is necessary that the model is considered not in its motionless perfection, which is unrepeatable and inimitable, but in the dynamics of its forming process, because only in this way does its rule, instead of being translated into a norm, present itself in terms of operational effectiveness, capable of being assimilated and transported, reinvented and transferred' (Pareyson, 1954, p. 123). Quatremère introduces the notion of type, which includes a similar processual logic and offers socially, culturally, and historically legitimated changes and adaptations. Processual logic implies that form is not static and unchangeable (Dalla Negra, 2015). In his book 'How buildings learn', S. Brand emphasised the fact that we like old buildings because they were built to last, survived and experienced multiple changes and proved their survivability (Brand, 1994). 'Therefore, the independence of the work of art not only does not prevent it from referring back to the process from which it results, but rather confirms and reaffirms it. The work of art is, in its perfection, absolutely independent and does not refer to anything else outside of itself; but it does refer back to the process from which it arises, which is not properly external to it, but is entirely included in it, precisely because it is its conclusion. If the totality of the work were static, one defect would suffice to dissolve the unity and destroy the whole; but it is dynamic, which means that the work, disturbed by some imperfection, has not yet come to be itself in all its parts, but the law of organisation of the process that formed it already acts as the law of coherence of the almost completed form, to hold the parts together in indissoluble and to indicate itself the parts that have not fully obeyed the law of the whole' (Pareyson, 1954, p. 91). In the case of urban form, the absence of materials illustrating the genesis of formation is not tragic, since the entire genesis is contained in the final form as it appeared at the time of contact with the reader and interpreter, and this genesis can also be read with the correct reading. Urban form is

a book of its changes written in its intrinsic characteristics, a palimpsest. All the iterations and phases in the process are important: 'Form, as the success of attempts, as a work produced while inventing its rule, as the success of a formation that has been able to organise itself from within, is essentially the outcome of a process: it is the process itself that has come to its own conclusion' (Pareyson, 1954, p. 78). Consequently, having 'read' the form, it's supposed genesis and its history of creation, the creator can simultaneously assume variants of its continuation in his interpretation. The idea of a process is not limited to the process of evaluating a given object and a set of preceding forms, but includes a set of subsequent forms, united by a cultural process that can provide adequacy and integrity. Thus, in the process of interpretation, it is necessary to try to read the instructions contained in the current and previous forms and interpret them in the process of creation of subsequent forms. Thus, integration into the overall process does not contradict the individuality of the form, but even strengthens it: 'So it is with tradition, the unbroken reality of which compromises so little the singularity of the work that adheres to it, that it rather contributes to spelling out and manifesting its soul' (Pareyson, 1954, p. 142).

The process of interpretation is a way of acting (Caniggia & Maffei, 2001, p. 55). Thus, during the process of interpretation coinciding with reading: 'It is useless to insist on the obvious realisation, executive and poetic aspect of formativity: to form means, first and foremost, to 'do'' (Pareyson, 1954, p. 43); activity as necessary condition is important as the artist 'thinks with a pencil in hands'. In the endless creation of iterations and variants, a balanced form is born: 'The necessary awareness of the multiplicity of interpretations does not legitimise the explicit programme of giving a new interpretation but is converted into the duty to deepen the work in order to render it ever better' (Pareyson, 1954, p. 199). Therefore, dynamic consideration of form includes not only the study of changes but the study of the author's variations and 'corrections': 'why does the artist erase, correct and redact if not to adapt what he is doing to that the work itself requires of him? and how can he correct and remake it if it is not the work that he is doing that guides and directs him? and how does the critic arrive at an exact evaluation of the variants and sketches and final drafts if the formed and successful work itself does not appear to him in the act in which it strives to

conform with itself, that is, in the act of acting as a formant? Criticism based on the examination of variants and drafts is a powerful confirmation of the tentative and thus formative character of the production of a work of art, and of the necessity for the reader, in order to perform the work he or she is reading, to place himself or herself in the author's point of view by considering the work in the act of acting as a formant.' (Pareyson, 1954, p. 216). The consideration of the active dynamics of form thus provides access to one of the central ideas of the work. In the case of urban form, the presence of archival material as a record of phases can be of great help in the study of language, reading and interpretation. If this study of the author's formative process is accompanied by the process of form production in the mind of the reader, then we can speak of simultaneous interpretation. Tests, trials, experiments, i.e. finding out and inventing different possibilities, together with the practice of constantly interacting with a problem, help to find out how the form should be done - this is how the author arrives at inventing the necessary possibility. Form in art is attractive and charming because of both its completeness and its potential for further change. It is safe to say that the same process occurs with urban form: it is beautiful in its integrity and perfection of incompleteness, allowing for additions and transformations according to changing times and internal laws of development. Taking all this into account, should we not say that the artist does not invent the form, but discovers it, if the form that constitutes the work is a law not only of the process that produces it, but also of the process that interprets it? ((eidos) comes from the verb idein, 'to see' (Preus, 2015)) The crucial moment is between authors' spiritual development and the ability to interpret, when the code becomes a 'vector' in the process of continuous development, embodying in the appearance of several completed related forms, each of the subsequent ones is inspired by the previous one and at the same time bears the signs of its author and thus has its own identity. Finally, 'The concept of 'interpretation' in turn already entails a wide-ranging system of relationships, starting from the dialectic relationship between ourselves as interpreters of the built environment and the built environment in its intrinsic possibilities of being interpreted' (Caniggia & Maffei, 2001, p. 55). The code of this urban book, the history and process of its creation, its immediate content, and the personalities of interpreters are therefore important for interpretation.

Typomorphology uses the method of 'reading and interpreting historical urban form', taking a piece of urban fabric as a text in context, taking into account spatial and temporal dimensions. Caniggia said: 'Co-presence and derivation are none other than historical outcomes in space and time. Co-presence is a spatial correlation; derivation is temporal correlation: an object exists in that it belongs to an identified point of the dual process that can be summed up in the unique concept of 'history'' (Caniggia & Maffei, 2001, p. 55). Additionally, the semiotician Terrence Hawkes writes, 'Language should be studied, not only in terms of its individual parts, and not only diachronically, but also in terms of the relationship between these parts, and synchronically, that is, in terms of its current adequacy' (Niven, 1996, p. 129). Art form, in Pareyson's understanding, is inseparable from its context. In fact, the main advantage of contextual interpretation in this sense is the possible achievement of integrity and continuity, because objects that do not fit the immediate context, do not refer to anything, are not pleasant, not understandable, not interesting and not informative for us (remembering that the study that focuses on the cultural, political, social context should be done separately). Non-integrated architectural form, which today often appears massively and inconsistently in the historic environment, creates information noise that complicates daily life. It is important to consider both synchronic and diachronic relations of forms: 'The description of urban morphological processes asks for the construction of an ontology based on a double temporal approach in which must cohabit diachronic and synchronic relations (it gives an account of the appearance of new concepts, their dormancy, their disappearance, their stability...)' (Pellegrino, 2011, p. 34). The 'reading' of form in the Caniggian terms is impossible without understanding the process and the context in its historical perspective, imprinted in the existing form in historical environments. The dynamic diachronic consideration of the form in its emergence from the historical humus is indispensable to the perception of its value in a historical context that should certainly and usefully be traced; in this way, the form contains the rules and codes for its creation and is itself capable of generating new forms.

The work of architecture is inseparable from the material of art, the matter. The finished work is nothing other than

its own material and cannot be distinguished from it: the work is the formed material itself. Formed matter no longer has the properties it had before artistic elaboration and no longer follows its natural laws, while unformed matter is the mutability of mutable things, receptive to any form (Ritter, Gründer, & Gabriel, 2007). Consequently, the reproduction of the work in the new material also involves interpretation: 'the transformation of a piece for organ into a piece for piano is complicated by the fact that in the change there remains a relative identity of language through the diversity above all of the instrument; and there is certainly a great transformation, because the creative intention was defined in terms of the particular effect that could only be achieved with that material and that instrument, with oil paint rather than with watercolour or inlay or whatever, with a particular tonal tempera rather than another, so that the transcription attempts to achieve the original effects with the new materials and the new instruments, adapting and inflecting them' (Pareyson, 1954, p. 37). It should be remembered that when the material or other conditions change, the interpreter must consider the nature and characteristics of this new material in order to avoid the effect of imitation. Every result of interpretation has its own spirit and style, its own law of coherence and organisation. Finally, the interpretation of the text written in the language of the urban form should result in the other urban form rather than in a literal text, that is why textual interpretations of architectural forms are outside the interest of this work.

Finally, Pareyson claimed that contemplation and the enjoyment of beauty is the conclusion of interpretation: 'It has been seen that the movement of interpretation is a process of formation, and that the stillness in which interpretation culminates is contemplation' (Pareyson, 1954, p. 165). Thus, for this moment of reading and interpretation, philosophical and art methods are facilitating. All these phenomena seem impossible to link, explain, and describe by pragmatic quantitative methods or formulas. To create, not to follow the program, to form, not to imitate, interpretation, therefore, is the embodiment in the work of the program laid down in past works. It is important to be careful to avoid normativity, so as not to reduce the method to a set of rules, recipes. It is therefore no longer a question of 'applying' a rule in its 'normative' formulation, but of 'adopting' it in its 'operational' efficacy;

no longer of disregarding the work in which it operates, as if it existed beforehand, but of immersing it in the work, which was able to succeed precisely because it was capable of being invented; no longer of considering it as the norm of a codifiable legislation, but of rediscovering it as a 'rule of law' (Pareyson, 1954). Ultimately, 'Learning form language' in this case coincides with 'reading' while reading process coincides with 'interpretation'.

## Methodological conclusions

For the purpose of restoring and rethinking the continuities of places with the complex past survived through multiple interruptions, such as difficult economic, cultural, social or political events and periods or the changes of power and ideology, which are currently searching for the methodologies capable of bridging the existing discontinuities and restoring or redefining their identities in cultural and architectural terms, such as colonial or foundation historical cities, the urban form of these places should be carefully conceptualised for the successful transition into architectural practices of the future. In conclusion, after a careful review of methodologies capable of facilitating the answer to this research question, it can be said that the theories that provide a holistic and comprehensive understanding of form in architecture and urbanism often offer little in the way of concrete methods that can be applied in practice, while others are too specific to deal with a phenomenon as complex as historical form, causing considerable difficulties. However, for the study of the palimpsest of urban form, the present work aimed to find a comprehensive methodology, but one that would be potentially operational.

The central spirit of this study is close to the phenomenological notion of 'place' (Casey, 2001) or genius loci (Norberg-Schulz, 1980) in this respect, and is inspired by it. Holistic or comprehensive approaches do not offer ready-made formulae and are difficult to operationalise, but they can provide an ontological framework and a terminological spectrum. The given research is not explicitly framed by a paradigm, the very notion of a paradigm is complex and polysemantic. However, it is this depth and comprehensiveness that will force the need to refer to this concept several times throughout the given study. At the same time, this research seems to run counter to the prevailing modernist paradigm in architecture, since the present study appeals to meanings, and the significance of the historical process for the urban environment, while relying on the guidelines of the Italian School of Urban Morphology (typological-processual approach to urban morphology, typomorphology, originating from the Roman School of Architecture represented by G. Giovannoni, G. B. Milani, S. Muratori and L. Vagnetti, developed by G. Caniggia and others), which seeks to achieve continuity with the past, while at the same time proposing methods to make architecture explicitly modern and offering the basic 'language' and principles of urban formation. The Italian school of urban morphology considers the urban environment holistically as an organism, synchronically and diachronically, taking into account the multiple flows of information, people and resources that shape it. The character of the urban form is dynamic and process-based, assuming a history of transformations.

Considering the possible intrinsic synchronic connectivity of various layers of existence, urban typomorphology operates within its own domain - urban form and cultural imprints. The system-based views typomorphology in a way inevitably shares, seeing the city as an organism, which consists of interrelated components, fractal-like or 'nested' (Moudon) concepts of different scales.

Caniggia's approach is both practical and practice-based, illustrating and exemplifying its use and explaining the basic principles of the formation of spontaneous urban fabrics. The followers complemented the studies of the method of Muratori and Caniggia with further examples of application (Carlotti, 2021; Mareto, 2013, 2014; Oliveira, 2018; Strappa et al., 2016) and extended the method by adding the principles of formation of planned cities (Moudon, 2019; Després et al., 2015; Larochelle and Gauthier, 2003; Larochelle, 2002; Larochelle and Lamandi, 1999; Després and Larochelle, 1996) or complemented the basic terminology by adding definitions and methods derived from the other schools of urban morphology, such as metrological analysis (Chow 2002; Serra, 1990; Slater, 1990) or definitions appearing in the historical-geographical approach (Conzen, 1960; Whitehand, 2010). More open or 'eclectic' approaches will not lose relevance in the near future, which was also evident at the ISUF (International Seminar on Urban Form) conference in 2023. Therefore, it was necessary to choose the combination of terms and methods that satisfies the research question posed by the particular study in order to conceptualise the particular form. In addition, Caniggia's method highlights the spatial typology of urban forms, which is to some extent shared by different cultures and places. However, in order to define local identical forms, it is important to understand and conceptualise what is not shared, and this requires the clarification of method and terms. Relying solely on the Caniggian typologies makes it difficult to answer the methodological question of how to apply the process-based typology to a completely different site. This is particularly important for unexplored areas such as Siberia.

How reading itself, or the transition from reading to interpreting, should be done? This research has a designated combined strategy and tactics, and accepted parameters. Particularly, the main framework for this study is provided by the typological-processual approach to urban morphology, reinforced by concepts taken from the relative strands of urban morphology (e.g. 'fringe belts') and complementary theories and philosophies, which fill logical, methodological and semantic gaps and contradictions. First, in terms of parameters, Pareyson offered formativity as the ability of a form to produce other forms (Pareyson, 1954, close to generativity in Chomskian generative grammar - the intrinsic ability of texts to produce other texts

and sentences). Urban typomorphology, which offers a similar logic, suggests that urban forms are the product of a collective deep understanding (so-called 'spontaneous consciousness') that allows different authors to create urban forms that together compose urban 'texts' or forms with an internal profound logic that can inform the production of further texts or forms. The idea of formativity makes the methods of urban morphology more operational: knowing that the form already contains a programme capable of generating new forms, one can try to 'read' these 'programmes' and 'interpret' them in projects. Caniggia offered the idea of formative process, which consists of the phases of formation and periods of transformations, which informed and structured the Part three of the given work. Moreover, knowing how certain urban forms exert a formative effect on neighbouring forms (for example, a phenomenon of polarisation of the urban form around the specialised building illustrated in the part II of the given work), it is possible to 'predict the processes in the urban fabric' or discover new forms.

Secondly, it seems inevitable to perceive the historical urban environment as a system composed of elements and layers, and the specificity of the relationships between layers or elements can vary. Typological-processual approach introduces the principle of connectivity as a vital principle for the application of codes, which can be informed by, for instance, the 'absent structure' (Eco, 1968). The core principle of a settlement system is that all its elements are interconnected, and that it is essential to determine and define this connectivity before any operations with the system or interventions. Indeed, knowing the principles of connectivity, or the ways of articulation, makes it easier to operationalise the urban form. Therefore, at the operational level, it is important to determine the elements of the system and the connections that exist between these elements. The third important feature is formativity. The special processes called 'transformations' in generative linguistics are used to produce new propositions on the basis of existing ones. Eco noted that since reality is unknowable, the only way to know it is to change it, and this claim to the cognitive power of transformation turns structural models into operational tools (Eco, 1968). Transformations highlight important specificities of a system and its elements, revealing and generating types. The ability to transform is thus one of the most operational properties of a system of urban form. By studying transformations one can better understand the system and learn how to work with it, which is explicit in the part three of the given work.

Urban typomorphology provides operational tools, which can be summarised in the approach of 'reading and interpreting urban form' at the strategic level. What is meant by reading? How the results of the reading should be interpreted? Thus, practically, reading (in the meaning of understanding the past and present

form as a system with its rules, codes, and components) itself, indeed, can be based on trial and error, iterative experience and practice of comparative analysis of codes, or the explicit or implicit use of norms to reveal the local 'language' of form. Additionally, an important role is played by the study of the other precedents of 'reading' (Carlotti, 2021; Mareto, 2013, 2014; Oliveira, 2018; Strappa et al., 2016) with the identification of the methodological apparatus, along with the principles used by other authors of precedents, which can vary. Having studied the basic theory, on which the precedents are based, and which provides the basic codes and patterns, one can understand the patterns in the studied form even deeper - learn the local language, ultimately being able to integrate their research into a more comprehensive theory, as well as practically rely on the conclusions made by colleagues. 'Learning form language' in this case coincides with 'reading' while reading process coincides with 'interpretation'.

Pareyson's formativity relies on the idea that the very process of its formation can be read in the form, and the continuation of the process by the artist by means of interpretation can to a certain extent guarantee the continuity and success of new forms when the reading process coincides with the interpretation process. Often, the form contains imprints of the history of its development, readable, if not in the physical form itself, then in its imprints in maps and other images. The reading of these imprints allows, at a minimum, to formulate hypotheses, research questions, or get an idea of formative process even when the original historical archival materials are not available. However, according to Gadamer we cannot interpret the text outside of its context. Therefore, the final interpretation of the urban fabric in the form of design projects should be based on the current state of urban form and its immediate physical context.

*'A conclusion must, above all, start from a balance-sheet, which can give us the sum of unified indications over human components in the series of various scales under review, which co-exist and participate in the environment structured by man, in the comprehensive organism that forms the structure of human space' (Caniggia & Maffei, 2001, p. 205). In particular, 'reading' in the given work starts, first, with the detection of grammatic and syntactic codes in form, along with the study of formations and transformations, which helps to define the main local language. In this process of reading, type is selected as a meaningful unit of grammar. In an architectural environment, 'words' can be, for example, types of buildings, roads, and elements of the environment; there will be some syntax, grammar, and morphology between them. It is possible to study these forms by converting them into some sets of rules and forming codes. Secondly, some denotative and relatively stable connotative 'strokes' can enrich grammatical structure.*



Third, the following or simultaneous study of cultural context and possible references should inform the semantic layer of the given work. In the case studies of urban form, this work is focused, first, on the form itself defining its structure, 'grammar' and 'syntax' without the consideration of semantics, which would be methodologically correct. Thus, the second chapter of the given work is dedicated to the definition of intrinsic characteristics of urban forms, identifying elements of structure and its connections, and detecting grammar and syntaxes (Detailed morphological reading of the Siberian city). Next, different or relative codes, grammar, and syntaxes can be compared with each other on the basis of their intrinsic characteristics, possibly dictated by a common code (Eco). Two settlements can be compared based on morphological similarity for an in-depth study of similarities and differences, and in this case, the similarities will probably speak of some common code specific to a larger cultural area, and maybe to the whole of humanity, and individual features will demonstrate local identity. Additionally, for instance, different settlements located in different parts of the earth can be studied on the assumption that having a similar context - geomorphological, cultural, climatic, even temporal - developed within the same period, may have a similar morphological code. This comparison is also provided in the second and the third chapter (comparative morphological reading of the Siberian and Canadian foundational cities).

However, knowledge of grammar and syntax in local language is not enough to create a rich meaningful environment, not considering semantic components. Architects are usually interested in signs in a built environment and explore symbols, denotations, and connotations. At the same time, it is important to separate structural analysis - grammar and syntax - from the studies of denotations and references, without mixing them in the same episode of research, especially talking in terms of cause-effect relations. If the amplitude of semantic fluctuations is reduced and can be exhausted by the main denotative code, then at the level of connotations, fluctuations are carried out in a very wide spectrum (Eco, 1968): bold metaphor, irony, allusion, detailed comparison - all this can lead to misunderstanding. While denotative codes are quite easily distinguished, more stable and obey strict rules and strong, connotative lexicodes are changeable, weak, and often depend on who is speaking, their description is always more or less approximate and is associated with a certain risk (Eco, 1968). Therefore, the risky 'semantic' layer would include certain considerations and limited discussions about references, denotations and connotations, and associations of the detected grammar and syntax, possibly avoiding discussions in terms of cause-effect relations (Part 3 of the given study). It is important to avoid discussions about the exact nature, roots or meaning of the particular code if the exact 'etymology' is unknown. Identification of possible influences

or references would be enough to enrich understanding. Thus, poetic connotative 'strokes' can informatively decorate a stable grammatical structure, considering the limitations of their use, but they should hardly be the purpose of this study. These 'strokes' will appear from time to time throughout the text. The complexity of semiological universe and principles of its organisation should undoubtedly be borne in mind in the process of reading the urban form.

It is important to emphasise that, in order to provide a tool suitable for transferring to operational practice, but at the same time preserving the capacity of a more holistic approach (as opposed to reductive), the units of codes themselves should become more capacious, or some of the capacious theories should become somewhat more operationalized. Thus, referring to the analogy with the text, the probability of getting a meaningful sentence would be more significant if one can take a word type with its etymology, or even a phrase as a unit meaningful (a building or a group of buildings, or a type of buildings, or even a block), since such a unit a priori contains the meaning and the external properties and connections inherent in it. So in our descriptive system there are still elementary units such as elements of building systems - windows, walls, doors, etc., but in order to achieve a readable environment it is perhaps important to group them not into other simple systems - some buildings that are not subject to decoding - but into more complex systems - types that already have holistic systems of meaning packed into them. Importantly, the irreducible meaningful unit should be defined individually for each individual case. The probability of creating meaningful sentences increases, even if only the laws of grammar and syntax are used at the operational level, without operating directly with meanings, connotations and denotations. Thus, the notion of form - a capacious concept, with which this study began, can become a meaningful unit, operationalised with the notion of type. This notion should be handled especially carefully, first defining its meaning for the methodology, since there are a wide variety of definitions of type in the world along with the ways of dealing with them. The essence and result of the methodology will directly depend on the definitions (provided below). In sum, this work is less interested in deciphering or discussing the meanings of architecture. Rather, the goal is to find a method for creating a potentially meaningful, integrated architecture that reproduces the continuity in the intrinsic form meanings that have developed within a certain environment, interpreting architecture using its intrinsic local language.

The second stage would include certain considerations and limited discussions about references, denotations, etymologies and meanings of the detected grammar and syntax, avoiding speaking in terms of cause-effect relations, with the aim to 'learn local language'. Pareyson, in his theory of formativity, also warns

against focusing too much on the cultural context or history of the issue, it is said that one should turn to these context or history of the issue after analyzing the form as such, perhaps to prove the properties of the form that have already been found or detected, or suggested: '*the appropriateness of this attitude, which makes use of the work's antecedents to understand it only if these are themselves illustrated by the work*' (Pareyson, 1954, p. 82). Thus, the researcher, who studies urban form grammar and urban systems, should be interested in certain contextualisation and in the simultaneous processes in social and cultural systems to increase awareness, but is important to differentiate these types of research questions, which can be studied simultaneously or diachronically, but separately, importantly without the search of cause-effect relations. The third chapter is dedicated to the process of identifying references, external influences, and etymologies in the language of urban form. Caniggia distinguished the phases of formation and periods of transformations in the settlements. This part of the study aims to detect these phases and periods for Siberian cities, revealing influencing ideas and references, and indicating identical forms, which persist in time. It is also important to observe how external ideas are transformed during their adaptation, forming local identities in the formative phases and providing continuity. In sum, throughout the text, the studies of grammar of the urban form is methodologically strictly separated from the description of the context and historical excursions used to prove or disprove hypotheses that arose in the process of reading or the definition of grammatical and syntactic codes.

The fourth chapter of the given work is dedicated to the illustration of reading and interpretation with the aim to demonstrate how the methodology can work. First and foremost, to read and interpret, one should know the language. The core idea of such a design is in finding the implicit project in urban form (Carlotti, 2021). The place, before something existing in the place is, according to Aristotle, the dimension in potency; and because of this similarity Plato held that the place is the matter. Eco claims that the art of restoration consists in deducing the missing parts from the surviving parts of the message (in a historical urban environment the place for the intervention project could be considered the missing part, while the whole environment is a message). Author acknowledges the objective intrinsic impossibility of the precise deduction, because in his message artist always goes beyond traditions and techniques of his time. Indeed, designing in a historical city resembles a restoration process: architects need to know and 'read' the historical urban form to find, interpret, and discover the missing element in the existing structure, considering its codes. Pareyson claims that reading is inseparable from interpretation. The form forming the work is a law not only for the process that produces it but also for the process that interprets it. Finally, hermeneutic interpretation aims at the understanding of

existing text and the integration of the new part in it.

All the iterations and phases in the process are important to take into account: the practice of interacting with a task or problem requires the experiment and trial and error approach but is not limited by it. In the case of urban form, the presence of archival materials as a record of phases can significantly help in reading and interpretation, but the absence or the lack of materials (as in the case of Siberia) is not definitive, since the entire genesis is enclosed in the final form as it appeared at the time of contact with the reader, and with correct reading, the genesis also can be read and interpreted. It should be said that the artist does not invent but discovers the form: reading the form is impossible without understanding the formative process in its historical perspective imprinted in the existing form; the form, which contains the rules and codes of its creation, is itself capable of generating of new forms. The idea of a process is not limited to the process of creating a certain object, it includes several preceding forms and a number of subsequent ones united by one cultural process as the code imprinted in form produce a number or a sequence of related forms, each of the subsequent ones is inspired by the previous one and at the same time bears the signs of its author and thus has its own identity. In the traditional form of settlements, it is clearly visible that each vernacular house is simultaneously a kind of instruction, which provides information on how to build another new house in this settlement.

There is a connection between authors' spiritual development and the ability to interpret. So, Pareyson sees interpretation as a dynamic process that includes both the figure of the author of the work and the figure of the one who is engaged in reading the form - both of them are interpreters. Finally, the urban form is beautiful in its integrity and perfection of incompleteness, allowing additions and transformations in accordance with changing times and internal laws of development. In sum, an art form in Pareyson's understanding is inseparable from its content, context, and the process of its creation, and from the personality of the interpreter or creator. In architecture, it is important to remember that a work of art is also inseparable from the material of art. '*After all, interpretation is a way of acting*' (Caniggia & Maffei, 2001, p. 55).

Consequently, having 'read' the form, its supposed genesis, its history of creation, the creator can simultaneously assume variants of its continuation. Indeed, the key advantage of interpretation in this sense lies in the possible achievement of continuity and connectivity, since if the objects do not fit in connection with the context, do not refer to anything, are not pleasant, not understandable, not readable or not interesting and not informative for us, in the case of architecture that appeared massively and inconsistently in the historical environment - create

information noise that complicates daily life. Therefore, cultural and aesthetic interpretation is a necessary tool in creating architectural images of settlements based on reading the existing environment. All these phenomena seem impossible to link, explain, and describe by pragmatic quantitative methods or formulas. It is important to be careful, avoiding normativity, not to reduce the program to a set of rules, and recipes. Thus, for this moment of reading and interpretation, philosophical and art methods are facilitating. Finally, the interpretation of text written in the language of the urban form should result rather in the other urban form or methodology of its creation, than in literal text. Form should be interpreted in its immediate context and result in contemplation.

The annex illustrates the principles of the process of finding the implicit project in the urban form (Carlotti, 2021): reading and interpretation. The historical environment of the Siberian city became the 'text' to be 'read', to be found, to be interpreted and to discover the missing element in the existing structure, taking into account its codes, revealing the hidden rules and idiolect of a work of art or a structural pattern. The local 'language' revealed in the previous chapters became the basis for reading, a form capable of generating new forms. Having 'read' the form, its supposed genesis and its history of creation, the creator simultaneously assumes variants of its interpretation: the chapter demonstrates the process of reading enriched by the simultaneous possible interpretation of codes. Processual logic implies that form is not static and unchangeable, and therefore legitimises interventions in historical form if these interventions follow processual logic. In the absence of archival materials, in reading the form of the historical villa in the chapter, the author relies on the form itself, which contains the imprints of past forms, to build the suggestions about its development. The example is not and definitive, there may be many alternatives. Each subsequent writer is free to interpret this instruction in a different way. Form is beautiful in its integrity and perfection of incompleteness, allowing for additions and transformations, so that the reader, who is also the interpreter, can imagine different ways of developing the project. In architecture, a work of art is also inseparable from the material of art, so the work with material is also exemplified. Thus, the illustrative part presents the example of revealing the implicit project in urban fabrics using the methods of reading and interpreting, relying on the language codes revealed in the previous chapters and offers possible options of form development rather than literal text.

In particular, this work begins with the detailed morphological analysis of the grammatical and syntactic codes of one of the basic cities - the Siberian city of Krasnoyarsk, where the author of the given work was born and has been teaching and practising architecture for decades, using the methodological approach

described in detail above (Part II). This was followed by a comparative detailed morphological analysis of the city, which is located on the other continent, but has a quite similar socio-cultural and political background, as well as geomorphological characteristics, and allows to reveal local cultural specificities along with obvious morphological similarities. After that, an in-depth study of the formation process of several Siberian foundation cities (Krasnoyarsk, Irkutsk, Tomsk, Yeniseisk) followed in order to enrich the repertoire of grammatical and syntactical codes of the urban form of these cities with certain connotations, denotations and references, which mostly constitute local specificity and the meaning of the urban form (Part III). This analysis of morphological codes has been carried out with the help of current cadastral maps of the cities, historical maps and master plans, and has been supported by the rich historical literature produced by historians and architectural historians for the cities under consideration. The extraction of morphological codes can be compared to learning the language of urban form for future reading and interpretation. The tools described above provide a conceptualisation of the available information on local urban form for further use in architectural and urban practice, which is exemplified in the illustrative annex.

# Terminological essay

The notion of form in this work is operationalised by the notion of type. What is meant by the concept of type in the given work? Why it is of particular importance? How does the prevalence of a certain understanding of the term and concept at a certain period of territorial development coincide with the formation of the urban environment in this territory? For Rowe, the terms Type and Paradigm are relative, type can be also understood as a record of collective experience (in typological-processual approach to urban morphology), the set of relatively abstract principles, the 'idea' of building, or certain component in taxonomy, etc. For instance, the following expression of Focillon *'Form may, it is true, become formula and canon; in other words, it may be abruptly frozen into a normative type. But form is primarily a mobile life in a changing world. Its metamorphoses endlessly begin anew, and it is by the principle of style that they are above all coordinated and stabilized'* (Henri Focillon in *'The Life of Forms in Art'*, 1934) illustrates one of the possible understandings of type, close to the model or template. However, for the Typological-processual approach to urban morphology, and for the given work, the type is not a frozen normative type, which sounds even risky for the development of urban organism due to its static nature. That is why it is important to formulate the difference between the existing understandings of type, which have been changed synchronously and diachronically, syntopically and diatopically, in a way determining the formation of physical urban form. Being studied and defined sufficiently, type can operationalize form also due to the presence of numerous complementary theories offering methods and experiences (e.g., phenomenology).

Thus, how can the result of applying the method depends on the understanding of the concept by the architect acting within the framework of the methodology? Depending on how a term is defined, framed, or integrated, the theoretical and practical results of the application of methodology may be different, which will be demonstrated below. History offers precedents when different, sometimes opposite understandings of these concepts accordingly coincide with the different production of the physical urban form. Jacoby in his dissertation considers 'theories concerned with type as epistemological and discursive arguments by which a synthesis of the form of architecture and the city is organised. Through typal reasoning, form acquires a multi-layered historical, social, cultural, and symbolic dimension that is both limited by and in excess of its material reality. Moreover, it is through the problems of type and historicity that a modern reasoning of architecture has become defined' (Jacoby, 2013, p. 10). The author described in detail the emergence and transformation of the concept of type in architecture since the XVIII century, focusing on individual thinkers and their mutual influence. Apart from considering different theories and definitions of type and selecting the most relevant to answer the research question, this study, based on complementary case studies, traces how a change in the understanding of type has correlated with the physical urban formation in a specific place. Thus, starting from the overview of different definitions of type in many disciplines and epochs, which in some way shaped the cultural processes of the development of cities, the following text will move on to the concept of a type that emerged in the XX century and corresponded to the revolutionised production of the urban environment, exemplifying this with the certain period in certain place. It will conclude with recommendations for newer perceptual definitions that can potentially contribute to the change of the current pragmatic production of the built environment to the continuous development of local cultural forms.

The concept of type has evolved in accordance with the changes in times, social attitudes and beliefs, and scientific discoveries. The understanding of history of the development of the term gives an idea of its potential, which becomes especially obvious in comparison with the materialistic oversimplified understanding of the term, dominating in the 20th century, that eventually caused its rejection, particularly among architects. The body of literature, that deals implicitly or explicitly with type and typology in architecture, is vast and growing. Jacoby mentioned 'Quatremère's entry of type in the *Encyclopédie méthodique: Architecture* (1825, III), *Argan's On the Typology of Architecture* (1962), *Rossi's Architecture of the City* (1966), *Colquhoun's Typology and Design Method* (1967), *Vidler's The Third Typology* (1976), *Moneo's On Typology* (1978), and *Werner Oechslin's Premises for the Resumption of the Discussion*

*of Typology* (1989)' (Jacoby, 2013, p. 12), and this list can be continued: 'Ever since Vitruvius, architectural theorists have given expression to the idea of a first architectural model—a type or archetype— from which architecture derives, without making explicit mention to those terms' (Jacoby, 2013, p. 12). Author claims that the main literature belongs to three historical phases: the nineteenth-century emergence of inaugural theories of type by Quatremère, Durand, and Semper; the reconsiderations of type in the 1960s and 1970s; the historiographical reviews of typological theories in the mid-1970s - the mid-1980s or the 90s. Thus, the concept of type, much like the concept of form, was already introduced in antiquity. Different authors and disciplines understood the concept differently. The 'Historical Dictionary of Philosophy' (Ritter, Gründer, & Gabriel, 2007, p. 1587) provides the following spectrum of the definitions of early type. In Greek it derived from *túnto* (to strike) or *tutów* (to coin), in craftsmanship and art meant the embossing form (hollow form, sketch) as well as the embossed (relief, statue, engraved letter), also impression e.g. of a signet ring or coin die. The term entered the European linguistic area via the Latin borrowing (*typus*). First attested in Aeschylus, type means, as in Empedocles' account of the first humans (*ouhogveis ... túroi xuovóg*; raw clods of earth), the shapeless shape. Plato (like Aristotle) compares the impressions that perceptions leave in memory to impressions of a signet ring in wax, type here means either the impression or the perception itself. In Neoplatonic metaphysics, the archetype as well as the type corresponds to the heavenly world of ideas that shapes the sensual world of appearances. Therefore, meanings range from outline, shape, form to model, pattern and paradigm. In post-classical times the meaning is usually changed to the archetype or prototype. Later, from the 2nd century till Renaissance, the term has been tasted by theological writings and was used by religion, meaning temporally preceding image or timeless symbol in Christian institutions (Ritter, Gründer, & Gabriel, 2007, p. 1587). The spectrum of uses broadened moving to the centre of the Enlightenment's critique of religion: 'typology first denoted in the study of scriptures reasoning by analogy in order to interpret the Old Testament as prefiguring the events and ideas of the New Testament: typology was the symbolic correlating of meanings. The authority and use of types by Jesus Christ implied that we do not fully understand reality unless we perceive it typologically' (Jacoby, 2013, p. 8). The term has had multiple interpretations mentioned in religious texts (image of gods, type of the coming one i.e. counter-image of Christ, etc.). However, the scope of use of the term and its potential was broadened even further along with the development of science and technology, particularly printing press, becoming a medium of reproduction. Jacoby said that in architecture, a typological order and morphological abstraction were already present in Sebastiano Serlio's early sixteenth-century book 'On Domestic Architecture'. Type appeared confidently beyond the religious

context in the XVIII century in various spheres (Ritter, Gründer, & Gabriel, 2007, p. 1587): in the 17th century as an isolated exemplary scheme within the grammar, in the 18th century in natural philosophy as a single basic form of the various mineral, botanical and zoological manifestations, on the threshold of the 19th century as a taxonomic term for differentiating species in flora and fauna as well as social, psychological, national and geographical characters. That is how the concept of type has evolved and acquired relevance, potential and depth in different spheres in accordance with the change in times, social attitudes, and values. Natural sciences and philosophy in the 18th and later 19th centuries also demonstrated that clearly: 'In every ontogenesis, the genetic force ensures the outward development of the inner, essential type since every creature is nothing but an idea of creative nature that has become real' (Ritter, Gründer, & Gabriel, 2007, p. 1587). Goethe searches for the analogous to the original plant, original animal - the concept, the idea of the animal, which he discovers in the osteological basic structural plan, the type of the mammalian. Growing interest in history, archaeology, anthropology, and etymology, and the emergence of the concept of ontogenesis has significantly changed the understanding of the type and spread to other fields of knowledge, type acquires significance in natural and practical philosophy, the philosophy of language and aesthetics. Kant used the concept of type in the Critique of Practical Reason (1788) in the section on the Typology of Pure Practical Judgement and defines the type a law for the sake of judgement. W. von Humboldt introduced it into the philosophy of language, while used by F. D. E. Schleiernmacher to designate basic shapes or forms (Ritter, Gründer, & Gabriel, 2007). Le Roy made an important contribution to the theory of architecture of the 18th century, influencing the evolving type theories in architecture, saying that, we need to use the potential of drawings as diagrams to methodically analyse buildings and their design, both typologically and morphologically (Jacoby, 2013).

By the XIX century, the notion of type gained popularity and acquired its versatility, partly due to the appearance of the concept of ontogenesis, which also inspired and informed architects and art historians trying to overcome the dominating doctrine of imitation (*mimesis*). Jacoby in his dissertation considers three fundamentally different inaugural theories of the first half of the XIX century (works of Antoine-Chrysostome Quatremere de Quincy, Jean-Nicolas-Louis Durand, and Gottfried Semper), which were built around typology (even not explicitly stating that). Author argues that they can be united by the reasoning of form through the means of symbolic abstraction. More precisely, for Quatremère, type as non-formal description provides a framework for discovery or invention or 'poetical' *mimesis* based on the structure of rhetoric; Durand's taxonomy is based

on the functionality of form, formal reduction of precedents and the abstraction of structural diagrams (where the form is the result of a structural arrangement of parts and a morphological sequence), disassociating form from its symbolism and connotations (Jacoby, 2013, p. 300). Author emphasises that mimetic imitation in the process of form creation was replaced by conceptual, memetic, and symbolic abstraction and argues that the combination of the advantages of three approaches would make this synthesis relevant for contemporary architecture since they engage with the historicity of the architectural work, but also share a search for the syntactic and ahistorical reading of form. Quatremère's understanding of type who was referring to Plato's concept of form is of particular interest for the given work: Idea (*eidós*) embodied in type is a way to transfer typal reasoning to the arts. Similarly to Rowe, Quatremere understands type as a paradigm or pattern (Quatremere, essay on imitation, p.21). Quatremere understands type as a generator, which comprises instances and potentials, is commonly produced by conventions, but transformable and dynamic, it is not a static framework, but rather a dynamic system of coordinates, which allows adjustments that mediate between the intention of a creator, its precedent models, and social- cultural context. The author's understanding of type influenced the revival of the notion in the XXth century. Through typal reasoning, form acquires a multi-layered historical, social, cultural, and symbolic dimension (Jacoby, 2013, p. ii).

Here it is important to recall Rossi's quote (1984) of Quatremère de Quincy: 'The word type represents not so much the image of a thing to be copied or perfectly imitated as the idea of an element that must itself serve as a rule for the model .... The model, understood in terms of the practical execution of art, is an object that must be repeated such as it is; type, on the contrary, is an object according to which one can conceive works that do not resemble one another at all. Everything is precise and given in the model; everything is more or less vague in the type. Thus, we see that the imitation of types involves nothing that feelings or spirit cannot recognize .... We also see that all inventions, notwithstanding subsequent changes, always retain their elementary principle in a way that is clear and manifest to the senses and to reason. It is similar to a kind of nucleus around which the developments and variations of forms to which the object was susceptible gathering and mesh. Therefore, a thousand things of every kind have come down to us, and one of the principal tasks of science and philosophy is to seek their origins and primary causes so as to grasp their purposes. Here is what must be called 'type' in architecture, as in every other branch of human inventions and institutions .... We have engaged in this discussion in order to render the value of the word type taken metaphorically in a great number of works- clearly comprehensible, and to show the error of those who

either disregard it because it is not a model or misrepresent it by imposing on it the rigor of a model that would imply the conditions of an identical copy.' Rossi stated that Quatremère rejects the understanding of type as something to be copied because there would be no making of architecture in this case. In architecture, he explained, there is an element that plays its own role, not something to which the architectonic object conforms but something that is nevertheless present in the model. Quatremère's theory (Encyclopédie méthodique: Architecture (1788–1825)) presents type as the discursive resource providing a structural idea and framework for invention (Jacoby, 2013, p. 4).

Thus, by the middle of the XIX century, the use of the concept of type in philosophy and different sciences (e.g., zoology, botany, crystallography, chemistry, linguistics, psychology, architecture, etc.) intensified: type denotes the simplest form in which a certain law of structure or composition can be given, basic form, a comprehensive concept, which at the same time is to find its real image in certain objects of experience. Logics of the second half of the 19th century discussed the problems of classification and taxonomy with certain semantic nuanced differences, understanding types as 'idea', 'general concept', 'basic form', etc. According to Maier, one distinguishes between two basic forms of type, the natural or - in its application to history - the historical and the constructive type (Ritter, Gründer, & Gabriel, 2007). The procedure of type formation stands in the middle between conceptual and descriptive abstraction. 'Philosophy of philosophy' uses the term excessively, mentioning the concept of 'typical fiction' or 'fictitious archetypes' (a type of science fiction closely related to schematic, paradigmatic and utopian fiction), etc. It can be seen how the complexity of understanding the term has increased in the middle of the XIX century, with its depth and diversity. Finally, typological thinking manifested itself in multiple forms in the XX century, introducing the changing variety of the understanding and the use of the term: 'types of world views', 'types of philosophical thinking', 'types of mind' (K. Jaspers); 'types of metaphysics' (M. Scheler); 'typology of epistemologies', 'typology of interpretation' (K. Mannheim); 'basic types of possible points of view in epistemology' (N. Hartmann), 'typology of meaning-bearing', a 'typology of the history of philosophy' and a philosophical theory of 'types of rationality', etc. (Ritter, Gründer, & Gabriel, 2007). Many disciplines are involved in type-related discourse, including social and historical sciences, the concept is of importance for social science research. Type also confidently appears in architectural theories in various meanings in the XX century: 'this is the rule, the structuring principle of architecture. In fact, it can be said that this principle is a constant. Such an argument presupposes that the architectural artifact is conceived as a structure and that this structure is revealed and can be

recognized in the artifact itself. As a constant, this principle, which we can call the typical element, or simply the type, is to be found in all architectural artifacts' (Rossi, 1984, p. 40).

Rossi significantly contributed to the understanding of type: 'Typology becomes in this way the analytical moment of architecture, and it becomes readily identifiable at the level of urban artefacts. Thus, typology presents itself as the study of types of elements that cannot be further reduced, elements of a city as well as of an architecture [...] no type can be identified with only one form, even if all architectural forms are reducible to types. The process of reduction is a necessary, logical operation, and it is impossible to talk about problems of form without this presupposition. In this sense all architectural theories are also theories of typology, and in an actual design it is difficult to distinguish the two moments. Type is thus a constant and manifests itself with a character of necessity; but even though it is predetermined, it reacts dialectically with technique, function, and style, as well as with both the collective character and the individual moment of the architectural artefact [...] Ultimately, we can say that type is the very idea of architecture, that which is closest to its essence. In spite of changes, it has always imposed itself on the feelings and reason as the principle of architecture and of the city. While the problem of typology has never been treated in a systematic way and with the necessary breadth, today its study is beginning to emerge in architecture schools and seems quite promising. I am convinced that architects themselves, if they wish to enlarge and establish their own work, must again be concerned with arguments of this nature. Typology is an element that plays its own role in constituting form; it is a constant. The problem is to discern the modalities within which it operates and, moreover, its effective value' (Rossi, 1984, pp. 40-41).

Reacting to the crisis of modernist architectural form with its denial of the past and tradition, which was particularly recognisable and traumatic in historical cities, Italian Neorationalism reconsidered type and revalued achievements of the thinkers of the XVIII century (Quatremère, Durand, etc.). The neorational agenda was vastly influential throughout Europe, and therefore, for instance, Saverio Muratori's morphological studies of Venice (1960), linking the concept of type to the city, deserves special attention. Revival of typology was manifested in the following studies, which presented neorational analysis of architecture: 'L'Architettura della città' (Rossi, 1966), 'Il territorio dell'architettura' (Gregotti, 1966), 'La costruzione logica dell'architettura' (Giorgio Grassi, 1967), etc. For Rossi type or typological form embodies a retrieval of history and tradition through the analysis of the historical city. Instead of the precise definition, the author offers an illustrative description of the typological form: 'Thus, while every place is characterized by

its own particular aspect, by being precisely the architectural construction that it is, it can also be referred back to a more general design. We can define this general design as typological form. The classification of various Gothic houses necessarily leads to our distinguishing the common characteristic that unites them and makes them unique; this is form. After arriving at its own specificity through its relationship with different realities, a form becomes a way of confronting reality, a way in which land is divided, for example, or the nature of the house established within a certain historical framework. In architecture such form has the value of a law, with its own autonomy and its own capacity to impose itself on reality. The Gothic lot, with its long and narrow form, the position of its stairs preestablished, and a constant relationship between solids and voids, constitutes a specific experience of unity. This experience coheres as a form even in different situations, even today; so that when an architect comprehends the beauty of a long and narrow cut in, say, an apartment design of Le Corbusier, he is referring to a specific experience which he knows through architecture. Typological form refers, then, to a form which, either as a result of its being chosen during certain periods or the implications ascribed to it, has ended up by assuming the synthetic character of a process which exactly manifests the form itself.' (Rossi, 1984, p. 171). Followers of Neorationalism relied on the critique of the Modern Movement, which denied context and history.

Type is criticised due to its systematic ambiguity. However, even though typologies are somewhat losing attractiveness today, type didn't lose its importance. Psychology and psychiatry became a fertile field of type application in the 20th century, bringing a multitude of different type concepts and approaches to typologisation, including typologies of perception, and this brings us closer to the concepts existing in phenomenology (Husserl, 2008, p. 159-60). In typomorphology type exists in the spontaneous consciousness of the amateur builders of the houses at the certain place: 'To the extent that nothing exists outside of an intentional act, each perception of a thing is simultaneously the awareness of a certain kind of thing. In other words, each thing we individually perceive is simultaneously perceived as the instantiation of a type whose meaning we question while we act in medias res. The perception of reality thus structures itself along language acquisition while, in turn, language is acquired under the impulse of experience-gathering. By writing the term "type" in italics earlier, I wanted to emphasise the depth of meaning that Saverio Muratori and Gianfranco Caniggia refer to when they speak of the "typological process" in their urban monographs' (Malfroy, 2021; p. 125). Type and typification might become the primary connector of two disciplines. In his phenomenological writings, Husserl said that all our experience is typified: 'Something similar recalls something else that is similar, but it also allows something similar to be expected in coexistence as

in succession. 'Due to this 'apperceptive transfer,' every object of our present experience simultaneously 1) recalls similar past experiences and 2) is itself anticipated in analogy with them. This double movement of evocation and anticipation, characterizing our typified experience of objects, is determined by Husserl as an 'assimilating apperception' (assimilierende Apperzeption). And it is indeed a process of typical assimilation that accounts for the fact that, as Husserl expresses it, 'the future always leads us back to the past', since all expectations necessarily echo implicit horizons of recollection' (Ferencz-Flatz, 2014, p. 67). Therefore, the connection between phenomenology and typological-processual approach to urban morphology deserves a separate investigation. Finally, since our perception is type-based, typification is necessary and inevitable in the process of reading and interpretation of form. Jacoby considers type-theories as frameworks for synthesis of architecture with other related fields and concepts: the arts and science, society and its culture, technology, and the city due to the 'vagueness' or incompleteness of type, which allows invention' (Jacoby, 2013, p. 125). This illustrates how type can potentially broaden the horizons of the methodologies (e.g. typomorphology) due to the presence of numerous complementary theories offering methods and experiences (e.g., phenomenology).

Typomorphology, with its aim of sustaining continuity and meaning to form, have been criticised for being subjective and lacking rigour in the conceptualisation, analysis and synthesis of form. However, even pragmatic positivist approaches are unable to provide a formula for artistic or architectural invention, or sufficiently inform a qualitative synthesis of form. In this respect, methodologies capable of informing and facilitating the qualitative production of form, such as typomorphology, are valuable for their qualitative nature, variability and compatibility with other theories, offering helpful toolkits rather than ready-made solutions. The potential of typology and morphology to provide comprehensive practical approaches was broadly criticised in the 1980s, particularly often also due to the misuse of concepts by various disciplines and factual implicit displacements of type by simplified notions such as diagrams. Indeed, in order to embrace the full complexity and potential of typology and morphology, the profound clarification of terms is required. It is important to remember that diagram can be a part of typological analysis or synthesis, but never displaces it. Talking in linguistic terms, type is the idea, while diagram is a written text, representation of this idea (Semerani). The XX century also brought an explicit emerging discourse on diagrams and patterns, including Christopher Alexander's Pattern Language, Eisenman's The Formal Basis of Modern Architecture (1963), Deleuzian school of thought, etc. Moreover, the modern movement somewhat legitimised the implicit and explicit use of diagrams, programmes and models rather than more holistic types

and paradigms. Diagrams are explicitly used in the software for three-dimensional modelling for architects. Eisenman is right when warning about the overuse of this software in design. At the same time, the excessive rationality of Eisenman's 'absolute order', for example, seems to lack an important dimension emphasised by this work: author understands diagrams broadly as a tool of invention and creativity, and in this, his understanding seems to be similar to 'holistic' type understandings. However, critical is the lack of connection of the author's understanding of diagram with the cultural historical context and history, which categorically contradicts the meaning of type of, for instance, Caniggian typology. Jacobi, in his literature review of typologies and their criticism in the 20th century (Vidler's 'The Third Typology' (1976), Casabella, 'The Grounds of Typology' edited by Gregotti, and Architectural Design, 'The School of Venice' edited by Semerani), illustrates the prevailing reductive nature of the reductive typologies, and it is precisely in this oversimplification that their danger lies. Author questioned if type-theory, in general, is a design tool, theoretical position or ideological instrument, an 'archive of given types', an instrument of analysis, or an instrument of classification, illustrating a need to redefine 'the debate vulgarised by codification and stereotyping'. For this reason, it is particularly important in this study to choose the most appropriate definition for this work and find the balance between pragmatic and non-reductive approaches.

As the historical development has shown, the concept of type has appeared and disappeared in different discourses, gaining and losing popularity in different disciplines at different times, not always synchronously. Often the concept reflected the spirit of the age, the needs, or problems of the time. Apparently, the changes in the use of the term type reflected the fundamental changes in architecture in the 20th century, including the appearance of simplified and functional modernist types. Moreover, the twentieth century, with its fluctuations from one radical opposition to another in architectural views, has shown how the concept of type has changed, sometimes implicitly, but visibly in the practice of creating the physical built environment of cities. It is the breadth and vagueness of the concept that makes it both attractive and fraught with risk. The twentieth century in architecture has demonstrated this vividly.

In this study there is no question of what happened before - the 'birth' of each of the concepts of type as a phenomenon in physical reality, or the birth of that understanding of type in a science or philosophy. It is also difficult to establish causal relationships between the dominance of a particular understanding of type and the production of a particular embodiments of type in the physical environment or urban form, although one can speak of a certain coincidence. It is

also possible to ask which of the typologies emerged in the reality of a particular culture in a particular place: it could be a natural, spontaneous typology, as in the historical Italian cities (Caniggia), or a 'statistically based' typology, as in the Soviet Union. At the same time, it is important to understand that in both cases the phenomena did not have to be accompanied by an explicit literal formulation of the concept, so the concept can be revealed a posteriori. Meerovich, the pioneer of the study of Soviet typology, said: *'It is not at all something that can be directly pointed out. Neither in the specialized literature, nor in ideological texts, nor in textbooks, as it has never been fully described, stated, conceptually defined [...] It manifested itself in differentiation by types of design objects of works on practical and methodological generalization of best practices, in the structure of normative developments, in the totality of academic subjects, etc.'* (Meerovich). *It is safe to say that type cannot be intentionally invented, but rather revealed: 'I think that the beautiful works of art have rather given birth to theories, than theories to beautiful works' (Antoine-Chrysostome Quatremère de Quincy (1823). The same principle is supported by Caniggia. Rossi said: 'Architectural innovations always reveal particular tendencies, but they do not constitute typological inventions. We can understand that there is no possibility of typological invention if we realize that typology is shaped only through a long process of time and possesses highly complex links with the city and society' (Rossi, 1984, p. 171).*

It was in the Soviet Union that top-down 'typology' reached an unprecedented scale, and this is a vivid example that deserves to be discussed in this work. If the concept of type is formulated on the basis of the dominating type-based production and practical examples of the physical form production in Soviet Union, it becomes clear that this type was contrary to Rossi's explanation or the definition of Caniggia. The concept wasn't explicitly formulated, but the phenomenon existed in reality and therefore defined the production of the built environment. Meerovich studied the Soviet typology postfactum, calling it 'mass design' and claiming that it was nourished by the ideas of constructivism: *'The Soviet system of mass design took out of constructivism everything that suited it, and discarded everything that it could not use. In particular, it learned from constructivism and learned the commandment that the main feature of the theoretical distinction of design objects should be specificity in their purpose - because we are talking about formations specially created by man to perform any functions. The theoretical systematization of buildings and structures based on their purpose (function) was called architectural typology' (Meerovich).* At first sight, the Soviet experts, contrary to believe of Rossi, created a brand-new typology, based on function (the dominant logic of the 20th century), relying on an analysis of statistics, proclaimed values and optimization in conditions of

scarcity.

Thus, typology in the Soviet Union was, first, function based. Secondly, it was based on the pragmatic positivist statistics-based approach: *'In architectural typology, hierarchical divisions of objects of architectural and urban planning design are determined by the scale of the function: separate structure - complex - city - system of populated places. These hierarchical divisions are complemented by a horizontal differentiation based on the main axiom of the functional approach: structures that differ in purpose have different qualitative and quantitative characteristics. In each level: building - complex - city (and its elements) - regional and local settlement systems, separate types are distinguished, and local typologies are formed in accordance with the specifics of the organized functional processes [...] the underlying functional typological concepts and the knowledge that grew on them could be reduced to the form of numerical indicators and quantitative units. That is, even the most general information could be brought to a set of specific quantitative indicators that set the dimensions of the parts of the structure, the order of connection of the parts of the structure into a whole, throughput, sanitary and hygienic requirements, etc. It was possible to strictly and unambiguously regulate the parameters and characteristics of the projected object' (Meerovich 2016, p.70).* Thirdly, the 'functional typology' was the basis for the organisation of the entire mass practice of design and production in the USSR, which is a unique phenomenon. This typology also became the basis for a system of norms and regulatory documents for real design and architectural practice in the Soviet Union. Architectural typology of buildings and structures, which is one of the most important branches of architectural science, systematises and develops the basic principles of the formation of types of buildings and structures, taking into account their preferred features and characteristics. It reveals social, ideological, functional, structural and technical, economic, town planning, architectural and artistic requirements, defines the classification and nomenclature (list) of types and types of buildings, sets the basic parameters of design standards, composition, size, type of technological connections of premises and their equipment (Zmeul S. G. & Mackhanko, 2004). Next, architectural typology had a property that made it irreplaceable within the framework of the state system of design in the USSR (Meerovich): the soviet typology was 'top-down' in contrast to all previously discussed typologies that had an evolutionary nature. Finally, the Soviet typology was also one of the main carriers of ideology, literally imprinted in type, this can be called its unique specificity. *'Actually, the main specificity of this new typology is a fundamentally new propaganda function, which directly influenced the exceptional external expressiveness of the building. The expressiveness of the club's appearance*

*becomes the primary task of architects, since the club is not just a functional building, it should become a reflection of ideology, its messenger, a manifesto made in stone [...] Club buildings as the core of the cultural and social life of the village are turning into materialized manifestos promoting a new ideology' (Ulinich, 2012, pp. 68-69).* Thus, this typology provided interesting fruits and deserves special attention. It was a unique and valuable experiment: literally, the whole country was built based on this highly 'innovative' concept of type.

Speaking of type in the Soviet sense, it is important to remember that this typology newly invented with the use of critical consciousness had nothing to do with the paradigmatic type meant in the works of the previously discussed theories; on the contrary, physical forms created on the basis of a new typology often did not acquire all the other necessary layers - social forms or cultural, value forms: 'microrayons' did not become neighbourhoods or communities of people. According to Meerovich, the first generalising part of the Soviet typology included a more holistic descriptions of types, which could not be reduced to numerical characteristics. Architectural typology consisted of two groups of information and knowledge, differing in the form of presentation and the degree of applicability in the practical activities of designers. The first group of knowledge carried the most general ideas about the types of design objects - a 'framework' for another group of knowledge - specific utilitarian and functional requirements, regulatory prescriptions, practical and methodological recommendations, etc., which set ideas about objects of this type in a quantifiable form. The knowledge of the first group was not related to the specifics of the designed structures and was the socio-cultural basis for working on objects, serving as a professional ontology - a functional typology associated with the general features of the types of projected objects, style of professional outlook, professional ideology (Meerovich, p. 71). However, being created intentionally, this typology was still more a classification, genus, species, group, variety, etc., disconnected with the history and culture of the particular place, and with the socio-cultural reality, which led to the significant problems in real life and the necessity to reconsider the mode of production of space postfactum. In the 1990s, the dominance of top-down initiatives revealed the inability of existing environments to meet social and cultural needs.

As mentioned earlier, pragmatic typologies are not new and periodically return, gaining popularity again. Durand has already at his time depicted the absurdity of total positivism and normative models concerning architecture. The failure of utopian typologies, including that of the Soviet Union, lies precisely in the removal of the link with history. However, modern parametric architecture often uses a similar pragmatic parameterisation

to create a spectrum of forms. It is important to remember that such approaches can inform architectural practice, but cannot replace it. Finally, the conflicting positions of theorists tending towards strict normative type made a meaningful discourse on type almost impossible. The primitivised understanding of type has spoiled the idea of the potential of typology: 'The notion of type in architecture today, however, is commonly understood as describing a group, class, or category with certain shared characteristics, which generally refer to typological classification according to use (e.g., church, school, housing) or morphology (e.g., radial plans, courtyard-buildings). Typology in turn denotes the study of types and the analysis of their characteristics' (Jacoby, 2013, p.8).

This Soviet experience was not totally unique in the 20th century, but it brought practical implementations and resulted in a clear live experience, and therefore is broadly criticized. A large and growing amount of literature is dedicated to the critique of functionalist typologies. Rossi said: '*More specifically, we reject that conception of functionalism dictated by an ingenuous empiricism which holds that functions bring form together and in themselves constitute urban artifacts and architecture [...] If, alternatively, we begin with a classification based on function, type would have to be treated in a very different way; indeed, if we insist on the primacy of function we must then understand type as the organizing model of this function. But this understanding of type, and consequently urban artifacts and architecture, as the organizing principle of certain functions, almost totally denies us an adequate knowledge of reality. Even if a classification of buildings and cities according to their function is permissible as a generalization of certain kinds of data, it is inconceivable to reduce the structure of urban artifacts to a problem of organizing some more or less important function. Precisely this serious distortion has impeded and in large measure continues to impede any real progress in studies of the city*' (Rossi, 1984, p. 47). Indeed, type should not be just a product of functional classification, it is a multilayered repository of other layers of existence, imprinted in type. Nor can the type be devoid of historical cultural layers: '*the study of the house begins with geographical classifications and sociological considerations and by way of architecture goes on to the structure of the city and the country, the human creation. Viollet-le-Duc discovered that of all architecture the house offers the best characterization of the customs, usages, and tastes of a population; its structure, like its functional organization, changes only over long periods of time. From a study of the plans of houses, he reconstructed the formation of urban nuclei and was able to point the direction for a comparative study of the typology of the French house. Using the same principle, he described the cities constructed ex novo by the French kings. Montpazier, for example, not only had a regular grid, but all the houses were of an equal size and had*

*the same plan. The people who came to live in a special city like this found themselves on a plane of absolute equality. Thus, a study of the lots and the urban block allowed Viollet-le-Duc a glimpse of the history of social classes in France that was based on reality*' (Rossi, 1984, p. 109).

Therefore, in this work, it is important to emphasize the differences in the understandings of the notion of type and how these differences may affect the concept of type dominating in reality, and production of the urban form. Now, talking about typology is considered outdated. It is thanks to this controversial experience (primary of the XX century), that it has become a bad tone to talk about the oversimplified concept of type today. Importantly, it was practically proved that architectures made on the basis of the 'new invented typologies' or function-based typologies are utopian or even risky, which is further demonstrated in this study. The Soviet Union has shown the appearance and development of function-based type and typologies grounded on statistics, which gradually changed spontaneously developed traditional types in the foundational cities under consideration. However, it is evident that even these new typologies contained a certain degree of continuity, proving its importance. That is why the selection of the concept and notion of type, which should be used for the better further production of urban form in these cities in order to get closer to the goal established in the given work, is of a primary importance.

In sum, definitions of type are grouped in the present work into certain 'semantic clouds': one can be reductive, statistical, pragmatic and functional (e.g. Soviet typologies or technical, operational ones); the other includes 'holistic', paradigmatic definitions that provide an apparatus for conceptual, strategic and creative thinking.

paradigm  
holistic document or record of cultural, social experience  
the imprint of impression or perception  
embodiment of the process  
multi-layered concept  
spatial, temporal and semantic palimpsest  
generator

template or cliché  
contains ideological imperatives  
function-based  
top-down  
invented  
statistics-based  
model

## Summary: Selected Definition

'The term building type was used in the past, and still is today, to indicate any group of buildings with some characteristics, or a series of characteristics, in common [...] This meaning was adopted by past manuals, grouping together buildings with a certain function in common (schools, dwellings, hospitals, prisons or the like) or, less generally, buildings with a similar structural-distributional plan (e. g. baptisteries with a central plan) or, more pertinently, it was used as part of enlightened attempts at systematising buildings when the need arose to connect the term to a system of constants, uniformly characterising buildings with the same purpose and similar architectural characteristics. However, this was done a posteriori and analytically, taking these common characteristics and grouping them into types in order to catalogue existing buildings or ensure buildings still to be built were in line with regulations without basically raising the issue of the whys and wherefores of the real, not purely logical, existence of these types. In other words, if we see that two or more houses have similar characteristics, we label them together and say that these houses belong to the same building type' (Caniggia & Maffei, 2001, p. 32). G. Caniggia followed the Neorationalism of Muratori and offered the following definitions. For typification author uses the terms 'a posteriori analysis' and 'critical consciousness': 'I group these characteristics together under the label 'row houses'. This means that I acknowledge the existence of such a type a posteriori, i. e. I noted its physical existence, and I produced a logical template out of it and classified this template as a row house. It is clear that this wording arises from its opposite, so that if I invent such a term and recognise the existence of a row house, it already means that I implicitly admit at least two things: the existence of houses that are not row houses, which I will have labelled differently, and the existence of buildings that are not houses. Furthermore, I admit to having seen buildings that are not houses and called them, for instance, churches, palaces, and convents. Therefore, I classified buildings in the districts I observed through an a posteriori analysis' (Caniggia & Maffei, 2001, p. 32).

In sum, being a study of urban form, typological-processual strand of urban morphology ((Caniggia and Maffei, 2001; Carlotti, 2021; Maretti, 2013, 2014; Oliveira, 2018; Strappa et al., 2016), etc.) is focused on form itself as a holistic document or a record of cultural, social, and political context with its intrinsic characteristics, operationalising it through type. Caniggia claims that types 'objectively' exist; he considers type as natural objective essence and a result of an evolutionary process and spontaneous consciousness: 'The best part is that each of these houses continues to be an inhabited house, therefore legitimising

it, given that in its own way it stands up and is useful to someone and that these houses all belong to the same historic moment and to the same cultural area. Therefore, we can only refer to what we said before: what appears in these houses is a result of product personalisation due to individual choices from a vast repertoire. However, these choices only relatively affect product use. Some degree of continuity is guaranteed not by those choices, but by what various builders did not choose and by what has remained in their working predetermined prior to their choices themselves, by what continues to be the vestige of spontaneous consciousness, house concept and, therefore, intrinsically current building type. Therefore, type exists and is not logical fiction; type exists and is a product of past and present spontaneous consciousness.' (Caniggia & Maffei, 2001, p. 32). Thus, the concept of 'type' for Caniggia is both 'a posteriori analysis' and 'a priori synthesis': 'During a moment of greater civil continuity, builders, guided by their spontaneous consciousness, can produce an object without thinking twice, only unconsciously conditioned by their cultural background. That object will be determined out of previous experiences in their civil surroundings, transformed into a system of integrated cognitions, assumed en masse to satisfy the particular need that object needs to meet. These cognitions are already an organism, inasmuch as they are integrated, correlated, self-sufficient or complementary notions with a single aim. They are already a pre-projection of what the end product will be, albeit prior to the object becoming a physical being. This applies to any object produced by civilised man' (Caniggia & Maffei, 2001, pp. 44-45). 'However, it is likewise true that talking about type and reviving it is a result of critical consciousness [...] Thus type can have a critical formulation, derived by a posteriori analysis; however, it inevitably owes its existence to being a priori synthesis, concept. That is to say, it exists in the builder's mind before producing a house and is not a prefiguration of one or several aspects of the building but of all of them together: a real organism, bringing the whole house to life before it physically exists. Through our critical work, which brings us to recognise a building type, we basically go through the formation of buildings until a moment before they come into being, when they only exist conceptually in their producers' minds, with all their historicity, namely belonging to a moment in time and a fixed place. Type is, therefore, the conception of the building produced: it is the total projection - initially conceptual, when it comes into being, and then logical, when we examine it - of existing buildings, shaped according to the house concept that exists in the builder's mind at a level of spontaneous consciousness and that is in force at a given moment in time, resulting from the succession of house concepts that developed before that moment in history.' (Caniggia & Maffei, 2001, p. 47).

In urban typomorphology, types exist at all levels - from house

type to street type and settlement type; thus, it is a multilayered taxonomy. Type and typology are therefore the frameworks to meaningfully conceptualize form. Thus, in the given work, the multilayered notion of form is operationalised through the notion of type. Following theoretical investigations, this research gravitates towards the 'holistic semantic cloud', which is close to the term 'paradigm' or 'idea'. Type here represents not an image of a thing to be copied, but the idea, a skeleton, an intention, which serves as a law or the set of rules. Type as non-formal description provides a framework for discovery or invention or 'poetical' imitation based on the structure of rhetoric, it is a generator, a kind of nucleus, it is an irreducible structure and generic idea that provides principled reasoning and rules for the design process. Typology is the analytical moment of architecture, the study of types of elements that cannot be further reduced, the very idea of architecture, the essence. It is a concept, or principle, which represents a group of objects characterized by the same inner, logical and formal structure, the result of memetic abstraction. Type is commonly produced by conventions. Together, the various authors agreed that type unites the collective experience into a pattern or theory. What is essential is that this concept is not reductive. This, type of formation is in the middle between conceptual and descriptive abstraction: from the former, it has the comparative ascent from the individual to the general, from the latter, on the other hand, the intention of the descriptive general image. 'Rafael Moneo in On Typology (1978) posited that typology raises the contradictory questions of the architectural object in its singularity and repeatability [...] this grouping implies 'neither a spatial diagram nor the average of a serial list' (Jacoby, 2013, p. 303). The architect should not discard traditional types and invent new ones, but express new ideas with the traditional types, it contains the possibility of invention, but can't be invented itself. Type is therefore a result of the historical process; it is an embodiment of the process.

What is important is that type is a multilayered concept. Type encompasses different levels and scales of form, different congruent layers of existence, and considers the socio-cultural dimensions imprinted in it. It is both limited by material physical form and in excess of its material reality, it contains cultural, social, and political reasoning underlying all typical forms, through the typical reasoning, the form acquires a multi-layered historical, social, cultural, and symbolic dimension. Type is a record of collective experience and memory, a trace, that contains an imprint of events, embodying the common-to-all, the underlying deep structure, synthesis, and generative principle, but also the particularity of its possible embodiments. The selected concept of type is not just capacious, but encompasses at the same time dynamics and stability, which is close to the notion of an organism (Caniggia). Type is dynamic and transformative: Semper acknowledges transformations as a

process of becoming the artistic form (similar to Pareyson's idea of formativity (1954); it is never a static framework, but rather a dynamic system of coordinates, which allows adjustments that mediate between the intention of a creator, its precedent models, and social-cultural context. A retrieval of history and tradition through the analysis of a historical city, it constitutes a specific experience of unity, it 'refers, then, to a form which, either as a result of its being chosen during certain periods or the implications ascribed to it, has ended up by assuming the synthetic character of a process which exactly manifests the form itself' (Rossi, 1984, p. 171). Therefore, type is a certain palimpsest. Moreover, it often contains an imprint of traditional types and forms borrowed from other or preceding cultures, it is synthesised. Type contains an imprint of the genesis of form. 'With the introduction of memory into the object, the object comes to embody both an idea of itself and a memory of a former self. Type is no longer a neutral structure found in history but rather an analytical and experimental structure which now can be used to operate on the skeleton of history; it becomes an apparatus, an instrument for analysis and measure' (Rossi, 1984, p. 8).

The distinction between type, model and diagram are vital for this study, therefore it is important to clarify. Quatremère clearly distinguished type and model, Durand didn't, but most of the authors suggest that the model in contrast to type should be repeated as it is, in the model, everything is precise and given. When it comes to the diagrams, they also obtain different meanings for different authors, sometimes replacing type: Eisenman seems to understand diagrams as a tool of invention and creativity. However, the crucial difference is the lack of connection of his diagram with the cultural and historical context, tradition, and continuity, which categorically contradicts the core idea of this study. Thus, being a transition between the model and the type, the diagram contributes to the process of invention, finding new forms, but does not replace type with the necessary interpretation process in terms of Pareyson, without which meaningfulness is impossible.



The following concepts are accepted as the basic typological code for the given work (Caniggia & Maffei, 2001):

#### BUILDING TYPE

A team that expresses the concept of 'dwelling/inhabiting' as set down by the members of a community in particular space/time conditions and understood as a foundation of civil work, which actively promotes the definition of its historical era. As such, it leads to the achievement of a commonly shared experience of construction, becoming its implicit process of legitimization and a recognition of its value, translating it into the explicit basis of individual work. Thus it is identified with a collective project that, in conditions of 'spontaneous consciousness', proves to be a 'prior synthesis' when constructing a complete and consistent (social entity, while in circumstances of 'critical consciousness' it is used as an 'analytical tool in retrospect' for choosing the data derived from what has been actually constructed, data that aids its conceptual and material comprehension.

#### SPECIALISED BUILDING

Non-residential buildings created through the application of a particular kind of 'critical consciousness' to private building stock, from which they originate - thus in actual fact creating a 'specialisation' of them whilst retaining an imprint of them - through a process of change that makes them suitable for public use. More precisely, the term expresses the intentional sublimation of their conventional characteristics, which are, in any case, found in the design of building types.

#### COURTYARD HOUSE

A regularly shaped rectangular enclosure, 12/18 meters wide and 20/30 meters deep, which - in its basic configuration used by the Romans - was partially occupied by a building.

#### MATRIX ROUTE

A route that crosses a territory in order to connect two poles in the most direct way. Due to the presence of natural obstacles, its almost never entirely straight.

#### BUILDING ROUTE

The formation of different kinds of routes - from gaps that remained in a building continuum along a matrix route or obtained by breaking through the front or demolishing a house - varies because it is not conditioned by the existence of two polarities but by the need to reach each house through that passage. Therefore, routes that come into being in expectation of their sides being built up are what we shall call planned building routes.

#### CONNECTING ROUTE

These connect two successive planned building routes, usually

at right angles to each other, in order to facilitate the relations between different pertinent strips.

#### NODE

This term expresses the quality of a point belonging to a continuous space, which is the intersection of two routes, or axes, or the gemmation of one route, or axis, from another. It is found simultaneous at all different scales, or levels of complexity, existing within the built environment.

#### POLE-POLARITY

This concept expresses the quality of a point considered part of a continuous and uniform space, which is the start or end point of many continuous spaces. To some extent, it represents a sublimation of the concept of 'node'.

## Bibliography: Form and Type

The following list of books and papers guides the definitions of Form and Type, and largely informed the given work.

Citations in text are translated from German, Italian and Russian to English by the author of given work.

### EARLY PERIOD

Alberti, L.B., (1955). *De re aedificatoria*, (ed.) J. Rykwert; (trans.) J. Leoni, Ten Books on Architecture (London, Tiranti).

Palladio A. (1570 (2002)), *The Four Books of Architecture* (I Quattro Libri dell'Architettura, Venice: Dominico de' Franceschi), Richard Schofield and Robert Tavernor (trans.), Cambridge, MA: The MIT Press.

Vitruvius, 15 BCE, *De architectura*; Ten Books on Architecture, Morris H. Morgan (trans.), Cambridge, MA: Harvard University Press, 1914; New York: Dover, 1960.

### THE XVIII - XIX CENTURY

Hegel, G.W.F. (1826), *Aesthetics: Lectures on Fine Art*, T.M. Knox (trans.), Oxford: Clarendon Press, 1975.

Kant, I. (1790 (2000)). *Critique of the Power of Judgment*, Paul Guyer (ed.); Paul Guyer and Eric Mathews (trans.), Cambridge: Cambridge University Press, 2000.

Pugin, A.W.N. (1841). *The True Principles of Christian or Pointed Architecture*. London: John Weale.

Ruskin, J. (1849 (1989)), *The Seven Lamps of Architecture* (London: Smith, Elder, and Co.). New York: Dover Publications.

Semper, G. (1860 (2004)). *Style in the Technical and Tectonic Arts; or, Practical Aesthetics*, Harry Francis Mallgrave and Michael Robinson (trans.), Santa Monica, Getty Center for the History of Art and the Humanities.

Collins, G. R., Sitte, C., & Collins, C. C. (1889 (2006)). *Camillo Sitte: the birth of modern city planning*. Courier Corporation.

Viollet-le-Duc, E. E. (1863). *Entretiens sur l'architecture* (Vol. 1). Paris: A. Morel.

Wagner, O. (1988). *Modern architecture: a guidebook for his students to this field of art*. Getty Publications.

### XX CLASSICS

Caniggia, G. & Maffei, G. L. (2001). *Architectural Composition and Building Typology: Interpreting Basic Building*. Alinea.

Eisenman, P., Graves, M., Gwathmey, C., Hejduk, J. & Meier, R. (1975). *Five Architects: Eisenman, Graves, Gwathmey, Hejduk, Meier*.

Lefebvre, H., Harvey, D., & Nicholson-Smith, D. (1991). *The production of space*. Bulgaria: Wiley.

Strauss, C. L. (1962). The science of the concrete. *The savage mind*, 17, 157-174.

Lynch, K. (1964). *The image of the city*. MIT press.

Lynch, K. (1984). *Good city form*. MIT press.

Pallasmaa, J. (2005). *The Eyes of the Skin: Architecture and the Senses*. Chichester: Wiley-Academy.

Pallasmaa, J., Mallgrave, H. F., Robinson, S., & Gallese, V. (2015). *Architecture and empathy. Finland: Tapio Wirkkala Rut Bryk Foundation*.

Popper, K. (2002 b). *The Logic of Scientific Discovery*, Routledge, London and New York.

Rossi, A. (1984). *The Architecture of the City (Oppositions Books)*. Cambridge, Massachusetts: The MIT Press.

Rowe, C. (1987). *The Mathematics of the Ideal Villa and Other Essays*. MIT Press.

Rowe, C. (1991). Foreword. *Urban spaces, Academy Editions*, 7-12.

Rowe, C. (1996a). The Provocative Facade: Frontality

and Contrapposto. As I Was Saying: Recollections and Miscellaneous Essays, MIT Press, 171-203.

Rowe, C. (1996b). Transparency: Literal and Phenomenal. As I Was Saying: Recollections and Miscellaneous Essays, MIT Press, 73-106.

Rowe, C. (1996c). Ideas, Talent, Poetics: A Problem of Manifesto. As I Was Saying: Recollections and Miscellaneous Essays, MIT Press, 277-354.

Rowe, C. (1996 d). Program versus Paradigm Otherwise Casual Notes on the Pragmatic, the Typical, and the Possible. As I Was Saying: Recollections and Miscellaneous Essays, MIT Press, 7-41.

Rowe, C. & Koetter, F. (1978). *Collage City*. Cambridge, Massachusetts: MIT Press.

Venturi, R., Brown, D. S., & Izenour, S. (1977). *Learning from Las Vegas, revised edition: the forgotten symbolism of architectural form*. MIT press.

Venturi, R., Stierli, M., & Brownlee, D. B. (1977). *Complexity and contradiction in architecture (Vol. 1)*. The Museum of modern art.

Wigley, M. (1993), *The Architecture of Deconstruction: Derrida's Haunt*. Cambridge, MA: The MIT Press.

### PHENOMENOLOGY

Breyer, T. (2007). *On the Topology of Cultural Memory: Different Modalities of Inscription and Transmission*. Königshausen & Neumann.

Bollnow, O.F. (2011). *Human space*. London: Hyphen.

Casey, E. S. (2001). J.E. Malpas's Place and Experience: A Philosophical Topography (Cambridge University Press, 1999) Converging and Diverging in/on Place. *Philosophy & Geography*, 4(2), 225-230.

Frampton, K. (1983). *Towards a Critical Regionalism: Six Points for an Architecture of Resistance*. The Anti-Aesthetic, 16-30.

Griffero, T. (2010). *Atmospheres: Aesthetics of Emotional Spaces*. Routledge.

Griffero, T. (2020). *Places, Affordances, Atmospheres: A Pathic Aesthetics*. Routledge.

Heidegger, M. (1951), *Building, dwelling, thinking. Poetry, Language, Thought, Albert Hofstadter (trans.)*, New York: Harper and Row, pp. 145-161.

Langer, S. K. (1953). *Feeling and Form*. New York: Macmillan Publishing Company.

Malpas, J. (2008a). *Heidegger's Topology: Being, Place, World*. A Bradford Book.

Malpas, J. (2008b). New Media, Cultural Heritage and the Sense of Place: Mapping the Conceptual Ground. *International Journal of Heritage Studies*, 14(3), 197-209.

Malpas, J. (2012). *Heidegger and the Thinking of Place: Explorations in the Topology of Being*. MIT Press.

Malpas, J. (2016). Spatialising Design: Architecture in the Age of Technological Capitalism. *Power, Verticality, and the Street*, 1-15.

Malpas, J. (2018). *Place and Experience*. Routledge.

Malpas, J. (2020a). In the Brightness of Place : Topological Thinking in and after Heidegger. *Jenseits von Polemik und Apologie: Die 'Schwarzen Hefte'. Der Diskussion, Heidegger Jahrbuch*, 371.

Malpas, J. (2020b). "The House of Being": Poetry, Language, Place. *Paths in Heidegger's Later Thought*, 15-44.

Malpas, J. (2021a). *Rethinking Dwelling: Heidegger, Place, Architecture*. London: Bloomsbury Publishing.

Malpas, J. (2021b). Spirit of Time / Spirit of Place. *Journal of Continental Philosophy*, 1-6.

Merlau-Ponty. (2004). *The World of Perception*. London and New York: Routledge.

- Norberg-Schulz, C. (1965). *Intentions in Architecture*. Cambridge, Mass.
- Schulz, C. N. (1980). *Genius loci: Towards a phenomenology of architecture*. Academy Editions, London.
- Rasmussen, S. E. (1964). *Experiencing architecture* (Vol. 2). MIT press.
- Zumthor, P. (2006). *Atmospheres: Architectural Environments - Surrounding Objects*. Basel: Birkhauser - Publishers for Architecture.
- Zumthor, P. (2005). *Thinking Architecture*. Basel: Birkhauser - Publishers for Architecture.
- XX-XXI HERMENEUTICS
- Gadamer, Hans-Georg, 1960, Truth and Method, Joel Weinsheimer and Donald G. Marshall (rev. trans.), London and NY: Continuum, 2nd edition, 1989.
- Pareyson, L. (1954). *Estetica. Teoria Della Formatività*. Bologna: Zanichelli.
- XX-XXI STRUCTURALISM , LINGUISTICS, SEMIOTICS
- Alexander, C. (1977). *A pattern language: towns, buildings, construction*. Oxford university press.
- Baird, G. (1969), 'La Dimension Amoureuse' in *Architecture. Jencks and Baird*, 78–99.
- Baird, G. 1995. *The Space of Appearance*. 1st Edition. Cambridge, MA: MIT Press.
- Barthes, R. (1985). The Responsibility of Forms: Critical Essays on Music, Art, and Representation, trans. *Richard Howard* (New York: Hill and Wang, 1985), 302.
- Barthes, R. (1972). *Critical Essays*. Northwestern University Press.
- Broadbent, G. (1977). A plain man's guide to the theory of signs in architecture. *Architectural Design*, 47(7-8), 474-482.
- Broadbent, G. (1980). Architects and Their Symbols. *Built Environment*, 6(1), 10–28.
- Chomsky, N. (1969). *Aspects of the Theory of Syntax*. Cambridge, Massachusetts: MIT Press.
- Donougho, M. (1987). The Language of Architecture. *The Journal of Aesthetic Education*, 21 (3), 53–67.
- Foucault, M. (Trans. A. M. S.). (1972). *The Archaeology Of Knowledge And The Discourse On Language*. London: Tavistock Publications.
- Foucault, M. (1975). *Discipline and Punish: The Birth of the Prison (Surveiller et punir: Naissance de la prison; Paris: Gallimard) Alan Sheridan (trans.)*. New York: Vintage Books.
- Goodman, N. (1985). How Buildings Mean. *Critical Inquiry*, 11(4).
- Goodman, N. (1976). *Languages of Art: An Approach to a Theory of Symbols*. Hackett.
- Kennedy, G. A. (2001). Architecture and Language: Constructing Identity in European Architecture c. 1000–c. 1650 ed. by Georgia Clarke, Paul Crossley. *Rhetorica*, 19(3), 346-347.
- Eco, U. (1968). *La Struttura Assente. Introduzione Alla Ricerca Semiologica* (Translated by V. Reznik, A.Pogonyailo in 2006). St Petersburg: Symposium.
- Eco, U. (1972). *A Componential Analysis of the Architectural Sign /Column*. *Semiotica*, 213–232.
- Hjelmslev, L. and Whitfield, F.J. (1953). *Prolegomena to a Theory of Language*.
- Ikonnikov A.V. (2006). *Space and form in architecture and urban planning*. Moscow: Com-Book.
- Ikonnikov. A.V. (2002). *Architecture of the twentieth century. Utopias and Reality: A two-volume edition*. Moscow: Progress-Tradition.
- Ikonnikov. A.V. (2004). Utopian thinking and architecture. Moscow: Publishing House 'Architecture-S'.
- Jencks, Charles and George Baird (eds.). (1969). *Meaning in Architecture*. London: Barrie and Jenkins, 10-25.
- Jencks, C. (1992). The Post-Modern Agenda. *The Post-Modern Reader*. St. Martin' Press.
- Koenig, G.K., 1974. *Architettura e comunicazione*. Libreria editrice fiorentina.
- Levi Strauss, C. (1962). The Science of the Concrete. *The Savage Mind*, 1–22.
- Lotman Yu. (2000). *Architecture in the context of culture. The semiosphere*. - St. Petersburg: Art - St. Petersburg.
- De Saussure, F., 1972. *Cours de linguistique générale (1916)*. Edition critique préparée par T. de mauro. paris: payothèque.
- Summerson, J. N. (1966). *The Classical Language of Architecture*. Cambridge, Massachusetts: MIT Press.
- Sorokin, P.A. (2006). *Social and cultural dynamics/Pitirim Alexandrovich Sorokin*. Moscow: Astrel, 1176.
- Tafuri, M. (1979). *Architecture and utopia: design and capitalist development*. MIT press.
- Tafuri, M., 1987. *The sphere and the labyrinth. Trans. Pellegrino d'Acierno and Robert Connolly*. Cambridge, Mass.: MIT Press.
- XX-XXI
- Aronoff, M. & Rees-Miller, J. (2017). *The Handbook of Linguistics*. Hoboken, USA: Wiley-Blackwell.
- Auret, H. (2019). *Christian Norberg-Schulz's Interpretation of Heidegger's Philosophy: Care, Place and Architecture*. London and New York: Routledge.
- Dağlıoğlu, E. K. (2016). Karl Popper's Architectural Legacy: An Intertextual Reading of Collage City. *Metu Journal of the Faculty of Architecture*, 33(1), 107–119.
- Dorling, D. & Fairbairn, D. (2013). *Mapping: Ways of Representing the World*. London and New York: Routledge.
- Derrida, J. & Stoker, B. (2007). *Jacques Derrida: Basic Writings*. New York: Routledge.
- Fontana-Giusti, G. (2013). *Foucault for Architects*. New York: Routledge.
- Forty, A., & Forty, A. (2000). *Words and buildings: A vocabulary of modern architecture (Vol. 268)*. London: Thames & Hudson.
- Groat, L. n. & Wang, D. (2013). *Architectural Research Methods*. Wiley.
- Guyer, P. (2011). Kant and the Philosophy of Architecture. *The Journal of Aesthetics and Art Criticism*, 69(1), 7-19.
- Haldane, J. (1999). Form, Meaning and Value: A History of the Philosophy of Architecture. *Journal of Architecture*, 4(1), 9–20.
- Harries, K. (1987). Philosophy and the Task of Architecture. *Journal of Architectural Education*, 40(2), 29–30.
- Harries, K. (2016). *Philosophy of Architecture Lecture Notes Fall Semester 2016*, Yale University Press, 1–311.
- Hattenhauer, D. (1984). The Rhetoric Of Architecture: A Semiotic Approach. *Communication Quarterly*, 32(1), 71–77.
- Illies, C. & Ray, N. (2009). *Philosophy of Architecture. Philosophy of Technology and Engineering Sciences*, Elsevier B.V., 1199–1256.
- Luft, S. & Overgaard, S. (2012). *The Routledge Companion to Phenomenology*. New York: Routledge.

- Lyons, F. (2019). *The Architecture of Nothingness: An Explanation of the Objective Basis of Beauty in Architecture and the Arts*. New York: Routledge.
- Macarthur, D. (2014). Working on Oneself in Philosophy and Architecture: A Perfectionist Reading of the Wittgenstein House. *Architectural Theory Review*, 19(2), 124–140.
- MCQuillan, M. (2016). *Deconstruction*. New York: Routledge.
- Mitrovic, B. (2011). *Philosophy for Architects*.
- Moore, S. & Kolb, D. (1992). Postmodern Sophistications: Philosophy, Architecture, and Tradition. *Journal of Architectural Education*, 45(4), 241.
- Niven, J. (1996). Meaning in Architecture... Is the Traditional Semantic Model Adequate? *Architectural Theory Review*, 1(1), 130–134.
- Pellegrino, P. (2002). *Theory of Architecture : Models and Grammars*.
- Pellegrino, P. (2006). Semiotics of Architecture. *Encyclopedia of Language & Linguistics*. Oxford: Elsevier, 212–216.
- Pellegrino, P. (2010). Space, Time, Semiotics. *Environment, Land, Society : Architectonics*.
- Pellegrino, P. (2011). Formalization of Architectural Knowledge. *Environment, Land, Society : Architectonics*.
- Pellegrino, P. & Jeanneret, E. P. (2009). Meaning of Space and Architecture of Place. *Semiotica*, 269–296.
- Spector, T. (2010). Bridging the Gap between Architecture and Philosophy. *Building Research & Information*, 38(4), 428–431.
- Sharr, A. (2007). *Heidegger for architects*. Routledge.
- Taylor, W. M. (2013). Philosophy for Architects. *Fabrications*, 23(1), 127–130.
- Weiner, J. (1997). Frege and the linguistic turn. *Philosophical Topics*, 25(2), 265-288.

## Main authors

### ANCIENT PERIOD + RENAISSANCE

- Marcus Vitruvius Pollio (c. 80–70 BC – after c. 15 BC), a Roman theorist, architect, engineer. ‘Western tradition’ range from his ‘De architectura’.
- Plato (428/427 or 424/423 – 348/347 BC), Ancient Greece. Philosopher in Classics, founder of the Academy or the Platonist school of thought. The influence of Plato can be seen in the Renaissance when his work was rediscovered. His important contribution is the theory of Forms (Ideas).
- Thomas Aquinas (1225 – 1274), Italy. Philosopher, theologian, jurist. His definition of beauty can be considered a post-Platonist view that aesthetic experience of form involves properties independent of our perception of them.
- Leon Battista Alberti (1404 – 1472), Italy. A Renaissance theorist, artist, architect. ‘In relation to geometry, he claimed that pure forms, like the circle and the square, were closest to the divine; they should therefore be reserved for religious buildings, while less important buildings, such as houses, could have a more casual and Pragmatic Form. Thus geometry serves to reinforce our sense of propriety.’ (Illies & Ray, 2009)
- Andrea Palladio (1508 – 1580), Italy. Renaissance architect. Was influenced by Vitruvius, his works can be considered as an illustration of form in which Plato’s philosophical principles can be applied to architecture. Influencer of the ‘Western tradition’ in architecture.

### THE 18TH CENTURY

- Immanuel Kant (1724 – 1804), Germany. A philosopher. Influenced theory of aesthetics of form, his aesthetic perception is independent of concepts (a formalism), can be considered in a way a continuation of the idea of Aristotle or Alberti that things can be enjoyed by themselves.
- Johann Gottfried Herder (1744 – 1803), Germany. Philosopher, theologian. In contrast to Kant, Herder denied nonconceptual aesthetic appreciation and believed that art should be appreciated in context, which anticipated the idea of the Spirit of the Time, Zeitgeist.

- Georg Wilhelm Friedrich Hegel (1770 – 1831), Germany. A philosopher. Introduced the term ‘Absolute Spirit’, explored the notion of symbol: ‘the symbol, according to Hegel, offers a natural connection, intrinsic between a signified and a signifier, putting at stake simultaneously a direct form and an abstract notion.’ (94 (Pellegrino, 2002)
- Friedrich Wilhelm Nietzsche (1844 – 1900), Germany. A philosopher, theorist. Believed in the ‘total work of art’, which unites form and content, along with many phenomena. ‘Nietzsche influenced many architects (and artists) at the end of the nineteenth century and beyond, especially of the Art Nouveau movement.’ (Illies & Ray, 2009)

### ROMANTICISM

- Geoffrey Scott (1884–1929), England. A theorist and historian of architecture. Followed a formalist approach, was widely appreciated in the twentieth century despite the contradiction with the modernist architectural theory, emphasised the continuity of evolution of forms developed by the generations of architects.

### XX CENTURY

- Karl Raimund Popper (1902 – 1994), Austria, the UK. Known for empirical falsification. Author largely influenced architects of the XX century and their forms.
- Charles-Édouard Jeanneret (1887 – 1965), Switzerland, France. Architect, theorist. One of the pioneers of modern architecture, largely influenced architectural form of the XX.
- Aldo Rossi (1931 – 1997), Italy. Architect and theorist. One of the leading exponents of the postmodern movement, largely influenced architectural form of the XX.
- Robert Charles Venturi Jr. (1925 – 2018), USA. Architect and theorist. Partnered with Denise Scott Brown, largely influenced architectural form of the XX.

### PHENOMENOLOGY-RELATED AUTHORS

- Husserl (1859-1938), Germany. Philosopher, the principal founder of phenomenology. Influenced by platonism, Descartes, Hume and Kant. The followers of Husserl contributed to aesthetics and human experience

of environments.

- Martin Heidegger (1889 – 1976), Germany. A philosopher, known for contributions to phenomenology, hermeneutics, existentialism, for his fundamental text *Being and Time* ((*Sein und Zeit*), 1927) and term ‘Dasein’ translated as ‘being there’, ‘being-in-the-world’, the question of the meaning of being. He was influenced by Brentano, Aristotle, Kant, Nietzsche, Husserl, his ideas contributed to the theory of architecture warning about technocratic anti-natural Modernism, alienation of man from Being: “The essence of building is letting dwell” [Heidegger, 1951, p. 361]. ‘It is significant that it is easier to analyse the experience of architecture in Heideggerian or post-Heideggerian terms than to translate such thinking into prescriptions for design.’ (Illies & Ray, 2009)
- Kenneth Brian Frampton (born 1930), UK. An architect, theorist. Known for his ‘Critical regionalism’, the approach, which strives to overcome ‘placelessness’ and lack of identity in architectural form in order to provide a modern tradition, at the same time rooted in geographical and cultural context, but not in the sense of returning to vernacular architecture, mediating between the global and the local languages. Based his ideas on Heidegger’s work.
- Roman Ingarden (1893–1970), Poland. A philosopher. His work ‘The Ontology of the Work of Art’ (1962) is important for architectural theorists. ‘Ingarden compared the works of architecture to the works of music since both arts are non-imitative. Works of music can be understood as abstract entities (similar to Plato’s Forms) that are only discovered, rather than created, by the composer, or as performances (physical events), or even merely as a set of notes written down on a piece of paper.’ (Mitrovic, 2011)
- Maurice Jean Jacques Merleau-Ponty (1908 – 1961), a French phenomenologist (influenced by Husserl and Heidegger). He studied meaning in human experience and perception, writing on art, politics, language, history, etc.
- Christian Norberg-Schulz (1926 – 2000), Norway. Architect, theorist. His name is associated with architectural phenomenology, the author of term ‘GENIUS LOCI’, largely influenced by Heidegger. His research influenced architectural theory and practice of the XX century. ‘Norberg-Schulz’s introduction of Heidegger’s views on architecture made in its time an important

contribution to another point: the analysis of the relationship between space and place. Norberg-Schulz defined existential space as the space of human action, marked by the concepts of orientation and identification. Such space is different from scientific, mathematically definable space. Following Heidegger, he further described the concept of place, which is not merely a location and is marked by character, or the spirit of the place. A place, from this point of view, gives a common identity to a group of human beings.’ (Mitrovic, 2011)

- Edward S. Casey (born 1939), USA. A philosopher, contributed in phenomenology and the philosophy of space and place, influenced by Kant, Husserl, Heidegger and Merleau-Ponty, contributed to research in aesthetics, the philosophy of space and time, ethics, perception.
- Jeff Malpas (born 1958), Australia. A philosopher, known for philosophical research on the concept of place.
- Aleida Assmann (born 1947), Germany. A theorist, focused on cultural anthropology and Cultural and Communicative Memory.
- Juhani Uolevi Pallasmaa (born 1936), Finland. An architect, theorist, philosopher. Among Pallasmaa’s many books on architectural theory is ‘The Eyes of the Skin – Architecture and the Senses’, his writings integrate insights from Continental philosophy.
- Colin Rowe (1920 – 1999), British-American. An architectural historian, theoretician. one of the major influencers for the development of architectural theory and practice (cited Popper).
- Peter Eisenman (born 1932), USA. An architect and writer. One of the major influencers, modernist or deconstructivist (Cited Rowe, Norberg-Schulz). Inspired by the concept of Genius Loci.
- Peter Zumthor (born 1943), Switzerland. An architect, theorist, minimalist. Inspired by the concept of Genius Loci.

### HERMENEUTICS AND INTERPRETATION

- Hans-Georg Gadamer (1900 – 2002), Germany. A philosopher of the continental tradition, was writing on hermeneutics. Influenced architectural theory inspired by the interpretation of text and context.
- Luigi Pareysón (1918 – 1991), Italy. A philosopher, best known for his *Estetica*, built on the hermeneutics of the

Austrian philosopher Ludwig Wittgenstein.

- Manfred Sommer (born 1945), Germany. A philosopher strongly connected to the hermeneutical tradition. "Mensch und Raum" (concepts like room, door, window, indoor/outdoor)

#### LINGUISTIC AND RELATIVE TO LINGUISTIC APPROACHES, STRUCTURALISM

- Ferdinand de Saussure (1857 – 1913), Switzerland. A philosopher, linguist, structuralist, semiotician, is widely considered one of the founders of 20th-century linguistics and semiology. Largely influenced architects interested meaning in architecture.
- Jacques Derrida (1930 –2004), France. A philosopher (post-structuralist), famous for his semiotic analysis called 'deconstruction', in the context of phenomenology (influenced by Saussure) Derrida's influence is significant in literary studies and architecture. Interesting also Derrida's collaboration with Bernard Tschumi in the Parc de la Villette.
- Claude Lévi-Strauss (1908 – 2009), France. An anthropologist and ethnologist (theories of structuralism and structural anthropology), the 'father of modern anthropology'.
- Paul-Michel Foucault (1926 –1984), France. A philosopher, structuralist, postmodernist. Influenced he ideas of architects and architectural theorists. 'Among the French thinkers whose work related to Foucault's interests in psychiatry, one should mention Gilles Deleuze (1925–1995) and Félix Guattari (1930–1992). Deleuze was trained as a philosophe in the French tradition; Guattari was a radical psychiatrist, involved in various revolutionary projects through the 1950s and 1960s.' (Mitrovic, 2011)
- Gilles Deleuze (1925 – 1995), France. A philosopher, influenced by Stoics, Leibniz, Hume, Kant, Nietzsche, Bergson, Spinoza, his work has influenced art, literary theory, post-structuralism and postmodernism.
- Louis Trolle Hjelmslev (1899 – 1965), Danmark. A linguist, together with Hans Jørgen Uldall he developed a structuralist theory of language with a high level of formalism, interested in semantic characteristics separated from context such as sociology, neurobiology, etc.
- Lev Semyonovich Vygotsky (1896 – 1934), Russia/ Soviet Union. A psychologist, worked on language and thought.
- Roland Gérard Barthes (1915 – 1980), France. A literary theorist, philosopher. He influenced structuralism, semiotics, social theory, design theory, anthropology and post-structuralism, famous for developing the analysis of sign systems.

- Umberto Eco (1932 – 2016), Italy. A philosopher, semiotician. In relation to architecture, he emphasizes the role of architectural objects as signs.
- Giovanni Klaus Koenig (1924 – 1989), Italy. An architect, historian of architecture. In his approach, rooted in semiotics, he saw architectural objects as signs that prompt spectator behavior.
- Avram Noam Chomsky (born 1928), USA. A linguist, philosopher. Sometimes called 'the father of modern linguistics', proposed the I-Language (or internal language of persons) for the study of language.
- Christopher Wolfgang Alexander (born 1936), British-American. An architect and design theorist, the father of the pattern language movement.
- Charles Alexander Jencks (1939 – 2019), USA. An architectural historian, a theorist of postmodernism, contributor to semiotics.
- George Baird (born 1939), Canada. An architect and researcher. Baird is talking about such semantic phenomena as metonymy, metaphor, ambiguity, in relation to architecture etc.
- Henry Nelson Goodman (1906 – 1998), USA. A philosopher. He presents an alternate view on linguistic phenomena in architecture, seeing arts as symbolic systems with language-like features, emphasising the key role of history and context in the generation of particular structures.
- Darryl Hattenhauer is an Associate Professor of Literature and American Studies specializing in American literary history, especially Gothic, grotesque, and fantastic fiction.
- Geoffrey Broadbent (born 1929), UK. An architect, theorist, semiotician.
- Roberto Esposito (born 1950), Italy. A philosopher, one of the founders of the European Political Lexicon Research Centre.
- Terrence Hawkes(1932), UK. Theorist, semiotician. 'Terrence Hawkes writes, 'Language should be studied, not only in terms of its individual parts, and not only diachronically, but also in terms of the relationship between these parts, and synchronically, that is, in terms of its current adequacy.' (129, (Niven, 1996)
- Susanne Katherina Langer (1895 – 1985), USA. An American philosopher, known for her theories on the influences of art on the mind, suggests that the symbolic communication of architectural objects is holistic.
- Caroline Alexandra van Eck FBA (born 1959), Netherlands. Theorist, art historian in the art and architecture.







The critical literature review revealed not only the range of possible definitions of the concepts of form and type, which have developed and changed over time and are linked to different cultural contexts, but also the variety of complementary approaches. These approaches are relevant for solving different kinds of problems. It is possible to see the existence of roughly two 'semantic clouds' in definitions of type and typology: one can be reductive, statistic-based, pragmatic and functional (e.g. Soviet typologies); the other includes 'holistic', paradigmatic definitions. When dealing with the issue of preserving the continuity of historical development, values, narratives and identities, it is necessary to use the latter category of definitions. Type in the latter category can also be used as a 'meaningful' unit in urban fabrics. Therefore, the present research insists on the choice of the second category of definitions, in case of the production of meaningful form, sustaining continuity. The following chapters also demonstrate how the dominating concepts of type differently define form production in different periods in the Siberian cities.

The following two chapters demonstrate the power of comparative case studies made with the use of the refined approach of typological-processual school of urban morphology. By comparing settlements that have certain similarities and marked differences, it is possible to define and determine which characteristics (languages or typologies) are shared by different cultures or places and which are unique. Knowing the characteristics of certain types shared by different cultures, it is possible to predict their natural behaviour (well described in the literature in typomorphology). The above question should first be addressed in the process of reading the intrinsic characteristics of urban form, learning the urban language. Which types persist over time despite the process of transformation, and which disappear? What kind of urban form is unique for the certain location and how one should conceptualise it? This is followed by a detailed analysis of the external ideas, asking how they intertwine with the local existing form, in order to clarify the process of formation of local identities and urban languages. The following chapter focuses on the historic centres of cities - the part that can clearly demonstrate the development of the intrinsic characteristics of historical urban form over time.



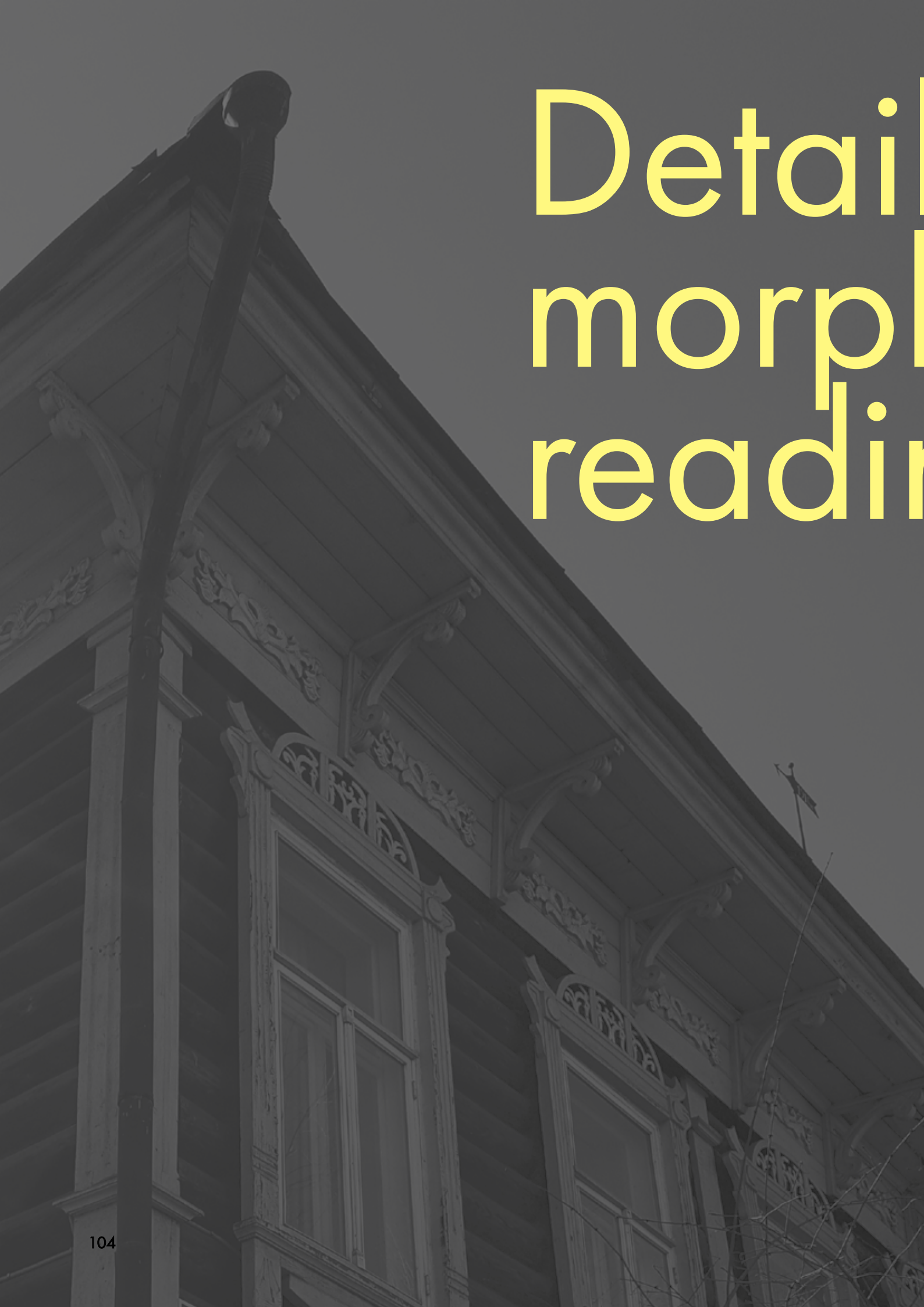
# LEARNING URBAN LANGUAGE. READING

Intrinsic characteristics



This study proposes a detailed reading of the urban form of the Siberian city. Many researchers in Siberia have described the architecture of the city: styles, construction technologies, age of buildings, decorative motifs or forms of traditional buildings, conditions for the appearance of certain objects, etc. (Tsarev & Zakharchenko, 2017; Gorbachev, 2016; Merkulova & Merkulova, 2013; Gevel, 2012; Tsarev, 2012; Ogly, 1980; Ruzhze, 1966; Aschepkov, 1953). Social processes have been described by ethnographers and historians, used by architects to present the context of architecture (Gorbachev, 2016; Bagashev, Fedorov, & Fisher, 2015; Bykonya, 2013; Tokarev & Blomkvist, 1956). In general, the analysis of the totality of Russian academic works has shown that the history of Siberian cities is quite well studied and described, as is the development of Siberian housing. However, it is difficult, if not impossible, to find a conceptualisation of the existing urban fabric and its development as an organism with its continuity; instead, the elements of the fabric are mainly considered separately, within the certain periods. It is therefore necessary to shift the focus from historiography to the logic of changing relationships between elements at all scales - from the scale of the building to the scale of the fabric - in order to provide the framework or language to identify 'signals' and 'read the urban organism'.

According to the principles of typomorphology, it is important to restart the historical process, which was interrupted by radical interventions. The studies of specifics of the genesis of the historical environment during the history of the formation of this city is facilitating. The urban fabric of the historic city consists of locally developed socio-spatial structures of the urban environment with the 'attached' values and social meanings. This chapter is dedicated to the extraction of grammatical and syntactic codes shared by different cultures, based on Caniggia's basic terminology and method, informed by further examples of application (Carlotti, 2021; Maretto, 2013, 2014; Oliveira, 2018; Strappa et al., 2016) and extended by the principles of the formation of planned cities (Moudon, 2019; Després et al., 2015; Larochelle and Gauthier, 2003; Larochelle, 2002; Larochelle and Lamandi, 1999; Després and Larochelle, 1996). The method is also complemented by methods derived from the other schools of urban morphology, such as metrological analysis (Chow 2002; Serra, 1990; Slater, 1990) or concepts such as the 'fringe belt' and 'morphological region' (Conzen, 1960), a 'supergrid' (Moudon, 2019), 'antipolarity' (Muratori, Camiz), 'collage city' (Rowe). This research has identified local identical forms, which provide continuity and therefore important to understand and conceptualise for unexplored areas such as Siberia.

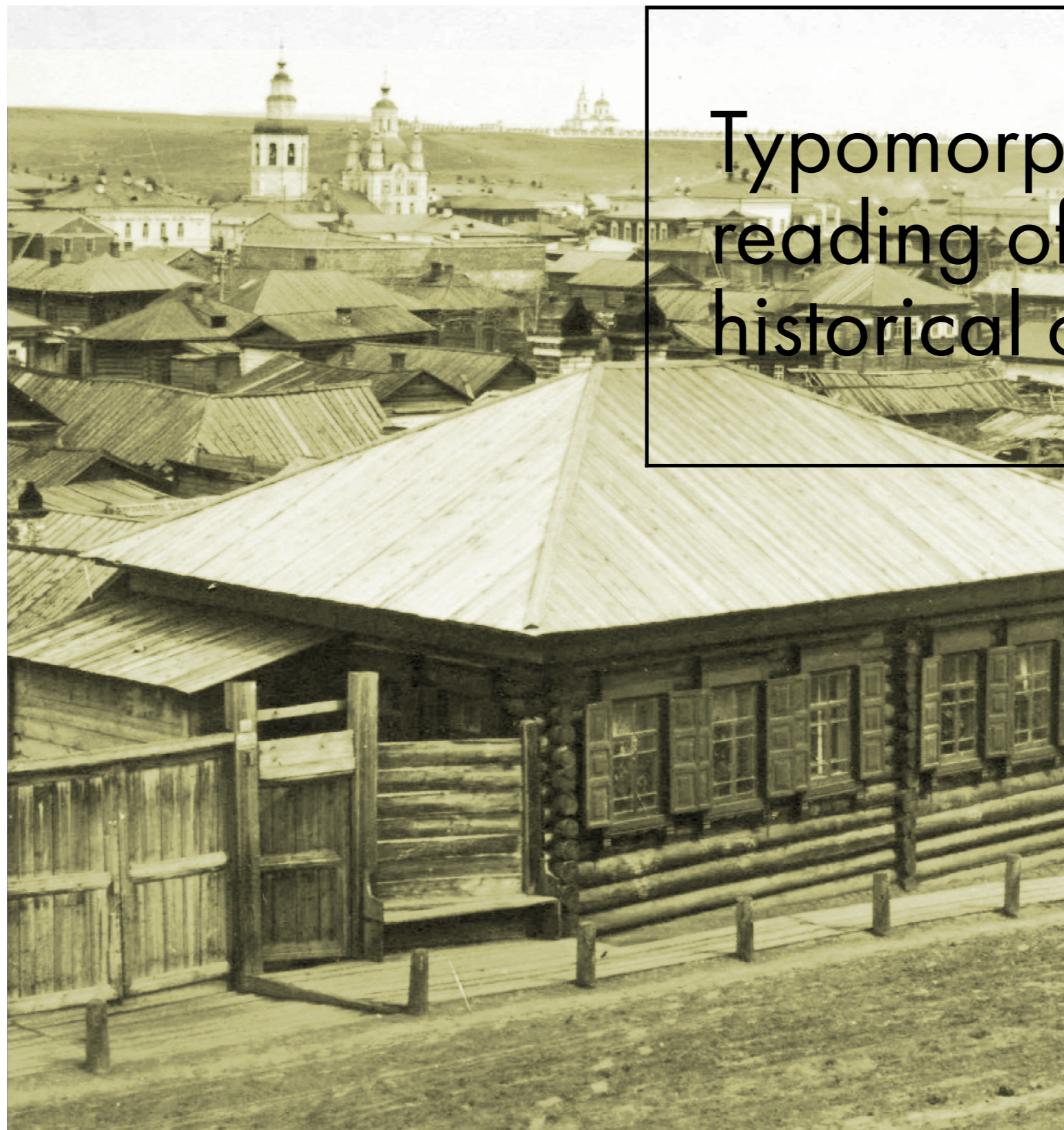


# Detailed morphological reading

The study is focused on the historical center of Krasnoyarsk. Today, Krasnoyarsk is one of the largest historic cities in Siberia (1.15 million inhabitants in 2021), situated on both sides of the Yenisei River on the Trans-Siberian Railway. Founded in 1628 as a wooden fortress, today it is one of the most important educational, cultural and industrial centres of Eastern Siberia (the context is described in detail in the next chapter as part of the comparison with Quebec City). Retrospective reading and careful redrawing of the overlaped maps was tactically used and informed by archival documents and historiographic literature.

Typomorphology begins the study of the city as an organism from the territory that the first inhabitants chose and that inevitably defined the first man-made elements. The direction of the winds, the rivers, the relief, the temperatures, the soil, etc. - All these factors determine the size and configuration of plots, the location and density of buildings, the correlation between volumes and voids, public and private spaces - in short, the traditional urban form that is specific to a given place. The choice of the location of the first Siberian cities, which were originally fortresses (so-called 'ostrog'), was dictated not only by strategic considerations, but also by favourable conditions for agriculture, trade and fishing, which arose at the intersection of the main water and land routes; they were located on elevated sites, at the junctions of small rivers with larger waterways. Many researchers state that compactness in the organisation of ostrogs, determined by the external environment and harsh climatic conditions, was their most common feature, defining the nature of the internal layout and the techniques of placing individual objects (Merkulova & Merkulova, 2013; Gorbachev et al., 2011; Ogly, 1980). The basis of Krasnoyarsk in the first centuries was a free (spontaneous) layout of the territory, taking into account its terrain and functions. Describing Siberian cities, which began their formation as villages, Aschepkov noted that the terrain became a decisive factor in the organisation of the structure. Moreover, in the case of Krasnoyarsk, the structure could be described as 'organic elements grouped in a serial composition' (Caniggia & Maffei, 2001), defined by 'spontaneous' typology.

The first fortress of Krasnoyarsk was located on a high riverbank, which provided a good observation and isolation, which are necessary for the function of protection and colonization, inscribed in the idea of 'ostrog'. The map (Fig.6) clearly demonstrates the correspondence of urban form of settlement and initial relief and landscape in general, and in details: placed on the natural platform, the overall contour of historical centre follows natural borders of its configuration: riverbanks, cliffs, slopes. Current contours of central park inherited the form of curves of primary terrain. Additionally, in 1775, city stopped at its western border where the flat terrace ends. Regarding the large-scale morphological developments and changes in masterplan, it is safe to say that until the end of the XIX century, Krasnoyarsk was developed in a relatively compact manner within the existed land on the 5.



# Typomorphological reading of the historical core.

natural terrace, limited by the natural borders (current city centre). When it used all the growth opportunities, the more fragmented and dispersed development phase begun, which could be characterized by the collage (Rowe & Koetter, 1978) of different morphological regions (Conzen, 1960). On a small scale, this effect is also visible: if the position, configuration or orientation of some elements, buildings or plots seems illogical today, it is better to see the previous structure of the terrain or the previous stage of urban landscape to understand the logic (Fig.6: the intersection of Lenina and Karatanova streets (1), communal bridge entrance at the left bank (2), plot of the building of city administration (3), etc). Thus, the memory of previous landscapes is enshrined in the configuration of some of the current plots and should be preserved in future developments.

Alexander Radishchev, while passing through Krasnoyarsk in 1791, returning from exile, wrote: 'On the right side there is a stone ridge, which is visible in other places sharp and bare ends. On the left side of the bank, mountainous, ending in Krasnoyarsk, treeless and with their redness show abundant iron ore. The Yenisei flows between the mountains, leaving abundant places in the valleys adjacent to it. Krasnoyarsk has a position like some cities in the Alps. The right Bank along the river is high and the mountains are uneven. The left Bank is high, but its surface is flat.'

Figure 5. Krasnoyarsk in the XX century (Photograph is provided by Krasnoyarsk Regional Local Lore Museum).



6.

7.



Figure 6. The correspondence of urban form of settlement and the initial relief in details (Background: the cadastral map of the contemporary Krasnoyarsk combined with geodesic lines of 1894).

Figure 7. The correspondence of urban form of wooden fortress and the initial relief (Background: the cadastral map of the contemporary Krasnoyarsk combined with geodesic lines of 1894, foreground: the reconstruction of 1748, by Panov E.M.). Fragment.



8.

9.



Figure 8. The correspondence of urban form of the first wooden fortress and the initial relief (Background: the cadastral map of the contemporary Krasnoyarsk combined with geodesic lines of 1894).

Figure 9. The correspondence of urban form of wooden fortress and the initial relief (Background: the cadastral map of the contemporary Krasnoyarsk combined with geodesic lines of 1894, foreground: the reconstruction of 1748, by Panov E.M.).

## Polarities, antipolarities, nodes

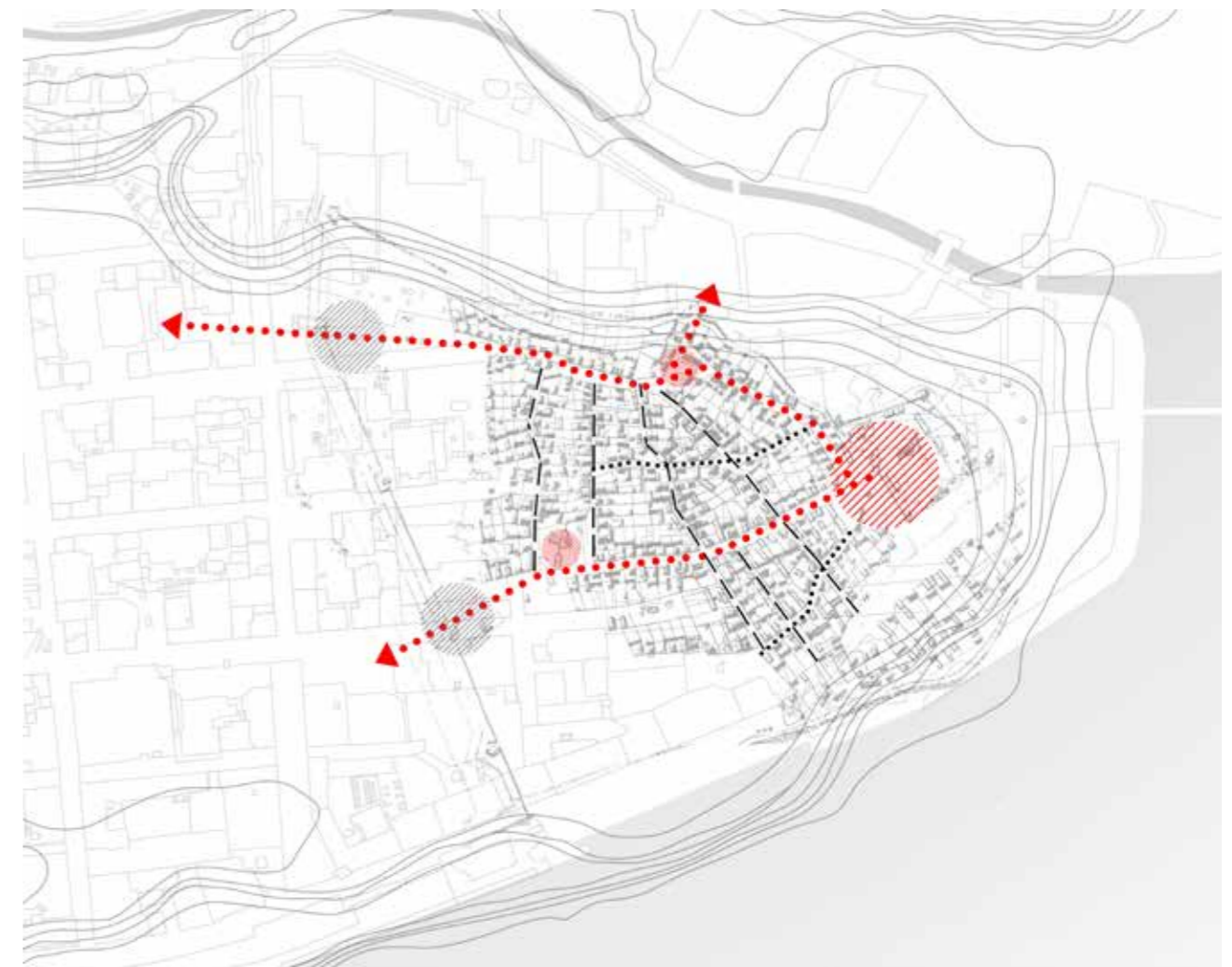
Polarity is one of the most important social and morphological concepts responsible for sustainability, defining the nature of urban structure, transmitting traditions and meanings, social and cultural values and ideologies, signs of power and symptoms of anarchy, priorities that guide society. The connectivity between polarities, as termination points and 'confluences' of information, energy flows, flows of people, finances and goods, determines the specificity of the urban structure, its nature and growth. The polar position both influences and is influenced by architecture: the specificity of the architectural language and structure, the substantial visibility and presence, the height, the orientation of the entrance, the level of publicity, the materials used, the scale and functions of the building, the nature of the surrounding fabric, etc. The function of buildings located on polar points lies in their coordination with the urban fabric and flows. Polarity defines urban priorities. The next complementary phenomenon is the phenomenon of anti-polarity, which should be considered together with polarity, as a polar-anti-polar transformation can take place. A specific case of anti-polarity is the fringe belt.

Thus, as far as polarities are concerned, S. Plautin's plan of 1748 clearly shows how the first fortress was transformed into a polarity - the confluence of the main roads leading to the main entrances of the city - the gates of the walls leading to the roads connecting Krasnoyarsk with other settlements. The plan of 1775 clearly shows that after the introduction of the regular grid the configurations changed, but the core principle remained the same. Researchers claim that the square on the site of the burnt-out fortress, at the confluence of the Yenisey and Kacha Rivers, served as the cultural, administrative and commercial centre of the city, in accordance with the principle of the main polarity visible on the map. Later, in the middle of the XX century, the demolition of the church on the Strelka and the appearance of the New Market Square caused the temporary transformation of the function of the primary historical pole into the antipolar place. Today, almost all the former buildings, with rare exceptions, have been lost and the area itself has been built over with medium and high-rise buildings. However, the polar function returned at the end of the XX century, when the new complex of special

buildings was built and gained special significance. Thus, the main historical poles demonstrate the resilience of the polar function and its behaviour, which persisted despite the various changes and which resembled the type of behaviour called morphological polar-antipolar transformation.

Another important polarity existed on the first plan of the city (1748) near the northern entrance to the city. On the later regular plan, the location of this point corresponds approximately to the position of one of the first stone churches. Later, the plan of the city became more regular, but four streets still converged at this point: Kachinskaja, Blagoveschenskaia (now Lenina Street), Malokachinskaja (Markovsky Street) and Blagoveschensky Lane (now 9th of January Street): this square had openings and views to Tatyshv Island, the Yenisei River, Karaulnaia Hill and the Chapel Chasovnya (Gevel, 2012). The pole lost its significance in the Soviet period, when religion lost its dominant role. The phenomenon shows the socio-cultural character of urban changes.

The next important place - the public garden, created by the order of the governor A. P. Stepanov, with the common territories, became the unofficial Western border of the urban development of the 1820s (later - antipolar and a fringe belt) and another example of antipolar-polar transformations. Just beyond the western boundary of the garden, wooden barracks for soldiers of the quartered battalion were built, together with a company of gendarmes and a military infirmary (Merkulova & Merkulova, 2013), which is also visible on the map of the city, signifying the anti-polar function. However, according to Ruzhze, the continuous growth of the city to the west from the late 18th century and the consequent distance of the new quarters from the old city centre at the confluence of the Kacha and Yenisei rivers began to affect the life of the city, thus provoking the emergence of the 'new city centre' project, which aimed to shift the urban significance (Ruzhze, 1966). Therefore, as the master plan of 1828 showed and as researchers noted, the new centre was designed at the intersection of the main street with the park belt. It was intended to extend a 'service radius' for the growing city and contribute to the function of the old centre. The project of a new city centre was called the New Market Square and proposed a large



10.

empty space with the Cathedral in the middle, surrounded by administrative and public buildings (large volumes of 'gostinnyi dvor', shopping areas, customs building, shops, barns, exchange buildings, market buildings and other objects), which can be seen in the master plan and the description of historians.

In general, the plan of 1828 assumed the concentration of the main polar functions (administrative, commercial and religious) in two urban centres - squares. Logically, the two poles were connected by the main, matrix Voskresenskaia Street (now Mira Street). The master plan established the importance of the street as the main planning axis and development vector.

However, contrary to the first plan, the New Market

Square constituted an urban void for quite a long time, which was reflected on maps and called empty space in the works of researchers (Merkulova & Merkulova, 2013; Ruzhze, 1966). Thus, in reality, the antipolar effect persisted. As a result, public and administrative buildings were scattered all over the city, mainly concentrated on the polar Voskresenskaia Street, forming the linear polarity. Thus, the city centre was completely transformed from a compact focal point into an axial scheme, which also included separate nodes - gardens and specialised buildings, gravitating towards the main street as the main axis. It can be seen that the majority of the buildings marked on the map of 1828 were located along the main axis - Voskresenskaia (Mira) Street. According to historians, the squares of the city retained their religious and commercial functions, but the main business, commercial and social

Figure 10. The initial structure of wooden fortress (Background: the cadastral map of the contemporary Krasnoyarsk combined with geodesic lines of 1894, foreground: the reconstruction of 1748, by Panov E.M.).



life moved to the central street (the main axe), which was quickly built up with shops, business institutions, public buildings, apartment houses and other large buildings, as can be seen on the maps, forming the phenomenon of linear polarity. The elements of recreation, leisure and entertainment also appeared.

Later, in the second half of the XIX century, the main cathedral was built and redesigned square continued to grow naturally. Inns, warehouses and outbuildings for carts and storage of goods were gradually built in the blocks adjacent to the New Market Square, which was a space of enormous dimensions (previously urban void) and became a place of attraction for people from suburban villages and remote settlements (Merkulova & Merkulova, 2013; Ogly, 1980; Ruzhze, 1966). In addition, the whole new part near the former western border changed quite significantly, which is visible in details on the map of 1852, including the location and configuration of nodes, the size of some quarters (which, however, could be the effect of distortion of the first plans). The transformation from antipolar to polar status is clearly visible along the former fringe and the 'park chain'. The 'polarisation' effect was even more evident on the maps, where it was marked by the orientation of the planned estates.

Gevel adds that according to the master plan of 1852, Voskresenskaia received a classical length of about 2.5 km (Gevel, 2012). The system of main polarities, including old and new market squares and Voskresenskaia Street connecting them, retained their significance and are visible on the map of 1906. The number of specialised buildings around them increased significantly. The number of stone buildings increased as well, which can be seen on the map. As it was already mentioned, in the early Soviet period, the former pole located on the place of old fortress became anti-pole due to the demolition of cathedral. Later, in the XX-XXI century, the New Market Square reflected all the important socio-political transformations of the city: the changed ideology brought the huge complex of administrative buildings built around the Square of the Revolution (the former New Market Square) instead of the earlier demolished specialised buildings (i.e. the Cathedral), this will be explained in more detail.

In the XIX century, the city began to acquire multipolar

structure, with a complex system of nodes, antipolarities and polarities that corresponded to the increasing complication of life and urban form. This can also be seen on the maps of the late XIX century. There were important 'entrance' transport nodes (river and railway stations), public, commercial, 'forest' and 'wood' squares on the banks of the river. These newly emerging polarities provided orientation, served as centres of social significance, and their functions were often reflected in the names of the streets. These were the centres of social life, places of the most important architectural complexes of old Krasnoyarsk (Gevel, 2012).

It is important to note the changed details on the 1852 map. For example, instead of the contemporary significant urban "pole" near the entrance to the municipal bridge (Veinbauma Street, the 6th N-S from the confluence of the Yenisei and Kacha Rivers to the left on the map) one can see the complex of squares and buildings. Instead of the regular blocks of 1828, the plan of 1852 shows the urban void, the periphery and all the symptoms of an antipolar place. The geological map of 1886 shows the appearance of a new square in this place. At the end of the XX century, when two bridges appeared at both ends of Veinbauma Street, the place was transformed into an important polarity with the buildings of the theatre, the city administration, the restaurant and the hotel. Gevel notes that in this period three new squares, laid out in the plan of 1828, began to form: the "Theatre" (Teatralnaia, now the "Locomotive" stadium), the "Parade Ground" (Plats-paradnaia, now Red Square) and the new "Ostrozhnaia" square due to the transfer of the prison (the area where the modern streets of the Republic and Robespierre intersect) (Gevel, 2012). Ruzhze stated that along with the development of the group of public squares - Novosobornaia, Starosobornaia, Plats-paradnaia (today's Red Square), Ostrozhaia and Teatralnaia (today's territory of the Lokomotiv Stadium), two new local centres - squares with shopping centres and a church were designed. (Ruzhze, 1966)

The secondary nodes of the old regular plan were also squares at the intersections of the main street Voskresenskaia (now Mira) with cross directions. They were called 'pedestrian' squares - Vladimirskaia and Pokrovskaia, where previously anti-fire pools were located. These

crossroads (current Mira/Surikova and Mira/Parizhskoi Commune streets) were widened and organized in the form of squares, being 'polarized' by the Pokrovskaia church and houses of important commercials. Thus, these nodal points also constitute the important memory of the city. Gevel mentioned front yards - 'kurdonery' (where buildings were placed deep into the plots with green squares in front of the street), which began to form in the period of classicism and continued in the time of eclecticism with the construction of large public buildings of the women's gymnasium, spiritual school, etc. (Gevel, 2012)

Along with the growth of the city in the middle of the XIX century - at the end of the XIX century, a new system of polarities and nodal points began to grow. The process of "polarisation" affected the corresponding secondary roads. According to Gorbachev, the main roads were spatially supplemented by the orthogonal smaller ones, thus expanding the trade and commercial zone, creating additional comfortable pedestrian spaces and convenient roads for loading products (Gorbachev, 2016). The planned 'polarisation' effect of the main nodes is already visible in a master plan of 1828: for example, the settlements located on the side streets perpendicular to the main street were oriented towards these streets if special (polarising) buildings were located on them, thus

increasing the importance of these streets. This effect could be seen around the planned Plazparadnaia square, Teatralnaia square, Archiereiskii line. On the map, which shows the current plots with the buildings from the second half of the XIX century, we can see the increased density of buildings, which began to gravitate towards the new pole - Novobazarnaia Square, which is recognisable by this density. Some of the buildings also began to spread along the present Veinbauma Street (the 6th N-S from the confluence of the Yenisei and Kacha rivers, to the left on the map), which gets the increased importance due to the appearance of the new pole at its southern end, which in pair with the neighbouring present Perensona Street (the 7th N-S from the confluence of the Yenisei and Kacha rivers, to the left on the map, leading to the Teatralnaia Street in the North), reinforced the meridian direction of the city development.

In the twentieth century, the planning structure of the city became even more complex, and the inner urban space gradually changed and became denser. However, the period was still characterised by morphological continuity and resembled the growth of an organism. In addition to the main polar squares already described, large nodal points were eventually formed into poles, such as the Wood Square on the high bank of the Yenisei - between the gymnasium and the Post Lane, which, as



Figure 11. The analysis of cadastral map of the contemporary Krasnoyarsk: the current plots with the buildings of the second half of XIX cent.

Gevel noted, was located on the site of demolished old smithies. The square was crossed by Beregovaia Street (a modern square with the Opera and Ballet Theatre and the Krasnoyarsk Hotel). Interestingly, on the map of 1906, the relatively new junction - the military Plazparadnaia Square - didn't correlate or align with any axes, nodes or poles, as well as the railway station, which was located nearby. Apparently, these functions were perceived as the 'outside' in relation to the historical city core, located on the outskirts, behind the former fringe belt that was still visible. They were well connected to the city, but they didn't aim to become points of attraction. The railway station, however, was connected by the straight road to the secondary pole with the wooden warehouses (the future entrance to the main bridge). Many small industries and warehouses were located nearby. This direct connection later disappeared. Thus, the increasing social importance of these urban elements is morphologically visible and readable.

Despite the general continuity, some restructuring processes began at the beginning of the XX century and were most visible near the river banks. The "anti-polar" character of the river banks was gradually reconsidered. Slowly, step by step, the natural bank of the Yenisei was transformed into an embankment - a place of attraction - with a road and specialised buildings. The phenomenon is well described by Tsarev: 'In the area of the embankment, in the block between Dubenskii and Pokrovskii lanes (now Paris and Surikov streets), the buildings of the municipal and police authorities appeared, and on the very bank of the Yenisei there were still the piers of the landing stage and the Sredne-Sibirskii steamship. The drawing of 1906 shows that along the existing embankment there was a street called Beregovaia, which connected with Sadovaia Street at the eastern border of the City Garden. The section of the embankment between the Gymnasium and the Post Lane (today Veinbauma and Perensona Streets) remained undeveloped, probably because of the sandy soil, and the plan shows a timber warehouse here. On the south-western edge of the town, near the Siberian Railway protection zone, on the bank of the Yenisei River, there was a military camp, a sawmill and beer factories'. (Tsarev & Zakharchenko, 2017, p. 16) At the end of the period, the military camp was finally moved out of this area, which also demonstrates the anti-polar-to-polar transformation of the former park belt.

In general, the oldest, easternmost part of the city, from the confluence of the Yenisei and Kacha Rivers to Surikov Street, has retained the layout of the 1770s, including two wide public squares - former squares at the intersection of Mira and Surikov streets of the Paris Commune. A number of old buildings from the XVIII-XIX centuries have also been preserved, such as the former Town Hall, the Kuznetsov mansion, and residential buildings at the crossroads of Mira, Surikov and Paris Commune streets. Gevel poetically described how stable the nodal point could be on the condition of stability of its social and cultural significance:

A remarkable place in the historical canvas of Krasnoyarsk is the story of the Pushkin People's House (73 Mira Avenue), built by active Krasnoyarsk citizens at the turn of the 19th and 20th centuries - after the wooden theatre on the former Ostrozhnaya Square - the beloved Temple of Melpomene and the public square next to it - burnt down in 1898. In 1902 the People's House Theatre was opened in a stone building on a new site designed by A. Kuznetsov. In the new building of the People's Drama Theatre, perhaps the first of its kind in Siberia, or even in the country, the citizens organised a real association, with an association for the care of primary education, a library, many clubs and shops, from which the People's House was maintained. It was everyone's favourite school of the early 20th century (after the Noble Assembly on Mira, 67 with its garden Edem (Mira Ave., 65)). The square was important for Krasnoyarsk, as there was built a pharmacy of the Society of Doctors of the Yenisei Province, and on the other side of the street - the large hall of the renovated trading house of I.G. Gadalov - to listen to news from the famous Russian Geographical Society. Nearby there was a cinema and a large trading house of the merchant Semyonov-Romanov. Later, after the reconstruction of the theatre building in 1952-53, the theatre square was moved to the crossroads. And now this square is a favourite meeting place for young people - they intuitively feel that at the beginning of the 20th century people gathered here, the social life of the city was boiling here' (Gevel, 2012, p. 21).

In the Soviet period, the new 'polarities' appeared as a natural continuation of the previous urban hierarchy. Structurally, nothing changed significantly in 1942-64, almost all new developments continued the established formation process with its system of nodes and poles. In

terms of the existing poles, new important nodes such as the river station and the bridge entrance, along the secondary 'construction' roads leading to the bridges over Kacha or other important nodes, can be seen on the map. All this could be described by the processes of 'polarisation' usually caused by bridges. Especially at the end of the XX century, when two bridges appeared at both ends of Veinbauma Street, the place was transformed into an important polarity with the buildings of the theatre, the city administration, the restaurant and the hotel.

Along with the big-scale residential developments, by the end of XX century, the old 'poles' and 'nodes' were renewed and sometimes completely rebuilt with the new specialized buildings and complexes, reflecting the ideological principles and the spirit of time. They still constitute to the image of the significant city sub-centres: the old market square was renewed with the buildings of research institute, hotel and concert hall, the nearest nodes were filled by the buildings of museum, court and institute of arts; the bridge square was enriched by the opera theatre, administrative buildings, hotel 'Krasnoyarsk'. The new pole was organized at the intersection of Dictatory Proletariata and Respubliki streets: the market building was built. Close to it, the new university building was organized. The main and secondary central axes were filled with the specialized buildings: schools, hospitals, trade buildings, post offices and telecommunications centres, other administrative buildings. Former peripheries at the North and South (attached to river banks) were filled with the residential micro-regions (see below).

## Routes | streets hierarchy, system

After the morphological points the linear elements should be decoded. At the first, spontaneous step of the city development, when the connections with other Siberian cities Tomsk, Tobolsk, Yeniseisk and Irkutsk became stronger, the main inner-city streets of Krasnoyarsk were developed (Merkulova & Merkulova, 2013). The map of 1748 clearly shows that the main routes (matrix) connected the main polarity with the city entrances (Fig. 2), connecting the inner - city streets with the inter - city routes, the phenomenon described by urban morphology (Caniggia & Maffei, 2001). Unfortunately, the layout of the city in 1748 has not been preserved, but on the basis of the graphic reconstruction provided by Panov, it was possible to identify the symptoms of the formation process, similar to that described by Caniggia (Caniggia & Maffei, 2001). The orthogonal streets have the characteristics of 'building streets' according to the Caniggian classification, taking into account the orientation and internal organisation of the properties. The opposite ends of them seem to be connected by 'connecting roads', which are less regular and continuous. The road that runs along the Kacha River seems to be another 'matrix' that also connects the pole and the exit of the city. With the development of the city to the west, the streets parallel to the Yenisei (which became wider) were given the leading role, which corresponded to the direction of the city's growth. This principle determined the future street layout of the existing central part of the city. To sum up, in the first period of its existence, the size, configuration and internal organisation of the city were determined by factors such as the population of the city

and the necessary size of the enclosing defensive structures inherent in the fortresses, as well as by the direction of the paths and roads that passed through the city, the location of the passageways, the convenient access to rivers, arable land and pastures, and, above all, the hydrographic conditions and the terrain.

The newly planned city covered the modern territory of the central part of Krasnoyarsk, from the confluence of the Yenisey and Kacha Rivers to the modern Weinbaum Street, which can be seen on the plan of 1775. Master plans show that it was based on a straight-line regular grid of streets, typical for new towns in Siberia at the end of the XVIII century, usually sent by the central state government. The regularity in this case could be considered as a statement of centralising power. However, it is obvious that the new plan inherited from the previous stage of the city development the position of the city centre, as well as the main direction of the city growth from east to west, and the importance of the latitudinal streets as the main ones in the city system. The east-west streets planned by this master plan retained their original meaning, while the main 'meridional' streets increased in number towards the west as the old city grew. The development of the city since the 1770s has, to a certain extent, determined the current state of Krasnoyarsk. In general, the location of some primary streets was defined and fixed by the former location of important elements, such as the city walls (Razdelnaia-Poperechnaia, which corresponds to the current Paris Commune street (Gevel, 2012)). Thus, it could be said that the first regular master plan of Krasnoyarsk largely inherited the morphological features of the previous

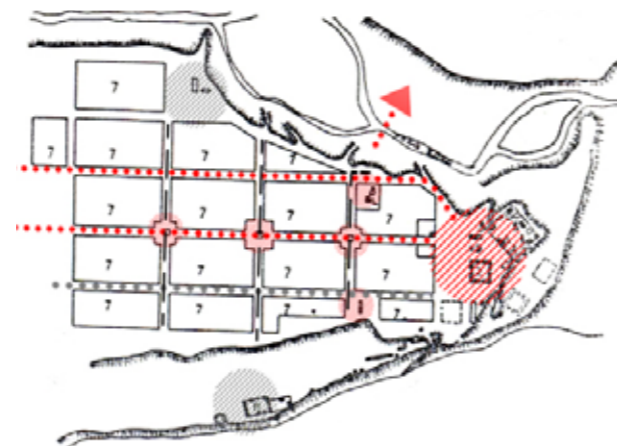


Figure 12. Figure 10. The comparison of initial structure of wooden fortress (Background: the cadastral map of the contemporary Krasnoyarsk combined with geodesic lines of 1894, foreground: the reconstruction of 1748, by Panov E.M.) and the first planned structure Of 1773.

spontaneous settlement: the meaning, role and hierarchy of the main streets, the layout of the quarters, the location of the main poles and nodes, the relations with the natural features of the territory, but the new plan interpreted all of them in a more regular way. All this became a kind of planning module or principle for Krasnoyarsk.

In general, the planned city can be considered morphologically as a case of urban organism, which contains a certain degree of organicity: in Krasnoyarsk, organic elements, grouped in a serial composition, while the construction of its fabrics is significantly spontaneous. (Caniggia & Maffei, 2001).

In the first half of the 19th century, socio-political changes affected the urban form: an increasing regularity in the master plan and the configuration of streets and plots could be considered a symptom of state centralisation, which is visible on various maps of the period. However, the general morphological logic and hierarchy in Krasnoyarsk was still preserved: the planning development in the first half of the XIX century was visibly based on the regular structure established in the last quarter of the XVIII century. Ogly notes that, as a rule, main roads and routes connecting the centres with suburban villages and other localities led to the trade and administrative centre, which fully corresponds to the principles described by Caniggia. (Ogly, 1980). Gorbachev agreed that transit roads became main roads as cities grew (Gorbachev, 2016). This is one of the core features of matrix streets. It can be seen from Figure 5-9 that Voskresenskaia (now Mira) Street remained the main axis, whose intersections with three cross streets were still marked with small squares. The main hierarchy of morphological elements is also visible on the map of 1828: Voskresenskaia Street, the matrix street with characteristics of linear polarity, is marked by the orientation of the facades of the main buildings of the estates. In contrast, the secondary ('building') streets, which are mostly perpendicular to the 'matrix', but can also be parallel in the Siberian city, correspond mainly to the side edges of the newly drawn plots. The corner estates (nodal points) were often marked by the special L-shaped corner houses.

Structurally, if the modern central part of Krasnoyarsk from the confluence of the Yenisei and Kacha rivers to the

modern Veinbauma street bears the features of the layout of Krasnoyarsk in the XVIII century, then to the west of Veinbauma street it reflects the development of the city in the XIX-early XX centuries, which is visible on the map and mentioned by many researchers (Gevel, 2012; Ruzhze, 1966).

In the second half of the XIX century some of the secondary streets (N-S direction) gained specific importance and their specialisation increased, which is visible on the map, due to the development of secondary nodes and poles (multi-nodal system of the city centre), which caused the concentration of specialised buildings (most of them still exist in the city). According to Gorbachev, the streets were not equal. The location of a cultural, educational, medical or other public building on a street gave it specialisation. There was also a social class hierarchy of streets. The location of the main street was further emphasised by the presence of pavements and the appearance of stone buildings. Gradually, in an expressed form, there was a spontaneous specialisation of other streets, long and short, into trade and commercial, administrative, transport streets leading to ports, railway stations, relatively large industrial enterprises (Gorbachev, 2016). The names of these streets reflected the collective identities of citizens: '- Cabby, what is your main and best street here? - Big. - Why don't you have a sign with an inscription on it? - We don't need one. Everyone can see that the street is long and wide - here, Big. And here is the alley, here is the Church of Pokrov, so everyone calls it Pokrovskii Lane. The next lane is Hospital Lane, because the hospital is there. We have everything so simple, without ideas. (The Eastern Review, 29 July 1890). The names of the streets are visible on the map; they correspond to the names of the adjacent nodes and the poles or specialised buildings located on them. The 1906 map included the street names, reflecting the continued specialisation of streets.

The increasing importance of the secondary roads is marked by the further proliferation of important buildings along them, especially at the new nodes. This may be evidence of further multi-polarisation/specialisation of the structure. The importance of these streets could be even higher than that of the streets parallel to the main axis, because if we count the marked buildings that could be found along the same lengths, the longitudinal streets win the competition. This could be due to the growing importance

of the secondary poles in the south-north direction, which attracted urban life and density. For example, Pokrovskii Street (now Surikova) was adapted to the junction where the Pokrovskaiia Church is located. Gimnazicheskii lane (now Veinbaumaya) led to the gymnasium, Teatralnyi (now Kirova) to the theatre square, Pochtovy or Postal lane, etc. Two of these streets (Pochtovy and Pokrovskii), rich with stone and specialised buildings and important junctions, led to the bridges over the Kacha River, which still exist today. The roads connecting important "poles" became more and more "polarised".

The end of this (pre-revolutionary) period marks the end of the morphological continuity of the city in terms of street names, identities, scales, the main tradition of estates and closed quarters. Until this period, the city had developed as an organism, despite its regularity. The revolution and Soviet power brought about rebranding, restructuring processes and radical changes in identities and social meanings, along with mental characteristics and social behaviours. That is why it is important to describe the pre-revolutionary state in detail.

During this Soviet period, work was carried out on the reconstruction and redevelopment of new districts of the central part of the city, which corresponded to the development of new forms of social life and ideology. Morphologically, the period 1914-1941 represents the beginning of restructuring processes that changed the internal logic of the city's organism, identity and development. Strategic changes in the structure were imposed by the Soviet system. From a historical patriarchal city, Krasnoyarsk gradually turned into an industrial city, which affected the scale, the notions of public/private spaces, the naming of streets and squares, the notion of private property, and so on. Most of the streets were named after the revolution, its symbols and heroes. However, despite the restructuring processes, the city centre was planned on the basis of the system established in the past; the former role of the main street, the linear polarity and now Mira Street, with its concentration of traffic, administrative and public, cultural and educational, commercial and residential buildings, remained the same.

The 1924 map showed relative continuity. It is not as detailed as the previous map, but some features could

be noticed. As for the development on the system level, structurally, during the Soviet period the development of the peripheries of the city centre completed the central part of the new Krasnoyarsk, changing its antipolar behaviour to polar. The idea of expanding the planning system of the central part of the city, including the unification of blocks into micro-regions, was already set in the first master plans of the 1930s.

The former void at the place of the present bridge entrance resembled more a square; in 1934 the development of the landscape zone included the old park, the banks of the Yenisei, the Kacha and the islands (Ruzhze, 1966). Restructuring processes began along the Kacha River, which began to look more organised. In 1917-1941 the restructuring process of demolition and new construction on the riverbank accelerated. Quite pragmatic developments destroyed the former connections with the natural environment, which can be seen on the maps of the riverbanks. For example, such a phenomenon as "vzvoz", the ramp leading to the river, was gradually destroyed (in the other Siberian city of Tomsk, for example, it was partially preserved). However, such important features of the city as visual connections with nature and open perspectives were preserved. The researchers commented as follows: 'The entire coastal strip of the Yenisei River in the Old Town, from the eastern end of the city to the railway protection zone in the west, with a total length of about 4 km and a width of 80 to 120 m, was allocated in the project for the organisation of a citywide boulevard embankment. In order to implement the project idea, it was planned to demolish a wooden residential building that occupied a significant part of the coastal area. The housing development on the riverbank included buildings for cultural and consumer services at the city and district level (schools, technical colleges, clinics, museums), which the planners decided to retain, as well as a few stone residential buildings intended for use as service facilities. The new buildings planned for the embankment area included the Pioneers' House, the Pedagogical Institute, the Central Library, the Theatre and the River Station. The general principle of structuring the embankment was to create a single ensemble' (Tsarev & Zakharchenko, 2017, p. 21).

The 1934 Master Plan has some interesting features. First of

all, the neighbourhoods adjacent to today's Mira, Lenina and Marksa Streets remained unchanged, while the areas adjoining the riverbanks received the extended planning scheme (areas of future large-scale developments and micro-regions). Apart from that, the new green axis from Yenisei to Kacha (former "fringe"), including the new market square, becomes clear, still resembling the fringe belt. After the Second World War the reconstruction of the riverbank continued: the new bridge was opened in 1961. 'In the mid-1960s work was carried out on the improvement of the waterfront near the Yenisei, in the area from the river station to Dzerzhinskogo Street. In 1972, practical measures for the reconstruction of the Central Park began, as a result of which it regained access to the bank of the Yenisei' (Tsarev & Zakharchenko, 2017, p. 25). Two streets that connected the new bridge square with the park (Beregovaia and Sadovaia) were restructured and changed direction.

The aero photomap of 1967 demonstrated the ultimate urban form of Krasnoyarsk after the previous period. The morphological structure was clearly visible. The three main axes manifested themselves with the bigger volumes of structures: the residential and administrative buildings of the middle scale and height. The former periphery, which was represented by areas closer to the banks of Kacha and Yenisei rivers, was filled with the small-scale private estates, with the exclusion of such 'poles' as pre-bridge squares, and river station. The Yenisei riverbank was partly restructured and landscaped. Some of the old estates along Kacha River are still there today, but in danger. It is possible to distinguish at the map continuous Uritskogo and Bograda streets, which are now just an inter-yard lane on the city map, being affected by restructuring

processes of the late Soviet period. The configuration of the plot of the Great Concert Hall is still defined by the previously existing fence and Prosvescheniia street, which was restructured later. The former wood-stock square (Drovyanaia) was located near the entrance of the bridge and filled with stadium. The Bograda street was continuous, which was clearly visible between the Dictatory and Veinbauma street. Today it is disappearing in the enlarged quarters. However, its configuration is still reflected in the inner spaces, where it is still possible to find the old estates with manor buildings, preserved between the high concrete blocks. Not many other places were restructured, with the exclusion of Abalakovyh Brothers Street and Profsoyuzov Street, which also corresponded to the periphery. Lebedevoi Street was stopped at Gorkogo street, further appearing in the number of quarters and configuration of current plots. Generally, the configurations of enlarged plots were obviously defined by the sum of configurations of the previous ones. Former Kuznechnaia street disappeared completely due to the enlargement of residential quarters. Some footprints of the former streets and estates are still visible in the yards of large Soviet blocks in the form of stone-made firewalls, fences, the semi-rebuilt walls of the old buildings.

In the latest period, many experiments, related to the optimisation of the network of roads, took place and included the enlargement of the widths of the streets, changed direction of the movements. However, the basic hierarchy remained as it was fixed historically, with the rare exceptions. The hyper-grid of continuous movements, which connected the city centre with the new regions, was included into the existing network of historical streets.



13 .

Figure 13 . Krasnoyarsk. masterplan scheme of 1934 (Background map: V. Ruzhze).

## Fringe belts

'A distinctive characteristic of all cities, and thus also of the urban aesthetic, is the tension that has been, and still is, created between areas and primary elements and between one sector of the city and another. This tension arises from the differences between urban artifacts existing in the same place and must be measured not only in terms of space but also of time. By time I mean both the historical process, in which phenomena of a permanent kind are present with all their implications, and a purely chronological process, in which such phenomena can be measured against urban artifacts of successive periods. In this way, formerly peripheral parts of large cities in transformation often appears beautiful: London, Berlin, Milan, and Moscow reveal entirely unexpected perspectives, aspects, and images. The different times more than the immense spaces of the Moscow periphery, by virtue of an aesthetic pleasure that resides in the very nature of the artifacts, give us the real image of a culture in transformation, of a modification taking place in the social structure itself. Of course, we cannot so easily entrust the values of today's cities to the natural succession of artifacts, nothing guarantees an effective continuity. It is important to know the mechanism of transformation and above all to establish how we can act in this situation-not, I believe, through the total control of this process of change in urban artifacts, but through the control of the principal artifacts emerging in a certain period. Here the question of scale, and of the scale of intervention, comes to the fore. The transformation of particular parts of the city over time is very closely linked to the objective phenomenon of the decay of certain zones. This phenomenon, generally referred to in the English and American literature as 'obsolescence,' is increasingly evident in large modern cities, and it has special characteristics in the large American cities, where it has been closely studied.' (Rossi, 1984, p. 96).

At the beginning of the XIX century, the territory occupied by the new park and adjustment territories in Krasnoyarsk could be considered a kind of urban outskirts (which later transformed into the chain of squares and parks and industrial territories, most of which still exist). The main characteristics of this antipolar part resembled the phenomenon of the so-called fringe belt zone (Conzen defined a fringe belt as 'a belt-like zone originating from the

temporarily stationary or very slowly advancing periphery of a city and consisting of a characteristic mixture of land-use units initially seeking a peripheral location' (Conzen 1960)). In the later period, however, the function of the new city centre was deliberately relocated there, resembling the phenomenon of antipolar-polar transformation. Ruzhze claimed that the new city centre included the city garden (now Gorky Park) - the old pine forest on the bank of the Yenisei (Ruzhze, 1966). All this marked the beginning of the development of the modern system of the centre, with its opening to the Yenisei. This previously antipolar area was gradually and deliberately transformed into the new polarity. In practice, however, the formation of the new city centre took a somewhat different course, and historians note that the development of squares according to the project plan was only partially implemented (Ogly, 1980; Ruzhze, 1966). In fact, it retained the features of a kind of belt with large empty areas adjacent to industries and parks. Gevel described the garden and its surroundings: 'Beyond the garden, to the south-west, the steppe stretches for 5 versts, and on it, near the bank of the Yenisei, were camps for battalion soldiers. These camps are lined with birch trees in the form of alleys... It is a favourite place for summer holidays of the local people. The clean air, the excellent location and the proximity to the city garden attracted walkers here to listen to military music' (Gevel, 2012, p. 68). This former perimeter belt was embraced by the city, but remained visible on the map with its chain of green and empty spaces. The vast deserted area of the New Market Square remained inbuilt throughout the XIX and early XX centuries. In this way, the phenomenon of the 'fringe belt' demonstrated stability and resistance. The 'belt' is still clearly visible on maps today, showing the location of the former city boundaries.

The riverbanks of the first period of the city's development corresponded to the periphery visible on the map of 1828, partly due to the concentration of warehouses and small industries. The plan of 1852 also defined the location of industrial zones and planned factories across the Kacha River. At the time of drawing of this plan the development of Krasnoyarsk stopped with the suburb of Terebilovka - the area behind the modern Dekabristov Street (the one that runs N-S, next to the street adjacent to the park on the east side), with rare buildings and wooden barracks of a military battalion - in the south-west. Thus, the periphery

included the riverbanks and the area on the western border, which included parks, military camps, a huge urban void, a cemetery and churches. Ruzhze explained that the construction department of the Yenisei provincial government proposed changes to the plan approved on 11 August 1855. It was proposed to occupy land 'within the city limits, but previously considered unsuitable for development' (areas near the banks of the Kacha River). The master plan provided for the placement of factories and cemeteries outside the residential area - on the opposite bank of the Kacha River and beyond the northern city limits.

The territory of the railway represented and still represents a wide industrial belt and shows another physical limit of urban development. Researchers agree that the railway caused changes in the planning development of the city, as it was located at the foot of the Afontova hill and cut off the main city's access to the west, to the natural landscape. At the same time, it could not stop, and even strengthened, the development of the city towards the west, which had already been planned in 1855. Workers' and craftsmen's settlements were built near the railway. Cut off from the city centre, they expanded the territory of Krasnoyarsk without qualitatively changing its planning structure. (Bykonya, 2013; Merkulova & Merkulova, 2013; Ruzhze, 1966)

The revolution of 1917, with its ideological changes, significantly affected the city's poles. The church at the centre of the New Market Square (which was part of the structure of the former fringe belt) when the trade 'Passage' building were destroyed. The square was renamed after the revolution. Architects made the project of new administrative buildings of "Soviets" right on the place of the former church. The main specialised buildings were planned as the development of important nodes and poles on the former peripheries: the buildings of the main post office, restaurants and shops were planned; cultural and educational complexes were designed, including the opera and ballet theatres, the conservatory, the art gallery (now the building of the regional archive) and the city library (Ruzhze, 1966). However, the placement of industrial objects planned before the Second World War didn't go according to plan, especially during the war. As a result, many objects appeared inside the historical areas, fragmenting the environment. For example, the

radio factory behind the central park, on the site of the former military camp; the film factory on the site of the former church cemetery, the reaper factory, etc. Their location corresponded to the former city boundary or 'fringe', which had an anti-nodal position before the transformation into the new centre. Thus, the phenomenon of the fringe persisted, and the area that included the riverbank, the central park, the huge Revolution Square (the former New Market Square), and the area of the radio and film factories still resembled the behaviour of the fringe.

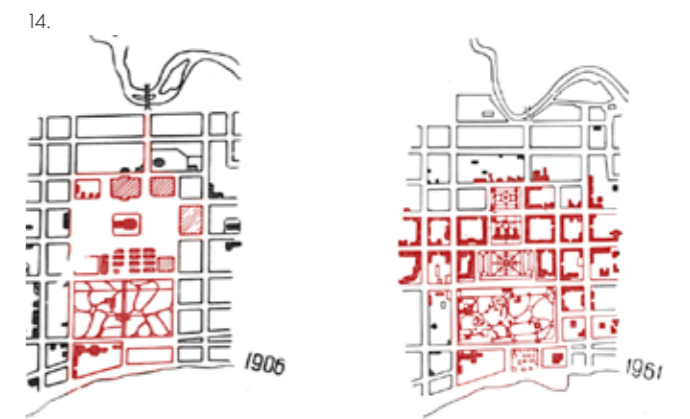


Figure 14. The increasing density around the new market square (new pole) demonstrates the increasing density around the new market square (new pole) (Background map: V. Ruzhze).

## Revolutionary changes

Thus, at the scale of the urban structure, development looks like continuity, while at the scale of streets, buildings and people, political events caused significant changes in the tissue, human lifestyles and the structure of private property. The most significant change can be described as a change in the scale of the structure: groups of blocks and streets were united by a super-grid of metropolitan significance. The wooden blocks of the periphery of the centre were destroyed and transformed into micro-districts. Gevel comments: 'Many of the old wooden buildings were lost in the 1960s and 1970s due to the expansion of K. Marx Street and new construction in the historic centre. The new standard blocks that replaced them did not add any 'personality' to the city's image. Since the 1970s, Krasnoyarsk's builders have been mainly concerned with clearing and widening streets. When it came to heritage protection, it was a matter of saving individual objects, taken separately and mostly related to the memory of V.I. Lenin's visit' (Gevel, 2012, p. 137).

The analysis of the plots containing buildings of this period shows interesting results (Fig. 8). Firstly, the average size of the plot in the late Soviet period became significantly larger than in the previous stages. The size of plots with new buildings increased from 2 to 10 times. The radio factory, photographic materials factory, harvesting plant and railway factory contributed to this statistic. They were built at the expense of the old wooden houses in the city centre. The river station, the new school, the first university, the stadium, many administrative and multi-family residential buildings formed the renewed system of the city centre. Interestingly, the new interventions were still concentrated along the main and secondary axes (today's Mira, Lenina and Marksa streets). The density of these interventions shifted even more towards the west and towards new urban poles. The area around the oldest pole, Strelka, at the confluence of the Yenisei and Kacha Rivers, seemed to be less popular (the transformation from a polar to an anti-polar position began). Interestingly, the densest area corresponds to the territory between Lenina and Marksa Streets, not gravitating towards the old polarities of the former old and new market squares, but located in the middle, stretching along Mira Street.

The second major step that brought revolutionary changes was perestroika. In general, the period after perestroika is known for its crisis, relative anarchy and the reappearance of private property. The main features of this period are clearly visible on the map. Morphologically, it can be seen in the changes in the established logics and hierarchies: the central courtyards of the historical blocks were filled with high-rise buildings, despite the historical significance of the nearby buildings (quarters between the streets Mira/Surikova/Parizhskoi Commune/Lenina, Robespiera/Lenina/Dekabristov/Mira, Markovskogo/Surikova/Parizhskoi Commune/Lenina, Karatanova/Mira/Marksa/9 Yanvaria, etc.). On the squares - primary and secondary nodes (Chameleon and Ibis/Novotel complex) commercial buildings have been built, filling the public spaces. The buildings in the historic centre, which filled in the gaps between the historic buildings, completely changed the scale and logic of the space. They could be considered 'symptoms of anarchy'.

Perestroika thus brought unprecedented freedom neighbouring anarchy in all spheres of life. The dominant top-down processes were often replaced by bottom-up and chaotic ones. This resulted in interesting urban interventions and reactions, such as small-scale 'DIY' urbanism, which revealed social dissatisfaction and urban disagreement with the imposed top-down changes of previous periods. The most interesting feature of this period is the multiplicity of illegal and semi-legal interventions, such as the appearance of super-small plots, usually less than 100m<sup>2</sup>, corresponding to the private garages or even massifs of garages and other illegal extensions of the 1990s. The small self-made extensions and small changes were literally everywhere: small shops and markets, reflecting the lack of service buildings in the micro-regions, garages and underground storage areas, reflecting the lack of storage space in the flats of the large Soviet blocks, and so on. Even the facades of medium- and high-rise buildings were individually modified by adding balconies and terraces, curtains and oriels, turning the blocks into a kind of vertical villages - the symptoms of micro-urbanism. Garages and other illegal small extensions are the morphological symptoms of the anarchy of the 90s, as are the high-rise buildings inside the historic quarters. This was also the social need to personalise the impersonal city of the late Soviet period.

## Specialized buildings

Further detection of the main code or language of the urban form of Krasnoyarsk will focus on the types of the smallest scale - the scale of individual buildings, in particular, specialised buildings according to the definition of Caniggia. Without going into details, this part will deal with the position in the morphological structure, role, function and its connection with dominant social values. Rossi believed in the significance of historical buildings, which largely generate the form of the city:

'When we consider the spatial aspect of primary elements and their role independent of their function, we realize how closely they are identified with their presence in the city. They possess a value 'in themselves,' but also a value dependent on their place in the city. In this sense a historical building can be understood as a primary urban artifact; it may be disconnected from its original function, or over time take on functions different from those for which it was designed, but its quality as an urban artifact, as a generator of a form of the city, remains constant. In this sense, monuments are always primary elements. But primary elements are not only monuments, just as they are not only fixed activities; in a general sense they are those elements capable of accelerating the process of urbanization in a city, and they also characterize the processes of spatial transformation in an area larger than the city. Often, they act as catalysts. At first their presence can be identified only by their function (and in this respect they coincide with fixed activities), but they rapidly take on a more significant value. Frequently they are not even physical, constructed, measurable artifacts; for example, sometimes the importance of an event itself 'gives place' to spatial transformations of a site.' (Rossi, 1984, p.88).

The study begins with the earliest maps. According to the plan drawn up in 1748 by a team led by the engineer Major S. Plautin, the main specialised buildings, which represented the polar functions in the small and large fortresses, were the governor's house, the voivodeship office, the church and the commercial complexes with squares, which conveyed the ideas of dominant functions, power and religion. The first plan of the town shows in detail the buildings inside the small ostrog and some of the buildings of the large ostrog. A group of specialised

buildings - the so-called gostinnyi dvor, the customs house, the town hall, the Pokrovskaia church, the brewery on the bank of the Yenisey were depicted.

In the first half of the 19th century, the plan of the city of Krasnoyarsk drawn up in 1827 showed that the most important buildings, mainly wooden, were concentrated within the boundaries outlined in the plan of 1773. Stone houses were concentrated near the confluence of the Yenisei and Kacha Rivers, which was the religious, administrative and commercial centre of the city. However, according to historians, the gradual displacement of wooden houses from the main centre began (Merkulova & Merkulova, 2013). Ruzhze mentioned the differences between the centre and the suburbs in the material of construction and the height of the buildings, which reflected the social stratification. (Ruzhze, 1966).

In the largest Siberian centres public institutions such as public schools, libraries, offices of rarities were established, built and marked on the maps of the XVIII-XIX century. There were also quite specific complexes connected with the peculiarities of the industrial, economic and commercial role of individual cities (Bykonya, 2013; Ogly, 1980; Ruzhze, 1966). The most important place in Siberian cities, the most advantageous in terms of composition, was occupied by cathedral squares with the complexes of church buildings, which usually included other spiritual institutions in addition to churches. Ogly states: 'High-rise picturesque volumes of church buildings essentially determined the silhouette and expressiveness of the city panorama, which was mostly represented by a homogeneous wooden structure. Churches of Siberian cities in the XVIII century occupied a special place in the city image, being the largest object, rich in decoration. With the disappearance of the fortresses that had previously determined the appearance of cities, stone temples began to play a dominant role in the formation of their silhouettes and, to a certain extent, their plans, as a new system of squares and streets was created. The visual perception of church structures was enhanced by positioning them on the city map, taking into account the landscape characteristics of the cities. In flat, low areas, the verticals of the churches were placed near the riverbanks, well visible at the entrance. If they were located in the depths of the city, they were placed on higher ground, thus creating a background for the city

panorama' (Ogly, 1980, p. 35).

Later, smithies, shops, etc. were moved from the residential area to the banks of the river, 'clearing' central area. Unfortunately, only a few buildings mark the beginning of the XIX century in present-day Krasnoyarsk. It can be assumed that the rest of them, made of wood, were burnt in fires or rebuilt. Of the remaining several buildings, only 3 were specialised - a school and two churches, all of them were located at the crossroads, marking the important nodes of the city, while the remaining 24 represented the residential estates of rich citizens, quite ordinary for that time. They could also be described as specialised buildings, representing domination and power. According to historians, the development of capitalism in Siberia brought to life completely new types of special buildings and structures: bank buildings, company offices, retail shops, specialised and department stores, cinemas, apartment buildings and hotels, which formed the development of main streets. Large cultural and educational buildings such as theatres, museums, libraries and educational institutions were also built. All this influenced the development of the surrounding districts, which took on a 'central appearance' (Merkulova & Merkulova, 2013; Ogly, 1980). Thus, the phenomenon of polarisation was accelerated by economic development and characterised by specialised buildings.

On the map of 1852, some new buildings could be seen on the territory of the historical part, especially along the Main Axe, near the nodes and poles (Fig. 14). According to historians, the institutions of the city centre were still located in the old buildings along the main street of the city, which could prove the continuing 'polarisation' of the main axis. In the centre of the New Market Square, the Cathedral designed by the architect K. Ton in 1845-1849 was finally built as a sign of the strong attachment to faith and religiousness of the society. The researchers noted that in addition to the cathedral squares, the urban structure also emphasised the importance of commercial spaces, which were particularly significant in towns where fairs were held regularly and were of great importance. This was due to the lack of reliable means of communication, the inconvenience of frequent travel and other circumstances that led merchants to meet at the agreed time and place. They were held 1- 4 times a year, usually in the autumn-

winter season. The dominant items of bargaining were manufactured, food, colonial goods, footwear, iron and other metal products, as well as local raw materials - leather, wool, furs, bread, hemp, wax (Gorbachev, 2016; Bykonya, 2013). The functionality of Siberian cities, first as trading and transshipment settlements, influenced the formation of the urban organism.

According to Gevel, the appearance of Krasnoyarsk in the 1820s - 1850s was largely determined by the influence of classicist traditions, or even by the albums of typical facades sent by the central government. The buildings of this period were almost exemplary and had to look according to the canons, characterised by the proportionate composition of the facades, restraint of strict forms, simplicity and relief of the facades. Their important characteristic was the symmetrical appearance and concentration on the main axes, as well as the location of the enfilade of the ceremonial halls and rooms (Gevel, 2012).

Gorbachev noted that, with the exception of retail spaces, a significant part of the city's territory was occupied by objects of external interurban transport and related buildings (Gorbachev, 2016). First there were stables, barns, warehouses. Later - large distribution complexes. There were also docks as reference points in the planning structure. With the development of shipping, many Siberian cities became ports and got quite developed transport and storage areas with berths, repair shops, rigging and cargo warehouses. These areas and the roads leading away from the rivers became more and more important local roads, which had a great influence on the development of the city.

In the second half of XIX century, the increasing 'polarization' of the city structure reflected the appearance of new specialised buildings. Again, administrative, commercial, and educational institutions were concentrated near the main axis of the city. A major achievement of engineering thought at that time was the railway bridge (1896-1899), a one of the first experiments in the use of large-span metal structures in Russia. But the main appearance and image of the city were the buildings of merchant estates, as can be seen from the many preserved photographs and maps of the period. Merkulova stated that Yenisei provincial government proposed to provide for stone-made blocks

of buildings on both sides of the main axe, between the two market squares (Merkulova & Merkulova, 2013). The most significant buildings of a new types in the second half of XIX - early XX centuries could be mentioned: the building of the gymnasium (1868, Now building of the Polytechnic Institute of Lenin street), girls' school (1878, the building of current pedagogical Institute on Prospect Mira), the house of the merchant Gadalov (now the agricultural Institute) and some others, which marked the increasing significance of education.

It is important to take a look at the history of Krasnoyarsk, as historical events have made a direct and well-known contribution to the development of the city. It is known that Krasnoyarsk merchants quickly became rich, built important buildings and often donated them to the city, or after their bankruptcy the houses became the property of the city - in payment of debts. Gevel noted that this happened with the house of the merchant Myasnikov (in the fifth Curtin): in the 1870s, when the goldminer went bankrupt, the city public hospital with a garden was established on his estate (Gevel, 2012). The complex still exists today at the important junction - crossroads - of the main roads - Mira (central axis) and Veinbauma (the road connecting two bridges). Today, however, the site is threatened by the growing commercial interest of developers due to its location at the crossroads of streets of metropolitan importance. In the same way, the former Yakovlev's house has been occupied by the Yenisei Order of Public Charity since 1839 (14 Mira St. - in 1 Curtin): all this explains the somewhat residential appearance

of some public institutions of the old provincial centre - in the former residential buildings and entire estates a public function was introduced (Gevel, 2012). However, the oldest hospital is now threatened with demolition due to its location at the junction of roads with increasing metropolitan significance, resulting in rising land prices and interest from developers.

After the construction of the Trans-Siberian railway at the end of the 19th century, a whole complex of additional buildings such as telegraphs and post offices. Cities began to develop more intensively. Large structures appeared - bridges, water towers, depots, etc. The densification accelerated the tendency of concentration of stone buildings on the main street of the city, which was fully manifested in 1900-1910, when the active construction of large public and private buildings began on Voskresenskaia Street and in the surrounding areas, which can be clearly seen on maps and in the physical form of the contemporary city. It is safe to say that it was this period that determined the appearance of the historical part of Krasnoyarsk and now forms the most significant part of the historical fabric. As for specialised buildings, famous merchants and high-ranking officials, in keeping with the spirit of the times, built the best stone houses in the central parts of the city, commissioning projects from local and metropolitan architects (Ogly, 1980). In the 1900s and 1910s, many educational, cultural and entertainment facilities were built in the city. These buildings often took on the characteristics of palace architecture, complementing the structures of the main squares and streets. At that time, separate large

buildings of banks and trade offices, profitable apartment blocks, a theatre (replacing the wooden one that burned down in 1898 (Ruzhze, 1966)), the first cinemas and other public buildings were built. Small parochial and primary schools and orphanages were built of wood, a material that was affordable and relatively cheap. Special buildings such as the circus and a public railway meeting building with an auditorium of 450 seats for workers and employees of railway workshops were also built of wood (Merkulova & Merkulova, 2013).

The new industrial image of the cities of the early Soviet period required the placement of many industrial objects, and the centre of Krasnoyarsk was no exception. The importance of the correct location of industry and the main ways of solving this problem were formulated. Lenin stated: The plan should include a rational distribution of industry in Russia from the point of view of proximity to raw materials and the least possible loss of labour in the transition from raw materials to all successive stages of processing semi-finished products to finished products. Rationally, from the point of view of the newest largest industry and especially of the trusts, the merger dispersal of production in a few largest enterprises" (Ogly, 1980). However, the placement of industrial objects didn't go very well, especially in the period of the Second World War. As a result, many objects appeared in the historical areas, fragmenting the environment.



15. Figure 15. Historical buildings of the beginning of the XIX century on the current cadastral map.



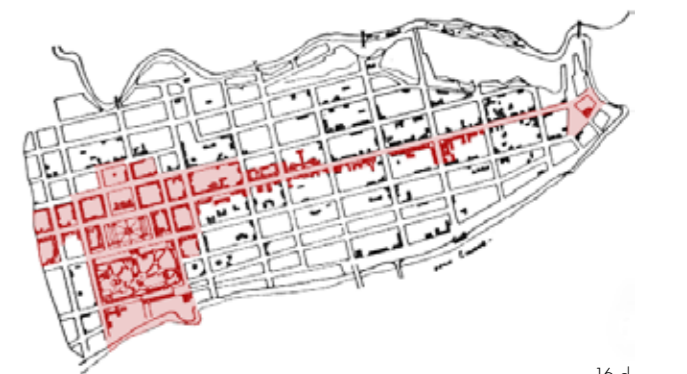
16 a.



16 b.



16 c.



16 d.

Figure 16. Krasnoyarsk masterplans with stone buildings in 1828, 1855, 1906, 1961 (Background map: V. Ruzhze).



## Primary urban unit

In the early period of its existence, the town was completely destroyed by two great fires - in 1773 and 1881 - except for the constant small fires that periodically destroyed documents, among other things. The new planning structure of the town, almost completely burnt down by the first great fire, was based on rectangular blocks with double-row farmstead buildings. (Bykonya, 2013; Gevel, 2012). Unfortunately, buildings from the XVII-XVIII centuries have not been preserved in Krasnoyarsk. In the assumptions one can rely on rare photographs, maps, documents. In general, frequent fires and rapid deterioration of the material, characteristic of wood as the main building material at that time, led to frequent replacement of village-like buildings. The state of the Krasnoyarsk ostrog in the middle of the 18th century was recorded on the first geodetic plan of the city made by a team under the command of the engineer Major S. Plautin in 1748 and further reconstructed by the architect Panov. It was only possible to make suggestions as to what the city looked like on a building or human scale, what constituted a building unit. Excavations in the city didn't cover a sufficient area.

This 'mobility' and plasticity of the urban fabric may have created a mental habit of restructuring the urban environment and the lack of continuity inherent in many traditional European cities. Taking into account the fact that at least until the second half of the twentieth century the largest part of the urban fabric of Krasnoyarsk was made up of individual wooden buildings, the mental habit of the interchangeability of the elements of the urban fabric, together with their low value, had a chance to become stronger in the perception of the citizens, which allows this interchangeability to this day. Until the second half of the XX century, the maps and master plans of the city depicted urban blocks as the smallest stable grain of the urban structure, marking on them only specialised buildings (often in "3D"), which proves all the above and allows to suggest that the smallest sustainable urban grain, which constituted the fabric, was the spontaneously organised block from the set or community of manors. The first master plan, drawn up in 1773 by the Tobolsk geodesist Peter Moiseev, marked the beginning of a layout of Krasnoyarsk: the blocks in the new regular planning structure of the city were depicted on a flat terrace, empty after the fire in which

all the fortifications burned out. The blocks were called 'kurtina' (corresponding to the name and size of a section of the fortress wall between two towers) (Gevel, 2012). Again organic elements, grouped in a serial composition. (Caniggia & Maffei, 2001). The researchers stated: 'By 1789, 475 houses were built again in Krasnoyarsk, so the population reached 2813 people. The size of the blocks in the projects of the first regular plan was determined in the range of 110x180 to 250x270 m' (Merkulova, 2013; Ogly, 1980; Ruzhze, 1966).

Each estate resembled a 'fortress' - the introverted, fenced-in courtyard house with the significant importance of the notion of family privacy. In fact, according to the photographs and the surviving pieces of later fabric, the perception was the same: the block was a collection of attached small fortresses, completely surrounded by fences, not transparent. Thus, the block was perceived as a unit, the internal structure of which was less important and changeable. The graphic representation on the maps showed coloured blocks of buildings and roads - voids or gaps between them. Apparently, the streets and 'public' spaces were more the natural 'gaps' between residential 'nests' - quarters of fenced-in estates. Interestingly, the same phenomenon of 'gated communities' is still visible in the city (reappearing after the collapse of the Soviet Union), with the stable importance of fence and fencing. Thus, Krasnoyarsk was developed on the basis of a village-type grain until the beginning of the XX century, when transformations began. Aschepkov in his study of typical villages of Eastern Siberia stated: 'As for the architectural and spatial composition of Siberian villages organized by separate 'nest' manors without pronounced streets, we can say that the general structure of these villages, which have a randomly formed layout, had a peculiar, picturesque beginning. Separate groups of farmsteads ('nests') were independent small complexes of residential and commercial buildings. These separate 'Islands' of development, scattered over a complex terrain, had a single compositional beginning, a common architectural and construction module, and close architectural and structural details that create the unity of the whole' (Aschepkov, 1953).

Thus the planning structure of the city became more complex, and the inner urban space gradually changed,

becoming denser and more complicated. There is a relatively recently recognised, but long existing, structural unit that mediates the transition between the private, the individual, and the public scale - the form and phenomenon of the neighbourhood, or its substitute 'equivalent' - the micro-region in the Soviet Union. The term neighbourhood captured a new planning concept that encapsulated the discrete part of a large city, giving it definable social, economic, geographical and physical characteristics. The idea of the neighbourhood is said to be a British creation of the late 19th century (Smailes, A.E. (1968 [1953]). *The Geography of Cities*. Chicago: Aldine Publishing Company). Clarence Perry's Neighbourhood Unit (1929) is perhaps the best known conceptual model of the neighbourhood. However, a growing body of research is documenting similar neighbourhood models developed in China, Japan, and the Soviet Union in the early 20th century (Peponis, Park, & Feng, 2016, Chen 2017). In all cases, the neighbourhood came to be seen as the building block of the modern city (Moudon, 2019).

Rossi noted: 'The concept of area just developed is closely bound up with that of the residential district. I have already introduced this notion in speaking of Tricart's theory, but at this point I think it would be appropriate to return to the idea of the part or segment of the city, and to view the city as a spatial system formed of parts, each with its own characteristics. Fritz Schumacher has also developed a theory of this type and it seems to have much validity. As we have suggested, the study of the urban residential district is simply an extension of the concept of the study area.

\* The residential district is thus a moment, a piece of the city's form. It is intimately bound up with the city's evolution and nature, and is itself constituted of parts, which in turn summarize the city's image. We actually experience these parts. In social terms, it is a morphological and structural unit characterized by a certain urban landscape, a certain social content, and its function; thus, a change in any one of these elements is enough to define its limits. We should also bear in mind that an analysis of the residential district as a social artifact based on the division of social or economic classes as well as on economic functions corresponds in an essential way to the process of formation of the modern metropolis; this process is the same for ancient Rome as for the large cities of today. Moreover, I would maintain that these residential districts are not so much subordinated

to one another as relatively autonomous parts; their relationships cannot be explained as a simple function of dependence but seemingly respond to the entire urban structure.' (Rossi, 1984, p. 65).

Some historians say that in Krasnoyarsk, too, morphological micro-regions appeared on the basis of the historical urban structure, forming the primary elements of the hyper-grid. Gorbachev described this phenomenon for the Siberian cities: the hierarchy and different weights of the street network in the pre-revolutionary city allow to draw a conclusion about the existence of certain micro-regions, whose boundaries were the widest commercial and other main roads. Quiet and green residential streets and alleys were located within such systems and represented rather pedestrian zones within the extended block. Each of these structures usually contained at least one church with a garden or some other special building (railway station, hospital, school, etc.), which played an organising role in urban planning (Gorbachev, 2016). Gorbachev is talking about the physical, spatial form, although he is actually implying a natural social form. In fact, there were probably neighbourhoods as a socio-physical form that were not entirely successfully replaced by newly invented neighbourhoods. Moreover, such a form could not be replicated: the creation of a physical form cannot be equated with the creation of a social form. This example perfectly illustrates the difference between the Soviet understanding of type and type as a complex paradigmatic structure.

More radical restructuring and rebuilding processes can be seen on the map, which shows the current plots with buildings from the time of the city's foundation up to 1991. The large-scale developments (shown in grey), which merged the former estates into the new 'micro-regions' or 'neighbourhoods', are clearly visible as large grey areas on the map. This was the period of the most intense restructuring of the city centre in Krasnoyarsk. The dominant housing unit was finally transformed from the private estate to the micro-region of multi-family buildings that were supposed to become the 'neighbourhood', but didn't. The typical large-scale top-down morphological changes of the urban structure of the XX century (Moudon, 2019) are visible in Krasnoyarsk. The 1967 map (aerial photo map) also clearly shows the contrast between the

old and new scales. The 'microrayon' is considered to be the basic structural element of cities.

'For our purposes, we will define this phenomenon as characterized by a group of buildings - which may be in the neighbourhood of a certain street or may constitute an entire district-that has outlived the dynamics of land use in the surrounding area (this definition has a much broader scope than some others). Such areas of the city do not follow life; often they remain islands for a long time with respect to the general development, bearing witness to different periods in the city and at the same time configurating large areas of 'reserve.' This phenomenon of obsolescence illustrates the validity of studying areas of the city as urban artifacts; we can then relate the transformations of such areas to the study of specific events, as we will see later in the theories of Halbwachs. The hypothesis of the city as an entity constituted of many parts which are complete in themselves is, it seems to me, one which truly permits freedom of choice; and freedom of choice becomes a fundamental issue because of its implications. For example, we do not believe that questions concerning values can be decided in terms of abstract architectural and typological formulations -for example, high-rise or low-rise housing. Such questions can only be resolved at the concrete level of urban architecture. We are fully convinced that in a society where choices are free, the real freedom of the citizen rests in being able to choose one solution rather than another.' (Rossi, 1984, p. 96).

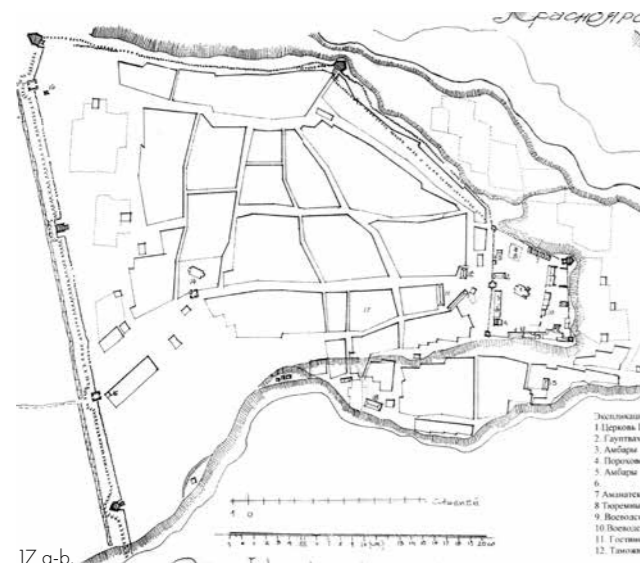
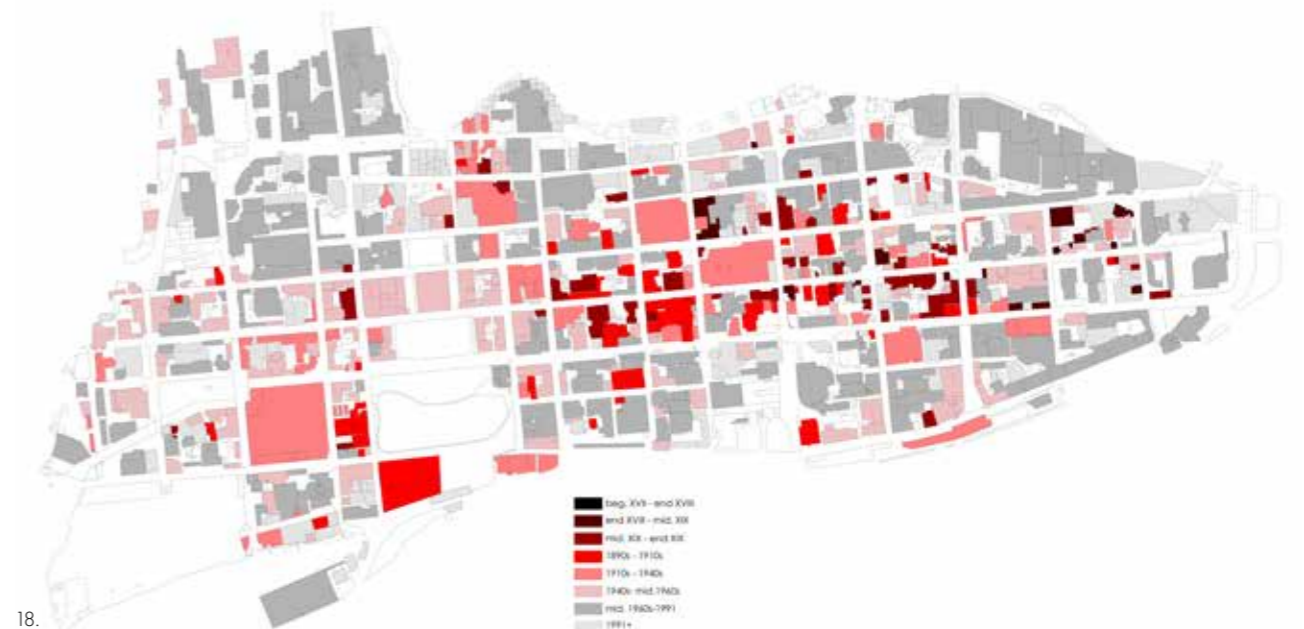


Figure 17 a-b. Krasnoyarsk in 1748 (local hand-drawn copy of the document); Graphic reconstruction of the Krasnoyarsk ostrog in 1748 (By Panov E.M.).



18.



19.



20.

Figure 18. Historical buildings of different periods in correspondence with the current cadastral map.

Figure 19. Current map of Krasnoyarsk (By Gevel E.) with new microregions of the Soviet period marked in red.

Figure 20. Aero-photo map of Krasnoyarsk 1967 (<https://kosmosnimki.ru/>) with new microregions of the Soviet period marked in red.

In sume, during the detailed study, relative continuity was observed in the scale of the structure of the historic centre. Interestingly, the original 'spontaneous' structure defined by more organic, spontaneous typology was completely replaced by a regular structure, but with the preservation of its characteristics at the strategic level, and was ultimately defined by the invented typology in the Soviet period. It can be said that the first regular master plan reinterpreted the morphological language of the previous spontaneous settlement in a regular way: the specific expression of continuity in urban form. This leads to the conclusion that the same type or idea of settlement (sosial+urban form) can be embodied in different configurations.

When it comes to particularities, it can be said that the latitudinal direction of the streets prevailed and dominated in the regular grid. However, in the course of the city's development, the meridional directions were often able to structurally dominate the latitudinal ones, acquiring a special status and importance. Therefore, although it is not always possible to distinguish with certainty between the types of 'building streets' and 'connecting streets', it can be assumed that in the growing structure of the city, 'building streets' formed both parallel and perpendicular to the main street, and a linear polarity, which is not typical of a traditional city, but is also found in other regular cities, such as Quebec in Canada. In addition, despite the peculiarities of the Soviet period, the city does not have any restructuring streets as such, which usually radically change the existing fabric, which may indicate a more delicate organic development of the fabric, the processes of radical changes were integrated into the existing structures: for example, enlarged units were formed within the boundaries of existing streets. Among the other specificities are frequent polar | antipolar transformations, and correlation of volumes and voids with the prevalence of voids.

In general, it can be said that the structural development of Krasnoyarsk can be described in terms of urban typomorphology, but with sufficiently pronounced deviations from the basic rules of development of a spontaneous traditional city. These features characterise the structural identity of the city. Typomorphology offers several basic concepts that describe the phenomena that can be found in most cities of completely different cultures, and the nature of the behaviour of these phenomena. This basic set can and should be supplemented by a number of local phenomena that are exclusively specific to the place being described. In general, the typomorphological description of a historical territory provides a 'canvas' or a reference code or typology for forecasting and designing the development of this territory, taking into account the quest for continuity. Used as a method of reading, urban morphology has repeatedly proved its value in projects for the development of historical urban territories: for example, the choice of location, internal structure, orientation and number of entrances of a building, the sequence of development of internal and external public spaces of the planned building, etc.



21 a.



21 b.

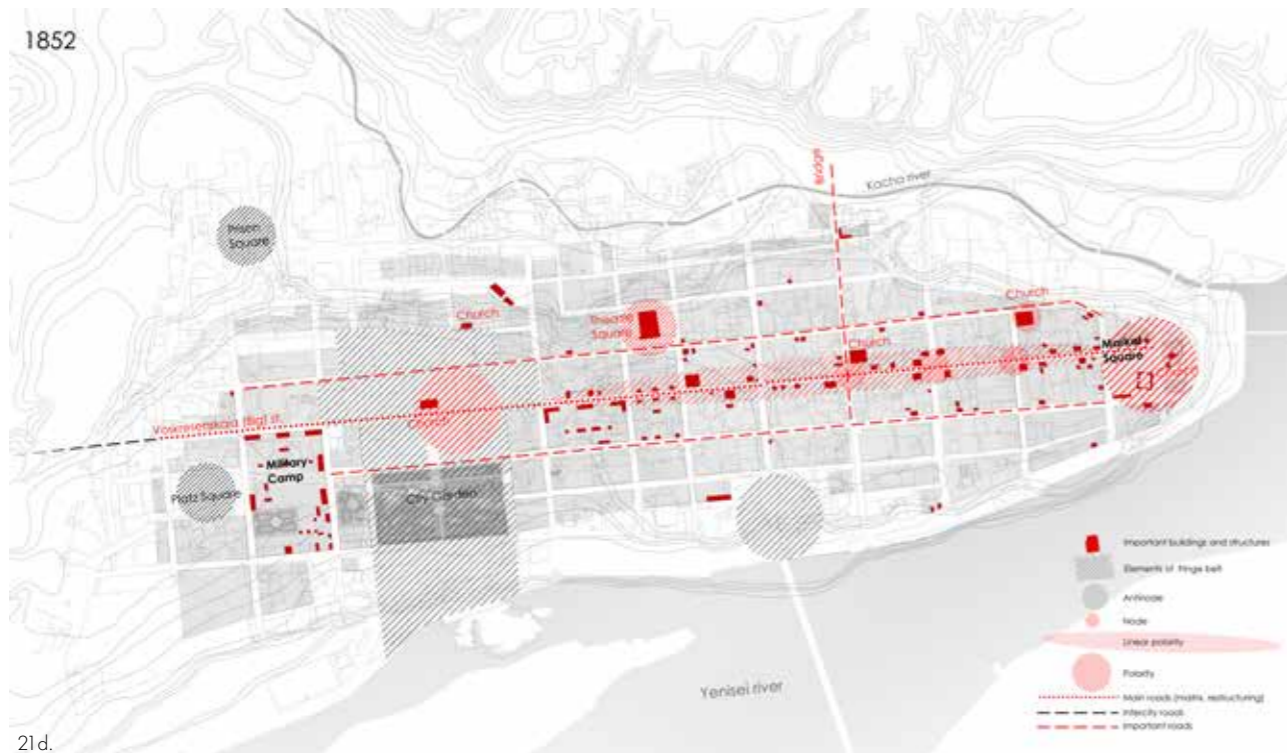
Figure 21 a-j. The genesis of urban form in Krasnoyarsk (Background: the cadastral map of the contemporary Krasnoyarsk combined with geodesic lines of 1894)



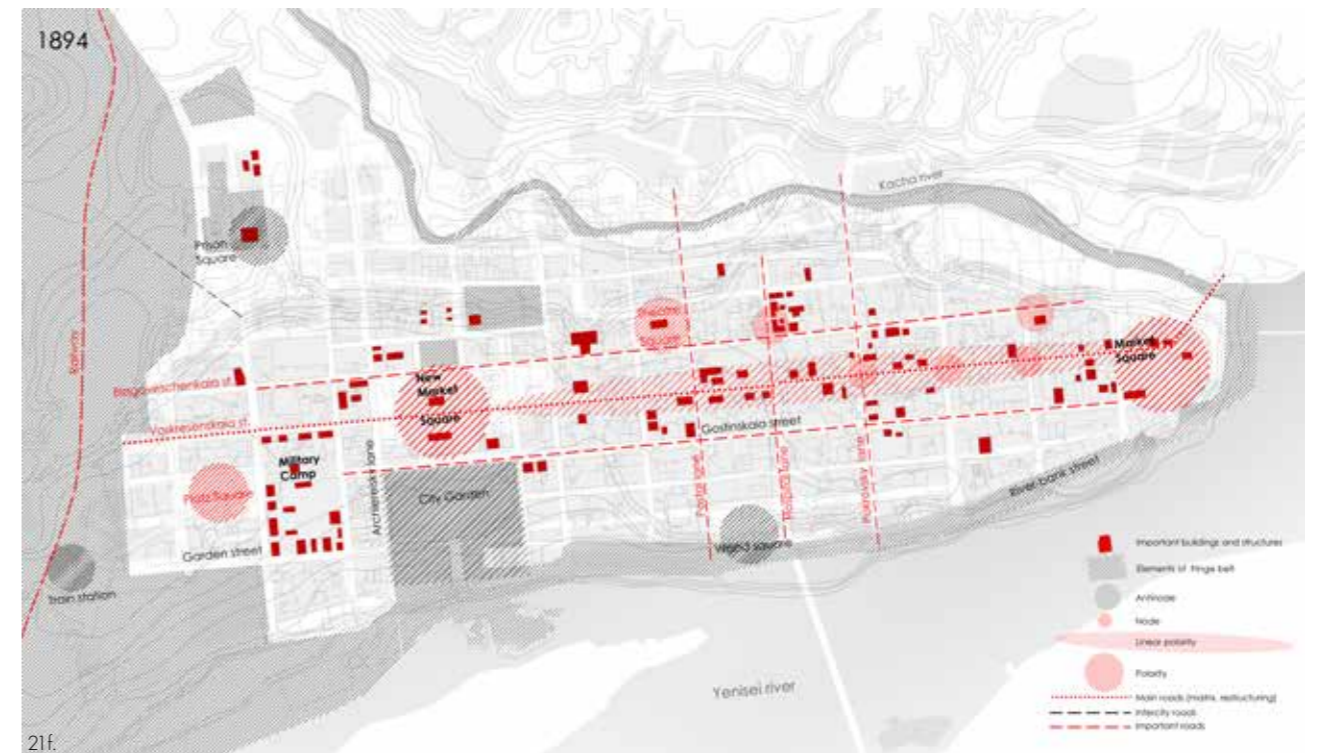
21c.



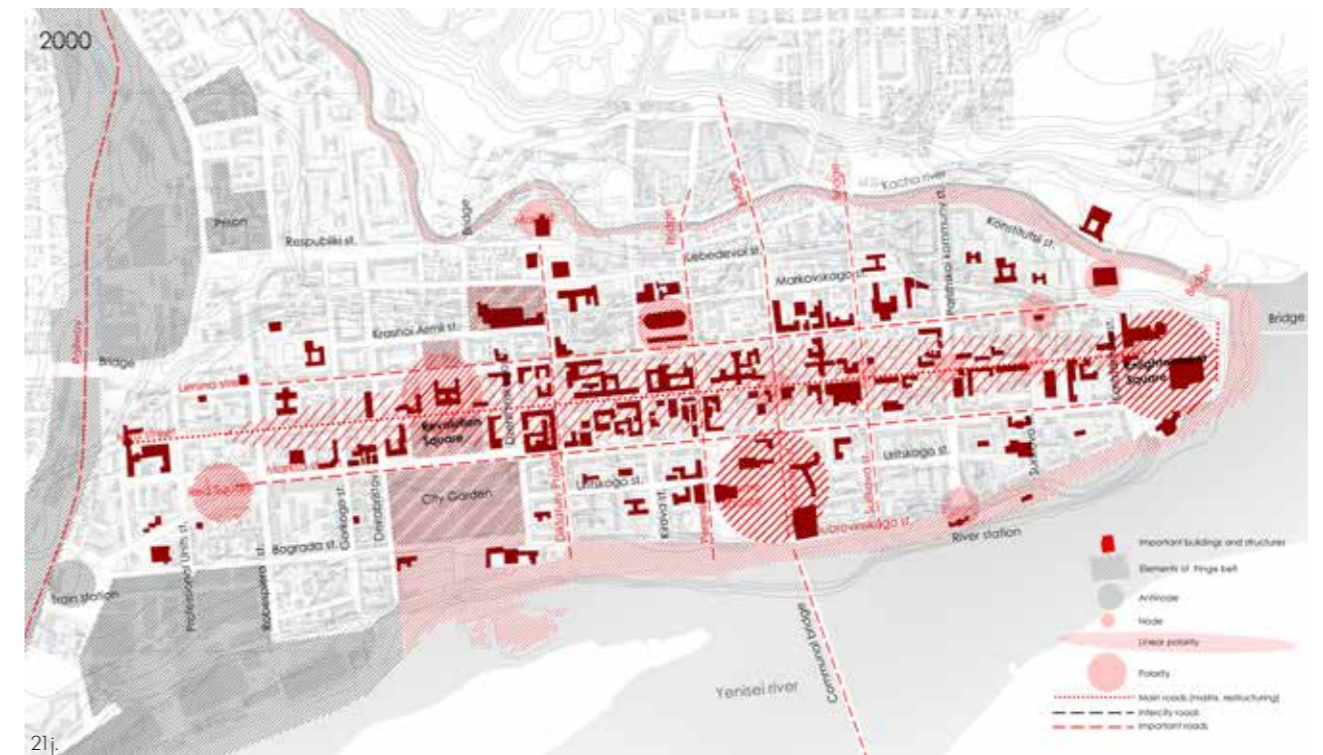
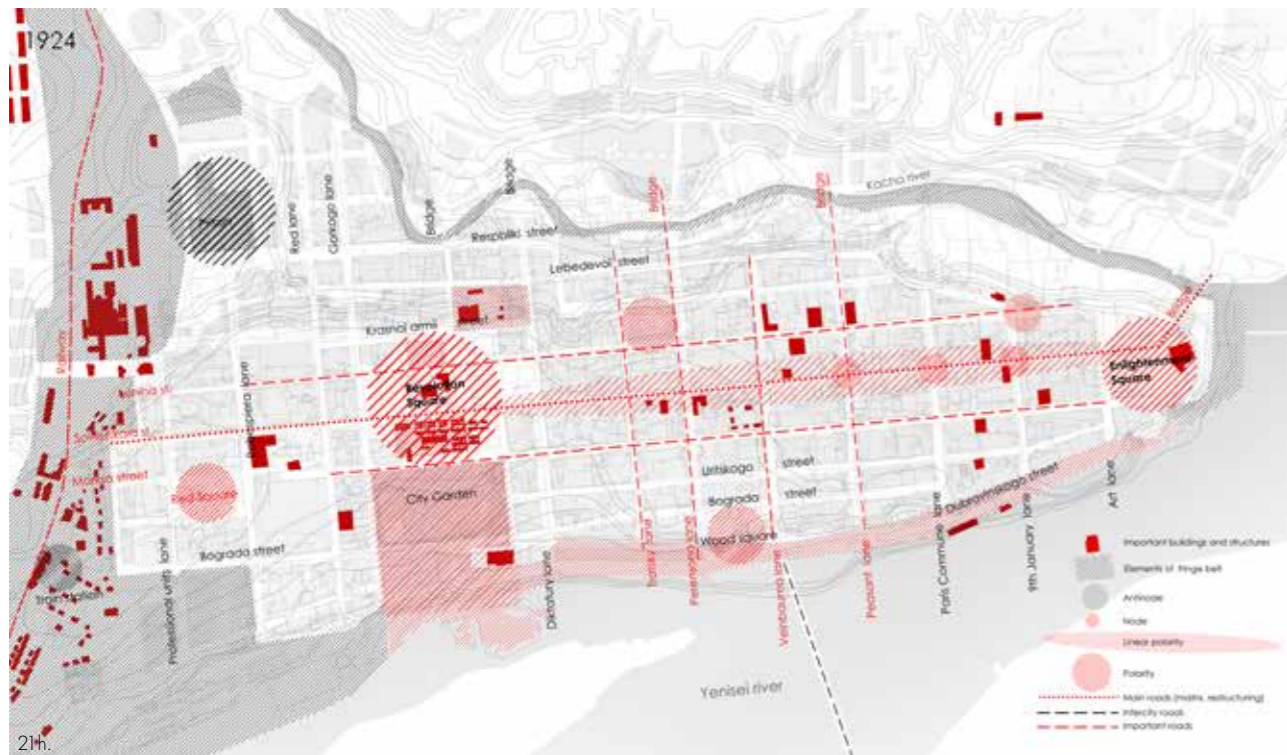
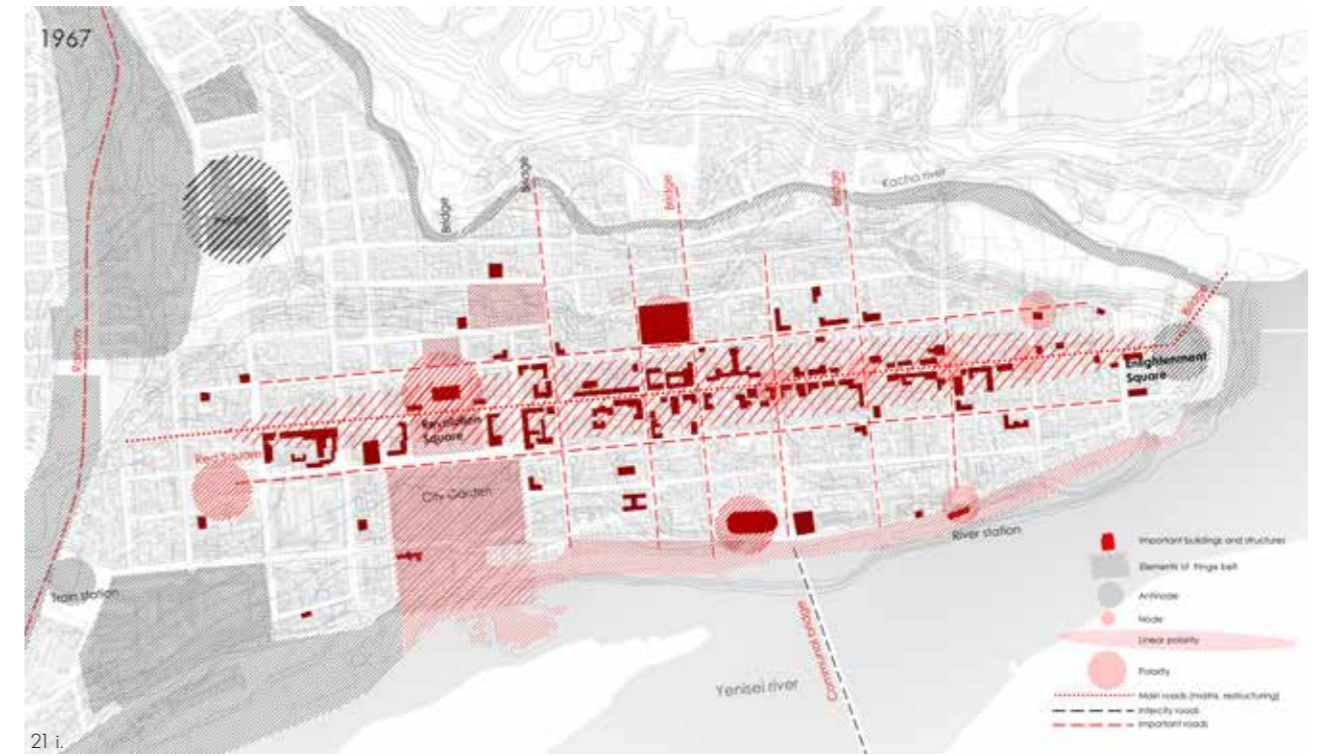
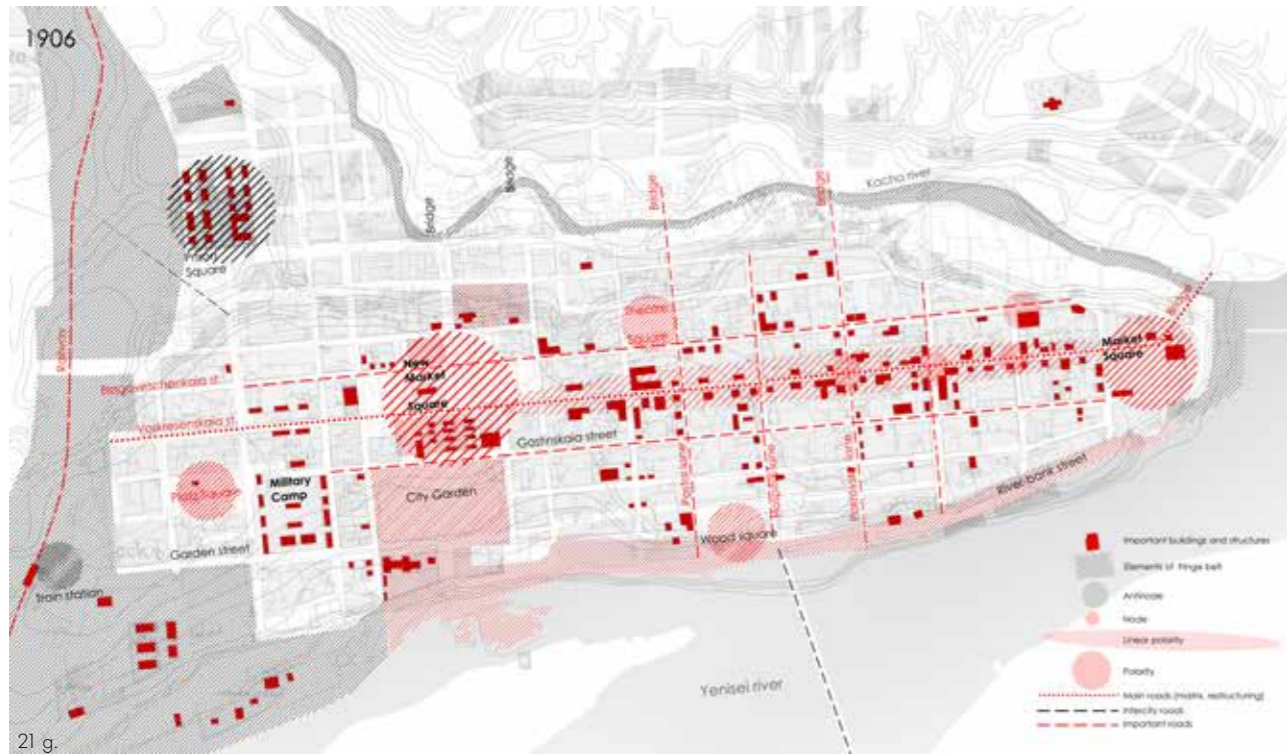
21e.



21d.



21f.



## Base type

The preserved wooden buildings, notes of travellers and books of the Soviet voluntary writers such as Aschepkov, and archival documents allow us to conceptualise the traditional type of house in the following way. In the case of Siberian wooden houses, the visible elementary structural, technical, spatial and functional component, on the basis of which all houses were created (or elementary cell in Caniggian terms), was the 'srub' or log cabin - a wooden structure, the walls of which are assembled from processed (chopped) logs. The logs in a log cabin are stacked on top of each other ('in a crate') and joined at the corners 'in a bowl' (or 'in an oblo') - with the ends of the logs protruding, or 'in a paw' (or 'in a tooth') - without any protrusion. The most elementary embodiment of the 'concept' of 'srub' (or 'basic type' in Caniggian terms) in Siberia was 'klet'. Basically, the house type 'klet' (or 'kletskaia' hut) is the quadrangular structure, the sizes of the parties of which correspond to the optimal length of the 'running' trunk (5-8 metres). Most of the old buildings 'klet', typically chopped from large 'kondovai' larch, widespread in Eastern Siberia, were impressive, struck by its emphatic simplicity, austerity and monumentality. They are still preserved in modern cities. One of the most popular types of basic dwelling is the single-storey 'izba' (hut) based on the 'srub'.

In the case of Krasnoyarsk, the concept of the dwelling type is clearly embodied in the phenomenon of the 'usadba' or estate, in which the 'izba' was located, and which is basically quite similar to the concept of the courtyard house, which is conceptually close to Caniggia's description: 'A regularly shaped rectangular enclosure, 12/18 metres wide and 20/30 metres deep, which - in its basic configuration used by the Romans - was partially occupied by a building positioned to enjoy greater exposure to the sun' (Caniggia & Maffei, 2001). Synchronic and diachronic variants of this type exist in different cultural areas' (Caniggia & Maffei, 2001). The old modification of the 'izba', consisting of a single cell 'klet', was not always sufficient. The design of such huts was limited by three or four main schemes, usually with small differences. In the villages of the Krasnoyarsk region the most common schemes of house layouts were 'klet', 'svyaz' and 'pyatistenok', rarely shestistenok (6-walled house).

The examples can be found in modern Krasnoyarsk.

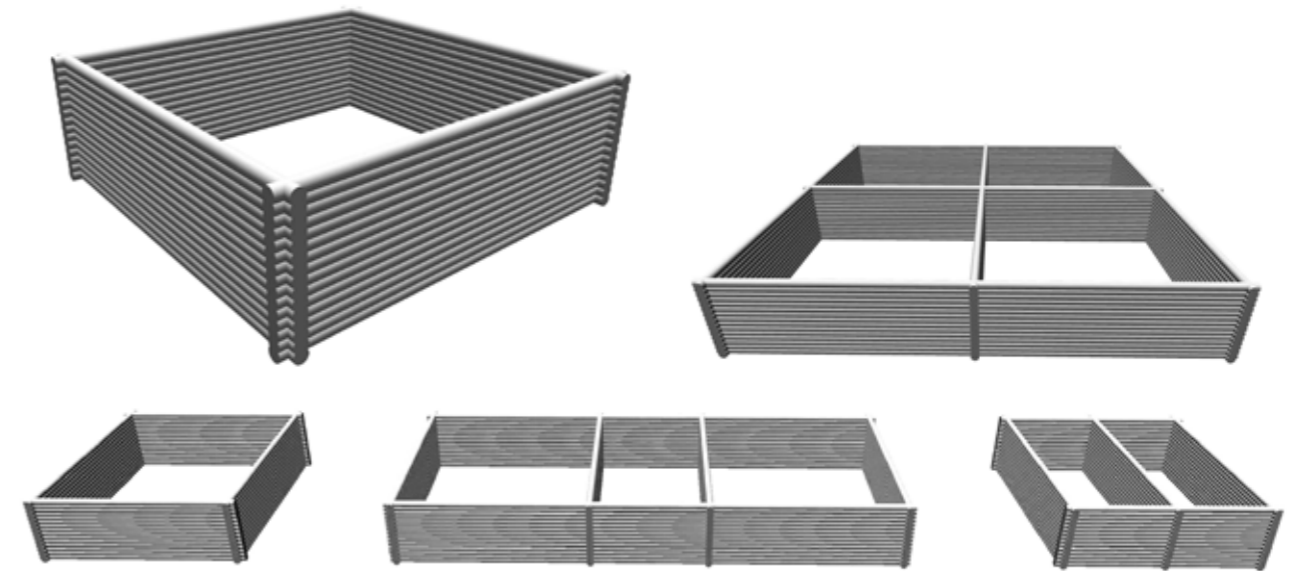
The general layout, as well as the appearance of the house, was usually simple, determined by tradition and the dominant material - wood. Old houses were always built according to one of the established simple schemes. Some later changes in housing were caused by the need to expand the space due to the increased household needs of the peasants, expressed in 'prirub' - the addition of additional volume to the existing building or the introduction of volume partitions, dividing the main rooms into a number of small cells. However, in the course of time, under the influence of local conditions, a number of changes were introduced into a simple dwelling circuit: extensions, canopies, protective walls, sheds, etc., which did not fundamentally alter the plans. In some cases there was a canopy next to a simple rectangular 'klet' from the yard side, which became the essential feature of the 'kletskaia' house.

The desire to protect the houses from the cold naturally led to the construction of extensions, sometimes as large as the house itself, which were sometimes used as storage rooms for goods and produce. Sometimes such a 'prirub', placed on the north side, had an additional 'annex', intended for the best preservation of heat in the house. A variant of the hut, the 'svyaz', was widespread. This type of dwelling, which could be found in various regions of Russia, was particularly convenient for peasants. The connection of the two living spaces by a warm hall 'seni' satisfied the household needs of the rural population. It was quite easy to add to the existing building another one at a distance, which allowed to create a kind of hall 'svyaz'. The connection between the two structures was made in different ways. Sometimes the ends of the logs of one log house were directly connected to the ends of the other frame. The traditional old techniques gave the structure its well-known strength. For the long walls of the 'svyaz', logs of up to 10-12 metres in length were used.

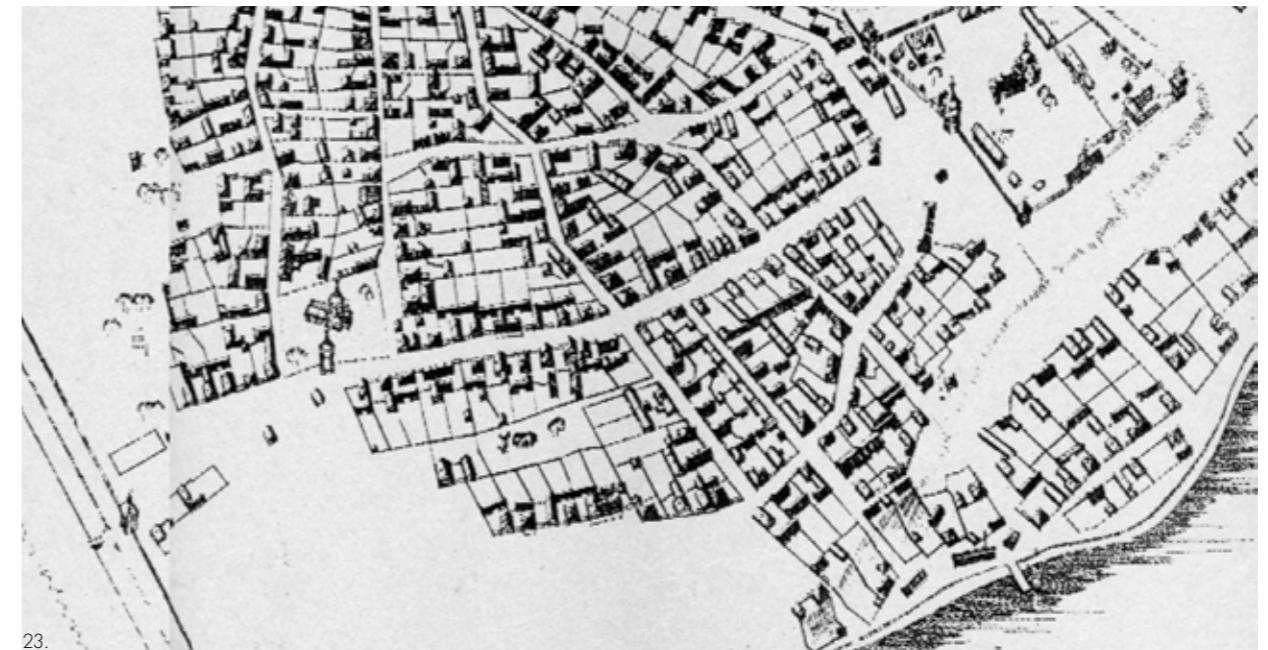
Not less often than 'svyaz', 'pyatistenok' are found in Eastern Siberia, which had a chopped transverse wall dividing the inner space into two equal or unequal parts. In one half there was a kitchen with a large Russian stove, and in the other - a clean room. Five-walled houses were

often built without cellars. The five-walled log house remained structurally unchanged and began to resemble a later town house in its appearance. There were also six-walled houses in Eastern Siberia, but they were not very common in comparison with other regions. These houses were usually located in the centre of the village, as they often belonged to wealthy peasants. Summing up the review of the earliest types of East Siberian houses, it can be said that these basic schemes ('klet', 'svyaz', 'pyatistenok' and 'shestistenok') exhaust almost all the

basic techniques of cottage design in these areas. And the preserved fragments of the urban fabric of Krasnoyarsk do not go beyond these limits. Very seldom there were more complex combined huts, and only a variety of details (window frames, verandas, gates) break the monotony. The simplicity of the spatial arrangement was compensated by architectural details: wood carving was an inseparable feature of wooden houses in Siberia. Its motifs are the subject of separate research.



22.



23.

Figure 22. Srub, general principle (log cabin): klet', svyaz', pyatistenok (5-walled house), shestistenok (6-walled house).

Figure 23. The reconstruction of 1748, by Panov E.M.: fragment.

Unfortunately, due to numerous fires and the predominance of wood as a building material, the very first wooden fabric of Krasnoyarsk, as of many other Siberian cities, has practically not been preserved. Therefore, in order to conceptualise the urban fabric at the level of individual buildings, this study relies on several preserved maps on which such structures can be read, on maps restored by historians on the basis of a few archaeological excavations, and on photographs that appeared in the XIX century and are stored mainly in local museums, and, of course, on a few preserved fragments of the urban fabric, which, as a rule, were built not earlier than the end of the XIX century. The very close and introversive concept of the fortress or "nest", from which Krasnoyarsk began to develop in 1628, then becoming a pole in a "big" walled city, embodying the functional ideas of colonisation, trade and protection, was enshrined in the ideas of city walls, towers, gates. Then the concept of the 'nest' was gradually transformed from the general idea of the city ('ostrog', fortress) to the idea of the 'individual fortress' - a manor house with the important mental national ideas of privacy and protection. It can be

said that the tradition of exile in Siberia contributed to the idea of the fenced-in neighbourhood and the increased importance of protection. Gorbachev noted that the openness of market spaces contrasted with the intimacy of private yard spaces and residential streets. The quiet, calm, patriarchal Siberian city of the mid-nineteenth century attracted the attention of guests from European Russia (Gorbachev, 2016).

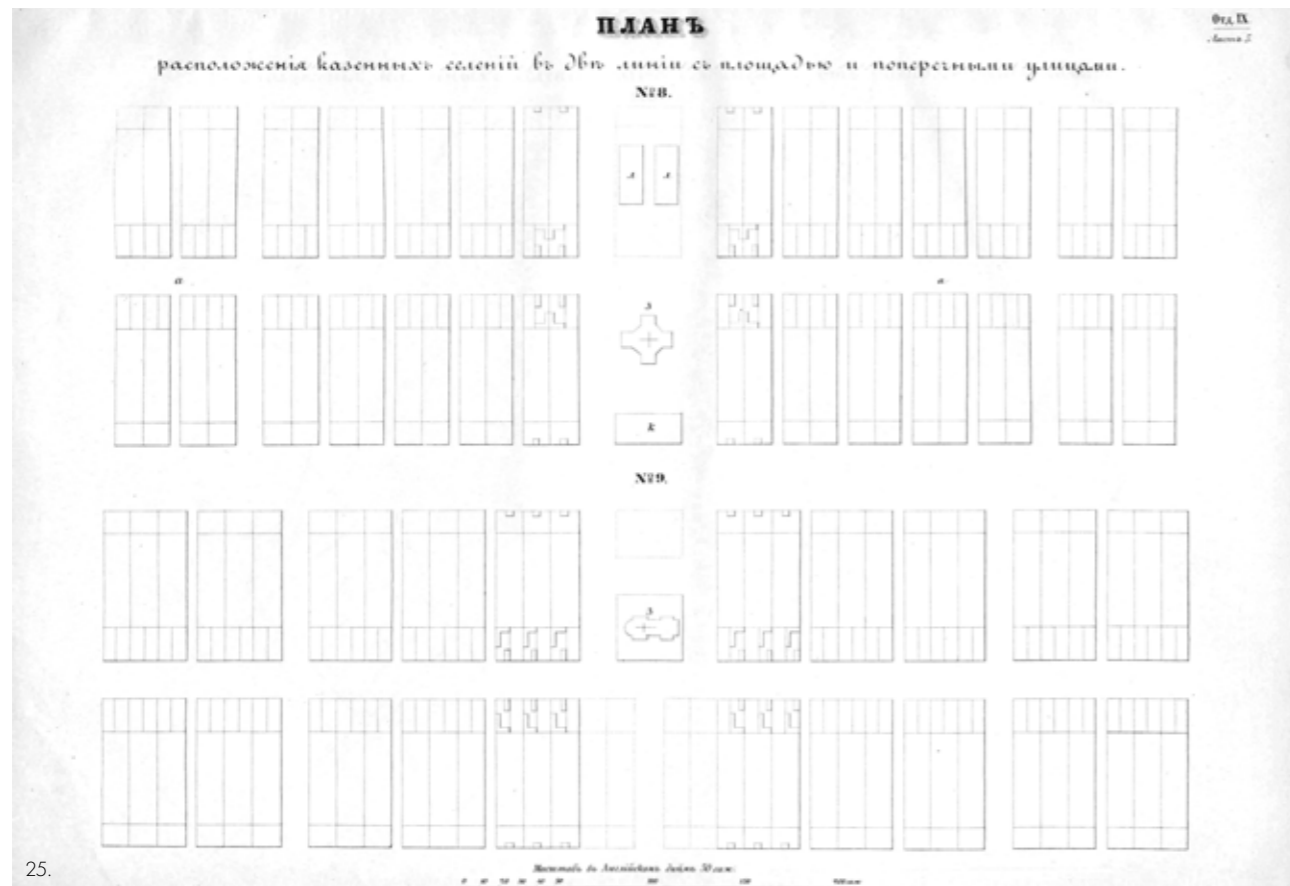
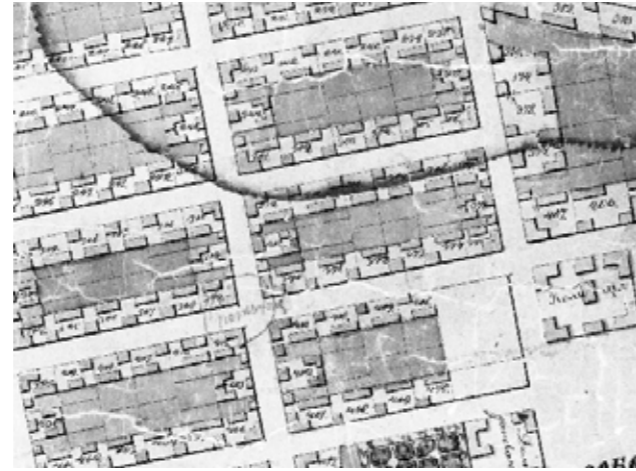


Figure 24. Krasnoyarsk masterplan in 1828: fragment.

Figure 25. The exemplar layout of linear rural estates of the middle of XIX cent.



26.



27.



28.

Figure 26. Krasnoyarsk in 1880s, Pesochnaia street (Photo: kraskompas.ru).

Figure 27. Krasnoyarsk in 1870s, current Veinbauma and Uritskogo streets (Photo: kraskompas.ru).

Figure 28. Typical firewall preserved in the centre of renewed block in Krasnoyarsk.

It is known that the 'Standard Projects of Facades', recommended for building in provincial towns, were first published in the 1770s and included the idea of the 'fenced' estate. Thus, the new urban planning structure, based on rectangular blocks with double-row farmstead buildings corresponding to the 'standard projects of facades', defined the regular plans after 1773. According to historians, the specialists of the Building Department, who were responsible for drawing up a new master plan for the city (approved by the capital's architect, Geste), drew up plans for the farmsteads and designed the facades of the residential buildings according to exemplary projects, the publication of which was continued (Department\_of\_Agriculture, 1853). This is clearly visible in the master plans of the XIXth century. However, researchers claim that the role of 'standard' facades was mainly reduced to an exemplary one for the development of a certain stylistic 'vector' in the construction of central city blocks, rather than to their direct practical use, due to the huge discrepancy between local climatic conditions in the vast country and the economic capabilities of the owners.

As the plan of 1828 shows, the urban structure was divided into clearly visible cell blocks, called curtains. Obviously, a significant part of the city's population maintained a close relationship with agriculture, which influenced the nature of urban development, that's why the wooden estates

in Krasnoyarsk mostly had large adjoining plots, which were occupied by gardens and were clearly visible on the master plan, which continued the existing tradition and also marked the morphological specificity of that time. The two-row estate structure of the residential quarters was further developed, reflecting the way of life and economic structure of the time. Residential buildings with outbuildings were located on the territory of such "usadbas". It is easy to assume that the vast majority of buildings were similar in terms of structure and layout, due to the limitations imposed by building materials and available techniques, so that the bulk of residential development was represented by one- and two-storey residential houses and merchant mansions.

The transition from the house to the street was made through the gates of the estate, rarely through the direct entrance to the house. This tradition was preserved for a long time and was visible even in the Soviet period, in the construction of apartment blocks. In general, the appearance of certain elements on the map of that period could mark their social significance and collective importance for that time. Conversely, the buildings that were ignored by the map could be considered the elements of lesser importance, they could be easily rebuilt or changed, and this would not significantly affect the structure or image of the city. The buildings of ordinary citizens were not reflected on the maps and did not constitute urban tissue or fabric. It

can be assumed that this phenomenon is related to the general role of an ordinary person in the social structure and hierarchy. As can be seen in the master plan of 1828, the part of the city that had already been built was less detailed than the planned area, with the exception of a few important buildings. Gevel noted that the planning basis of the development was plots of land, the size and proportions of which depended on the titles and ranks of their owners (Gevel, 2012).

In the second half of the XIX century, when Krasnoyarsk was being transformed from a village settlement into a city, the densification process began. The type of housing was changed according to the socio-economic conditions and requirements of the urban lifestyle: it is possible to find multi-family houses and houses with shops of that time preserved in the modern city. The height and size of the buildings and their location on the land became subject to fire safety requirements. In general, solidly built wooden buildings could stand for a hundred years or more, depending on the circumstances. It should be remembered, however, that the fire of 1881 destroyed most of the wooden buildings in the city. Densification brought such an important phenomenon as stone firewalls, which are still preserved in modern Krasnoyarsk courtyards and mark the vanished morphological scales and boundaries of Krasnoyarsk's past.



30.



29.

Figure 29. Standing on a firewall of the estate of the 1830s.)



31.

Figure 30. The estate of 1830s.

Figure 31. The house of the beginning of the XIX century.



In general, the photographs of the nineteenth century clearly show that the physical fabric within the regular quarters had nothing to do with the regularity of master plans, but represented communities of estates, each of which had its own individual layout and configuration. The preserved fragments of the fabrics formed by such blocks of wooden estates, such as Nikolaevskaia Sloboda, built at the turn of the XIX and XX centuries, Pokrovskaia Sloboda and small areas along the Kacha River, as well as some blocks of the historical centre, demonstrate the plastic wooden fabric formed on the basis of several construction techniques. In the 1900s and 1910s, as a result of economic and cultural growth, the construction of wooden and stone buildings further compacted the settlement development, the results of which formed the image of the current centre of Krasnoyarsk. In spite of the intensive stone building, the construction of wooden houses prevailed in the city at the beginning of the century, and even the aerial map of 1967 shows the predominance of wooden buildings. From 1895 to 1913, the housing stock of Krasnoyarsk based on wooden houses increased fourfold (Merkulova & Merkulova, 2013).

As can be seen from the maps, along the main streets,

the two-row structure that had been used earlier, when village-like estates predominated in the city, began to be filled in by the new, predominantly stone-built buildings, which were attached to the main streets, built almost without gaps, and formed the 'perimetrical' structure of the neighbourhoods. The size of the typical estates largely determined the size of the buildings and the length of the facades, thus demonstrating a morphological continuity. The current city map is enriched by the buildings from the end of the XIX - beginning of the XX century, which constitute the most important mass of historical architecture and largely determine the image and appearance of the city. During the Soviet period, the dominant type of housing was gradually changed from the estate to the multi-family house, due to the densification and disappearance of private property in the Soviet Union. If we look at the map of the current plots with the buildings from the foundation of the city until 1964, we can see the further filling of the former wooden quarters with the new developments. The post-war period is represented by a very specific type of apartment blocks, which are easily recognisable in the city. They gradually changed the predominant individual wooden houses. However, the traditional way of life resisted for a long time: the aerial map of 1967 shows the dominance of the traditional wooden fabric.



Figure 32 a-d. The fragments of preserved wooden fabrics in Krasnoyarsk



Basic units of a common building language, which traditionally existed on the territory before the modern transformation, should be considered as a manifestation of mutual agreement in society in relation to what should be built/destroyed. Thus, such 'urban agreements', based on respect for the historical evolution of traditions, seem to be the perspective way to achieve harmony in urban relations. In this case, the evolution of buildings is itself a record of the diachronic collection of 'social traces' and the evolution of the concept of dwelling: each new phase embodies the changes in the way of life, family relations, economic system, political agenda, etc. In particular, the notion of private/public, which has undergone significant spatial changes throughout Russian history, is clearly embodied in the urban morphology of cities.



Figure 33. Traditional wooden settlement at the Aero-photo map of Krasnoyarsk 1967 (<https://kosmosnimki.ru/>). Fragment

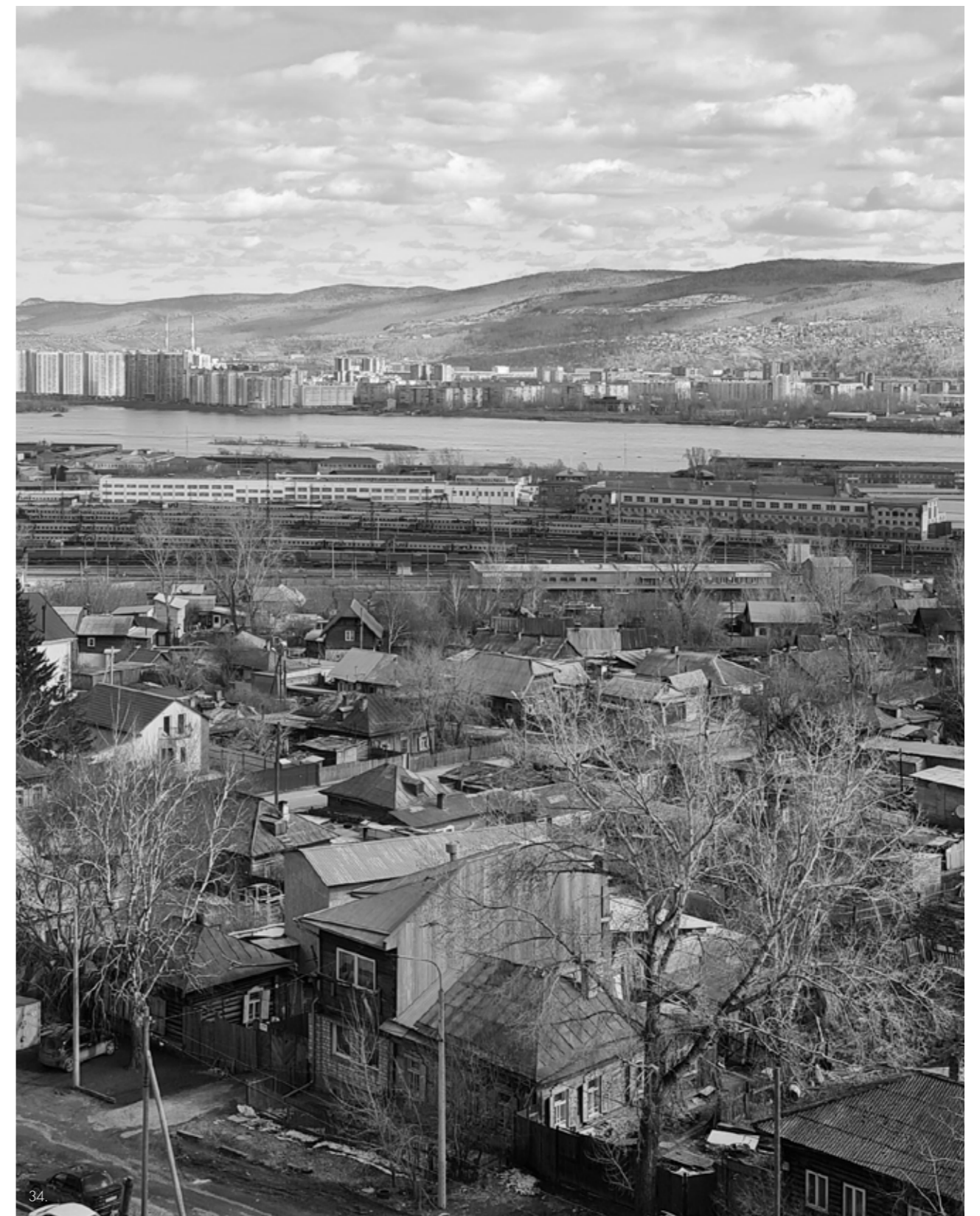


Figure 34. Wooden settlement on the periphery Nikolaevskaia Sloboda, modern condition.

The aim of this stage of the research is to study the grammar of the urban form of the Siberian city, which is almost impossible without a detailed description of the basic type and its formation. Unfortunately, as already mentioned, due to numerous fires and the predominance of wood as a building material, the wooden structure of Krasnoyarsk, as well as of many other Siberian cities, has not been preserved in mass. That is why it is not possible to get a full picture of the genesis of the basic type of dwelling from the preserved urban fabric or from modern maps. It is no coincidence that many, if not all, historians begin their studies of local buildings in Krasnoyarsk from the XIX century (Gorbachev, 2016; Merkulova & Merkulova, 2013). The fragments of the urban fabric that remained in the city were, for the most part, built after the end of the XIX century. As a result, the genesis of the basic type can be reconstructed only on the basis of rarely preserved archival materials, i.e. through a historiographical study. Such a study with a detailed description of the supporting materials and details was carried out, for example, by the Merkulovs (Merkulova & Merkulova, 2013). This study, based on the publications of the Merkulovs and other historians, generalises and conceptualises the building types in terms and principles of G. Caniggia. In general, the topic of the development of a residential building in Siberia has been described in detail by historians, which allows us to supplement the morphological reading with the information provided by a rich literature (Gorbachev, 2016; Tsarev, 2012; Gorbachev et al., 2011; Tokarev & Blomkvist, 1956; Aschepkov, 1950, 1953).

Aschepkov and Tsarev provided the description of old Siberian villages, which can give an idea of the oldest building structures in the earliest cities (Tsarev, 2017; Aschepkov, 1950, 1953). Gorbachev generalises the development of the architecture of Siberian cities in the XIX - early XX centuries, emphasising "styles", details, providing examples to rely on (Gorbachev, 2016). Merkulovs provides the historical description of the development of wooden architecture in Krasnoyarsk since the XIX century, emphasising periodisation, styles and artistic elements of architecture (Merkulova & Merkulova, 2013). Many researchers focus on the cultural roots of the genesis of housing: 'From the historical point of view, it is difficult to date the origin and spread of housing features before the XIX century, because the forms of yard development,

the plan of a residential building, the height of the house and the covered courtyard and other features, whose development was determined by a complex set of economic, socio-economic and many other factors. The final answer to the questions about the time of appearance and development of certain features of Russian housing requires a thorough analysis of a wide range of materials, especially archaeological excavations and written documents of the XIII-XVIII centuries, since the housing history of this period is the least covered. The problem of housing classification is directly connected with historical and genetic questions. (Chizhikova, 1971). In Krasnoyarsk there is no preserved physical evidence of the earliest type of settlements due to frequent fires and the specificity of wood as the dominant material, which decays relatively quickly without sufficient care and protection. However, this 'vernacular city' (professional architecture appeared confidently at the beginning of the XX century), driven by 'spontaneous consciousness' (Caniggia & Maffei, 2001), is worth studying as it can inform current practices.

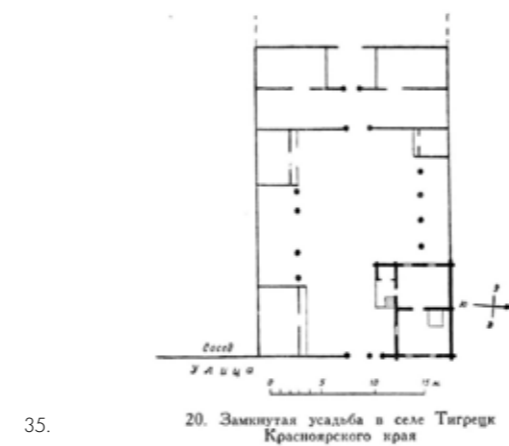
This research will further clarify the main stages of conceptual formation of the diachronic variants, based on the descriptions provided by historians and preserved pieces of urban fabric, from the point of view of the architect, with the aim of informing future projects. Without claiming historical value, these data will help to build hypotheses and design ideas. They would help to 'read' the urban fabric, which could inform future professionals. For example, many later stone buildings inherited the features and plans of timber architecture, and in order to read this in the existing urban form, it is important to know these features. After formulating the concept in its diachronic development, future research based on ethnographic studies could add the connection of the type with social aspects of life (privacy/publicity, the role of the family, functional needs, values and priorities, symbols, etc.) and general fabrics in order to find connotations and link the concept with socio-cultural traditions.

Furthermore, an excursion into history, etymology and literary sources is necessary to enrich and further clarify the typological features read in the urban form. Tokarev & Blomkvist say that the question of the origin of the klet is of great interest. The word klet (cage) is already known in Russian written texts of the X century, and since then it is very common and its meaning is different: a house, a

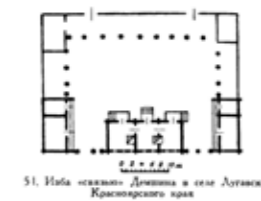
room, a cell, a storeroom, a barn. Since the XI century there is a diminutive word 'cage', it means a room, a cell and a small building in general. In the XV century, the word 'klet' in urban usage meant a shop (meat klet), in the XVI century prisoners were put in a klet. In antiquity, a klet was apparently an unheated summer dwelling: it is known, for example, that St. Vladimir lived in a klet in Berestov (a village near Kiev that served as a summer residence for princes). Comparing the written sources of several centuries, it becomes clear that the klet gradually lost the meaning of a dwelling and from the XV century, as at present, this word meant an unheated room of a household (Tokarev & Blomkvist, 1956).

The type of dwelling and household buildings (building type in Caniggia's terminology) of the first Russian villages that appeared in the Siberian lands was characterised by traditional ideas about the most rational construction and construction techniques that the settlers brought from their homeland to the new eastern frontier of the country. Tsarev notes that the analysis of the development

of estates in remote villages clearly shows that the most popular buildings of the entire variety of structures of Russian wooden architecture of the seventeenth century were used in the first Siberian agricultural villages (Tsarev, 2017). It should be emphasized that the phenomenon of the traditional estate (courtyard house) is important in the culture from the social and cultural point of view: 'In the traditional culture of the Eastern Slavs, folk architecture (residential houses, farm buildings and estates) is a unique phenomenon of syncretic polyfunctionality. At the same time, it is capable of performing a wide range of utilitarian, cultural and sacred functions, which are essential for the reproduction of the family, the species, economic activity, adaptation to specific natural and climatic conditions, etc. In the space of a traditional house, as a rule, the most important moments of a person's life took place (birth, inculturation, calendar and family rituals, creation of a new family, transfer of practical and cultural experience between generations, passing away, etc.)' (Bagashev, Fedorov, & Fisher, 2015, p. 26). The scheme of the development of the basic building is presented below.



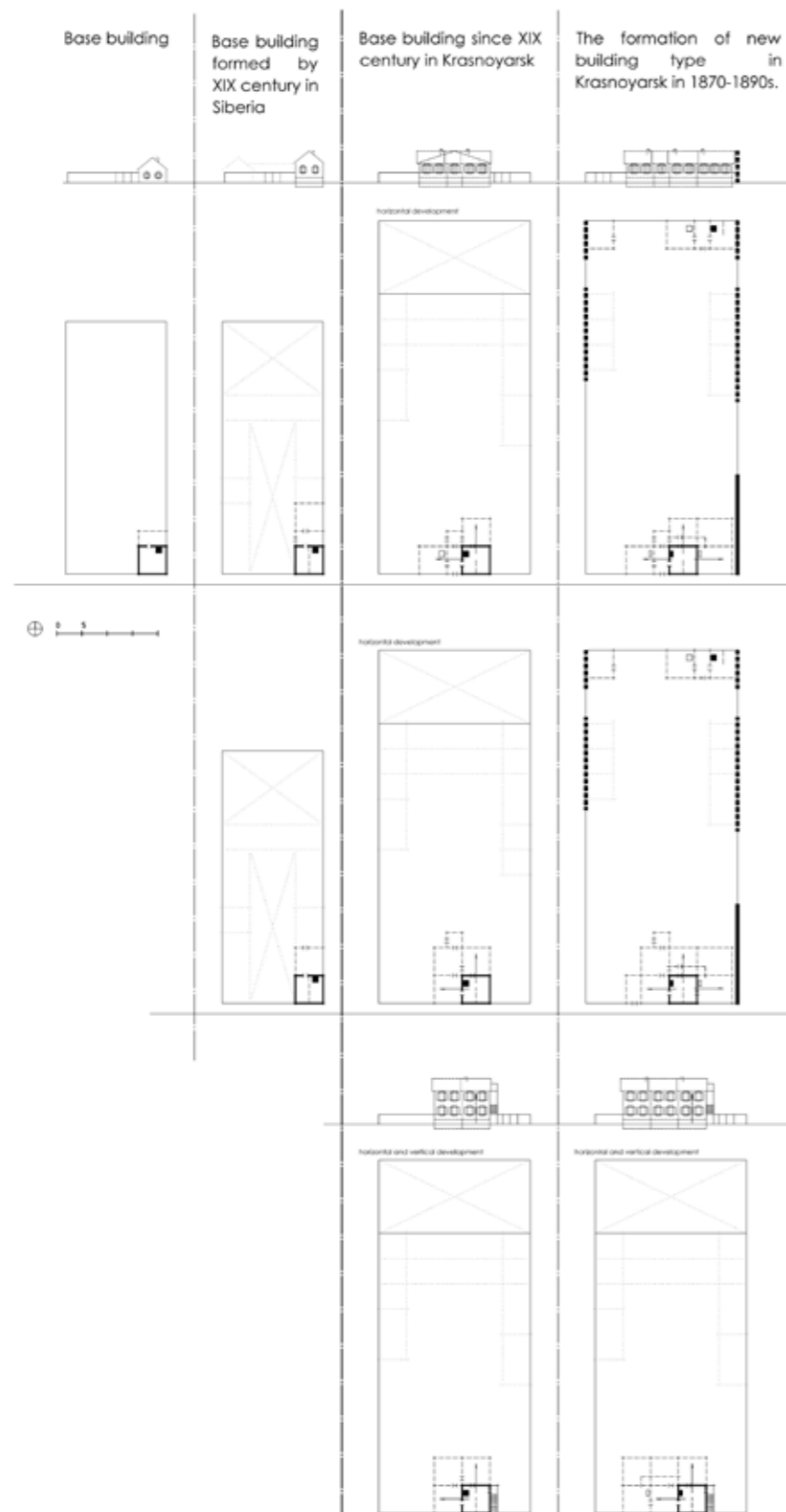
35.



36.

Figure 35. Usadba with izba in the Tigretsk village in Krasnoyarsk territory. (Retrieved from (Aschepkov, 1953)

Figure 36. Hut 'svyaz'. (Retrieved from (Aschepkov, 1953)



Krasnoyarsk, like many Siberian cities, started its development from the village-type settlement, which supposedly caused the appearance of the first widespread village-type building type: the collective image of the base building, many examples of which are reflected in the basic descriptive works of local researchers (Gorbachev, 2016; Bykonya, 2013; Merkulova & Merkulova, 2013; Gevel, 2012; Gorbachev et al, 2011; Chizhikova, 1971; Tokarev & Blomkvist, 1956; Aschepkov, 1950) First of all, it should be said that the size of Siberian estates was comparatively large. Authors claim that the abundance of land available for settlement created the possibility of free development (Aschepkov, 1950, 1953). In this context, the estate was the common cell of urban settlements. In the eighteenth century, as shown by the analysis of archival documents, the ordinary development of villages in the Yenisei district, as in the previous century, was formed by residential and household buildings united by yard space (Tsarev, 2017). Thus, the 'izba' and the inner courtyard with additional outbuildings surrounding it formed the type of courtyard house called 'usadba' (or estate). Describing the earliest villages of Eastern Siberia, Aschepkov states: 'In many villages there were closed courtyards with household rooms built around the perimeter. The courtyard usually had the shape of an elongated rectangle (15 x 50 or 20 x 60 metres) and faced the street with a smaller side'. In his book the author gives a general description of the most common examples of courtyard houses in Eastern Siberia. In the system of a closed courtyard, a dwelling house was usually placed at the end of the street, forming the long side of the inner yard. Immediately adjacent to the izba were sheds where the farm outbuildings were concentrated, forming the perimeter of the yard. A closed yard with a monumental blind gate and a high lock gives the impression of a protected place (Aschepkov, 1953).

As several literature sources unanimously state, the size of the first izbas, the main structural part of the estate, corresponded to the chosen configuration and number of common elementary cells - 'srub': 'klet', 'svyaz', 'pyatistenok' or 'shestistenok', where logs could reach 5-12 metres, resulting in cells of 5-8 metres (Gorbachev, 2016; Merkulova & Merkulova, 2013; Gorbachev et al., 2011; Aschepkov, 1953). Tsarev describes the sizes of peasant buildings in the Yeniseyskii region, mentioning the average number of logs in the houses of the old buildings

of 12-14 (older houses were made of a large tree, in the recently built buildings peasants used trees with a diameter of 20 centimetres) (Tsarev, 2017). It is well known that the quest for the necessary comfort was combined with a minimal use of materials, which was mainly wood from the foundation to the roof, with 'srub' also being the load-bearing system. Gorbachev noted the search for the most economical and compact solution for the layout of the building, where all the internal space was deliberately used: houses were built with a minimum perimeter of external walls, rectangular in shape, which created the most favourable conditions for wintering. Buildings always followed the rule of compacting living spaces as much as possible in order to reduce construction costs and avoid unnecessary external walls and, consequently, heat loss (Gorbachev et al., 2011). The Russian stove was the central element of the building (Gorbachev, 2016). Small stoves, niches, "potters" were cut directly into the body of the stove by the builder to create maximum comfort and economy of space (Aschepkov, 1953).

As for the vertical arrangement of the building, it could consist of 'podklet' (semi-basement), a main floor and the cold attic (Gorbachev et al., 2011; Aschepkov, 1953). Gorbachev describes the details of the entrance node, which was always organised from the yard, in order to create the most favourable conditions for wintering, the number of outdoor spaces in the house was reduced to a minimum. The author also states that the Siberians designed the wooden roofs of their houses with special care for precipitation and thermal protection. When placing a house on the site, citizens tried to orient it towards the sun so that they could make the most of solar energy through openings, usually the windows of the main rooms and exterior doors were oriented towards the sunny side if possible (Gorbachev, 2016; Gorbachev et al., 2011; Aschepkov, 1953). Because of this orientation, when the sun penetrated through even small windows, it partially took over the task of heating the house for most of the day. To reduce heat loss through the windows at night, they were closed with shutters called 'stavni' (characteristic of Siberian dwellings) and, in windy weather, with fabric curtains.

The functions of the estate were distributed as follows: the izba contained all the functions of the dwelling unseparated

Figure 37. Base wooden building formation since the XIX century in Krasnoyarsk

(gornitsa, seni), often mixed in one room, the yard was surrounded by several storerooms and workshops. This is how the middle-class peasants live, the rich have several rooms (Stepanov A. p. Yenisei province. Part 2. SPb., 1835. - 154 p.) The Siberians were concerned about cleanliness and hygiene: all the estates had a bath, 'every week the floors were not only washed, but scraped with knives; the walls are covered with white clay' (Stepanov A. p. Yenisei province. Part 2. SPb., 1835. - 154 p.). Krasnoyarsk Governor Stepanov described the layout of houses and some manor buildings. Ordinary peasant houses are built with a long facade facing the street, on the first stone-made floor 'podklet'. Seni divided the house into two halves. On the one hand there is a wooden hut, on the other there is a room-gornitsa, on a height of four or five steps, divided by a partition (Stepanov A. p. Yenisei province. Part 2. SPb., 1835. - 154 p.). The initial abundance of storage spaces was the characteristic of Siberian dwellings, partly caused by long winters. The front corner of the room was occupied by icons, often on canvas and in frames; under them was a painted table; along the walls were chairs and benches (Stepanov A. p. Yenisei province. Part 2. SPb., 1835. - 154 p.).

With regard to such a social aspect as the number of inhabitants or family that such a type could accommodate, the family as a social cell (up to 20 people or even more) could be mentioned (Aschepkov, 1953). The diversity of the population, with a significant number of exiled and wandering people, led to the dominance of the closed type of farmsteads, which created the need for the inner courtyard. That is why the manor was separated from the outside world by monumental fences and gates (Aschepkov, 1953). In relation to the general urban structure, the wealth of the citizens was reflected in the size of the house and estate, its location in the city (rich - near the centre, poor - on the outskirts), and in the number of outbuildings on the estate (Gorbachev, 2016).

Several synchronic variants were possible. For example, the joined estate. Two houses were built on the same plot - for two owners, usually related by family ties. Each house had its own group of outbuildings. The central part of the yard remained undeveloped. As well as farms linked by a common courtyard, there were also farms linked by a narrow gate with a gabled roof. The external side of the

common estates had a single frontal composition and formed the street façade. A common type of cross-houses 'shestiistenok' were buildings with 'taken out angle', in which the floor plan takes an L-shape, perfectly suitable for the corner estate. Instead of one courtyard, there could be an enfilade of courtyards placed along the main longitudinal axis. The old type of covered yards was rarely used in the Siberian village. In case of orientation of the rectangular plot with the largest side to the street, the closed system of the yard was not changed. Only the cottage with a long side turned towards the street. This made it possible to have more windows facing the street, which was very desirable for the house owners.

The description of the base building of the XIX century in Eastern Siberia could be as follows: 'Immediately adjacent to the izba there were sheds where the farm outbuildings were concentrated: a cellar, a bath house, workshops for repairing the inventory, then premises for small livestock and poultry. The back of the yard was usually closed by buildings for large domestic animals with haylofts and rooms for straw. Sometimes all these buildings were preceded by a corral with a shed or an open courtyard. Directly behind the stables there was a vegetable garden. Opposite the hut, facing the road with the front and the large side with the door facing the house, there was usually the most durable barn for storing food and valuable inventory. The general composition was closed by a gate with a gable roof, which covered the whole space from the hut to the barn' (Aschepkov, 1953). The 'Atlas of projects and drawings of rural buildings' offered standard drawings of a 'klet' house, a 'svyaz' hut and a five-walled house for construction, depending on the peasant's property status.

Some changes in the dwelling caused by the need to expand the space due to the increased domestic and economic needs of the peasants, expressed in the 'prirub' of additional volume to an existing building or the introduction of the internal space of partitions, dividing the main room into several small cells. In general, in the course of time, under the influence of local conditions, various changes were introduced into the simple scheme of housing: extensions, covered roofs, protective walls, etc., which essentially did not change the concept of the layout, but only gave it a new external expression.

E. A. Andreeva in her "Notes on Siberia" (middle of the 19th century) wrote: "The houses were high and were built in two parts: on the top there was the room, and the lower half-basement "podklet" was occupied by the kitchen. From the hall you went directly into the upper room, where on the right side there was a tiled stove with ornaments. The room was usually divided into two, with a bedroom behind the partition and a cupboard with crockery. The back rooms were used for children". Stepanov also described the entrance with high verandas, often without railings and canopies. The entrance was organised through 'seni', through the yard from the street; as all the houses were extremely high, one exit led from the back veranda down the stairs and the other, through the plank rungs, to the upper level of the large shed, that is, under a spacious canopy supported by pillars (a kind of gallery); here, in summer, the whole family, especially the women, gathered and did various household chores. (Stepanov A. p. Yenisei province. Part 2. SPb., 1835. - 154 p.).

The description from the 'Atlas' is quite similar: 'The porch is about 14 steps, on racks under the canopy, assuming the presence of a cellar, the entrance to which was arranged under the porch' (Department\_of\_Agriculture, 1853). Unheated rooms in the summer, with the exception of verandas, were very rare. Such spaces would be useless for most of the year. However, verandas, which are common in dry and sunny climates, were located in one- and two-storey buildings and usually faced south-west. The Siberians loved them, although they were rarely used in winter, but the greenhouse effect kept them relatively cool on sunny spring days or summer evenings when it was quite cold outdoors. In addition, unlike terraces, balconies and loggias, verandas could be used in winter as cold storage, a kind of refrigerator. Compared to the warmer regions of Russia, verandas were glazed, balconies were turned into loggias, and southern rooms were deeper. (Gorbachev, 2016) As for openings, the windows are with 'stavni', 3/4-arshin high, made of glass, 'sluda' patterned or 'bubble'. (Stepanov A. p. Yenisei province. Part 2. SPb., 1835. - 154 p.)

To conclude the description of the collective image of the base type in Eastern Siberia, it is safe to say that the morphology of the initial phase of base building reflected the traditional social nature of peasant life: the quite

introverted space of the estate assumed closeness in all senses: the entrance to the izba was organised from the inner yard, the estate was fenced, the windows were small. The urban estate was a closed world of its owner, protected by a blind fence from the neighbours and the streets (Gorbachev, 2016). The embodiment of the notion of privacy, the courtyard house or the closed type of estate is a manifestation of the social attitude towards property, private space, belonging. Aschepkov commented on the peasant's life spent in the forest or in the field on arable land, which caused the need to have a limited domestic space, an enclosed courtyard, a protected area (Aschepkov, 1953). This organisation also provided the 'connection with the ground and nature' and a kind of transitional space between the actual dwelling and the street. In front of or behind the house there were often minigardens where cherry trees, sea buckthorn, raspberries and currants grew (Gorbachev, 2016). Interestingly, the same phenomenon can still be found in Krasnoyarsk, where citizens organise home-made mini-gardens in front of the windows of the first floors of large apartment blocks. The veranda, as a semi-warm entrance space, was also an optimal transition between indoor and outdoor space. At the same time, the personal privacy of each family member was minimised: the family was perceived as an inseparable unit.

Usadba combined undivided work and living functions. Importantly, it included a significant amount of storage in a private yard space. Traditionally, clean and dirty spaces were separated, and the tradition of taking off one's shoes when entering the house is still strong in Siberia. It is also interesting that the tradition of creating 'niches' in the walls of apartment blocks (analogous to the niches in the body of a huge stove) for the economy of space survived until the middle of the XX century. During the Soviet period, the huge number of storerooms, which were common in the traditional Siberian dwelling, was significantly reduced in reality, but remained in the mentality, which caused the functional reorientation of such spaces as balconies, garages, lodgings and living rooms into storerooms. The embodiment of the described building concept could still be found in Siberia and Krasnoyarsk.

According to historians, in the 19th century, especially in Siberian cities, the basic type was transformed and new types were created. The basis of housing development

consisted of one-storey or, more rarely, two-storey houses, the layout of which varied in one way or another, based on the schemes developed in the previous period. In Krasnoyarsk, according to Merkulova & Merkulova, 5 curtinas were built in 1823, and residential quarters began to appear along the road to Yeniseisk. In 1829, 97.5% of all residential buildings were made of wood; in 1861, 96.9% were made of wood. Public buildings were also mostly wooden. According to the Krasnoyarsk State Archives, the number of wooden residential buildings increased from 505 to 1173: 1 to 36, while the number of special wooden buildings increased from 22 to 37, stone-made: 2 to 17 during the period (Merkulova & Merkulova, 2013). The size of the basic buildings in the urban architecture of the nineteenth century changed significantly: houses became more spacious (Gorbachev, 2016). Typologically, it was the result of the gradual development of a multi-chamber dwelling by combining four-walled log houses. In terms of plan configuration, three-chamber buildings began to predominate in Siberia, originally consisting of an 'izba', an entrance or 'veranda' and a 'klet' (unheated room), which was gradually transformed into a room-gornitsa, the first significant functional change that could manifest the need for separation of functions (Merkulova & Merkulova, 2013).

There were also noticeable changes in the layout of the house: a multi-room layout was a natural stage in its development. The desire for comfort and cleanliness was reflected in the isolation of the seni and then the kitchen, which was the first step in the development of the layout and increased the number of individual different premises in the house. The appearance of independent functions of rooms in the XIX century (isolated kitchen and bathroom, dining room and bedroom), the disappearance of stoves (in its rustic version), 'polati' and benches, changed the whole system in a radical way. The functional versatility of the old types of houses was significantly reduced. This complication was also related to the appearance of new additional partitions, with expansion of lighting in living rooms and room stoves. The development of urban dwelling types and their more complex construction was expressed in the addition of extra log cabins (development along the longitudinal and latitudinal axes).

Thus, at the end of the XIX century in Siberian cities the

original versions of wooden houses with residential apartments were formed with a rather long symmetrical-axial composition of facades and the plan based on the application of multi-wall framework 'srub' (Gorbachev, 2016). The gradual increase in the number of storeys could also be mentioned (vertical development), so the vertical layout could consist of 1 or 2 storey houses, sometimes with a mezzanine or the house on 'podklet'. Common to the main facades facing the street was a strict symmetry of the composition, an odd number of windows on the main facade (from three to seven) (Merkulova, 2013). The entrance to the apartment building could be arranged at this stage not from the yard, but from the street (Gorbachev, 2016). In comparison with the first descriptions of houses with small windows describing peasant life in the XIX century, Gorbachev noted the height and spaciousness of the premises, high windows with large panes of glass, which seem surprising for Siberia - the land of long and harsh winters. The double glazing retained some of the sun's heat even on cold but sunny days, which are common in Siberia (the 'greenhouse' effect). In addition to ordinary windows, double or one-and-a-half windows were sometimes installed to increase light or for architectural purposes, and less commonly triple ('Italian') windows were made, joining three window boxes in one wide opening. This abundance of large windows in houses always amazed visitors to Siberian cities, who noted the 'love of Siberians for the sun' (Gorbachev, 2016).

Simple and brutal in their architecture, the houses of the third quarter of the XIX century began to be replaced by houses with a bright decorative appearance. In the 1860-1890s, as can be seen from the descriptions of local researchers, the planning structure of many courtyard houses changed, and their yards were no longer divided into a clean and domestic yard or garden, but had a single yard space. Farm buildings and outbuildings took the place of kitchen gardens. The simplest forms of profitable home ownership, where landlord and tenant lived in the same house or where small outbuildings were built on the estate plot for rent, developed in Krasnoyarsk in the 1870s and 1890s (Merkulova & Merkulova, 2013). After the last major fire of the estate and as a result of the compaction of the building, the wooden houses were separated by stone firewalls.

The social conditions that induced a conversion during the XIX century: the number of inhabitants was still reduced to one family. However, the new layout of the house reflected the need to separate adult members of the family from children and old people, married people from bachelors, girls from boys, and to create more or less favourable conditions for work and rest. The living conditions of the wealthy classes led to the desire to increase the number of living cells. The desire for comfort and cleanliness led to the separation of kitchens. The change in living conditions, and the further historical development of urban culture, changed the living and working conditions of the population. It should also be noted that work processes, especially craft rooms, were moved further and further away from the dwellings and housing estates, and were replaced by rooms specially designed for this purpose. The urban family was on average smaller than the peasant family, and therefore the villas could be smaller.

There was a tendency to replace wooden manor houses with stone ones, and to densify the blocks of manor houses. However, wooden houses continued to predominate. Simultaneously with the process of complication of the house of the wealthy citizens, the poor housing in the early twentieth century remained a small one-storey house in a peasant hut chopped (Gorbachev, 2016). According to the location in the structure of the quarter, the estates were divided into corner and row (basic) houses. The corners of the blocks were fixed with L-shaped houses. The three-dimensional composition of residential buildings could develop vertically due to frontons, if the house had a gable roof, or due to the appearance of mezzanines under the gable roof, which also ended with frontons (Merkulova & Merkulova, 2013).

Transformations occurred mainly under the influence of the transition to an urban lifestyle. The transformation of the peasant house under the influence of various conditions went in two main directions. The first was the gradual creation of a bourgeois villa, and the second consisted in the transformation of individual dwellings into multi-family houses for rent. Private entrepreneurs, in a situation of increasing demand for apartment buildings, built three- or four-storey buildings designed for renting out profitable individual premises, thus becoming commercial homeowners. In cases where several houses belonged

to the same owner, the enlarged estate was united by a single planning cell. Residents engaged in agriculture had in their own yards space for cattle, a shed for carts, sleighs, a barn with a hayloft for storing fodder, and other ancillary services necessary to meet the requirements of the family's daily needs (Gorbachev, 2016).

The analysis of archival data revealed another new functional type of estate, and this transformation was characterised by the phenomenon of tabernisation (Caniggia: 'Tabernisation: The process by which infills were gradually formed in a domus type along a street front to create commercial areas. This transformation reduced the open spaces of the domus and allowed a new type of two-storey building to emerge'). This was a residential area with an additional commercial function. In this case, the shop was located on the first floor of a house or in a separate building. Many citizens were engaged in crafts. Small 'home shops' were located directly in residential buildings or were designated as 'outbuildings' on the estate plan (Merkulova & Merkulova, 2013).

In the 1870-1890s, Siberian cities (especially Krasnoyarsk) saw the emergence of the courtyard multi-family house (a new city-like building type), and the popularity of multi-family houses grew. Gorbachev claims: 'Private entrepreneurs, in an environment of acute housing need, built apartment buildings, including three- and four-storey buildings intended for renting out individual premises. At the end of the XIX century in Siberian cities a kind of wooden multi-family buildings with a rather long symmetrical-axial composition and layout based on the use of multi-walled log houses formed' (Gorbachev, 2016). According to Merkulova, in Krasnoyarsk variants of layouts were created based on well-known schemes (pyatistenok, krestovik, svyaz), with the addition of rooms, utility chambers. The construction of internal partitions allowed to increase the number of rooms. With the introduction of corridors into the layout, isolated rooms appeared. Wealthy citizens (merchants, officials) built houses - multi-walled log houses with a front enfilade of rooms, with a clear functional zoning of the premises (Merkulova & Merkulova, 2013). In an individual house with a rented apartment, the entrances to the apartments were separate. The staircase to the second floor was located in an unheated wooden extension, which was sometimes completely or partially

open. Houses usually had two entrances: the front and the back. The back entrance led to the main part of the house, where the kitchen, storerooms and toilet were located. The main entrance to the house was usually behind a gate in the courtyard and led to the living part of the house. Sometimes the vestibule led to the front door on the street (Merkulova & Merkulova, 2013).

Two-storey wooden houses (usually profitable) did not differ in logic from one-storey ones: in most cases, both floors repeated the layout of a one-storey dwelling with all the usual structural and decorative features for this 'urban' type, only occasionally the principle of two-storey multi-room *svyaz* of residential premises was applied. In this case, both floors were one apartment and were connected by a staircase - a vertical system of connecting rooms (Gorbachev, 2016). The City Duma decided that only stone houses or houses with vertical layout on stone floors 'podklet' could be built on the central streets of the city due to densification and frequent fires (Merkulova & Merkulova, 2013).

Regarding the social conditions that induced conversion at the end of the XIX century, it could be said that population growth and the development of the city's economy contributed to the fact that Krasnoyarsk, although slowly, still outlived the patriarchal way of life (Merkulova & Merkulova, 2013). A significant factor influencing the conversion of wooden buildings was the fire of 1881, when more than 300 estates in the central part of the city burned down. Many citizens whose houses burned down but who still had land were forced to give up their plots. These lands were bought by speculators and citizens who had the money to build stone houses, which led to the gradual eviction of wooden mansions from the city centre.

The construction of the Siberian railway contributed to the changes. The poor population moved from the main streets to the periphery, where development retained its traditional manorial character (Malokachinskaia, Bolshekachinskaia, Tatarskaia, Beregovaia Kachinskaia regions, etc.). Merkulova claims, based on the 'Layout sheets on taxes on real estate in Krasnoyarsk' for various years, that stone buildings gradually replaced wooden ones. In the 1870s and 1890s, due to the increased need for housing, the simplest tenement houses appeared. In

the preceding years, the city authorities had to provide accommodation for a large number of civil servants and military personnel, who frequently moved from place to place. In the beginning, the rooms that were rented or used for living were attached directly to the owner's house. In the 1870s and 1890s, a type of individual dwelling house was created, adapted for renting out living space. Renting out residential premises became the main source of income for some owners (Bykonya, 2013; Merkulova & Merkulova, 2013).

In addition, professional architects began to contribute to the appearance of the city. And when, as was often the case at the beginning of the twentieth century, a certified architect was involved in the design and supervision of construction from start to finish, a small wooden house took on a different quality. The rapid construction that took place at the end of the 19th and the beginning of the 20th century changed the appearance of one-storey towns, which had previously been built almost entirely of wood, for 10-30 years. The appearance of provincial and large district towns changed particularly drastically (Gorbachev, 2016). The development of small-scale industry, usually associated with the primary processing of products and raw materials, led to the construction of small industrial buildings in some settlements. For the construction of 'tanneries, soap factories and others', the 'lower part was taken to the mouth of the Kacha River'. Homesteads with industrial buildings did not stand out in the street structure (Merkulova & Merkulova, 2013).

The above description of the formation and transformation of the basic type of wooden house in Eastern Siberia, using Krasnoyarsk as an example, is fundamental to this work. It was on the basis of this type, intertwined with ideas from outside, that the stone houses were formed, constituting the basis of the appearance of today's historical centre. Almost all variations and stages of development of the wooden house could be seen in Krasnoyarsk until the 70s of the last century, when the mass standard construction (described in the last chapter) developed in the city and replaced the wooden houses. The example of spontaneous wooden buildings shows how the house reacted to climatic and socio-cultural changes and adapted naturally. It is also possible to see the characteristics that have been preserved, despite the fundamental changes that have taken place.

As for the traditions of the period that have survived the passage of time, the willingness to add something to the existing building or change the original layout of the apartment is still alive and fruitful in Russia and Krasnoyarsk, which demonstrates the popular striving for self-made developments that seems to remain in the genes of Siberians. To illustrate the importance of traditional continuity, such an innovation as the entrance from the street to a one-storey residential house can be mentioned as an attribute of the city's new professional architecture. Justified for block development, this method was inconvenient for the estate, as it required another exit to the site, and extra doors - extra heat loss. And no matter how great the temptation to give the house an urban character, the street entrance was not very popular. This is a striking example of the fact that the techniques of folk architecture, verified over the centuries, appeared more elaborate and sustainable. Even today, the entrance to the houses from the street is extremely rare, which could be the result of the traditional sensitivity to privacy.

In general, the existing types and their development took place continuously in the city. In the construction of stone dwellings, especially in the first phase, we can observe the general techniques of composition and layout, which were completely borrowed from wooden architecture. However, the appearance and structure of the new buildings tended to be influenced by both professional architecture and vernacular traditions. The way in which

the rooms were arranged around the entrance hall, for example the arrangement of the huts 'in two *svyaz*', the presence of a cellar and high verandas - typical features of wooden architecture - were used in the construction of stone houses. As in wooden houses, the main room was always oriented towards the street, simply because the house was adjacent (to the side or courtyard facade), having the extensions with stairs, storerooms, hallways, covered with its roof. The principle of a 'compact' plan is inherent in most villas. The new houses inherited some traditional features, such as the size of cells, windows and roof types, etc., but they could be applied to the new types of houses in a new way, reconsidered. As a result, the plans became more individual, with a large number of variants and options.

According to Gorbachev, the architecture of Siberian cities in the pre-revolutionary decade was influenced by professional architecture. When applied to wooden architecture, this is reflected in the search for new spatial solutions and new decorative elements based on the use of the as yet undiscovered possibilities of wood as a building material. This search has been facilitated by a new technique for preparing and processing wood. Most importantly, professional architects and artists were already working in the cities of Siberia at that time, most of them trained in St. Petersburg and some of them abroad. 'Wooden Art Nouveau, this last stage in the centuries-old development of wooden urban architecture, is of great interest. It combines the characteristic features of traditional folk architecture with new forms' (Gorbachev, 2016).

During the Soviet period, the dominant type of housing was 'revolutionised' from the manor house to the apartment block, in parallel with the disappearance of private property. This phenomenon can be described as traumatic for the social and physical fabric of the city. Russian and foreign researchers studied in detail the micro-districts of the Soviet period and the districts of new development. The second half of the twentieth century is represented by a rather specific type of apartment buildings, which are easily recognisable in the city's appearance. They replaced the predominant type of individual wooden houses. However, the traditional way of life has long resisted: the map of 1967 shows the dominance of traditional wooden types. The stability of vernacular traditions against the background

of socio-political transformations is also demonstrated by the example of many cities in the world; it can be considered a manifestation of local identity in the historical physical fabric. Thus, in terms of urban morphology, it can be argued that major socio-political transformations tend to quickly and directly alter the polar and nodal elements of the urban hierarchy, while traditions and local historical identity, which ensure continuity of development and connection between generations, are reflected in the vernacular and the urban fabric on a human and intermediate, relational scale, or the scale of community.

The Perestroika of 1991 brought freedom, but also anarchy in all areas of life. The dominant 'top-down' processes often became 'bottom-up'. Small independent additions and small changes were literally everywhere: shops and markets that reflected the lack of services in the neighbourhoods, the appearance of garages and underground cellars that reflected the lack of storage facilities in the apartments of large Soviet districts and neighbourhoods, and so on. Even the facades of medium-sized and multi-storey buildings were individually modified, balconies, terraces and oriels were added, turning the blocks into a kind of elements of vertical micro-urbanism. Garages and other illegal small extensions are also morphological symptoms of the chaos of the 90s. They reflected the social need to personalise the city of the late Soviet period, a kind of manifestation of problems and deficits.

The completely introverted concept of a 'nest' or the concept of a wooden fortress, from which Krasnoyarsk began to develop in 1628, which later became a pole in a 'large' walled city and embodied the functional ideas of territorial development, trade and protection, was fixed in the ideas of city walls, towers, gates and, later, fences. It can be assumed that the concept of a fenced island of development was gradually transformed from the general idea of a city (ostrog, fortress) into the idea of an 'individual fortress' - a manor house with important concepts of privacy and protection, or a quarter consisting of fenced estates located side by side. It can also be assumed that the concepts of colonisation, migration and exile to Siberia also contributed to the emergence of the idea of a fenced, dense quarter and the increased importance of protection. Thus, the planning structure of the city, based on rectangular blocks with two rows of estates

with high fences, determined the dominant type.

Morphologically, the traditional type of house presupposed a certain freedom of transformation (the addition of cells, for example, a 'log cabin'), but it is difficult to say that transformations prevailed in the city, on the contrary, wooden buildings were often completely replaced, for example, by stone ones. This important observation, which also complements the mental habit of interchangeability, explains many phenomena in today's urban environment. All that remained was a given 'step' and scale, the rhythm of the building, which can still be read today. However, the new type could have some features of the previous type. Thus it is possible to observe a formative process of type - formation and transformation. In general, massive wooden buildings could stand for a hundred years or more, depending on subjective factors, but fires accelerated the renovation process: two stone houses were often built on the site of a wooden house. It is interesting to note that even after the revolutionary changes of the twentieth century, the habits of the organisation of the dwelling can still be seen in the structure: From the entrances to the dwelling, which are almost never located on the side of the main street, occupying a more private courtyard area, to the sensitivity to the concepts of 'private-public', 'mine - someone else's' and the need for a large number of storage spaces (balconies, garages and cellars were replaced by barns and pogrebs, characteristic of a peasant estate), the typical load-bearing cell was 6x6 m, derived from ancient srub. The characteristics described, which show stability over time, indicate the local values of this society and should be taken into account when planning the development of the historic area.

The analysis showed that in Krasnoyarsk local urban identity was formed and maintained at the intermediate or 'relational' level - the block or community level, which will be further analysed in the following chapters. Often the social dimension of the urban environment is studied from the perspective of one of two extremes: an individual-based approach (taking into account the opinion of an individual), or an approach that examines generalised categories of citizens or institutions - enlarged, politicised and formalised (for example, a cadastral map is a product and reflection of formalised relations with landowners or land users). Both individual and public agency seem

important, but they don't cover the whole spectrum of issues. This adherence to two extremes can easily be explained operationally, as it is quite easy to ask a particular person for a separate opinion or to study the relationship between urban form and citizens (e.g. cadastral map). However, something important is missing on a qualitative level. Namely, something that lies between the above-mentioned approaches and that is taken into account by relational approaches in various disciplines. These are primarily approaches based on relationships within a social group, which claim that the quality of life depends directly on the quality of relationships. For example, a community living in a given area can, according to its own rules, define the boundaries of the residential area, which will be different from the existing physical, personal or cadastral boundaries. It is at this level that the type that defines local identity is often formed. It is important to note that this level of research can and should be used in the practice of individual design, especially when it comes to cultural objects and the historical environment. At the relational level, the typological approach can and should be further refined and clarified through situational typification or the specificity of social relations.

In sum, the detailed analysis of the genesis of urban form of Krasnoyarsk revealed the pronounced differences in comparison to the method of Caniggia reinforced by the relative theories and terminologies. Therefore, further analysis is required and will be based on the metrological reading of the cadastral map of the historical core of Krasnoyarsk.





'Building plot: A regularly shaped piece of land earmarked for building purposes that is generally rectangular and fenced off, placed near a planned building route and divided up into a portion occupied by a house, or a number of houses, and a pertinent area' (Caniggia & Maffei, 2001).

Turning to complementary theories and methods that enrich the reading of the urban fabric, it is necessary to consider other areas and methods of urban morphology, such as metrological analysis - analysis of the shape of cadastral plots. Urban morphologists carry out research based on metrological plot analysis (a detailed measurement of plot sizes using the existing surviving plot boundaries). Terry Slater, for example, analyses the boundaries and dimensions of plots, reconstructing the history of plot boundaries along with the principles that determined how they were subdivided (Serra et al., 1990; Slater, 1990). Morphological regionalisation structures the existing landscape in a historical-geographical perspective and defines patterns of land use (Whitehead & Gu, 2010; Hofmeister, 2004; Conzen, 1960). Indeed, the metrological analysis is increasingly relevant today, considering the growth trends of buildings and urban structures in the twentieth century, which proves that it could bring tangible results. Chow and Moudon have noted that parcels have increased in size along with buildings, changing the nesting relationships in street blocks (Moudon, 2019; Chow, 2002).

Land registration in Russia began in the IX century. The first 'cadastral books' contained mainly descriptions of monastic and ecclesiastical lands. Soon the register of owners expanded. The state wanted to know who owned land in order to collect taxes. Under Ivan the Terrible, 'scribal books' appeared for this purpose. These books recorded the name of the owner and how he came to own the land. The 'scribal books' became the main proof of rights and in many ways the prototype of the modern unified state register of rights. It was more difficult to determine the boundaries of principalities and manors. The amount of land was approximated. During the reign of Peter I, the accuracy of field measurements increased. The geodetic profession began to be taught. At the beginning of the XVIII century Peter I set the goal to create a general map of the Russian Empire. A detailed map and a large

three-volume atlas were published after Peter's death. The maintenance of the land cadastre had finally become a matter of national importance. In the middle of the 18th century an attempt was made to collect information on the territory of the country and on all landowners.

In fact, the general survey was initiated by Catherine II. In pre-revolutionary Russia, all information about land and its owners was recorded in 'land' and 'boundary' books. The data was fairly accurate, which allowed the state to collect taxes effectively and owners to assert their land rights in court. The nature of the cadastre changed radically after the October Revolution. All land became the property of the state and was no longer subject to taxation. Registration of rights was no longer necessary. However, a cadastre did exist in the USSR. Although it contained data not on the owners but on the users of the land. The state needed accurate information about land registration. Although the 70-year history of the USSR had accumulated a great deal of cadastral experience, after the collapse of the Soviet Union the system of rights registration had to be rebuilt almost from scratch. Land, which had been 'common' before 'perestroika', had to find clear boundaries and owners. Land became subject to taxation again. In 2008, by decree of the President of the Russian Federation, the functions were transferred to the Federal Service for State Registration, Cadastre and Cartography - Rosreestr.

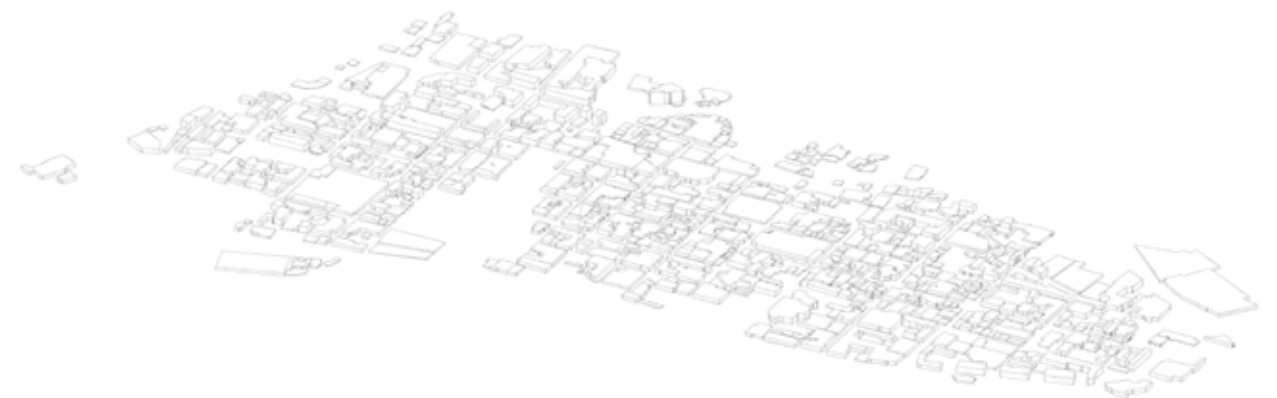
The analysis of the cadastral map of the historical centre of Krasnoyarsk (Russia) is based on the current cadastral map of the city, provided by Rosreestr, dated 2017 (<https://pkk5.rosreestr.ru/>). The city area, which was historically limited by the natural geographical boundaries, in particular, the Yenisei River from the southern and eastern part, the Kacha River from the northern part, and the railway territory, which was defined by the position of a large hill in the western part. The analysis included measuring, reading and comparing the sizes and configurations of the plots in relation to the corresponding heights of the buildings located on them, taking into account their position in the system of the city centre.

For the preliminary analysis, the plots were divided into groups according to their size: plots between 100 and 1000 m<sup>2</sup> were highlighted in red, 1000-1500 m<sup>2</sup> - in

# Metrological reading of the historical core.

orange, 1500 to 2500 m<sup>2</sup> - in yellow, 2500-10000 - in light grey, more than 10000 m<sup>2</sup> - in dark grey. The maps were then given a third dimension according to the maximum height of the buildings on them. Since the territory of the city centre is relatively flat, the 0.00 for 3D map was taken at about +154.00 (the height difference on the territory of the centre is from +151.00 to 156.00,

with a slow gradual slope (except for the river banks, where the sharp difference could be up to 10.0 m). The height of each floor has been rounded to 3 metres. Thus, the following set of graphs was devoted to assessing the correlation between the size and height of the plots and the age of the buildings located on them.



In general, the progressive increase in the size of plots over time (the larger the plots - the newer the buildings) can be seen on the cadastral map, which shows the dramatic increase in the size of plots after the 1917 revolution. This is particularly visible in comparison with the map, which shows the plots coloured according to the age of the buildings.

At first glance, the smallest plots (red/orange/yellow) are evenly distributed throughout the historic area. However, it is possible to differentiate the concentration of the smallest plots along the main historical axis of the city (now Mira Street), or in the places where the historical quarters are still located.

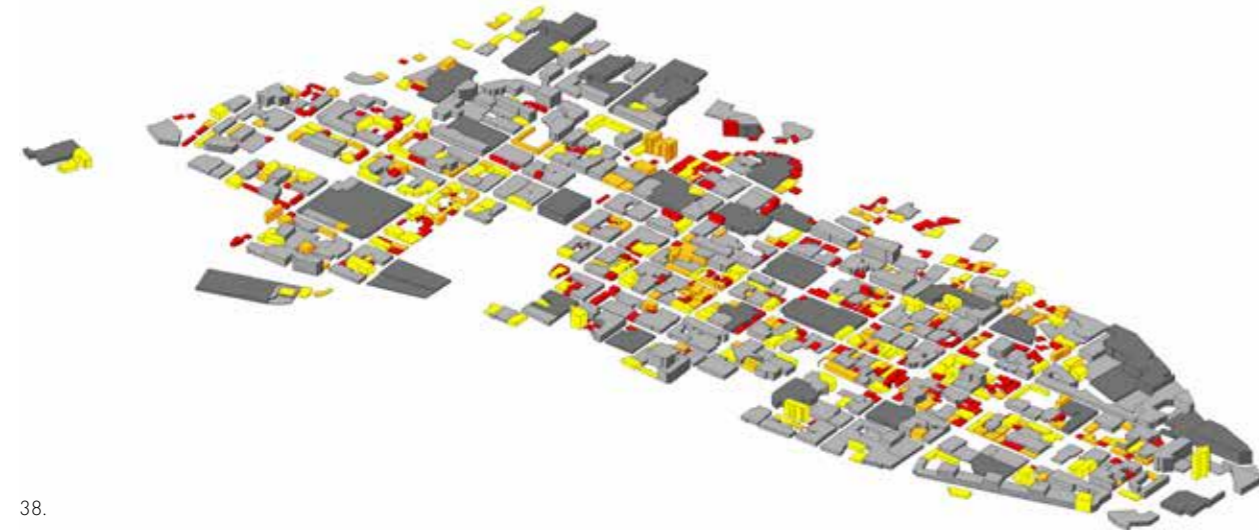
This is partly due to the densification programme of the late Soviet period, which resulted in the reconstruction and rebuilding of important historical parts on the periphery of the city centre, while the central streets remained relatively untouched:

'In 1961-1962, the Krasnoyarsk branch of Gorstroiproekt developed a project for a detailed layout of the central left bank of the city. In contrast to the existing network of small blocks of 1.5 to 4.5 hectares, the project envisages the reconstruction of the old city on the basis of a system of enlarged blocks and micro-districts of up to 20 hectares or more... Residential buildings of increased number of storeys, sectional and tower type will be located along the fronts of K. Marx and Dubrovinskogo Streets, in the depths of the micro-districts and with access to the Bridgehead

Square... Low number of storeys and high percentage of buildings (up to 33 and more), low density of housing stock and small size of blocks, which developed in certain historical conditions, cannot meet modern housing requirements' (Ruzhze, 1966).

The described phenomenon is clearly visible on the maps: the central core is occupied by 2-5 storey buildings, taller buildings are located mainly on the periphery of the city centre, with rare inclusions in the urban fabric. They were integrated during periods of densification, which occurred in the late Soviet and post-perestroika periods, when new buildings were distributed around the city centre without preserving the parameters of the historical, including wooden, districts. Economic and demographic factors were the main drivers of densification. Interestingly, on the periphery of the city centre, in the 'renovated' districts, one can still find some old buildings, stone firewalls and other fragments of historical buildings, located on small plots of land, but surrounded by larger buildings (many examples between Marx and Dubrovinskogo Streets). These small islands of old life can be considered as an important memory of the place that needs to be preserved.

The effect of changes in the terrain over time can be seen on a small scale: for example, when the position, configuration or orientation of some elements, buildings or sites is difficult to explain, it is possible to refer to the previous structure of the terrain or the previous stage of development of the urban landscape in order to understand the logic. The configurations of the sections in

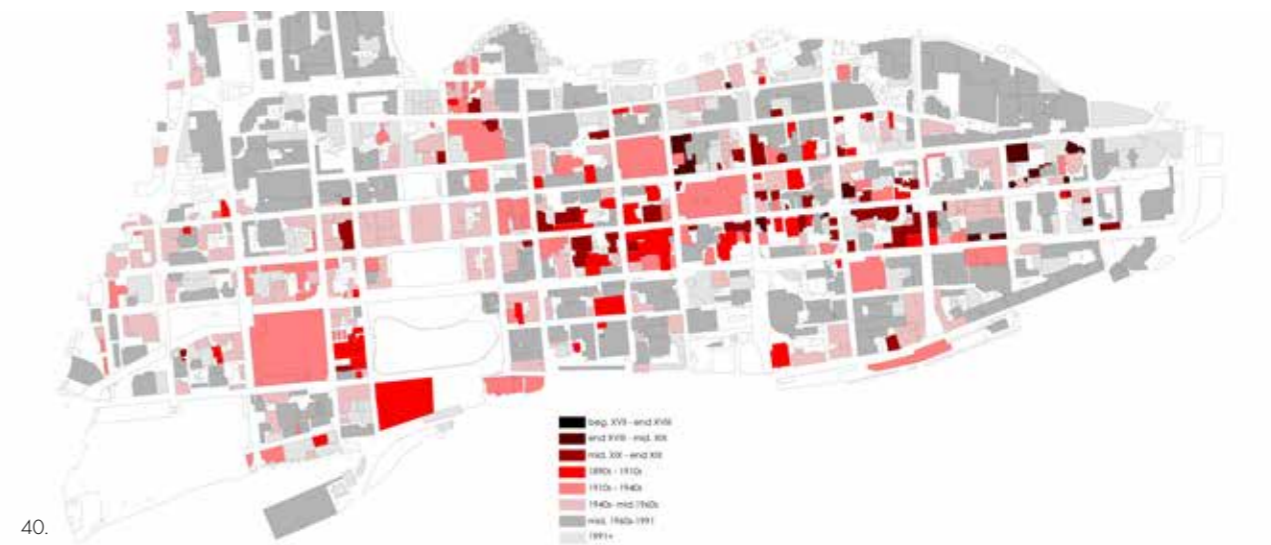


38.

Figure 38. Correlation between the size of land plots and the height of buildings located on them



39.



40.



41.

Figure 39. Progressive increase of the sizes of plots.

Figure 40. A map showing the age of buildings corresponding to specific plots.

Figure 41. Plots of 100-2500 m2.

this case may, for example, repeat the contour of a pre-existing relief, old roads. Figure 5 shows a combination of an old relief map and a modern cadastre. In the marked areas, one can observe an approximate correspondence between the relief lines and the contours of the parcels and assume that the location of the old parade ground (4) was partly dictated by the presence of a small hill. Consequently, the 'strange' configurations of the cadastral plans preserve the memory of elements of the urban environment that once existed, and pre-project studies are needed to explain this phenomenon. Thus, the memory of morphological elements is fixed in the configuration of some of the existing plots and should be preserved during the development of the territory.

In the 1990s, the privatisation process coincided with the appearance of small-scale interventions (around 100 m<sup>2</sup>), which were included in the cadastral maps during the privatisation process. Individuals were able to organise small garages for one car, warehouses and illegal small shops and outbuildings in an absolutely chaotic manner. This 'symptom of disorder', which for an architect is also an indicator of the needs of society, somewhat distorts the overall picture of the gradual increase in plot size over time.

Historically and traditionally, the size of land plots in

Krasnoyarsk in particular varied between 1500m<sup>2</sup> and 2500m<sup>2</sup>, and in Eastern Siberia in general between 400-2500m<sup>2</sup>. Analysing the urban development of the Eastern Siberia, Gorbachev noted that, depending on the wealth of the individual landowners, the plots in the blocks ranged in size from 400 to 2500 m<sup>2</sup> (Gorbachev, 2016). Similarly, Aschepkov states that 'in many villages, enclosed yards were built around the perimeter of the household premises, the yard usually having the shape of an elongated rectangle (dimensions 15 x 50 or 20 x 60 metres) and oriented with the short side to the street' (Aschepkov, 1953). Finally, describing the wooden dwelling in Krasnoyarsk, Merkulovs claimed that 'the newly designed quarters were divided into owners' plots, within which courtyards with farm buildings and vegetable gardens were provided, the plots usually had the form of an elongated rectangle with a width of 12 to 20 sazhen and a length of 32-34 sazhen' (Merkulova & Merkulova, 2013). According to the above statements, if we unite the yellow, orange and red areas in the analysis (100-2500 m<sup>2</sup>), we get the following result: it is visible that the red plots on the map correspond to the former estates, which were the main units of the city. The concentration of the smallest plots in most cases indicates the oldest preserved areas of the city and the footprints of the former estates, which constitute the memory of the place. Privatisation and the redrawing of the cadastral map after 1991 also led



Figure 42. Plots of less than 100 m<sup>2</sup>.

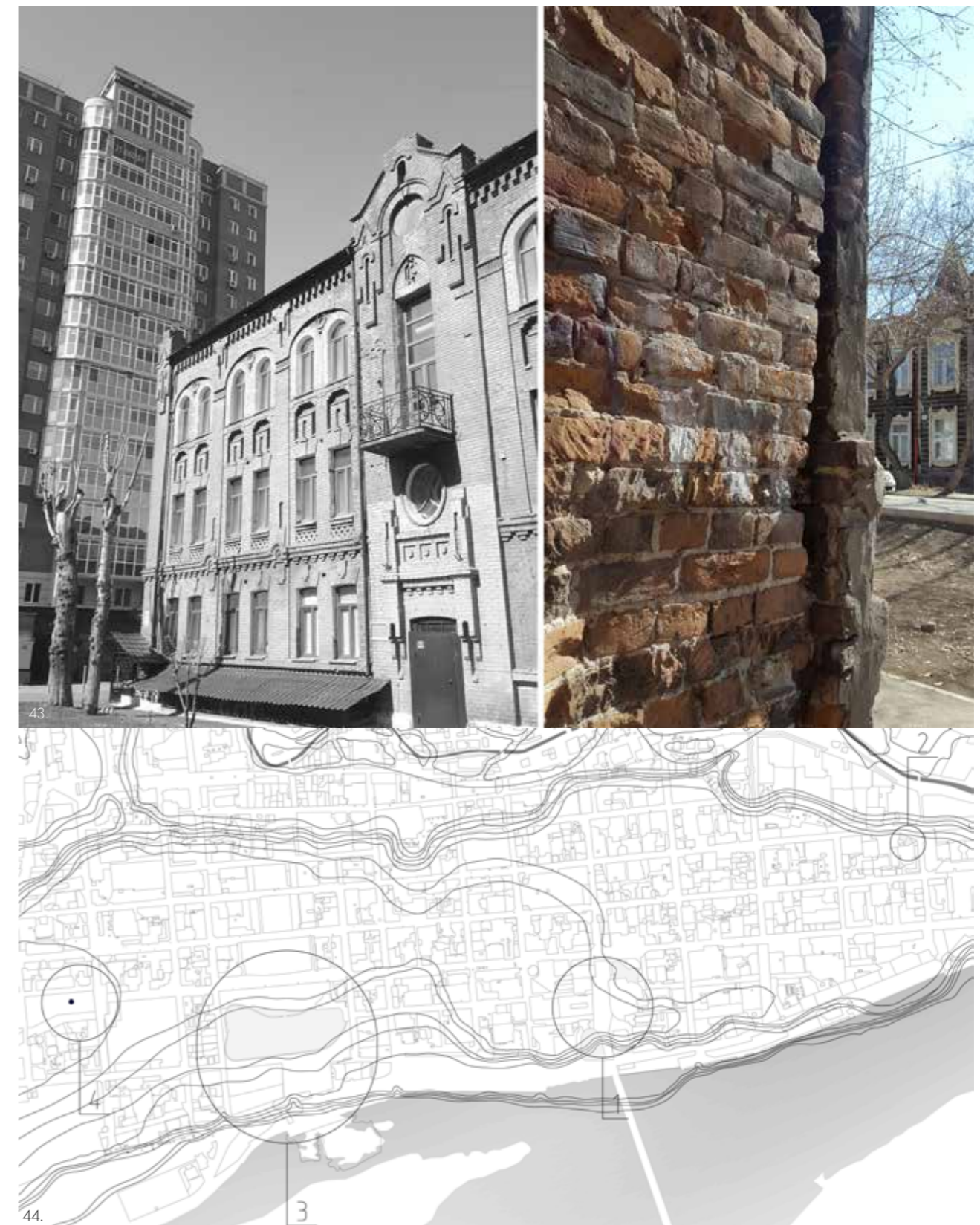


Figure 43. Contrast of old and new buildings inside the block.

Figure 44. Configurations of urban fabric and natural characteristics of the territory: historical memory.

to the appearance of very small plots (less than 100m<sup>2</sup>), drawn precisely around existing buildings).

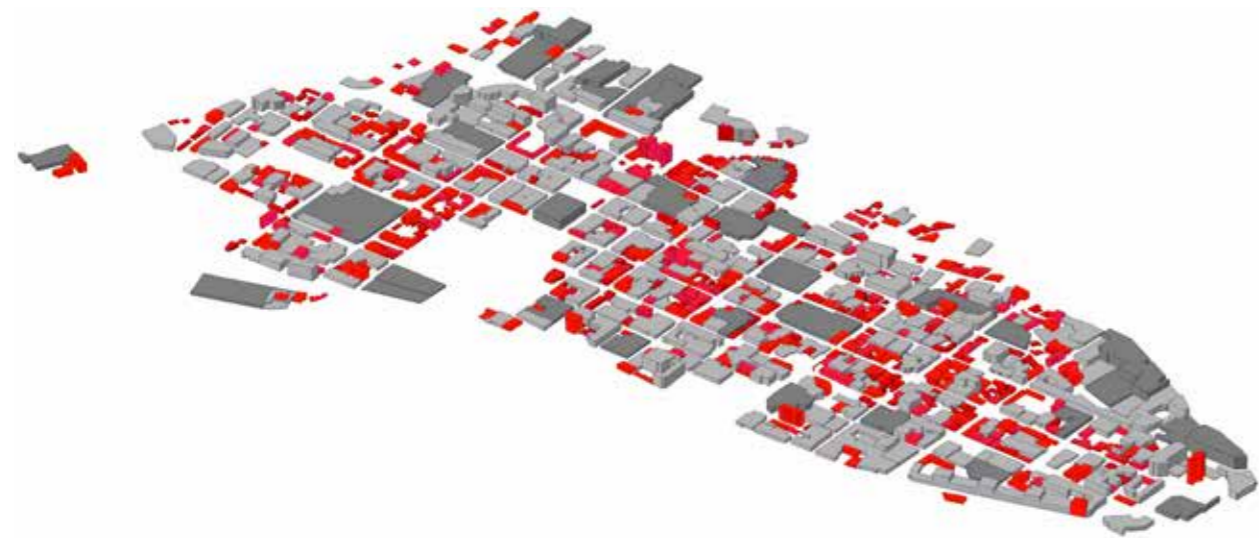
Furthermore, if we select on the cadastral map the plots containing the officially listed historical buildings, we can see that a large number of the red plots (100-2500 m<sup>2</sup>) correspond to the official historical heritage assigned to them (mostly pre-Soviet and early-Soviet buildings). For example, the quarters between Lenina and Marksa Streets, especially the plots on Kirova, Surikova, Parizskoi Communy and 9 Yanvaria Streets (the N-S streets, from left to right on the map: 7, 4, 3, 2) correspond to the earliest periods of the city's formation and emphasise the main historical axis. Interestingly, about 16% of the red plots are occupied by heritage buildings, 15% of the orange plots, and 14% of the yellow plots (in Krasnoyarsk, usually any building older than 50 years can be considered a heritage building). The whole central area contains 527 red plots (100-1000m<sup>2</sup>), 165 orange (1000-1500) and 187 yellow (1500-2500). At the same time, only 7% of the grey plots (2500-10000m<sup>2</sup>) contain historical buildings, while only 2.5% of the dark grey plots (more than 10000m<sup>2</sup>), of which 1.5% are quite young, corresponding to the middle of the last century.

The fragmentation of the cadastral map is interesting: quite often the plots are located at a distance from each other, organizing 'urban voids' of various sizes - territories for which responsibility is blurred. It is also common to find buildings without plots and plots without buildings on

the official map, and often the plots do not fit together perfectly.

In the analysis that includes building heights, it can be seen that the city centre of Krasnoyarsk is relatively 'flat' in terms of building heights compared to cities of the same size (metropolitan) and number of inhabitants worldwide. Therefore, the 'vertical scale' of the plots in the following graphs has been increased by a factor of four to make the difference more apparent. It can be seen that, with few exceptions, the oldest sites have the smallest buildings. The graphs show the progressive growth of the height levels and plot sizes of the city centre as the city grew. In the diagrams, the colour of the smaller plots is darker than the colour of the larger plots, clearly demonstrating the correlation between size and age. The last graph shows the number and location of buildings of different height categories (1 storey, 2-3 storeys, 4-5 storeys, 6-9 storeys, more than 10 storeys) in relation to plot size: the darker - the smaller.

Thus, in most cases, larger plots correspond to newer buildings. It should be noted, however, that the 'post-perestroika' period of the 1990s led to the emergence of many exceptions, for example, new 'neoplasms' such as high-rise buildings in the core of old blocks surrounded by relatively old historic buildings. This phenomenon can be seen as another 'symptom of disorder', a time when the urban organism was 'sick', a point of 'discontinuity' in continuity. Another symptom of the urban chaos of the 1990s is the number of plots of less than 100 m<sup>2</sup>. The



45.

Figure 45. Plots of 100-2500 m<sup>2</sup>.

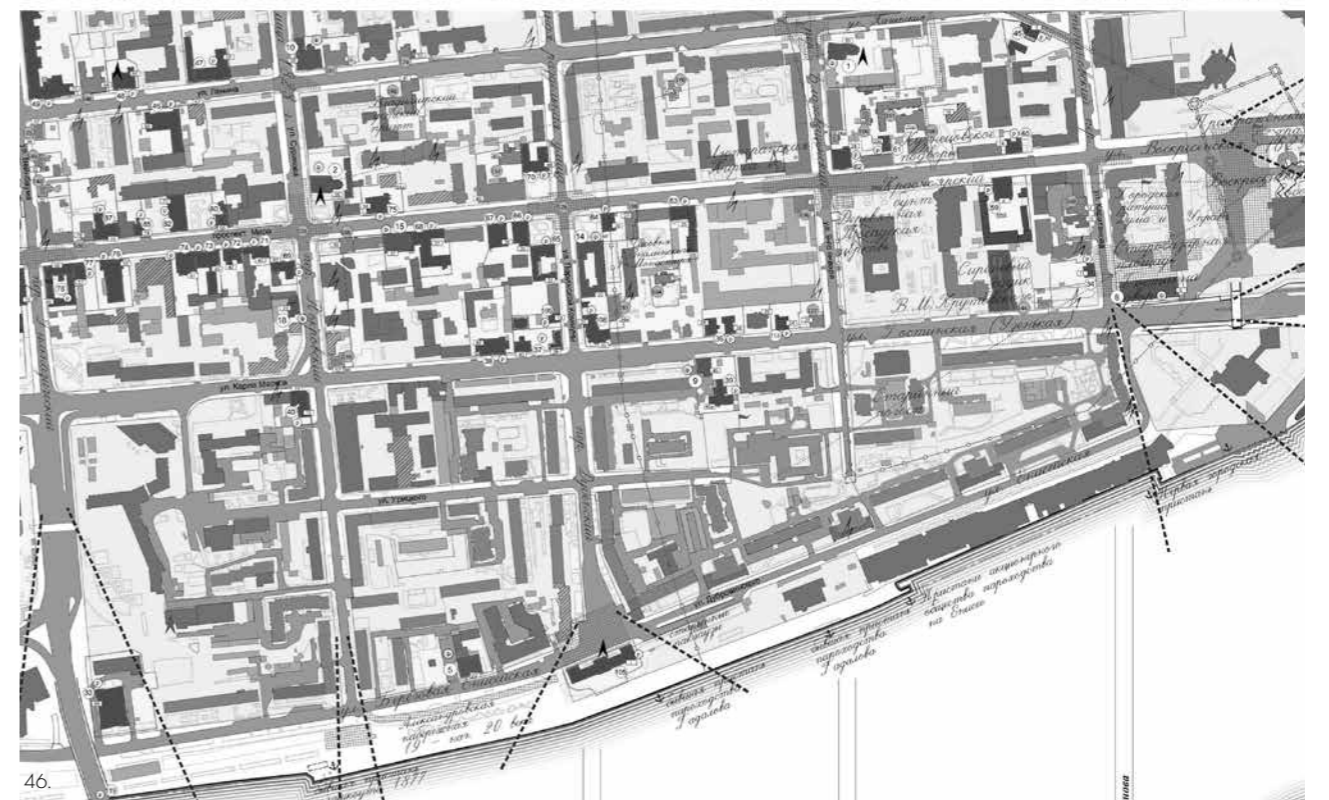


Figure 46 . Aerial photography 1967 (maps.kosmosnimki.ru) and the 2017 map (Gevel). Comparison of initial morphological scale and later changes.

third symptom is the fragmentation of the fabric: 'urban voids', the responsibility for which is not clear. On a small scale, the influence of the previous, later modified relief and the previous morphological situation is also manifested in the position, configuration or orientation of the plots, and to understand the logic it is better to refer to the previous structure of the terrain or the previous stage of urban landscape development. It is important to take these data into account as a memory of the place when designing and planning. The main morphological unit still corresponds to the configuration and size of the plot of the former estate. This largely determines the scale and rhythm of the urban environment and ensures positive inertia and continuity in the urban fabric.

The structure of the parcels is the result of the sequence of transformations, the description of the history of the part of the territory: multi-level diagrams showing the chronological sequence of structural development could be a key to the logic of a dynamic process, even if the urban fabric presents an orthogonal grid. In many ways, it was the cadastral plan that historically determined the preservation of the identity of buildings in historic cities. Urban morphology in general, and metrological analysis in particular, offer tools for reading urban form: by finding patterns in the configurations, sizes of plots and social processes associated with their formation, change and interaction, it is potentially possible to create a database of recommendations for 'reading' the cadastral map

and designing its boundaries. Thus, a designer who is aware of the patterns can assume not only the age of the design plot, the moment of its creation, but also the reasons that formed it, such as the changed terrain, roads and buildings that have gone in the past, other 'aspects' of morphological memory, for this one does not need to completely reconstruct the history of the place. The parcels set the rhythm and scale of the urban environment. Thus, for example, a designer interested in preserving the continuity of the urban fabric and the scale of the environment may, after receiving a design brief with a set of several interlocking sections, decide not to merge the two small plots into one or to capture their past configurations in the image and form of the projected object.

Thus, in this work the effectiveness of metrological analysis, previously used for historical European cities and now proven to be relevant all over the world, was successfully tested on the fabric of a traditional Siberian city. The use of metrological analysis to identify the internal logic of changing relationships between the interrelated elements of the organism "city" is potentially able to inform architectural practice on the way to preserving the identity of cities, and is recommended for further use as a method complementing typological-processual approach in urban morphology. Recommendations for further research include the study of the genesis of the cadastral plan in relation to the accompanying data on landowners, changes in the nature and forms of ownership, and the general socio-political situation.

In order to conceptualise the identical urban forms, the further comparative analysis is required.



47.

Figure 47. Sites containing buildings-monuments.



48.

Figure 48. Sites containing buildings-monuments.



Figure 49. Sizes of plots in relation with the ages of the buildings, located on them:  
 a. 1628-1850  
 b. 1628-1896  
 c. 1628-1920  
 d. 1628-1940  
 e. 1628-1964  
 f. 1628-1991  
 g. 1628-2020



Figure 50. Heights of buildings in relation to the sizes of plots and their location:  
 a. 1 floor  
 b. 2-3  
 c. 4-5  
 d. 6-9  
 e. 10+

Thus, Caniggia's typomorphology is relevant as a basis for conceptualising the urban form of the Siberian city, but should be refined and complemented by the following urban phenomena specific to Krasnoyarsk. The existing process-based typology should be complemented by the principles of the formation of planned cities (Moudon, 2019; Després et al, 2015; Larochelle and Gauthier, 2003; Larochelle, 2002; Larochelle and Lamandi, 1999; Després and Larochelle, 1996), the basic terminology by adding definitions and methods derived from the other schools of urban morphology, such as metrological analysis (Chow 2002; Serra, 1990; Slater, 1990) or definitions from the historical-geographical approach (Conzen, 1960; Whitehand, 2010), such as fringe belt or morphological regions; the concept of collage (Rowe and Koetter, 1978) plays an important role in the conceptualisation. In Krasnoyarsk, morphological micro-regions emerged based on the historical urban structure and formed the primary elements of the hyper-grid (Moudon, 2016). The super-grid of continuous movements, connecting the city centre with the new regions, was incorporated into the existing network of historical streets. In the selected case study, the principle of organisation of the urban fabric was transformed over time, first from 'organic elements grouped in an organic composition' to 'organic elements grouped in a serial composition' and finally to 'serial elements grouped in a serial composition' (Caniggia & Maffei, 2001). The first step was defined by the spontaneous typology, while the last step is defined by the Soviet top-down, statistically based type.

An interesting phenomenon can be observed: the stability of the settlement type even after a dramatic transformation of the whole settlement. The strategic logic of the first spontaneous settlement was preserved in the new regular plan, which changed the spontaneous urban structure: the number, position and hierarchy of streets, the main direction of development, the positions of the main 'nodes' and 'poles', but interpreted them in a regular way. The embodiment of the type can bring different forms in reality. Another important parameter is the degree of polarisation of the structure, which reflects the social structure of the society: in the highly polarised city, where functions are maximally concentrated around the main pole, one can observe the centralisation of power and the dominance of big business, while in the more democratic structure and reliance on small businesses, polycentricity and dispersion of the structure are observed, the

priority of the pole concept over the node concept is less clear. This parameter has been changing in the Siberian city over time. Also, a new system of social meanings or a new ideology always brought new specialised buildings placed from top down and systems of values that almost immediately influenced the urban form. The city is also characterized by such specific urban phenomena as linear polarity, or characteristic of building roads, which provides growth in depth to be both parallel or orthogonal to the matrix.

The correlation of volumes and voids in the urban structure showed the prevalence of voids. The Siberian tradition of building cities of extremely low density, the sensitivity of citizens to privacy, and the high contrast between interior and exterior spaces are still visible today, especially in comparison with dense European cities. The number and variety of voids are characteristic of the Siberian city and should be conceptualised and typified separately in further research.

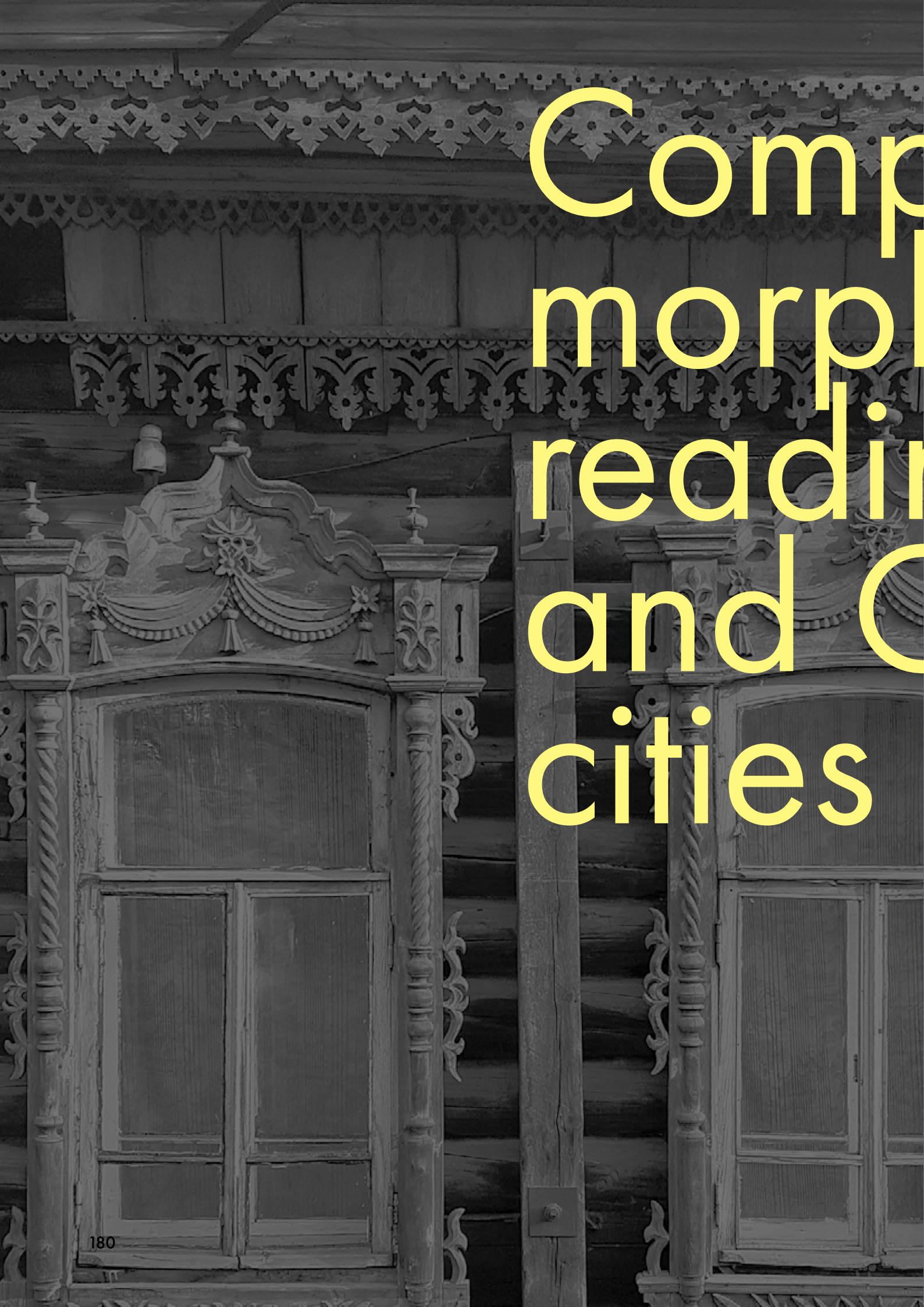
The completely introverted concept or type of a 'nest' or wooden fortress, from which Krasnoyarsk began to develop in 1628 and which later became a pole of a 'great' walled city, was fixed in the ideas of city walls, towers, gates and later fences. It can be assumed that the concept of a fenced island of development was gradually transformed from the general idea of a city (ostrog, fortress) into the idea of an 'individual fortress' - a basic type of manor house with important concepts of privacy and protection, such houses were united in quarters consisting of fenced estates located side by side. Each estate resembled a 'fortress' - the introverted, fenced-in courtyard house, while the block was a collection of attached small fortresses, completely surrounded by fences, non-transparent, with zero permeability, perceived as a unit with a less important and changeable internal structure. Streets and 'public' spaces were more the natural 'gaps' between residential 'nests' - neighbourhoods of fenced-in estates. Interestingly, the same phenomenon of 'gated communities' is still visible in the city: local urban identity was formed and maintained at the intermediate or 'relational' level - the block or community level derived from the nest concept, or the block of adjoining spontaneously organised gated estates. It is interesting to note that even after the revolutionary changes of the



twentieth century, the habits of organising the dwelling can still be seen in the structure: From the entrances to the dwelling, which are almost never located on the side of the main road, occupying a more private courtyard area, to the sensitivity to the concepts of 'private-public', 'mine - someone else's' and the need for a large number of storage spaces (balconies, garages and cellars were replaced by barns and pogrebs, characteristic of a peasant estate), the typical load-bearing cell was 6x6 m, derived from the ancient srub.

Morphologically, the traditional type of house presupposed a certain freedom of transformation (the addition of cells, for example, a 'log cabin'), but it is difficult to say that transformations prevailed in the city, on the contrary, wooden buildings were often completely replaced, for example, by stone ones, creating a mental habit of interchangeability. To this day, the only thing that has remained is the 'step' and the size of the plots, the rhythm of the buildings. However, the new type of building could have some features of the previous type. In the construction of stone dwellings, especially in the first phase, it is possible to observe the general techniques of composition and layout, which were completely borrowed from wooden architecture. However, the appearance and structure of the new buildings tended to be influenced by both professional architecture and vernacular traditions. The way the rooms were arranged around the entrance hall, for example, the arrangement of the huts 'in two svyaz', the presence of a cellar and high verandas - typical features of wooden architecture - were used in the construction of stone houses. As in wooden houses, the main room was always oriented towards the street, simply because the house was attached to it (on the side or yard façade), with the extensions with stairs, storerooms, corridors, covered by its roof. The principle of a 'compact' plan is inherent in most villas. The new houses inherited some traditional features, such as the size of the cells, windows, roof types, etc., but they could be applied to the new types of houses in a new way, reconsidered.





# Comparative morphological reading: Siberian and Canadian cities

Thus, the second chapter of the present work is devoted to the definition of the intrinsic characteristics of urban forms, the identification of main grammatic codes and their interrelations, and the determination of grammar and syntax. In the previous subchapters, the basic local language or grammatical code was formulated on the basis of the refined method of typomorphology. A number of specific local forms were revealed. According to Umberto Eco, codes (cultural, architectural, linguistic, etc.) are a structure that acts as a fundamental rule in the formation of specific messages and can be compared with each other on the basis of a common, more comprehensive code (Eco, 1968). Next, different or relative codes, grammars and syntaxes can be compared on the basis of their intrinsic characteristics (defined by typomorphology), possibly dictated by a common code. Two settlements will be compared on the basis of morphological similarity for an in-depth study of similarities and differences, and in this case the similarities will probably speak to a common code specific to a wider cultural area, and perhaps to humanity as a whole, and individual features will demonstrate local identity.

Detailed factor by factor comparative morphological reading complemented by relative theories as in the previous subchapter was the main method of the following part. Scaled historical maps of Krasnoyarsk and Quebec were progressively superimposed on the current cadastral maps of the historical centres of both cities in order to define the stages of urban development. The sets of 16 maps of Krasnoyarsk and 28 maps of Quebec were provided by local archives, museums and universities. The maps were rescaled and distorted to ensure the graphic unity and consistent language of the maps, the irrelevant information was removed from the maps to highlight the essential features of the urban form evolution of the cities. The importance of a careful redrawing of the original cartographic sources was demonstrated by the many specificities of urban development found in the process of redrawing: the method is considered by researchers as an effective analytical tool (Oliveira and Pinho, 2006).

History is inscribed in urban tissue: the understanding of logic and specificity of a dynamic process (Caniggia and Maffei, 2001) helps to develop heritage cities, which address local cultures and identities. Methods of urban morphology offer an opportunity to develop holistic approaches to sustaining heritage cities, which address local cultures and identities, through analysis of the evolution of place and its interpretation in spatial and architectural practices. Particularly, the dialectical relationships of elements of urban form on different scales or instances of the same element can be investigated, even when the urban fabric presents an orthogonal grid. In fact, in these cases, we can recognize the process of transformation of the urban fabric throughout the hierarchically produced order between the roads that have come to be determined over time (readable in the arrangement of the entrances of the buildings, in the distribution of commercial activities, the height of building and largeness of the street). However, there is a difficulty in finding the key specificities of a particular piece of urban fabric, especially when 'reading' urban form includes merely detection of primary codes: grammar and syntax. A comparative reading of dialectical relationships of elements of urban form of cities, which emerged in similar conditions, may potentially help to reveal those specificities. Indeed, different or relative codes, grammar, and syntaxes can be compared with each other based on their intrinsic characteristics, possibly dictated by a common code.

Two settlements can be compared on the basis of morphological similarity for an in-depth study of similarities and differences, and in this case the similarities will probably speak of a common code specific to a wider cultural area, and perhaps to the whole of humanity, and individual features will demonstrate local identity. Moreover, different settlements in different parts

of the world can be studied on the assumption that, given a similar context - geomorphological, cultural, climatic, even temporal - developed within the same period, they may have a similar morphological code. The subchapter illustrates the evidential power of the comparative method by presenting the intermediate results of the ongoing comparative morphological case study of the development of an urban form in the colonial cities of Krasnoyarsk (Siberia, Russia) and Quebec (Canada), both of which were founded in the 17th century in a similar climate and have clear morphological similarities and obvious differences. The former could speak of objective characteristics inherent to the construction of cities, regardless of the socio-political and economic context, while the latter could point to the unique specificities that are most characteristic of the place in question.

Primary historical studies of both cities, as well as numerous maps, already exist and have been published for Krasnoyarsk (Bykonya, 2013; Merkulova and Merkulova, 2013; Gevel, 2012; Tsarev, 2012; Ogly, 1980; Ruzhze, 1966, etc.) and Quebec (Després et al., 2015; Larochelle and Gauthier, 2003; Larochelle, 2002; Larochelle and Lamandi, 1999; Després and Larochelle, 1996; etc.) and have largely informed this comparison. This chapter focuses on form reading, guided by the internal constraints and potentials of the morphological system, and also follows the context of this formation.



Figure 51. (1). Quebec city (542 298 people) and Krasnoyarsk city (1 066 934 people): locations. (2) Quebec (1) and Krasnoyarsk (2) city centres (the area of research, in scale).

## Connection with nature

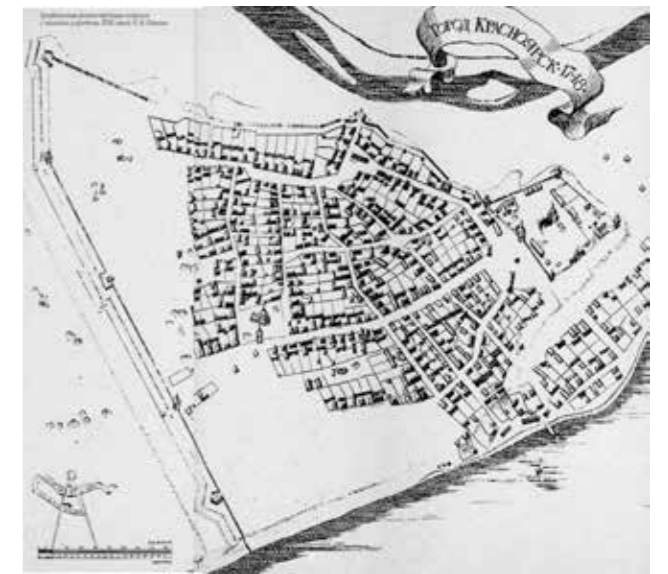
Quebec is a city in the province of Quebec, Canada, located on the north bank of the great Saint Lawrence River, near the confluence with the Saint-Charles River. The historic core of Quebec is located at the top and foot of Cap Diamant (the district of La Cité-Limoilou is divided into upper and lower town), on the eastern edge of the plateau Cape Quebec - Quebec Hill. In colonial times, a fortification was built on the Plains of Abraham, at the south-eastern end of the plateau, while the working-class settlements of Saint-Roch and Saint-Sauveur were built at the northern foot of the cape. (Interestingly, similar segregation and social division could be seen in Krasnoyarsk at the time). To the north of the hill was the St Lawrence plain, rich in arable land, and beyond this valley were the foothills of the Laurentian Mountains.

Krasnoyarsk is a city in the Krasnoyarsk Territory of Russia, located almost in the geographical centre of the country, on both banks of the Yenisei River at the junction of the West Siberian Plain, the Central Siberian Plateau and the Sayan Mountains, in a gorge formed by the northernmost spurs of the Eastern Sayan. The Yenisey River flows through the city from west to east. Thanks to the Krasnoyarsk hydroelectric dam, the Yenisei never freezes in winter and the temperature in summer never exceeds +14°C. To the south and west, Krasnoyarsk is surrounded by forested hills averaging 410 metres above sea level; to the north, except for the Drokinkaia Sopka hill, it is generally flat, with forests to the northwest and agricultural fields to the north and east. The forests close to the city are mostly pine and birch; further away, aspen dominates in many areas. The mountains west of the city are dominated by fir and Siberian pine, while the forests to the south are mostly pine, fir and aspen. Krasnoyarsk is one of the most compact megacities in Russia. From west to east, the city is about 41 kilometres long (on the shortest route along the streets), from north to south - almost 37 kilometres. The main river near the centre of Krasnoyarsk is the Kacha, which flows through the historic centre of the city. Therefore, similar to Quebec, the core of Krasnoyarsk is located on the eastern part of the high terrace near the confluence of the Yenisei and Kacha rivers. Urban morphology begins the study of the city as an organism from the territory chosen by the first inhabitants and which inevitably defines the first man-

made elements (Caniggia & Maffei, 2001). Similarly, the choice of location for Siberian cities in the XVI-XVII centuries (the so-called ostrog) was dictated by strategic considerations and favourable conditions for agriculture, trade and fishing, as evidenced by literature. That is why they were often built on favourable, elevated places, at the junctions of small rivers with larger waterways. 'The Yar was a pleasant place, high and beautiful... there is a forest nearby, and there are many lowed places and hay mows' (Merkulova & Merkulova, 2013, p. 8).

As can be seen from Figure 2, the locations of Quebec and Krasnoyarsk have many similarities in this regard. The first fortresses were located on high river banks, near the confluence of two important rivers, one of which served as an important waterway (the Yenisei in the case of Krasnoyarsk and the Saint Lawrence in Quebec), connecting the new fortresses with the other remote settlements. This type of location provided good observation and protection, which were necessary for the functioning of colonisation, inscribed in the idea of ostrog in Krasnoyarsk and fortress in Quebec. In 1608, Champlain built his 'abitation' on the banks of the St. Lawrence River at the foot of the plateau, near the Saint-Charles River, where the width of the river decreases to only one kilometre, the smallest distance observed between the two banks on the scale of the river (Larochelle & Gauthier, 2003).

The climate of both Krasnoyarsk and Quebec is humid continental; both have four distinct seasons, short springs and autumns, warm or hot summers, cold, windy and snowy winters, although Krasnoyarsk has lower average winter lows. Humidity is significantly higher in Quebec (1190 mm vs. 450 mm); snow usually remains on the ground in both cities from mid or late November to mid or late April; the highest temperature recorded in both Quebec and Krasnoyarsk was officially +36; the coldest was -36.7°C in Quebec, -53°C in Krasnoyarsk. So the climatic characteristics are quite similar, except for the winter temperatures and humidity. The first fortresses of both cities were built on high terraces near the confluence of two important rivers, one of which served as an important waterway (the Yenisei in the case of Krasnoyarsk and the St. Lawrence in Quebec), connecting the new fortresses with the important outlying settlements.



The first maps of Quebec show the permanent historical settlement on the lower terrace of the cape, right under the cliff on the river bank. The old map of Krasnoyarsk shows the existence of peasant settlements on the lower shore, which looked more temporary and later disappeared (Fig. 5). Nowadays, it is interesting to note that both cities are united by the idea of locating large park belts along and near the banks of the main river.

In general, the orohydrographic system played a decisive role in the choice of the location of Quebec (Larochelle & Gauthier, 2003). At the beginning of the XVII century, the Yenisei River was the only route to eastern Siberia, connecting the major waterways of the Ob, Yenisei, Baikal and Lena (Bykonya, 2013). Similarly, Courville shed light on the settlement strategy of the Compagnie des Cent-Associés, which devised a linear mode of implantation along the river, intended to expand step by step from the three equidistant 'bridgeheads' of Quebec, Trois Rivières and Montreal (Courville, 1981). The St. Lawrence is the only axis of penetration into the interior of the continent from the North Atlantic; but beyond its undeniable strategic value, which derives largely from this peculiarity, from a practical point of view, the river and some of its main branches will constitute the only access routes to the settlement sectors of New France, and this for many years. Larochelle and Dubé (1993), in their study of the island of Orléans, have shown how the occupation of rows clearly testifies to the role of the St. Lawrence as a route generator.

The authors noted that the division of the territory into elongated lots with the small side and the first dwellings at the edge of the shore was intended to ensure the only optimal access from the river, a waterway. Thus, the authors observed a decisive influence of the hydrographic network on the way of dividing the territory, which seemed to be even more influential than the topography. Interestingly, in Krasnoyarsk the division of the land didn't correspond so clearly to the direction and configuration of the rivers. Moreover, the first centuries of its development were characterised by the peripheral emptiness of the riverbanks. According to Tsarev's research, this could be related to the characteristics of the soil (predominantly sandy) (Tsarev & Zakharchenko, 2017).

However, the division of the land did not only correspond to the configuration of the rivers, but also took into account the prevailing wind direction in both cases. Larochelle & Gauthier mentioned that the orientation of the land according to a pre-established direction is called rhomb de vent (or rumb, or rhumb), which was established to fix the general orientation of the lands of generally perpendicular to the St. Lawrence River (Larochelle & Gauthier, 2003). Thus, the northwest-southeast orientation of the lands was determined by the direction of the wind. In Krasnoyarsk, the division of plots in the historical core was perpendicular to the river, but not to the prevailing wind direction in order to avoid 'wind corridors' in winter. In this respect, an interesting case of the Krasnoyarsk territory is

Figure 52. Quebec and Krasnoyarsk: mid. XVIII cent.

the structure of the military camp, the orientation of which corresponds to the orientation of the grid of the historical part of Krasnoyarsk: an orthogonal grid of main streets didn't correspond to the directions of the main winds, which ensured that the Siberian winds in the cold period would not be enforced. In contrast, the structure of the surrounding streets of the city ignores the camp (Belova et al. 2020): it corresponds to the main direction of the winds, which makes this area extremely uncomfortable. This is due to the proximity of the runway of the former airport, which logically followed the direction of the main winds and later dictated the orientation and configuration of the main streets built in place of the runway when the airport was closed. This is a real anomaly which, by contrast, confirms the existence of a dominant rule or tradition and illustrates the efficiency of the orientation of the streets in the historic centre. In addition, this orientation of the plots in Krasnoyarsk allows the most efficient west-east orientation of the houses, which makes it possible to collect the necessary amount of solar energy.

The first maps of both cities show the correspondence between the urban form of settlement and the initial relief: being situated on a natural platform, the overall contour of the historical core of the cities follows the natural boundaries and their configuration in both cities (river banks, cliffs, slopes). As already mentioned, compactness in the organisation of Siberian Ostrogoths was also dictated by the external environment and harsh climatic conditions. Until the end of the XIX century Krasnoyarsk was developed in a relatively compact way on the existing land on the natural terrace, limited by the natural boundaries (the present city centre). On the contrary, at the beginning of the XIX century Quebec began to grow beyond the natural platform before it was filled in. Thus, it could be said that the compact development of Krasnoyarsk doesn't correspond to the way of development of Quebec. Interestingly, the size and scale of the first settlements were also comparable, corresponding approximately to the area with a radius of 500m. It could be assumed that this distance was convenient for the first settlements in similar conditions. The current total area of Quebec is more than 480 km<sup>2</sup> (more than 540 inhabitants), while in Krasnoyarsk it is 348 km<sup>2</sup> (more than 1 million inhabitants).

Krasnoyarsk is thus historically a more compact city, currently due to its infrastructural peculiarities (central heating system introduced in Soviet times). At the same time, the agricultural orientation of both cities required larger plots of land for housing.

The basis of Krasnoyarsk of the first centuries was a free (spontaneous) layout of the territory, taking into account its terrain and functions. In case of later planned Krasnoyarsk, the structure of the settlement could be described as 'organic elements grouped in a serial composition', but still taking into account the natural features of the territory. The map clearly shows the correspondence between the urban form of the settlement and the original relief and landscape in general and in detail. For example, in 1775 the town probably stopped at its western boundary, where the completely flat terrace ended. On a smaller scale, the configuration of some plots in Krasnoyarsk still reflects the configuration of the previously existing landscape. Thus, the memory of previous landscapes is embedded in the configuration of some of the current plots.

The correspondence between the urban settlement form and the initial relief can also be seen in detail: for example, the location of vaults in Quebec and 'podklet' houses in Krasnoyarsk was linked to the topography between a lower and a higher level (Santos & Dufaux, 2020). The altitudes of the city centre of Krasnoyarsk are as follows: the highest point of the plateau is about 156 metres; the depression in the immediate vicinity of the Yenisei River is less than 137 metres; the height of the platform generally varies between about 147 and 155 metres. The nearest hill where the observation point was located is about 100 metres higher than the lower riverbank. Similarly, the urbanised sector of the Quebec region occupies the entire space of the Quebec plateau, cut by the river channel to the south-east and the Cap-Rouge-Limoilou to the north-west; the highest point of the Quebec plateau is 105 metres; the Cap-Rouge-Limoilou depression is less than 30 metres overall and 15 metres in the immediate vicinity of the Saint-Charles river; the height of the erosion platform varies between approximately 60 and 90 metres (Larochelle & Gauthier, 2003).

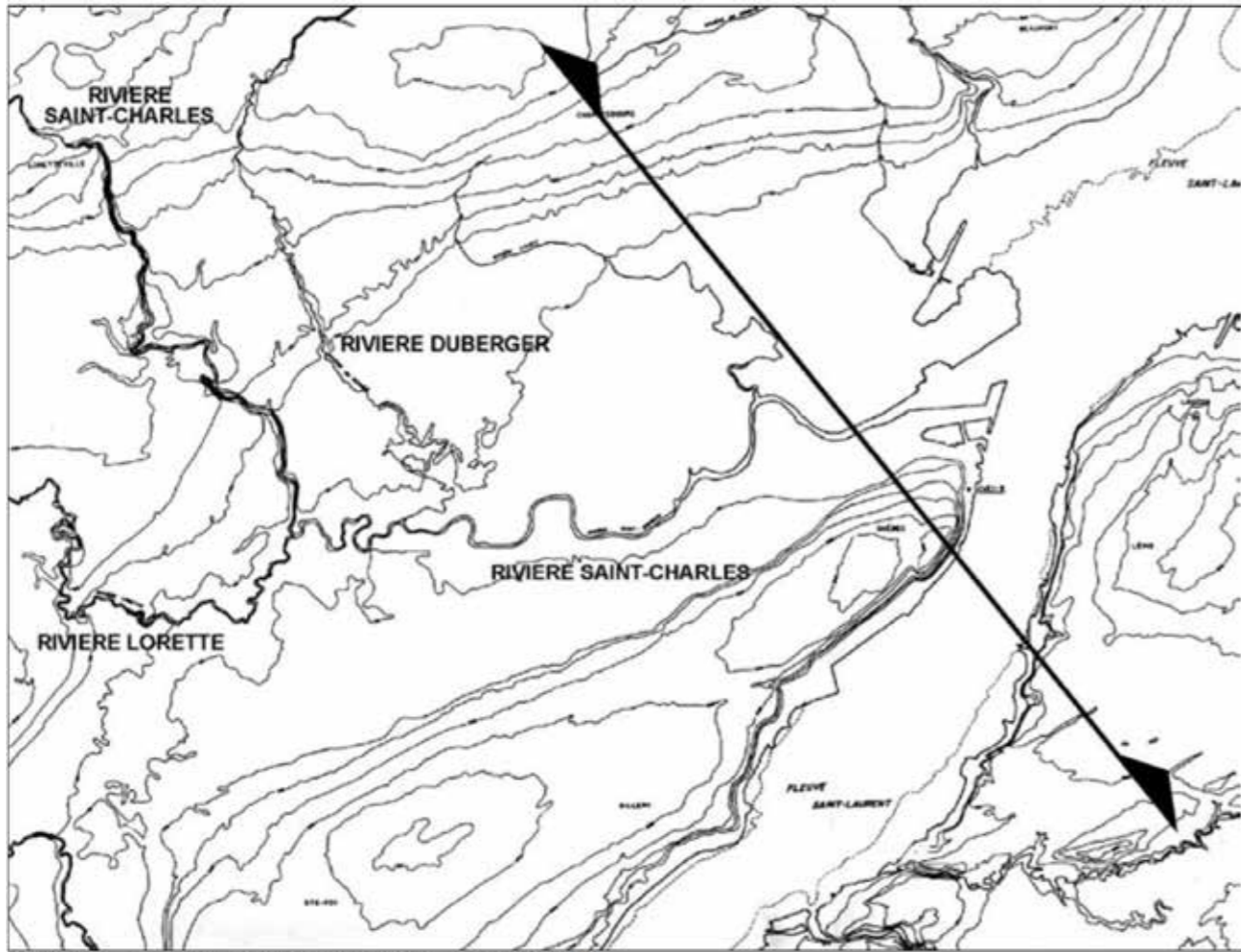
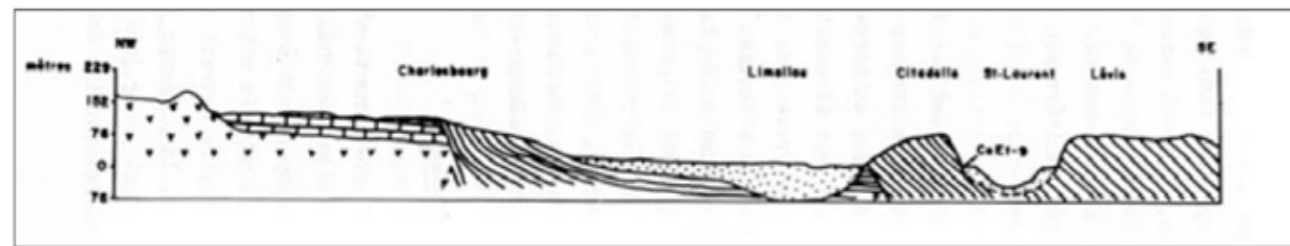


Figure 3.1 Le système orohydrographique de la région de Québec Painchaud, 1993



\*(Larochelle & Gauthier, 2003)

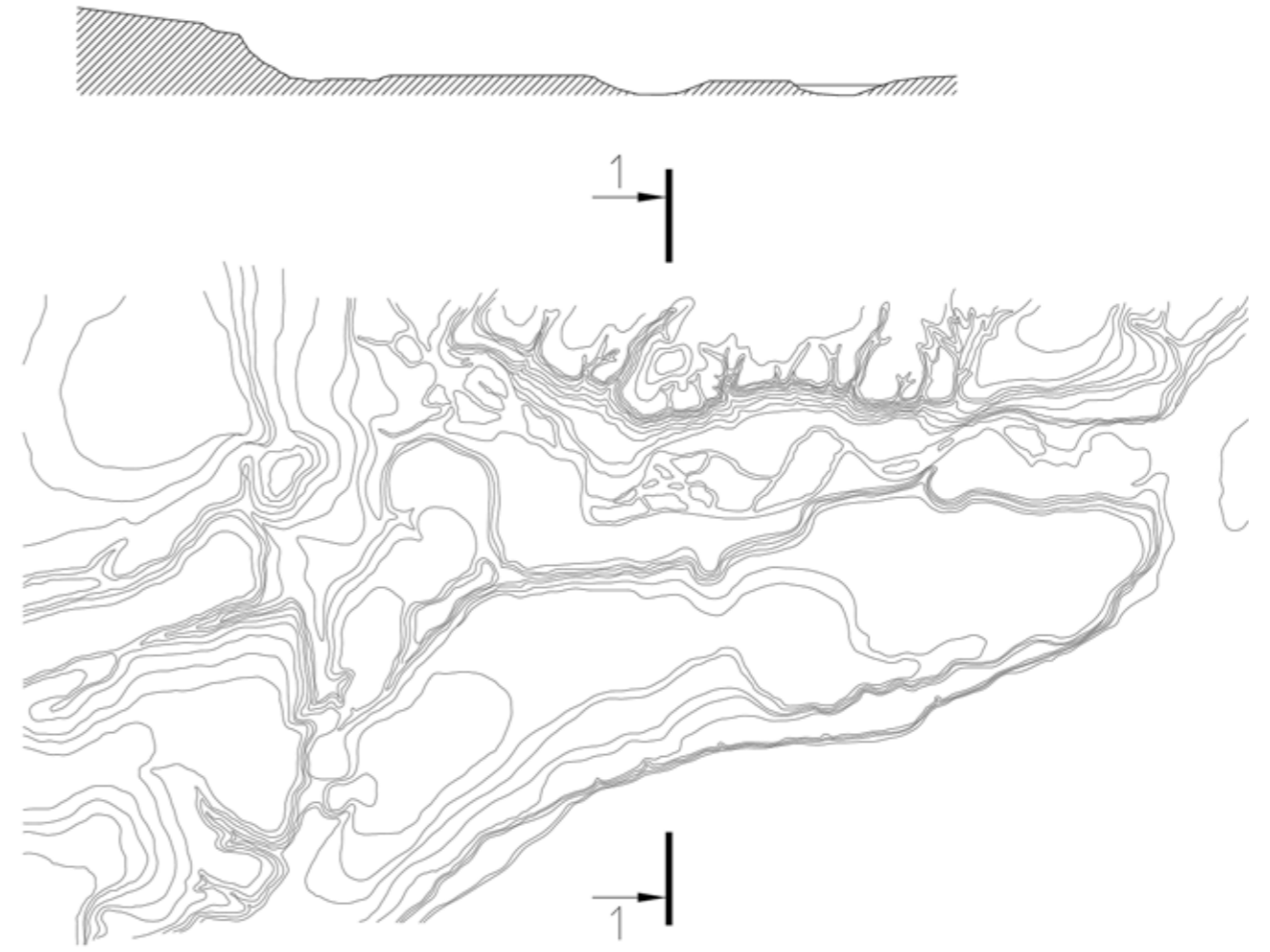


Figure 53. a - Quebec (retrieved from (Larochelle & Gauthier, 2003) and b - Krasnoyarsk terrain and section); c - Military camp in Krasnoyarsk city; d - Land division in Quebec.

## Polarities, antipolarities, nodes

Both cities began as colonial fortifications and trading centres: maps showed that the poles were filled with corresponding functions - trade, defence, ideology (religion), administration - and reflected the collective mission and values of state significance. In both cities, the main polarity is still associated with the site of the first settlement; it has a symbolic value as a founding site, directly influenced by the changing collective systems of meaning. In Krasnoyarsk, this is the site of the first fortress, which unfortunately hasn't been preserved. Nevertheless, the polar functions have survived through time in a complex of specialised historical buildings (such as the cathedral and its annexes, the museum, the castle, the town hall, etc. in Quebec), which embody the system of collective social meanings. Larochelle & Gauthier noted that in Quebec, 'the pole which represents the centre of the centres - the Place d'Armes' (Larochelle & Gauthier, 2003). The same situation can be found in Krasnoyarsk. The map clearly shows that the first fortress was transformed into a main pole, where initially the intersection of the main roads leading to the main entrances of the city was located. After the Great Fire and the subsequent introduction of a regular grid in Krasnoyarsk, the configurations changed, but the general principle remained the same, leaving the polar function and location unchanged: the square on the site of the former fortress, at the confluence of the Yenisei and Kacha rivers, remained the cultural, administrative and commercial centre of the city. Later, the square survived through antipolar/polar transformations and the replacement of specialised buildings due to the changing collective systems of significance (for example, the Soviet power denied religions and demolished churches).

Today almost all the former buildings in Krasnoyarsk have been lost, but the polar function returned at the end of the XX century, when the new complex of specialised buildings was built and gained special significance. The main polarity reacted to the social changes in a quite direct way, for example, in comparison with the system of housing types or road system. The main historical pole thus demonstrates the sustainability of the 'polar' function and behaviour, which has survived despite multiple changes. At the same time, significant ideological changes in the society are

readable in the sequence of changes in the polar places: 'after 1791, with the organization of the Canadian colony divided between Upper and Lower Canada that the British rulers began to invest in new buildings. Official buildings were designed and constructed: an Anglican cathedral, a courthouse, new fortifications and the rebuilding of the Château Saint-Louis for the governor. Each building bore witness to the culture of the new political and commercial elites' (Santos & Dufaux, 2020, p. 30). Santos & Dufaux noted: 'Quebec experienced strong growth in the first half of the 19th century and remained the most important city in Canada, both as the first port, a commercial centre and a political capital. The lower town, around the Place Royale, developed as a result of the private initiatives of various merchants who built their quays and warehouses by filling in the river. This growth stopped after 1860' (Santos & Dufaux, 2020, p. 30). When Quebec City became a secondary city in Canada, it had to reinvent itself as a heritage core; 'the old capital', exceptional in North America. This in turn influenced the main core, resulting in the special attitude and preservation of the fortifications to attract tourists (Santos & Dufaux, 2020).

Once the place was morphologically formed, its characteristics prevented further change: 'At the urban scale, the spatial segregation fit the class and ethnic division introduced by the British colonial order. Finally, it provides a clue to the conservation of the Place Royale area. The small plots, the narrow streets, and the mature buildings over three to four storeys, made transformation and expansion of larger structures, like warehouses, more difficult than in other part of the Lower town. These morphological limitations preserved an historical built form regardless of the political changes and the economic developments' (Santos & Dufaux, 2020, p. 39). Importantly, in both Quebec and Krasnoyarsk, the location of the vanished first settlement or fortresses corresponds to the concept of the main 'polarity', which has changed under the influence of socio-political and cultural changes.

However, there are some differences in the development in and around the main polarity. For example, the importance of the upper and lower towns near the main pole was different in two cities. According to the maps, the lower bank of the Yenisei was less important than the upper town and currently has a public park or embankment function. In

Quebec, on the other hand, Santos & Dufaux claimed that between 1666 and 1681 the population was concentrated near the Habitation. The dense place with concentrated functions was further developed in the XIX century, survived, densified and rebuilt after the crusades and fires. When Quebec became heritage city, 'The lower town enjoyed the growth of the financial services and maritime activities which lead to the construction of new buildings or the densification of existing ones. After 1910, the fire at the Champlain Market and the establishment of the new railway station far from the harbour marked the beginning of its decline. By the 1920s, Place Royale benefited from a first heritage recognition with Notre-Dame des Victoire church and the square itself' (Santos & Dufaux, 2020, p. 30). In the post-war context, the significance of the heritage was enhanced and contributed: 'The restoration project of the Place Royale contributed to the emergence of a new collective identity. The site commemorated French origins and the restored buildings illustrated a form of national renaissance in the context of decolonisation. Moreover, the dense urban architecture of the Place Royale, built in stone, also appears as a symbolic counterweight to the contemporary Americanisation of Quebec and Canadian society' (Santos & Dufaux, 2020, p. 29). In contrast, the lower bank of the Yenisei River is still undeveloped.

In both cities the new parliament appeared near the former city limits, together with the second main polarity with the city growing to the west (antipolar/polar transformation). In the beginning of the XIX century in Krasnoyarsk the project of the 'new city centre' appeared, when Krasnoyarsk began to overgrow the former city border, which had clear anti-polar characteristics, where the public garden, churches and cemetery, wooden barracks for soldiers of the quartered battalion were located, with the aim of shifting the hierarchy of urban significance. However, contrary to the plan, the New Market Square remained an urban void for quite a long time, which is clearly visible on the maps and means that the established antipolar effect of the place persisted. The new administrative building was built here at the spatial apex of the chain of parks - the former periphery - in the middle of the XX century, after the demolition of the specialised buildings that represented the former collective values: the commercial building and the cathedral. Similarly, in Quebec, the new Parliament was built close to the edge of the city (still visible behind

the old city walls), where new polar functions were developed, also in response to the contemporary needs of the growing city.

In both cities, the main specialised buildings were visibly 'stretched' along the main (matrix) street, forming linear polarities. In Krasnoyarsk, the master plan of 1828 proposed the concentration of the main central functions (administrative, commercial and religious) in two urban centres - squares connected by the matrix Voskresenskaia Street (today's Mira). Logically, this street was eventually transformed into the linear polarity that later master plans established as the main planning axis and vector of development. As a result, specialised buildings were scattered all over the city, mainly along the 'polar' Voskresenskaia (Mira) Street. Thus, the city centre was completely transformed from a compact to an axial scheme with squares, embankments, gardens and other nodes. The trend was developed during the XIX and XX centuries, until recent times. In Quebec, the concentration of the main specialised buildings is also visibly stretched along the Grand Alley, corresponding to the phenomenon of linear polarity, connecting the old and the new pole, which is also the result of the shift to the West, but which is more discontinuous than in Krasnoyarsk.

As the cities grew, the systems of nodes were developed, signifying the increasing importance of the everyday life of communities and following the complication of an urban organism. Structurally, almost all new developments in both cities continued the established formative process with its system of nodes and poles. For example, maps of the 19th century show that Krasnoyarsk began to form a polycentricity with a complex system of nodes, antipoles and polarities, which corresponded to the increasing complication of life and urban structure. These newly developing polarities provided orientation, centres of social significance, the function of which was often reflected in the naming of streets. The 'polarisation' effect is visible in both cities.



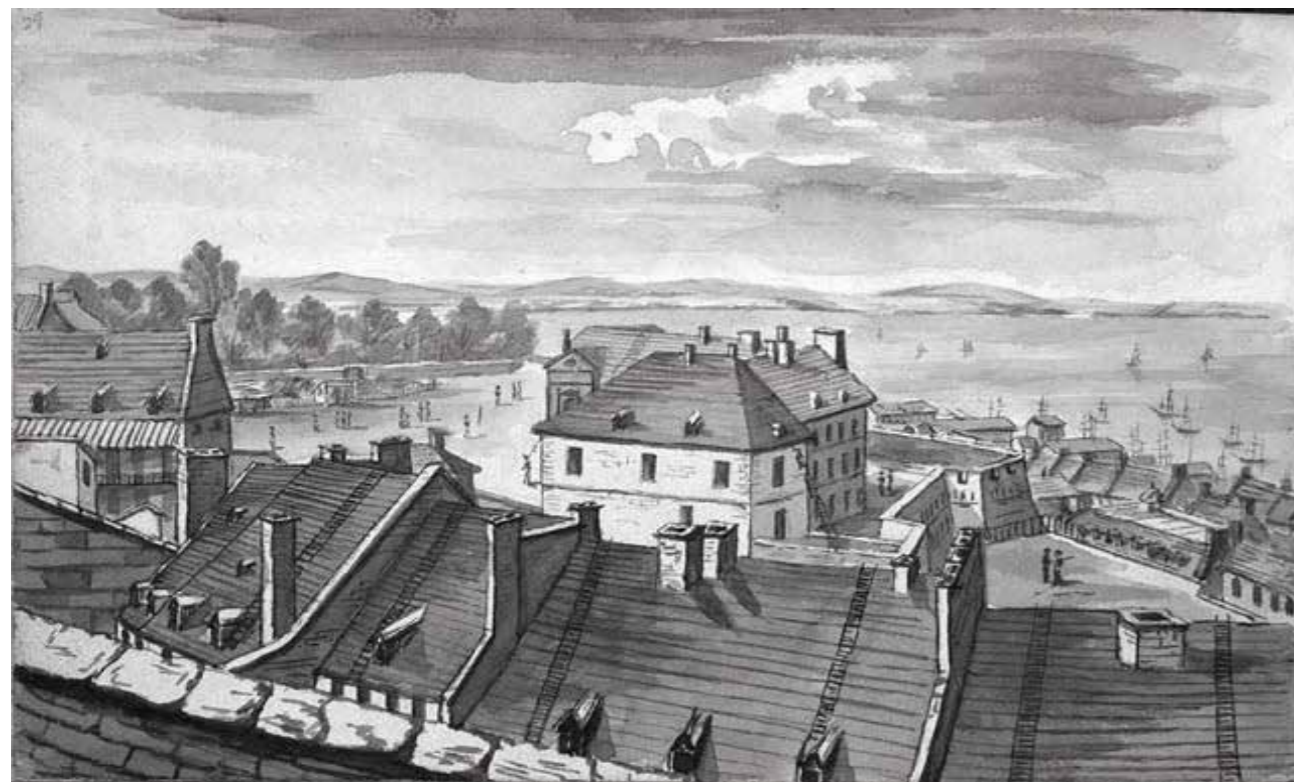
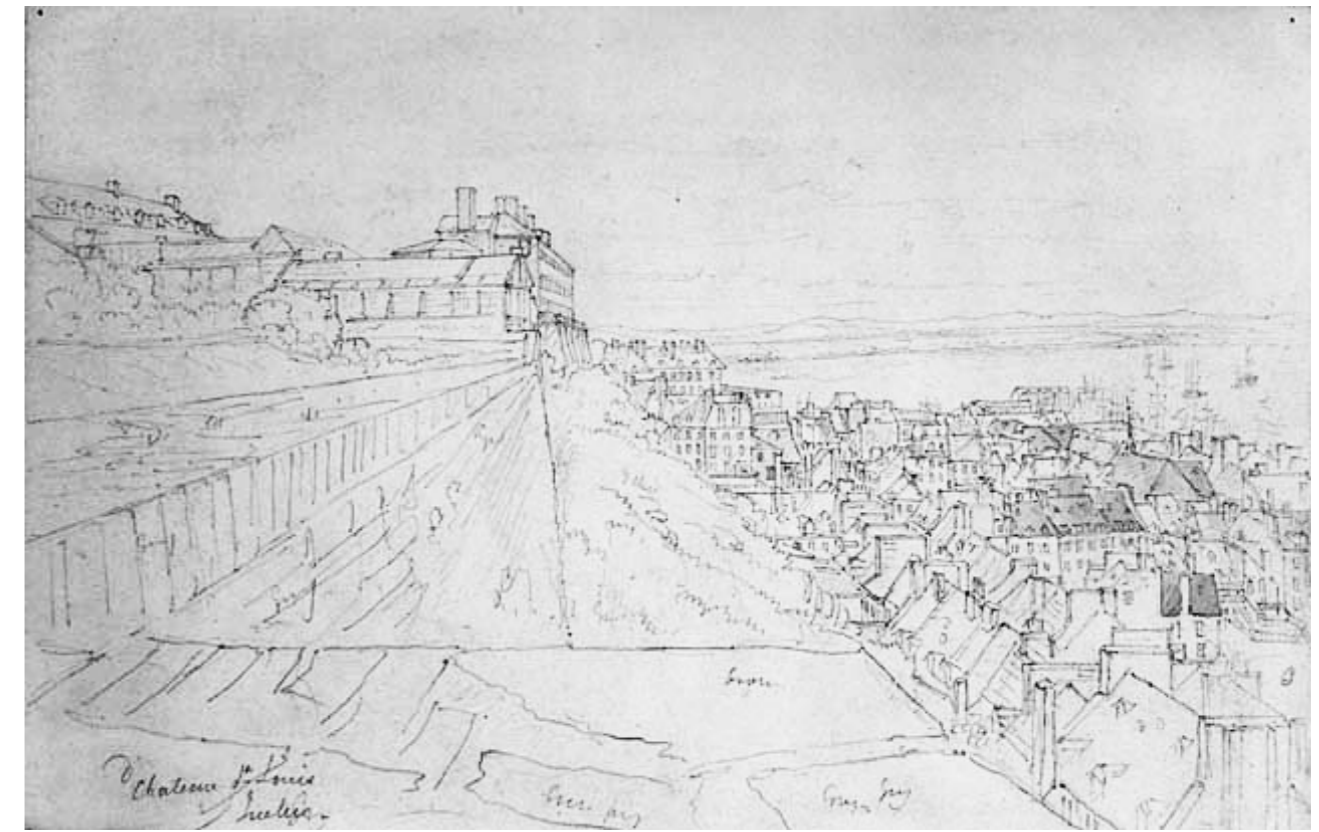
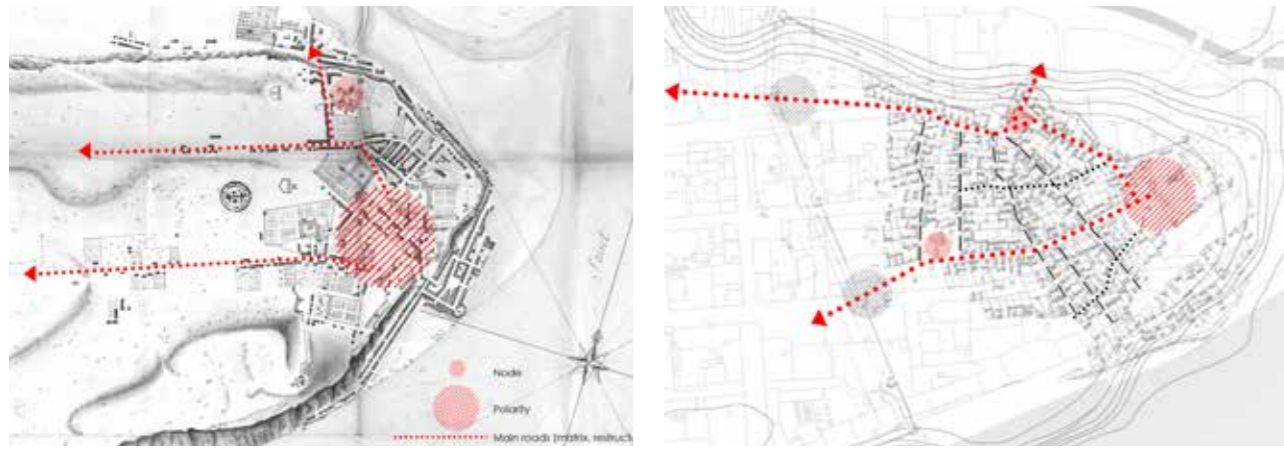


Figure 54. Krasnoyarsk in 1748 and Quebec in 1742. Comparison.

Figure 55-57. Drawings of the historical Quebec (the pictures of federal archives)

Both cities began their development spontaneously. In the plan of Krasnoyarsk of 1748, the process of formation is visible (Caniggia and Maffei, 2001): the central, straightest and widest street, leading from the small fortress to the western gate of the city, with the frontal plot sides oriented to it, could be considered as a 'matrix', the orthogonal - 'building streets', the opposite ends of which are connected by 'connecting streets'. The road connecting the pole and the northern exit of the city was another 'matrix'. Larochelle & Gauthier, commenting on the evolution of the road structure in Quebec, say that the roads, originally interurban, which connected the city to the territory, became the mother routes of the new urban fabrics, turning into unifying axes of the new districts (Larochelle & Gauthier, 2003). This statement is also true for Krasnoyarsk, where the historical transformation of interurban routes into streets is clearly visible. At the first, spontaneous stage of the city's development, when the links with other cities of Tomsk, Tobolsk, Yeniseisk and Irkutsk became stronger, the main inner-city streets of Krasnoyarsk were developed. In Quebec, the authors distinguished three categories of routes, determined by the agricultural division: rectilinear courses, broken orthogonal courses and curvilinear courses; the routes can belong entirely to one category, or certain segments can alternately belong to different categories. Morphological studies by Larochelle & Gauthier have shown that, of all the structures that testify to the organisation of the built environment, those relating to the territorial scale are the most durable. An informed and attentive observer has already noted that parcel systems, and roads in particular, are more resistant to change than built systems (Larochelle & Gauthier, 2003).

The elements of the regular master plan first appeared on the maps of Quebec in 1716, continuing the existing spontaneous structure, which was gradually logically incorporated into a more regular grid, while in Krasnoyarsk in 1775 the regular orthogonal grid completely changed the existing spontaneous settlement, at the same time preserving the general logic of the space. Morphologically, the planned city is a case of urban organism, it contains a degree of organicity: in Krasnoyarsk organic elements were grouped in the serial composition (Caniggia &

Maffei, 2001). Larochelle & Gauthier mention that the orthogonal routes were generally laid out on a south-west-north-east axis, often very old, and also conditioned by agricultural divisions. The authors note that the interrupted routes are much shorter than the straight ones and cross several seignories and fiefs. They are therefore subject to the geometry of the 'coasts' or rows of concessions, whose contours they have to follow, which has the effect of breaking their continuity. The main function of the broken orthogonal roads is therefore to connect the straight roads. Their relative importance as main roads derives from morphological considerations: a minimum of permeability is required to allow the circulation and easy crossing of old fiefs and lordships (Larochelle & Gauthier, 2003).

In Quebec, the regular layout continued to grow and became more explicit in the English period, mostly outside the city walls. Socio-political changes influenced urban form: an increasing regularity in the layout could be seen as a symptom of state centralisation and a statement of colonisation (in Quebec, the English colonial period). The configuration (elongated rectangle) and composition of a regular grid in Krasnoyarsk and Quebec are comparable in newer morphological regions, while the size of the block in Krasnoyarsk is much larger; in Quebec a regular configuration of new regions is visible, while the historical part remained spontaneous and relatively untouched. The current central part of both cities is based on three main roads (including the 'matrix' connecting the historical core with the contemporary centrality), the space between them is filled with highly specialised dense urban tissue with characteristics of centrality. In Krasnoyarsk, this central linear 'backbone' consists of the current Mira, Marksa and Lenina streets. Another rectilinear route is an exception to the rule by virtue of its function: the axis of Rue Saint-Louis / Grande-Allée. Larochelle & Gauthier mention this axis, which already appears on the Bourdon map of 1640. It acted as a planned route for the production of the fabric and therefore gave access to the plots of land on either side of it. This old route became the Saint-Louis/Grande-Allée axis, a route of major importance even today (Larochelle & Gauthier, 2003). The second route is Boulevard René-Lévesque, which is relatively modern, and the third is Rue Saint-Jean. This NW-SE 'linear' mode of urban development has historically largely defined the urban structures of the city centres.

### MATRIX ROADS.

The reading of maps of both cities demonstrated the following. Originally interurban roads became the parent routes of the new urban fabrics, turning into internal main streets and unifying axes of the new districts; such roads often connected the main polarity with the city entrances. In Krasnoyarsk, Mira Street was an interurban 'trading line', now it constitutes the history of a place, connecting the centre of centres with other localities. In Quebec, the originally interurban path (today Saint-Louis, Grande-Allée, Chemin Saint-Louis and boulevard Laurier) constitutes a nodal line of major importance, matrix: it joins in a straight line the Place d'Arms to the peripheries (Larochelle and Gauthier, 2003). Thus, within the city centres, both streets obtain quite similar characteristics. The buildings built on its margins bear witness to the history of the Capital of the territorial significances. Mira in Krasnoyarsk is now shorter and doesn't directly connect the centre with the metropolitan area, not any more serving the purpose of metropolitan transit road, being interrupted near the musical theatre. This changed the initial meaning of the road but preserved its local significance and its image of historical walkable lane and concentration of heritage. Many architects of the city claimed that the street must be pedestrian alley and exclude cars traffic. In the Soviet period, the idea was realized for some time and became the tradition for big holidays, when the access of transport is prohibited. In Quebec the described matrix lane connects historic center with the university camp directly, at the same time not excluding its isolation, while in Krasnoyarsk there is no direct connection, but the university campus is located on a visual extension of the axis of the street. The first period of Grande-Allée was formed with villas, building type built on large plots, surrounded by gardens and outbuildings, and located at a distance from the road. Several plots, originally occupied by villas, are now occupied by institutional or administrative complexes, or residential developments. Similarly, in Krasnoyarsk, the matrix road was marked by the orientation of facades of the individual mansions, which were later transformed into specialised buildings.

The first period of the Grande-Allée was characterised by villas, a type of building built on large plots of land, surrounded by gardens and outbuildings and set back from

the road. Several plots, originally occupied by villas, are now occupied by institutional or administrative complexes or residential developments. Similarly, in Krasnoyarsk, the matrix street was characterised by the orientation of the facades of individual villas, which were later transformed into specialised buildings.

### SECONDARY STREETS.

In Krasnoyarsk the secondary roads, perpendicular to the matrix (N-S direction), corresponded mainly to the side edges of the newly drawn plots. In the second half of the XIX century some of them gained specific importance and their spontaneous trade, administrative, commercial, etc. specialisation increased; streets developed through the development of secondary nodes and poles, which were marked by the concentration of specialised buildings (ports, railway stations and large industrial enterprises, etc., most of which still exist); street names reflected the collective identities of communities. The inequality of the streets was marked by the presence/absence of pavements and stone buildings. The location of some primary streets was determined by the former location of important elements, such as the city walls before the Revolution of 1917. The development of roads in Quebec also showed a specificity: first, linear growth along the main roads, and then - gradual filling in of agricultural lines, while building roads went parallel to the matrix (P. Gauthier), contrary to the classical model. It can be said that in Krasnoyarsk, too, the built roads were parallel to the matrix. Thus, secondary roads mainly express the local characteristics of both cities. In general, it can be said that roads in the orthogonal grid have changed their meaning over time.

### INTERURBAN EXPRESSWAYS.

In the central parts of the historical maps, certain routes, initially only local, either became 'collectors' in the network or were integrated into a new major route providing access to the hinterland. The location of a present-day expressway - Veinbauma Street - corresponds to the western boundary of the city of Krasnoyarsk in the 1770s. Similarly, in Quebec, the modern motorway (Avenue Honoré-Mercier/Saint-Sacrement) crosses the historic part of the city along the former city boundary. The site

feels like a discontinuity, a 'wind wall' for pedestrians, separating the city and negatively affecting walkability and permeability. In Quebec, the restructuring of Boulevard Charest and Boulevard René-Lévesque were designed without anticipating the healing mechanisms of the traumatised urban fabric (Larochelle and Gauthier, 2003).

Modern cities are generally united by the new phenomenon described by urban morphologists: with the appearance of motorways, a new type of interurban route of a completely different nature and logic can be mentioned. Unlike the traditional types of roads, the new interurban roads are no longer convertible into intra-urban roads with the growth of the city, reduced to traffic functions, indifferent to the territory crossed, they absolutely cannot become elements of urban public space, places of socialisation and collective practices of space (Larochelle & Gauthier, 2003). The authors warn that the transformation of old transport arteries based solely on traffic needs and the introduction of interurban roads into the city, indifferent to the history of the place and collective memory, testify to a deep ignorance of the essential attributes that should distinguish intra-urban and interurban routes.

In Krasnoyarsk, in the Nikolayevskii prospect, the new motorway leading to the new bridge was built at the expense of the demolished wooden area, completely replacing the existing urban fabric, without any kind of 'yield' or healing of the tissue. The consequences of this highly traumatic operation are difficult to predict. In Quebec, one such example is the restructuring of the Boulevard René-Lévesque, which was designed and built without taking into account the relationship of the street to the parcels and adjacent buildings, and thus without anticipating the healing of the urban fabric (Larochelle & Gauthier, 2003). In Krasnoyarsk, there is a very positive example of Bryanskaia Street, built at the foot of Karaulnaia Hill. Because it was physically connected to the existing natural barrier, it didn't cut through the fabric and could potentially be more easily integrated into the fabric. In Quebec, on the other hand, there is an opposite example of how the new motorway can divide the urban fabric: Instead of cutting through an old and homogeneous residential fabric, the Boulevard Charest should have been built at the edge of the residential fabric,

either at the foot of the cliff to the south of the district, or along the Saint-Charles river to the north, i.e. along one of the two relatively impassable natural barriers" that serve as the district's borders (Larochelle & Gauthier, 2003). In general, probably due to a lack of resources, radical restructuring processes are rather rare in Krasnoyarsk, and man-made borders often adjoin natural ones. Thus, if the appearance of highways is currently inevitable (Moudon, 2019; Levy, 1999), the principle of combining natural and artificial boundaries seems reasonable.

Essential factors unite expressways Champlain in Quebec and Dubrovinskogo in Krasnoyarsk: typically, both pass along the banks of important rivers, along the heritage zones and the central parts of the cities, both need to facilitate access to the water; have low permeability, located between two natural urban barriers close to each other (the cliff to the north and the St. Lawrence River to the south in Quebec; in Krasnoyarsk, the road passes alternately along the lower part of the embankment, then along the upper part, keeping the Yenisei to the south). Lawrence River to the south in Quebec; in Krasnoyarsk, the road alternates between the lower part of the embankment and the upper part, with the Yenisei River to the south). To sum up, it is crucial that new types, alien to the local culture, which inevitably lead to a state of crisis, highways that cannot be transformed into intra-urban roads with the growth of the city, indifferent to territory and history, cannot constitute public space.

## Fringe belts

As has been said, historically both cities developed within natural boundaries. As a result, the river banks in different periods corresponded to the peripheries, where warehouses, industries, docks, etc. were located. The reconstructed map of Krasnoyarsk from 1748 shows rows of houses located on the lower bank despite the risk of flooding. However, later regular maps emphasised the centrality of the main axis, making all the buildings on the riverbank a kind of 'outskirts'. Thus, in the 19th century Krasnoyarsk the riverbanks were considered a periphery, which is visible on the 1828 and 1852 master plans, partly due to the concentration of warehouses and small industries. In August 1855, the construction department of the Yenisei provincial government proposed that the areas near the banks of the Kacha River be used to locate factories and cemeteries outside the residential area - on the opposite bank of the Kacha and beyond the northern city limits. On the other hand, the heart of Quebec, the Place Royale, on the lower bank near the confluence of the two rivers, has a symbolic value. Apart from this exclusion, the rest of the lower Quay de Québec shows elements of a port or docks on maps of different periods, which corresponds to the specificity of Quebec as a city through which goods were transited. In addition, a significant difference in height between the lower and higher banks prevents easy passage and 'cuts off' the quay from the city centre. The historic chain of parks, the 'Park des Champs-de-Bataille', reinforces the effect of separating the lively city centre from the riverbank. In Krasnoyarsk, the absence of such a significant natural boundary facilitated the transformation of the riverbank into a city centre park with the characteristics of centrality, despite the sandy soil that probably prevented earlier development.

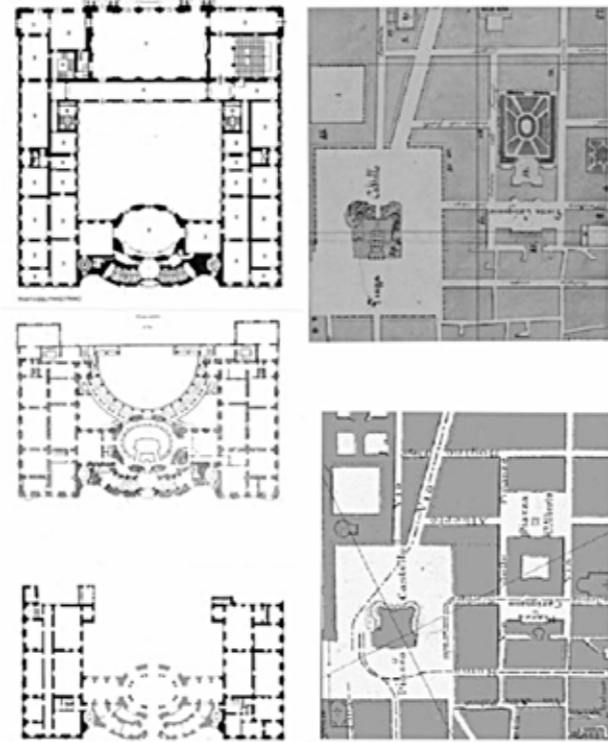
In the nineteenth century the transformation processes on the riverbanks began: the 'antipolar' character of the banks of the Yenisey and Kacha gradually changed: the natural bank of the Yenisey was transformed into an embankment - a place of attraction - with a significant road and specialised buildings. Thus, the development of the riverbanks in Krasnoyarsk and Quebec had some similarities and quite significant differences.

The maps of the beginning of the XIX century showed that the territory of today's Central Park and adjustment areas of Krasnoyarsk could be considered as a kind of city outskirts, which later was transformed into a chain of squares, parks and industrial areas, most of which still exist. In the middle of the XIX century the development of Krasnoyarsk stopped behind this chain of parks and the modern Dekabristov Street with rare buildings and wooden barracks of a military battalion - in the south-west. Thus, the periphery included the river banks and the territory on the western border, with parks, a military camp, a huge urban void, a cemetery and churches. The main characteristics of this 'anti-polar' part were similar to those of the 'periphery'. In the later period, the military camp was finally removed from this area, the function of the new city centre was deliberately transferred there, which resembled the phenomenon of the antipolar-polar transformation, but in practice the formation of the new city centre took place only partially, it retained the features of a kind of 'belt' with the large empty areas neighbouring the industries and parks. What's more, in the period of the Second World War, the plan for the placement of industrial objects did not go according to plan: many objects appeared in the historical areas, fragmenting the environment, such as the radio factory behind the Central Park, on the site of the former military camp; the film factory on the site of the former church cemetery, the harvesting machine factory, etc.. Their location corresponded exactly to the former city boundary, which still had an anti-nodal position and was supposed to be transformed into the new centre. Thus, this transformation was not successful, and the area that included the riverbank, the central park, the huge Revolution Square (the former New Market Square) and the area of the radio and film factories still resembled the behaviour of the 'fringe belt'. This former perimeter belt was embraced by the city, but remained visible on the map with its chain of green and empty spaces, so the 'fringe belt' demonstrated stability and resistance. The 'belt' is still clearly visible on maps today, demonstrating the location of the former city limits. Similar morphological events marked Quebec. 'Founded in 1608, Québec City saw the construction of several fortifications between 1690 and 1820. The outline of the current city wall was established in the mid-18th century, marking the boundary between the inner city and the first generation of suburbs that would

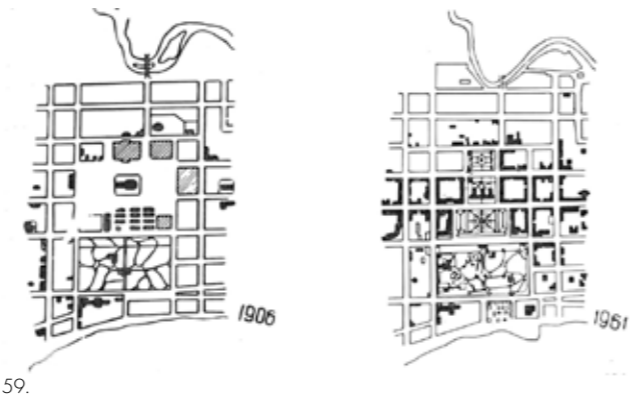
become the old suburbs' (Després et al., 2015). Thus, the same period is marked on maps of Quebec by a visible 'fringe belt', behind which the emergence of the new city centre can be seen on the main axis vector. Thus, two cities showed quite similar characteristics of the development of the urban fringe with the shift of the city centre along the main street. In Quebec, the city walls have been preserved along with the 'fringe belt', which still exists in the form of a park, also fragmenting the fabric.

# Specialised buildings

Special buildings deserve special attention as markers of social and cultural priorities and political events. During the Soviet period, the central squares of the city were renovated, mostly large buildings and complexes, reflecting the new forms of social life and ideology. The ideological changes affected the poles of Krasnoyarsk relatively quickly and significantly: churches were destroyed. The church in the centre of the new market square as well as the commercial building 'Passage' were destroyed as symbols of the previous era. The square was named after the Revolution. Architects started the project of new administrative buildings of 'Soviets' right in the place of the former church. The complex of buildings of the Soviets, now the seat of the regional government, was designed and built on the intersection of the park belt (the sequence of public parks, squares, church gardens and cemeteries), creating a rather conventional urban form, resembling the typical spatial form of palaces, such as Palazzo Farnese (square+palace+garden) or Palazzo Carignano, and others. The situation in Krasnoyarsk also resembles the same form in Quebec City near the fringe belt, spatially structured in the same way. Moreover, the introduction of a huge public space in Krasnoyarsk right in front of the government building in 2018 is fully in line with the recent tendency to build a dialogue between the government and the people - architecturally, spatially, socially. The project includes a contemporary interpretation of the colonnade that surrounds the new public square. A similar project was designed for Quebec, where architects tried to introduce a place of dialogue into the government space, a place where people and administrators could meet for discussion. This example illustrates how quickly and significantly polar structures and the specialised buildings located on them follow socio-political processes, and how typical the reaction can be.



58. Palazzo Carignano – G.Guarini , C. Sada, A.Peyron 1679 - 1861



59.

Figure 58. The structure of palazzo.

Figure 59. Transformation of the central square in Krasnoyarsk (Ruzhche).



60.

Figure 60. Administrative buildings in the central squares in Krasnoyarsk and Quebec.

## Primary urban unit

At first glance, the two cities are very different architecturally and stylistically. However, a careful study of the types reveals significant similarities of form, mostly dictated by similar climatic and geomorphological conditions, as well as similarities in lifestyle, available building materials and production methods. Until the twentieth century, the dominant type of dwelling in both cities had similar characteristics: the 'log cabin' - a basic cell made of logs laid horizontally on top of each other, placed in the 'courtyard type' of basic building. The implementation of this type may be different, but the generating code or strategic principle was similar. The Siberian city stems from the ideas of village and fortress, which was reflected in the character of the units of the urban fabric. A similar process in the urban morphology is found in Quebec: during the initial phase of building the suburbs, the first similar houses can be found in the countryside. In Krasnoyarsk, however, the unit embodied the tradition: double-row courtyard houses - attached small 'fortresses' or 'nests', built spontaneously, surrounded by fences, without permeability and transparency - were perceived as a unit, the perimeter of which was defined by the street voids; the internal structure of the unit was less important, therefore flexible and changeable.

Similarly, in Quebec political changes influenced rather specialized buildings than residential types, for which changes were more gradual and slower. 'Tax policies, the social and economic context, political and religious ideologies have also played important roles. On the other hand, if these factors influenced the formation and transformation of residential types and urban forms specific to the Quebec suburbs, they did not determine them. Our analyses indeed reveal the inertia of habitus and architectural types inherited from French and English material and immaterial culture.' (Després et al., 2015) The idea of compactness and the base principle of a courtyard house united both cities of the early period of existence: 'Champlain proposed a building on a hillock surrounded by a palisade. A drawing of 1613 emphasizes the verticality and the compact built form. The design highlights the adaptation to the northern climate that will take place during the 17th century in New France. This

first 'house' was burnt down in 1629 by English privateers. It was rebuilt in 1632 with a second building, this time in stone with two turrets at the end of an L-shaped building, like a courtyard with additional wings to be constructed later. This became a common pattern of the colonial era; buildings were carried out in stages; a modest start would lead to a larger structure.' (Santos & Dufaux, 2020, p. 29). However, the general idea of transformation didn't characterise Krasnoyarsk housing to this extent. Krasnoyarsk was developed on the basis of the village principle until the end of the 19th century - the beginning of the 20th century, when significant urban processes began, and previously existing urban 'villas' began to become specialised buildings - the process that can be described as the transformation of the type. From the point of view of building style and decoration, the differences between the two cities seem significant.

In both cities, fire and relief encouraged the emergence of a particular type of house, with a basement or first floor of stone or brick. Houses with a stone basement met many needs at the same time. Firstly, the possibility of construction on the terrain, which was questionable for completely wooden buildings. Secondly, the need for long-term storage of products in winter, and thirdly, the possibility of building taller houses because of the stone foundation. The stone ground floor also protected the property from fire. Deep terraces and plantations in Quebec helped to green the alleys (Després et al., 2015), similar to the introduction of 'palisadnik' in Siberia. In both cities, timber construction was replaced by stone construction in the urban centre at the time of the transition from a rural agrarian lifestyle to an urban one: in the suburbs, the predominance of timber construction distinguishes them from the predominantly stone-built inner city.

Both Krasnoyarsk and Quebec historically had the mixed-use (residential plus industrial) type of neighbourhood (for example, estates with small industries), illustrating the isomorphism of physical and social structures. At the beginning of the 20th century both cities underwent a transition to the dominant type of multi-family housing. In Krasnoyarsk at that time, the explosive growth caused by migration and exile was accompanied by densification, and additional rental housing appeared on existing plots. Housing developed towards the dominance of multi-

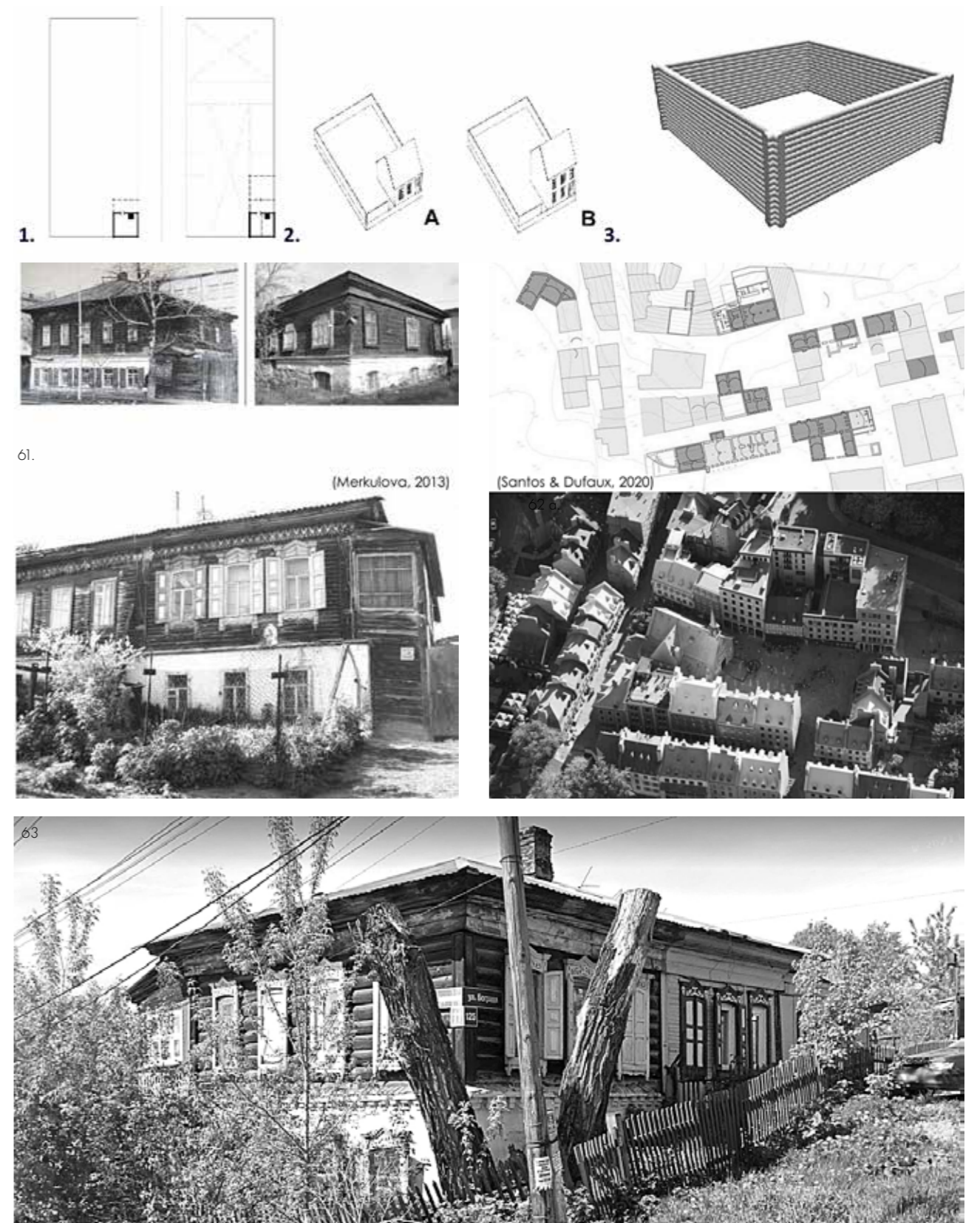


Figure 61. Courtyard house types: Siberian (1), Canadian by Prof. P. Gauthier (2) and the construction technique (3).

Figure 62. Courtyard house types with the stone-made basement and a ground floor: Siberian (by Dr. Merkulova) and Canadian (by Prof. P. Gauthier)

Figure 63. Houses with the stone-made basement in Quebec and Krasnoyarsk.

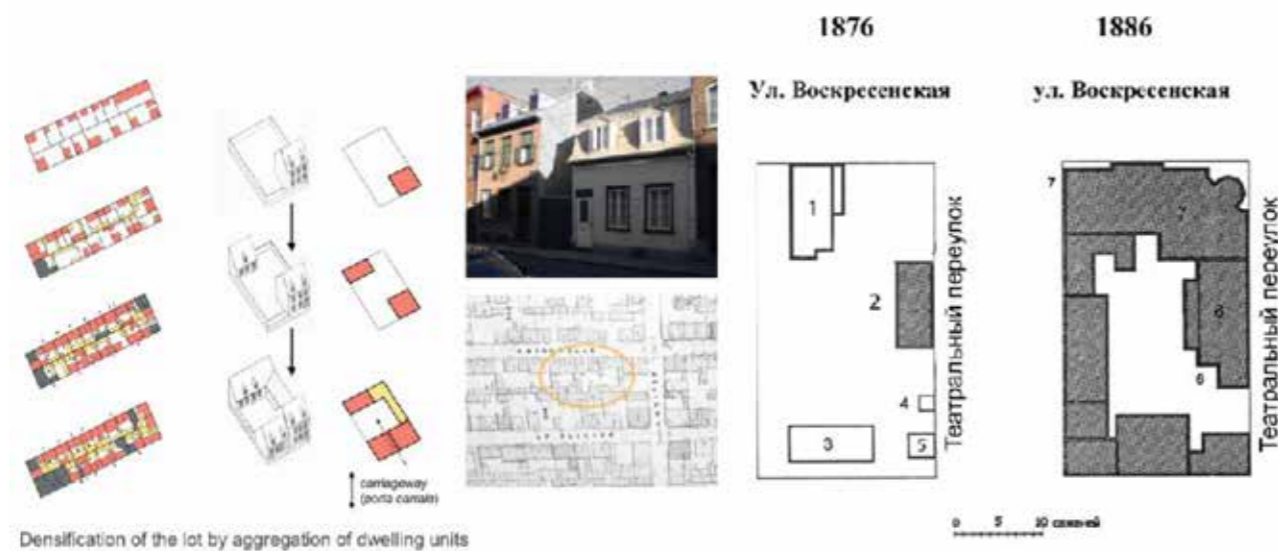
family architectural forms. It was not until the mid-19th century, after the abolition of the seigneurial system and with the appearance of the first mortgage companies, that it became possible, according to Després et al, to borrow and purchase the land, with the possibility of subdividing it for sale. At the beginning of a period of intense densification, in which housing evolved towards new multi-family architectural forms, the suburbs were hit by a series of major fires (Després et al., 2015).

In XX century, the transformation of the image of urban grain or quarter from joined estates to perimetral urban quarter was gradually taking place, following economic necessity, densification need and new regulations in both cities. In the 1900s and 1910s, in Krasnoyarsk, the character of building quarters changed, especially in the central part of the city, where commercial and administrative buildings, educational institutions, mansions and profitable residential buildings were concentrated. In Krasnoyarsk, the gradual process of specialization started to appear. The process was enforced by the Socialist power. Today it is easy to find many specialized buildings transformed from old residential ones during the twentieth century.

Perestroika in Russia brought revolutionary solutions to architecture: in Krasnoyarsk it is safe to say that continuity was broken. Earlier in the Soviet period, planned large-scale developments merged former estate quarters into newly built 'micro-regions' or 'neighbourhoods', destroying estate quarters in Krasnoyarsk. The dominant type of housing unit in the city was eventually transformed from the block of private estates to the micro-region of apartment buildings, which was intended to become a 'neighbourhood', but in fact didn't, creating the contrast in scale between the old and newly created fabric (see map of 1967). Thus, the typical large-scale top-down morphological changes of the urban structure of the XX century with the introduction of supergrids (Moudon, 2019) are visible in Krasnoyarsk. Similarly, in Quebec today, the main transport arteries act as dividing axes within the urban fabric. Their relative position in relation to urban barriers, whether natural or artificial, contributes concretely to determining the size of neighbourhoods and neighbourhood units. Following the cultural tradition of the 20th century, the 'neighbourhood' module corresponded to a comfortable walking distance - 500-800 m in both

Quebec and Krasnoyarsk. In these modules, specialised buildings such as churches or schools occupied the centres. The period after WWII brought significant growth to both cities along with the confident domination of 'hyper-grid'. Then, as the city took advantage of all the physical opportunities for growth within its natural boundaries, the more fragmented and dispersed phase of development began, which could be characterised by the collage (Rowe & Koetter, 1978) of different morphological regions (Conzen, 1960).

Quebec, as a cultural collage, is currently also a collage of identities in different morphological regions, each region corresponding to a specific type of building. The ranking system can be read with the naked eye by anyone flying over the territory; an informed map reader will be able to recognise the imprint and thus the conditioning effect of the first divisions of the territory on the street grids of Montreal or Quebec, for example (Larochelle & Gauthier, 2003). It is still completely filled with individual types of housing. In Krasnoyarsk, the collage of new neighbourhoods consists of multi-family high-rise blocks. However, the suburbs are growing with planned and unplanned individual housing. In contrast to Canada, permeability in Siberia is extremely low, almost zero.



64.



65.

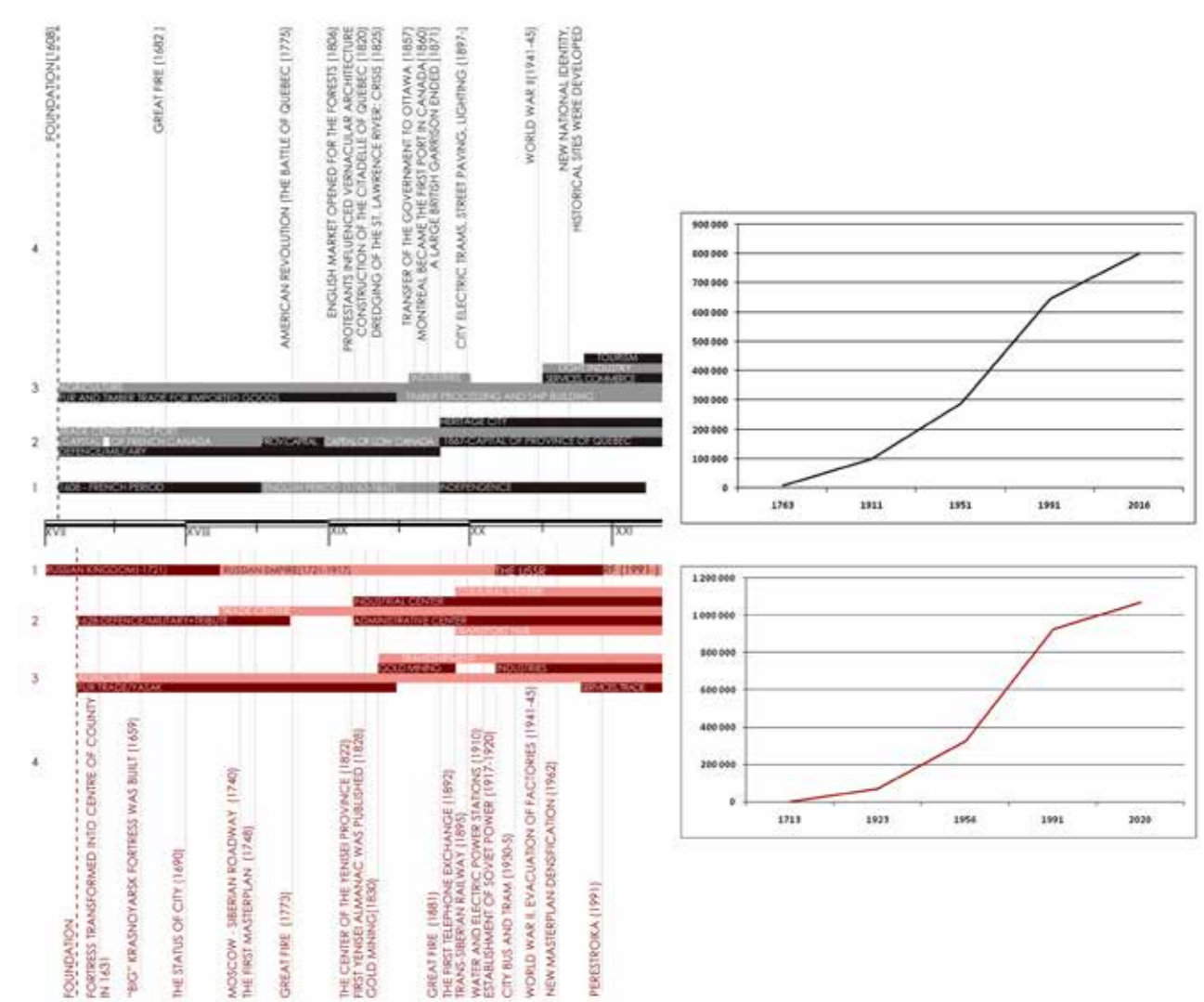
## Context

Readings of similar urban forms can be contextualised by cultural, social and political events. Graphs provide a comparative overview of political regimes (Graph 1), the role of cities (Graph 2), dominant modes of production and economy (Graph 3), and key events (Graph 4). The red colour scheme refers to Krasnoyarsk, the grey to Quebec. Both cities were products of colonisation at the beginning of the XVII century, serving military purposes, while the reasons for the establishment of settlements were trade, defence and resources. Quebec was founded by the French explorer Samuel de Champlain in 1608,

while Krasnoyarsk was founded by the Cossacks in 1628 as a military fortress in Siberia. In pre-industrial Quebec, the inhabitants traded their agricultural surpluses and firewood, and later furs, for imported goods at the two city markets; the situation was similar in Krasnoyarsk. Wooden Krasnoyarsk was almost completely destroyed by fires in 1773 and 1881; a fire in 1682 destroyed the first generation of wooden houses in Quebec. Today, Krasnoyarsk is the major industrial and administrative centre of the Krasnoyarsk Territory, an important junction on the Trans-Siberian Railway, and the seat of the regional government. Since 2001, Quebec has been one of Canada's most prosperous cities, with developed industries and services, a major port centre and host to the

Figure 64. Densification in Quebec (Gauthier, 2014) and Krasnoyarsk (Merkulova & Merkulova, 2013).

Figure 65.. Urban grain in Quebec and Krasnozarsk.



66 a.

66 b.

regional government. External migration has historically been a key factor in the growth and cultural development of both cities.

Figure 66. a - factors of development of Quebec and Krasnoyarsk, b - population growth



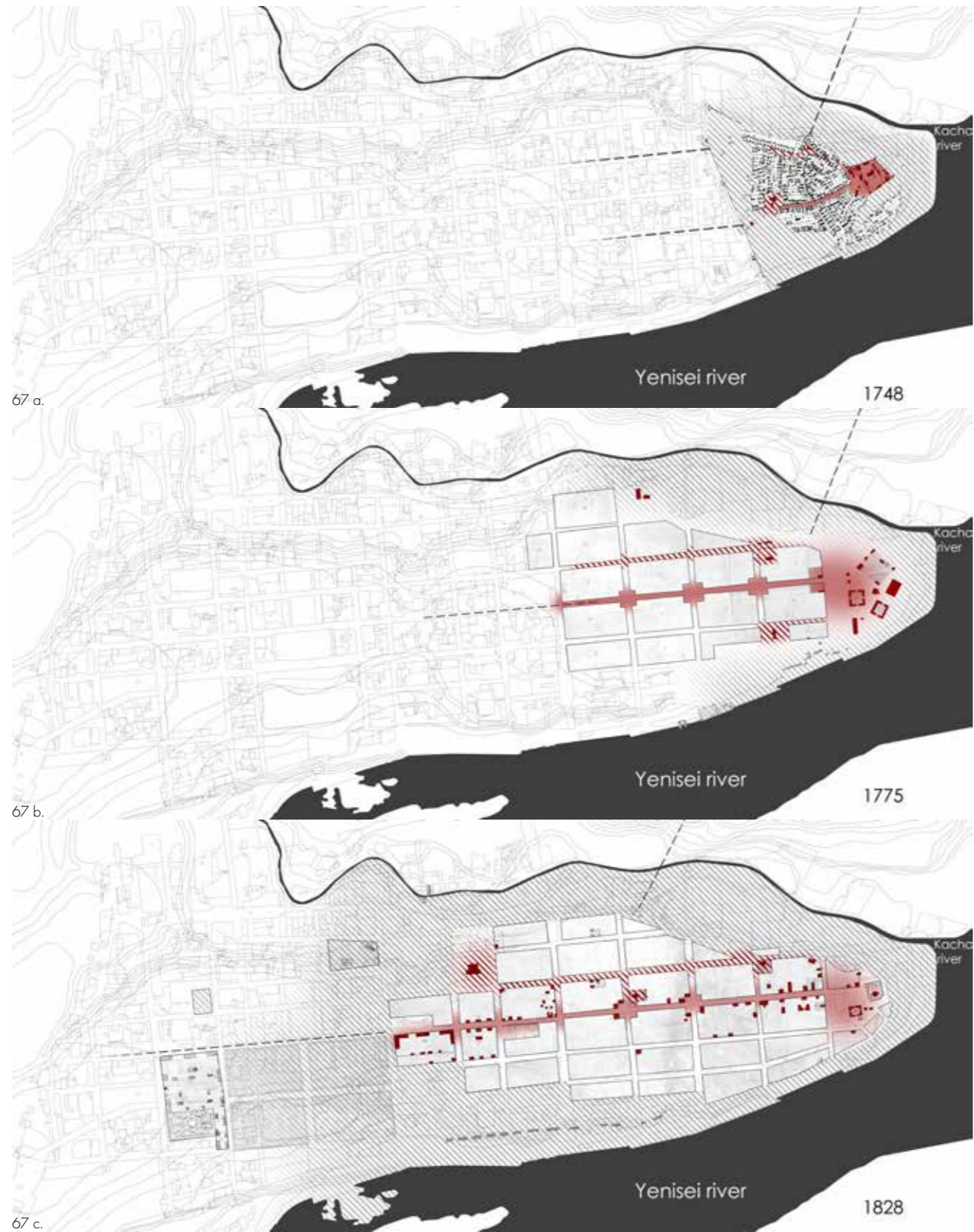


Figure 67 Genesis of urban form in Krasnoyarsk.

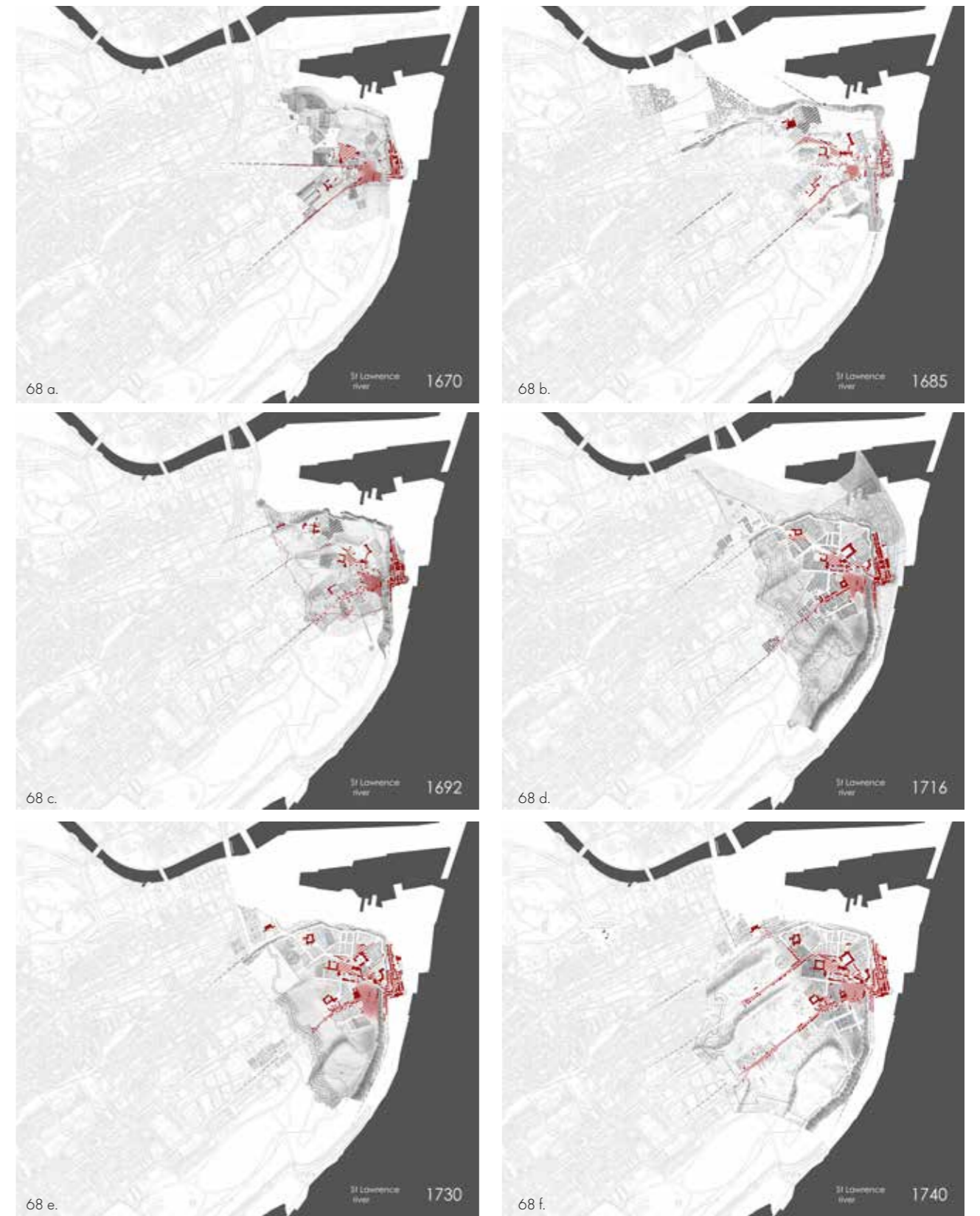
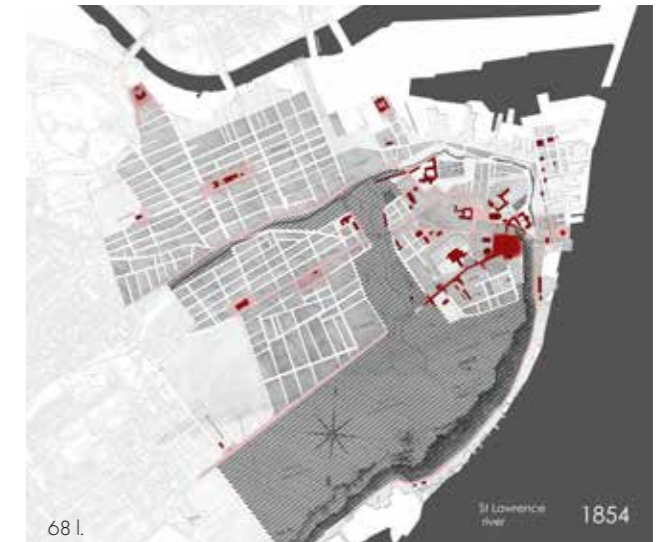
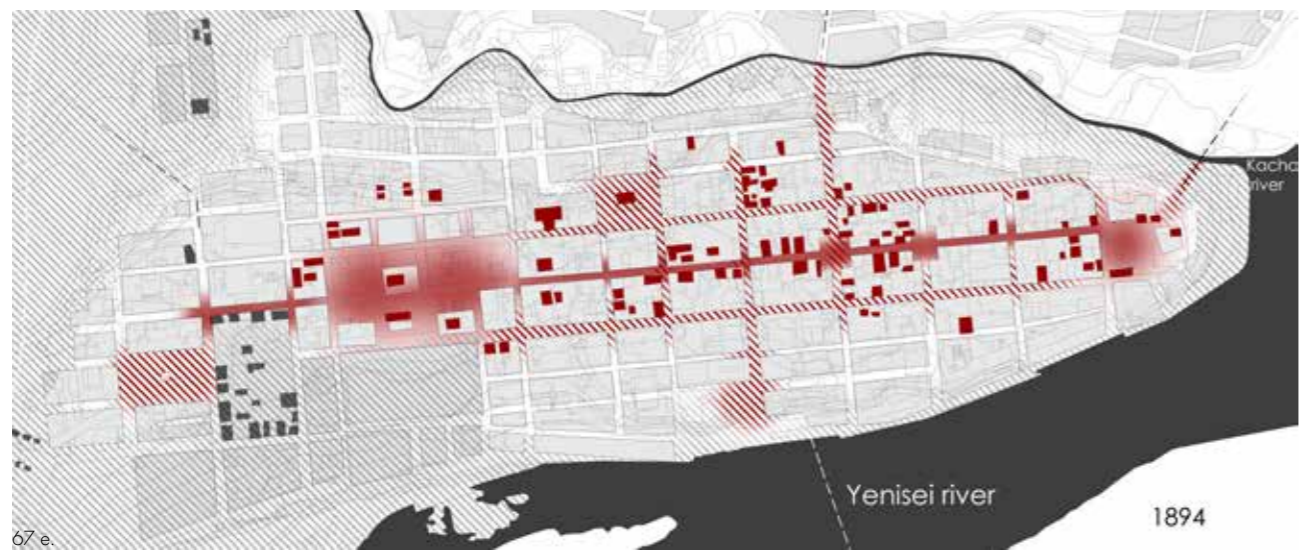







Figure 68. The genesis of urban form in Quebec.





-  Specialised and the most important buildings
-  Polar structures and matrix roads
-  Nodal structures and nodes
-  Peripheries
-  Intercity roads

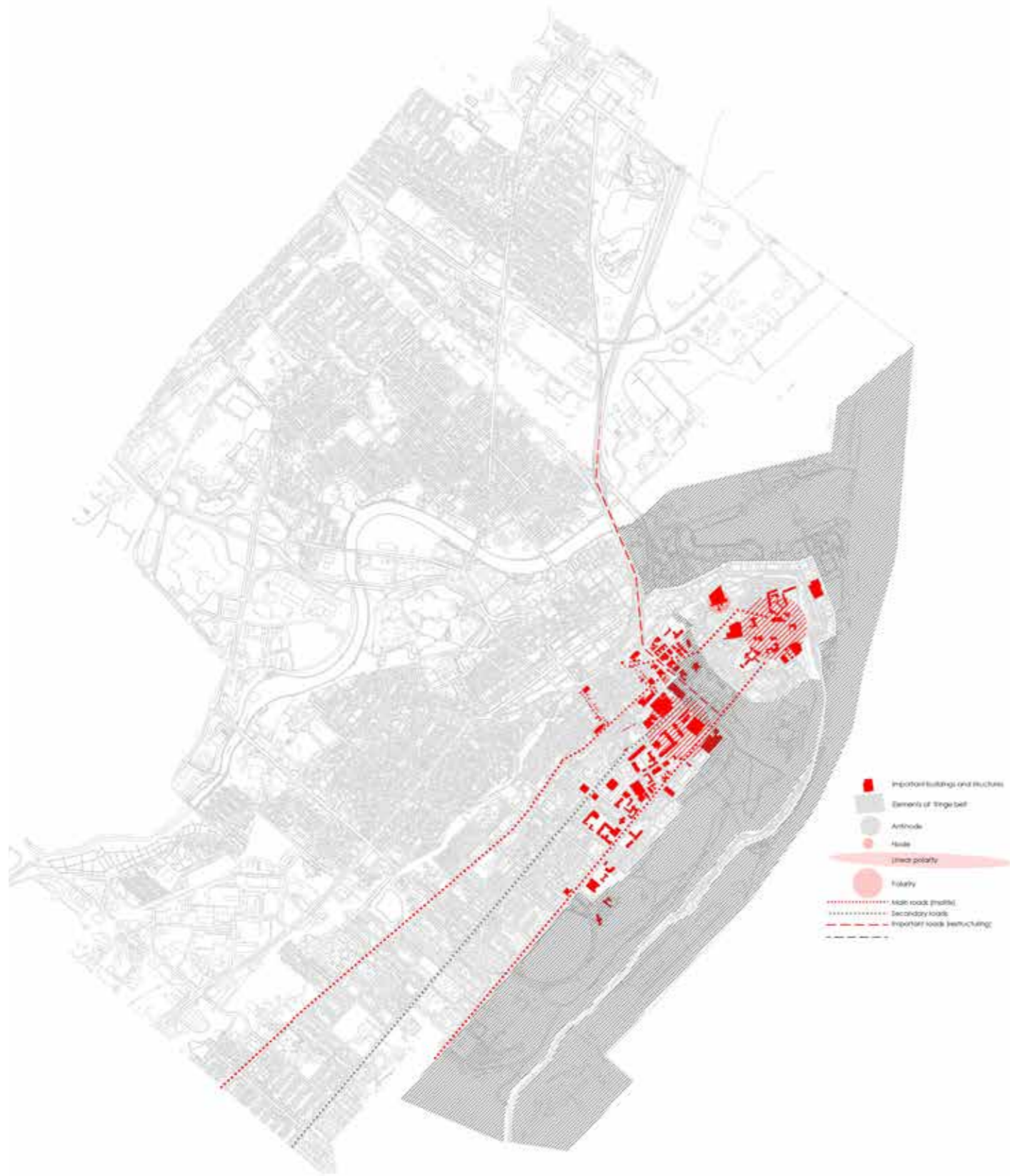


Figure 69. Current structure of Quebec.



Figure 70. Current structure of Krasnozarsk.

Similar climatic, geomorphological, hydrographical, topographical, and other natural features of the city forms visibly induced similar 'internal' spatial logic of their development in many aspects. Thus, before focusing on key transformations that can be explained by socio-political and cultural influences, a general assessment of morphogenetic patterns influenced by the constraints and potentials internal for the morphological system is essential. When the urban fabric presents a planned orthogonal grid, we can recognize the process of transformation of the urban form throughout the hierarchically produced order between the roads that have come to be determined over time (readable in the arrangement of the entrances of the buildings, in the distribution of commercial activities, the height of building and largeness of the street). At the same time, the persistence of the local vernacular tradition is readable even in a planned city and constitutes the part of local identity, especially on a small scale.

Urban typomorphology provides the principle of typification of the man-made elements. However, it is interesting to observe how similar type of settlements or its typified elements can be embodied in different forms in different realities influenced by the direction of the winds, the rivers, the relief, the temperatures, the soil, etc. - all these factors determine the size and configuration of plots, the location and density of buildings, the correlation between volumes and voids, public and private spaces - in short, the traditional urban form that is specific to a given place.

Different or relative codes, grammars and syntaxes can be compared on the basis of their intrinsic characteristics (defined by typomorphology), possibly dictated by a common code. In the given part, Krasnoyarsk and Quebec were compared on the basis of red process-based typology and reconfirmed the selected method and conceptualised specificities of the urban form of both cities. The urban fabric presents a planned orthogonal grid, and the

transformation of the urban form can be seen in the hierarchically produced order between the streets that has been determined over time (readable in the arrangement of building entrances, in the distribution of commercial activities, in the height of the buildings and the width of the street). The comparative study demonstrated the same principle that was revealed in the study of the central core of Krasnoyarsk: that the same type of city can take different forms in different realities. Both cities showed the appearance of a very specific type of building with the ground floor made of stone and the first floor made of wood: vaults in Quebec and 'podklet' houses in Krasnoyarsk, which connect the topography between a lower and a higher level. This specific type of house is a reflection of geomorphology, climate and cultural specificity. The study would be impossible without the concept of collage (Rowe and Koetter, 1978) of morphological regions (Conzen, 1960). Both Krasnoyarsk and Quebec are cultural collages, collages of identities reflected in different morphological regions, each region corresponding to a specific type of building.

Next, the influence of socio-political and cultural spheres and modes of production on urban fabric should follow, focusing on those that had a key morphological impact that couldn't be explained otherwise, to ultimately inform architects and urban planners.





The study of the main intrinsic code of the settlement made it possible to define the main structural logic and the behaviour of its elements, basic grammar and syntax, as well as to identify some of the specificities of the local language, refining the method and enriching terminology. The comparative reading of the codes of two different settlements on the basis of the common code revealed even more specific elements. All of this allowed the knowledge of the local language to grow. The study revealed the importance of an 'intermediate level' of urban system for the formation of local identity - a stable socio-morphological code. The abrupt change of the town structure from spontaneous to a planned one illustrated how one type can be embodied differently. The chapter illustrated the role of reading urban form: the grammatical descriptions and concepts provided above can be interpreted using modern architectural languages and can largely inform the projects of development of architectural environments. Moreover, the reading was made in the terms of urban typomorphology, which means that the extended descriptions and specific behaviour of such phenomena as 'matrix route', 'specialised building', etc. can be found in the methodological literature provided by the author and his followers, and used accordingly. Next, it is important to focus on the formative process with its formative phases and transformative periods, and on possible and well-known references and etimologies, in order to elaborate the knowledge of the local linguistic code and enrich it with connotative strokes.

It can be concluded that it is human nature to create similar typologies of form in similar contexts at the scale of the settlement structure (matrix routes, polarities, fringe belts). It can also be observed that, within the framework of striking similarities in climatic, geomorphological and socio-political contexts, there is a clear continuity in the development of many local morphological features. Krasnoyarsk shows less obvious continuity, as there have been periods of significant transformation, in particular, influenced by political will (see below). However, the preservation of the key traditional elements over time, and therefore continuity is clearly visible and will be further illustrated.

Next, this thesis examines the process of formation and transformation of a number of cities in Siberia in order to accurately articulate the most persistent characteristics over time that remain in the city despite the revolutionary changes. It has already been shown that local identities are more stable at intermediate scales, such as the scale of the block or neighbourhood, which should be proved during the analysis of several Siberian settlements.

Next, the greatest attention is paid to the intertwining of local typologies and external ideas (C.O. Sauer, 1925) in the formation process. The principle of intertwining will enrich process-based typology.





# LEARNING URBAN LANGUAGE. READING

External ideas influencing formations and transformations  
of the Siberian settlements



The cities of Siberia developed not only on the basis of the internal logic, but also under the dramatic influence of external ideas and morphologies. Moreover, the 20th century brought an exponential growth of these cities beyond the historical cores, which should also be conceptualised at least at the strategic level.

The character of transformation processes of spatial structures in historical settlements can have a significant impact on architectural and urban practice. The following subchapter is part of a comparative research that examines the formation and transformation of cities that share similar urban form and environmental situations. The aim of this part of the research is to study the formative process of several cities in Siberia that have undergone partly spontaneous and partly planned development. The study, based on the refined typomorphological method, presents the chronological sequence of changing urban form of Siberian cities. Several case studies in the Siberian District, the cities along the routes of the Siberian Tract and the Trans-Siberian Railway, are characterised by a similar environmental-geomorphological context. Despite this relative initial similarity, the cities developed differently: some showed relative resistance to the regular planning, others were almost completely rebuilt. Laboratories of 'trial and error' - Siberian cities demonstrated the adaptation of various planning ideas along with the process of transformation of territorial types.

Detailed factor by factor comparative morphological reading complemented by relative theories was the main method of the following part. Scaled historical maps of several cities were progressively superimposed on the current cadastral maps of historical cities in order to define the stages of urban development.

Following the principles offered by complementary theories, with the aim to further refine and clarify the method of typological-processual strand of urban morphology, to preserve and develop local identities of the given type of cities in the certain context, the following study offers limited discussions about references, denotations, etymologies and meanings of the grammar and syntax of the Siberian foundation cities, avoiding to speak in terms of cause-effect relations while relying on morphological reading. Pareyson, in his theory of formativity, also warns against focusing too much on the context or history of the subject, saying that one should turn to the context or history of the subject after analysing the form as such, in order to prove the properties of the form that have already been found or discovered, which is why contextualisation is done simultaneously or diachronically and is used to reinforce morphological readings. In sum, throughout the text, the reading of urban form is methodologically strictly separated from the description of the context and historical excursions used to prove or disprove hypotheses that arose in the process of reading - the definition of grammatical and syntactic codes.

It seems impossible to reveal the formation process of local language of Siberian form not looking at external references, which directly influenced urban formation. G. Caniggia distinguishes between phases of formation and periods of transformations of territorial types in *Typological Process*: 'We shall call 'phase' a sufficiently long interval of time for these changes to be sufficiently clear [...] in short, I must speak about historical formation and transformation processes' (pp. 45-49), where territorial type 'It is the spontaneous consciousness of the area...' (p. 190). Intertwined, such formative and transformative processes shape a local identity - unique features of form that simultaneously bear some resemblance to the original form and to the features of form superimposed from outside. 'Interpreting the typological process of territory, therefore, involves referencing the current structure to its formative laws through the identification of the phases of successive mutations of territorial type' (p. 192).

This part of the study aims to identify these phases and periods for Siberian cities, to reveal influential ideas and references, and to indicate identical forms that persist over time. It is also important to observe how external ideas are transformed during their adaptation, forming local identities in the formative phases. The chapter also aims to demonstrate how the change of dominating concept of type from primary Caniggian and spontaneous to the Soviet statistics-based can change the production of form at a strategic level.





Aldo Rossi, one of the inspirers of qualitative research of the city, said: 'Thus, while every place is characterized by its own particular aspect, by being precisely the architectural construction that it is, it can also be referred back to a more general design. We can define this general design as typological form. [...] After arriving at its own specificity through its relationship with different realities, a form becomes a way of

confronting reality, a way in which land is divided, for example, or the nature of the house established within a certain historical framework. In architecture such form has the value of a law, with its own autonomy and its own capacity to impose itself on reality.' (Rossi, 1984, p. 171). The general understandings of the notions of form and type have been provided in the beginning of the given work. In this part, methodological note should

follow in order to clarify the basic criteria and procedures of reading urban form and formative process. The primary framework is provided by G. Caniggia. The following typological descriptions have been made a posteriori and analytically, taking common characteristics of territorial organisms and grouping them into 'types'. The logic is based on the evidence (the reading of a series of preserved maps from



different periods, supported by documents provided by historians) that similar settlements, from which a certain type of settlement can be 'statistically' derived, were built in a particular way because they could not have been built in any other way, since they were built nearby and at the same time, within the same cultural context, in preselected parts of the territory with similar climatic and geomorphological characteristics. The concepts of these settlements summed up all the characteristics, partly guided by critical consciousness (talking about type and reviving it is a result of critical consciousness), partly by spontaneous consciousness, to correspond to that era and in that precise cultural area.

Thus, type inevitably owes its existence to being 'a priori synthesis', 'concept'. Through the critical work, to recognize a type, it is important to basically 'read' the formation of settlements until a moment before they come into being. Type is, therefore, the total projection - initially conceptual, when it comes into being, and then logical, when we examine it - of existing settlements, shaped according to the 'concept' that exists in the creator's mind at a level of spontaneous consciousness, resulting from the succession of previous 'settlement concepts'. 'Studied from this point

of view- archaeology, the history of architecture, and the histories of individual cities-the city yields very important information and documentation. The city, like all urban artifacts, can only be defined by precise reference to space and time. Although the Rome of today and the Rome of the classical period are two different artifacts, we can see the importance of permanent phenomena linking one to the other; nonetheless, if we wish to account for the transformations of these artifacts, we must always be concerned with highly specific facts. [...] Mutations, transformations, small alterations all of these take different lengths of time. Certain catastrophic phenomena such as wars or expropriations can overturn seemingly stable urban situations very rapidly, while other changes tend to occur over longer periods and by means of successive modifications of single parts and elements.' (Rossi, 1984, p. 139). Next, it is important to refer to the definitions of typological process, phase, territorial type and territorial typological process provided by Caniggia. The process is based on the concepts of formation and transformation, similar to the understanding of Rossi and Pareyson: the rhythm of art, consisting of formation and transformation, is also the transformative imagination that explains the artistic cases in which originality prospers on continuity; the vicissitudes of art are governed by a rhythm that alternates between formation and transformation: the world of forms is governed by this law of metamorphosis, whereby forms proliferate other forms, not reproducing themselves in copies and repetitions, but producing other forms, yet bound to themselves by family ties, with an infinite and ever-renewable fruitfulness (Pareyson, 1954).

[Typological process]

'Type awareness requires another further definition: typological process. If we examine several historical building types in the same cultural area, we perceive a progressive differentiation among them that is more marked in very old buildings and less so in more recent buildings. [...] Therefore, it is easy to find a scalar mutation of the building type depending on the era. [...] This means that every era attributes a different meaning to the 'house concept' producing different houses. However, differences apart, we can see a phenomenon of striking continuity that we can easily perceive by observing the differences

between similar products. [...] The mechanics of change are most greatly affected by progressive variations in existing buildings, widespread - albeit limited - adaptation of existing buildings to make them suited to the continuous pursuit between the formation and transformation processes of buildings and parallel process changes in needs. In actual fact, the contribution of widespread changes can only be interpreted at prolonged intervals, comparing a new order to its previous version' (Caniggia & Maffei, 2001, pp. 45-49)

[Phase]

'We shall call 'phase' a sufficiently long interval of time for these changes to be sufficiently clear. If, therefore, I examine types in their progressive mutation and in their phase sequence, I obtain what we call 'typological process', which can also be read in a particular historical neighbourhood; however, we must bear in mind that we cannot be too exacting in that case because, by definition, type sequence can only start at the moment in which the general concept of 'house' has formed in man's mind and it is only intended to correspond to the present moment. Let us say that, on examining buildings in a cultural area, I note that they are different from buildings in any other area and that these differences increase according to the growth in purely metric distance and also to spatial boundaries enforced on each culture, phase by phase. That is to say, during the same historic phase, buildings differ widely in the Lazio and Tuscany regions, but even more so if we compare Tuscany to France. Differences will increase if we compare Tuscan buildings to Chinese buildings, to the point where they make Tuscan and Lazio buildings look almost similar. All this always refers to a fixed time period because there are greater differences, for instance, between 13th-century and 15th-century houses in the regions of Tuscany and Emilia Romagna. This means that the same scalarity that I read in time in the same culture area can also be read in space when comparing several cultural areas, i.e., in space there is continuity in building differences to the point where I can talk about a typological process that is a progressive differentiated dislocation of areas in contact. I approach the real nature of process only by associating both variants and by interpreting the typological process as a succession of changes in time, distinctions, and applicable mutual spatial

influences; in short, I must speak about historical formation and transformation processes. Historicity - which is an essential condition of man's existence and every object he produces, together with every event concerning him - cannot be separated from a dual time-space relationship. A man, an object and an event exist in so far as they are fixed in time and space. History is a system of time-space individuation that can be interpreted through its formation and transformation processes, produced by the distinguishing unit that arises from each manifestation being placed in a reciprocal link, which is also reciprocal opposition. Nothing exists, or ever has, without being fixed in space and time.' (Caniggia & Maffei, 2001, pp. 45-49).

[Territorial type]

'Let us try to explain in more detail the specific terminology. When defining a 'cultural area', we associated its meaning to the term 'relatively impassable boundary'. We discussed people, nations and their territory and pertinent boundaries and axes and national areas, often confusing dimensions, and analyses on very different scales. In the meantime, we have to admit the demand of a territorial type, in an accepted meaning very different from the one used, for instance, by geographers, but very similar to 'types' examined up until now on smaller scales. Territorial type and the concept of territory is what every person, pertaining to an era and a place, adopts. It is the spontaneous consciousness of the area in which he or she lives and encompasses a way of crossing that territory, of choosing where to settle and to set up his or her productive activity, and of including another place equipped with sufficient nodality to be a trading centre and meeting place with other people and territorial entities. Above all, this concept includes a dimensional entity, a territorial 'quantity': what from era to era and place to place, people accept as a dimension in which to live their lives and to which they know they belong' (Caniggia & Maffei, 2001, p. 190).

[The territorial typological process]

'Therefore, consequential to the definition of a 'territorial type' as a 'concept of

territory' in force in a certain place and time period, and therefore organically varying, we can define a territorial typological process as a progressive mutation in territorial types and as a system of laws governing the transformation of a previous type into a subsequent one. Interpreting the typological process of territory, therefore, involves referencing the current structure to its formative laws through the identification of the phases of successive mutations of territorial type. This occurs through the interpretation of markers that are recognised as being inherent to the same concept of territory, in that they are complementary and reciprocally indispensable and, therefore, pertinent to a historic phase. These are distinguishable from markers with a different consistency because they belong to previous and subsequent phases of the same territorial organism. This is possible because each subsequent phase reuses the structures of each of its previous phases, although with a marked difference: structures typifying a previous phase in their entirety, and therefore defined as being carrying during that phase, are used in the subsequent phase as a secondary structure, no longer 'carrying' but marginal because they remained at the level of specialised structures.' (Caniggia & Maffei, 2001, p. 192)

The aim of this subchapter is to define the territorial typological process, which defined settlement types, to identify the common features of different foundational cities that appeared at roughly the same time during the formation of the Siberian part of the Russian territory in the XVII century. It was important to distinguish phases of formation and periods of transformation of the previous type into the following one, and to relate the current structure to the system of laws governing it by identifying the phases of successive mutations. It is safe to say that the identity of the Siberian city is the result of the evolutionary development of the city type, which includes the obligatory phases of continuity (formation) and perception and adaptation of cultural models and influences from the outside (transformation). It is also important to remember those who influenced and contributed: architects, theoreticians, people who lived in and used the buildings, those who paid or made political decisions.

The work refers to the hypothesis that the identity of local places is the product of periodic exchanges between local culture and external, dominant cultural

influences (C.O. Sauer, 1925). In fact, if we look at historical Siberian cities, it is obvious that they are the product of formal synthesis and intertwining of reorganised and redesigned external models and types with more 'spontaneous' (the main terminology is taken from G. Caniggia's typology (Caniggia & Maffei, 2001)) local settlement principles that have intertwined significantly throughout history, forming local identities. Shvidkovskii noted:

'If we try to briefly summarize the ideas about the structure of the history of architecture in Russia, we note: firstly, contacts of Byzantine samples acquired by Russia in 990-1070, and features characteristic of the Romanesque style of the middle of the XII century, secondly, the absence of Gothic due to the influence of the steppe East, thirdly, the appearance of Renaissance ideas and architectural forms in Moscow in the last third of the XV - first third of the XVI centuries. Fourth, the comprehension of Renaissance ideas in the spirit of the 'post-Byzantine Mannerism' of the XVI century that arose after and because of the death of Byzantium, which during the XVII century was gradually replaced by various types of Baroques with a gradual increase in classical themes in it. Fifthly, stylistic polyphony in the architecture of Peter the Great in Moscow, whose architecture ended with the harsh regularity of the proto classicism of early St. Petersburg, decorated in the middle of the XVIII century by the imperial Baroque of F.B. Rastrelli. Sixth, conscious formation using, first, French and Palladian ideas of classicism of the Russian Enlightenment as state architecture in the era of Catherine the Great. Seventh, the development of this type of classicism during the first half of the XIX century until the birth of eclectic architecture. And, finally, in the twentieth century, according to K.S. Melnikov, the 'explosion of the thunder symphony' of the Russian architectural avant-garde, the only rise in the history of our construction art, which turned out to be able to change the architectural culture of the whole world. Finally, the last great surge of imperial neoclassicism that replaced the avant-garde, which ended shortly after Stalin's death, with the industrialization of construction art with its global sad consequences' (Shvidkovskii, 2013, p. 113).

However, Russia has always been large and diverse, and such a generalisation may not be sufficient to understand the development of cities in Siberia.

Moreover, the Italian school of urban morphology looks beyond architectural styles and considers the typology of urban volumes and spaces as a language, finding features in the development of settlements that are characteristic of humanity as a whole, applicable to Iran, China, Russia, etc., and thus providing valuable analytical and practical tools.

The typology of Siberian fortresses and defensive settlements that emerged in the 15th-18th centuries is extensive: from 'winter camps' and earthen fortifications to ostrogs and stone fortresses. The type of fortress depended largely on its stage of development and purpose. The most famous of the impressive number of the first settlements in Siberia, which were built as wooden ostrogs in the 17th century and then didn't disappear but developed into cities, are Yeniseisk, Tomsk, Krasnoyarsk, Irkutsk, Novokuznetsk (Kuznetsky ostrogue), Achinsk, Kansk, Bratsk. Thus, the study focused on typologically similar settlements, which arose as wooden fortresses in Central Siberia in comparable geomorphological and climatic conditions in the initial period of the Russian development of Siberia, and eventually developed into large historical cities with a deep history. Tomsk, Krasnoyarsk and Irkutsk - the largest of these historical cities located in Central Siberia and connected by the Siberian Tract, were chosen. The example of Yeniseisk (once one of the most important fortresses in Siberia) was occasionally used to prove the hypothesis.

As laboratories of trial and error, historically Siberian cities has been adopted different models of regular and ideal cities, which central governments tried to superimpose over the existing plans. However, these models 'landed' and germinated differently, being influenced by persistence of vernacular tradition and geomorphology. How various models intertwined with vernacular tradition? What elements of tradition persisted, forming local identity? How territorial type changed? Quatremere influenced change in the paradigm of thinking about the development of art forms from thinking in mimetic terms to thinking in memetic (evolutional) terms, which is crucial. Thus, it is important to approach with caution the search for external models and ideas that influenced typological transformations. Additionally, according to the theories of the symbolic universe, there can be no direct connection between the symbol and



the thing or the referent or the signifier and the signified, the connections are in a much more subtle relationship. It cannot be said that the turrets of Siberian fortresses directly mimic, for example, to Roman architecture. If we talk about denotation and connotation, the Siberian fortress, which symbolizes protection, can refer to a whole class of fortresses, of which it is a collective image, among them may be Roman or others, since the history of fortifications is very rich. And hard analogies should not be drawn. Quatremere said that 'The invention of architecture must be seen as parallel to the invention of language. That is to say that neither one nor the other invention can be attributed to any man because both are attributes of men.' Architecture's basic grammar similar at any continent can be attributed to any men, it can be called universal, but not necessarily deriving from the certain culture (possibly referring to Eco's *Sin* structure). According to Quatremere, 'infer from general similarities shared by two architectures that one is the product of the other is as indefensible an abuse as it would be to define one language as the derivative of another because they share features of universal grammar'. Thus, similar architectures or types can appear simultaneously in different places because they embody an objectively optimal solution of the certain problem. However, one can use the concept of 'reference', which influenced form, saying that the fortress refers to something, and keep this in mind during operational processes. The presence of such a reference can be well-known, proved or indicated by cross-cultural contacts that were present during the transformation of the type. In addition, the very understanding of the term type at a certain point in time could change to the opposite in parallel with a radical change in physically embodied types and the transformation of the type of settlements.

[Methodology]

Several historical cities along the route of the Siberian Tract, characterised by a similar geomorphological context, are considered. The first maps of Siberian cities were graphic interpretations of the cities rather than actual maps in the modern sense. Most of them, especially the earliest ones, were highly distorted. Therefore, for the present study, the maps were adjusted successively (but not distorted block by block) on the basis of the preserved configurations and

'milestones'. The morphological reading was mainly brief, not detailed, and aimed to illustrate the formation and transformation of the main morphological types at the urban scale, according to the typomorphology offered by Caniggia. The main ideas and characteristics have been analysed in detail. It is important to mention that the following morphological reading is an architectural tool, which doesn't claim to be completely historically accurate, but allows to propose a preliminary hypothesis of the typological formation of the Siberian city, which can be further confirmed by historical descriptions. At first sight, despite the appearance of transformative phases, it is possible to notice the resilience of types in the development of the Siberian city as an organism, the main elements of which exist in relative continuity.

In fact, the transformation process of the cities is not a linear phenomenon, aiming at a positivistic progress, but a phenomenon in permanent transition, while phases of formation and periods of transformation are continuously coexisting, which is particularly visible in the XX century when urban organism became increasingly complex. Caniggia offers a principle of urban development based on cycles of formation and transformation, which has great potential but should be further developed. Therefore, the Soviet period of formation is conditionally taken as primarily formative, but it should be taken into account that the detailed process of development was more complex and should be studied separately.

In a relatively short period of time, at least 150 settlements were established across the vast expanse of Siberia (Gorbachev et al., 2011). Officially, the main purpose of the movement of Russian people into the depths of the continent was to hunt and collect fur tax from Siberian tribes, to incorporate these tribes into Russian citizenship, and to protect the borders from nomads. As local historians claim: 'This movement was accompanied by the construction of fortified points in the taiga (at first, sometimes in the form of so-called 'winter zimovie'), which after a while were rebuilt into ostrogs (fortresses) and towns. [...] In many cases, Russian people got along peacefully with the local population. For example, the Khanty helped build the Surgut ostrog' (Gorbachev et al., 2011, p. 66).

### TOMSK

According to local historians (Gorbachev et al.), Tomsk is one of the numbers of colonial cities in Siberia, Russia, which appeared at the beginning of the XVII century as a fortress, located in the east of Western Siberia on the banks of the river Tom'. In 1604 Cossacks were sent to Siberia with the task of founding a city, the works were completed in September. However, in 1648 the old fortress was destroyed and a new one was built on the southern promontory of the Voskresenskaya Hill, near the confluence of the Ushaika and Tom' Rivers. Tomsk became an important strategic military fortress in the XVII century: in 1614, 1617, 1657 and 1698 it repelled the raids of the nomads. Tomsk also became an important trade centre after the construction of the Siberian Highway, which ran from Moscow via Tomsk (in the XVIII century) to Kiakhta. Local historians emphasise the role of transport links in the development of the city, including the transport of goods by water in addition to the Moscow-Siberian road. The craft industry for transport services was also closely linked to transport activities (Gorbachev et al., 2011). In 1804, the city became the regional administrative centre of the vast Tomsk province. According to local historians, the discovery of Siberian gold deposits in the first quarter of the 19th century was a powerful impetus for the development of Tomsk, Krasnoyarsk, Mariinsk, Yeniseisk and Chita. At the end of the 19th century, however, the Trans-Siberian Railway passed much to the south of Tomsk and connected

Tomsk with a separate branch, as a result of which the city lost its importance as a transport hub.

Consequently, the period from 1918 to 1944 was a time of serious decline for Tomsk: in 1925 Tomsk became part of the Siberian region, then the Western Siberian region, and in 1937 - part of the Novosibirsk region. There were no industries, bad transport connections, but the extraordinary growth of universities. During the Second World War about 30 industrial units were evacuated to Tomsk and in 1944 the Tomsk region was established. Tomsk became the regional centre. In the 1960s and 1980s the educational complex was further developed, regional transport infrastructure was created, including the construction of a modern airport. In general, Tomsk has always been famous for its cultural and educational role. Today it is the administrative centre of the region with a population of over 560,000 and the oldest major educational, scientific and innovation centre in Siberia, known for its 9 universities, 15 research institutes and 6 business incubators. The historical city is rich in museums, culture and monuments of wooden and stone architecture of the XVIII-XX centuries. There are more than 300 innovative centres in Tomsk in the fields of construction, industry, energy, mining and IT.

Tomsk is located on the border of the West Siberian Plain and the foothills of the Kuznetsk Alatau, on the right bank of the Tom River, 50 km from its confluence with the Ob River, on the edge of the taiga. The climate is continental-cyclonic, the winter is hard and long. The terrain of the city is uneven. In Tomsk there are various elements of the river valley, but the forests have been constantly cut down, roads have been built and the land has been cultivated, all of which has led to a gradual flattening of the relief. Miller gives the following information about the site chosen for the town and its first buildings: 'The Tom River, as you know, flows into the Ob from the east, but it has almost the same direction as the Ob, flowing mostly from south to north. On the right, or eastern, bank of this river, about 60 versts from its mouth, there is a rather considerable mountain which the builders recognised as being particularly suitable for their purposes. They built a small wooden town on the side of the river where the ascent to the mountain is particularly steep. The dwellings were located behind the town, on the same mountain, and were surrounded by a standing wall. Later, as the population grew, the lower part under the

mountain down to the banks of the Tom River was heavily built up. Along this lower posad runs the river Ushai, or Ushaika, which flows into the Tom'.

The second version of the Tomsk fortress is well studied and reconstructed in the model by scientists on a comprehensive database (including archaeological surveys). In Tomsk there are a lot of preserved monuments of wooden architecture of the end of XIX century. Impressive commercial buildings, city dumas, public halls, theatres, banks were built. There were also completely new types of public buildings - higher educational institutions, cinemas. The complex of buildings of Tomsk University marked the beginning of the creation of an entire educational and scientific zone in the city (Gorbachev et al., 2011). The rapid construction, which took place at the very end of the XIX and the beginning of the XX century for 10-30 years, changed the appearance of the one-storey Siberian cities, which were almost entirely built of wood. The detailed descriptions of local historians give a clear and colourful picture of the image of the Siberian city and the nature of its changes.

### IRKUTSK

Since the second half of the 17th century, Russian authorities have increasingly focused on exploring the southern routes from Lake Baikal to the far eastern regions of Siberia (Gorbachev et al., 2011). In 1682, Irkutsk Ostrog broke away from the Yenisey Uyezd and became the administrative centre of an independent Uyezd, and in 1686 it received the status of a city. From 1723 (until 1792) there was a customs house in the city, through which all caravan trade with Mongolia and China passed. The commercial prosperity of Irkutsk was due to its geographical location, convenient for trade with China, north-eastern Siberia, the city became the most important trading residence (Gorbachev et al., 2011). In 1701 the first stone building appeared - the Command House. In 1701 the postal service with Moscow was organised, in 1719 Irkutsk became the centre of the Irkutsk province, a part of the Siberian province. In 1722 the town hall was opened, a year later it was transformed into a magistrate's office. Following the fate of many Siberian cities, Irkutsk prospered from the Siberian gold industry. The Irkutsk province was established in 1764. In the 1770s the city

fair and the bank were officially opened. In 1775 a fire almost completely destroyed the city centre, and in 1790 the walls of the Ostrog were demolished. In the 1780s a public library, a theological seminary, a municipal school, a college and a publishing house were established. In 1879 another fire destroyed the town and the provincial archives, and with them the memory of the town. The gold industry helped to rebuild the town.

In 1898 the first train of the Trans-Siberian Railway arrived in Irkutsk. The railway led to the emergence of new transport companies in the city, revived coal mining and forestry, and contributed to the influx of population. At the end of the XVIII century Irkutsk began to take on the appearance of a European city, culturally developed. Before the revolution of 1917 it was mainly a trading city, located on the Russian-Chinese trade route. Historically, it was also a place of political exile. In 1958 the Irkutsk hydroelectric power station was commissioned, but the city remained mostly wooden and one-storey until the 1960s and 1970s, when large-scale residential and industrial construction began. Today Irkutsk is a major industrial (aircraft, food, hydroelectric), scientific and educational centre, and a transport hub on the Trans-Siberian Railway and the Baikal and Siberian highways. With a population of over 600,000, Irkutsk is one of the largest and most important historic cities in Eastern Siberia.

The city of Irkutsk is situated on a flat platform where the main river makes a sharp bend. It is also the confluence of three rivers: Angara, Irkut and the small Ushakovka. Like one of the other Siberian cities, Irkutsk was founded as a fortress - ostrog, probably in 1661 (some researchers date Irkutsk's emergence to 1620, others believe that Russian winter settlements appeared in the 1650s) to collect yasak (a form of 'taxes'). Like many Siberian cities, Irkutsk is located on the banks of the Angara River at its confluence with the Irkut River, about 60 km from Lake Baikal. The climate is harsh and continental, and there are regular earthquakes. It is situated on the Angara River, in the picturesque foothills of the Baikal Mountains, surrounded by taiga. The planning structure of the city is extremely fragmented: three rivers, flood plains, mountains, a railway, industrial enterprises, seismically active zones and faults'. (Gorbachev et al., 2011, p. 609). In the first period, the city was largely built of wood and was damaged or even

destroyed by frequent fires, the largest of which occurred in 1716 and 1879. As in other cases of Siberian wooden settlements, these fires influenced the urban form of the city.

In the early fortress of Irkutsk in the middle of the XVII century the back walls were replaced by chopped ones. In 1672 the first wooden church (Spasskaia) was built, in 1689 the Znamenskii monastery for women was founded. The description of Irkutsk was made in the 30s of the XVIII century by G.F. Miller: 'Irkutsk is divided into two parts - 'small town' and 'big city'. The small town, which started from the bank of the Angara, was an old wooden fortress (ostrog) surrounded by walls with three blind towers on three corners and two passage towers with gates. In the town there was a stone building of the provincial chancellery with three upper and three storerooms, the house of the vice-governor with barns and cellars and a stone cathedral church. In Posad, not far from the town, there were several churches, a town hall, a gostinnyi dvor, a customs house and other government buildings. In the town there were 10 wine and honey taverns, a commercial bath, three salt houses and 939 peasant houses. The large town was surrounded by a wooden palisade of 1277 sazhen, which approached the Angara from both sides. Behind the palisade a moat was dug and slingshots were placed. There were 14 entrenchments and three passage gates in the palisade. Behind the palisade there was a church and 12 granaries'. In general, Irkutsk is famous for its attitude to heritage, a relatively large number of preserved historical buildings, including historical wooden structures. This makes the city attractive to tourists and researchers.

#### YENISEISK

In 1600, Prince Myron Schakowsky and Danilo Khripunov and the son of a boyar and ataman, and with them 100 people, were sent to Mangazeia and Yeniseisk by decree of the sovereign and by letter from Tobolsk. They were ordered to build fortresses in Mangazeia and Yeniseisk' (Gorbachev et al., 2011, p. 64). Yeniseisk was one of the first and most important Russian settlements in Siberia. According to some reports, as early as 1609, the yearling Cossacks visited the areas where the Makovskii and Yeniseisk fortresses were later built, and even the 'Tiulkina Zemlitsa', where the Krasnoyarsk fortress was built twenty years later. Yeniseisk was the first Russian town in Central

Siberia. Its location not only established the central 'point' of the region, but also defined a new geographical centre of the changing spatial boundaries of Russia. In the XVII-XVIII centuries the waterway connecting the Russian state with the new eastern territories passed through Yeniseisk. Administrative, economic and cultural activities of most Siberian regions were concentrated here. It was from here that the routes of numerous expeditions were laid out, which allowed us to rightly call Yeniseisk the main gateway to Eastern Siberia (Gorbachev et al., 2011). From 1796 it was the district town of Tobolsk province, from 1804 of Tomsk province, and from 1822 of the newly formed Yenisei province. In the 1840s, Yeniseisk became the centre of a large gold mining district (see also Gold Rush in Siberia). In the 1860s gold production began to decline, which had a severe impact on the economy of Yeniseisk: fishing declined, manufacturing declined, and capital began to flow out.

On 3 July 1869, there was a great fire. The engineering works, which had been operating since 1941, was of great importance to the town's economy. The factory was closed in 2004. For a long time Yeniseisk was the centre of the region's forestry industry. A large sawmill operated here, which was transformed into the Lower Yenisei Rafting Office in the early 70s. Yeniseisk is an important transport centre on the Yenisei. The Yenisei Aviation Enterprise has been operating since Soviet times, and civil aviation since 1938. Until the 90s the airport was the largest in the region. In 1934 the Yenisei River Shipping Company was organised on the basis of the Ob-Yenisei Regional Department of Water Transport. A shipyard was operated. The food industry was actively developing in the town. There were bakeries, food processing plants, a catering office, a dairy, a brewery, a meat processing plant. At present the food industry, geophysical and geological exploration and forestry are developing in Yeniseisk.

Like other Siberian towns, Yeniseisk is situated at the confluence of rivers. However, the humid climate, harsh winters, frequent floods and fires quickly left the wooden city of Yeniseisk in an extremely dilapidated state. In fact, the city lies well to the north of Krasnoyarsk and Tomsk. It is situated between the taiga swamps, between which the first inhabitants tried to place their buildings on higher ground. The place for the ostrogue was chosen unsuccessfully;

around the city there is a swampy, peaty plain. The great bend of the Yenisei River meant that the city was located on an almost strictly latitudinal site, with its coastal 'façade' facing north (Gorbachev et al., 2011).

Rapid stone building began in Yeniseisk in the second half of the 1730s. The economic prosperity of the town, associated with the development of trade and handicraft production, the leading industries of which were metalworking, salt production, and shipbuilding, contributed to the establishment of Yeniseisk as one of the largest centres of stone construction in Siberia in the XVIII century (Gorbachev et al., 2011). Yeniseisk is famous for its incredible atmosphere of old Russia and wooden architecture, which attracts tourists and the attention of international heritage committees.

KRASNOYARSK is described in detail in the previous subchapter.



In the present research, the process of creation of the first Russian wooden settlements in Siberia is conditionally divided into four main stages or periods (typological phases of formation) for conceptualisation:

- The first phase of development was constituted by wooden fortresses and growing village-like wooden settlements in and around them ('small' and 'big' respectively);
- The second phase was influenced by the 'models' and ideal plans of European cities and is known for the adaptation of 'classical' or 'ideal' models and urban plans;
- The third phase began with the formation of the Soviet Union, was influenced by the ideas of ideal cities and the exchange of Soviet utopian top-down models, and resulted in supergrids, superblocs (Moudon, 2019) and collages of morphological regions;
- The contemporary city has evolved as a collage (Rowe & Koetter, 1978) of different morphological regions, especially since 1991.

The formative process looks similar to that developed in many cultures. However, it is important to delve deeply into the formative steps and see them in detail in order to understand this local identity formation. Each period can be further divided into morphological sub-periods. The period of typological transformation appeared between the phases of formation. In Russian history in general, it is possible to distinguish, so-called, waves of adoption and search for cultural identities - phases of transformation and formation, respectively. As far as Siberia is concerned, which has always been characterised by strong remoteness, inertia and autonomy, the waves of influence of external ideas and the search for cultural specificities and identities reached it in a much less pronounced form, which means that the great historical cities of Siberia were characterised by relative continuity compared to the cities in the western part of Russia. In concrete terms, this meant that projects sent from Moscow to Siberia were often not implemented, or only partially implemented, and that strong 'waves' of a particular architectural or building culture did not reach Siberia at all. In Krasnoyarsk, for example, there is only one building from the avant-garde period that shows signs of this trend and was built during this period.

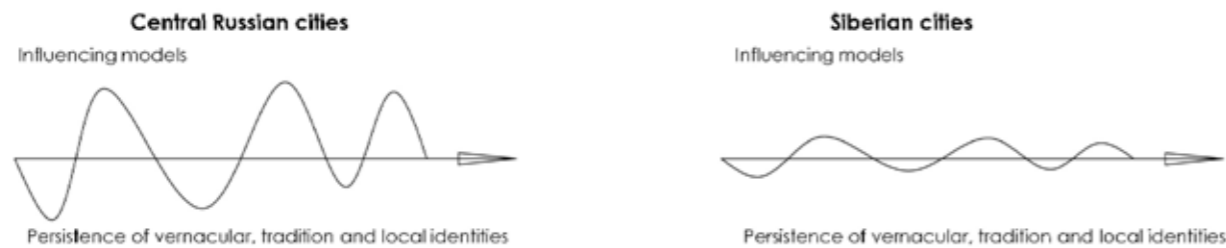
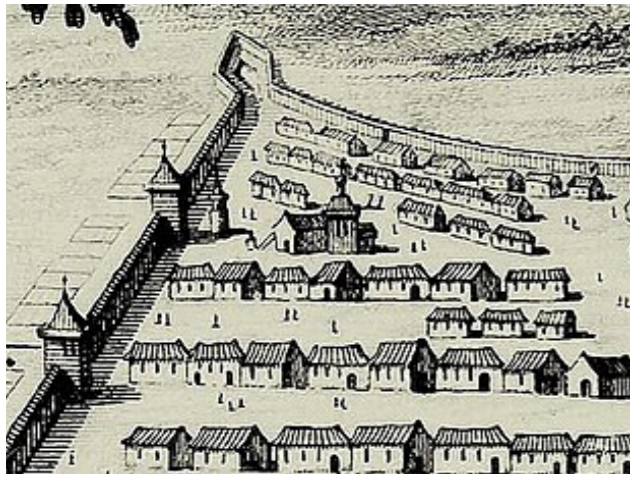


Figure 71. The 'waves' of cultural exchanging and searching for 'cultural' identities - phases of transformation and formation respectively

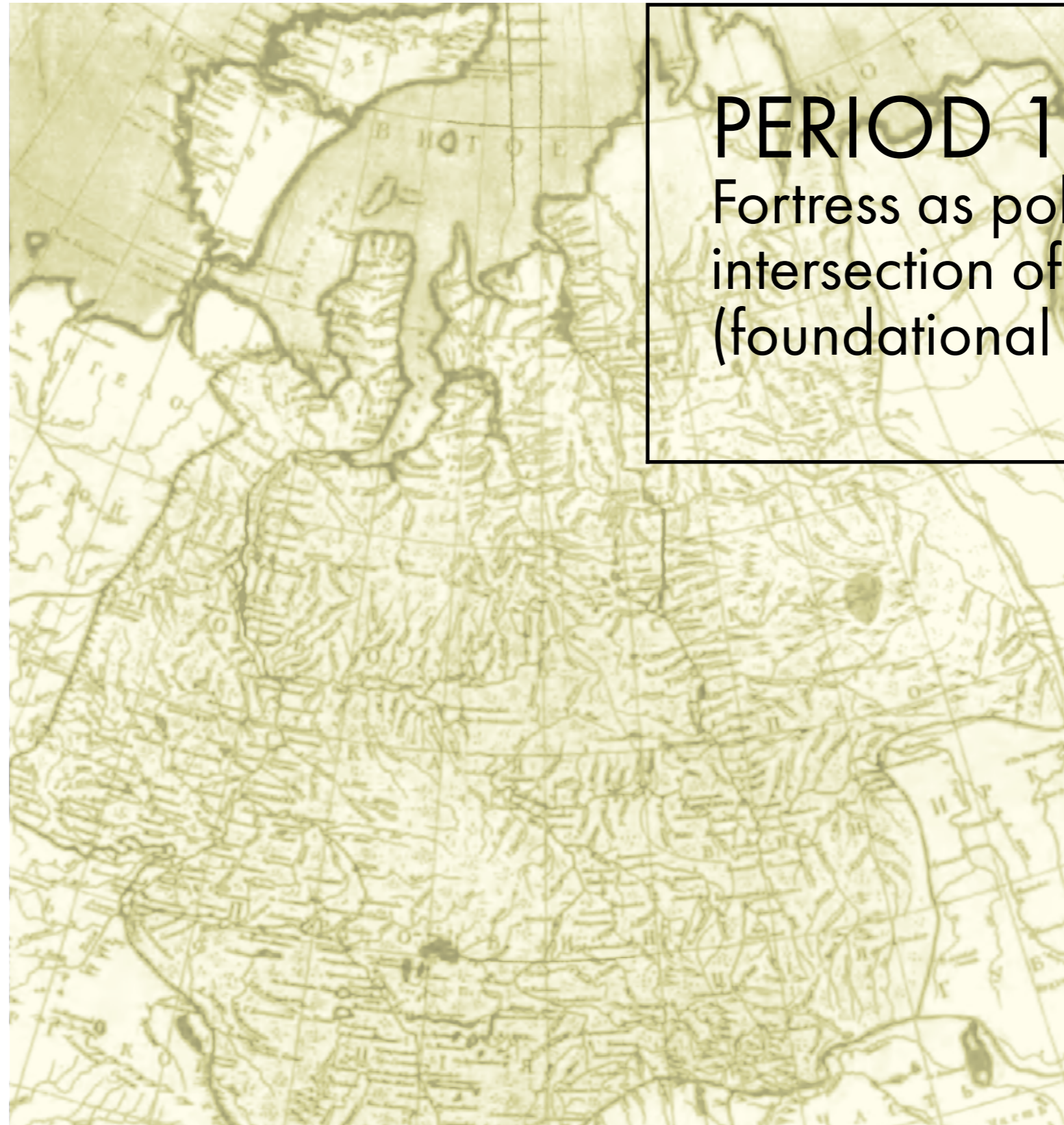


Figure 72. The maps of roads to Siberia: the first period (rivers-roads), the second (Siberian tract) and the third (Siberian railway) of development.



It is known that in the 16th century, before the appearance of the Siberian Ostrogo, the Russian state was in contact with other countries, European or otherwise, and also had its own history of fortress construction. There is information about the sending of Moscow ambassadors to the Italian lands in 1498-1504, documents indicate the participation of Italian architects in the construction of the Moscow and Nizhny Novgorod Kremlins. The subject of the participation of Italian specialists in Old Russian architecture has been fruitfully studied for a long time - since the second half of the 19th century, and this data can be found, for example, in the collection 'Old Moscow'. The importance of the contribution of Italian masters in the Moscow Kremlin, in the civil and military architecture is well known and needs no further proof (according to such researchers as Milchig M.I., Nosov K.S., etc.). The Kremlins of Russia built by Italians, 'Italianisms' in the Russian military architecture of the Moscow state (the last third of the XV - the first half of the XVI century), as well as many other similar research topics have been of great interest to researchers, who have devoted themselves to the activity of Italian engineers and architects in Moscow in the 15th - 16th centuries. The presence of other specialists - representatives of other European countries - has also been documented. And it is quite likely that the instructions sent from central Russia to Siberia to the builders of the first fortresses could absorb this general influence.

However, the identification of the greatest influence is not of primary importance for our study, since the wooden fortress is accepted here as the starting point of research - with all its specificities, construction technologies dictated



# PERIOD 1

## Fortress as pole at the intersection of rivers-roads (foundational phase).

by the climate, the abilities of the builders, the availability of materials. All in all, the character of the development of Siberian cities was different from that of the cities of Central Russia, i.e. Moscow, St. Petersburg, etc. (Quilici, 1976). According to Siberian architectural historians, the construction of wooden fortifications in Siberia became a unique phenomenon (Gorbachev et al., 2011, p. 75).

It is not easy to 'read' the first 'maps' of Siberian cities or to draw conclusions from the images of that time, which were not very accurate and were more a reflection or an impression, an interpretation of the author, than a precise drawing. However, even at first glance it is clear that the ostrogues were usually represented by fortress walls of a regular shape in plan (usually close to a square or quadrangle, but taking into account the configuration of the terrain), gates and towers, but all made of wood using locally available techniques. Unlike, for example, Roman military fortresses, the internal structure of Siberian settlements wasn't regular and had a dominant element - the church - in its centre. Thanks to the analytical work and excavations of local historians, it is possible to prove the 'reading' of these maps and the 'a posteriori synthesis' of the first territorial type.

The type of the first Siberian wooden fortresses can be

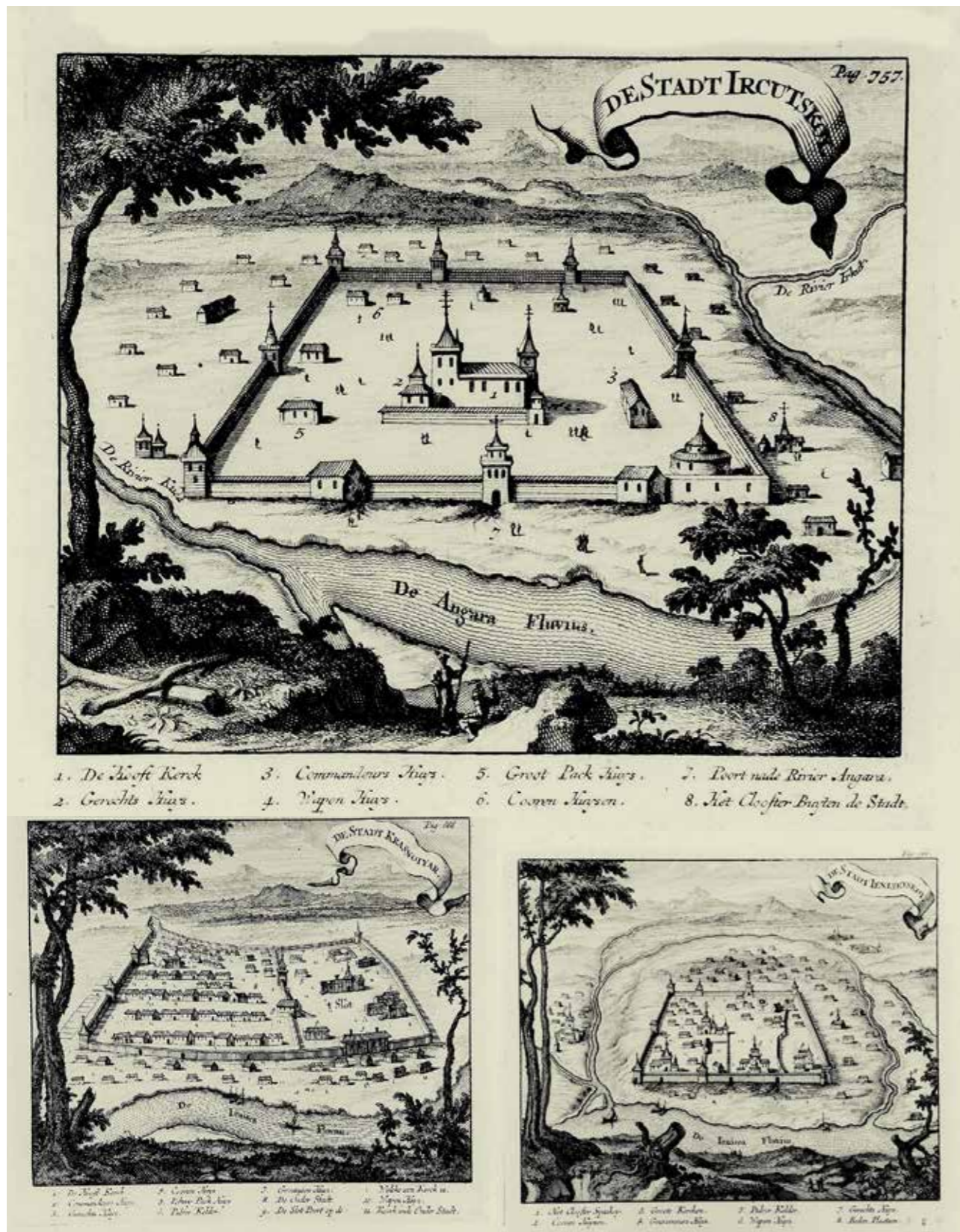


Figure 72. Irkutsk, Krasnoyarsk and Yeniseisk at the end of the XVII century, engravings in the book of Nicolaus Witsen 'Northern and Eastern Tartary' (1690s). (Photograph is provided by Krasnoyarsk Regional Local Lore Museum).



Figure 73. Irkutsk, Krasnoyarsk, Tomsk and Yeniseisk in the XVII century by Remezov ('The drawing book of Siberia') (Photograph is provided by Krasnoyarsk Regional Local Lore Museum).

interpolated from the summary of reading the first maps of that time and confirmed by graphic reconstructions of such local historians as Gorbachev V.T., Tsarev V.I., Kradin N.P., Kradin N.N., Stepanskaia T.M. The description of the 'collective image' of the first type of Siberian wooden settlements may sound as follows. At the first stage of colonisation of Siberia, rivers served as roads (intercity routes in urban morphology). The first Siberian wooden fortresses - called ostrogues - appeared as 'poles' at the intersections of two or more 'river roads' (many fortresses then roughly went through several stages: a fortified area, an 'ostrogue', and finally a town with log walls). The first small ostrogue (usually a square) was usually built near the river, on the highest bank. The fortified towers, the residential building, the prison, the warehouses, the customs buildings, the administrative buildings, the churches - all of them were usually built on the basis of the same 'basic cell' - srub (there were different techniques), determined by the available building material - wood. The settlement within the walled perimeter was spontaneous (unlike Roman fortresses), with the dominant element being the church in the centre of the settlement.

Historians say that the instructions for the construction of the first fortresses were sent to Siberia by the central governments: there were abstract, imaginary models of fortresses, oriented to specific tasks, which became real depending on the initial, given parameters and taking into account local circumstances. In the written instructions - letters and orders to governors and mayors - the model of their behaviour on the spot was usually described in detail, starting from relations with the natives and ending with recommendations on how to build a fortress, indicating its parameters, harvesting methods, placement of people and a series of buildings inside the fortress, including the church and public buildings. When the work was completed, schematic drawings showing the location of the fortress were sent to Moscow with the report (Gorbachev et al., 2011). What Gorbachev et al. described corresponds directly to the widely accepted understanding of the notion of type (e.g. in G. Caniggia): a record of collective experience (perhaps a collective image of the existing fortresses of the western part of Russia, itself influenced by the long European history of fortification construction), which doesn't contain the precise parameters, but rather the main social, functional, cultural and technological

ideas, which can be grounded differently in different geomorphological situations and still collectively form the type. It's important to note that this type description did not include a precise drawing, but mostly verbal indications, including the indication of model 'behaviour' - here the multi-layered concept of type is vividly illustrated.

At the turn of the XX-XXI century, the Tomsk scientist N.S. Novgorodov put forward a hypothesis about the Siberian ancestral homeland of mankind; in order to substantiate it, in his works he provides an analysis of domestic and foreign authors on the location of ancient cities in Siberia, such as Serponov, Kassin, Kambalyk, Grustina (Gorbachev et al., 2011, p. 51). Thus, the history of fortifications or primitive regular settlements existed in Siberia before the Cossacks:

In the era of primitiveness, with the emergence of productive forms of economy and an increase in population, conflicts over life-sustaining resources escalate and people begin to build protective structures around their settlements. Archaeologists date the appearance of fortified settlements and defensive structures on the territory of the southern and western regions of Siberia, in Central Asia, to the Bronze Age. In this context, it is important to note that the term 'settlement' is usually used to refer to a fortified place protected by fortifications (ditches, stone or earth walls, wooden palisades, etc.). The settlements could be long-term settlements as well as places of temporary refuge from enemy attacks. [...] During the period of the Uyghur Khaganate (VIII-IX centuries), the southern neighbour of the Kyrgyz, fortified settlements and fortresses appeared in the upper reaches of the Yenisey. They were quadrangles surrounded by walls made of clay or mud bricks. Some of them had rounded defence towers at the corners and at the gates. There were usually two gates. Outside, all the fortresses were surrounded by deep moats filled with water, and only dry entrances led to the gates. [...] The first Russian explorers began to bring back information about the existence of fortifications among many other peoples of Siberia. For example, the constant hostilities between tribes, accompanied by theft of cattle and kidnapping of captives, led the Yakuts to build fortifications to protect their property. V.V. Antropova, who studied the military organisation and affairs of the northeastern peoples of Siberia, noted two main types of such fortifications, depending on the way of life and agriculture - fortifications

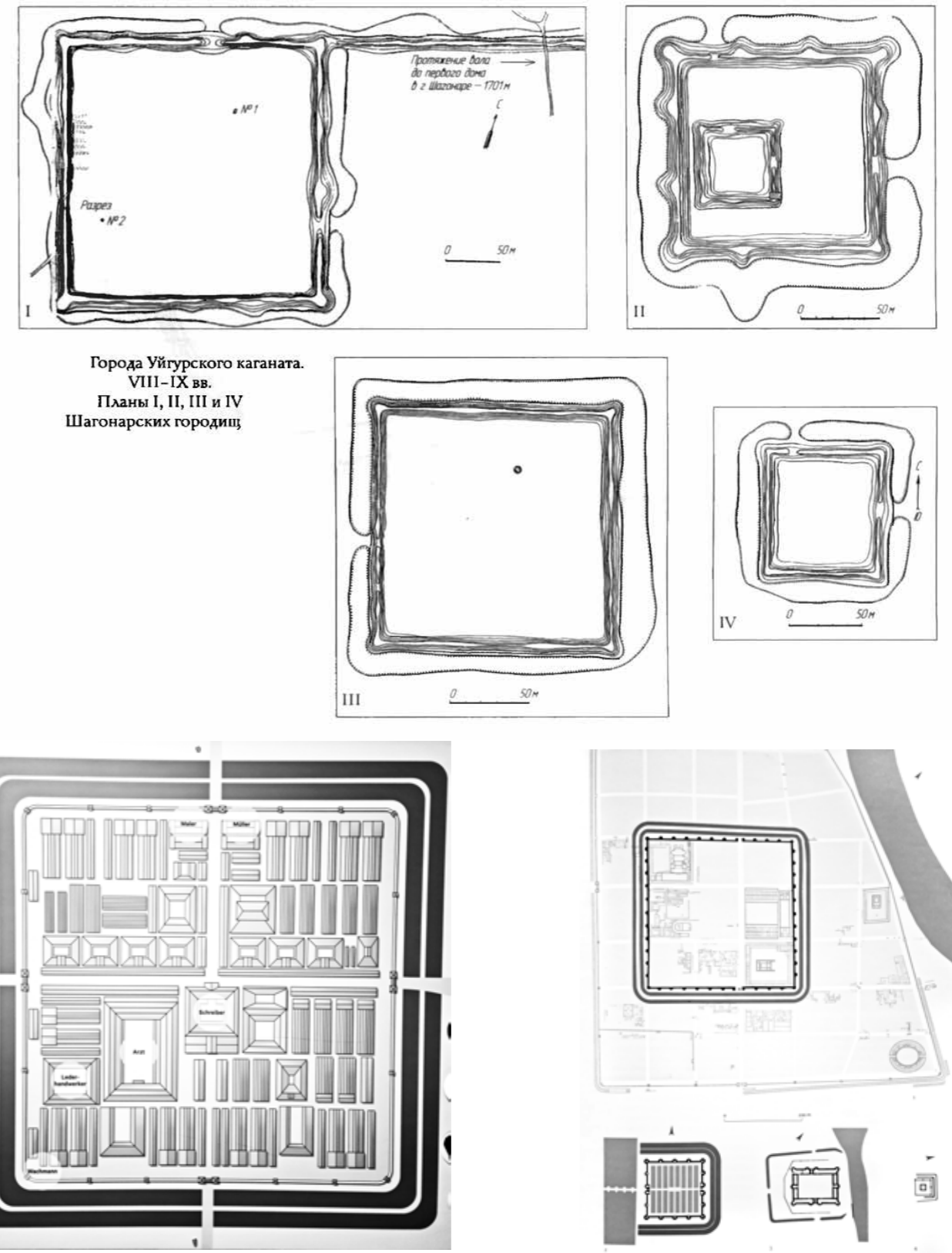


Figure 74. Above: settlements in the south of Siberia, VIII-IX cent (Gorbachev et al., 2011); below: the Roman colonial fortress, the origin of Bonn (Photograph is provided by Bonn Lore Museum).



of sedentary people and fortifications of nomadic reindeer herders. The most widespread were permanent fortifications, which were 'ordinary villages or individual dwellings surrounded by an earthen or stone rampart, a wooden palisade, and sometimes all these means of protection together'. (Gorbachev et al., 2011, pp. 20-25).

Therefore, it is difficult to say with certainty whether it was the tradition of building fortifications in central Russia in the 17th century, or techniques or foreign experience or local experience that most influenced Siberian wooden fortresses. The ascetic image of the ostrogoe structures, as well as the nature of the rare details, do not directly refer to Italian or other European analogues. Obviously, they were a simplified 'collective image' of pre-existing fortresses, built with locally available materials and existing construction techniques (typical for the construction of houses in local settlements and villages of ancient Russian tradition). As mentioned above, this study does not aim to establish the exact origin of the fortifications. However, after a typological study of the documents describing the nature of the settlements, it is possible to draw conclusions about the formation process, taking into account the typological similarity with other types that existed in other cultures synchronously, diachronically, syntopically and diatopically. Obviously, it can be assumed that not only the instructions sent from Moscow containing the knowledge of the European tradition of fortress construction, but also the local settlements that existed in Siberia before the Russian ones had an influence on the development of the first Russian fortresses in Siberia due to the known communication between the fortress builders and the local people. The aim of the study was not to describe the Siberian Ostrogoe from the point of view of fortification science or military art, but to determine the architectural and morphological type of the settlement, primarily by means of map reading.

The era of Peter I accelerated a special interest in military affairs and the construction of fortresses according to standard projects:

'... the typical design of Siberian-style fortifications was characterised by the incorporation and adaptation of designs from translations into Russian of European treatises by military engineers. It's known that books on fortification

were an integral part of Peter I's extensive personal library on architecture, and with the emergence of an urgent need for theoretical training of domestic specialists in military engineering and the introduction of the civil alphabet in printing since 1708, the tsar personally supervised the process of distribution and publication of foreign literature. Translations of books on western European fortifications of the XVII century became the theoretical basis for the formation of the foundations of the Russian engineering school. The direct participation of Peter I in the publication of books on military engineering is reflected in the history of the publication of translations of some works of the civil press in 1708-1725. These sources are available in the Rare Books Department of the Russian National Library (RNB, St Petersburg). They include the treatises of L.-H. Sturm (1709), M. Kugorn (1709), F. Blondel (1711). In 1708 a book on fortification by the German engineer Georg Riempler 'Riempler's Manira on the construction of fortresses' was published, and in 1724 a translation from French of de Cambrai's treatise on fortification by Sebastien de Vauban 'The true way to strengthen cities' became known in Russia. As the results of our comparative analysis showed, in the process of designing fortifications along the Siberian defensive lines of the XVIII century, these paths became a source of prototypes of projects with a new fortification.' (Shmelina, 2016, p. 84).

However, the cities of interest for this study appeared earlier. It can be assumed that various knowledge about fortification had already arrived from central Russia and had been transformed into typological, imaginary, descriptive models that were sent to Siberia as recommendations. Obviously, in the selected cities of the XVIII century the opposite processes took place: by the middle of the century the cities ceased to have a defensive function.

In later periods, typologically speaking, each urban estate, subsequently a minimal building unit, also conceptually conveyed the idea of defence and resembled a fortress, an 'introverted' (inwardly oriented, suggesting protection from outside contacts, in contrast to the more 'extroverted' historical houses in close contact with the street in many European cities) concept of a house with a courtyard, a local modification of the 'courtyard house', in which the concept of collective family privacy was important. In fact, according to photographs, plans,

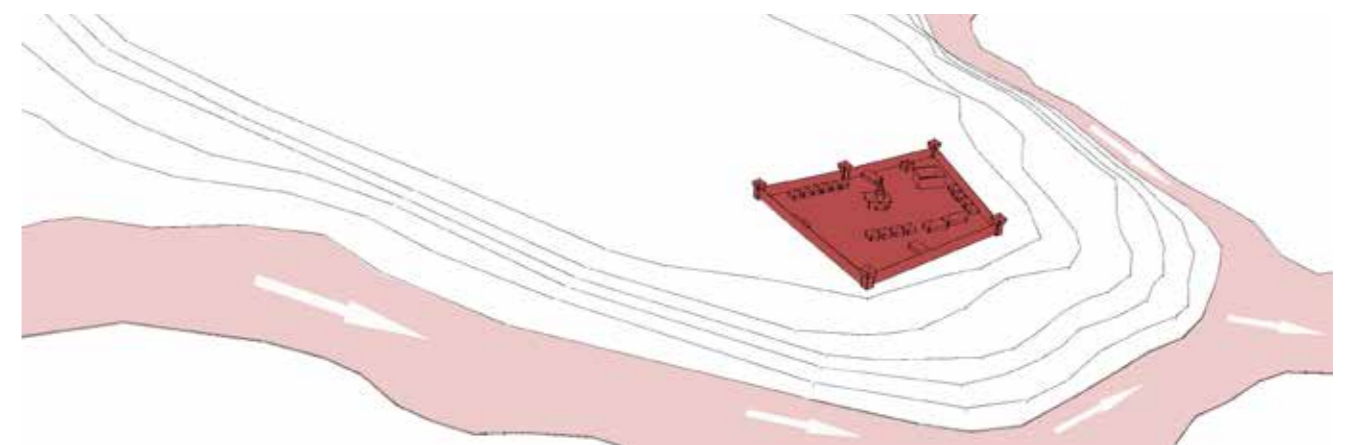
reconstructions and preserved pieces of later fabrics, the perception was exactly this: the quarter of the Siberian city was a sum of small 'fortresses', adjacent to each other, completely surrounded by fences, not transparent and not passable from the outside. Thus the block was perceived from the outside as a single whole, its internal structure being less important and more changeable. The graphic image on the maps of the time confirms this principle: the blocks were represented as a surface, with roads between them, perceived as gaps or voids. It is obvious that roads and 'public' spaces were rather natural 'voids' between residential 'nests' and blocks of fenced-in estates. Interestingly, the same phenomenon of 'gated communities' can still be seen in the cities (reappearing after the return to private ownership after the collapse of the Soviet Union), the fence and fencing are consistently important. The transition from house to road was made through the gates of the estate, rarely through a direct entrance to the house. This tradition has been preserved for a long time and manifests itself in the construction of apartment buildings, where the entrance 'from the street' is rather an exception. The Siberian city is still dominated by the tradition of entrances from the inner part of the district or block, or from the courtyard.

Equally important was the phenomenon of the 'urban void', the un-built space in the city, which was quite extensive compared to compact European cities, and which was reflected in culture and mental habits. The first fortresses were built in the centre of vast uninhabited spaces that extended for thousands of kilometres outside the fortress. The first urban 'squares', the roads, were empty spaces

of traditional Russian settlements - the square could be a self-sufficient void, with its size, vagueness and a lot of air. Thus, historically, many works of folklore and art in Russia have been devoted to the phenomenon of the 'mysterious' emptiness of the Russian void.

Thus, the description of the basic territorial type can be as follows:

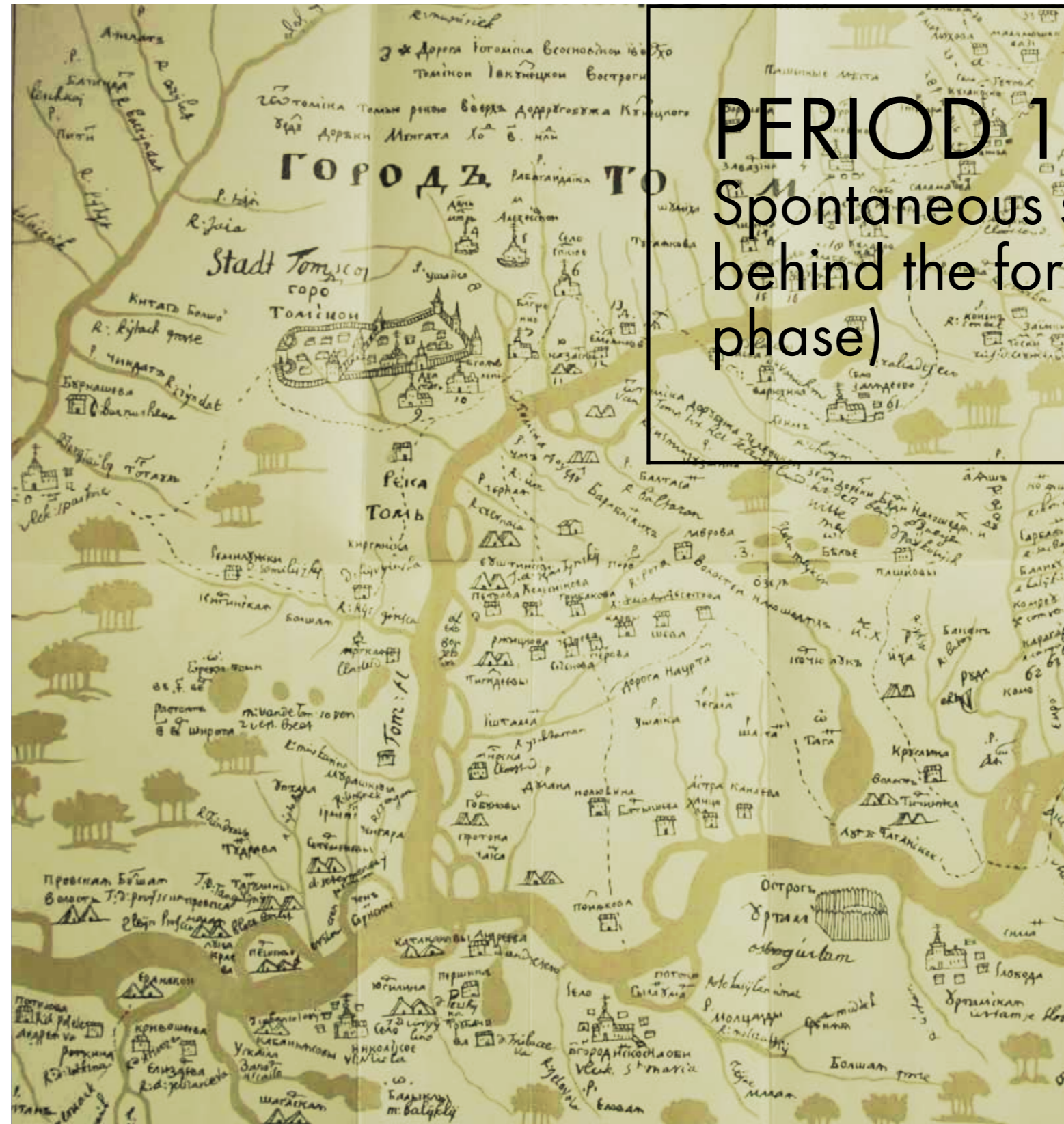
1. In the first stage, rivers served as roads (intercity routes in urban morphology). The first Siberian wooden fortresses - so called ostrogoes - appeared as "poles" - at the intersections of two or more "river-roads";
2. The first small ostrogoe was usually built near the river, on the highest bank;
3. The fortress towers, residential buildings, prison, warehouses, customs buildings, administrative buildings, churches - all were usually built on the same 'basic cell' - srub (different techniques existed), dictated by the available building material - wood;
4. The settlement within the walled perimeter was spontaneous (in contrast to Roman fortresses), with the dominant element of the church in the centre of the settlement.
5. Fortresses had regular shape in plan (usually close to a square or quadrangle, but taking into account the configuration of the terrain), had gates and towers, all made of wood using locally available techniques.





This sub-stage is rather an evolution of the first type of Siberian wooden settlement, a formative phase: it basically retained the features of the original settlement type - from the functions of the buildings and spaces to the building material and the spontaneous nature of the settlement organisation, which extended far beyond the original walls. The main typological feature, the fortified wall surrounding the spontaneously organised settlement, has also been preserved. Thus, despite the differences, there is a remarkable continuity in the development of this type.

'Spontaneous building includes the immediate, concise comprehension of what occurs to form a building product. If we think of how basic spontaneous building production came about (and still does), without the mediation of others and without the tools that help plan buildings before they are constructed, it is easy to find a strict, correlated bearing on the purpose of producing a useful, solid, equally 'interpretable' building at the same time, in the sense of providing those who observe it with evidence of how useful and solid it is. Men have always built their own houses themselves, without the intervention of architects, guided by the heritage of correlated notions that characterise each cultural area throughout history, according to the specific 'building culture' they spontaneously helped to hand down and develop. When someone builds their own house with their own hands, they do not follow the dictates of the various architectural schools or currents and do not choose to build it out of structural steel or tree trunks without distinction: they do it as a house is built at that particular moment and in their own cultural area, thus acting in full



# PERIOD 1

## Spontaneous settlement in and behind the fortress (formative phase)

spontaneous consciousness.' (Caniggia & Maffei, 2001, p. 40).

Unfortunately, very little information has been preserved about this stage in the development of Siberian cities, even less than about the cities of central Russia. According to Glazychev, fires continued to destroy not only buildings but also documents, and fewer documents have survived to the present day than from the infinitely older Mesopotamia (Glazychev, 1987). The map of Irkutsk from 1784 stands alone, this preserved map is one of the most detailed and precise, at the same time it is possible to notice that Irkutsk has experienced the minimum number of changes in comparison with other Siberian cities of that period. That's why Irkutsk with its early maps was chosen as a basic case study for the research dedicated to the 'spontaneous' period of development outside the city walls. Based on the map of 1784, it is possible to reconstruct the basic logic of Irkutsk's development and compare it with several other Siberian cities in order to confirm the hypotheses. The timeframe of this research step is limited by the end of the phase of dominant spontaneous development of the city - with the emergence of the first regular master plans in all the described cities at the end of the eighteenth century. The following morphological interpretation allows to propose a preliminary hypothesis of the typological

formation of the Siberian city of the first period, which can be confirmed by comparison with other Siberian cities and historical descriptions.

As can be seen on the maps, in the XVIII century, the streets of Irkutsk remained curved, spontaneously developed. In the 1760s, the first Irkutsk governor wanted to 'to improve the city' straightening the existing streets: in 1768, the first plan of Irkutsk was drawn up in the local drawing agency, indicating territories for handicraft and other industries, administrative and trading centres, a complex of existing stone church buildings. (Ogly, 1980)

The given map of Irkutsk allows to suggest the following steps of formation of the first settlement beyond the first city walls, based on the criteria described by G. Caniggia, which can be attributed to any men in any culture, using the method of morphological reading:

- 0 step: a wooden fortress and the road, which connected this fortress with other settlements are visible; the direction of the road was conditioned by the presence of a hill, which had to be bypassed, at the southern end.
- 1 step: formation of the 'spontaneous' settlement with fortress as a main polarity, connected with the trade square by matrix road, and with several nodal points (churches), which were interconnected by secondary roads; the moat outside the city wall is clearly visible, hatched in grey (this situation is visible also on the map of 1729 (Fig. 4)); the outer roads determined the positions of the city gates, while the city gates determined the position of, for example, the monastery to the east.
- 2 step: further densification and formation of 'building roads' - some of them were perpendicular to the secondary roads, some parallel.
- 3 step: the city wall disappeared and the plots previously adjacent to it formed a band of pertinence for new roads, which replaced the wall; new pertinence appeared on the other side of that roads; the formation of roads outside the former walled city began.
- 4-5 step: new nodes started to appear beyond the city wall - market, churches, military centre, etc.; 'building roads' are mostly parallel to the matrix and orthogonal to the city wall and moat.
- 6 step: the former moat previously filled with water was becoming a road connecting new nodes, which appeared near it; the new road due to the irregularity of pertinent plots resembles the restructuring road; first fragment of masterplan and orthogonal grid is visible.

The development described could be summarised as follows. As the settlement grew beyond the city walls, the main 'pole' appeared near the main ostrogo and may have included the market square with associated buildings, the cathedral and administrative buildings. The inner 'matrix' street usually connected the 'main pole' with the 'secondary pole' - the market or church square, and with the city gates. One or more new nodes were usually connected and marked by churches. The positions of the city gates were defined by the outer streets. One of the gates was usually marked by a nearby monastery. The growing settlement behind the first fortress was based on a 'spontaneous' principle (Caniggia & Maffei, 2001), in contrast to, for example, Roman colonial settlements. The orientations of the external roads, their positions and configurations defined the main internal roads. The locations of former city walls were usually later transformed into roads. River banks had an 'antipolar' character and were a smooth transition between landscape and settlement. The physical limits of this step were determined by the limits of the natural flat platform. Thus, this 'natural' feature of the Russian city is the presence of the 'void' - an empty field within the city, a meadow separating the city wall from the quarters of the estates, etc., and the 'poetic' or even 'melancholic' connection of the settlement with the landscape.

Thus, all the above can be proved by the analysis of at least three other Siberian cities of the same period. For example, the presumably formative process in Krasnoyarsk had a similar character. The analysis clearly shows the existence of a spontaneous stage in the development of the first Siberian settlements, most of whose patterns correspond to G. Caniggia's description of the principle of formation and the main concepts and terms, and characterise urban development in different cultures. Typologically, these Siberian cities can be defined as colonial fortresses, but the spontaneous nature of their organisation distinguishes them significantly from, for example, Roman colonial fortresses, which were strictly regular. The fact that the configurations shown on the cadastral map of Irkutsk and the reconstructed map of Krasnoyarsk in the late 18th century still determine the directions and configurations of the existing urban fabric supports the idea that the described stage left no physical artefacts, but largely determined the current urban fabric.

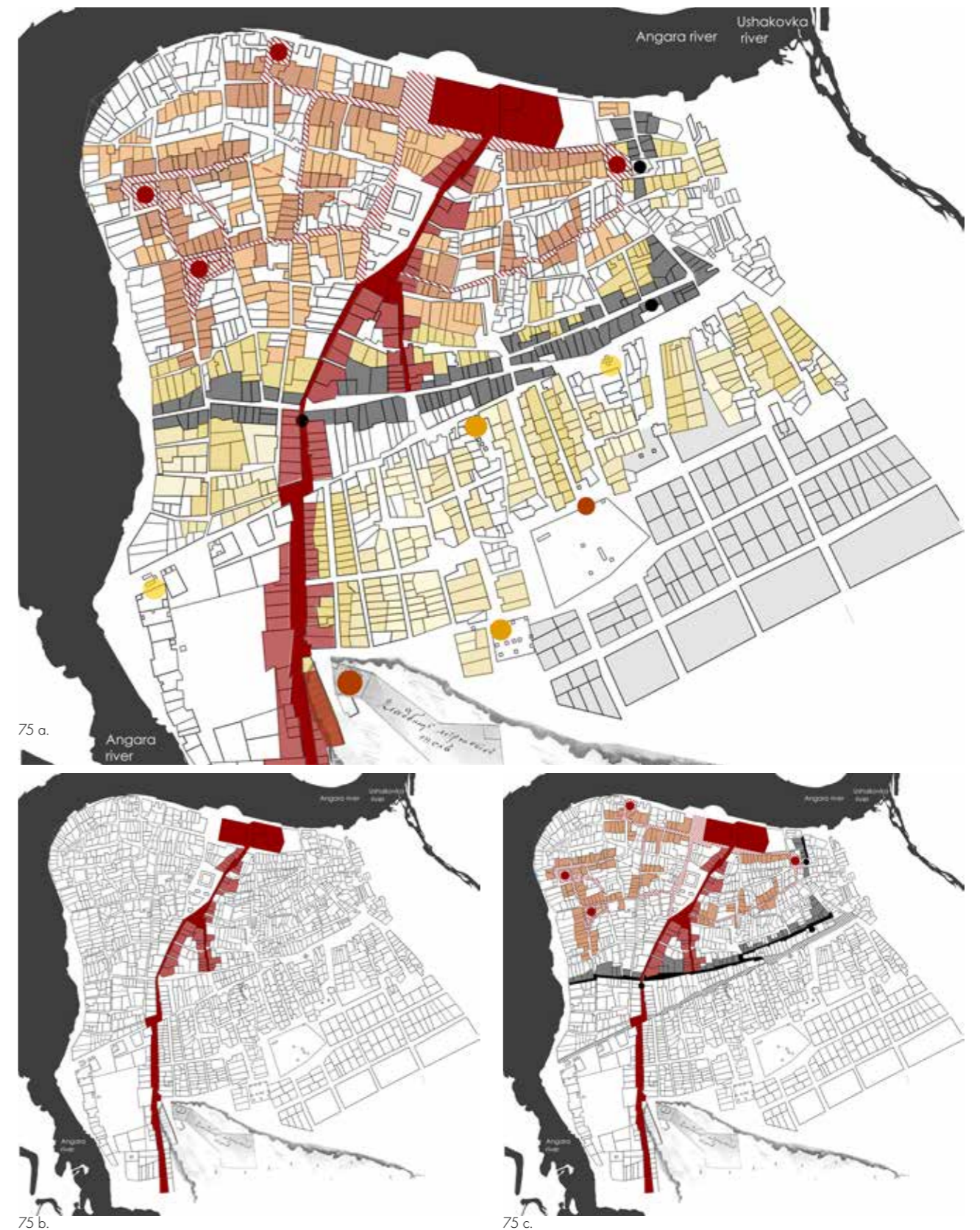


Figure 75. The hypothetical steps of formative process of Irkutsk before 1784.



75 d.



75 e.



75 f.



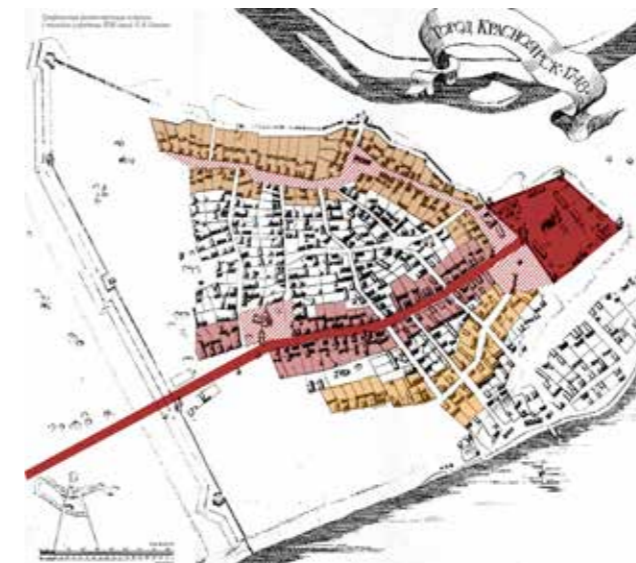
75 g.



75 h.



75 i.



76 a-d.



The geomorphological situation of Yeniseisk is strikingly similar to that of Krasnoyarsk and Tomsk. Unlike many other Siberian historical settlements, Yeniseisk has been thoroughly researched and described, as it is included in numerous lists of protected monuments and has been nominated for inclusion in the UNESCO lists. According to the preserved map, probably from the seventeenth century, the building was dense and spontaneous, as in the other described towns, a settlement was formed outside the small fortress. The description by local historians is particularly interesting: 'The Yeniseisk fortress of the 1660s contained in its three-dimensional composition most of the most characteristic elements of Siberian defensive

architecture: the choice of the fortress location in relation to large and small rivers, square log towers, round tents with observation towers'. (Gorbachev et al., 2011, p. 133). In the XVII century the structure of Yeniseisk included the main fortress and the Posad, and was supplemented with new components - monasteries. The same principle is visible: the main fortress acts as the main polarity, surrounded by administrative and commercial buildings, together with the dominating church. The nearest hill is marked by the cathedral. One of the main roads connects this hill with the main polarity. The main matrix runs parallel to the river, forming a linear polarity. According to local historians, development to the west was stopped by the risk of

Figure 76. Formative process of Krasnoyarsk before 1748 (based on the map-graphical reconstruction of E. M. Panov).

flooding. The city developed most intensively along the Mill River, with a bridge forming the main axis. The city stretched along the Yenisei River at a distance of 200-400 metres from the bank, connecting the roads from the city to Krasnoyarsk and Makovskii ostrog (Gorbachev et al., 2011).

A brief excursion into the social and cultural history of development phase of Russian fortresses can tell the story about the possible references or relative types for the Siberian wooden fortress. Apparently, as it was said, this principle of development of the first fortress is not totally unique in Russian history even though it contains absolutely unique features:

'The juxtaposition of gorod and posad tended to become an organic feature of the Russian city during its period of political and economic stabilisation between the 16th and 17th centuries. The gorod - as seen in Moscow - generally comprised the Kremlin and an adjacent district where the clergy, nobility and merchants lived. The posad, on the other hand, together with the jamskaia sloboda (the suburbs that grew up around the 'posts', along the roads leading from the countryside), form a kind of fabric with a lower specific density, in which structures and spaces are organised at the lowest level of urban life. The contrast remains clear, physically underlined by the presence of the fortified belts, by the dialogue at a distance between the main architectural elements. A contrast that is generally mediated by the presence of the natural element, the bed of a river (which has often favoured the very origin of the city), a hill or a promontory on which the Kremlin and the Gorod proudly stand. In short, the Russian city is at one with its landscape, with the history of the settlements scattered over the vast territory, built as bases for caravan or river transport, as impregnable fortresses around which the nomadic and warlike populations flowed or settled, free to expand westwards in the absence of clearly defined geographical boundaries in that direction.' (Quilici, 1976, p. 65).

The Siberian principle of the growth of fortresses and the organisation of the posad resembled the cities of western or central Russia, but contained significant typological differences, such as the material of construction, the presence of different categories of population and the

corresponding types of organisation of housing and urban spaces, etc. Glazychev noted that the large family was common in conditions such as an uninhabited place, virgin soil, dangerous border areas of Siberia, but in other situations, such as the established cities of central Russia, small families were more common (Glazychev, 1987). Gorbachev and Aschepkov, studying housing in Eastern Siberia, also mention this trend and the accompanying phenomenon of collective family privacy, the virtual absence of personal private space and a sharp contrast with the 'public' spaces of the city, most often represented by uninhabited voids between the nests of connected estates (Aschepkov, 1953). In their descriptions of settlements in Eastern Siberia, the authors also mentioned the structure of spontaneous Siberian villages organised by separate 'nest' estates without pronounced streets, where 'nests' were independent small complexes of residential and specialised buildings 'islands' of development.

Glazychev described the cities of central Russia, mentioning I.E. Zabelin, who studied the history of Moscow in depth in the 1970s, explaining its fragmented nature and the role of urban void. The author said that the most characteristic feature of Moscow was the variety of fields and meadows that separated the inner settlements from each other and from the city walls. The same feature could be found in Siberian cities. In a traditional Russian city, roads, which were called streets only in the XIX century, were well distinguished (Glazychev, 1987), but they rather resembled voids. Thus, this 'natural' feature of the Russian city is the presence of 'emptiness' - an empty field within the city, a meadow separating the city wall from the quarters of the estates, etc., and the 'poetic' or even 'melancholic' connection of the settlement with the landscape, which is common to Siberian cities. Thus, there were features that united the fortresses of Central Russia and the Siberian fortresses, and it is impossible to deny the influence or the same cultural origins, but the Siberian fortresses had a significant identity and specificity, which indicates the existence of a special type of settlement - a Siberian wooden fortress or ostrog. In fact, there was no precise formulation of the concept of type at that time. However, the physical principles of the development of the environment showed the objective real existence of types, the definition of which corresponded perfectly to the one given in this work and to the definition that

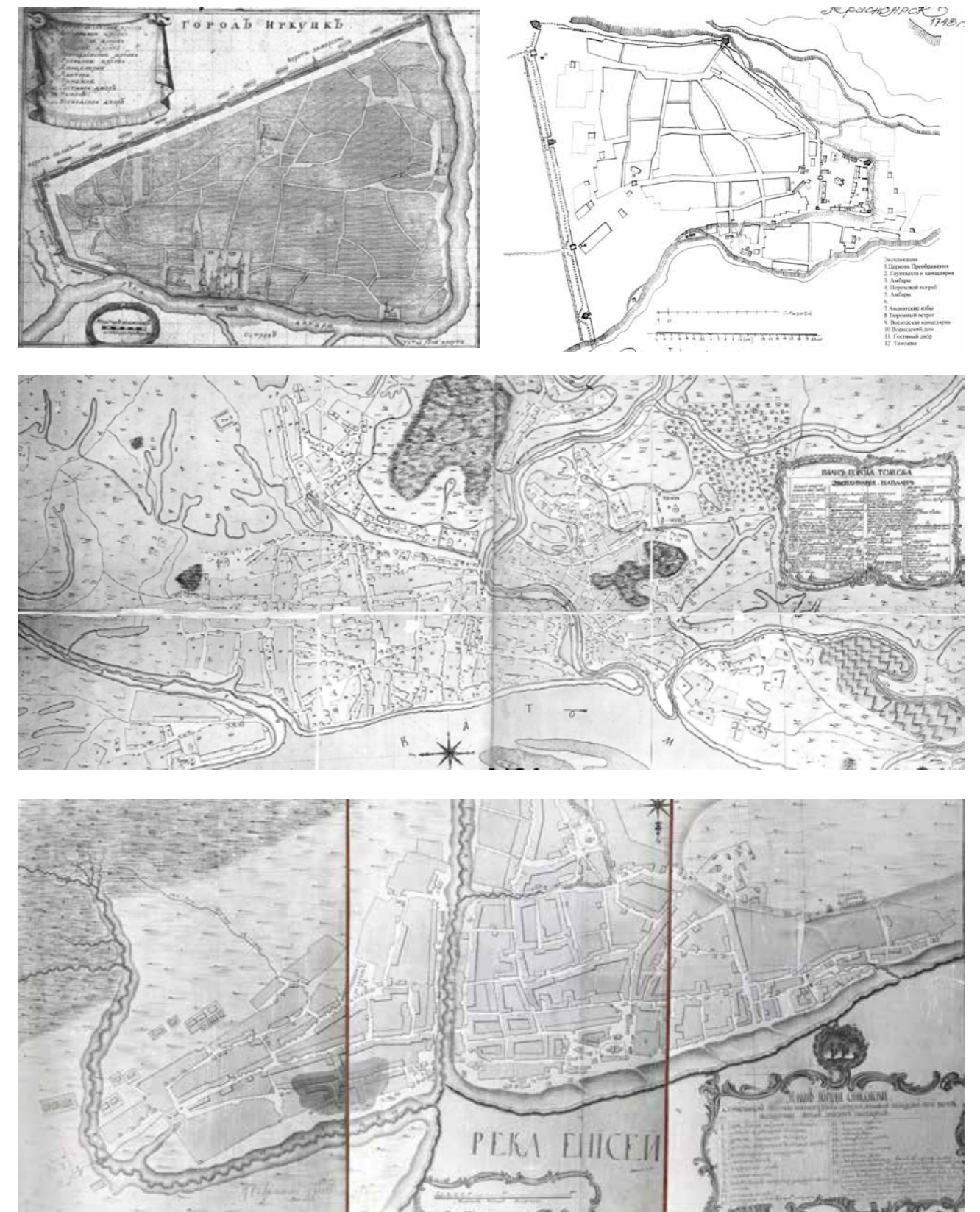
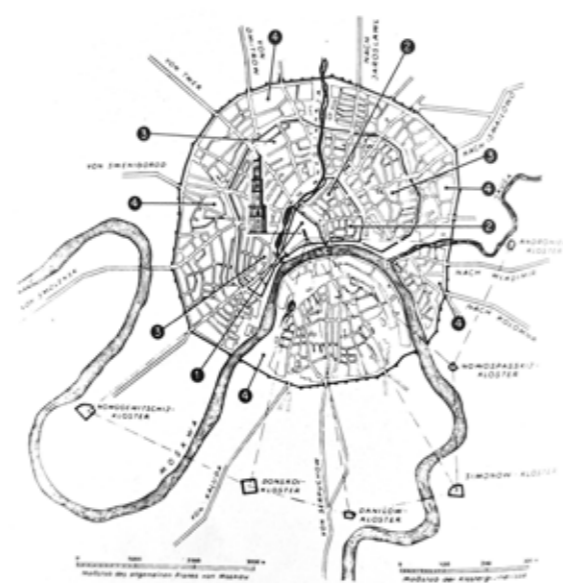
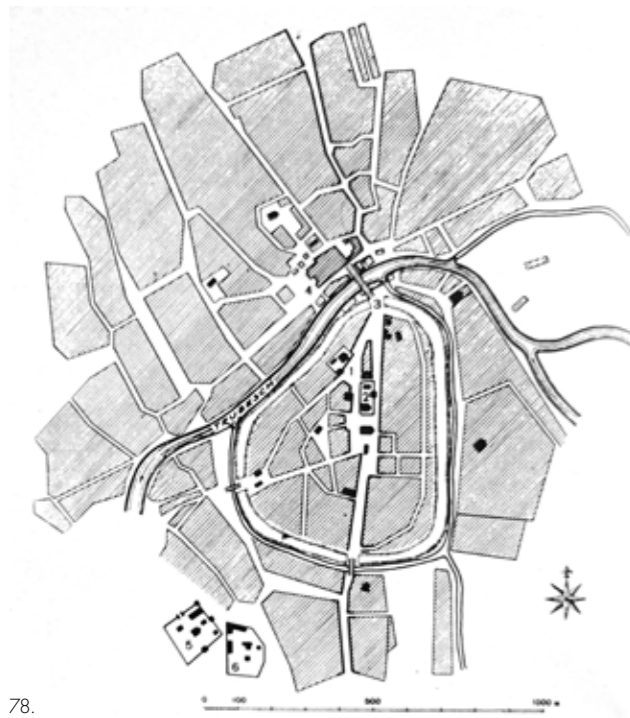


Figure 77. Plans of spontaneous settlements of the beginning-the middle of XVIII cent.: Irkutsk, Krasnoyarsk, Tomsk, Yeniseisk (maps are provided by Krasnoyarsk Regional Local Lore Museum).



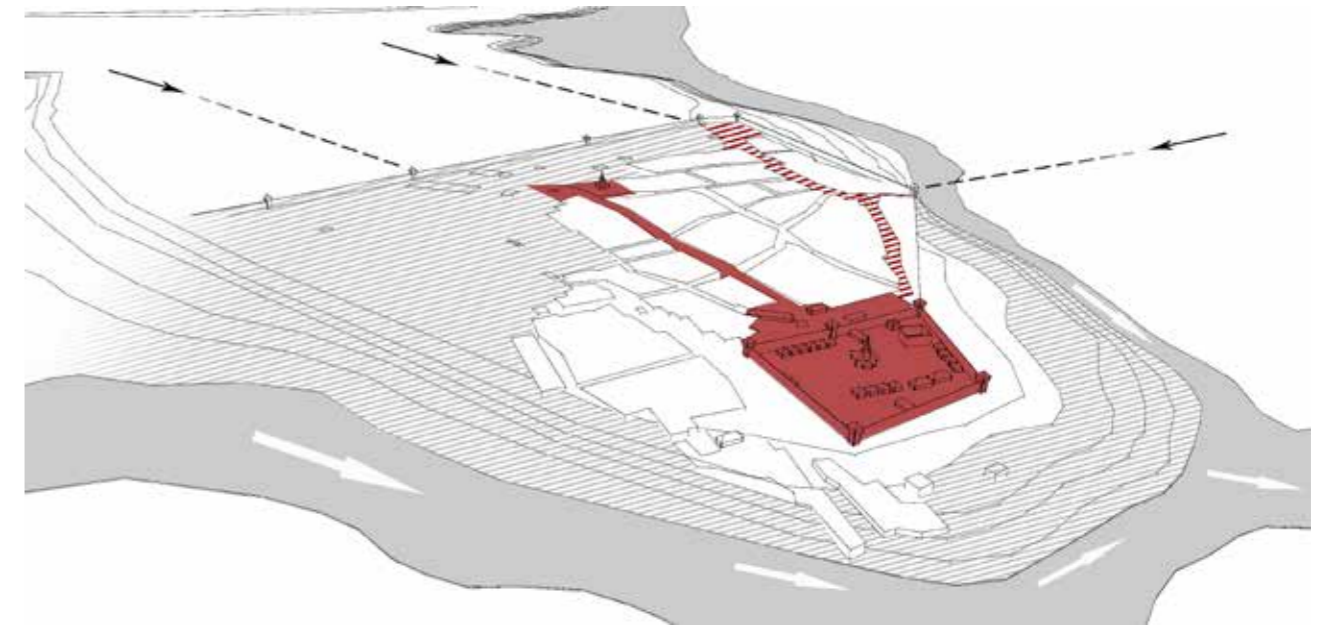
78.

Caniggia adhered to. Thus, the typology that emerged in the process of urban development considered the type as a cumulative record of collective experience, the result of the continuity of generations.

Thus, it can be said that the general principles that guided the Siberian cities corresponded to those described by G. Caniggia, which can be attributed to any man in any culture. It may be interesting to note that, unlike in Italian settlements, the 'building roads' were usually built in parallel with the 'matrix roads', a peculiarity that can also be found in the Canadian city of Quebec. In short, the Russian city is at one with its landscape, presenting a spontaneous fabric with a lower specific density. This was even more pronounced in the Siberian city. It is important to note that in Siberia there was a large, undivided family, due to the conditions of settling in an uninhabited, dangerous place, which led to the accompanying phenomenon of collective family privacy, the actual absence of personal private space, and a sharp contrast with the 'public' spaces of the city, most often represented by uninhabited voids between the nests of connected estates - 'islands' of development with voids between them. In addition, the most characteristic feature of ancient Russian cities was the

great variety of fields, meadows literally located within the city, or separating buildings from its walls in general, or located beyond the fortress walls (which began to disappear in old Siberian settlements in the eighteenth century). In a traditional Russian city, roads were called streets only in the nineteenth century. Thus, this 'natural' feature of the Russian city is the presence of a 'void' - an empty field within the city, a large square, a road instead of a paved street, or a meadow separating the city wall from the quarters of the estates, etc. These empty spaces form a 'poetic' or even 'melancholic' connection between the settlement and the landscape. These 'nests' with spontaneous internal organisation and the importance of collective privacy protected by blind walls or fences, contrasting with large and poetic 'voids', were the most pronounced specificity of Siberian settlements that persisted over time. During the development of the settlement, the main polarity appeared near the main ostrogue, which could include the market square with associated buildings, the cathedral and administrative buildings. This main polar square was a large open space, literally a void. In general, the role of 'voids' cannot be overestimated. The inner matrix usually connected the main pole with the secondary pole - the commercial or church square - and

Figure 78. Plans of Pereslavl-Zalesskij (XVIII cent) and Moscow (XVII cent). (Quilici, 1976)



with the city gates. Thus, the directions of the outer roads defined the main inner roads and the positions of the new poles. The growing settlement behind the first fortress was based on a spontaneous grid. The place of former city walls was usually later transformed into roads. The main nodes were defined by the positions of the churches.

Thus, the description of the fundamental territorial type at the end of the formation phase can be as follows:

1. General principles that guided Siberian cities corresponded to those described by G. Caniggia.
2. The main polarity appeared near the small ostrogue - a market and cathedral square, a large open space, literally a void.
3. The inner matrix connected the main pole with the secondary pole - second market square or church square, and with the city gates.
4. The directions of the outer streets defined the main inner roads and the positions of the new poles (one was a monastery - prior antipolarity).
5. The growing settlement behind the first fortress within the natural borders was based on a spontaneous grid.
6. The place of former city walls was usually later transformed into roads.
7. Main nodes were defined by the position of

churches.  
8. The 'building roads' usually developed in parallel with the 'matrix roads', a peculiarity also found in the Canadian city of Quebec.

9. The first settlements were in unity with the landscape, presenting a spontaneous fabric with a lower density.

10. Characteristic feature of ancient Russian cities was the great variety of fields, meadows literally located inside the city or generally separating buildings from its walls, or located beyond the fortress walls (which began to disappear in old Siberian settlements in the XVIII century).

11. In a traditional Russian city, roads began to be called streets only in the XIX century. Thus, this "natural" feature of the Russian city is the presence of "voids" - an empty field within the city, a large square, a road instead of a paved street, or a meadow separating the city wall from the quarters of the estates, antipolar river bank, etc. A 'poetic' or even 'melancholic' connection of the settlement and the landscape.

12. The "nests", with their spontaneous internal organisation and the importance of collective privacy protected by blind walls or fences, contrasted with large and poetic "voids", were the most pronounced specificity of Siberian settlements that persisted over time.



Pareyson used the concept of formativity, arguing that form already contains all the essential information about future forms, which ensures the self-reproduction of such a form. Caniggia complemented formativity with the concept of transformation, which he described in detail and which often allows the form to become more appropriate to changing conditions. Intertwined, such formative and transformative processes form a local identity - unique features of the form that bear some resemblance to the original and, at the same time, features of the form superimposed from outside. It is obvious that the concept of type in Siberia during the described period was not yet explicitly formulated by those involved in the production of form, but the objectively existing type corresponded to the understanding of the concept described and accepted in this work and to the parameters Caniggia included in his typomorphology. On the one hand, the necessary transformations initiated in Siberian cities at the end of the 18th and the beginning of the 19th centuries corresponded to the changing function and role of settlements and formed a new territorial type; on the other hand, these transformations were a kind of 'graft' from the outside, which was not completely implanted into the body of settlements in its pure form, but was changed under the influence of the existing morphological situation. Remembering that type is a concept that operationalises form, the study of typological changes operationalises morphological studies and should inform the final projects of urban form development.

The priority given to the construction of the new Russian capital, St Petersburg, meant that provincial towns, including those on the eastern edge of Russia, were completely neglected. By the end of the nineteenth century, Siberian cities existed in a state somewhere between a defensive fortress and a northern Russian village. Gorbachev et al. say that Siberian cities, having developed as military fortresses, lost their defensive walls and took on a village-like appearance (Gorbachev et al., 2011). The centralising ambitions and idealism of Catherine II began to reach Siberia in the form of idealised masterplans that were far removed from the existing reality, with Irkutsk being one of the rare exceptions. Ogly says: 'In 1792 Catherine II approved the first regular plan of Irkutsk, drawn up by the local provincial architect A. Alekseyev. The plan preserved the planning basis of the old part and outlined



## PERIOD 2 Siberian road, centralisation and regular plan (transformative period)

a clearer rectangular structure in the new areas, beyond the line of the former 'posad'. By the end of the century, with the strengthening of trade relations, Irkutsk developed geographically along the main trade and postal routes - Moscow route, Yakutsk route, Lake Baikal, where suburbs and working settlements were formed" (Ogly, 1980, p. 30). The first significant growth can be attributed to this period (end of the 18th - end of the 19th century): industries, roads, better connection with central Russia thanks to the new Siberian tract provoked qualitative and quantitative changes. This significant growth and the consequent densification of the cities were followed by destructive fires and the economic crisis of the second half of the century, which in turn led to such urban phenomena as suburbanisation in many cities. However, the arrival of the Siberian railway at the end of this period provoked further growth and development, culminating in the formation of a unique type and image of the nineteenth-century Siberian city.

Figure 79. Krasnoyarsk in the XIX century (Photograph is provided by Krasnoyarsk Regional Local Lore Museum).



Thus the status of the towns changed, while their communication with Moscow improved. This was reflected in the urban form of the time as follows. In Irkutsk, the existing structure was continued with the planned regular quarters with straight streets and corners. As a rule, the present structure of Irkutsk is the closest to the historical one in comparison with other historical Siberian settlements, which grew out of wooden ostrogues. Historians say that the implementation of the regular plans depended primarily on the budget and the growth rate of the city. In the conditions of budgetary poverty of the cities, the administration could expect to straighten the existing streets only at the expense of the inhabitants themselves, who were not very interested in it, that is why the planning structure changed slowly and gradually. In Irkutsk, Governor A. Treskin introduced milestones for straightening streets (Gorbachev et al., 2011). However, even this surgical straightening proved to be a 'lesser evil' compared to the complete replacement of the layout with a regular orthogonal block grid in most Siberian cities. The old streets of Irkutsk were slightly straightened compared to the other Siberian cities. The map of Tomsk looks more complex and fragmented due to the characteristics of its geomorphology, and later it developed in a slightly different way from the other cities, since the railway went much further south than the Siberian tract, which caused the

difference in economic development. What is important, however, is that the type can be embodied differently in different cases, while retaining its core characteristics.

The strategic logic of the settlements and their main elements were retained in the new plan. Figure 83 shows the correspondence of the first regular master plan of Krasnoyarsk with the structure of the previous spontaneous settlement. Krasnoyarsk, Yeniseisk and Tomsk are similar both in the geomorphological context and in the structure of the first settlement, and the configuration of the proposed regular master plan, the first regular master plan of 1773 in Tomsk and the plan of the late 18th century of Yeniseisk also redrew the entire irregular urban layout. Thus, the new regular plans were often a geometrically 'corrected' expression and reinterpretation of the old spontaneous plans, while maintaining the hierarchy of elements at a fundamental, strategic level - the specific expression of continuity in urban form (Krasnoyarsk, Yeniseisk and Tomsk clearly demonstrate this). Often the elements of the geometric grid structure adopted the basic principles of earlier spontaneous plans, such as the number, position and hierarchy of streets, the main direction of development, the positions of the main nodes and poles, but interpreted them in a regular way. However, it wasn't a rule for all kinds of cities, and secondary cities like Achinsk didn't follow it.



Figure 80. The examples of regular plans for Siberian city Verkhneudinsk (founded in 1966) (Gorbachev et al., 2011)



Figure 81. Plans of the end of XVIII century: the illustration of 'landing' of regular masterplans to the existing geomorphological conditions of Siberian settlements. (Left to right: Beriozov, Tomsk, Achinsk, Turuhansk, Yeniseisk, maps are provided by (Gorbachev et al., 2011)



In particular, the new master plan of the central core of Tomsk, even with changing configurations, partially preserved the previous hierarchy of the spontaneous city - the main roads, the position of the main nodes. This regular plan of Tomsk was refined in the late XVIII century, despite the fact that some quarters had already been built (however, the maps were imprecise, these changes in the maps can tell about their distortions). The map shows the remains of a spontaneous curvilinear structure in which the historical nodes seem to have been preserved. However, it is clear that the centre would soon shift to the newly planned area, forming a linear polarity together with the old polarity. The spontaneous urban fabric, together with the emerging multinodal structure of the city, was visible outside the regular plan of the central core. The ridge leading to the former fortress on the hill is particularly visible, as the road and the associated fabric follow the line of the ridge. The urban fabric is very fragmented due to the relief and the rivers. An attempt has been made to fit the new elements of the master plan into the existing spontaneous grid of blocks and terrain. Between the regular blocks, patches of small-scale spontaneous fabric

are visible everywhere, some of which will remain on later maps. The matrix road connecting the Strelka (confluence) of the two rivers (this was the site of the first fortress) and the new assumed polarity is clearly visible. The antipolar nature of the rivers is well read. The most important nodes, which included churches, for example, have obviously been preserved. It is already clear that the development of the city will be linear, based on the main road - the matrix.

The same principle can be seen in Yeniseisk: the authors of the plan (a regular orthogonal grid slightly disturbed along the terrain) tried to preserve the general logic by interpreting it in a regular way. Two secondary nodes with the fire prevention basins marked the future nodes. Historians say that the project plans of Yeniseisk and Krasnoyarsk are the first regular city plans in Central Siberia, but if in Krasnoyarsk, which was almost completely burnt down, the new plan was developed quickly, then in Yeniseisk changes were developed for a long time. By the end of the century, the planning structure of Yeniseisk had undergone significant changes only in the oldest central part, which was the first to fall into disrepair, and the vacant plots were formed according to the design

Figure 82. The illustration of 'landing' of regular masterplans to the existing geomorphological conditions of Siberian settlements. (Tomsk, maps are provided by Regional Local Lore Museum).

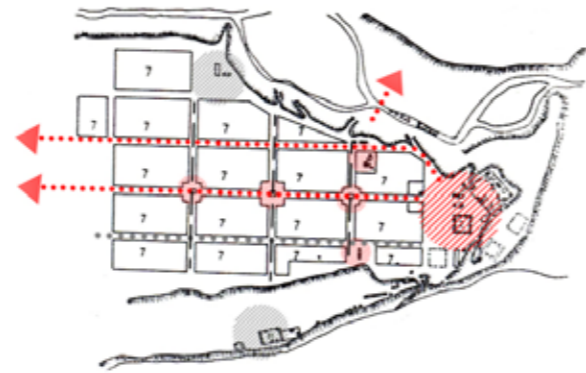
plan of 1773. By the end of the eighteenth century, in addition to nine stone churches and gostinnyi dvor, there were many important state buildings: the construction of public squares, money storehouses, provision salt and wine shops, seventeen drinking houses, seven stone partial houses, one thousand one hundred and thirty-five wooden ones', as well as there were 'stone cells' in the monastery (Gorbachev et al., 2011).

It should also be noted that the new plan sent from Central Russia contained a kind of verbal instruction, methodological guidelines, which corresponded to the understanding of the concept of type. The rules also indicated the organisational methods of urban reconstruction: 'Those inhabitants who do not comply with these rules may leave until the buildings themselves fall down or are destroyed in some other way, or until the owners themselves voluntarily move and before that wish to rebuild according to the plan, so that the townspeople do not suffer any loss from the destruction of the yards that are still fit for habitation, and whose yards will be divided by streets and squares and then they will not be able to be in the old places, in this case these residents will be given other separate places for stone or wooden houses, where everyone could build according to their condition, according to the promise and destruction of their current buildings' (Gorbachev et al., 2011, p. 156). In this case, however, the type was not fully embodied (as in the case of the first fortresses, which landed on an empty territory), but was a kind of inculturation that gradually grew into the existing organism of the city, intertwined with its tradition.

In order to clarify the suggestions that arise from reading the maps of the cities, it is important to review the main historical literature of the period. According to the research of historians and art historians, it is difficult, if not impossible, to trace specific cultures or models that defined or influenced certain phenomena, the process was much more complex. Shvidkovskii called the uniqueness of Russian architecture of the time of Peter the Great stylistic 'polyphony'. The author mentioned the changes that took place in St. Petersburg in the work of foreign masters: 'The Italians became more reserved. The works of the Germans acquired an 'Italianised' character. The Swiss tended towards the northern versions of the Baroque. And all of them had to reckon with the Emperor's preference

for Dutch interiors and gardens.' (Shvidkovskii, 2013) He claimed that the works of masters of many nationalities acquired characteristic Petersburg features, such as regularity, rationality of plans, the desire for simplicity of contours and internal layout of buildings, the use of a flat order and graphic character of facades. However, the presence of the influence of collective Europe as such is undeniable. Speaking generally about the influence of foreign ideas, it can be said that throughout the existence of the Russian state there has been a gradual intertwining with different cultures: ideas first landed in the central cities, where they were transformed for the first time, and then they were transformed again and landed in the periphery. Shvidkovskii said that 'it has long been clear to everyone that the basis of Russian architecture was those features that it could take from the architectural culture of Byzantine Hellenism. Sir Dmitry Obolenskii wrote that for Russia, the Byzantine heritage 'means either a quasi-permanent and still-existing component of Russian civilisation, or a whole series of influences through which Byzantium influenced Russia... The legacy of Eastern Rome was not a wall that isolated Russia... from medieval Europe, as has often been assumed, it was the main route by which it became a European nation. Byzantium was not a wall built between Russia and the West: it was a gateway to Europe for Russia' (Shvidkovskii, 2013, p. 104). Moreover, in the history of Russia one could notice the periods of dominance of Westernism and Slavophilism. The constant change of Westernistic and Slavophile tendencies (often transformative and formative phases, respectively) in Russia perfectly illustrates the above-mentioned principle of identity formation: each of the phases left several 'ingrained' signs, gradually 'growing' into the tradition. Glazychev said that first Amsterdam, then Paris were taken as models for cities, even the use of the word 'perspective' in the Russian lexicon reveals a connection with Mercator's cartography and the European style of painting (Glazychev, 2011).

In her comprehensive books devoted to the development of architectural literature in Russia, Evsina N. examined the architectural theory of the seventeenth and eighteenth centuries in order to identify the basic influential ideas and to determine the sources of inspiration for various architects, for example, for the epoch of Peter I. She recalled that in 1697 the 'Great Embassy', including the 'Stolniki' of



the tsar and Peter I himself, left Moscow for Poland, then Germany, Holland, England, Italy, Austria (Evsina, 1975). Commissions brought books about European countries to Moscow, including a translation of Andrea Palladio's treatise on architecture. The dominant influential role in different years belonged to different Western cultures - from Holland to Italy, and depended on various factors - from politics to the availability of relevant literature:

'Russian travellers found the 'Italian way' truly beautiful, which they could hear about in Moscow, where Italian architects and artisans had long been working, along with other overseas fabrics, Italian decorating the interiors of Russian churches, as Joseph Vladimirov wrote at the time, defending the right of a Russian iconographer to update iconographic techniques. But the main thing is not the traditions of two hundred years ago - the main thing then was modernity. And in this modern artistic life of Western Europe, Italy played an important role. In many countries, Italian art was revered as the best. This was well understood in the enlightened circles of Moscow at the end of the century. In addition, France seemed to have fallen out of the Russians' sights - political relations between these countries left much to be desired, and France was not included in the route of the 'great message'. And in France itself, where the advocates of classicism and baroque argued passionately within the walls of the Royal Academy of Architecture, the high authority of Italian art was not in doubt.' (Evsina, 1975, p. 28).

The author says that the chronological outline of the 'free arts' in the Russian diaries is too simplistic: Antiquity (or 'pagan antiquity'), 'old' or also 'ancient' (but of Christian times) and 'new' (mainly 'Italian') 'manner'. The authors focused

not only on art or architecture, but also on various practical aspects of everyday life, on institutions. This corresponds directly to the multi-layered concept of type; the renewed typology, in the broadest sense, had to include not only urban forms, but also forms of life. In fact, the fortification occupied a special place in the diaries, along with bridges and roads (Evsina, 1975), and ultimately influenced the regular planning due to its strictness and correspondence with the idea of centralised power. It is worth noting that diaries and albums of translations, abstracts and sketches gave rise to albums of standard drawings for buildings and even entire settlements:

'These and numerous foreign essays on the same subject played an important role in the development of ideas of regular town planning, they were the first 'town planning' books in Russian. It is curious that in the 1700s, and later in diaries, books on geography and history, the tradition of describing fortresses and city plans, clearly borrowed from such publications, was preserved. The latter, however, were valued primarily as manuals of military art; interest in architecture itself was almost secondary. At the same time, specific books on architecture attracted attention. A translation of Vignola's treatise was published in 1709, while other editions were being prepared. Despite all the differences between the Russian books of the 1700s, they were united by a commonality of tasks, ideas about theory and its connection with practice, about the very nature of publications. The emphasis was not on complex philosophical works, but on their accessible presentation, not on purely theoretical works and practical advice on them. This or that problem was not considered in depth, but its essence was taken - after all, the main thing was to understand the basics of the necessary specialities

and immediately apply them in practice, and therefore translations of practical manuals of the seventeenth century - peculiar abstracts and collections where the main provisions of several books were set out - they were perfectly suited to the period of apprenticeship, acquaintance with the principles of European science and technology. [...] However, it is difficult to believe that the level of knowledge of European architecture at the time would have allowed the Russians to write a new theoretical work, to choose new illustrations so freely and accurately (in particular, to know the connection between the works of Vignola, Michelangelo and Bernini). In fact, the first comparisons with the numerous reprints of Vignoles from the XVII century convince us otherwise. As early as 1602 (Rome), ten additional tables were published (works by Vignola and Michelangelo), and numerous Dutch and French editions were designed as practical guides based on Vignola's treatise (O. S. Davile, for example, even wrote a special course in architecture, to which he added an extensive architectural dictionary). Such guides could serve as a source for the Russian 'architectural book' of 1709. It is enough to compare it with the publications printed in Amsterdam (in various languages), Ghent, Leiden, Paris, Augsburg, Nuremberg to understand how diverse the additions to Vignola's treatise were, especially in the illustrations, which were re-engraved by P. Picart for the Russian translation.' (Evsina, 1975, p. 37).

Diaries and notebooks, richly illustrated, sometimes huge and luxuriously published, as well as individual engravings, selected and collected in albums, presented the architecture of many countries. The emergence of new town planning and architecture was thus based on a multi-stage, multi-phase interpretation. The construction of 'exemplary' projects introduced a new architecture into everyday life in a very straightforward way (Evsina, 1975). The forms and formats of the appeal to European culture changed over time. For example, in the XVIII century, Peter selected 20 aristocrats to study abroad, which later became a tradition.

Quilici argued that in St Petersburg, where the network of canals created a series of rectangular, elongated 'islands' that obviously suggested maximum use of the land (based on the Amsterdam model), Strel'ka, with its piers for ships, the stock exchange and the guest quarters, had already assumed the character of an 'observatory' of the capital.

With Peter and Léblond, a plan that was still essentially Baroque, characterised by elements typical of the art of landscaping 'gardens', takes on the appearance of an abstractly rational operation, precisely because of the lack of historical precedents from the Renaissance that give historical depth to the Franco-European experience' (Quilici, 1976, p. 77). Andrei Belyi said that here is infinity in the infinity of running avenues with infinity in the infinity of running intersecting shadows. The whole of St. Petersburg is the infinity of the avenue, raised to the nth degree. Herzen argued that St Petersburg differs from all European cities in that it looks like everything; Moscow is because it does not look like any European city at all, but there is a gigantic development of a rich Russian village (Herzen). As it was said, according to the researchers, architects who came to St. Petersburg designed differently from what they would have done 'at home'; their projects landed on Russian soil, having already been Russified. St. Petersburg became the main laboratory from which scenarios of adapted European principles of urban planning and architecture that had already landed on Russian soil were written. As a result, the direct influence of the collective West is barely perceptible in St Petersburg, and in regions such as Siberia it is so distorted that it is sometimes difficult to read. During the revolutionary period of Peter the Great, Siberian cities were remote defensive fortresses that were gradually changing their image, so Peter's revolutionary urban planning ideas did not directly affect the shape of the cities. Later, however, they had an indirect effect, especially through master plans and model albums. Evsina said: 'And before the eyes of the buyers of these books and engravings, the builders of houses, a new city was being created according to decrees and 'models', the architecture of which gradually ceased to be new. The development of Moscow began to be regulated, new forms and techniques penetrated into the provinces, where they coexisted with the old familiar compositions' (Evsina, 1975, p. 62).

In this sense, Moscow, the historical plan of which responded to nature and geomorphology, is practically the most vivid image of a traditional Russian historical city, which has experienced episodes of transformation but has not perceived the influence of European cities as systematically and clearly as St Petersburg. Many of its peculiarities can be explained by the history of the city's development. Glazychev saw in the original,

Figure 83. The comparison of initial structure of wooden fortress (Background: the cadastral map of the contemporary Krasnoyarsk combined with geodesic lines of 1894, foreground: the reconstruction of 1748, by Panov E.M.) and the first planned structure Of 1773.

historical plan the fundamental, enduring features of the urban structure, which constitute a kind of genetic 'code' of the spatial organisation of the city, reproduced after hundreds of years and tens of kilometres under completely different socio-economic conditions (for example, the nature of the development of a particular planning direction) (Glazychev, 2011). Similar features characterise Siberian cities, which, being historical, have not been completely replanned. Quilici argued that for Moscow, the development of a bourgeois urban structure is less discontinuous than in the case of St Petersburg; in nineteenth-century Moscow, the relationship with tradition is not merely a formal heritage, but is identified with the dynamics of the structure and configuration of the city itself, with its capacity to contain and represent all its past (Quilici, 1976).

The idea of creating architecture as a heritage for the future and for eternity is not an exception in Russia (Deschepper, 2018). Quilici described this period as follows: 'Positivist reason, trust in institutions and intellect merged with discipline and military order' (Quilici, 1976). It is with this that the idealism of architecture and urban planning in Russia of all times can be linked, striving for the future rather than the past. Shvidkovskii mentioned the Empress's desire to anticipate the specifics of the future, to transfer imaginary objects and images into it. Catherine II presented the buildings created during her reign as 'future antiquity', which in thousands of years would be considered equal to antiquity - the justification for the use of classicism in the complete 'restructuring' of Russia (Shvidkovskii, 2013). Glazychev said that the idea or a symbolic act of transferring settlements to the status of cities, steadily pursued by Catherine the II, which was reduced to the spread of highly approved regular master plans to all cities universal throughout the empire. The author says that symbolization brought purely speculative schemes, such as the vast round square of Poltava or the oval square of Petrozavodsk, drawn up without any connection with the reality of different places, gave rise everywhere to deserted rectangles of squares that no one and there was no need to fill (Glazychev, 2011). This phenomenon was also visible in Siberian cities. However, this only increased the significance of urban voids.

The development of Siberian settlements was influenced by the urban planning policy of European Russia,

connected with the activities of the 'St Petersburg and Moscow Stone Building Commission', established in 1762 to rebuild the two capitals, which initially did not include the master planning of provincial towns. Historians say that in 1763 a decree was issued 'On the preparation of special plans for each province for all towns, their buildings and streets', which stipulated the preparation of design plans for more than 500 towns. The task of the provincial surveyors was to draw the actual situation in the cities for the new city plans to be developed, and the mass fixation was carried out in the 1770s and 1790s. All this was carried out within the framework of the administrative reform in Russia, with the assignment of specific functions to different types of cities and plans based on the principles of regularity' (Gorbachev et al., 2011, p. 121). Often, in the pursuit of regularity, the authors of master plans tried to make them into ideal geometric shapes, making the idea largely utopian: The planning structures of the cities of Surgut - 'the figure of an ellipse', Tomsk - 'the figure of an oblong quadrilateral', Yeniseisk - 'the figure has the four-sided oblong trapezoid', Verkhneudinsk - 'triangular figure'. However, in the atmosphere of scarcity and lack of experience, on the one hand the government declared the necessity of reconstruction, on the other hand it did not provide any funds. In this way, the attempts to create models of an ideal society, which Catherine II had legislated, without any real support, were in danger of failing because they were utopian and could not be implemented.

In fact, the historical settlements of Siberia developed according to their own laws, dictated by local conditions and circumstances, as can be seen above. In October 1786, the governor-general of the Tobolsk and Perm viceroalties, E.P. Kashkin, sent to the Commission on the Structure of St. Petersburg and Moscow plans for 12 district towns of the Tobolsk vicerealty that 'do not yet have highly tested plans'. The Commission approved these plans on 13 May 1789 and submitted them 'for the highest consideration', but they were not approved in 1796. The Viceroy's Council therefore asked the district authorities to carry out the construction according to the 'projected' plans without waiting for their 'highest approval'. The results of the practical urban planning activity at this stage were given characteristics noticeable for their time in the topographic descriptions of the Tobolsk and Irkutsk governorates of 1790 and 1792, in which the planning

structure of the cities was considered from the standpoint of new principles of regularity (Gorbachev et al., 2011). In general, the development of the periphery, especially of Siberian cities, should have followed the image and likeness of St. Petersburg (as evidenced by numerous general plans - regular and ignoring the existing situation), but in fact chose a compromise development path between the development of Moscow and St. Petersburg (a more delicate interweaving of new ideas into the existing reality).

After all, the image of St. Petersburg with its 'Strelka' ('Arrow'), large squares, gardens, embankments, regular blocks, ensembles and complexes, straight avenues and 'perspectives' facing natural features has become a cliché, a model for new layouts in the second half of the XVIII century under Catherine II, and more vividly - the plans of the beginning of the XIX century. However, studying the existing literature devoted to 'Russian' architecture and culture of various periods, it is important to remember that such a generalisation as 'Russian' is somewhat dangerous: Russia has always been too big and too diverse. Scheboleva & Rudchenko argued that if for the architecture of the capitals the first third of the XIX century is associated with the birth and victorious march of the Empire, then in the province the process looked much more complex, and the little knowledge about the province has formed a misconception about it as something secondary, completely dependent on the processes of the capital (Scheboleva & Rudchenko, 2012). Most of the literature is devoted to the western or 'central' part of Russia, namely Moscow, St Petersburg and related cities. Siberia has always been somewhat different. 'Although profound changes in the foundations of the old Russian architecture seemed obvious, everywhere and at the same time - on the territory of a huge country and in the same city, in the same house - events took place, works of the most diverse design existed: the new was adjacent, organically intertwined with the old. Even St. Petersburg in 1720 looked like a city where many things were just beginning' (Evsina, 1975, p. 8). Unlike Moscow, which reflects the relative continuity of the formation of the traditional Russian city, and St. Petersburg, which is a model of 'landed' European ideas about the city, Siberian historical cities can be characterised by periods of continuity of development and adaptation of models. Ideas about the ideal regular city in the provinces were often just ideas. Glazychev said that in

Russia, which was almost entirely made of wood, any urban reconstruction seemed easier. And yet, such initiatives did not yield noticeable results until the middle of the eighteenth century, because after each fire, the boundaries of each household were carefully restored, and with them - the tracing of streets and alleys, the boundaries of blocks, which retained a high symbolic value of stability despite all the vicissitudes of life. This is not surprising, because the vast resources needed to reorganise the army, create a fleet, build a new capital and a new court could only be concentrated in one way - by withdrawing them from all corners of the country (Glazychev, 2011). Quilici said: 'The influence of the direct control of the political authority over urban operations led to the existence of a 'programme' rather than a real 'plan for the reconstruction' of the city, which moreover obeyed the criterion of interventions by sectors or large episodes to be defined by unitary overall projects' (Quilici, 1976, p. 90). The picture was not always perfect, even in the capitals. In the Russian periphery of the time, between the fragments and episodes of regular plans and the intrusions of the author's architecture, real life in Russian cities took place with its imperfections and the dominance of vernacular traditions.

Meanwhile, the ground was being prepared for the formative stage, which involved changes on a smaller scale:

'Quarenghi's neoclassicism has been described as a 'period of orientation towards classicism'. With Catherine II, the entire political, institutional and cultural framework changed profoundly. And so, of course, did official taste. Catherine loved academic classicism, symmetry and the most refined formalism. After strengthening the Academy of Arts, founded at the end of Elizabeth's reign in 1758 and already wished for by Peter (who only managed to create the Academy of Sciences), she organised it on the model of the Académie Royale de Peinture et Sculpture in Paris. However, it differed from the latter in that it included an architecture section. The teachers are predominantly French, as are the Germans at the Academy of Sciences. The building of the Academy itself is decidedly classicist [...] the Commission for the Construction of the Brick Buildings of St. Petersburg and Moscow, created in 1762, whose members were A. Kvasov, I. Starov, A. Ivanov, as well as members of the high military ranks (Černyščev, Becky, Daškov), who were responsible for the selection

of the technical cadres. The sixties and seventies: this was the period of greatest activity. In 1763, an international town planning competition was launched. Between 1764 and 1767, the commission intervened in each district and the individual projects were incorporated into an overall design. For the first time in the modern era, the city was conceived as a 'unitary organism' (more on this at the beginning of socialist management!). The city that the Commission had to work on was still the one shown - for the part that could be considered a relief - in Machaev's plans of 1753.'(Quilici, 1976, p. 81).

It seemed unlikely, however, that Catherine's classicism had reached Siberia. Glazychev argued that in Russian conditions the idea of 'solid facades' or continuous facades remained unchanged, but the form of its expression changed, being corrected by reality. In practice, there were not enough rich developers to maintain a certain standard of housing, even in the city centre. Therefore, first under the leadership of Leblon and after his death, D. Trezzini, P. Eropkin, M. Zemtsov and other architects developed projects of 'model' or exemplary houses for different classes of citizens (Glazychev, 1987). It is interesting to observe how social, cultural and economic reality corrects ideal projects that are not in line with this reality. At the same time, exemplary projects of residential buildings stimulated stone construction and reconstruction of cities - a means of protection against fires. Scheboleva & Rudchenko argued that in most Russian provincial towns stone buildings were rare, log houses were distinguished by their size and carved decoration. Simultaneously with the introduction of model housing projects, it was forbidden to repair old wooden houses, especially those that did not fit into the new street grid (Scheboleva & Rudchenko, 2012). Peter set up a special architectural committee, headed by Betancourt, which was supposed to simply examine the projects for new facades, approve, reject or modify them, and also deal with the regulation of streets and squares, the design of canals and bridges - to take care of beauty. As a side effect, the separation of the facade from the house was not in doubt, but even played the role of an unconditional ideal. Glazychev was surprised by the phenomenon of the separation of the facade from the building, while he himself devotes a separate chapter of his book to the arguments about the facade. The consequences have been visible for a

long time. In fact, this separation of facade and plan, this inconsistency in design, can still be found in the typology.

In short, the Siberian region had a strong identity. However, 'Central Russian' and international studies usually do not consider Siberia at all, especially the central and eastern regions. The Siberian cities, having emerged as military strongholds, something between a military settlement and a village, and having acted as administrative centres, underwent a process of type transformation - establishing themselves as cities in our ordinary sense of the word. The Siberian road and increased shipping brought extensive growth and new images of the cities. The centralisation of the Russian state was accompanied by the first regular master plans 'based on the experience of St Petersburg', which intertwined with the existing spontaneous plans of the cities, forming new identities of transformed territorial types. Regular plans often 'landed' on the real ground with adaptations influenced by the persistence of vernacular and geomorphology. It is important to note that the regular plans often preserved the existing logic of the settlements, reinterpreting the existing morphology in a regular way. Thus, the new regular plans were often a geometrically 'corrected' expression and reinterpretation of the old spontaneous plans, while maintaining the hierarchy of elements at a fundamental, strategic level - the specific expression of continuity in urban form. Often the elements of the geometric grid structure adopted the basic principles of the previous spontaneous plans, such as the number, position and hierarchy of streets, the main direction of development, the positions of the main nodes and poles, but interpreted them in a regular manner. None of this, however, was a strict rule for all kinds of cities, and secondary cities like Achinsk didn't follow it. Irkutsk miraculously preserved its historical structure, even though the streets were straightened.

In particular, quite often the old polarity of the city, represented by the first small fortress, located at the confluence of two or more rivers, was transformed into the main polarity, connected by the external roads with the nearby settlements and by the main matrix road with the secondary node(s) or pole. The main polarity was accompanied by the Church Square or the Trade Square (or a combination of both), which included the administrative, church and trade buildings. The secondary

nodality or polarity was of a similar nature or was simply a church square or former monastery previously located on the periphery. This matrix road was usually transformed over time into a linear polarity. It is interesting to note that the building roads are often parallel to the matrix road (in contrast to the Italian tradition where the building roads were perpendicular to the main matrix). An interesting feature are the nodal points, often located along the matrix road, at the centre of which were fire-fighting pools for the collection of water. Hills, elevations, polarities and major nodes are marked by the verticals of churches. The banks of rivers were of anti-polar character. Finally, the image of St. Petersburg with its 'Strelka' ('Arrow'), large empty squares, straight avenues and 'perspectives' facing natural features became an example, an inspiration for new layouts in the second half of the XVIII century under Catherine II, and more vividly - the plans of the beginning of the XIX century. In fact, it was often between fragments and episodes of regular plans that real life took place, with its spontaneity, imperfection and the dominance of vernacular traditions. Even regular blocks were formed by the traditional spontaneous wooden fabric of maisons 'usadba' with its plasticity and irregularity - introverted 'nests' or communities of courtyard houses. It is unlikely that Catherine's classicism reached Siberia, where exemplary projects were interpreted by amateur builders, reflecting all the peculiarities of their understanding and imperfections, or regional peculiarities of mastery. The grids of blocks initially planned similar to the ones in St. Petersburg, created a series of rectangular, elongated 'islands' that evidently suggested maximum use of the land, Strel'ka, with its guest quarters, in Siberia didn't resemble their predecessors. Léblond's Baroque plans, in the absence of Renaissance historical precedents to give historical depth to the European experience, were abstract in western Russia, and even more strangely realised in Siberia, transformed beyond recognition.

It is important to note that the authors of various studies, illustrated albums and translations of European books focused not only on art or architecture, but also on various practices of everyday life, institutions, thus creating new typologies of buildings and cities in a holistic, multi-layered sense of the notion of typology and type, which includes not only built forms, but also everyday life and culture connected with the renewed, transformed forms.

The transforming force of Siberia was the large merchant class, which later contributed to this transforming identity by combining bold engineering solutions of typical projects of facades albums with traditional forms of buildings. In fact, this separation of facade and plan, a kind of inconsistency in design, is still found in the typology.

It can be said that the type or form of settlement remained in new regular interpretations (the hierarchy of morphological elements, building type, materials, lifestyles and social structure), but was embodied in different shape or outlines in reality, becoming the starting point for transformation.

Thus, the description of the fundamental territorial type at the end of the transformation period can be as follows:

1. Geometric grid structure adopted the principles of earlier spontaneous plans: the number, position and hierarchy of streets, the main direction of development, the positions of the main nodes and poles, but interpreted them in a regular manner.
2. Old polarity represented by the first small fortress was connected by the external roads with the nearby settlements and by the main matrix road with the secondary node(s) or pole, it was marked by the church square or/and market square with the administrative, church and commercial buildings.
3. The secondary node was of a similar nature or was just a former monastery located on the periphery.
4. The matrix road was parallel to the river and was usually transformed over time into a linear polarity.
5. Building roads are often parallel to the matrix road.
6. Nodal points, often located along the matrix road, had fire-fighting basins for the collection of water.
7. Hills, elevations, polarities and major nodes are marked by verticals of churches.
8. The banks of rivers were of anti-polar character.
9. Between the fragments of regular plans real life took place, flat territory accepted the orthogonal grid quite successfully, while the picturesque elements of relief differences retained a lively spontaneity.
10. Regular blocks similar to St Petersburg, created rectangular, elongated 'islands', filled with traditional spontaneous wooden fabric of the "usadba" houses - introverted "nests" - communities of courtyard houses.
11. Orthogonal grid was framed by fringes along the rivers, slopes and relief, wooded and swampy areas.
12. Instead of pompous squares, one sees large empty spaces occasionally filled with markets and events.

In sum, local code was transformed: a spontaneous fabric with a low density organised in the regular blocks - 'islands' or 'nests' of spontaneous communities of courtyard houses with voids-roads between. The 'mysterious' or 'melancholic' emptiness - Russian void, that has been later reflected in works of folklore and art. Besides, it was proved that the same type or idea of settlement (social+urban form) can be embodied in different configurations as a result of continuity and intertwinement.

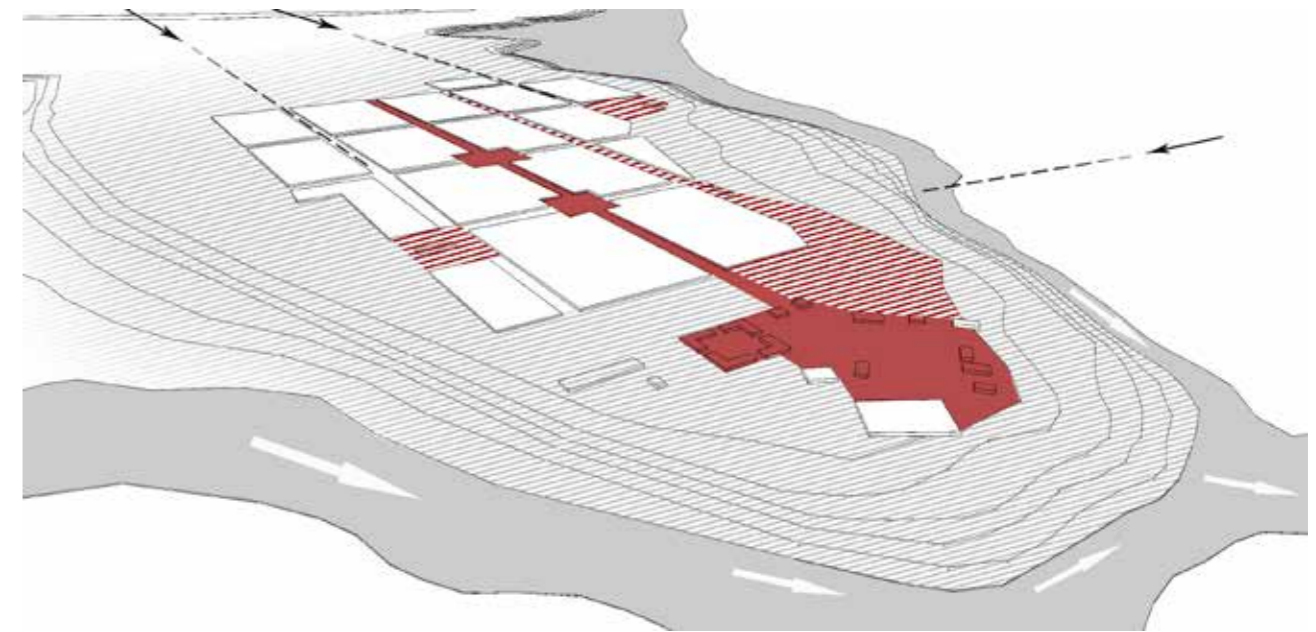




Figure 84 a-f. Cities in the XIX century (Photographs are provided by Regional Local Lore Museum).







Thus, it can be said that in the previous, transformative stage, a strict orthogonal grid, which began to appear only in fragments, remained from the initial ideas of ideal models. The beginning of the 19th century in Siberia also brought ambitious plans for the development of cities, due to the growth of the gold industry and the increasing number of merchants, who during the century built the fund of historical stone buildings. Based on the elementary geodetic surveys of the time, it was necessary to further reform the cities. A special role in this was played by the activities of provincial surveyors, who drew up fixation plans of cities - the basis for further planning work (Scheboleva & Rudchenko, 2012). During the formation period - approximately from the beginning to the last third of the 19th century - there were, roughly speaking, two stages of the appearance of general plans - at the beginning and in the middle of the century, accompanied by their partial interpretative implementation and growth. Those that appeared in the middle of the century developed, corrected and continued the first ones, since the first ones were largely unrealistic, idealistic images, a kind of collages combining classical elements and 'images of St. Petersburg' or 'Europe'.

At the beginning of the nineteenth century, the growing cities were characterised by an orthogonal grid framed by a kind of fringes, old belts and historical nodes were still clearly visible on the maps, marked also by the historical spontaneous fabric: in Tomsk, mainly at the confluence of the Tom and Ushaika, tributaries of small rivers, and on the hill in the place of the former ostrogoe. The first maps of Tomsk and Yeniseisk in the early nineteenth century showed flat fragments of territory that successfully

## PERIOD 2

### Growth of regular plan, gold mining and industries, trade, fringe belt (formative phase)



accepted the orthogonal grid, while the picturesque elements of relief differences retained a lively spontaneity. Instead of pompous squares, we see large empty spaces - urban voids framed by estate fences and rare stone buildings. A similar situation can be seen in Krasnoyarsk. In Tomsk it is clear that the regular grid blocks were slightly adapted to the terrain and geomorphological conditions: the configurations of the new blocks were determined by streams, rivers, irregularities. Spontaneous buildings still crowned the periphery, stretching along the small Ushayka River in Tomsk, the Melnichnaia River in Yeniseisk. The plan of Irkutsk at the turn of the century shows an increased number of blocks of the regular grid, which fortunately appeared only on the periphery and did not destroy the old city plan: the quarter grid was extended southwards to the hill.

The next phase was the formation of a type that had already been transformed. This formation was further informed by external ideas and influences that continued the logic of the transformed type. The image of St. Petersburg with its 'Strelka' ('Arrow'), large squares, gardens, embankments, regular blocks, ensembles and complexes, straight avenues and 'perspectives' facing natural landscapes became a model for new layouts in the plans of the early nineteenth century. The master plans of the twenties and thirties of the eighteenth century, presented below, are of

Figure 75-76.. Krasnoyarsk in the XIX century (Photographs are provided by Krasnoyarsk Regional Local Lore Museum).

particular interest. They are characterised by a great variety of regular 'ideal' geometric shapes, contours. It looked like an echo of Catherine's quest for ideal regularity, belatedly reaching Siberia. There were also echoes of regular parks, boulevards of St Petersburg, combined in different ways in different city plans, reminiscent of a parametric collage. Ideal blocks of housing with an even distribution of plots and perfectly planted houses, with corners marked by special corner houses - typical units that make up the grid. On these plans, even those fragments of the city that preserved spontaneous outlines of relief elements and rivers were regulated. The plans were marked by bridges, development of river banks. The variety of Tomsk's plans of that time refers to the dream of the ideal city and classical composition, strictly regular. Many of them depict a landscaped waterfront, which in reality began to change its status from peripheral to central in the middle of the century. On the southern side there is a second centre of Tomsk with a large square around the main cathedral, the layout of which is similar to that of Krasnoyarsk with its linear structure. The masterplans of Tomsk already show the basic structural elements of the future city: university centres and cultural complexes surrounded by squares and boulevards. All the plans of this period have a similar style. The period of less detailed masterplans began.

ideas in their pure form, but rather the ideas informed the development as a guide, in practice forming other phenomena with their inherent identity. Thanks to the work of surveyors, the maps of the mid-19th century contained information on the existing state of morphological development - a kind of symbiosis of a master plan with an elementary geodetic map. This allows us to draw conclusions about what was built and how. It was not for nothing that the built-up areas on the maps were shown as regions or islands, simply filled with colour: in reality they contained mostly the fabric of spontaneous wooden buildings, in contrast to the ideal houses of the general plans and the streets of the predecessor - St. Petersburg. Regular blocks were formed by traditional spontaneous wooden fabric of maisons 'usadba' with its plasticity and irregularity - introverted 'nests' or communities of courtyard houses, according to local historians. In fact, the elements of baroque-classicist parks hadn't been fully realised. Stone buildings were highlighted on the plans among the areas of spontaneous coloured fabric, and from their number and location it can be concluded that the classicist appearance of the capital was not achieved: stone buildings were supposed to frame the squares and main streets, forming complexes, but this didn't happen until the beginning of the XXth century, when the process accelerated.

However, the formation was not the embodiment of these



77.

Figure 77-78. Maps of Tomsk combined with masterplans - 1810 and 1818 (maps are provided by Regional Local Lore Museum).

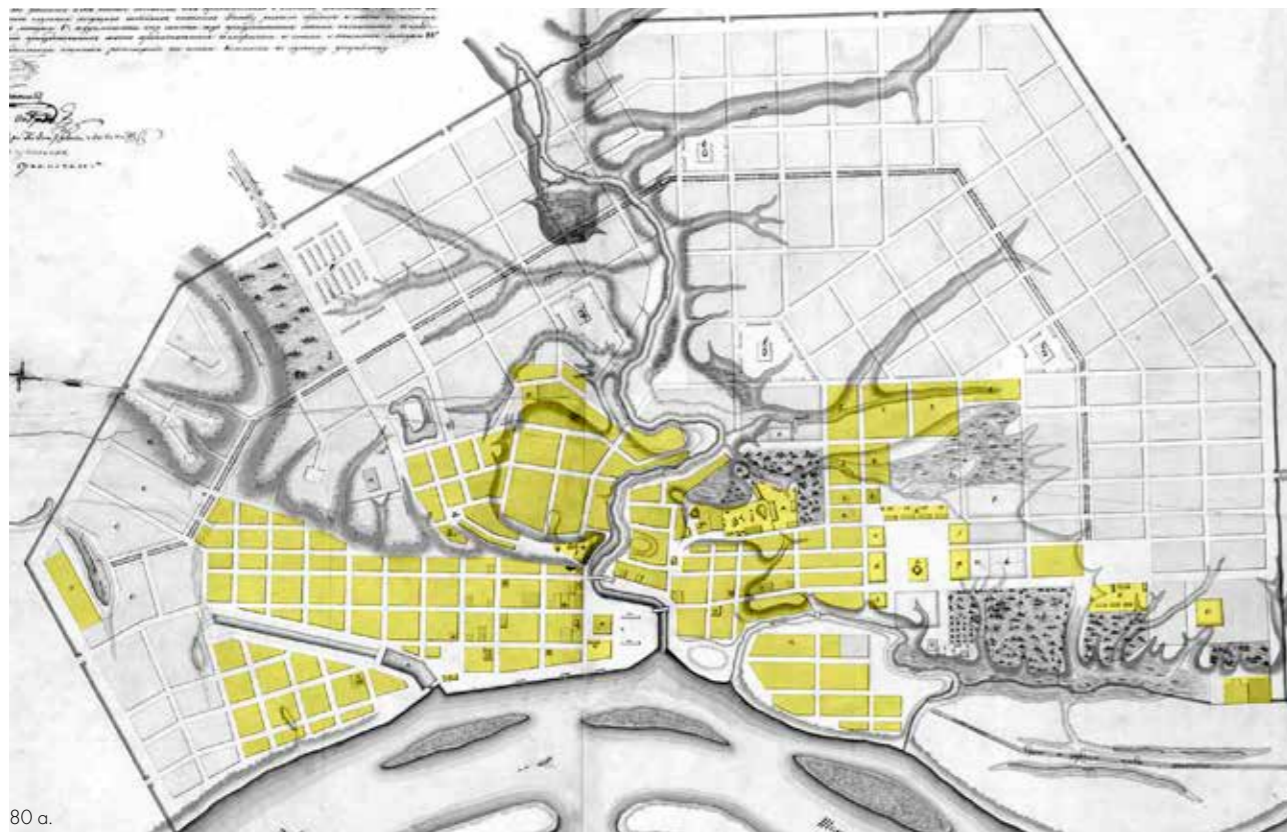


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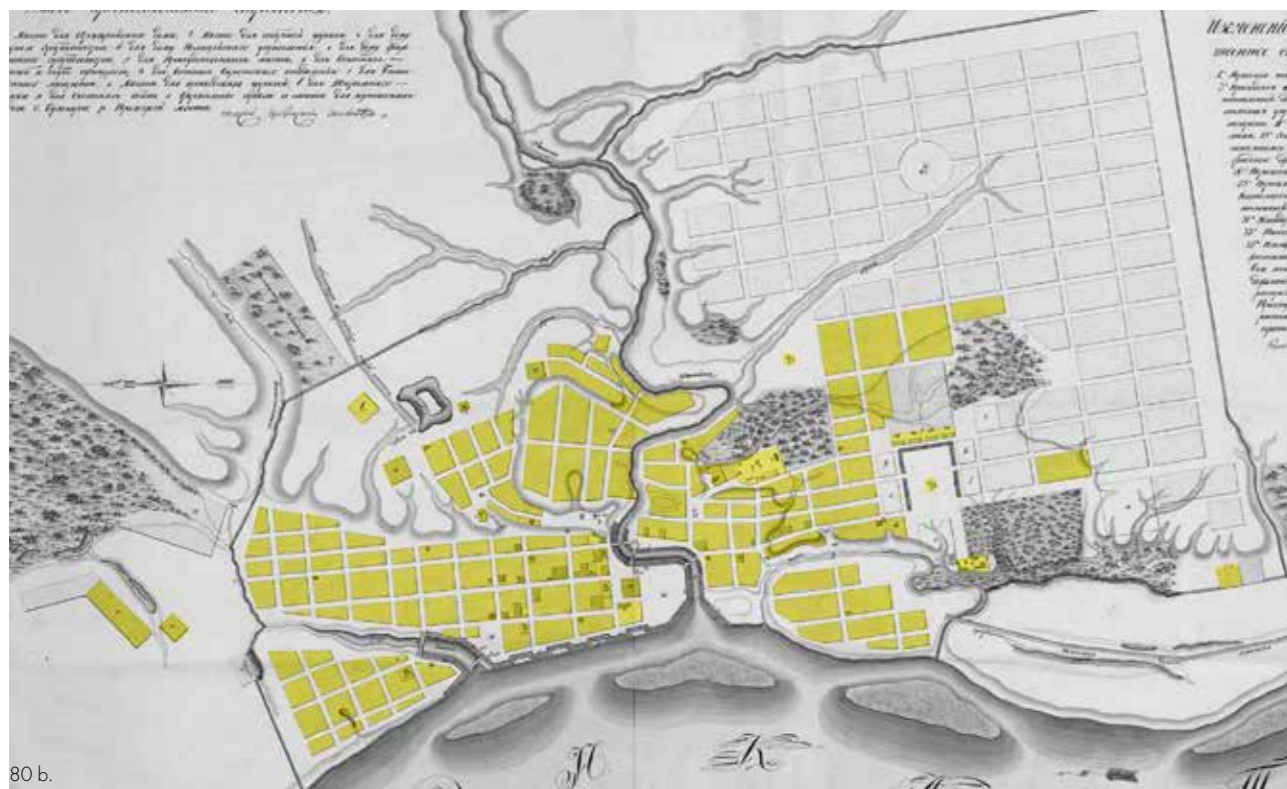
79.



Figure 79. Map and masterplan for Krasnoyarsk of 1828 (maps are provided by Regional Local Lore Museum).



80 а.



80 б.

Figure 80. The options of masterplan for Tomsk of 1824 (maps are provided by Regional Local Lore Museum).

In particular, it can be seen that the plans drawn after the middle of the century continued the tendencies that appeared in the earlier plans, correcting them according to the increased technical capabilities and the existing situation. As it is said, the governor of Irkutsk, under the influence of the all-Russian tendency to regularise the general plans of cities, tried to straighten the streets of the historical part of the spontaneously developing city. However, unlike many other cities in Siberia, where the spontaneous grid was largely replaced by an orthogonal one, in Irkutsk the elements of irregular streets were somewhat straightened, preserving the general established configuration, logic, hierarchy and structure of the master plan. These changes are visible on the plan drawn in 1849. At the same time, there are strategic similarities that prove the existence of a territorial type. The orthogonal grid of the new part of the city, the presence of large open spaces, a natural approach to the design of the river banks, the idealised geometry of the city itself - its outline, the production area on the small river. Secondary nodes and polarities of the old city developed, the city acquired polycentric features. Hills, elevations, polarities and main nodes are marked by the verticals of the churches. The banks of the rivers still belong to the periphery, the cities often developed within the natural boundaries and almost

fully exploited the potential of territorial development at that time. Linear polarities were reinforced. All these morphological symptoms can be seen in the 1852 Krasnoyarsk master plan. In Krasnoyarsk of 1852, the institutions of the city centre were still located in the old buildings along the main street of the city, which could prove the continuing 'polarisation' of the matrix street. In the centre of the new market square the cathedral designed by the architect K. Ton in 1845- 1849 was built, which marked a new polarity. The 1849 plan of Irkutsk again shows the urban fabric in the form of building blocks, with no detailed representation of the estates. However, the plan also shows a greater number of groups of public buildings. The structure and hierarchy of the fabric remained the same, having been developed in detail. One can clearly see the correspondence between today's grid of quarters and the grid of quarters in Irkutsk in the mid-19th century. Buildings are visible on the other side of the river, a bridge (ferry) has appeared. Streets are noticeably wider, with more open spaces. The nature of the map representation had changed considerably, becoming more schematic, this graphic language is typical for Siberian cities at the end of the nineteenth and twentieth centuries. This may indicate a more strategic and less detailed way of thinking, the emergence of general central planning and a change in



Figure 81. Wooden bridge in Yeniseisk (photograph is provided by Krasnoyarsk Regional Local Lore Museum).

the scale of thinking. Again, the graphic language of the maps of different cities is similar.

The nodes and polarities established by the first master plans began to take physical form in the second half of the century, with more massive stone construction and economic growth. However, the decline of the gold industry and the frequent destructive fires at the end of the century led to a crisis in urban development. The cities were temporarily halted in their territorial expansion, which had by then acquired a pronounced periphery (although sometimes with elements of antipolar-polar transformation), usually within the natural boundaries, with cemeteries, monasteries, military towns and church areas, and this area, because of this halt, in many cases corresponds symptomatically to the phenomenon of the fringe belt. The new master plans were also framed by ideal outlines and had a similar graphic language. The map of Tomsk of 1872 showed that some secondary roads perpendicular to the matrix changed their significance. The linear character of centrality became even more pronounced. The map of Irkutsk of 1869 is very detailed and, in addition to the general idea of continuity in the development of the general plan, gives an idea of the diversity and richness of cultural life - the presence of educational institutions, museums and churches as specialised buildings, which mainly denote nodes and speak about the specialisation of the urban fabric, also speaks about the complexity and deepening of public life in the city. Indeed, the maps of the period were filled with an increasing number of stone buildings, which could be the mansions of merchants and industrialists, or public and cultural

institutions: the polarisation of urban fabric. The presence of several buildings dedicated to commercial processes testifies to the importance of trade as a driving force in the formation of the city. New nodes and polarities began to manifest themselves clearly outside the historical part of the city (processes already visible on the map of the previous period), previously located within the city walls or borders. In Irkutsk, a new market area can be seen in the southern part and the growth of the second most important pole at the junction of the historical matrix road with the former fortress wall (the site of the former gate). New administrative buildings and educational institutions were built here. The beginning of the anti-polar - polar transformation is also clearly visible on this map of Irkutsk: the number of administrative buildings grows near the Ushakovka River. The growing number of buildings on the other side of the river is clearly visible, a second ferry has appeared connecting the opposite bank of the Ushakovka and a straight road (on the site of the former fortress wall), which has increased the polarisation of the road. The master plan of Irkutsk shows the planned extensive growth of the city, consisting of regular orthogonal grids of blocks, in some cases slightly rotated to better adapt to the terrain. Fortunately, the changes have not affected the historic part of the city, which makes Irkutsk an exception.

The turn of the 19th century and the beginning of the 20th century was associated with an explosive economic growth caused by the appearance of the Siberian railway and the growth of industry, provoking the formation of other fringe in the next period. Morphologically, this period can be characterised by

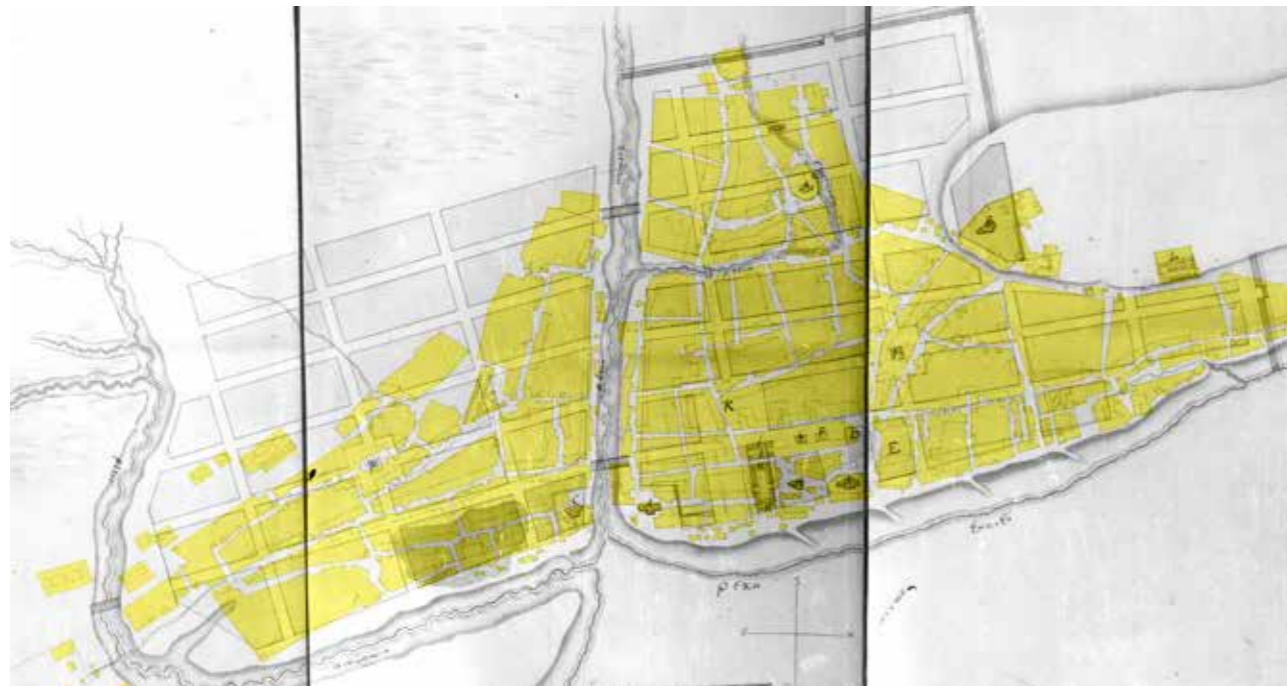


Figure 82. The map of Yeniseisk of XIX century (maps are provided by Regional Local Lore Museum).



Figure 85. Map and masterplan for Krasnoyarsk of 1852 (maps are provided by Regional Local Lore Museum).



Figure 86. Map and masterplan for Tomsk of 1859 (maps are provided by Regional Local Lore Museum).

multinodality and the growth of the second city centre (polarity): the small urban centres formed in this period could not serve the outskirts of the expanding cities. Gorbachev mentioned the specialisation of short streets perpendicular to the main streets, which extend the trade and commercial area and create convenient entrances for loading goods' (Gorbachev et al., 2011). The densification and creation of the new image of the Siberian city is also associated with an explosion in the number of stone buildings and professional architecture. At the end of the 19th century, the process of urban development and urbanisation was determined by commercial, transport, cultural and educational buildings, while churches dominated the cityscape, compositionally subordinating and organising the surrounding buildings (Gorbachev et al., 2011). The further development of bridges and river crossings is visible in all cities. Riverbanks began to lose their antinodal character. The appearance of landscaped embankments completely changed the relationship of the city with the river, nature and the philosophy of the Russian city. The railway left Yeniseisk and Tomsk alone, preserving its unique historic environment from intensive development. Gorbachev et al. noted that by the end of the XIX century the city of Yeniseisk had acquired a planning structure that was in many respects close to that laid down in the first design plan. The map of Tomsk of 1898 shows the persisting continuity. One can notice the appearance of secondary important streets parallel to the main linear polarity. Due to the developed cultural sphere, the city also became polycentric and seemed to have developed gradually, steadily and without explicit contrasting periods. The Trans-Siberian Railway didn't

pass through Tomsk, therefore the city avoided explosive growth and industrial boom and remained a cultural and educational centre on the periphery. Despite its regularity, the plan of Tomsk looks spontaneous and curvilinear, resembling a traditional European city. Cultural elements were not concentrated in one place, but evenly distributed. The 1903 map of Irkutsk shows the same trends: persistent continuity, further extensive growth of the regular grid. The antipolar/polar transformations continued, the river bank took on the characteristics of centrality. All these plans are already anticipated by the Soviet type of development - a collage of morphological regions.

The maps of the beginning of the twentieth century show a new territorial type - an urban form corresponding to the established provincial cities of Siberia with their charm of wooden urban fabric, mansions of estates of rich merchants built in islands of estates, large spaces of squares, often framed by fences of estates instead of pompous continuous facades and wide streets, folding a regular structure, each of the streets came into a picturesque landscape. Compared to the previous maps, the new ones are different in their continuity, the main pole immediately catches the eye - the place where the city was founded. The emergence of the embankments as walking elements reflected the decorous and leisurely lifestyle of the nineteenth century. The verticals of the churches served as landmarks, marking iconic nodes and polarities. Fringe belts looked like natural parks with a degree of neglect. The gardens and boulevards that were fashionable at the time also had a more landscape character. A few stone buildings still marked the nodal points



Figure 86. Map and masterplan for Tomsk of 1872 (maps are provided by Regional Local Lore Museum).

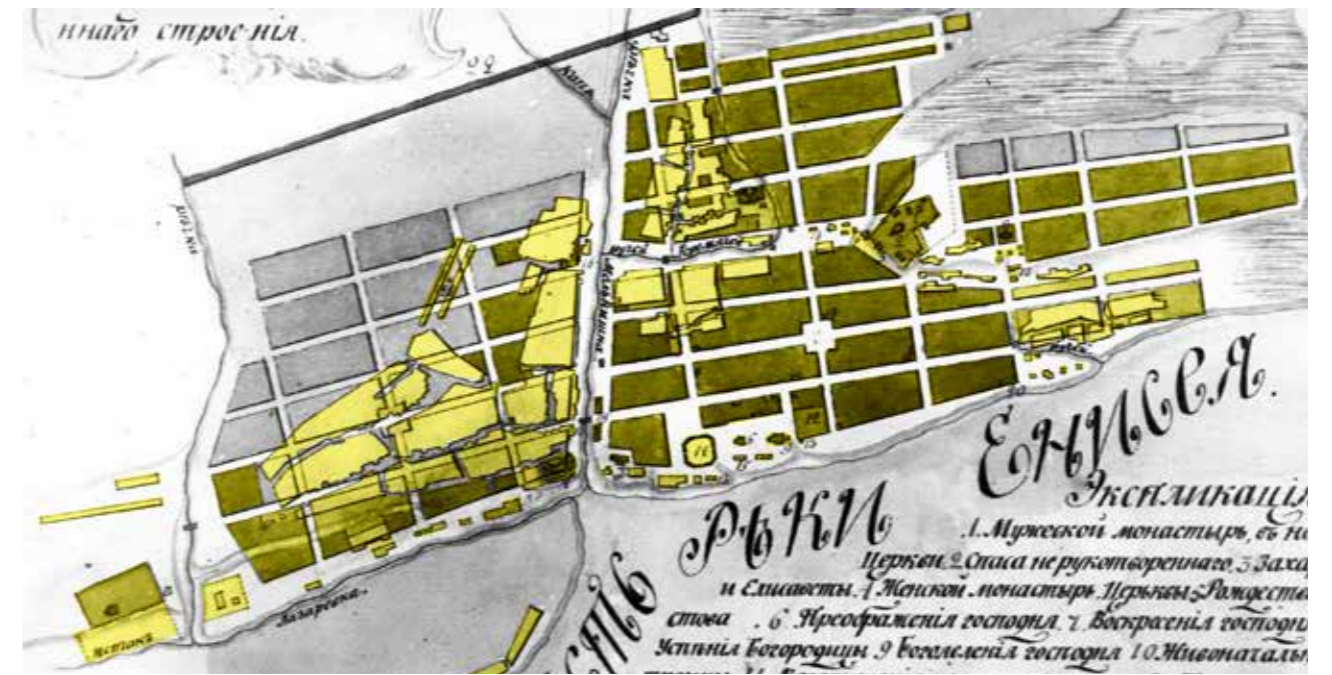


Figure 87. Map and masterplan for Yeniseisk of the XIX century (maps are provided by Regional Local Lore Museum).



Figure 88. Map and masterplan for Irkutsk of 1869 (maps are provided by Regional Local Lore Museum).



and formed ensembles, but these were not of a metropolitan nature. In almost all cities, a linear pole was formed, connecting the old and new polarities, which were subject to anti-polar and polar transformations, periodically losing their significance. The multi-node structure of the city was diversified: specialised buildings defined the function of the nodes, which could have an educational, cultural, administrative or transport character. The specialisation of the urban fabric, including the streets, began. The awareness of other cultures brought a charming eclecticism to the architectural images, interpreted in a particular provincial way. As the ideas of classical regularity implanted from the outside took time to sprout, the embedded images changed almost beyond recognition, the local identity took shape and the elements were adapted. Moreover, the enthusiasm for foreign ideas periodically waned, reinforcing the germination of local cultural codes.

Obviously, the XIX century was the 'golden age' in the history

of Russian architecture and landscape art. The fascination with Versailles has not passed Russia either. This is the time of the creation of both the famous imperial residences – Peterhof, Tsarskoie Selo, Pavlovsk, and numerous noble estates, which inspired, in particular, new masterplans of the XIX century for the province. However, the canons and principles that existed in European or St. Petersburg parks were not realised, and the new master plans of Siberian cities seem to represent borrowings exclusively visible in the form of plans, which didn't take into account the meanings embedded in predecessors. Consequently, since the original connotations of the forms were unavailable, new connotations developed. The Italian concept of Piazza acquired a non-human scale in St. Petersburg and landed in Siberia as urban void. Photographs and paintings of the XIX- early XX centuries give an idea of the Siberian cities, their spirit and atmosphere, and how the ideas were landed, acquiring unique identity. Between fragments and embodied episodes of regular plans, real life took place with

Figure 89. Yeniseisk of the XIX century (maps are provided by Regional Local Lore Museum).

its spontaneity and the dominance of vernacular traditions (Bykonya, 2013; Gevel, 2012; Gorbachev et al., 2011). Judging by the descriptions of historians, it was during this period that it is clearly visible how the ideal picture differed from reality: a huge void was always located on the site of the proposed square of the 'capital' scale (the ideas of pompous paved squares of St. Petersburg framed by ideal rhythms of facades), instead of wide avenues there were wide unpaved roads drowning in mud in autumn and spring, during the rains.

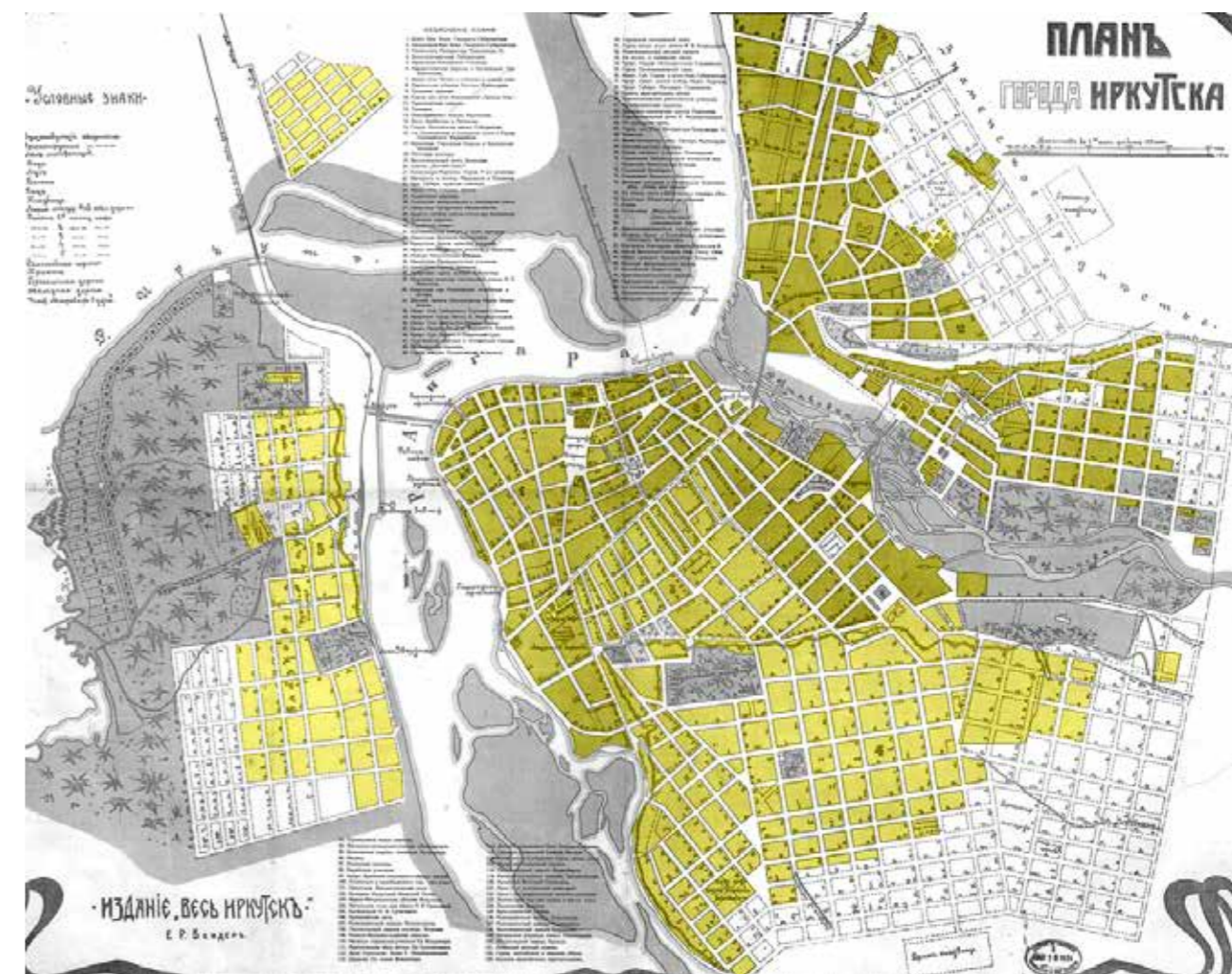


Figure 90. Map and masterplan for Irkutsk of 1915 (maps are provided by Regional Local Lore Museum).



Individual representatives of the buildings that have survived to the present day confirm what Glazychev said about the combination of traditional plans and exemplary facades. In general, there was a characteristic discrepancy between the plans and the facades (in contrast, for example, to the Italian tradition, which allowed the internal structure of the building to be read from the facade). Such a discrepancy contradicts the concept of type, with its structure, logic and legibility.

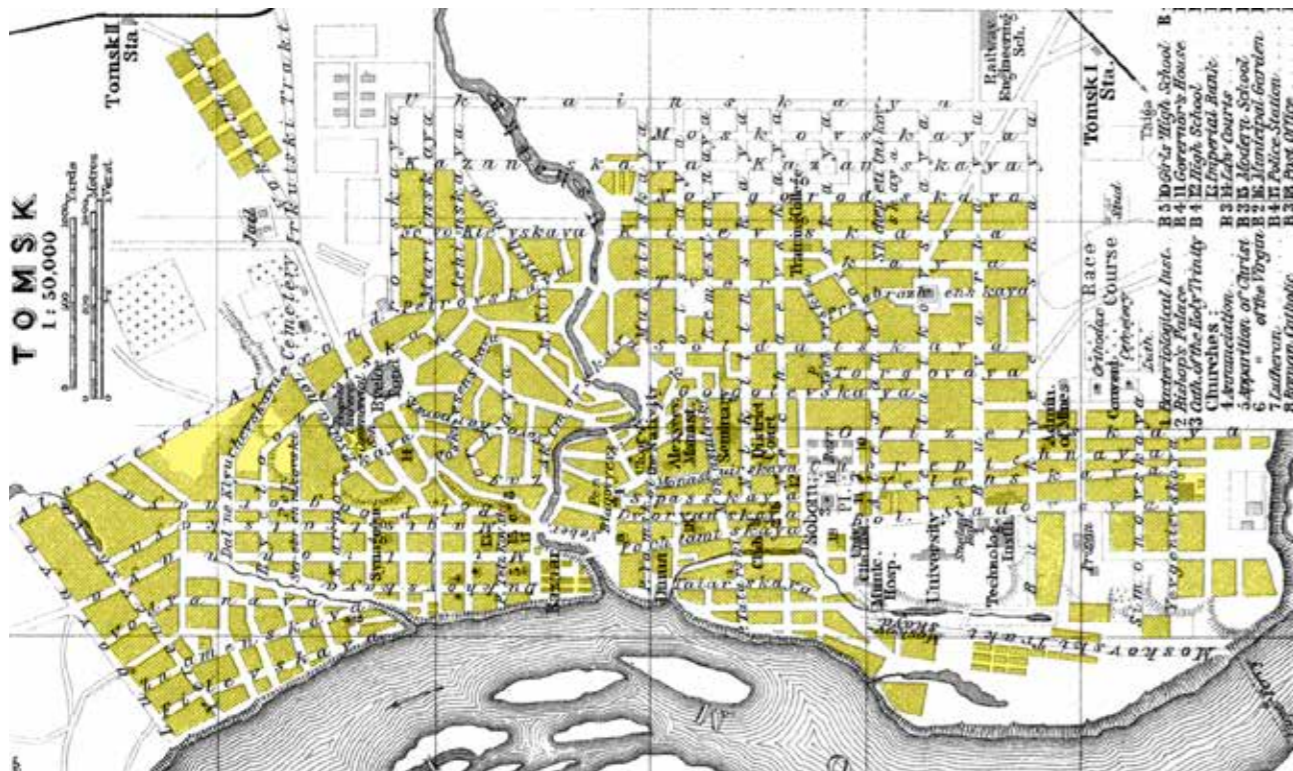


Figure 91. Map and masterplan for Krasnoyarsk 1906 (maps are provided by Regional Local Lore Museum).

Figure 92. Map and masterplan for Tomsk 1918 (maps are provided by Regional Local Lore Museum).

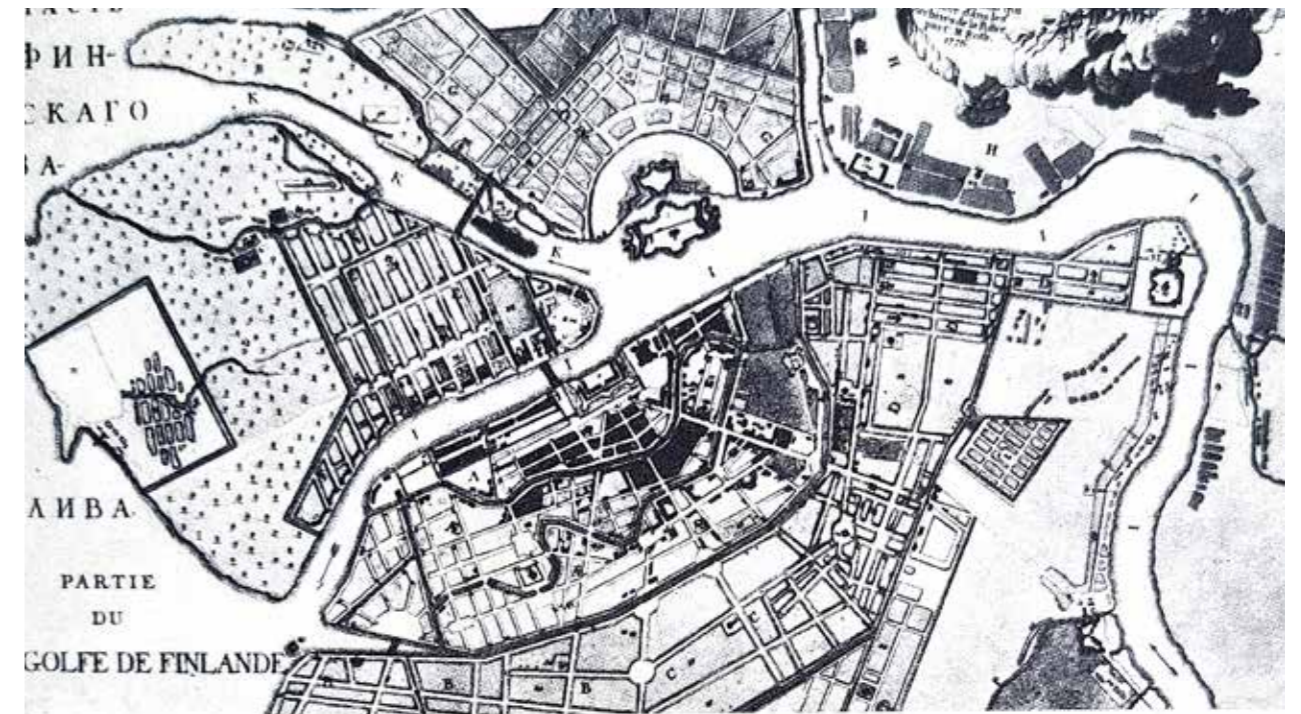
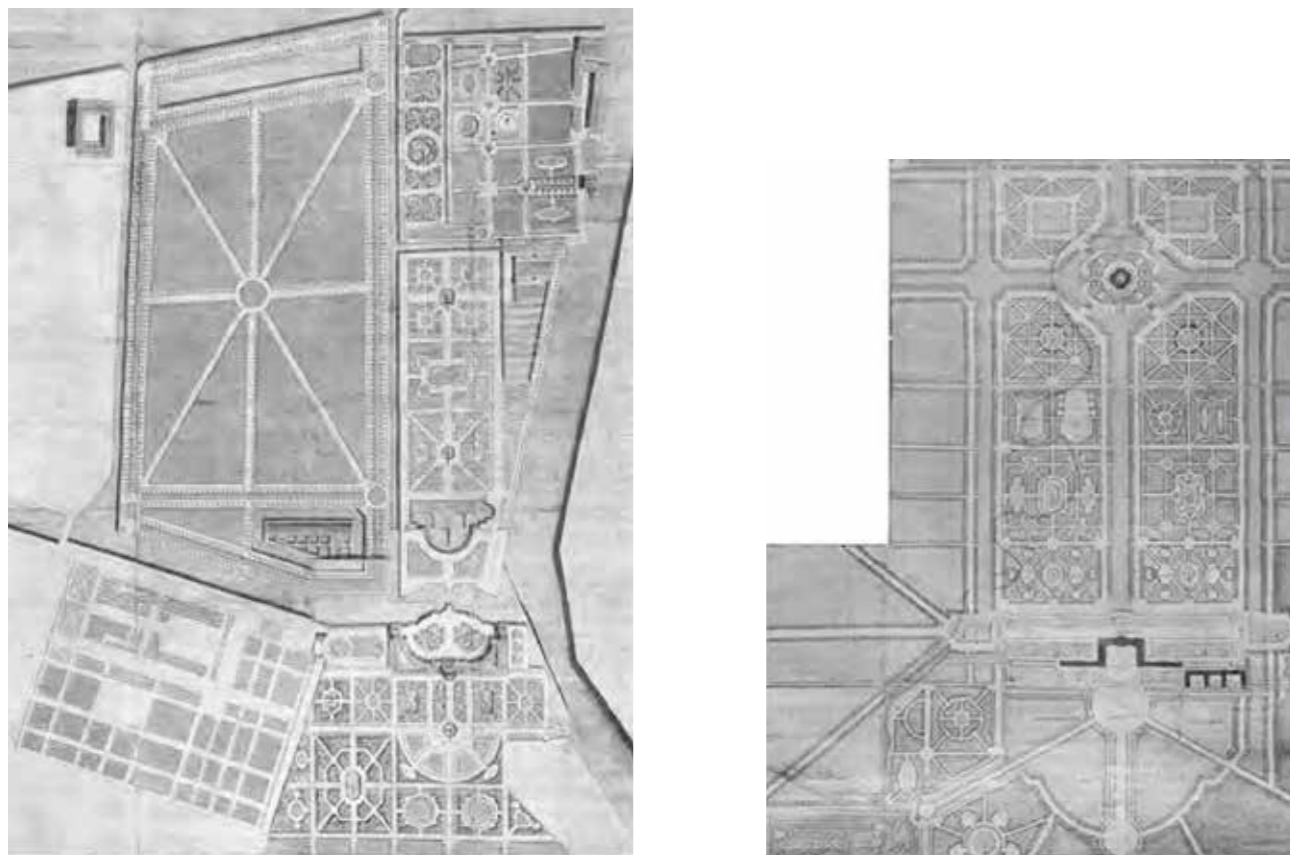
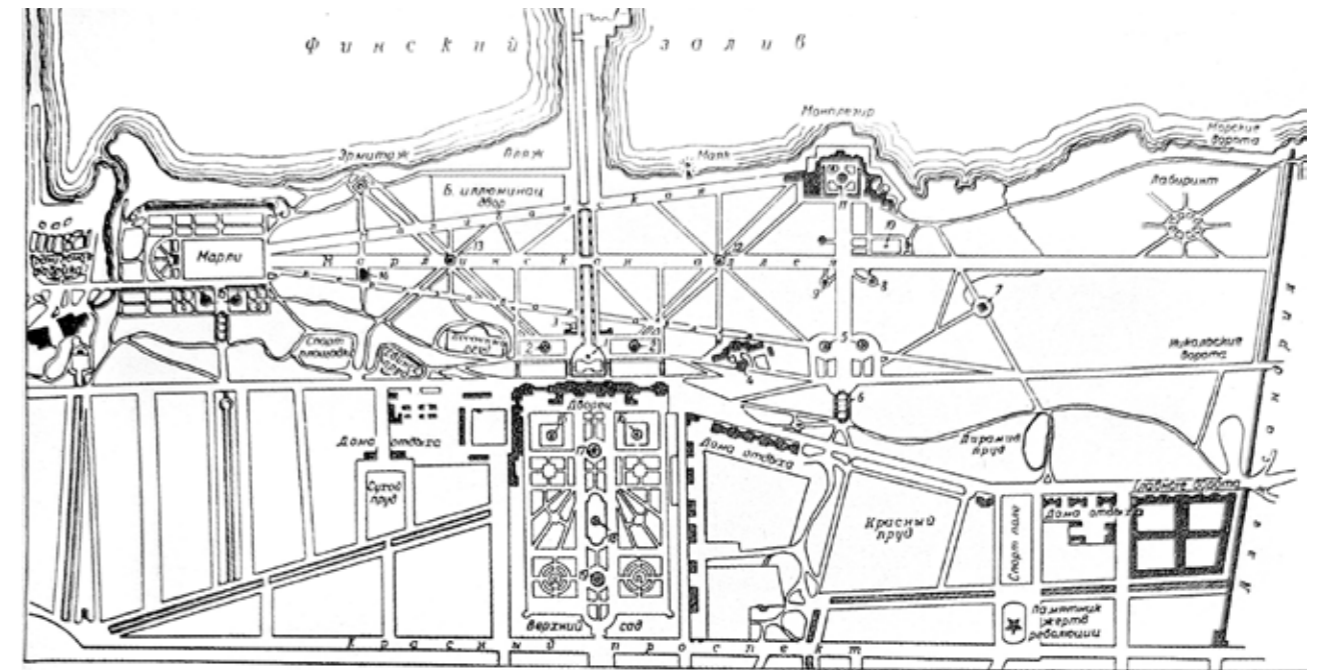
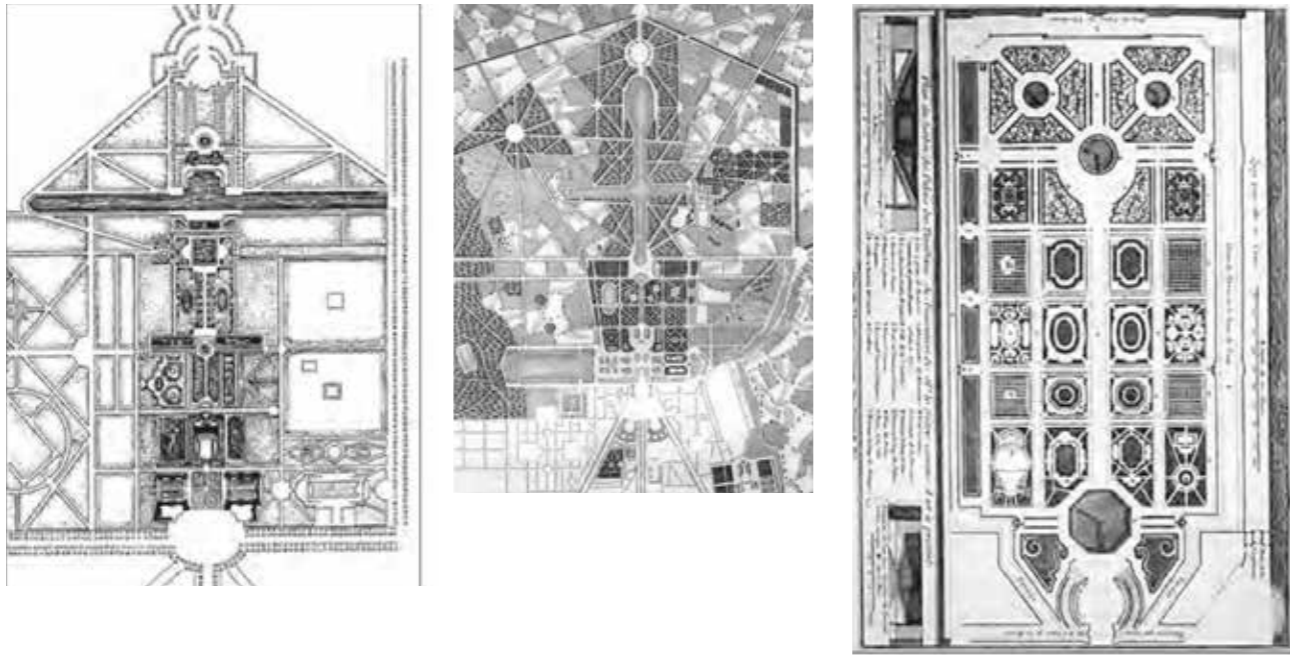


Figure 93 a-c: A. Lenotr. The plans of the Vaux-le-Vicomte, Versailles, Tuileries garden (Scheboleva & Rudchenko, 2012), d-e: Leblon. Strelna, three summer gardens in St. Petersburg (Scheboleva & Rudchenko, 2012).

Figure 94. a: Plan of Peterhof (Rastrelli). b: Masterplan of St. Petersburg in 1776 (Quilici, 1976).



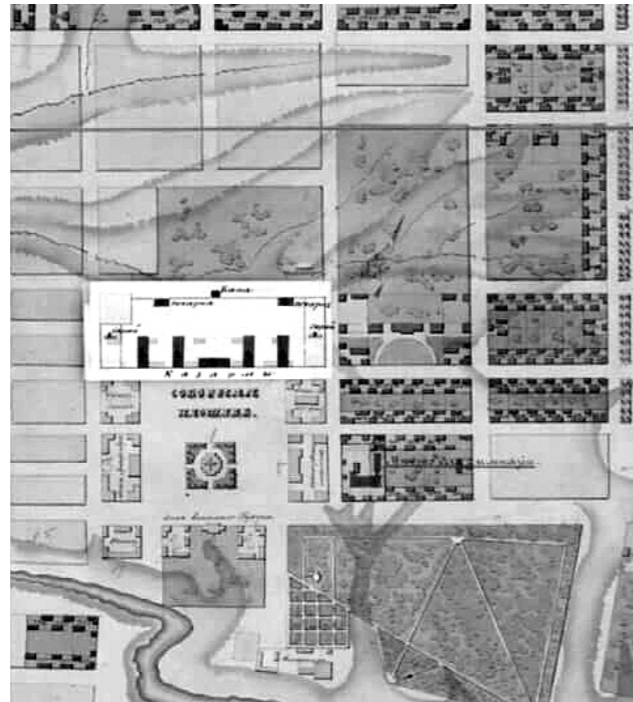


Figure 94. Plan of St. Petersburg in 1830s (Quilici, 1976).

Figure 95. The fragment of plan of Tomsk of 1824 and its factual implementation on the plan of 1859 (Solid fills indicate areas of wooden spontaneous development, (maps are provided by Regional Local Lore Museum).

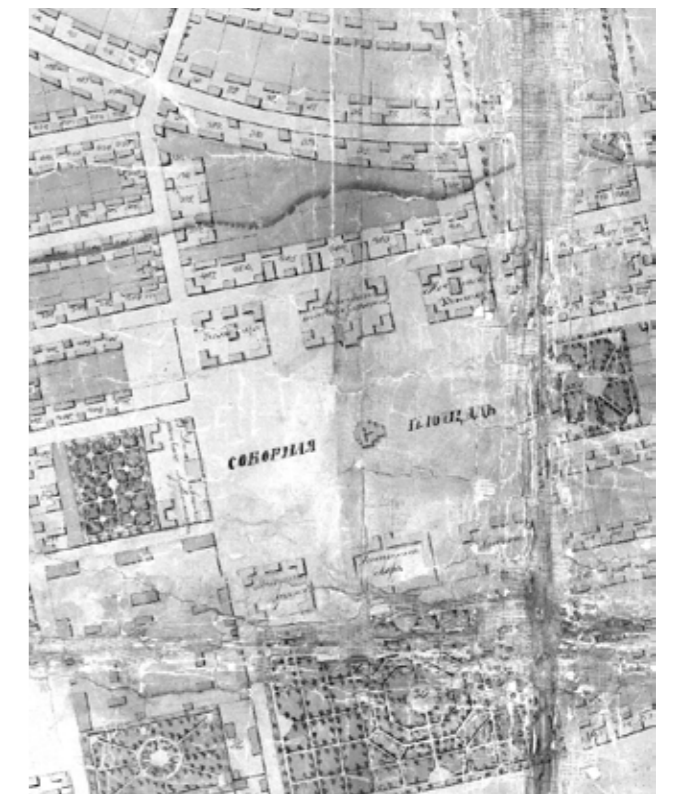


Figure 96. Cathedral square in Tomsk (photographs are provided by Regional Local Lore Museum).

Figure 97. The fragment of plan of Krasnoyarsk of 1828 and its factual implementation on the plan of 1852 (Solid fills indicate areas of wooden spontaneous development, maps are provided by Regional Local Lore Museum).

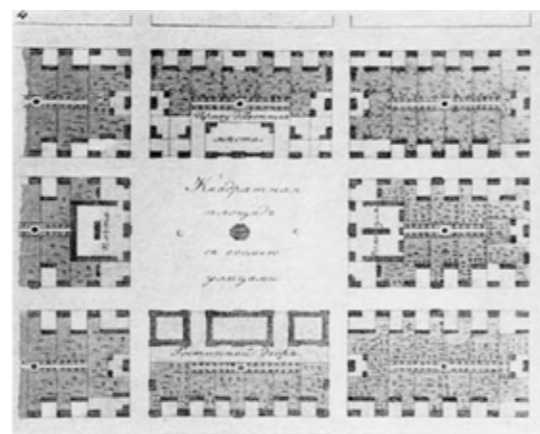
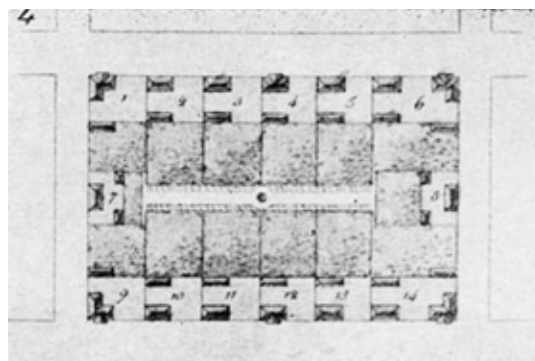
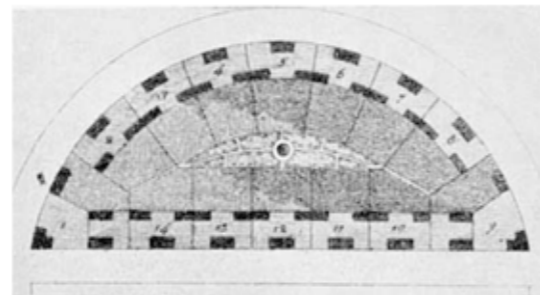
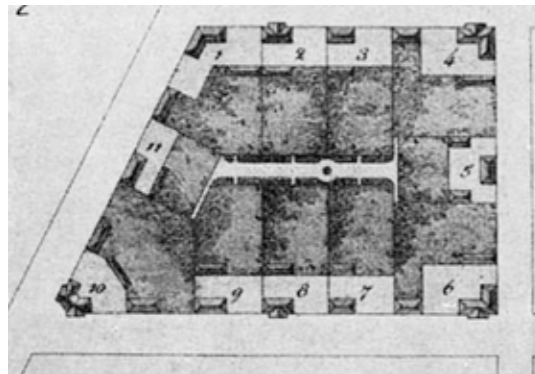


Figure 98. 1910. Krasnoyarsk, new market square. (photographs are provided by Regional Local Lore Museum).

Figure 99. Exemplary projects of V. Geste quarters and squares. 1812: a) trapezoid, b) part of a circle, c) parallelogram, d) plan of a city square with eight streets (Scheboleva & Rudchenko, 2012).

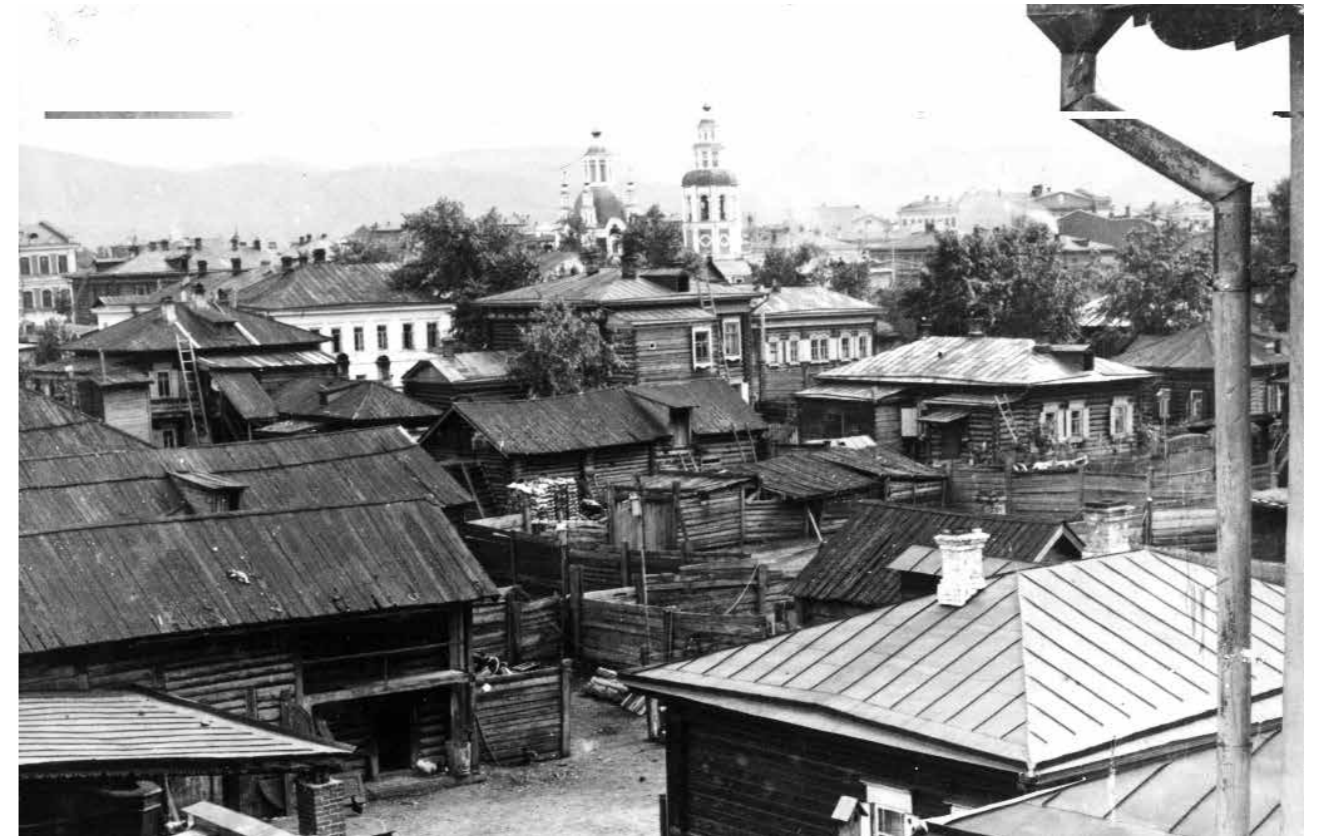


Figure 100. Spontaneous urban tissue of Krasnoyarsk (photographs are provided by Regional Local Lore Museum).

Figure 101. A cursory glance at the later historical maps of Krasnoyarsk illustrates the hypothesis of the interweaving of the ideal plan and the spontaneous principle of the development. (maps are provided by Regional Local Lore Museum).



Figure 102. Spontaneous urban tissue of Krasnoyarsk (photographs are provided by Regional Local Lore Museum).

Figure 103. Spontaneous urban tissue of Krasnoyarsk (photographs are provided by Regional Local Lore Museum).

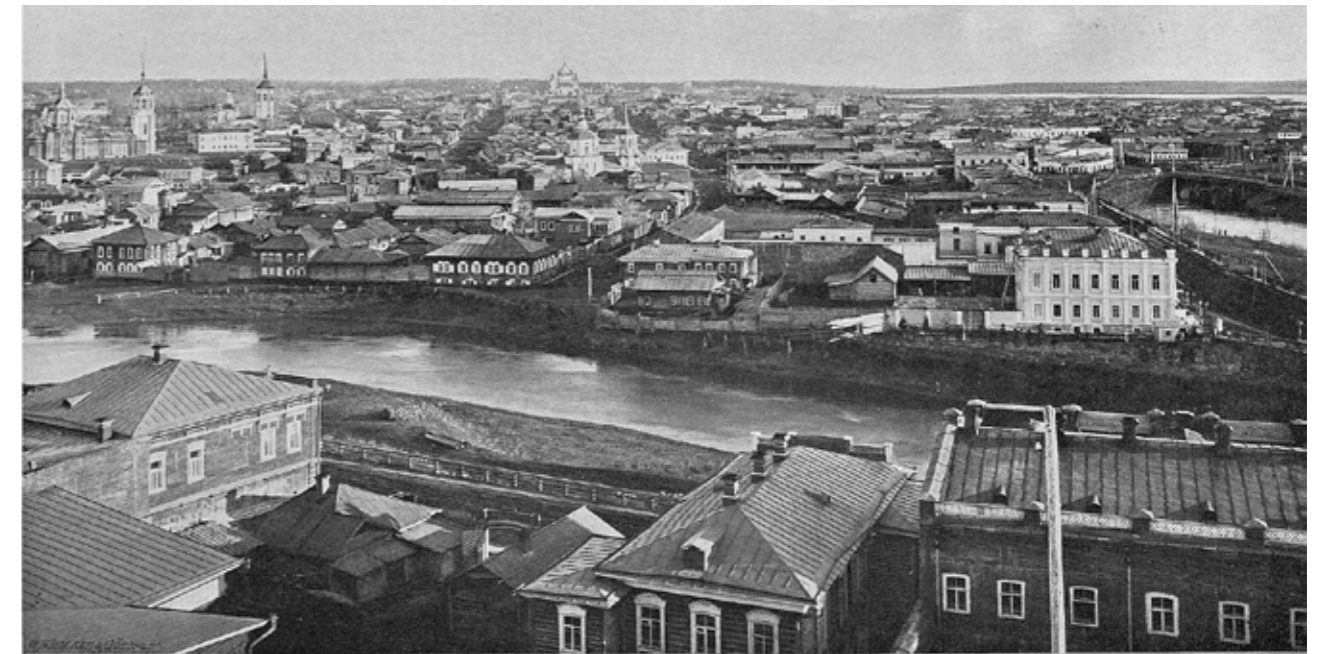


Figure 104. Spontaneous urban tissue of Irkutsk (photographs are provided by Regional Local Lore Museum).

Figure 105. Spontaneous urban tissue of Tomsk. (photographs are provided by Regional Local Lore Museum).

Figure 106. Spontaneous urban tissue of Yeniseisk. (photographs are provided by Regional Local Lore Museum).



Figure 107 a. Krasnoyarsk, matrix road (photographs are provided by Regional Local Lore Museum).

Figure 107 b Since the middle of the XIX century in Krasnoyarsk there was a Noble assembly — a kind of closed club for eminent citizens. A small garden was laid out in the courtyard, which was called 'Edem', with a fountain (photographs are provided by Regional Local Lore Museum).



Figure 108 a-b. Krasnoyarsk, the crossroads with a fire-fighting pool (photographs are provided by Regional Local Lore Museum).



Figure 109. Krasnoyarsk, old market square.

Figure 110. The house of the daughter of the gold miner Evdokia Petrovna Kuznetsova. 1895 (photographs are provided by Regional Local Lore Museum).



Figure 111. Model projects of residential buildings from the 'Collection of facades' 1809-1812 (Scheboleva & Rudchenko, 2012)

Figure 112. Market in Tomsk (photographs are provided by Regional Local Lore Museum).

Figure 113. Irkutsk-market square (photographs are provided by Regional Local Lore Museum).

Let's turn to literary sources and literature to prove the hypotheses that emerged during the morphological reading. First of all, it is important to remember the influence of social factors that arose in the XIX century, such as the abolition of serfdom, which contributed to the fact that people were drawn to the cities. Quilici argued that the cities were not prepared for the rapid population growth that followed the agrarian reforms of 1861 and the Crimean War: 'The rigidity of the structures, the general typology of the central arrangements, exclude and reject the emergence of a productive economy based on labour freed from the countryside and in search of a new location. Thus, while the suburbs paid the highest price for a rapid demographic and environmental transformation, in the city the dates of transformation naturally revolved around the infrastructural works typical of nineteenth-century metropolises, adapted to the innovations induced by production and technology' (Quilici, 1976, p. 90). Obviously, in Siberia, the abolition of serfdom, as well as its existence, was significantly less noticeable (Bykonya, 2013). Basically, it is important to note that the image associated with the concept of Siberia for those who are not directly familiar with Siberia differs significantly from reality. So the association with unfreedom, exile, prison is not unfounded, but it does not cover the whole picture. In fact, people often went to Siberia for freedom - serfdom was least felt here. Exiles were often not imprisoned and had the opportunity to work, even to move, to create businesses, even orchestras, to make a cultural contribution, especially intellectual exiles, artists, musicians. For many, Siberia has always been associated with a special degree of freedom. Quilici mentioned the class division of the population in the eighteenth century, which was reflected in the urban structures: the 'jump' between the centre, well built and delimited, and the periphery, poor in materials and formal structure, reinforced by the obligation to build in stone in the central areas (Quilici, 1976). The phenomenon described appeared in Siberian cities in the 19th century, during the heyday of the merchants, but was also less pronounced.

Centralisation and attempts to create models of an ideal society, undertaken in the legislative plan of Catherine II (Gorbachev et al., 2011), on a smaller scale introduced typical projects of plans, buildings, facades, which flourished in the 19th century. The authors said that the

albums of facades (authors: Zakharov, Geste, Ruska, Stasov) were published in 1809-1812 in five parts: the first two albums included urban casual houses, the third - houses with shops and outbuildings, the fourth - wooden and stone residential and factory buildings, the fifth - details for fences and gates (Scheboleva & Rudchenko, 2012). Obviously, when implementing projects, provincial architects adapted and interpreted them according to the available materials and techniques, the nature of the building site and the taste of the owner or builder. Cycles of Westernism and Slavophilism (e.g. in the mid-19th century) - trends that encompassed many spheres, from architecture to lifestyle - were also superimposed on the existing situation, emphasising the transformative and formative nature of cyclical development. However, it was also weakly expressed in Siberia. Glazychev noted that before the trend towards international borrowing, the pendulum usually swung in the other direction, namely, the protest against internationality, and everywhere attempts were made to express one's affiliation to a national, local culture through the appearance and structure of a residential building. According to the author, similar processes can be observed in England and the USA, and in Russia there is a return to the pre-Petrine architectural tradition. The author illustrates it with the example of the new magazine 'Architect' (1872), where one can find drawings and a description of the Porokhovshchikov house in Moscow, which was perceived as a challenge to the prevailing taste in the centre of the city, reviving or rather composing anew the 'Russian style' of residential architecture, at the same time absorbing all the latest novelties of the time (Glazychev, 1987).

On the whole, the formation process took a century, partly because of the logical and natural resistance of the existing settlements as organisms, accompanied by an atmosphere of scarcity, partly because the first plans were too imaginary and did not actually contain specific instructions, conditions and financial and bureaucratic support for their implementation. In addition, Russia had no previous experience of such large-scale transformation. However, exemplary projects contributed to the implementation of the ambitious plan. Scheboleva & Rudchenko paid particular attention to the person of William Geste, a native of Scotland who played a leading role in planning and whose signature can be found on

most of the city plans of the first third of the 19th century. The implantation of external models did not take place as planned, but the transformation of the existing territorial type did take place. Geste was also commissioned to develop model projects for building blocks of various shapes, including diamond-shaped and trapezoidal segmented - 19 'model' quarters and seven squares collected in an album. Each of the options offered a system of cutting plots and the location of buildings symmetrically along the front, behind there were outbuildings separating the garden from the vegetable garden, a small square was designed in the centre of each block, corner buildings were equally oriented to both streets and had more plastic forms (Scheboleva & Rudchenko, 2012). Interestingly, each new reform period was accompanied by standard projects sent from central Russia. At first these were instructions for the construction of the first wooden fortresses, which lacked clear parameters and came closest to being a record of collective experience. They landed safely in the empty expanses of Siberia. The first fortresses, without a clear plan, occupied the space allocated to them by the relief and geomorphology. After the natural spontaneous development of settlement types as organisms, these types in the classical sense tried to 'instil' external ideas and schemes that already resembled models (or typology closer to the understanding of the 20th century type) and caused the transformation of the territorial type, but not its replacement. On the other hand, the plans of the late eighteenth and early twentieth centuries had a relatively clear outline, but this outline was sometimes radically at odds with the physical reality: a regular classical park or avenue could cross a ravine or a hill in the project. Then, in the period of the development of forms, there appeared, as an accompaniment, typical developments on a smaller scale at the level of drawings of model facades, blocks, squares, which were supposed to be suitable for different situations. Scheboleva & Rudchenko told that each group of blocks was accompanied by a plan of an 'exemplary' square, on which it was planned to build a temple, the most representative public administrative or commercial buildings, gesture was based on the experience of urban planning of the eighteenth century and actively used the principle of repetition, being adherents of classicism, squares were divided into administrative, cathedral and commercial (Scheboleva & Rudchenko, 2012). But they didn't land in their pure form either. New plans included

projects for public gardens, squares and boulevards, embankments. In practice, they could look for a long time like fragments of a forest, wastelands, urban voids. Perhaps such unrealised squares, which in fact represent voids, formed the concept of urban emptiness, but already within the city and not now in poetic contact with nature.

Of particular interest is the common phenomenon of combining a facade from an album of typical facades with a plan of a log house that was understandable and practical for ordinary people. Metaphorically speaking, the new face was put into the old body - both in the case of the city and the house. Glazychev noted that the traditional layout of wooden log houses was almost completely restored in stone buildings, and even the usual dimensions of the rooms did not change significantly (Glazychev, 1987). Thus, for example, the mansion in Krasnoyarsk at 29 Mira Street, built in 1817, when albums of typical facades already appeared, has a typical layout of a private rustic wooden house, but has already acquired a 'typical' facade, as evidenced by the logical discrepancy between the plan and the facade of the building. This approach is often criticised by followers of various pure styles for its primitiveness. However, from a research and typological point of view, the same thing happened - the transformation of the existing type under the influence of external models and ideas, the interweaving of the existing vernacular tradition with reinterpreted 'styles' according to materials and technologies. It is the fabric of cities as organisms formed according to this principle that creates the provincial charm or the charm of non-capital settlements. Scheboleva & Rudchenko mentioned that in the 30s of the XIX century, decorative elements taken from the Baroque architecture of stone temples penetrated into the decoration of wooden buildings - curled volutes converging into a palmette at the end of the Irkutsk plate bands, curved window aprons in the buildings of Yeniseisk, especially pronounced in the wooden architecture of Irkutsk (Scheboleva & Rudchenko, 2012). Glazychev added that since the end of the XVIII century, the structure and appearance of a dwelling bear an ever-increasing ideological burden: the idea of dignity, expressed through external, easily identifiable signs, becomes more and more important. If at the beginning of the nineteenth century the appearance and structure of the house were purely class, and even the rich merchants slavishly imitated the structure

of the noble dwelling (on the pediment of the 'classical' house there was often a figurative representation of the coat of arms, to which the owner had no right), in time they sought to express the personality of the owner (Glazychev, 1987).

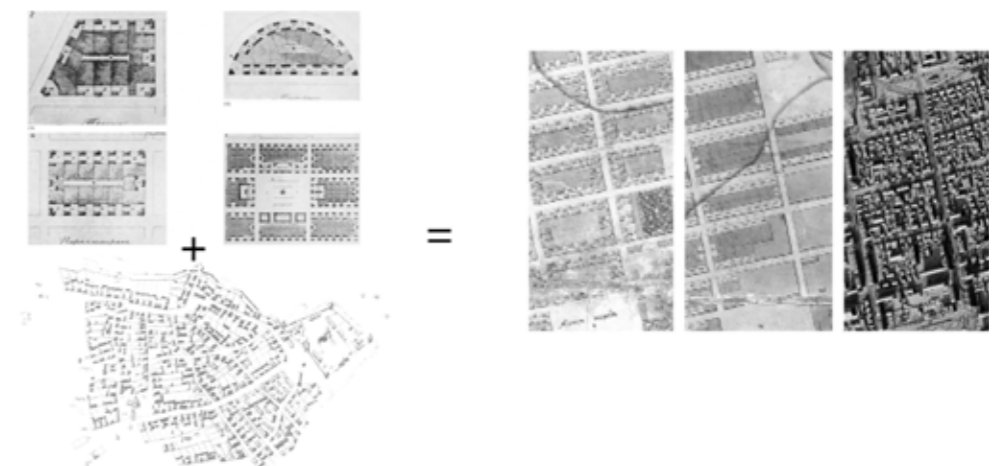
The period between the end of the nineteenth century and the beginning of the twentieth century was at the same time the manifestation and flourishing of an established type of settlement and a transitional phase that prepared the city for the transformations of the twentieth century: 'Urbanisation was not confined to the capital, but followed a widespread trend: while in 1867 there were only four cities in the whole empire with more than 100,000 inhabitants (Petersburg, Moscow, Warsaw, Odessa), by 1897 there were nineteen. Moreover, these phenomena were accompanied by a more general and widespread sense of civil coexistence, of the usefulness of city institutions' (Quilici, 1976). The arrival of the railway, and with it a new economic and cultural wave, caused the intensification of urban development in Siberia. The railway brought engineers, increased technical skills. In general, the leap in development is also visible in maps - new knowledge and technologies made it possible to draw maps and plans on a different technical level. It is necessary to mention the importance of international contacts of that time for the following period of transformation and exchange: 'It had already happened that the materials needed for the development and improvement of the railway network could not be produced by the Urals industries, which were not prepared for this purpose, and therefore had to be purchased abroad. Thus began the familiar mechanism of massive grain exports (sales quadrupled between 1861 and 1885) to raise the capital needed to purchase materials and machinery from Europe. It was from France - in the form of capital - and Great Britain - in the form of technicians - that the greatest influx of aid for industrial development would take place' (Quilici, 1976). The appearance of eclecticism and borrowing can also be linked to the formation of new contacts. Morphologically, the scale of ordinary fabrics began to change. The scale of specialised fabrics followed.

As a rule, the plans of Siberian cities were drawn up by specialists with Russian surnames on the basis of regulations and what they could see in St Petersburg - in

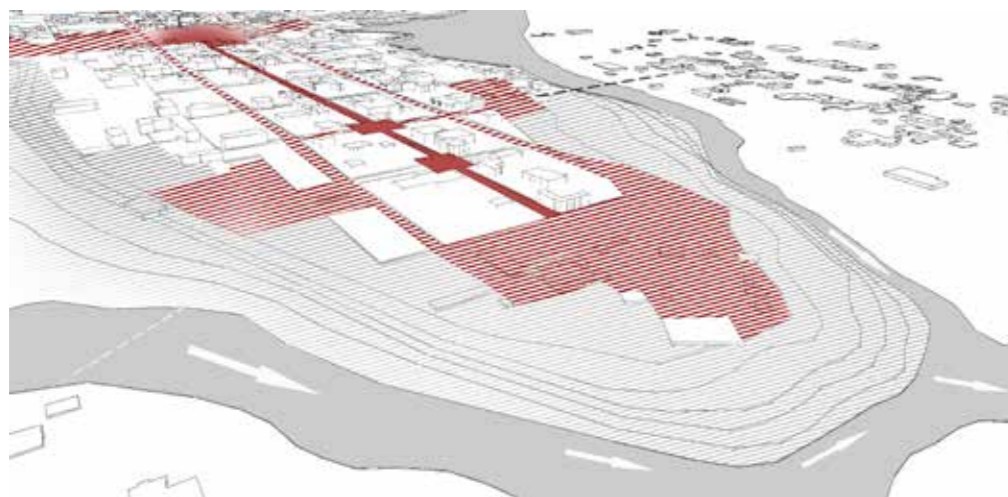
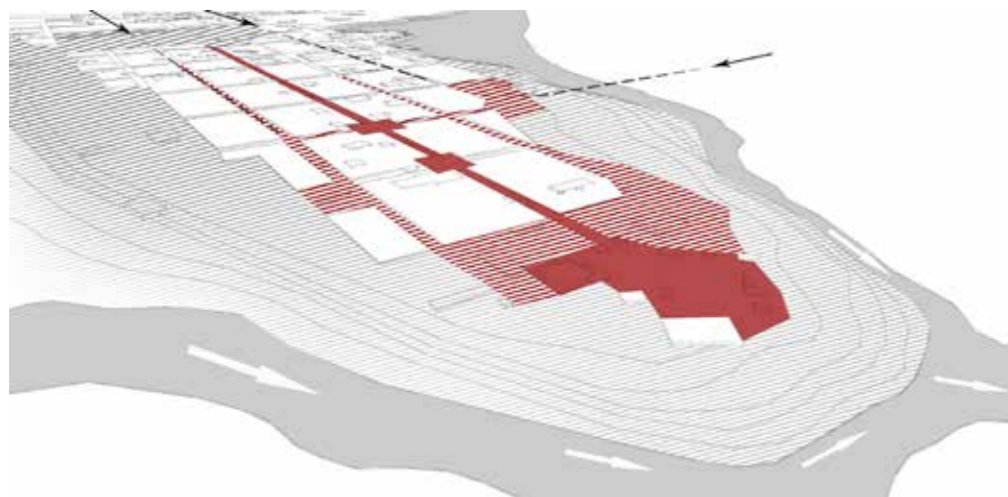
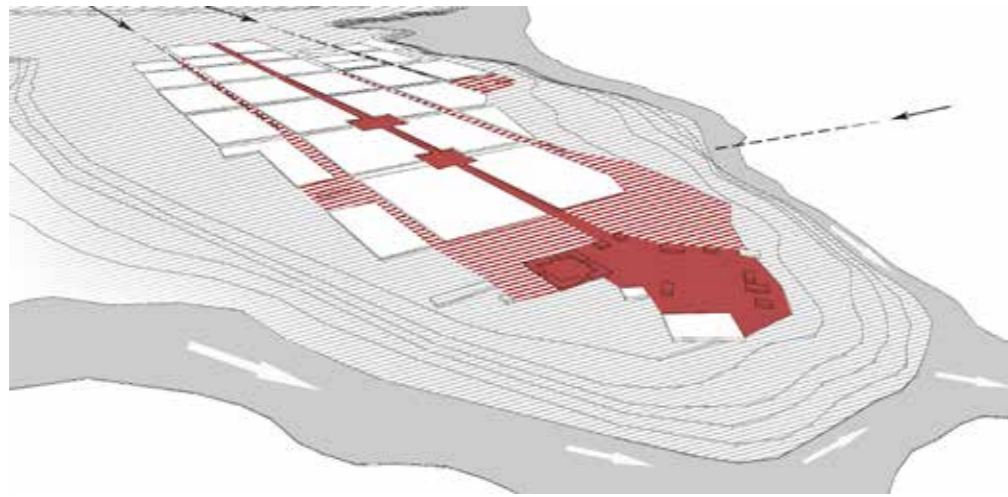
other words, already Russified European models. And often there was nothing left of these models but a regular grid and geometric shapes. The structure of the plots within the blocks of the regular grid was usually spontaneous. Between the embodied fragments of a regular structure that fell on relatively flat areas, there were areas on the relief whose structure could not be regular. They were also spontaneously filled with vernacular language. In the Russian periphery of that time, between the fragments and episodes of regular plans and the intrusions of the author's architecture, real life was taking place in Russian cities, with its imperfections and the dominance of vernacular traditions.

It was during this formative period that the embodiments of the ideas that had previously been thrown onto the Siberian soil were formed, took shape and budded into an identity. The establishment of stone construction in Siberian cities is usually associated with the emergence of active trade (the Siberian tract) and industry (primarily the gold industry). If the previous, transformative period was largely associated with master plans, this formative period is mainly characterised by the appearance of architectural objects. This is the period of formation that followed the period of transformation (when abstract structures intertwined with vernacular tradition) and received a new 'face' in the form of ensembles, merchants' villas. Cities began to acquire images - empty spaces, which on ideal master plans embodied pompous spaces of squares (in fact remained huge voids without development), gradually acquired an image by the appearance of stone buildings. Some of the cities almost completely accepted perfectly regular new master plans (e.g. Krasnoyarsk after the great fire), some regularised the existing streets, made them straight, preserving the existing structure (e.g. Irkutsk). The cities grew in the direction of the intercity roads. The second pole, linear polarity and additional nodes appeared gradually. Growing importance of additional nodes and poles is visible on plans and means complication of social life. The growing diversity and richness of cultural life is constituted by the presence of educational institutions, museums and churches as specialised buildings, which mainly denote nodes and speak of the specialisation of the urban fabric. Finally, crises and fires halted the extensive development of the cities in some places and created fringe belts that are still visible in the cities. During

this period, the cities developed mainly within the natural geomorphological boundaries, practically without going beyond them.



Intertwinement: 'organic elements grouped in an organic composition' + 'serial elements grouped in a serial composition' = 'organic elements grouped in a serial composition' (Caniggia).



Thus, the description of the foundational territorial type at the end of the formation phase can be as follows

1. Orthogonal grid inherited principles of spontaneous plans and grew usually along the river, within the available natural boundaries.
2. The river as a means of movement and transport of goods has ceased to be the main 'road'.
3. Land tract and a railway connected cities with capital.
4. Many bridges and crossings were built.
5. The old polarity lost its importance due to the development of the second main polarity.
6. Linear polarity connecting two poles gained the importance exceeding the importance of both poles.
7. The urban fabric is highly specialised – with the thematic nodes and streets with the names of the main buildings and functions.
8. The scale of urban fabric started to change: the formation of a supergrid and morphological regions began.
9. Hills, elevations, polarities and major nodes were marked by the verticals of churches.
10. The banks of rivers changed their anti-polar character.
11. The railway brought the development of workers' settlements: plans began to spread beyond the historic centre.
12. The grids of blocks and wide streets acquired their own appearance and specificity, framed by the 'urbanised' wooden houses of the estates ('usadba' - still the main unit), enriched with stone mansions of wealthy merchants.
13. Neighbourhoods were still introverted, dominated by entrances to houses from courtyards.
14. The density of the Siberian city was much lower than in central Russia, with large empty spaces, occasionally filled with events.
15. Parks, squares and cemeteries on the periphery were embraced by the city, forming fringe belts and going through antipolar transformation
16. Roads were still mostly unpaved, opened to natural elements - hills, rivers, which gave connection with nature.
17. The city got a new "face" in the form of ensembles, merchants' villas, educational and cultural institutions -the

specialisation of urban fabric.

18. The cities consisted of organic elements grouped in a serial composition (Caniggia).

19. Polarisation of the whole fabric around the bridge entrances and new nodes and poles began.

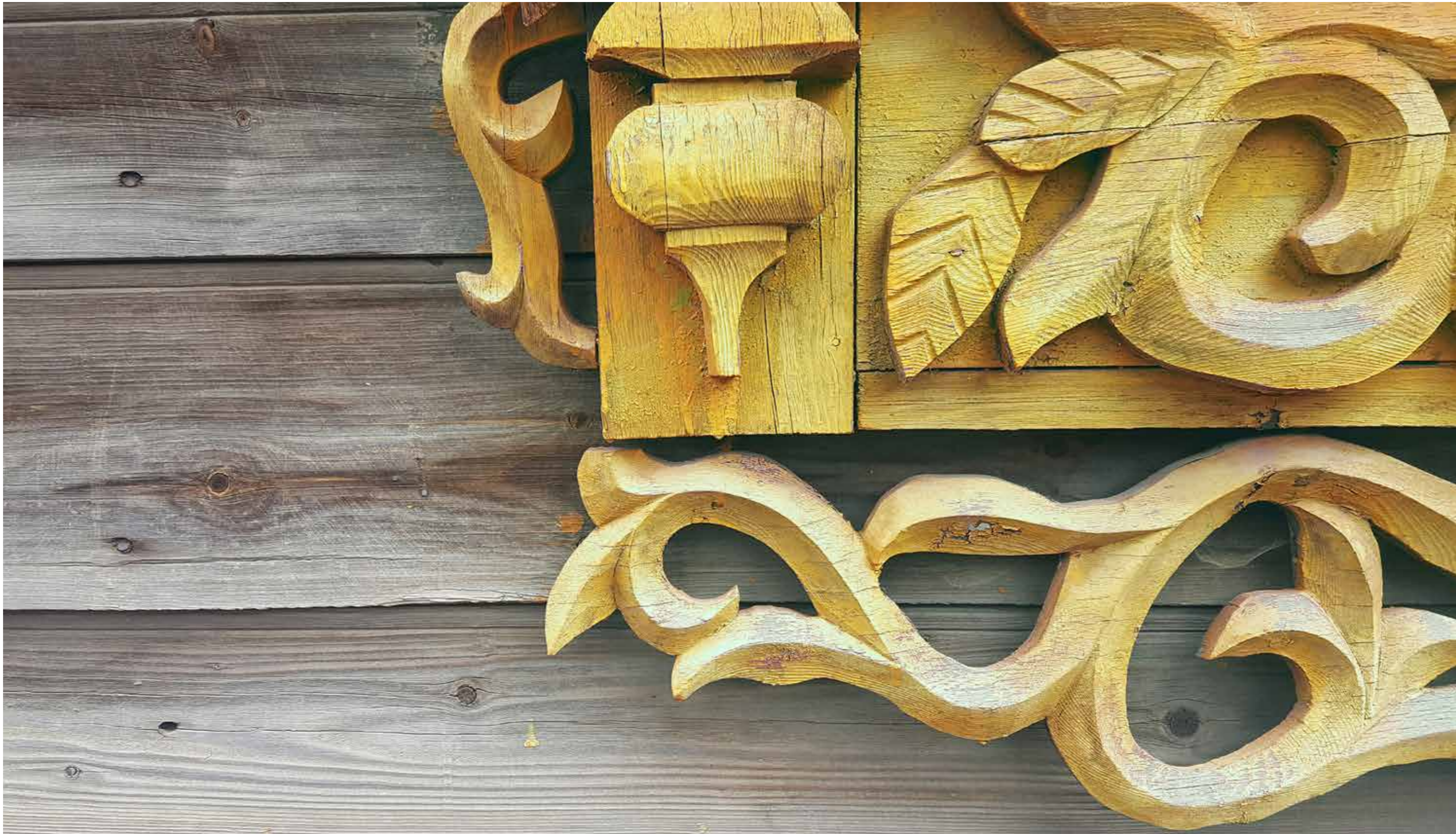
20. The development of roads parallel to the matrix is visible.

In sum, local identities flourished as follows. The regular block of the Siberian city was a spontaneous tissue composed of communities of courtyard houses. The intimate and introverted concept of the fortress or 'nest' derived from old way of settling, which encapsulated the ideas of colonisation and protection, was embodied in the ideas of walls, fences and gates, and was transformed into the idea of the 'individual fortress' - a peasant's house with the important cultural ideas of collective privacy (smooth transition from the house to the street through high gates and mini-garden - from collective private to 'no one's' space, the entrance from the street was impossible), ownership and protection, 'connection with the ground and nature', or wintering (resulted in storage space). The openness of market spaces-voids contrasted with the intimacy of communities of private yards.

local identity has been preserved at the intermediate or 'relational'scale. Major socio-political transformations tend to quickly and directly alter the polar and nodal elements of the urban hierarchy, while traditions and local historical identity, which ensure continuity of development and connection between generations, are reflected in the vernacular form on a human and intermediate, relational so-called meso-scale, the scale of community (relational approaches in various disciplines), relationships within a social group.

Since the original connotations of the forms were not available, new connotations developed: the charm of wooden urban fabric, villas of rich merchants built in islands of wooden estates, large spaces of squares, often framed by wooden fences instead of pompous continuous facades and wide streets, folding a regular structure, each of the streets came into a picturesque landscape.









The development of this phase in Central Siberia was distinctive in this phase in the capitals. However, the ideas that prevailed in the centre of the country often did not reach Siberia in practice. The period of transformation, which left a significant mark in Moscow, left almost no trace in the periphery. The germination of revolutionary ideas and their 'ingrowth' into the existing order came much later - in the pre- and post-war period, during industrialisation. Parallel to this, there was also a change of ideas, sometimes immediately embodied in a new environment, which led to the revolutionary destruction of the old order (large building complexes in the 1950s or the destruction of churches), sometimes with a delay. However, it can be assumed that it was in such a multi-layered, complex and gradual way that a new type of settlement - the Soviet 'collage city', assembling the variety of morphological regions, the skeleton of which was the supergrid - was formed and rooted. In general, the Soviet period is much more complex and deserves special attention in a separate study, that is why this research provides only a general outline to demonstrate the process of formation of the morphological type of the Siberian city and to confirm the hypothesis based on reading and interpretation of the existing urban fabric. In this subchapter, the period is presented in its main features. Perhaps the most important is that a large part of the country was created on the basis of a newly invented concept of type and typology.

Thus, the most essential and radical change in this transformative period is the change in the very understanding of urban and architectural form (and with form, type): In the monumental tower of Tatlin's III International, 'the forms [...] must be elementary: cubes, cones, spheres, their sections [...]'. The monumentality, simplicity, integrity and elegance of the architectural concept of the Palace' - reads the recommendation to the designers provided by the Building Council, 'it must reflect the grandeur and nobility of Soviet construction' (Quilici, 1976, p. 149). Apparently, architectural form took on an ideological tone. This was followed by an ideological break with the continuity of past form and tradition. As can be seen from the plans of the cities at the beginning of the Soviet period, the great Soviet 'idea of the cities of the future' practically did not reach them until the 1930s. In general, maps from the beginning of the period show continuity and don't show any traces of the utopian ideas



## PERIOD 3

### Soviet ideology and ideal utopian city models (transformative phase).

that dominated as a movement in Central Russia. However, the changes did have an impact on Siberian cities: street names were changed to reflect the new ideology. Churches and temples that had previously dominated the skyline were demolished or rebuilt en masse. In the 1930s, urban master plans were drawn up in the spirit of the times, but there was no time to implement or even approve them because of the war, which brought with it evacuated shops and factories, often arranged in a chaotic fashion. In the post-war period, however, the ideas of the early period began to germinate in the historic cities of Central Siberia.

Were the ideas of the authors of social utopias known to a large number of Soviet architects? Khan-Magomedov said: 'In 1917, in Moscow, in the series 'Revolution and Culture', the book by professors V.F. Totomiantsev and V.M. Ustinov was published. Ustinov's 'Utopias (Social Paradise on Earth)' was published in Moscow in 1917 in the series 'Revolution and Culture', in which the ideas of T. More, T. Campanella, T. Herzki, D. Ruskin, O. Saint-Simon, O. Comte, S. Fourier, L. Blanc, E. Cabe and P. Proudhon were discussed in detail and with many quotations in separate chapters. Proudhon, and gave an overview of the practice of the functioning of 'communist colonies' organised by followers in the early 1930s, N. Markovnikov published an article 'House-commune in past and present', in which he

Figure 115. Krasnoyarsk in the beginning of XX century (Photographs are provided by Krasnoyarsk Regional Local Lore Museum).

examined in one line the project of the village (communist community)' (Khan-Magomedov, 1996, p. 13). It should be noted that ideal models of the Soviet period have always attracted special attention, as a subject of art or social achievement. However, their impact on the reality of the historical city as a living organism, its plexus, rarely appears in the focus of researchers. Quite often, both foreigners and Russians, write about micro-districts and settlement systems as if they existed in a vacuum, not in the longer perspective or historical context, or in the formation of types in the broadest sense.

In general, borrowing, adaptation and exchange are among the basic driving forces of many cultures, and Soviet culture, with all its specificities and uniqueness, was no exception. Therefore, it is essential to study the Soviet period in its continuity with the previous period and within the broader cultural context. Next, it is important to explore the ideas that existed in this transformative period, why they were important, and how they influenced the

actual development of urban form in Siberia, selectively illustrating the influence in the examples of the formative period. At the beginning of the twentieth century, a new revolutionary approach to architecture was born in several countries, including Russia, Germany, Holland and France. It is symbolic that Khan-Magomedov begins his book with a description of ideal cities and social utopias formulated at different times and in different cultures. The author emphasises the participation of foreign architects (E. May, H. Mayer, M. Stam, H. Schmidt, V. Schwagenscheidt, B. Hebebrand, etc.) in the design of new Soviet cities. A. I. Kokkinaki identified three stages in the development of international relations:

'The first stage - from the end of World War I to 1924-1925, the second stage - from 1924-1925 to 1929-1930, the third stage - from 1929-1930 to the mid-30s. [...] Until the early 1910s, Russian artists mastered the new creative achievements of the foreign avant-garde, and many artists and sculptors studied in art studios in Germany and

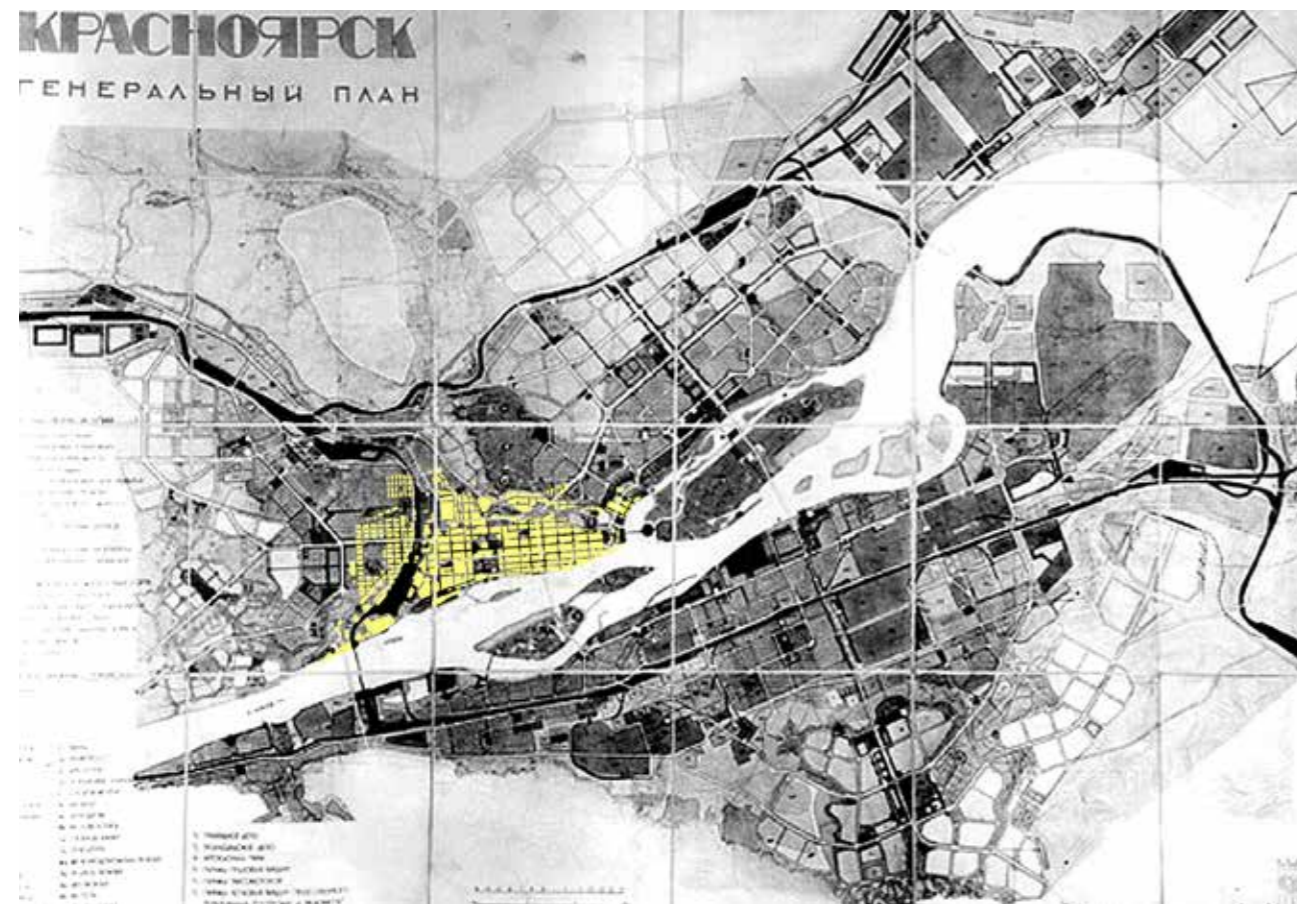
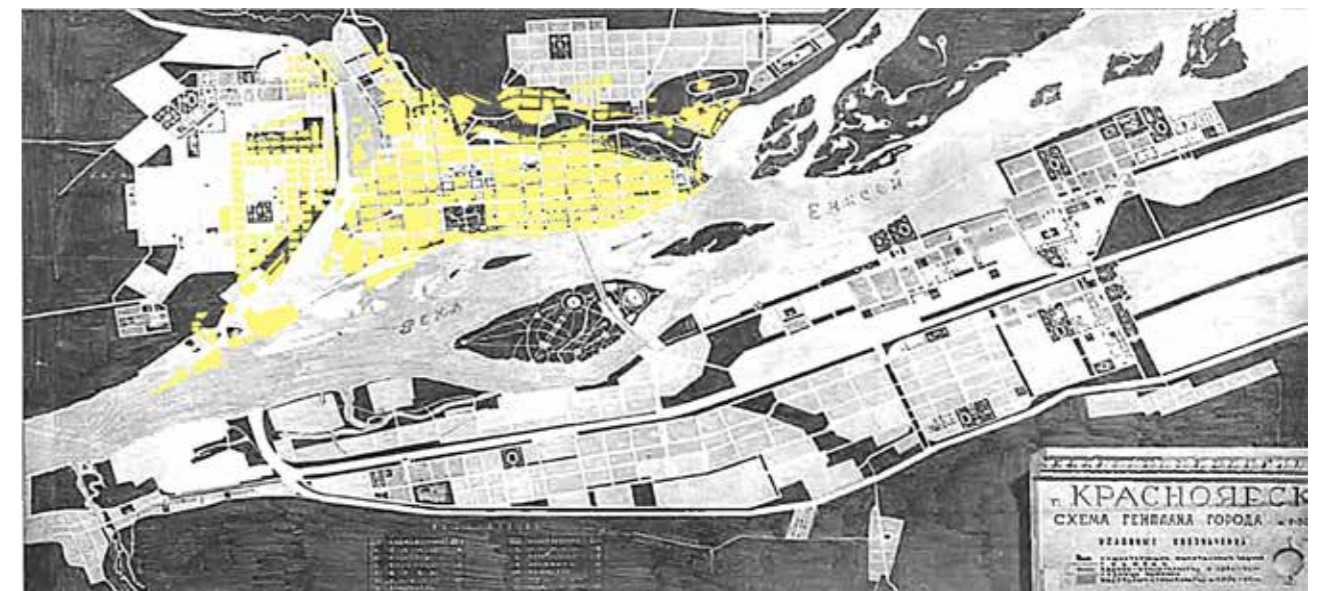
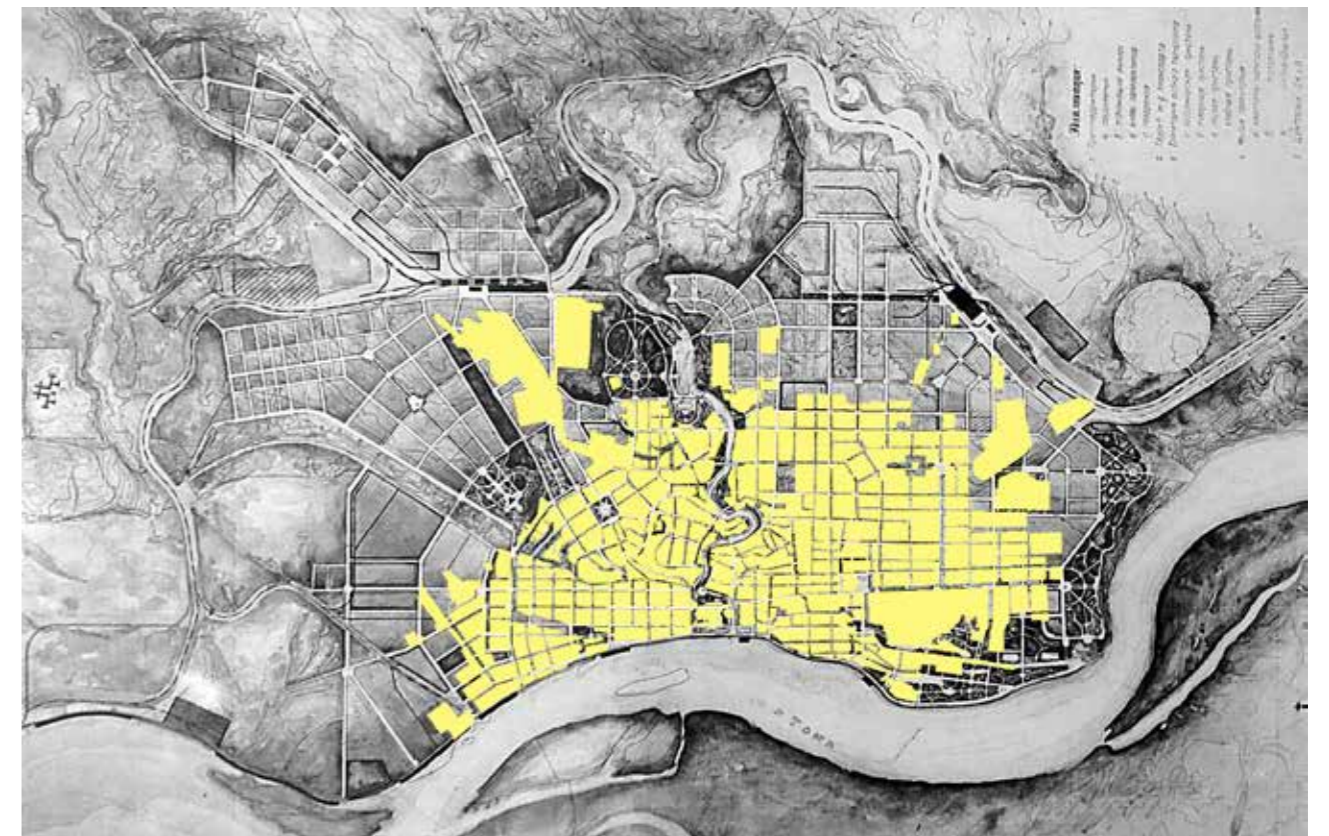


Figure 116. Map (in yellow) and masterplan for Krasnoyarsk 1934 (maps are provided by Regional Local Lore Museum).



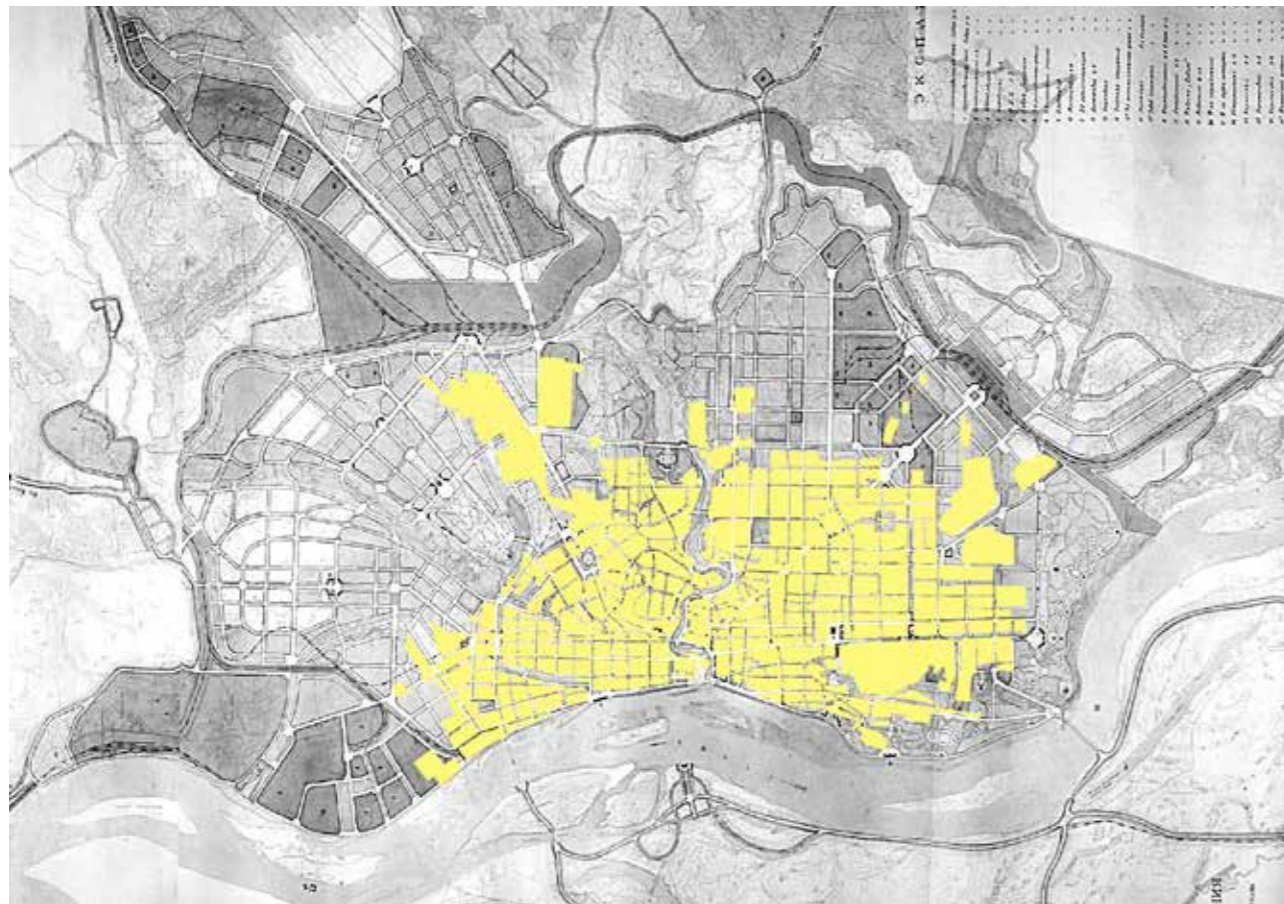
117.

Figure 117. Map (in yellow) and masterplan for Krasnoyarsk of 1950 (maps are provided by Regional Local Lore Museum).



118.

Figure 118. Map (in yellow) and masterplan for Tomsk of 1939 (maps are provided by Regional Local Lore Museum).



France. During the next ten years (1912-1922), a rapid process of formation of the original creative concepts of the Russian avant-garde took place, the originators of which were V. Kandinsky, M. Larionov, K. Malevich, B. Tatlin and others. The creative ideas of these masters had a revolutionary influence on the entire sphere of artistic creation (graphic art, theatre sets, architecture, interior design, fabrics, etc.), which in 1910 underwent a phase of formal experimentation (cubism, futurism, cubo-futurism, suprematism) that helped to overcome traditional figurative stereotypes. But it was precisely this most intense period of formal experimentation in left-wing art, in which many of its proponents 'went out' into the thematic world of three-dimensional forms and abstract structures, that was marked by a sharp weakening of ties with artists from other countries. This was caused by the First World War and the Civil War, during which the avant-garde developed rapidly, relying mainly on internal impulses. As a result, by the beginning of the 1920s, a huge creative potential had accumulated in the domestic avant-garde. This determined

the nature of the relationship between the Soviet avant-garde and other centres of the formation of a new style - in the first half of the 1920s, the flow of information from our country clearly prevailed over the flow from abroad. [...] The flow of information from our country has been gradually increasing since 1918' (Khan-Magomedov, 1996, p. 251).

The need to find new cohorts of planners capable of tackling an unprecedented amount of work in a very short time, the creation and strengthening of planning institutes and the project coordination of the various initiatives scattered in the different regions, the coordination of training, typification and standardisation of housing, necessitated the creation of design brigades made up of mixed teams of Western and Russian architects:

'The difficulties encountered in the first period of the Plan's implementation, and in particular the shortage of qualified technicians at all levels of intervention, prompted the

call for foreign architects, especially German, but also Swiss, Dutch, Hungarian etc., from the ranks of European rationalism of the 'radical' tendency and who had already partly tested their disciplinary skills in the field of working-class housing [...] It is a fact that at the end of 1930, two groups of German architects arrived in the USSR, the one led by Ernst May, made up of twenty or so technicians who had participated in the social democratic experience in Frankfurt, and the one led by Hannes Meyer, made up of his collaborators from the Bauhaus in Dessau. Also arriving were Martin Wagner, the Dutchman Mart Stam, who also collaborated with May in Frankfurt, Hans Schmidt, Fred Forbat, while others, such as Van Loghem, Lurçat, Kreicar. All of them saw the Soviet Union as the country in which they could fully realise the only partially realised and in any case limited vision of a new urban planning and rationalisation of the *housing question*, which the European social democratic reform movement had conceived' (Quilici, 1976, p. 232).

The large-scale socialist experiment attracted creative minds, creating a kind of cauldron of change, fuelled by new ideas and international exchanges.

'V. Gropius participated in competitions for projects of the theatre in Kharkov and the Palace of Soviets in Moscow. B. Taut actively cooperated with our country. In 1920 he published in his book *The Collapse of Cities* the full text of the Soviet decree on land, and in 1923 participated in the creation of the German society *Friends of New Russia*. In 1926, B. Taut was invited by the Moscow City Council to Moscow to familiarize himself with housing construction for workers. After that, B. Taut made a report to the Housing and Construction Committee under the Presidium of the Moscow City Council, in which he made several suggestions and recommendations to improve the organization and quality of construction. When he visited Moscow in 1929 and 1930. [...] In 1929-1930, the craving of foreign architects for the USSR experienced a kind of boom' (Khan-Magomedov, 1996, p. 258).

This also confirms one of the main theses of this work, namely that local identity is dynamically formed from the interweaving of cultural exchange with local cultural characteristics. The Soviet concept of typology was born under the pressure of the need to carry out tasks

of incredible scale on a vast territory in conditions of economic limitation. Quilici spoke of a belief in an urban social order that tends towards an intact universality, towards a total unity of 'the whole space, which for us is practically infinite', in which harmony is only possible if the individual elements of architecture are structured as typical elements, i.e. if they have a certain universality in their mutual relations (Quilici, 1976).

International architects such as E. May and H. Mayer were invited to do real design work for the construction process. The architects of E. May's group (including Soviet architects) prepared the projects of the first stage of development of new cities, the first blocks (housing, public buildings) were built in a number of cities according to these projects and projects of other architects. Khan-Magomedov said that Mayer went to Moscow and invited seven young Bauhaus graduates (the 'Mouth-Front' group): R. Mensch, K. Neumann, K. Pyushel, B. Scheffler, F. Tolziner, A. Urban, T. Weiner (Khan-Magomedov, 1996). K. Pyushel describes the work of X. Mayer's group in the Soviet Union as follows: 'The condition for the implementation and consequence of industrialisation was the need for a large number of specialists of different profiles. It is no coincidence that Hannes Mayer's group was subordinated to the People's Commissariat of Heavy Industry, and that its first task was connected with a very large need for educational buildings. The field of activity of the Unified Foreign Brigade was first the Institute for the Design of Technical Educational Institutions - Hyprovuz, and then the University Project, which was mainly concerned with the construction of buildings for higher education institutions'. From the following quotation of Khan-Magomedov's words, it is possible to judge how much of a creative role was played by the cooperation with foreign specialists, who provided the very interweaving of cultures that formed a new identity:

'Tibor Weiner, Philipp Tolziner and Konrad Pyushel [...] were transferred to the Gorstroiproekt. There they met with some of the members of Ernst May's group - Hans Schmidt, Mart Stam, Werner Hebebrand, Greta Schutte-Lihotzky, Ernst Zyman and others... A group of Bauhaus graduates included in the Gorstroyproject. [...] In addition to the general scheme of the district planning for the Perm industrial basin Mayer (at the head of a team of

Figure 119. Map (in yellow) and masterplan of Tomsk of 1947 (maps are provided by Regional Local Lore Museum).

designers) in the Standard Project develops projects of two autonomous social cities - Nizhny Kuryinsk and Gorki. Mart Stam, who came to the Soviet Union as part of Ernst May's group, worked with May for some time (in particular, on the layout project of Magnitogorsk). Then he left the group and worked independently on the layout and development project of Makeyevka) or in co-authorship with H. Schmidt (Orsk). Except for these groups, in the 30s, some other foreign architects who came from France (Andre Lursa), the Netherlands (Nigeman, Nienhuis), Czechoslovakia (Kreutzar, Shpalek), Germany (Kurt Mayer - city councilor for the construction of Cologne) and other countries. Since 1933, when the strengthening of radicalist tendencies (constructivism) began in the Soviet architecture, the attitude towards foreign architects began to change. [...] in the middle and in the second half of the 30s, most foreign architects left the Soviet Union' (Khan-Magomedov, 1996, p. 269).

However, the historical Siberian cities (including those under consideration) have not received development projects directly from the hands of foreign teams, which may have preserved their historical environment, at least for some time. However, the ideas and influences of the projects and buildings of foreign teams reached them with a long delay, and they were integrated and adapted already at the stage of formation.

Quilici said that the aim was not so much to present a model of planning practice as a formal model of a 'socialist city' (Quilici, 1976), which is more in keeping with the definition of model than with the definition of type given in this study. Khan-Magomedov and his deep immersion in Soviet architecture is important for this work. The author also argues that architects didn't have the task of developing a new type of industrial city; he argues that in the early years of Soviet power it was the need to build workers' settlements that was the focus of architectural discourse: various urban concepts or models were formed (Khan-Magomedov, 1996). Quite practical goals were set: the improvement of large cities and 'chaotic' spontaneous suburban development, the development of small towns, the problems of housing and urban improvement, sanitary and hygienic problems, etc., which shifted the focus of attention to the creation of workers' settlements in the suburbs of large cities, located in nature, which

shouldn't resemble working quarters adjacent to industrial enterprises. Quilici defined some of the main themes of urban ideology visible in the projects of the time: the integrity of the formal structure of the city, architecture as a single spatial whole, the psychological-organisational role of spatial art, etc., linked to the concept of the 'urban collective as an integral part of the national collective and in the future of that of the whole of humanity' (Quilici, 1976). The first ideas and ideologies are important due to their future impact. Khan-Magomedov provides an example the scheme of a small settlement by I. Zholtovskii: it was based on the idea of harmonious construction of a three-dimensional composition built from the periphery to the centre: a - an individual (housing), b - groups (clubs, schools, libraries, shops), c - community (government buildings), d - the dominant philosophical idea (for example, a temple), with the buildings oriented towards the centre being characterised by verticalism (Khan-Magomedov, 1996).

Among the large number of ideas of the fertile Soviet Union, this work examines several categories of the main ones that influenced or were reflected in the practice of real construction of cities in Siberia throughout the twentieth century. First of all, it should be noted that the

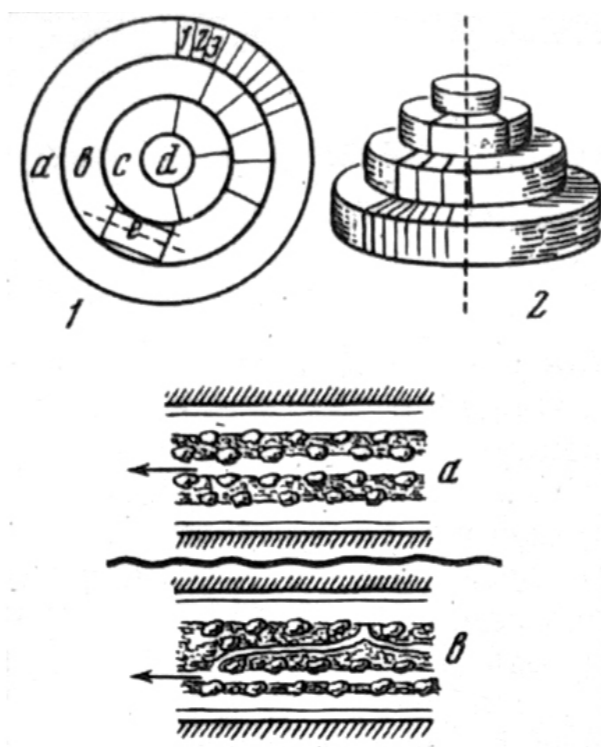


Figure 120. Zholtovskiy. Scheme of a small settlement. (a- individual; b-group; c-community; d- philosophical idea) (Khan-Magomedov, 1996)

historical cities, which are the focus of this study, as a phenomenon contradicted the basic ideas and ideology of the Soviet Union, which was looking to the future and interested in building a completely different socialist settlement. Zelenko believed that the old cities would either be rebuilt or gradually disappear, and that two types of new cities would emerge in their place - an industrial city (should have production, storage and residential zones, and should be planned so that the production zone could expand) and an agro-city; the residential area should be within walking distance, separated from the industrial zone by a green strip (200-300m wide), the residential part of the city (for 50 thousand inhabitants) should be compact (30 to 40 minutes on foot (Khan-Magomedov, 1996). For this reason, and because of extreme economic constraints and a consequent focus on solving practical, pragmatic, statistically predictable tasks, Soviet architects mostly ignored historic cities, especially those located on the periphery. There were basically no viable strategies for working with such cities, and there were no funds for in-depth rethinking and reconstruction or reorganisation. Perhaps all this has saved historic Siberian cities from complete destruction or restructuring. Next, the main sets of ideas and their possible interrelationship with the new transformed type of historical settlements are considered.

Thus the garden city became the primary idea of the first Soviet years, seeming to resolve the city-country dilemma as 'an expression of the order of life being established' (instead of capitalist chaos), with the 'suburban garden' as a transitional phase: the working-class suburban garden around the factory, as a centre of organisation, represents the embryo of the new building concept (Quilici, 1976). The garden city ultimately became a way of reconstructing old cities inherited from capitalism by deconstructing and greening them; it seemed to be the most scientifically grounded settlement concept because of its provisions, such as the creation of an interconnected settlement system, functional zoning, a residential complex with public utilities, they were even used separately to solve specific problems. 'Working Garden City', 'Red Garden City', 'City-village' - urban planning of the future was associated with such types of settlements. Khan-Magomedov argued that the garden city theory's approaches to many problems influenced a number of urban planning documents of those years (Reports and Resolutions of the Representative Congress on the Improvement of Populated Areas, 1921;

Draft Regulations 'On the Establishment of City Plans', 1922; Resolutions of the All-Union Congress of Housing Cooperatives, 1923, etc.) (Khan-Magomedov, 1996). Semenov considered garden cities and settlements to be the basis of the socialist settlement of the future: 'Building small towns, erecting small houses, we must not forget the future and provide for all possibilities. These are not small backwater towns of the past, these are cities of the future, garden cities. Their principles should be applied not only in the construction of new ones, but also instilled in all, without exception, our cities. [...] the calculation of the state for the protection of the health of its citizens is much more important'. Khan-Magomedov said that despite the name 'garden city', it was supposed to be built not instead of large cities, but instead of small villages, low-rise apartment buildings were supposed to replace not multi-storey city houses, but individual houses of peasants: 'not the dissolution of the city in the countryside, but the urbanization of the countryside, not the combination of factory labour with rural work, but the industrialization of agriculture, not the allotment of workers with land, but the liberation of peasants from individual farming' (Khan-Magomedov, 1996, p. 58). However, the line turned out to be too thin, and at the stage of implementation of settlement systems, in fact, workers built the same village houses as before, or settled in barracks.

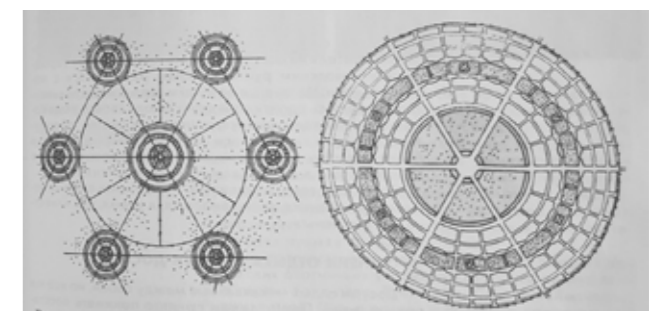


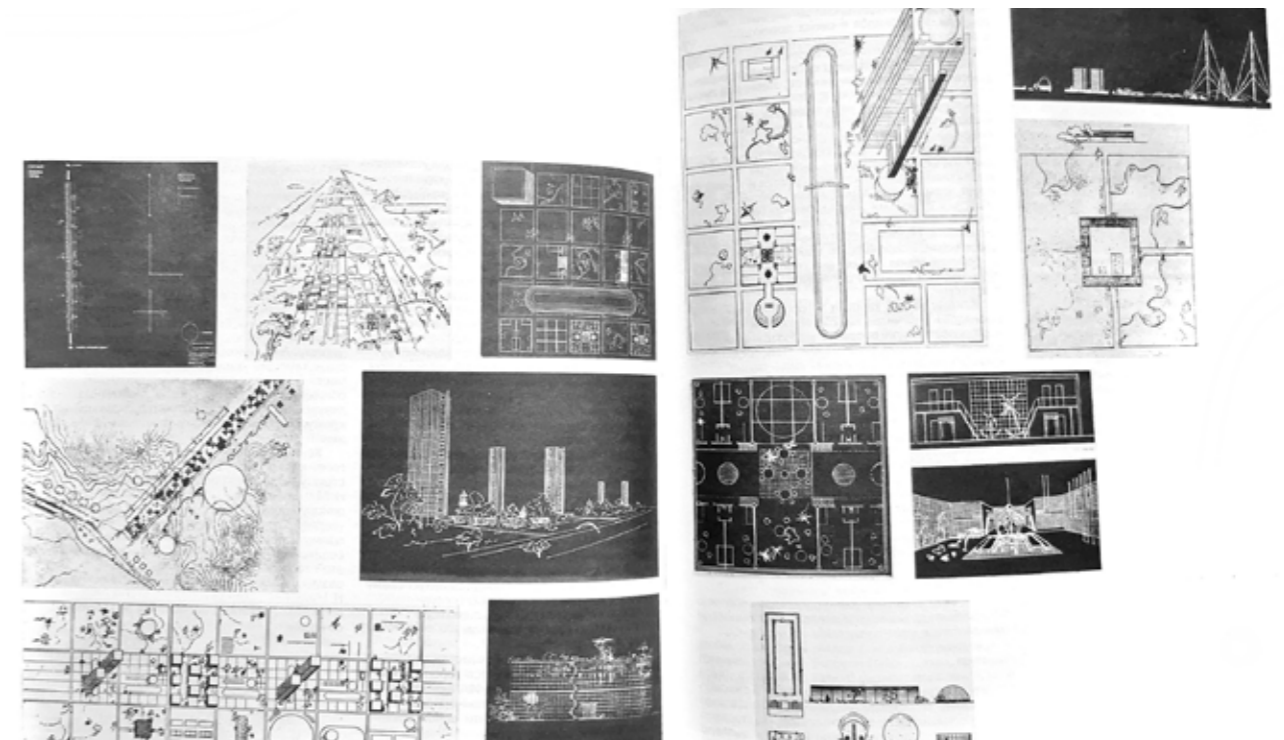
Figure 121. Garden-city concept: the network of garden-cities and the scheme of settlement. (Glazychev & Gutnov, 1990)

Indeed, Soviet architects were not limited to the idea of the garden city. In the Soviet period, architects produced many conceptual projects of cities, towns and suburbs. Roughly speaking, these projects can be divided into two groups - urbanism and desurbanism. In this work, it is important to focus on the concepts of linear settlements, the collective image of which served as a prototype for the expansion of historical Siberian cities, their growth at the expense of factory settlements. Quilici argued that two opposing currents, essentially formal from a distance - the 'urbanist' hypothesis (Sabsovič, A. Vesnin) on the one hand, and the 'desurbanist' hypothesis (Okhitovich, Ginzburg) on the other - represent a completely conceptual prefiguration of spatial structuring (Quilici, 1976). The aforementioned spontaneous suburban sprawl of working settlements of individual houses, which marked the beginning of the century, was perceived by some urban planners as a sign of the beginning of the collapse of compact settlements. Desurbanism - is associated with the name of M. Okhitovich, who justified the theory of 'new settlement' - the antipode of the theory of the socialist city, the 'socially reconstructed' villa development of the Howard Garden city. Okhitovich and Sabsovič were united in their rejection of the capitalist metropolis: Sabsovič believed in the creation of cities of limited size, Okhitovich generally rejected any form of compact urban formations and supported a de-urbanist concept. The 'new settlement' was understood literally as the dispersal of settlement into individual residential cells (detached or blocked) in nature.

Khan-Magomedov stressed that a fragment of the development of a 'new settlement' can be conditionally considered as a residential complex scattered over a large territory, with its individual cells and public service facilities - a settlement line of separate standard residential cells, which Okhitovich proposed to create, impressed architects by their opposition to the idea that unification and even destruction of personality should be programmed in communal houses. According to Khan-Magomedov, Okhitovich's ideas 'trapped' an official leader, M. Ginzburg, who fell completely under the influence of the concept of 'new settlement' and became an active developer and propagandist of desurbanism. Sabsovič: 'Thanks to such an opposite process in the city (decentralisation of the current urban industrial and administrative centres) and in the countryside

(concentration of settlements on the basis of the largest agricultural production and the combination of agricultural and industrial production), the differences between urban and rural settlements will increasingly disappear. [...] in about 15-20 years we will really be forced to 'demolish' almost all existing towns, villages and settlements and to build other settlements of a completely different type in their place....We will have to start building socialist type settlements in the coming years'. Both concepts had a significant problem: they didn't take into account the need for future development of such settlements: Sotsgorod of Sabsovič consisted of the same type of housing units and could develop only by adding new housing units, while the rest of its structure remained unchanged; the 'new settlement' belt could develop both in length and by increasing the population density per kilometre. Okhitovich's residential belts with cultural and public facilities along the ribbon of the residential zone connected to the industrial poles were partly reminiscent of Caniggian matrix streets or the linear settlements of Soria i Matta, Spain; Benoit Levy, France, which connected existing compact settlements to industrial, cultural and social centres. The reflection of the concept can be found in the ways of urban sprawl in Siberia.

The 'new settlement' influenced the projects of I. Leonidov (compact placement of industry with a linear layout of the residential zone) and N. Milutin (industry is also placed linearly). As can be seen in the flow-functional scheme of N. Milutin's 'Sotsgorod', industrial enterprises are placed parallel to the residential development, closer to the residential quarters, allowing the linear city to develop in two directions. The urban area is spatially 'layered' in the following order: 1) the territory of the railway; 2) the territory of industrial and municipal enterprises and complementary facilities, scientific and technical educational institutions; 3) a green strip (protective zone) with a motorway; 4) a residential zone with: a) a strip of public facilities; b) a strip of residential buildings; c) a strip of children's houses; 5) a park area; 6) a zone of state garden and dairy farms; 7) a water basin (river, lake, large pond) adjoining the city line from the residential area (Khan-Magomedov, 1996). The reality of the historical settlements at that time was somewhat different: the rejection of these concepts of big cities by the proponents made it difficult for many real urban planning processes to communicate with them, the projects were deprived of community centres,



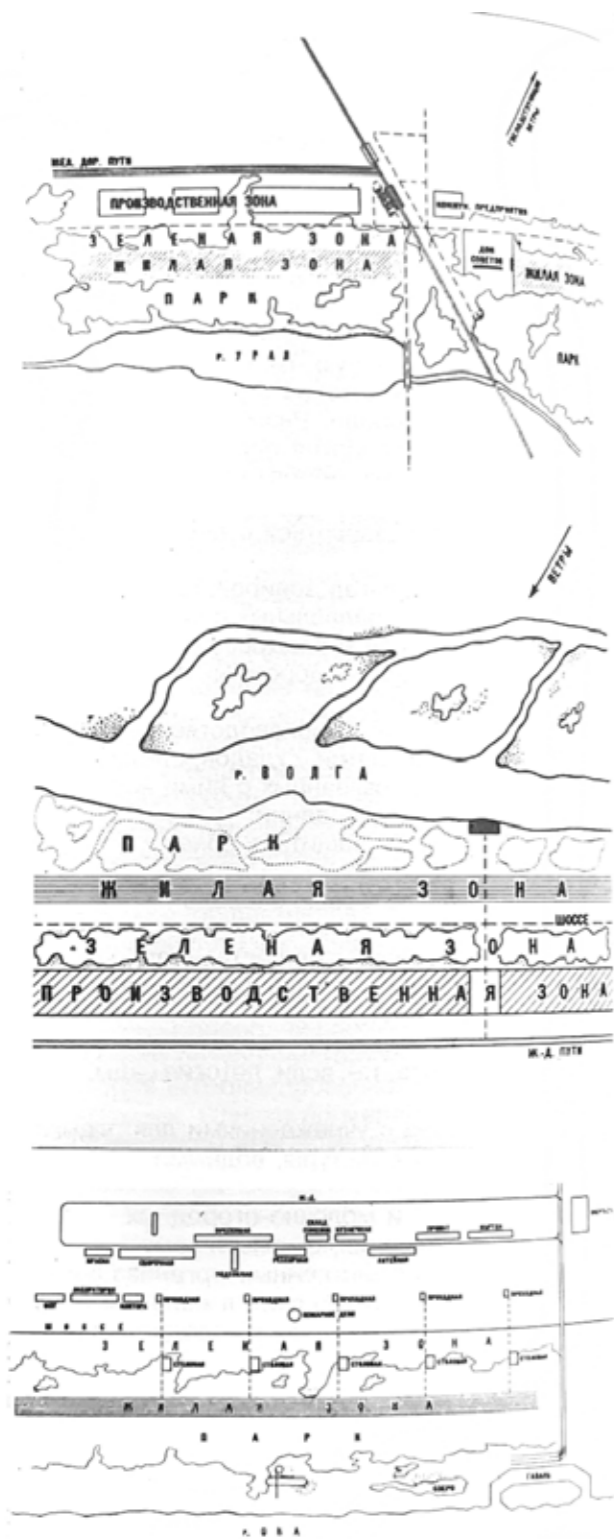
and the spatial planning structure stopped at the level of a residential area or a small town. Most importantly, the creation of built form was artificial and didn't lead to the creation of social form.

Then, accelerated industrialisation shifted attention to the big city. In this regard, Khan-Magomedov recalled H. Ladovskii and a group of his followers who left ASNOVA in 1928 and founded the ARU (Khan-Magomedov, 1996). It is necessary to clarify the difference between the concepts of Ladovsky and the ARU as a whole and the urbanism of Sabsovič or Le Corbusier: Sabsovič rejected large cities and saw the future in small settlements, the size of which was determined by the need for labour in a large industrial enterprise or state farm; Le Corbusier and N. Ladovsky saw the future of large cities as centres of science, culture and social life; while N. Ladovsky did not believe that urbanisation necessarily led to skyscrapers (Khan-Magomedov, 1996). Ladovskii's ideas are important to study when working with large historical cities, as his urban theory was one of the most deeply developed, reflecting the patterns of real urban planning processes:

'The problems of socialist settlement in general, industrial agglomeration, flexible layout, structural elements of a large city - all issues were developed in the theoretical works and projects of supporters of the ARU. Ladovsky, even before the urban planning discussion unfolded, urged the chief to pay attention to the development of urban planning problems. [...] Ladovskii's urban planning concept was characterized by an integrated approach to various urban planning problems. For example, unlike many urban planners of the 20s, Ladovsky also developed such urban planning problems as the artistic appearance of the city and the complication of its structure in the process of development, paying great attention to functional and technical (solving the transport network, rational zoning of the territory, taking into account the radii of pedestrian accessibility, etc.) and sanitary (insolation, protection of residential neighbourhoods from the noise of highways, green gaps between industrial and residential areas, etc.) problems of urban planning, H. Ladovsky attached no less importance to artistic issues, believing that new social relations should be reflected in the architectural and artistic appearance of the new city. He tried to find patterns and techniques of three-dimensional combination and spatial

Figure 122. City-line by Leonidov (Khan-Magomedov, 1996).

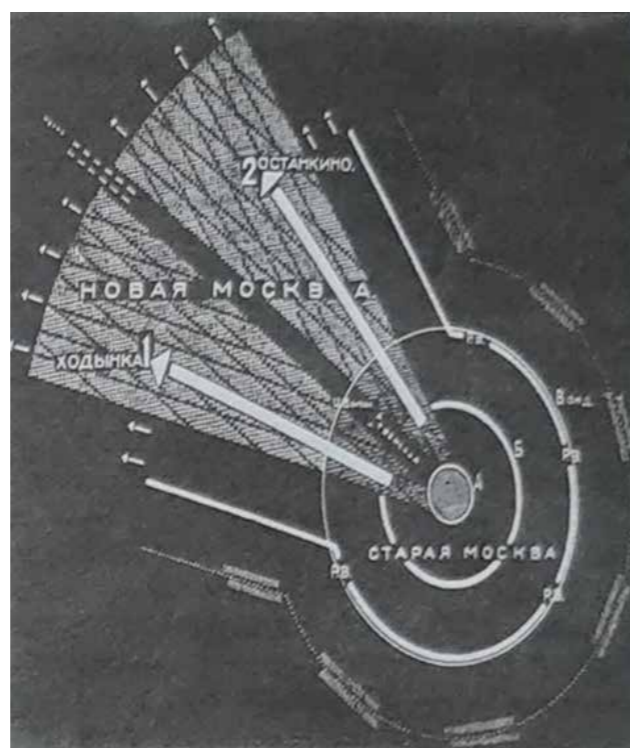




123.

Figure 123. Flow-functional scheme of Milutin (Khan-Magomedov, 1996)

Figure 124. Ladovski's Parabola (Khan-Magomedov, 1996)



disclosure of buildings, complexes, squares and streets, to take into account the peculiarities of a person's consistent perception of various elements of the development of a new city' (Khan-Magomedov, 1996, p. 244).

It can be said that the basis of the new type of classless city of the Soviet period, corresponding to the ideology of communist society, was reflected by general idea of seriality. The idea of socialist settlement was based on replicability, repeatability, and, as a result, specific Soviet typology. This also met the ideological and economic time needs of the period. Therefore, it is logical that the most successful ideas of different scales were planned to be replicated in different ways. One of the ideas, the original cells of the Soviet city was the micro district, which, as an idea, also developed gradually under the influence of many developments. The first and largely experimental work of the E. May group was the development of a project for Magnitogorsk with its Magnitogorsk Iron and Steel Works plant. The group of E. May developed the first preliminary draft of the Magnitogorsk layout first for 120 thousand people, then for 200 thousand - a compact social city in terms of layout, consisting of the same type of blocks of low-rise buildings. E. May wrote:

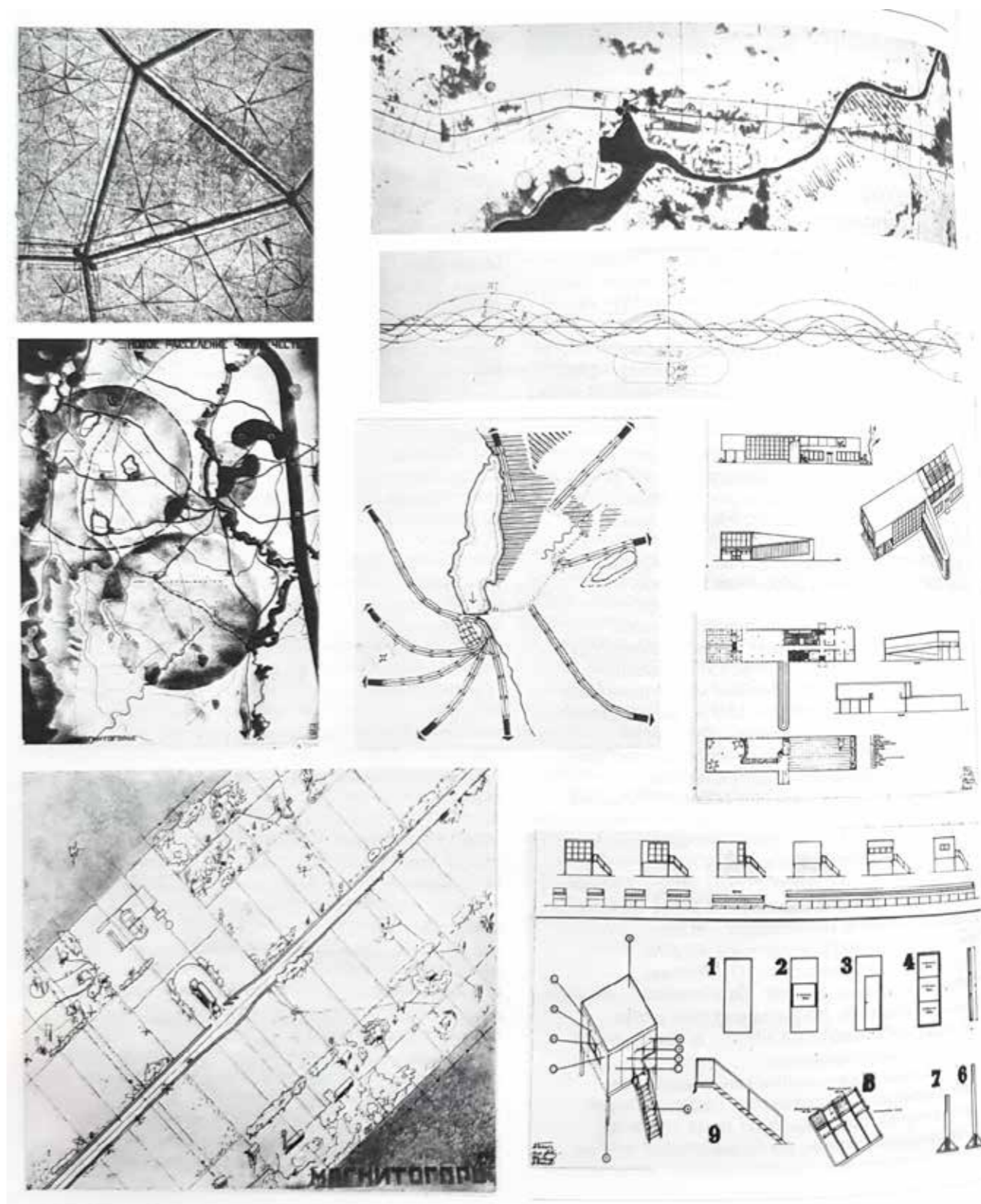


Figure 125. Desurbanism and the lines of settlements. (Khan-Magomedov, 1996)

'The whole city is divided into 5 districts... In each district there is a district club and a sports ground, when choosing the location of which were guided by the nature and scenic beauty of the area, as well as the organic position of the building in the area it serves... Individual districts are subdivided into blocks, each designed for a population of 6 thousand and, in turn, breaking up into 3 residential complexes with a population of 2 thousand people. Each residential complex is equipped with nurseries, kindergartens, and canteens according to the norms of the relevant People's commissariats. The system of other types of services has been developed in the form of separate schemes also based on existing norms... Here, at least in general terms, we will note the architectonic principles that define social cities [...] in its appearance, a socialist city will differ significantly from obsolete capitalist cities. New completely 'recrystallized' forms of human society should create an architectural image corresponding to a classless state. A characteristic feature of the capitalist city was the differentiation of various city blocks, which were distinguished by pronounced external differences depending on the significantly different lifestyle of different classes of capitalist society. The socialist city knows only one class - the class of workers. Hence follows the basic requirement of planning and building a socialist city: namely, to create equally favourable living conditions for the entire population in terms of both the internal organization of the dwelling and its lighting, ventilation, economic and cultural services and communication amenities. [...] We take into account the disadvantages associated with

the well-known monotony of parallel blocks [...] While maintaining in principle the orientation from north to south, we sought to revitalize the architectural design of the space by changing the height and length of the blocks and the distance between the blocks (proportional to height): one- or two-storey social security buildings (nurseries, kindergartens, canteens, department stores, food stores, etc.) are erected as a contrast to 4-5-storey residential buildings. In order to protect neighbourhoods from winds (mainly western and northern), one-storey transverse wings are attached to the northern ends of residential blocks, which are used as private garages, shops, premises for savings banks' (Khan-Magomedov, 1996, p. 264).

The general principles of the layout of a socialist city and the projects of typical districts (for 400, 500 and 1200 people) and a typical village for 10 thousand people (two-storey buildings) were developed. It is important to note that it was during the Soviet period that the principle of the microdistrict as an important unit of settlement formation was born. However, unlike the concept of neighbourhood, typical of Anglo-Saxon culture, which is based on human relations and, for example, a religious community, the 'microdistrict' was formed on the basis of numerical parameters of settlement and therefore did not become a formative social unit. The microdistrict has become the apotheosis of typological research in the field of housing. The concept of the micro-district was attributed by Quilici to the group led by V.N. Semenov and D.M. Sobolev,



Figure 126. Magnitogorsk. (Khan-Magomedov, 1996)

Figure 127. Magnitogorsk. (Khan-Magomedov, 1996)

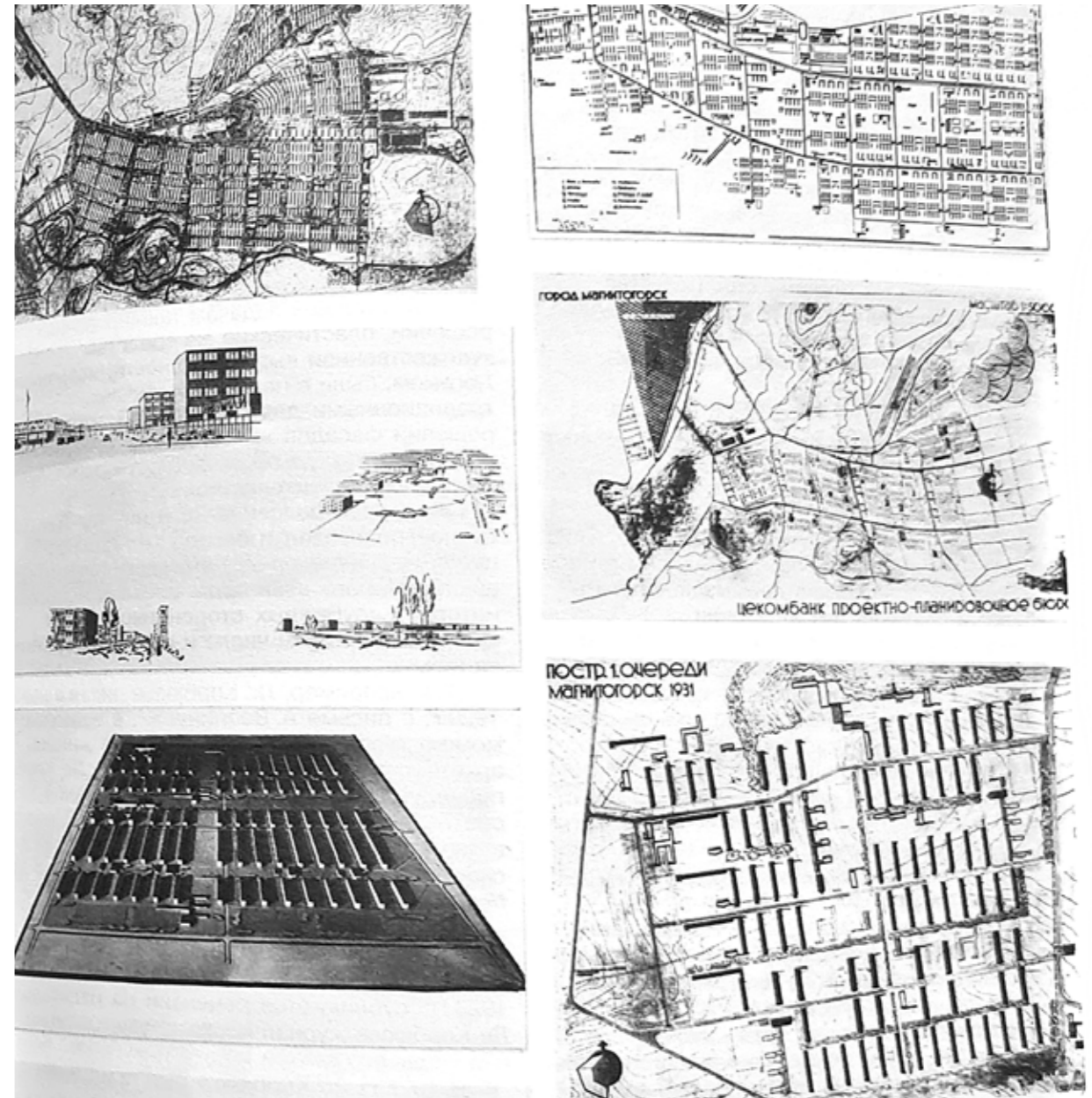


Figure 128. Magnitogorsk. (Khan-Magomedov, 1996)

who in 1929 created the new 'residential districts', in which the strict serial linear scheme was softened with sub-units of 6,500 and green areas, respecting rural traditions and assuming a scalar distribution of services (Quilici, 1976). Glazychev argued that the idea of the 'garden city' was reinterpreted into an 'effective' micro-district, which, with the growth of large cities, 'took the place of the old quarter' (Glazychev, 1987). In fact, in a big city, the links between neighbours, who were forced to settle together immediately, 'weigh' much less than contacts at work, which resulted in the absence of clearly defined spatial boundaries, psychological difficulties in recognising spaces as 'one's own', and so on. This is an illustration of the differences between the statistical functional typology and an organic one.

Architectural and urban form in the Soviet period became explicitly, intentionally symbolic. Quilici cited Lunačarskij who, following his visit to VCHUTEIN, noted that students design the Soviet city of the future: the rationalist theory, which explicitly attributes to architecture the role of a 'psychological and ideological system that gives strength to the social whole of the city', to use 'architecture as a means of organising mass psychology', the tendency was visible right from the first period of the avant-garde (Quilici, 1976). The Soviet Union intentionally perceived the concept of TYPE as the basis of the architectural language and a means of communication of new values, which is important. Typology in the Soviet Union is a top-down structure (in contrast to Caniggian notion of Type). The Soviet type was not naturally grown out of collective cultural experience but was based on collected statistical data of a socio-economic nature. Thanks to this experience, it became clear that the cleansing of cultural continuity makes the approach based on pragmatic intellectual methods limited and even risky.

A separate discussion was devoted to the question of where Soviet workers should live: in individual houses, apartment blocks or workers' barracks? All three concepts actually appeared in Soviet cities and still exist today. Zelenko believed that the residential part should be built densely and with large houses, proposing 'blocks' (housing complexes consisting of residential and children's buildings) consisting of 4-6 houses connected by warm passages for 2 to 6 thousand people could live in each

such 'block', which had small individual bedrooms and large rooms for public needs (Khan-Magomedov, 1996). Khan-Magomedov wrote that VKhUTEMAS developed course projects of Red Army barracks with dormitories, a dining room, a red corner, stables for horses, etc. There were projects of barracks for 50 people with shared dormitories and a dining room, a workshop, a building for oxen for 100 head of cattle, etc., or two-apartment residential buildings for the Sakharotrest competition. Barracks, as a temporary form of housing, should not be confused with communal houses, which were intended to be permanent. There were also temporary types. The search for a new type of residential buildings was associated with the restructuring of the entire everyday way of life of citizens (top-down type), a theory according to which the division of the urban territory into districts and quarters should have reflected new social processes was put forward. But if we purify all these residential ideas of their romantic flair, we are left with three options: the wooden village house, the large multi-family block or the worker's barracks, all of which did not take into account local specificities, personalities and individuals. It was often in this purified state that they arrived in Siberia, in fact. Quilici argued that the new workers' villages built around the new industries did not differ significantly in their planning solutions from those associated with pre-revolutionary reformism or from those in Western Europe. The presence of 'collective buildings' in these garden villages was a novelty that showed the establishment of collective living habits (Quilici, 1976).

Specialist buildings deserve special attention. Zhuravlev & Khan-Magomedov noted that in the 1920s much attention was paid to the development of such types of communal facilities as shops, canteens, baths, children's institutions, department stores, kitchen factories, baths with swimming pools, etc. as part of the restructuring of everyday life, the improvement of cultural services for the broad masses of workers (Zhuravlev & Khan-Magomedov, 1968). Unlike housing, which often represents continuity and tradition, specialised buildings reflect the main trends and moods of the time, are built and replaced more quickly, and are sometimes even destroyed. This was also true of Soviet specialised buildings.

To sum up, among all the models, ideas and projects of the

fruitful Soviet period, the present work considers three main instances of levels of urban hierarchy: a model of a linear city or village (garden city) that influenced the spread of historical cities, a micro-district of typical apartment buildings as one of the main 'grains' of the spread, new types of specialised fabric, with the aim to demonstrate the intertwinement of these ideas with local traditions.

Thus, the description of the foundational territorial type at the end of the transformation period can be as follows:

1. The geometric grid structure, which inherited the principles of spontaneous plans, stopped growing continuously.
2. Appearance of 'communal flats', changing functions of former estates and mansions, the disappearance of private property.
3. The main 'types' on an urban scale remained unchanged.
4. City received several 'exemplary' Soviet types: a new type of block, a club, some specialised buildings.
5. Churches and large commercial buildings were destroyed as symbols of the previous regime. Nodes and poles were changed accordingly, turned into voids.
6. The river banks were still changing their anti-polar character.

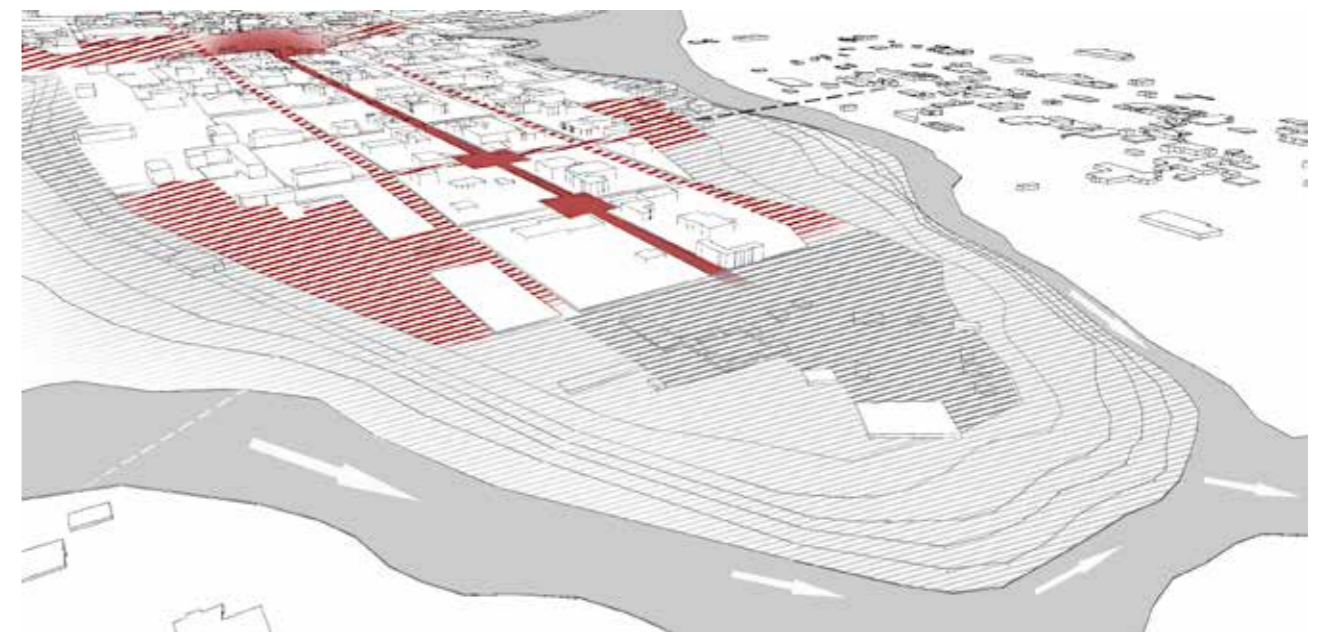
7. The railway brought the appearance of workers' settlements, which were reconsidered by the Soviet ideology.

8. In reality, often between fragments and episodes of regular plans, real life was still taking place, with its spontaneity, imperfection and the dominance of vernacular traditions.

9. Most of the roads were still unpaved. The only thing that has visibly changed in all the cities is the naming of streets and places. Most of the streets were named after the revolution, its symbols and heroes.

10. The streets were renamed following new ideas and ideology.

Generally, the formed type of settlement didn't change in Siberian cities significantly in the transformative period, when the new architectural and planning ideas listed above appeared, since historical cities were rejected by ideology. The formal reaction on the transformative period physically appeared much later, being significantly transformed and intertwined with the local specificities. Most importantly, the notion of type changed: the dominating concept of type became a function-based and top-down, took on an ideological tone, that was reflected in the general idea of seriality, reproducibility, repeatability and, as a result, a specific Soviet typology.



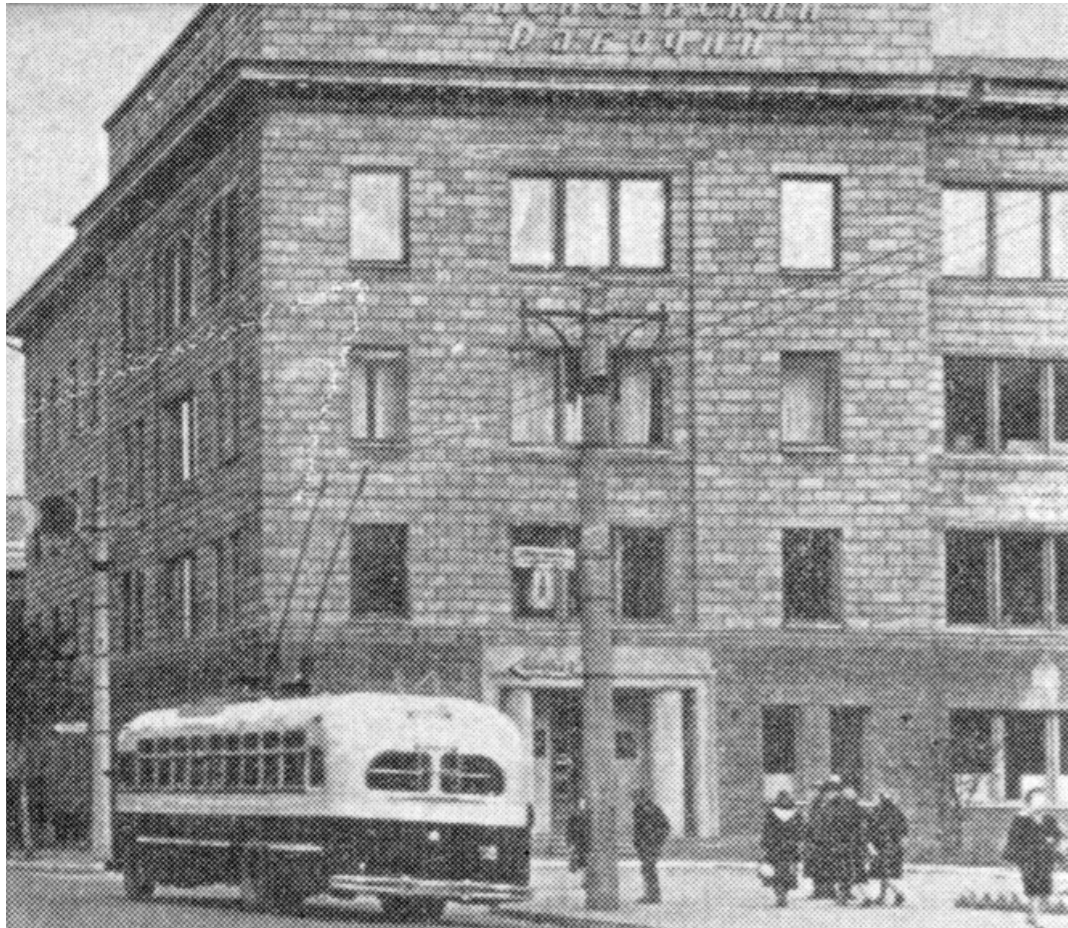


Figure 128 a-f. Krasnoyarsk in the beginning of XX century (Photographs are provided by Krasnoyarsk Regional Local Lore Museum).





This work would not see the phase described in this subsection (the Soviet period) as a series of formations and transformations. For example, Quilici argued that the wave of novelty at the end of the 1950s should not be confused with a new intellectual avant-garde (Quilici, 1976). The practical physical form of the historic cities of Siberia didn't change much during the rise of Constructivism in the transformative phase, but the echoes of this period could be heard throughout the century. Rather, a large number of new ideas, born in the first decade of Soviet power, began to grow into the existing reality in different ways, sometimes in parallel, sometimes sequentially, in the form of different flashes and trends: during industrialisation, for example, the ascetic ideas of Constructivism were put into practice in the periphery of the country; in the pre-war period, new ideas and technologies intertwined with old, already familiar classical motifs interpreted in a different way; the ideas of new cities or linear settlements were embodied in a simplified form in suburban settlements for factory workers and, above all, factories evacuated during the war. Glazychev emphasised that the intensive search that had begun in 1917 and resulted in very bold, non-trivial concepts could not be implemented immediately due to the devastation, the civil war and the urgent tasks of restoring the economy (Glazychev, 1987).

This work focuses on the development of historical cities, mostly their historical parts. However, during the Soviet period, the historical cities were mostly ignored or neglected. Besides, historical cities of Siberia developed mostly outside the central historical core, which became one of the elements of the collage city that grew extensively by adding a variety of morphological regions. The added morphological regions, i.e. the elements of the collage city that extended beyond the natural morphological boundaries, resembled the simplified collective images of Soviet conceptual ideas, from linear settlements of various

# PERIOD 3

## Soviet ideology and ideal utopian city models. (formative phase) 1930s - ...



kinds to interpretations of garden city. An enlarged scale of the grid of streets also appeared naturally within the historical territory before the urban revolutionary processes in the form of a hierarchy of streets in the orthogonal grid: some of them were of metropolitan significance, others - of local significance. They formed superblocks, supergrids, which were later transformed into Soviet microdistricts. The cities also received new complexes of buildings, defining important nodes and polarities. The historical logic and structure of the centers were largely preserved. Unfortunately, the historical wooden fabric was gradually destroyed with its restructuring into micro-districts on the periphery of the centres. The prevalence of the void became even more significant during the Soviet period, as an 'embodiment' of power.

As a rule, the revolutionary ideas developed in Moscow by Soviet and invited foreign experts were either confined to the cities of the central part of the country or focused on completely new cities (Magnitogorsk, Igarka, etc.). The master plans of historical cities developed by central laboratories often resembled utopian images rather than realistic master plans. Consequently, master plans for historical Siberian cities were often developed or improved by local specialists. For example, the general plan of the city of Tomsk and recommendations for

Figure 129 a-b. Krasnoyarsk in the middle of XX century - projects of administrative and residential building (Photographs of drawings are provided by Krasnoyarsk Regional Local Lore Museum).

improving the urban situation in 1955 were developed by the chief architect of Tomsk I. Egorov.

In general, the morphological reading provides the following picture. The first glance at the maps of the Soviet cities of the first half of the 20th century shows complete continuity and almost no changes. Architecture of the time was represented by a very few buildings of clubs for workers and typical dwelling units. The map of Tomsk of 1933 is difficult to superimpose on the maps of the pre-revolutionary period, which indicates the great inaccuracy of the drawings that persisted in Siberian cities until the middle of the last century. This map of 1933 also shows that even the growth envisaged at the beginning of the twentieth century did not materialise, and that it is already possible to distinguish the configurations of a modern city. The relief lines on the map show the extent to which the urban form is determined by the topography. In the structure of the main poles one can see the developments typical of the Soviet period. Namely, the disappearance of churches and the appearance of stadiums, circuses, etc. as the main buildings defining the new priorities and therefore polarities. The railway had a minimal impact on the urban form. The overall structure of the city is very similar to that of Krasnoyarsk. Looking at the maps of these two cities, it seems as if someone has moved identical elements around in the structure of the city, as in a game, or the structure of a patchwork or collage. The 1924's map of Krasnoyarsk also shows relative continuity. The only symptom of changed power structure that is visible in all the cities under consideration is the naming of streets and places. Most of the streets were named after the revolution, its symbols and heroes. Restructuring processes in Krasnoyarsk begin along the Kacha River, which seems more organised. The former void where the bridge now stands resembles a square. So the changes are visible in polarities and nodes. The embankments of the cities are obviously undergoing an anti-polar-polar transformation, becoming centres of attraction. The maps are not as detailed as the previous ones.

The pre-war and post-war periods are famous for their master plans, which were more strategic, less realistic and lacked detail. The general plans of the mid-century look more like utopian pictures than real projects, increasing the area of the cities many times over due to the

suburbs. The pre-revolutionary plan of Irkutsk showed the dominating Moscow road and supergrid of metropolitan significance, emphasising shifted priorities. The cemetery on the hill was turned into a park. Street names were also changed to names associated with the revolution and the new ideology. The map of 1940 shows the emergence of restructuring processes on embankments decorated as boulevards, new bridges and metropolitan centres, but also within the framework of the existing planning structure. The fabric of polarities changed according to the changes in ideology. The blocks are numbered (the block numbers still appear in the city as their names and as an element of identity). The new general plan of Irkutsk continues the structure of the beginning of the century.

The master plan of Krasnoyarsk of 1934 has some interesting features. First of all, the quarters adjacent to today's Mira, Lenina, and Marksa streets remained unchanged, while the areas adjacent to the river banks received the extended planning scheme (areas of future large settlements and micro-regions). In addition, the new green axis from Yenisei to Kacha (the former 'fringe'), including the new market square, becomes clear. The analysis of the plots of land in Krasnoyarsk with buildings of this period showed that the size of the plots with new buildings increased from 2 to 10 times. The radio factory, the photographic materials factory, the harvesting machine factory, and the railway factory contributed to this statistic. They were built at the expense of the old wooden houses in the city centre. The river station, the new school, the first university, the stadium, many administrative and multi-family residential buildings formed the renewed system of the city centre. Interestingly, the new interventions were still concentrated along the main and secondary axes (today's Mira, Lenina and Marksa streets). The density of these interventions shifted even more towards the west and towards new urban poles. The area around the oldest pole 'Strelka' at the confluence of the Yenisei and Kacha rivers underwent a transformation from a 'polar' to an 'anti-polar' position. In Tomsk, in the northern and southern parts of the city, the general plan of 1939 provided for the construction of industrial enterprises and residential districts for workers, the construction of a new avenue named after I.V. Stalin, the centre remained at the site of the main pole at the confluence of two rivers, the House of Soviets was to be built there, a square was to be arranged around it.

The draft general plan of 1947 proposed the construction of a diagonal motorway: Stalin Avenue was to connect Lenin Square with the square in front of Tomsk I railway station, and new construction was planned in the northern and southern parts of the city. The plan is very schematic: only the main buildings around the main nodes and poles are shown, but very sketchily.

The growth of the Krasnoyarsk masterplan appears to be the most ambitious: the masterplan is several times larger than the mid-1920s plan. Surprisingly, the map of 1967 does indeed show transformations of unprecedented scale, but certainly not that significant. In 1955, the chief architect of Tomsk, Egorov, rejected the idea of a diagonal motorway, arguing that Tomsk was an old city with a

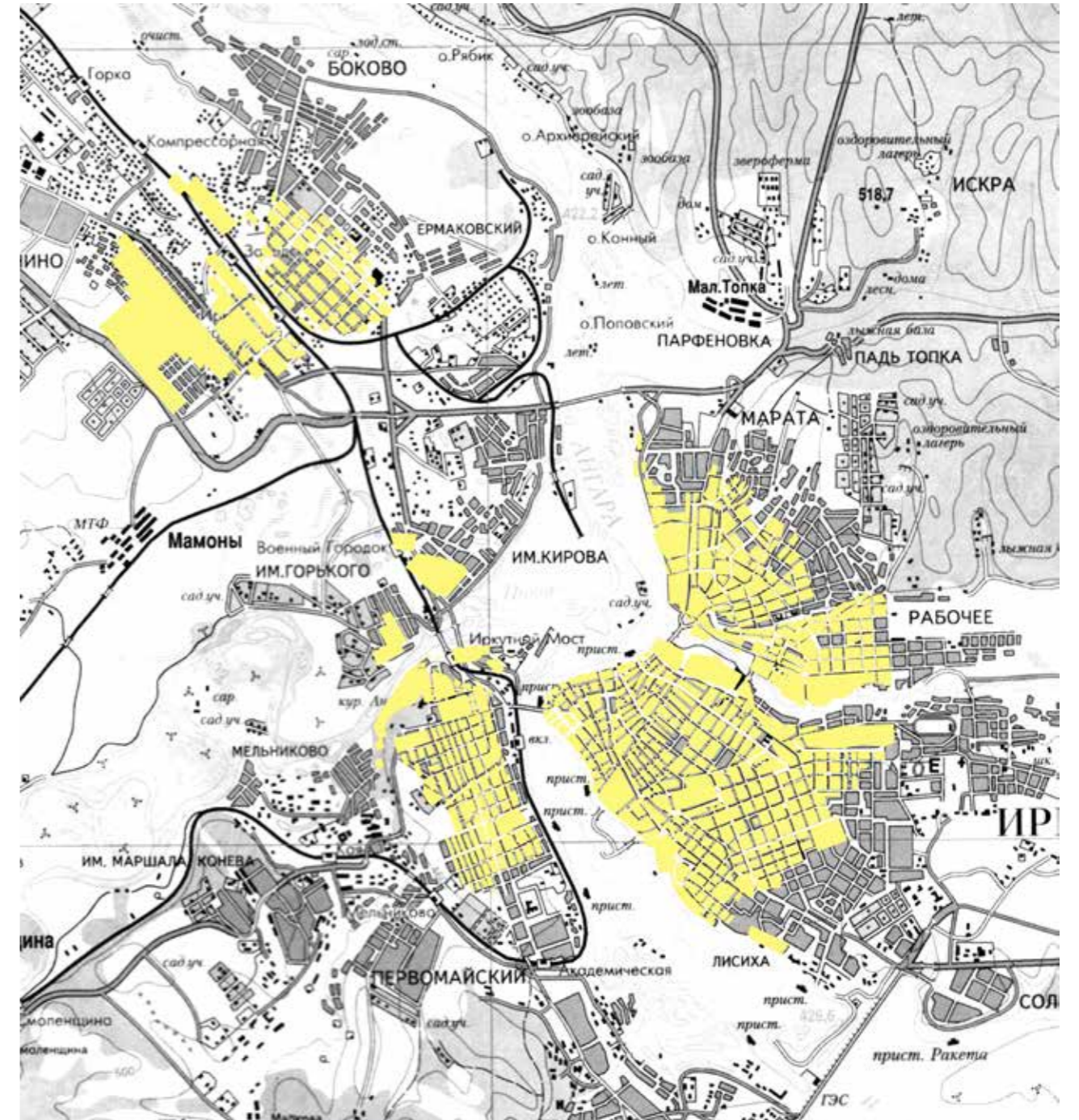


Figure 130. Irkutsk in the end of XX century overlapped with the plan of the beginning of XX century (Maps are provided by Regional Local Lore Museum).



Figure 131. Aero-photo map of Krasnoyarsk 1967 overlapped with the plan of the beginning of XX century (<https://kosmosnimki.ru/>)

Figure 132. Tomsk in the end of XX century overlapped with the plan of the beginning of XX century (Maps are provided by Regional Local Lore Museum).



Figure 133. Aero-photo map of Krasnoyarsk 1967-fragment: Nikolaevka (<https://kosmosnimki.ru/>)

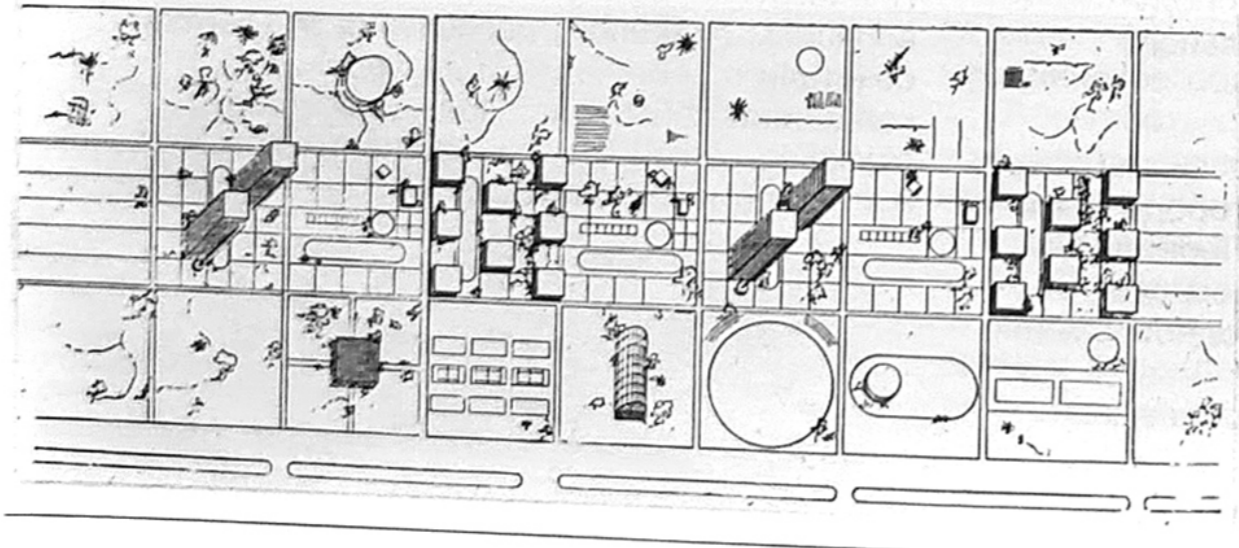
Figure 134. Nikolaevka, a poor working settlement that arose near the railway on the map of 1906 and satellite images of 1967 in Krasnoyarsk (suburban settlements consisting of rather poor man-made wooden estates than the elements of garden-city)



historically developed urban structure and buildings; Egorov considers the further development of the urban structure from the position of preserving the existing urban planning system, the percentage of multi-storey buildings increases, the percentage of single-storey buildings decreases. Reality was different again. Ideas landed only partially, where possible, intertwined with the historical fabric, with noticeable bursts of shape-shifting in polarities and nodes.

Okhitovich's residential belts with cultural and public institutions along the ribbon of the residential zone connected to industrial poles, or I. Leonidov's compact placement of industry with a linear layout of the residential

zone, or N. Milutin's linear scheme of linearly placed industry could be found in modified modes in the development of historical cities in Siberia, which began to grow extensively by means of such new morphological elements. For example, N. Milutin's stratification can be found on the right bank of the Krasnoyarsk river: 1) the territory of the railway; 2) the territory of industrial and municipal enterprises and auxiliary facilities, scientific and technical educational institutions; 3) a green strip (protective zone) with a highway; 4) a residential zone with: a) a strip of public facilities; b) a strip of residential buildings; c) a strip of children's houses; 5) a park area; 6) a zone of state garden and dairy farms; 7) a water basin (river, lake, large pond), which is adjacent to the city line from the residential area. In reality, however, the industrial



135.



136.



137.

Figure 135. Linear settlements of Leonidov. (Khan-Magomedov, 1996)

Figure 136. Linear settlements - experimental planning scheme of the new linear city in Siberia. (Khan-Magomedov, 1996)

Figure 137. Aero-photo map of Krasnoyarsk 1967: industrial settlement. Microraion (<https://kosmosnimki.ru/>).



138.



139.



140.

Figure 138. The dominance of the spontaneous principle in unregulated territories is still visible on the current cadastral map of Irkutsk.

Figure 139. Aero-photo map of Krasnoyarsk 1967: industrial settlement. (<https://kosmosnimki.ru/>).

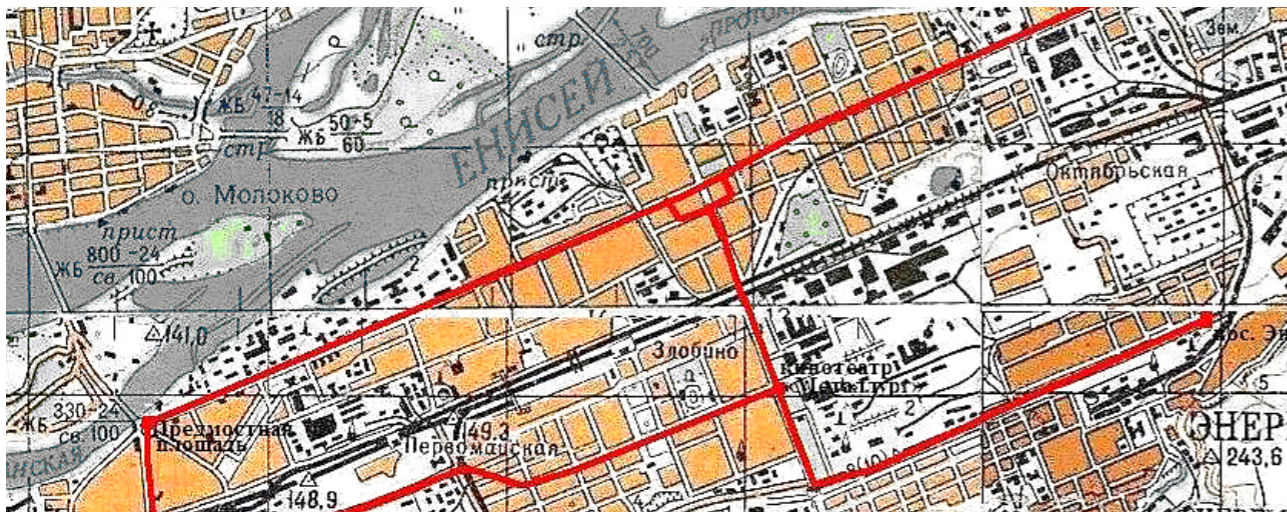
Figure 140. Aero-photo map of Tomsk 2022: industrial settlement. Microraion (Google Maps).



141.



142.



143.

Figure 141. Aero-photo map of Krasnoyarsk 1967: linear industrial settlement. (<https://kosmosnimki.ru/>)

Figure 142. Masterplan of Krasnoyarsk 1950s. Fragment. Linear industrial settlement (Maps are provided by Regional Local Lore Museum).

Figure 143. Map of Krasnoyarsk: a linear industrial settlement. Fragment (Maps are provided by Regional Local Lore Museum).



144.



145.



146.

Figure 144. Map of Krasnoyarsk: a linear industrial settlement. Fragment (Maps are provided by Regional Local Lore Museum).

Figure 145. Map of Krasnoyarsk: a linear industrial settlement. Fragment (Maps are provided by Regional Local Lore Museum).

Figure 146. Aero-photo map of Irkutsk 2022 (Google Maps).

During the Stalinist period, interesting adaptations of classical Italian palazzo models with a chain of sequentially arranged gardens appeared. They were used for university complexes (Tomsk) or complexes of administrative buildings, as in Krasnoyarsk. Such buildings and complexes often appeared on the territory of greater or lesser polarities and became a manifestation of the ideology and dominant values of the era.



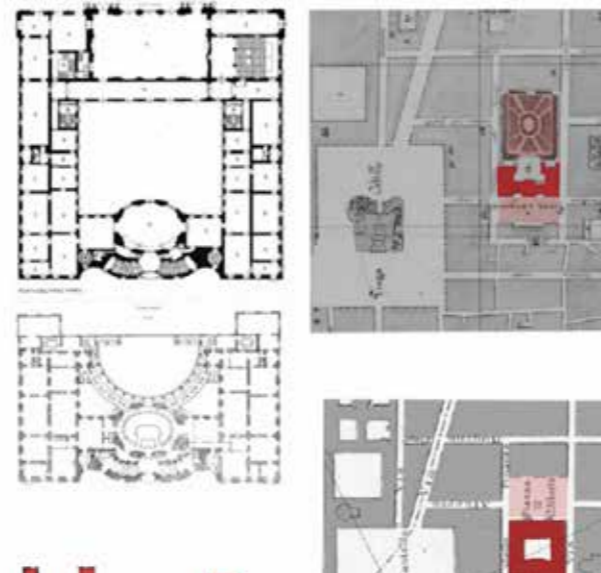
147 a.



147 b.



147 c.



147 d.

Figure 147. The transformation of cathedral square into: a-b. the complex of administrative buildings in Krasnoyarsk; c. University complex in Tomsk. d. The exemplar structure of palazzo: Palazzo Carignano.



148.



149.

And even at the atmosphere of the dominance of mass standard housing, the tradition found a 'way out', which became pronounced by the end of the period: the traditional habit of numerous storage places of the traditional Siberian house forced residents to convert balconies into storages, numerous storage places in the apartments themselves in the form of mezzanines, create improvised collective storerooms in the courtyards. The traditional need for transit space between private and public forced the construction of second doors at the entrance to the apartment in the entrance, the potency in the plot of land - to fence individual front gardens with flowers and vegetables in the yards. Residents of the first floors made extensions to the balconies. Garage arrays appeared in the courtyards.

Next, it is important to summarise the morphological readings of the existing maps, highlighting the elements of the initial urban cultures that resisted in the atmosphere of radical change. Such resistance shapes our life-world and provides the necessary continuity, forming local identities. First of all, the spontaneous communities of wooden settlements, grouped in regular quarters or serial compositions according to Caniggia, formed the basis of urban fabrics until the 1970s, which are visible on the aerophotomap of Krasnoyarsk and can still be found in the cities mentioned. Their introverted nature, with entrances to houses from courtyards and high fences, refers to the old concept of the nest. Their existence was justified by the dominant idea of the garden city or 'garden suburb' in the case of historical cities. This phenomenon illustrates the resistance of culture at the relational or intermediate

Figure 148. E. May, the project for Kuznetsk of the first years of Soviet period (Khan-Magomedov, 1996)

Figure 149. Krasnoyarsk, 1930s (Google Maps)

scale (the scale of the community as opposed to the scale of the citizen or the scale of society constituted in the urban structure). The estate itself, 'usadba' with its plasticity and irregularity, as the main morphological unit, defined the scale of the historical part to a large extent, even after the period of transformation. The whole structures of historical parts remained within the collages of exponentially growing collages of cities, remained an element of such collages, connected by supergrids of streets. The strong differentiation between public spaces (streets, squares) and private spaces (the collective privacy of the family hidden behind the fence of the estate), or 'clean' and 'dirty', is still emphasised by the necessary presence of a transitional space between public and private, inside and outside, or by the necessity of taking off one's shoes to enter a clean or private space. This transition can be embodied in the small gardens in front of the houses, in the vestibules, in the tambours.

Finally, the low-density cities are defined by the dominance of voids over volumes. These voids are represented by enormous empty squares or wide streets that are not completed by the vertical of a significant building, but on the contrary open to nature - usually a huge river, a meadow or a park. Void is reflected in Russian and Siberian culture, from poetry to painting, and in the Soviet period it acquired an important ideological connotation.

All the cities are united by the presence of the old polarity at the confluence of the main rivers-roads, the polarity that survived the polar-antipolar transformation and was eventually transformed into a cultural or administrative pole. It is usually linked to the second pole by a linear polarity that determines the direction of the development of the city along one of the main rivers. Minor elements of urban identity, such as secondary important nodes, originally created for fire protection pools, are usually still linked to the linear polarity and still represent an important historical memory of the cities.

Let's turn to theory. The most important reference scenario of the possible practical implementation of the ambitious ideas born during the transformative period was the case of Moscow's reconstruction: a laboratory of changes. This is how V. Semenov assessed the processes of Moscow's development, suggesting that Moscow was growing as a star of irregular outline, stretching its tentacles along the lines of railways, in the direction of local centres of settlements separated by extensive parks, referring to Howard, who said that a garden city cannot expand, but it can turn into a group of garden cities (Khan-Magomedov, 1996). This principle of the fragmented structure of the urban collage of morphological regions became fundamental for the development of large cities.

One of the theoretical centres for the development of various types of buildings for a detailed programme of housing construction was headed by I. Zholtovsky. The urban planning concept of the Department of Architecture and Art was based on the theory of the garden city: the idea of a garden city was understood not as an autonomous concept, but as a promising element of a large city - a garden settlement with the aim of overcoming the dualism of city and countryside. The city was a concentration of culture and production, the village a way of life in nature, and the task of socialist culture was to harmonise the two.

The decentralisation of large cities was seen as a step towards the creation of a new city. The village garden, which developed around the factory as a centre of labour organisation, was the primary concept of urban development. Khan-Magomedov said that in the early years of Soviet power, this urban planning concept informed a master plan for Moscow to create residential complexes in the city. An important principle was established, which was later applied to the historical cities of Siberia: suburban industrial settlements, developed according to one of the models of ideal cities or a collective image of these models, were initiated on the periphery of historical cities, mainly along the already existing directions of external development. The author emphasises the role of Moscow in the first years after the revolution, the city became a testing ground for various urban planning concepts: 'One of the first really implemented garden cities in the suburbs of Moscow was built near the Perlovskaya railway station, 14 km from the city. The idea of creating this 'working garden

city' on a cooperative basis arose among the workers of the Bogatyr rubber factory even before the First World War, but in 1914 the Moscow governor did not approve the workers' association's charter' (Khan-Magomedov, 1996, p. 66). Ladovsky was looking for a flexible spatial structure that could become more sophisticated as the city grew. In Ladovsky's concept of urban planning, and in his concept of design as a whole, the attitude to the organisation of architectural space played an important role. Ladovsky saw the existing city as an interconnected urban environment rather than a conglomerate of streets, ensembles and squares. But his approach didn't win. Other projects approached the problem exclusively from a quantitative point of view and thus suffered from the main 'mechanistic' flaw: they were temporary and static, rather than forming an organism that could grow organically.

Moscow, therefore, became a city-laboratory not just for post-revolution period:

'One of the most fruitful lessons from the experience of Moscow's reconstruction lies in the fact that it has clarified, theoretically and practically, the ways to liquidate the opposition between the centre and the periphery. This is not achieved by unilaterally building peripheral districts, but by jointly transforming the entire city: the centre and the periphery. This transformation of the city, raising the housing conditions of the population of the former suburbs, changing their entire appearance, has not, however, led to a levelling out in which centre and suburbs as separate parts have disappeared. That is, as the central, symbolic and representative part, 'emerges as the most important architectural category', and also because 'the architectural-urbanistic unity of the city does not exclude, but rather presumes, its heterogeneous structure.' (Quilici, 1976, p. 284)

The role of the historical center is interesting in this case. The authors saw the only way out in the reconstruction of Moscow on the principle of 'new settlement'. They proposed to categorically prohibit the construction of new and the expansion of existing industrial enterprises, scientific, educational, administrative and other institutions in Moscow, and to gradually move them out of the city. This will lead to a decrease in the population of Moscow and will allow us to begin the second stage of

reconstruction - 'the resettlement of the remaining working population of Moscow not in Moscow itself, but along the highways connecting Moscow with other nearby centres.' In Moscow itself, all construction will be stopped as buildings naturally wear out, they will be demolished and replaced by green areas, only architectural ensembles of historical and artistic interest and individual architectural monuments will be preserved. The ultimate goal is to transform Moscow itself into a central park of culture and recreation, into which the ribbons of socialist settlement will converge: 'In this grandiose park, the few remaining administrative institutions, scientific institutes and universities serving only the population of Moscow, auditoriums, stadiums, water stations, zoos, botanical gardens, flower gardens, nurseries and hotels will be freely spread out for visiting tourists' (Khan-Magomedov).

Khan-Magomedov sees the reason for the 'collage' principle of development and fragmentary approaches in the estate-based development: he thinks that estates were architecturally solved separately from the urban structure, not woven into the fabric, which is relevant for the central Russia. The author also sees the continuity between classicism and constructivism in the following principle: in both periods the city was assembled from individual elements. For Khan-Magomedov, the spatial concept of Constructivism was somehow related to the concept of Classicism - the principle of autonomous spatial elements. The author emphasised the new spatial qualities of the urban development of the late XIX - early XX century:

'The ensemble character of classicism in cities (including Moscow), where the techniques of estate development were widely used, manifested itself in the forms of the relationship between the ensemble and the city: the architect singled out a piece of urban space and solved it as a fragment isolated from the city. The strict symmetry of the manor-like composition did not take into account the asymmetry of the buildings or ensembles adjacent to the site. The city was, so to speak, 'assembled' from separate ensembles, the boundaries of which were clearly defined, ideally such ensembles were surrounded by several impenetrable trunks - at least from three sides. During the period of eclecticism, a different urban space gradually emerged. New land use conditions led to the fragmentation of plots. The boundaries of the classical



ensembles, which had been clearly defined in the urban space, rapidly became blurred, which led to a sharp change in the usual criteria for evaluating the artistic merits of the urban space. Increasingly, people no longer perceived spatial fragments of the city (in the form of self-sufficient ensembles), but the space of the city as a single organism. And although no one deliberately created this single spatial organism, in practice a new quality of citywide space did indeed take place. [...] Neither they, nor most later architects, saw or appreciated the spatial qualities of the urban development of the late XIX - early XX century. Realising the spatial value of new urban structures in those conditions was hindered by emotions about the endless violations, distortions and destruction of really beautiful ensembles of classicism' (Khan-Magomedov, 1996, p. 241).

Although the phenomenon was not so pronounced in the Siberian city, the phenomenon of the estate also determined the development of the urban structure, in a slightly different manner.

Soviet architectural ideas give the impression of being universal for the whole country. However, theorists are unanimous in claiming that the All-Union building process did not actually take place. Khan-Magomedov mentioned that on the outskirts and in the vicinity of large

cities, housing estates and complexes spontaneously sprang up, ironically called 'vegetable garden cities', low-rise residential buildings built mainly from local cheap building materials (Khan-Magomedov, 1996). In the conditions of severe lack of funds and inability to fully control the development of cities in Siberia, the following phenomenon was observed. Ideas came in a purified form, and sometimes simply in the form of interpretation and conceptualising already existing phenomena. So a garden village in Siberia became just a village on the outskirts of the city. 'Thus, on a typological level, there is an oscillation between the predominantly figurative-symbolic projection of an alleged 'working-class virtue' (the simplicity of the worker's everyday life) - which, on closer inspection, always implies the identification of a populist constant of peasant origin within the customs of a recently urbanised working class - and the prefiguration of romantic and at the same time rigid, true models of living, in which the workers would renew the old collective-communal peasant spirit. As Semenov notes, *the new building comes from the old suburban types, mutated and adapted: three-storey izbas with rooms distributed around*

Figure 150. Moscow in 1894 and in 1937 (Quilici, 1976)

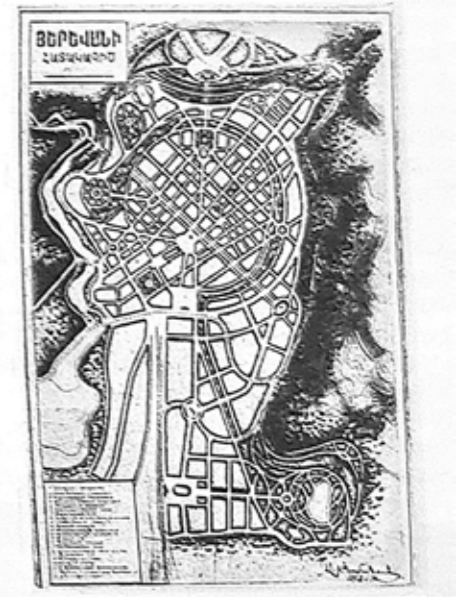
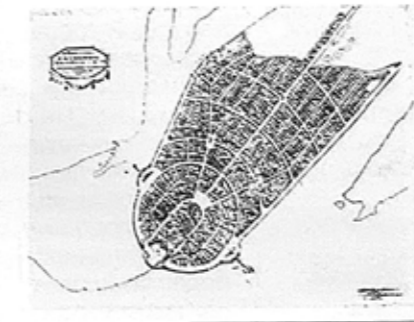
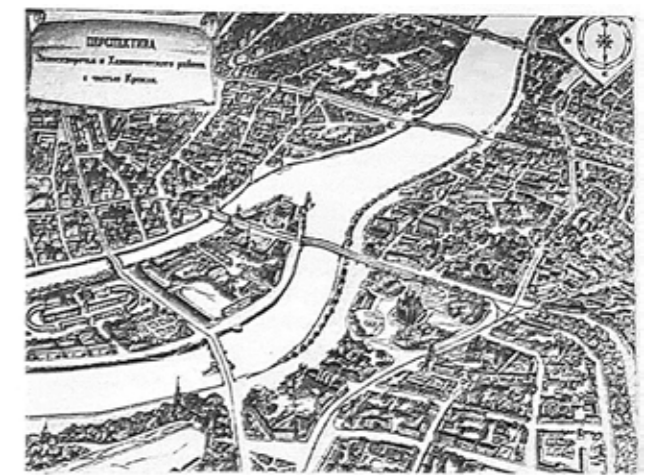
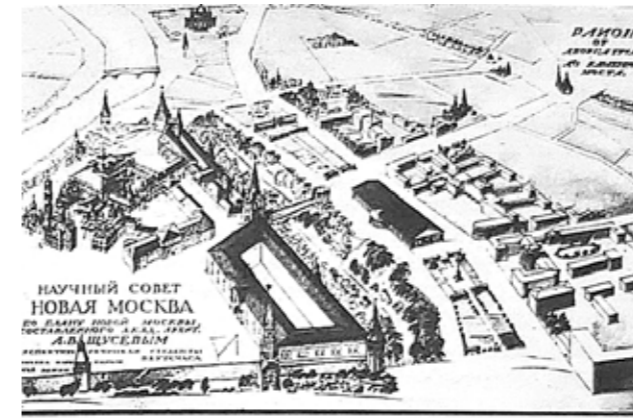


Figure 151. New Moscow (Khan-Magomedov, 1996)

*the russkaia pec* (the traditional Russian stove placed in the centre of the dwelling). And while it is true that we are already beginning to talk about the need to create collective services to free women from domestic slavery, it is also true that in the end the concept of the *russkaja pec* will prevail' (Quilici, 1976, p. 137). Indeed, the city of Krasnoyarsk remained a village until 1967, which, surprisingly, did not contradict the concept of a garden city with individual workers' villas. This is sustainability in action: literally, when there is no financial support, people carry on as before. According to the main principle of this study, concepts and global ideas that came from outside were first 'run-in' in Moscow or the cities of central Russia, followed by remote Siberian cities. Thus, on its long journey to the Siberian city, the idea often lost many of its features and was transformed beyond recognition.

The idea that capitalist cities had to disappear with the triumph of socialism saved historic cities: for a long time, in the absence of a clear strategy and financial resources, they were bypassed by thinkers. An important case of the restoration of Moscow showed how it was possible to work with historical cities. Elements of Soviet culture appeared locally in them - houses of culture and palaces of administration in the nodes and polarities of historical cities, which was readable on the maps of Siberian cities. Since the 1930s there has been a conscious reorientation away from socio-typological research towards the development of ceremonial compositions. However, one of the most serious mistakes of this period, both in the capital and on the periphery, was the massive demolition of existing buildings - from the destruction of churches and commercial buildings to the demolition of wooden manor houses in order to replace them with new neighbourhoods. Luckily, this happened mostly in fragments of the Siberian cities.

'The most astonishing thing about all this pathos of radical restructuring of the historical core of Moscow was that the projects of new ensembles were created as if from scratch (this is especially typical of the first years after the adoption of the 1935 plan). Looking at the projects for squares, highways, embankments, entire residential districts, etc. of the second half of the 1930s, it is often impossible to recognise the particular part of the existing city for which the project was intended. Architects designed almost without taking the existing buildings into account. In the

1930s, the idea of contrasting the 'new', i.e. the future Moscow, with the 'outgoing' Moscow prevailed, and the latter was treated very negatively. There was a rush to change the relationship between the 'new' and the 'outgoing' Moscow in favour of the 'new' one. But since new construction required money and time, they tried to change this ratio by physically reducing the 'outgoing' Moscow, i.e. by intensive demolition. [...] by 1940, as a special commission of the Academy of Architecture has just found out, 50 per cent of the architectural and historical monuments of traditional Russian architecture had been destroyed in Moscow, the remarkable links necessary for the study of architecture and the architectural skills of the Russian language had been torn out [...] In 1918, the act of the Soviet government on the transfer of the capital to Moscow clearly facilitated the preservation of the historical core of Petrograd. But Moscow, as a city deprived of the necessary buildings for the capital's institutions, was put in a difficult position. On the one hand, it was necessary to develop the city as the capital, and on the other, to preserve Moscow as a unique object of Russian urban planning. It was extremely difficult to solve both tasks positively at the same time. Moscow did not have enough buildings for government offices, so it was clear that they would have to be built. The city's population was growing rapidly and transport was developing. As early as the 1920s, practical work began on adapting the city to its new metropolitan functions. And the danger of violating the spatial structure of Moscow immediately became apparent. This increasingly complicated contradiction had to be resolved. Various proposals were made, urban concepts for the development of the capital were developed' (Khan-Magomedov, 1996, p. 298).

Similar processes of loss of the architectural image of the old city have occurred in other large cities, but on a less massive scale. Quilici mentioned the problems of a simulated construction of cities that claimed to be whole, complete, organically formed by productive structures and services, workplaces and places of cultural regeneration, which presented themselves in their dramatic nature, thus giving historical depth to the present. (Quilici, 1976).

The following description is interesting because it illustrates what happened in Krasnoyarsk - the existing structures in the historical centre were conceptually rethought, new residential complexes of five-storey buildings were built on

the periphery of the centre, and new workers' settlements appeared on the periphery of the city:

'It was proposed to use restoration work to gradually transform the entire structure of the residential areas of cities. If the proponents of the garden city concept proposed to use restoration work to clarify the functional zoning of the urban area, rationalise its transport network and increase its greenery, the proponents of a radical restructuring of everyday life, accepting all this, went further. They saw in the restoration work not only an opportunity to improve sanitary and hygienic conditions and to improve the city, but also a radical reconstruction of everyday life. One of the authors of the article 'Socialist Urban Improvement' imagined the stages of this reconstruction in the conditions of the existing housing development as follows: the gradual restructuring of the buildings of the district and their economic and territorial (demolition of fences) unification; then the establishment in the districts of common kitchens, dining rooms, living rooms, kindergartens; the last stage of the unification of the district - the cultural, spiritual unification of its inhabitants - the establishment in the districts of libraries, reading rooms, public halls (for lectures, concerts and theatre performances). As a result, instead of dividing the city into tens of thousands of courtyard plots, a system of blocks united into districts will be created. Of great importance in the process of developing a new type of urban housing complex was the 1922-1923 competition for the design of two demonstration housing districts for workers in Moscow, to which more than fifty projects were submitted. The task was to create residential complexes with a network of consumer services in limited areas of existing urban development. [...] The competition for the construction of land in Ivanovo-Voznesensky marked a decisive shift from the development of urban labour complexes to the creation of blocks of sectional three and five-storey houses. Mass urban housing construction in the second half of the 1920s and early 1930s followed this path. The construction of new residential complexes with a network of public utilities, consisting of three- and five-storey sectional houses, on vacant plots of land became the most common type' (Khan-Magomedov, 1996, p. 90).

Inspired by early Soviet ideas, such as Okhitovich's linear system of settlements and factories along the motorway, Milutin's Sotsgorod, or Leonidov's linear city (a street with

crystals of houses), the entire right bank of Krasnoyarsk is arranged along the river and motorway. In the post-war effort to purify and simplify, all the ideas of the early Soviet period were reduced to a structural minimum - from individual buildings to workers' estates. Quilici argued that in the '*elimination of all architectural artifice that leads to an external effect* - hoped for in Magnitogorsk - one would like to see a definitive overcoming of the bourgeois-capitalist tradition, or that the quest for the maximum homogeneity - in the present - of the formal-material order of the city will lead to indifference towards the territory (the linear scheme will represent a use of it conceived as mere walkability) and to the elimination of the concept of the urban *centre*, as for Stadtwerk it must be: *after all, there is no reason to give autonomous form to the individual parts of the city; on the contrary, efforts should be made to extend cultural and economic information to all parts in a homogeneous way*' (Quilici, 1976, p. 235). In fact, however, the ideas born for Magnitogorsk or various linear serial developments have often been spread almost blindly only since the 1970s.

Ladovsky with ARU stands alone in this respect, they looked at urban planning, more widely and deeply than Sabsovich and Okhitovich, did not reduce the variety of problems to one type of settlement and, most importantly, considered the problem not only in space but also in time, perceiving the city as a growing organism. Khan-Magomedov emphasised that the ARU sought to create a holistic, scientifically based method of architectural design, raised the problem of differentiating types of settlement, and included in its research programme, for example, the study of settlement in the specific conditions of Central Asia in order to avoid total standardisation. Ladovskii's 'parabola' influenced not only the theoretical development of the problem of dynamic planning, but also its practice (Khan-Magomedov, 1996). In the 1960s, the aversion to the old city was so acute that entire districts were demolished without regret. Glazychev stresses the race for novelty that has been present throughout the existence of the Union and the danger of this trend, since it does not allow preserving the best of what has been achieved at the previous stage, but when the principle of micro-districting became universal, a change in public opinion began (Glazychev, 1987). Each novelty was appreciated precisely for its novelty, for its difference from the old city. In the 1980s, when there was much more

new than old, the special charm of the old town, with its narrow streets and small courtyards, was appreciated. In cultural terms, continuity of development suggests that each transformation should preserve the best of what was achieved in the previous phase and add to it what was missing. Khan-Magomedov mentioned the change in attitude towards the historical centres of cities that took place everywhere in the 1970s and had a huge impact on the fate of the classical quarter, unfortunately, when it already turned out that the losses were too great - both psychological and economic (Glazychev, 1987). Probably, in the case of Siberia, collage was the best of all that could happen, and the worst outcome could be total demolition, since, for example, Zelenko believed that 'the old cities will either be rebuilt or gradually dissolve and disappear' (Khan-Magomedov, 1996).

Moving on to the human scale, namely speaking of specialised and residential buildings of the cities of the Soviet period, it is important to mention the waves of Stalinist neoclassicism and its successor 'purification' - industrialisation and brutalism. Stylistically, at the moment of the 'ingrowth' of new ideas into reality, coinciding with the need to strengthen power, classical motives logically arose again, often falling on constructivist forms, which manifested itself on the scale of buildings. Quilici said, 'Whereas for the Palace of Labour they required simple, modern forms, not belonging to any specific style of the past era, it is now considered necessary to take the forms most perfect and, consequently, the most classic. The truth is that architectural ideology, as a whole, is taking on a univocal connotation and - as Meyer notes - concerns both *building construction* and *urban planning*: what the ideology must *represent* is the cultural and political identity of the proletariat and its leader, the party, which is now engaged in conducting an economic planning policy that tends to adapt every act, every way of being in society, to the ultimate goal of productivity, to the gigantic building effort to which the country is subjected. Ideology as sublimation (*greatness and nobility* - precisely - *of Soviet construction*), but also ideology as compensation (the crisis in the first years of the Plan's implementation causes, as we have seen, serious imbalances, harsh working conditions, housing shortages, etc.)' (Quilici, 1976, p. 256). Shvidkovskii noted that Russian architecture of 1932-1954 created an independent, unique and sophisticated type of neoclassicism, which included decorative details

of buildings and ensembles of entire cities. For the author, the projects of A. Speer's circle were more rationalistic, the Italian neoclassicism of that time was much more based on the achievements of modern architecture - its forms were more concise, more generalised (Shvidkovskii, 2013, p. 113, p. 113). Theorists have argued that not all of this was done comprehensively: often the developers only decorated the front of the street, leaving the courtyards unfinished. This juxtaposition of the street as a 'ceremonial' element of the city and the inner block spaces testifies to one of the 'decorative' trends of the early 1950s; another such trend was the abundant, eclectic use of decorative stucco, excessive colonnades on the facades and interiors of large public buildings and structures (Zhuravlev & Khan-Magomedov, 1968, p. 52). However, the decorative trend cannot be judged completely negatively, as architects often combined the achievements of constructivism - balanced forms - with simplified classical references, creating unique architecture.

Then, following the Stalinist neoclassicism, a wave of purification came at the scale of building type as well. Quilici reflected on purification:

'as it is evident in Vlasov's article in the *Izvestija* of 1959, in its utilitarian problematic, meaningfully juxtaposing *the deficiencies of architecture in relation to the needs of the people* with the *needs of mass industrialised building*, links up with the appeal of Khrushchev at the Builders' Conference and closes a period of incubation, but without adding anything of its own in the analysis as well as in the programmatic elaboration. [...] *I am convinced*, says Khrushchev, *that most architects will understand our requirements*. The closed volumes of the Superblock, itself a module-object, are thus abandoned as a solution that is too rigid with respect to the new requirements of component assembly. The aligned parallels of the buildings were reduced from 6-8 storeys to 3-4 storeys, in order to facilitate the vertical assembly of the prefabricated parts. The construction site is thus transformed into an *assembly line*. The blocks are aligned according to criteria of better utilisation of plant and equipment. Their placement on the site seems to be dictated rather by *parking* requirements than by criteria of use or visual perception. It was only from 1957-58 onwards that timid changes in the layout of the microrayon were noticeable, as in Moscow's Novi Ceremuski, but the results still left something to be desired.

In this regard, a controversy develops, which is also taken for granted, on the need to safeguard the *artistic* character of the building operation, also because the ideology of the symbolic *value* of urban space cannot, all of a sudden, disappear (the experiences, as in the past, of the *artistic* character of the urban space are still too close to the surface)' (Quilici, 1976, p. 298).

It is important to talk more about the type of mass housing, one of the most famous Soviet phenomenon, which persisted throughout the Soviet period and took on various forms, some of which, even radical and temporary ones, still exist in urban environments in Siberia. Glazychev eloquently described the communal apartment as the basic type of the beginning of the Soviet period, along with its characteristic lifestyle and social climate. The growing population of large cities could only be provided with living space (this word replaced the word house or apartment for obvious reasons) at the expense of 'compacting' of old dwellings. The idea of a communal house was expressed in dormitories for students and temporary workers. Glazychev provided the illustration of transit from pre-Soviet tradition of dwelling to the Soviet - a tragicomic epic 'kommunalka', mentioning those who spent their childhood in 'communal dwellings', where seven to twelve families lived side by side in large, previously luxurious apartments' (Glazychev, 1987, p. 3). In any case, the reality did not look programmatic and systematic; scarcity and the inability to build ideal Soviet cities simultaneously gave rise to various intermediate options, houses and villages in which tradition and modernity were intertwined.

'The childhood and youth of my generation are almost invariably associated with the shared flat... For my parents' generation, of the same age as ours, the expression 'red corner' had a very specific meaning: in this corner of the room, usually on a small shelf covered with a crocheted, starched napkin, there was an icon and in front of it the light of the lamp always flickered... The simplest dwelling has always been the world of the family and has always been perceived as a special world, so much so that its construction, the 'breaking' of the plan on the surface of the earth that preceded it, and the choice of the building site itself have been associated with many special rituals. From this group, the tradition has survived until recently of throwing a coin under the 'foundation stone', even if the house is made of wood, and of throwing a cat into a new

house before the future tenants enter. The simplest house could not have a single internal partition (in the south the eaves were often absent), but without a roof there is no simplest house, and the roof is a whole structure, becoming more complex as one moves from south to north. In the south, the roof could be just the underside of a brick vault, or a *roll* of wooden beams, scaffolding, thin logs. Wicker mats were laid on top of such a roll, and clay was poured and trampled on top. Where the winters were colder and the rains heavier, not to mention the places where there was a heavy snow cover, it was necessary to separate the ceiling from the roof, to give the roof a strong slope. There was a variety of used space, which we have called the Turkic word *attic* for many centuries. How great is the variety of roofs, attics, how rich is their representation in world literature, how many young people started their *discovery of the world* from an attic! We have lost a great deal since the insensitive superimposition of multi-storey buildings, or the replacement of attics with so-called technical floors, which are inaccessible' (Glazychev, 1987, p. 3).

The idea of progressive communal housing for workers reached Siberia in the form of workers' barracks. Glazychev said that with the rapid growth of cities, industry was experiencing a rebirth, and the most massive type of housing was a 'barrack': a long, two-storey or one-storey building with a dark corridor with doors to small rooms, starting from the communal kitchen and ending with the communal toilet and washroom (Glazychev, 1987, p. 118).

Interestingly, inertia persisted despite the revolutionary changes. According to Glazychev, the apartments in the houses were designed to be small (as a rule, they either became communal immediately or were 'consolidated' later), although the inertia was great, and on the apartment plans one could very often read 'a room for a housekeeper'. The period of industrialised multi-family concrete block construction completed this stage, in Siberia later than in central Russia (massive housing in the 1970s), the final chord: typical prefabricated housing construction, succinctly described by Glazychev. Residential buildings were built in the most economical way: wooden beams, mostly wooden floors, partitions made of waste materials. The dynamics of decorative trends was interesting: first it was a 'constructivist house without decorations, strict, often refined forms in the plan, silhouette, facade... followed

by the fashion for countless false decorations, turrets, balustrades became universal, behind and under which *chic* entrances were hidden, but still the same small, often uncomfortable, insufficiently bright apartments. The savings lost all meaning, as they were repeatedly overlapped by the costs of the *decoration* that seemed to be so urgently needed' (Glazychev, 1987, p. 116).

Finally, reality appeared much more complex than the proliferation of one or two basic types of dwelling. Industrialisation brought to Siberia typical blocks and microregions, but the basic tissues of Siberian cities were assembled from traditional wooden village-like houses. *Dacha* (second individual house) appeared along with the proliferation of concrete 'Khrushchev' blocks. Glazychev noted that having survived the fascination with national styles, the architecture of an ordinary residential building has also survived the fascination with international style, diverging into two very definite lines, namely proliferation of cheap standard housing, and the second - cottages or houses on garden plots or even car trailers specially designed as a compact dwelling (Glazychev, 1987).

The Soviet period is of particular interest and is therefore described and studied in detail in the works of Russian, Soviet and international authors. In this work, this period is not divided into sub-periods due to its complexity: the construction of a large new country using 'top-down' methods, which required maximum optimisation and assumed the simplest possible settlement of people in cities, where they aspired to earn money and a new life, under the influence of powerful ideas coming down from above, wrapped in the packaging of socialism. Such a division would also be difficult to make in many cities, some of the sub-periods are not morphologically embodied, or are strongly displaced in time. This requires further research. Unlike the previous formative period, which began with an idealistic conception but continued according to the purely spontaneous principle of natural continuity, the Soviet period was saturated with ideas introduced from above, constantly transforming the city and society. However, all the stages of the great Soviet period reached Siberia with such a considerable delay that there was often almost nothing left of them on the way. Initially, Lenin was inspired by the idea of the City of the Sun, and no doubt by other cross-cultural influences. But according

to the same principle, namely that the new emerges as a result of the processing of the old, as a result of external influences intertwined with the existing progressive moods of society and local culture, the avant-garde emerged, unanimously regarded as a unique phenomenon that had no analogues in the world. Returning to the subject of Siberia, it is safe to say that even the ideas of constructivism and the avant-garde in their pure form have practically not reached it. The Soviet period is embodied in Siberian cities in the workers' settlements built under the influence of the ideal city and in the hectares of prefabricated housing, as well as in the brutalist architecture that marked the morphological polarities of the Soviet Union.

Thus, the type of settlement that emerged in the Soviet period is a kind of collage with the interweaving of different morphological regions, including spontaneous traditional fabric of historical centre -organic elements grouped into organic composition and new serial elements grouped into serial composition. The filling in of the gaps in the construction took place gradually, with consolidation and the emergence of more advanced construction technologies. In particular, the Soviet period brought regularity and the repetition of identical modules - according to Caniggia, serial elements organised into a serial composition. In addition, a super-grid was clearly manifested in the structure of the historical parts of the cities, formed on the basis of the main streets of the orthogonal network of the historical fabric, as if superimposed on it. The super-grid, superimposed from above, which later formed the basis of the cities, united factory settlements developing on the periphery and large areas of handicraft development of chaotic working quarters. Despite the explosive growth and significant changes, it is possible to trace the stable signs that define urban identity, among them - the introversive city blocks - even the city blocks of communities of the northern type of wooden courtyard houses bound in the spontaneous fabric; the role of urban void 'embodied' in disproportionately wide streets and huge squares without any particular programme, not always framed by facades (unlike a traditional Italian city, where, for example, a square or a street has a façade, and the façade belongs to the street space no less than the building- the source of inspiration for St. Petersburg), etc. Urban void received ideological connotation - an 'embodiment' of power. Ideal cities, fully designed in

the Soviet period, deserve a separate study. Thus, the historical Siberian city, which developed 'spontaneously' and successively in the pre-revolutionary period, despite the existence of a regular grid, turned out to be incorporated into a development of a completely different scale and character in the Soviet period. The ideas of the avant-garde and constructivism, so popular among researchers and architects, could not be spread over the vast territory of the Soviet Union and were mostly localised in selected places. The reality had little in common with the ideal city: in fact, on the outskirts of the historic cities of Siberia, simplified versions of workers' settlements in industrial enterprises often appeared, or even self-constructed arrangements like an old village, although sometimes inscribed in a regular grid. In this research it is important to emphasize that the historical city has become one of the morphological regions: the phenomenon that accompanied the 20th century in many corners of the world.

The description of the foundational territorial type at the end of the formation phase can be as follows.

1. The regular grid changed its internal priorities and adapted a superimposed grid of streets of metropolitan significance, extended beyond natural boundaries.
2. Many cities 'stepped over' the river and began to develop along its banks in the form of linear working-class settlements.
3. The old polarity of the city survived the antipolar/polar transformation and retained its significance as a historical centre, acquiring new significant buildings - statements of the epoch.
4. The linear polarity retained its importance, the whole historical area received the image of a linear centre.
5. Some roads perpendicular to the matrix acquired the importance of transit roads and roads of metropolitan significance.
6. Polarisation of the whole fabric around the bridge entrances and new nodes and poles occurred.
7. Nodes and poles changed their image due to the destruction of old dominants and the appearance of new specialised buildings - a new "face".
8. The scale of the urban fabric began to change significantly: the formation of a supergrid and morphological regions became the main principle.

9. In fact, the sectors of spontaneous traditional fabrics between the quarters of the orthogonal grid remained until the present day.

10. The blocks are historically introverted, dominated by the entrances to the houses from the courtyards.

11. The density of the Siberian city was much lower than in central Russia. The role of urban voids is stable.

12. In some places, elements of old peripheral belts are still visible, which have not formed as full-fledged phenomena.

13. Streets open up to natural elements - hills, rivers, which create a characteristic of openness, connection with nature.

14. The new type of settlement formed - a collage of interweaving morphological regions, including spontaneous traditional fabric.

15. The added morphological regions, i.e. the elements of the collage city that extended beyond the natural morphological boundaries, resembled the collective images of Soviet conceptual ideas, from the linear settlement of various kinds to the garden city equivalents.

16. Naturally appeared superblocks were later transformed into Soviet microdistricts.

17. Most of the streets were named after the revolution, its symbols and heroes.

18. The embankments of the cities were obviously undergoing an anti-polar-polar transformation, becoming centres of attraction.

19. Elements of identity are sprouting into new master plans and ideas, embodying continuity. Serial elements, grouped in a serial composition, dominated.

20. The scale of the fabrics became radically different. The streets can be roughly divided into those of metropolitan significance and those of neighbourhood significance (nested principle).

Importantly, even new revolutionary soviet building types of XX cent. inherited many traditional morphological codes (smooth transition from public to private, the abundance of storage, clear strict 'clean-dirty' division, etc.)



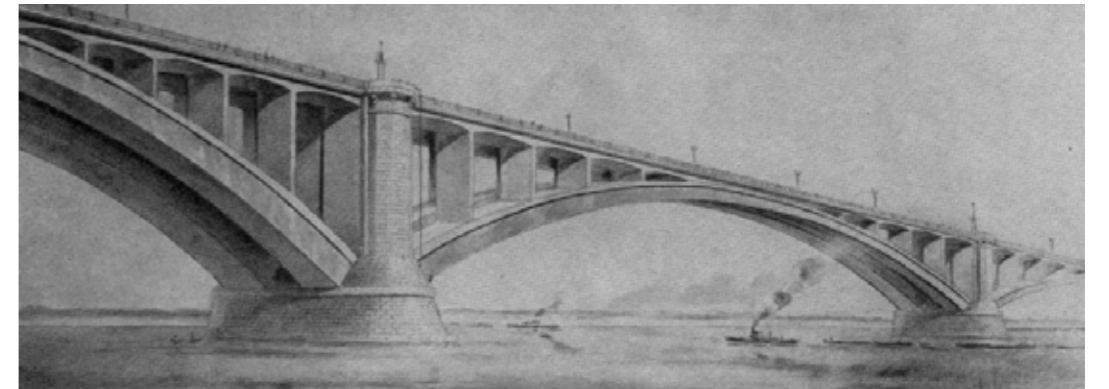
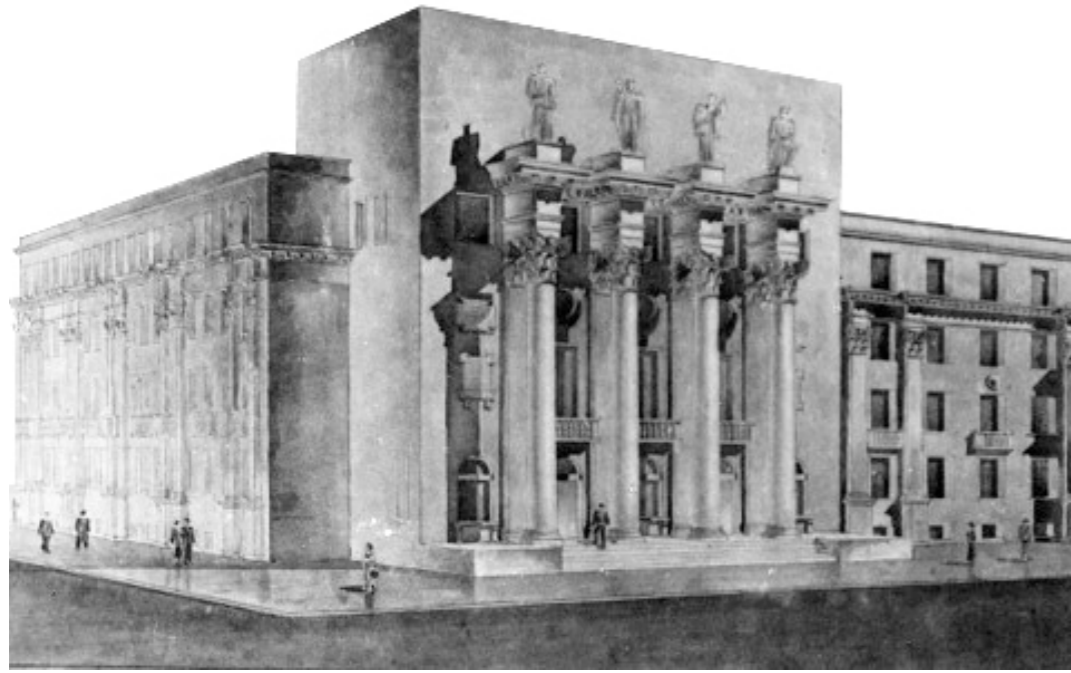
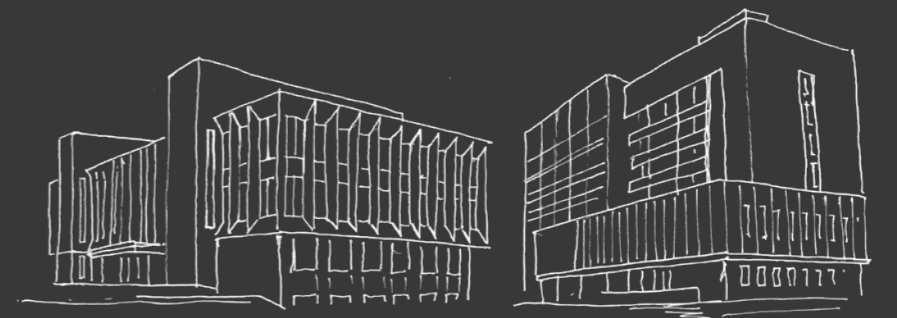


Figure 152. Krasnoyarsk - architecture of the middle and the end of XX century (Photographs are provided by Krasnoyarsk Regional Local Lore Museum).



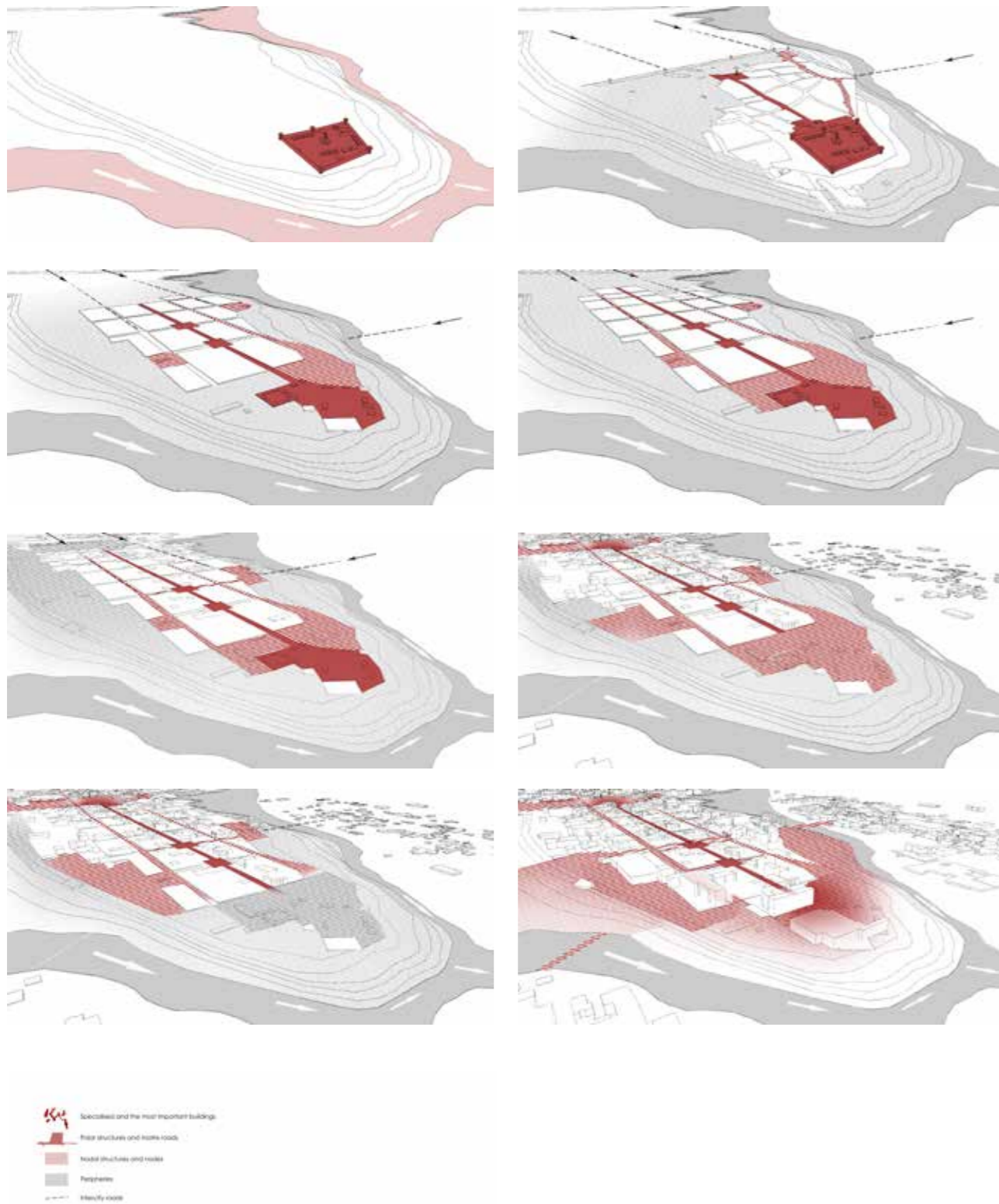


Figure 153. The generalised model of the genesis of settlement type of Siberian foundational settlements.



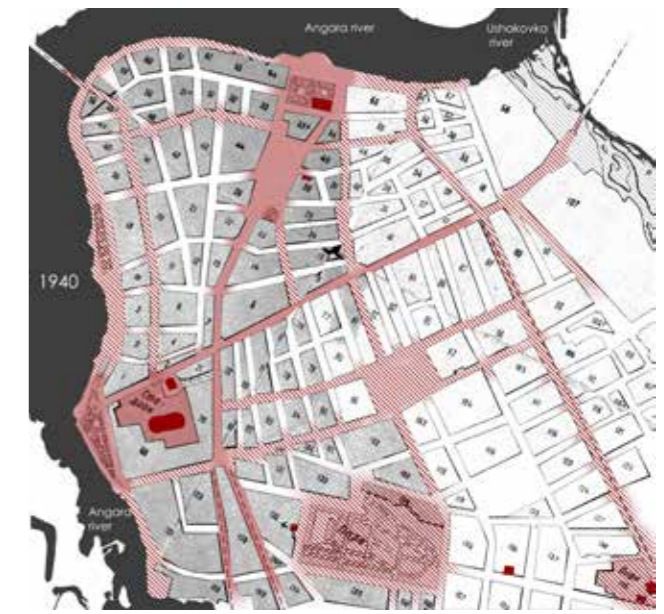
154 a.



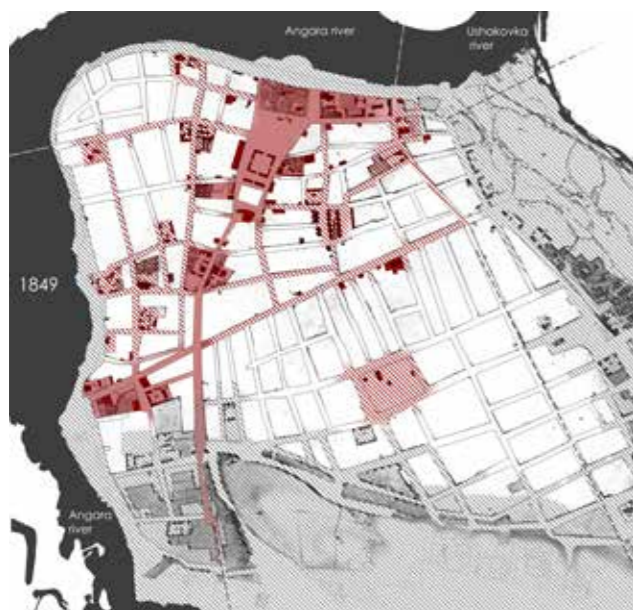
154 b.



154 e.



154 f.



154 c.



154 d.



154 g.



154 h.



Figure 154 a-h. The genesis of urban form structure of Irkutsk.



155 a.



155 b.



155 c.



155 d.



155 e.



155 f.



155 g.



155 h.



155 i.



155 j.

Figure 155. The genesis of urban form structure of Krasnoyarsk.



156 a.



156 b.



156 c.



156 d.



156 e.



156 f.



156 g.



156 h.



156 i.



156 j.

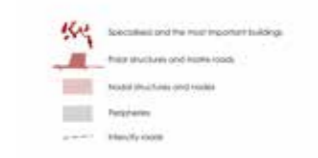


Figure 156. The genesis of urban form structure of Tomsk.



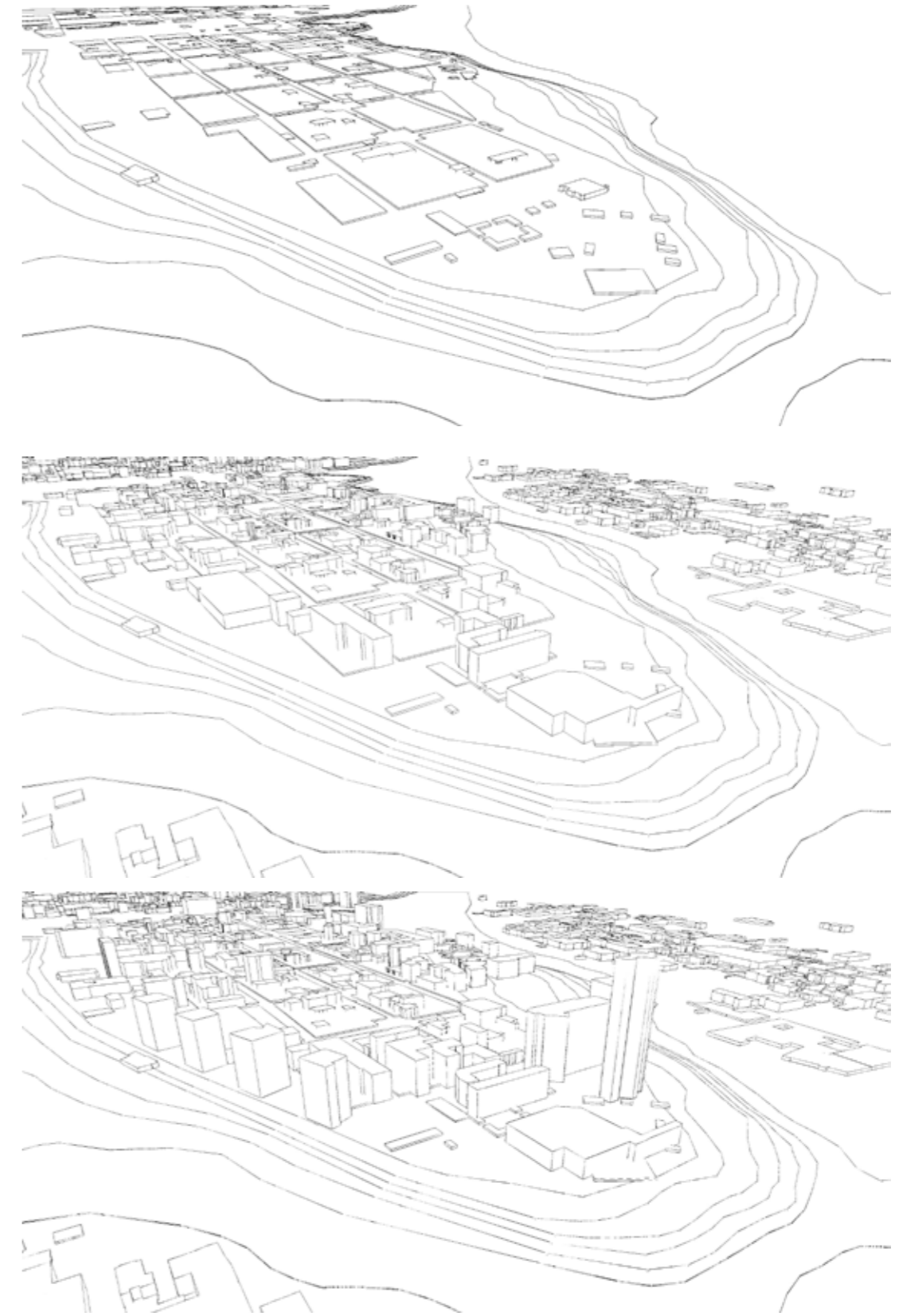
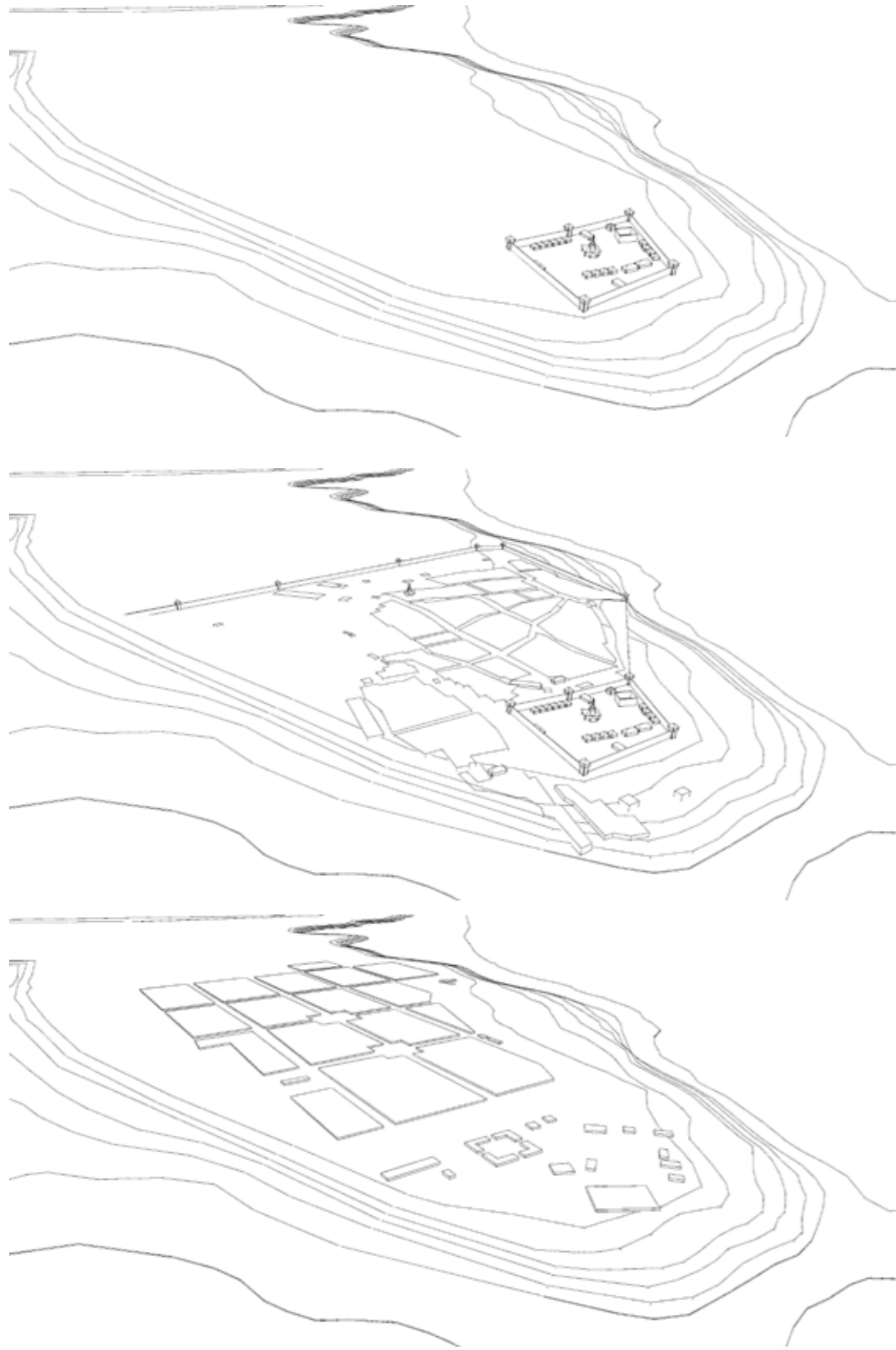


Figure 157. The generalised model of the genesis of settlement type of Siberian foundational settlements.

Historical settlements with a complex past that have survived numerous interruptions, such as dramatic economic, cultural, social or political events and periods, changes of power and ideology, shouldn't be studied in fragments but require tailor-made methodologies capable of describing the complexity of the evolution of palimpsests or complex urban organisms over time. The methodologies capable of bridging existing discontinuities and restoring or redefining the identities in cultural and architectural terms are needed. Colonial or 'foundation' cities (the term accepted for these study) are the particular examples of this type of places, and the present work examined a number of these cities in Siberia, comparing to Canadian one. Siberian cities are underexplored and underrepresented in the international research, and therefore are of particular interest. Moreover, such peculiarities as the local traditional dominant material (wood) or climate (not many traditional architectural forms are preserved), the rare archaeological excavations, the frequent devastating fires in the early periods, and the remoteness from central Russia have made the number of historical documents and maps very limited, while the accuracy of these historical maps is often extremely low. A number of studies have been devoted to the historical development or architectural history of Siberian foundation cities, but this historical data is not sufficiently conceptualised for the potential use in architectural practice. This study selected the suitable methodology and conceptualised the available historical data and the existing historiographical studies, described formative process and the genesis of the urban form of the selected Siberian settlements for a successful transition into the architectural practice of the future.

First and foremost, FORM was accepted as the fundamental notion and concept, allowing for work with urban palimpsests. Logically, the cultural tradition of urban morphology became the methodological basis. Today, the concept of form itself is often taken to be somewhat simplistic and reductive, whereas the history and genesis of the concept in philosophy and theory reveal form to be broad, multifaceted, multi-layered and dynamic; the concept has existed in the tight connection with the dominating worldviews. The influence of ideas happened not always directly through specific methods, but often indirectly, rather determining the spirit and mood of the time, or defining a specific cultural context. The understanding of the notion of form and the connectivity of this notion with relative theories and concepts has been affecting the production of physical urban and architectural form. In sum, theoretical and philosophical definitions, considerations and reconsiderations of the concept and notion of form and related concepts

in various writings are informative for the present work since they help to avoid the unnecessary reduction and to perceive form as an inherently rich concept, encompassing congruent physical, social, cultural and other layers of form. Therefore, fundamentally, this work primarily relies on the cultural position of process-based typology (Caniggia and Maffei, 2001; Carlotti, 2021; Maretto, 2013, 2014; Oliveira, 2018; Strappa et al., 2016 and the others) or typological-processual strand of urban morphology and focuses on the urban form with all the information imprinted in it. Literature review highlighted the necessity of the choice of the definition or the spectrum of definitions, so-called 'semantic cloud', relevant for the selected research question before the beginning of research, this will also bring connection with the other notions and concepts, potentially opening the door to the other related disciplines, which ultimately bring complementary methodologies and philosophies.

After all, the typological-processual approach to urban morphology, which contains at its core so many cultural codes, metaphors, and references to related disciplines, and which draws on extensive philosophical scholarship, cannot, by definition, be reductive; moreover, thanks to this quality, the approach seems to invite these disciplines into dialogue, often through similarities in the understanding of concepts and notions. A literature review has shown that some of the problems are better methodologically resolved within the complementary disciplines. In sum, the choice of framing philosophy might be critical, and for process-based typology hermeneutics and, potentially, phenomenology, seem beneficial. There is a variety of evident connecting points between typomorphology and phenomenology, which should be potentially developed in future research (such as the concepts terrain and territory, affordances, place, or typification), it deserves a separate investigation. Phenomenological ideas have the potential to positively change and complement the concept and the notion of architectural and urban form, moving towards a more sensible and sensitive concept, insisting on the search for a special experience that cannot be rationalized or articulated in numbers and schemes. Various strands of language-related theories have had a significant impact on the study of architectural form, bringing, first and foremost, the principles of grammar and syntax, but not only: they help to build the argument and the methodological structure and sequence. Thus, linguistics, hermeneutics and phenomenology are important complementary theories, but it is also essential to choose the right path within these disciplines. Consequently, using logical argumentation, it is possible to clarify and complement the methods of urban morphology



with the approaches used in related theories. In addition, one of the certain achievements of the twentieth century is that scholars and practitioners have begun to develop combined, interdisciplinary and 'eclectic' approaches, and this will not lose its relevance in the near future: this trend was also evident at the ISUF (International Seminar on Urban Form) conference in 2023.

Process-based typology, which offers a method for the meaningful conceptualization of form is both practical and practice-based, illustrating and exemplifying its use and explaining the basic principles of the formation of spontaneous urban fabrics. However, it was not entirely clear how the reading itself, or the transition from reading to interpreting, should be done for the unexplored territories, which bring new phenomena and redefine the existing concepts. This work was informed by further examples of the application of Caniggia's method (Carlotti, 2021; Mareto, 2013, 2014; Oliveira, 2018; Strappa et al., 2016 and the others) and extended by adding the principles of the formation of planned cities (Moudon, 2019; Després et al., 2015; Larochelle and Gauthier, 2003; Larochelle, 2002; Larochelle and Lamandi, 1999; Després and Larochelle, 1996). The basic terminology was complemented by definitions and methods derived from the other schools of urban morphology, such as metrological analysis (Chow 2002; Serra, 1990; Slater, 1990) or definitions appearing in the historical-geographical approach (Conzen, 1960; Whitehand, 2010). Thus, the conventional typomorphological method and terminology were refined and clarified for the present study, and the enriched method proved to be effective.

The strategy of 'reading and interpreting urban form', accepted by the researchers in typological-processual strand, is facilitated by complementary theories and philosophies that fill methodological gaps and compensate for the lack of clarity; in particular, for instance, the insights of hermeneutics (Pareyson, 1954) assume that form already contains programmes for the implementation of its formativity, capable of generating new forms: one can try to 'read' and 'interpret' these 'programmes' in projects. Strategically, 'Learning form language' coincides with 'reading' while reading process coincides with 'interpretation'. Type is chosen as a meaningful unit of grammar. The result of the interpretation of form is the other form. Since we cannot interpret the historical urban text out of its context (while the full context of the past is often unavailable, according to Gadamer), the final interpretation of urban form in the design projects should be based

on the current context, but may include 'excursions' into historical contexts, enriching interpretation. Certain urban forms impose a formative effect on neighbouring forms (for example, the phenomenon of polarisation of urban form around the specialised building). The historical urban environment is a system of elements and layers, and the specificity of the relations between them. Transformations highlight important specificities of a system and its elements, revealing and generating types that operationalise urban form. However, it turns out that grammatical and syntactic studies are not sufficient to continuously build a rich 'meaningful' form, not considering semantic components. Eco said that the fact that architectural form can be described by employing a geometric code does not mean that architecture as such can be reduced to geometric code (Eco, 1968). While studying the meaning of an architectural form along with the process of its 'reading', after studying grammar and syntax, it is 'safer' to talk about denotative codes. Therefore, 'risky' or 'shaky' semantic layer in this work includes certain considerations and limited discussions about references, denotations and associations of the detected grammar and syntax, possibly avoiding discussions in terms of cause-effect relations, the exact nature, roots or meaning of the particular code if the exact 'etymology' is unknown. Identification of certain known or highly possible influences or references would be enough to enrich understanding. Additionally, poetic symbolic connotative 'strokes' can informatively 'decorate' a more stable grammatical structure, considering the limitations of their use, but they should hardly be the purpose of the given study. Thus, the researcher interested in the meaningful reading of urban form should be also interested in a certain contextualisation - the simultaneous processes in social and cultural systems to increase awareness and to prove morphological hypothesis, but it is important to distinguish these types of research questions, which can be studied simultaneously or diachronically, but separately, importantly without seeking cause-effect relations. Thus 'reading' in the given work, firstly, follows the detection of grammatical and syntactical codes in the form (learning language), together with the study of formations and transformations following the methods of the typological-processual strand of urban morphology. Secondly, some denotative and relatively stable connotative strokes can enrich the grammatic structure. Thirdly, the study of various cultural context and possible references should inform the semantic layer of the given work. To sum up, throughout the text, the reading of the urban form is methodologically strictly separated from the study of the context and the historical excursions used to prove or disprove hypotheses that arose in the process of reading - the definition of grammatical and syntactical codes. Instrumentally, retrospective reading

and careful redrawing of the overlapped maps was tactically used and informed by archival documents and historiographic literature.

Form in this work is operationalized through the notion of type, which also broadens the horizons of typomorphology due to the presence of numerous complementary theories offering methods and experiences (e.g., phenomenology). The potential of typology and morphology to provide comprehensive practical approaches was broadly criticised in the 1980s, particularly often also due to the misuse of concepts by various disciplines and factual implicit displacements of type by simplified notions such as diagrams. However, as the historical development has shown, the concept of type has also reflected the spirit of the age, the needs, or problems of the time. Apparently, the changes in the use of the term type reflected the fundamental changes in architecture in the 20th century, including the appearance of simplified and functional modernist types. Moreover, the twentieth century, with its fluctuations from one radical opposition to another in architectural views, has shown how the concept of type has changed, sometimes implicitly, but visibly in the practice of creating the physical built environment of cities. It was in the Soviet Union that top-down 'typology' reached an unprecedented scale, and this is a vivid example discussed in this work. If the concept of type is formulated a posteriori on the basis of the dominating type-based physical form production in Soviet Union, it becomes clear that this type was contrary to Rossi's explanation or the definition of Caniggia. The concept wasn't explicitly formulated, but the phenomenon existed in reality and therefore defined the production of the built environment. The Soviet Union has shown the appearance and development of pragmatic function-based type and typologies grounded on statistics, which gradually changed spontaneously developed traditional types in the foundational cities under consideration. However, it is evident that even these new typologies contained a certain degree of historical continuity, proving its importance. On the top of that, case studies presented in this work, which illustrated the evolution of the concept and the notion of type in particular place – from the spontaneous type to the pragmatic and function-based, are highly informative for the morphological theory, and for the given work, which is focused on Siberian cities. This can be considered the core of formative process for the certain cultural area. Finally, it is the breadth and vagueness of the concept of type that makes it both attractive and fraught with risk. That is why the selection of the definition of the concept and the notion of type, which should be used for sustaining continuity of urban form, is of a primary importance.

This thesis has shown that type and typology can potentially be defined differently depending on the research question, methodology, selected study area, scale of investigation, etc. In sum, definitions of type are grouped in the present work into certain 'semantic clouds': one can be reductive, statistical, pragmatic and functional (e.g. Soviet typologies or technical, operational ones); the other includes 'holistic', paradigmatic definitions that provide an apparatus for conceptual, strategic and creative thinking. Concerned with the continuity of historical environments, values, narratives and identities, this work operates within the latter category of definitions. Type is thus a 'meaningful' unit in the urban fabric, a result of the historical process and an embodiment of the process, a multilayered concept and a palimpsest, it contains an imprint of the genesis of form, an idea, a skeleton, an intention, a law or a set of rules, it contains the possibility of invention, operationalising form, it is a generator, a framework for discovery. At the same time, type can't be invented: the architect should express new ideas in traditional types. Caniggia offers the following definitive concepts. First and foremost, the author uses the term 'a posteriori analysis': the physical existence of the type is noted, the type is not intentionally invented (Caniggia & Maffei, 2001). The author claims that types exist 'objectively'; he considers type to be a natural objective essence and the result of an evolutionary process and spontaneous consciousness while talking about type and reviving it is a result of critical consciousness. Thus, for Caniggia, the concept of 'type' is the result of both 'a posteriori analysis' and 'a priori synthesis'. After all, types exist at all levels - from house type to street type to settlement type; it is therefore a multi-layered taxonomy. Type and typology thus provide the framework for a meaningful conceptualisation of urban form containing the imprints of socio-cultural form. This work aimed to answer the question 'what remains' rather than 'what changes' in the process of type formation and transformation, making local historical environments specific.

In particular, the detailed morphological reading of the intrinsic characteristics of the historical center of the Siberian city revealed frequent polar-antipolar transformations, unusual correlation of volumes and voids with the prevalence of voids, frequently changing hierarchy of streets in the orthogonal grid. The formation and transformations of the basic type of wooden house derived from the introverted concept of a 'nest' or the concept of a wooden fortress, and later was fixed in the ideas of fences - an 'individual fortress' - a manor house with important concepts of privacy and protection, or a block consisting of the community of fenced courtyard houses located next to each other, constituting an inseparable unit. It was

on the basis of this type, that the later stone houses were built, which form the appearance of today's historic centre. The example of spontaneous wooden construction shows how the house reacted to climatic and socio-cultural changes and adapted naturally. In the construction of the stone houses of the beginning of the XX century, especially in the first phase, we can observe the general techniques of inner structure and layout, which are completely borrowed from wooden architecture. However, the appearance of the new buildings tended to be influenced by both professional architecture (e.g. albums of the typical facades) and vernacular traditions. Almost all variations and the stages of development of the wooden house could be seen synchronically in Krasnoyarsk until the 70s of the XX century, when the standard mass construction appeared in the city and replaced the half-timbered houses. In general, the existing types and their evolution happened continuously in the city, with the interruption of the Soviet period, which brought top-down functional typologies.

It is also possible to see the characteristics that have been preserved despite the fundamental changes, and that have taken place up to the present day. As for the surviving traditions, the willingness to add storage rooms to the existing building or to change the original layout of the apartment is still alive and fruitful in Russia and Krasnoyarsk, demonstrating the popularity of striving for self-made developments that seems to remain in the genes of Siberians. The importance of traditional continuity is illustrated by the fact that innovations such as the entrance to a single-storey house from the street didn't become the norm. This is a striking example of the fact that the techniques of vernacular architecture, verified over the centuries, appeared more elaborate and sustainable. Even today, entrances to residential buildings from the street are extremely rare, which could be the result of traditional sensitivity to privacy. The perestroika of 1991 brought freedom, and the prevailing 'top-down' processes changed to 'bottom-up'. Extensions and small changes were literally everywhere: shops and markets, reflecting the lack of services in the neighbourhoods; the appearance of garages and underground cellars, reflecting the lack of storage facilities in the apartments of large Soviet districts and neighbourhoods, etc. Even the facades of medium-sized and multi-storey buildings have been individually modified, balconies and terraces have been added, and the blocks have become elements of vertical micro-urbanism. Garages and other illegal small extensions are also morphological symptoms of the chaos of the 90s. They reflected the social need to personalise the artificial character of the city of the late Soviet period with the introduction of traditional elements,

were a kind of manifestation of problems and deficits, illustrating the need for transformation. It is interesting to note that even after the revolutionary changes of the twentieth century, the habits of residential organisation can still be seen in the structure: from the entrances to the dwelling, which are almost never located on the side of the main street, occupying a more private courtyard area, to the sensitivity to the concepts of 'private-public', 'mine - someone else's', and the need for a large number of storage spaces (balconies, garages and cellars were replaced by barns and pogrebs, characteristic of a peasant estate), the typical industrialised load-bearing cell was 6x6 m, derived from ancient srub, which entered the system of mass-production. The traditional need for transit space between private and public forced the construction of second doors at the entrance to the apartment; organisation of individual front gardens with flowers and vegetables in front of the multifamily buildings. Residents of the first floors made extensions to the balconies. The strong differentiation between public spaces (streets, squares) and private spaces (the collective privacy of the family hidden behind the fence of the estate), or 'clean' and 'dirty', is still emphasised by the necessary presence of a transitional space between public and private, inside and outside, or by the necessity of taking off one's shoes to enter a clean or private space. This transition can be embodied in the small gardens in front of the houses, in the vestibules, in the tambours. Thus, even at the atmosphere of the dominance of mass standard housing, the tradition found a 'way out', which became pronounced by the end of the period. Such resistance shapes our life-world and provides the necessary continuity. The estate itself, 'usadba' with its plasticity and irregularity, as the main morphological unit, defined the scale of the historical part to a large extent, even after the period of transformation. The characteristics described, which show resistance over time, indicate the local values of this society and should be taken into account when planning the development of the historic area.

The addition of metrological analysis and comparative morphological analysis allowed to clarify and enrich the form grammar and find more characteristics of local languages and identities. The comparative analysis of Siberian and Canadian cities shows that similar climatic, geomorphological, hydrographic, topographical and other natural features of urban forms in many respects induced a similar 'internal' spatial logic of their development. Thus, before focusing on key transformations that coincide with socio-political and cultural shifts, a general assessment of morphogenetic patterns influenced by the constraints and potentials internal to the morphological

system is essential. When the urban fabric presents a planned orthogonal grid, we can see the process of transformation of the urban form in the hierarchically produced order between the streets that has been determined over time (readable in the arrangement of the entrances to the buildings, in the distribution of commercial activities, in the height of the buildings and in the size of the street). At the same time, the persistence of the local vernacular tradition can be read even in a planned city and forms part of the local identity, especially on a smaller scale. Comparative study ultimately helped to conceptualise urban form of Siberian city: comparison allows to notice specific expressions of codes. Specificities found in one city allowed to notice them in the other. For instance, cities grew along the main roads, and after - gradual filling of agricultural lines: building roads could be parallel to matrix. Secondary roads mainly express local specificities of both cities. Regular masterplan became the symptom of centralizing power. 'Hyper-grid' (Moudon, 2019) was integrated in the existed logic, incorporating neighborhoods or microregions with 500-800 m. Cultural collages also demonstrates collages of identities in different morphological regions, each region corresponds to specific building type and culture. In both cities, fires and relief resulted in the basement or the first floor made of stone or brick. The cities are comparable not only in terms of geomorphology or climate, but also in terms of major social and cultural events that occurred at the same time. It can be suggested that in comparable geomorphological, social and cultural contexts, people tend to create similar morphologies. The study of the external influences should follow the reading of intrinsic characteristics, focusing on those changes that had a significant morphological impact that couldn't be explained otherwise.

The previous chapter revealed the basic morphological codes of the historical parts of the foundational cities, based on the terminology provided by the typological-processual approach. However, the cities of Siberia, for example, developed not only on the basis of the spontaneous principle, but also under the dramatic influence of external ideas and morphologies. Moreover, the twentieth century brought an exponential growth of these cities beyond the historical cores, which should have been conceptualised at least at the strategic level. Caniggia offers a principle of urban development based on cycles of phases of formation and periods of transformation - a typological process: 'we shall call 'phase' a sufficiently long interval of time for these changes to be sufficiently clear [...] in short, I must speak about historical formation and transformation processes' (pp. 45-49). Territorial type he defined as 'the spontaneous consciousness of the area...' (p. 190).

Thus, the interpretation of territorial typological process the author defined as follows: 'interpreting the typological process of territory, therefore, involves referencing the current structure to its formative laws through the identification of the phases of successive mutations of territorial type' (p. 192). The author also used the example of the formative process of language, which are close to the principle of formation of the local architectural languages of the Siberian cities influenced by the external cultures: 'Latin became widespread through its superimposition over local languages and, in turn, was influenced by them to the extent that the Latin of the 5th century BC and the generalised Latin of the 1st century BC differ widely. Generalised Latin had to accept surviving linguistic remnants in the form of dialects or particular local preferences for syntactic and grammatical moods and for vocabulary deriving from pre-existing Latin brought into use locally. This occurred until, with the breakup of the empire, local dialects - benefitting from the reduction in trade between one place and another - developed into local languages that can roughly be described as a combination of localised ancient and less ancient generalised languages. We know how a new boom in trade between various areas led to the Formation of new generalised languages, the 'Romance' languages, including Italian. However, Italian continues to acknowledge the presence of the whole previous process, reproduced in the Form of local dialects that are ready, in turn, to assume linguistic functions should there be a further disintegration of today's Italian nation.' (Caniggia & Maffei, 2001, p. 33). Caniggia's description vividly illustrates how phenomena detailed in related disciplines, in this case linguistics, can inform morphological theory. Similarly, it is possible to describe the development of 'languages' of architectural forms and local identities, through periods of formations and transformations, and the influence of the external cultures. This work illustrated how intertwined, such formative and transformative processes shape a local identity - unique features of form that simultaneously bear some resemblance to the original form and to the features of form superimposed from outside. It seems impossible to reveal the formation process of local language of Siberian form not looking at external references, which directly influenced urban formation. The spectrum of concepts offered by Caniggia had to be for this purpose further developed and enriched by the historical-geographical method of urban morphology and the broader comparative analysis of not only the genesis of forms of different Siberian cities, but also the analysis of historical literature and the known possible formal references - from the cities of Central Russia to some parts of European cities. Comparative analysis of the forms of Siberian cities, their master plans and the plans and ideas that

persisted in Central Russia were supplemented in order to detect the possible references of the dominant forms. After the morphological readings, literary sources studying the history of the development of Russian cities along with the possible foreign influences were used to prove the hypothesis. The study conceptualises the broader form of cities, enriching the lexicon of process-based typology and conceptualising the process of formation of local formal identities. Similar urban form and environmental situations shared by the cities make the typification and conceptualisation process clearer. The third chapter presents the formative process of Siberian foundation cities, consisting of formations and transformations, and illustrates how local urban identities are formed in the process of intertwining local characteristics and external ideas, providing both continuity and development. Even in periods of revolutionary change, key elements of local identity have been retained and intertwined with innovation to form a new identity that bears the characteristics of the old. It is against the background of enduring characteristics that the new is attractive.

It is noteworthy that the process of the formation of the number of investigated Siberian cities began with the landing of the written summary of the collective experience of the previous fortress building, which included both the social and urban form of the organisation of the settlement (the instructions of the governments contained abstract, imaginary models of fortresses, the model of the behaviour on the spot, relations with the natives, harvesting methods, the placement of people and buildings inside the fortress) - literally, a posteriori type. They were locally reinterpreted and rooted differently in different geomorphological situations and yet together formed the type, the result of the continuity of generations: a completely wooden fortress was a pole at the intersection of two or more rivers - roads located on the elevated bank and inside it contained a small spontaneous wooden agricultural village with the verticals of the churches primarily close to the centre, built by the followers of Russian vernacular tradition. Thus, there were features that united it with the fortresses of Central Russia, and it is impossible to deny the influence or the same cultural origins, but the Siberian fortresses had a significant identity and specificity, which indicates both continuity and the existence of a special type of settlement - a Siberian wooden fortress or ostrogue, which shared features of the northern agricultural fortress and defensive fortress. The fortress was a polarity at the intersection of rivers, which served as roads. The development of this type was embodied in the 'great' fortress - the walled extension of the settlement beyond the original walls. The formed type included the number of characteristics (grammatical

and syntactical codes), which constituted the traditional identical character of the local form, later on intertwined with external influences, visible in the formation. It was a town with a spontaneous structure, which corresponds well to the description of the spontaneous settlement of Caniggia, but built entirely in wood, with a specific type of base building, with a lower specific density, in harmony with the landscape. These wooden base buildings - courtyard houses attached together formed 'nests' with spontaneous internal organisation and the importance of collective privacy protected by blind walls or fences, contrasting with large and poetic 'voids', which were the most pronounced specificity of Siberian settlements that persisted over time. The phenomenon of the 'urban void', the unbuilt space in the city, reflected in the culture and mental habits, began with the vast uninhabited spaces that stretched for thousands of kilometres outside the fortress and continued with the first urban 'squares' - a self-sufficient void with its size, vagueness, open agenda and a lot of air, not framed by facades; the streets - empty spaces between buildings, a meadow separating the city wall from the quarters of the estates, etc. Many works of Russian folklore and art have been devoted to the phenomenon of the 'mysterious' emptiness of the Russian void, the 'poetic' or even 'melancholic' connection of the settlement with the landscape. The configurations shown on the first cadastral maps of Irkutsk and the reconstructed map of Krasnoyarsk in the late 18th century still determine the directions and configurations of the existing urban fabric, supporting the idea that the described stage left no physical artefacts, but largely determined the current urban form. The identity of this original landscape and original urban form is imprinted and still readable in later urban forms.

The period, which coincided with the centralisation of power, was accompanied by regular master plans of cities and the creation of intercity roads connecting them (partially replacing the role of rivers) and brought about the gradual transformation of the settlement from a defensive fortress into a city. The elements of the geometric grid structure of the new plans adopted the basic principles of the earlier spontaneous plans, such as the number, approximate position and hierarchy of streets, the main direction of development, the positions of the main nodes and poles, but interpreted them in a regular way - the embodiment of power structure. The block or 'nest' of attached spontaneously organised small 'fortresses' - courtyard wooden houses 'usadba', with its plasticity and irregularity, remained the main unit of the newly organised orthogonal grid - introverted 'nests' or communities of courtyard houses. This illustrates how the same type of

town, with its specific way of life, function and type of production, can be embodied in reality in a different form or outline. Thus, the new regular plans were often a geometrically 'corrected' expression and reinterpretation of the old spontaneous plans, while maintaining the hierarchy of elements at a fundamental, strategic level - the specific expression of continuity in urban form (Krasnoyarsk, Yeniseisk and Tomsk clearly demonstrate this). Spontaneous origin, developed according to Caniggian concepts, was gradually intertwined with regular models.

Thus, the method of urban typomorphology (Caniggia and Maffei 2001) is sufficient to codify the spontaneous step of the development of Siberian cities, but should be informed by the formal references of externally influencing dominant forms, enriched with etymologies. How was one type transformed into another, preserving certain morphological patterns that showed resistance in the transformative phases? The ideas of the regular or 'ideal' city guided the development and, in practice, informed other newly-created phenomena with their own identity. The classicist appearance of the capital as a reference, with pompous squares framed by continuous facades, paved avenues and stone bridges, was not achieved: in the absence of the original connotations of urban grammar, new connotations developed. Léblond's Baroque plans, in the absence of Renaissance context, which gives meaningful depth to the European experience (according to hermeneutics), were already quite abstract in Western Russia, and even more strangely realised in Siberia, transformed beyond recognition, getting new identity. Temporary wooden bridges were possible instead of permanent stone ones. The Italian concept of the piazza (in which façade is connected to the void, not only to the volume) took on an inhuman scale in St Petersburg and ended up as an urban void in Siberia, framed by wooden fences with its spirit and atmosphere. Instead of wide avenues, there were wide unpaved roads that drowned in mud when it rained in autumn and spring. In short, the 'ideal' projects of cities, squares, gardens and houses were reinterpreted locally, intertwined with local traditions. It was not until the middle of the eighteenth century that the ideas embodied in the master plans began to produce tangible results, because after each fire the boundaries of each household were carefully rebuilt, and with them the traces of streets and alleys, the boundaries of blocks, which retained a high symbolic value of stability despite all the vicissitudes of life. Between the fragments and embodied episodes of regular plans, real life took place, with its spontaneity and the dominance or resistance of vernacular forms and materials. Everywhere between the regular blocks there were patches of small-scale spontaneous

fabric, some of which survive on later maps. The spontaneous urban fabric was visible outside the regular plan of the central core, together with the emerging multinodal structure of the city. Unlike Moscow, which reflects the relative continuity of the formation of the traditional Russian city, and St Petersburg, which is a model of 'landed' planned European ideas about the city, Siberian historical cities can be characterised by periods of continuity of development and adaptation of models (Caniggian formative process). The linearity and regularity of St Petersburg, with its 'Strelka' ('Arrow'), large empty squares, straight avenues and 'perspectives' facing natural features, was conceptually mixed with Moscow's spontaneity and response to geomorphology.

This phase of development can be described in typomorphological terms, despite the regularity of the plans, but should be enriched with terms derived from the historical-geographical approach (Conzen, 1960; Whitehand, 2010). The new master plans of the 19th century were also framed by ideal outlines and had a similar graphic language, continuing the ideas of the first master plans and finally considering the real situations formed in the cities. The nodes and polarities established by the first master plans began to take physical form in the second half of the century, with more massive stone construction and economic growth, bringing about a polarisation of the urban fabric. However, the decline of the gold industry and the frequent destructive fires at the end of the century led to a crisis in urban development, halting the territorial expansion and creating a pronounced periphery with elements of antipolar-polar transformation, with cemeteries, monasteries, military towns and ecclesiastical areas, this corresponds symptomatically to the phenomenon of the fringe belt. Its position also coincided with the change in geomorphological characteristics - relief or soil structure. The new plans included projects for public gardens, squares and boulevards, embankments that for a long time remained fragments of forest, wastelands, forming the concept of urban void, but already within the city. The grids of blocks and wide streets acquired their own appearance and specificity, framed by the 'urbanised' wooden houses of the estates ('usadba' - still the main unit), enriched by the stone mansions of wealthy merchants. At the end of the period, at the beginning of the XX century, the scale of the urban fabric began to change: the formation of a super-grid and morphological regions began. The railway brought the development of working-class settlements: plans began to spread beyond the historic centre, often forming an outer belt around the railway.

If the beginning of phase was largely associated with master plans, the end of the formative phase is characterised by the appearance of architectural objects, cities receiving a new 'face' in the form of ensembles, merchants' villas. There was also an interweaving at the scale of buildings. The authors of various studies, illustrated albums and translations of European books focused not only on art or architecture, but also on various practices of everyday life, institutions, thus creating new typologies of buildings and cities in a holistic, multi-layered sense of the concept of typology and type, which included not only built forms, but also everyday life and culture associated with the renewed, transformed forms. These diaries and translations had a great influence on the creation of albums of typical facades sent to Siberia in the XIX century. The transforming force of Siberia was the large merchant class, which later contributed to this transforming identity by combining bold engineering solutions of typical projects of facade albums with traditional forms of buildings and traditional plans. In fact, this separation of facade and plan, a kind of design inconsistency, is still found in the typology. This approach is often criticised by advocates of various pure styles for its primitiveness. However, from a research and typological point of view, the same phenomenon was happening - the transformation of the existing type under the influence of external models and ideas, the interweaving of the existing vernacular tradition with 'styles' reinterpreted in accordance with the existed materials and technologies. It is the fabric of cities as organisms formed according to this principle that creates the provincial charm or the charm of non-capital settlements.

Evidently, each new period of reform was accompanied by standard projects sent from central Russia, beginning with instructions for the construction of the first wooden fortresses, which landed more safely in the empty expanses of Siberia, and continuing with the master plans, which attempted to 'instil' external ideas and schemes, which already resembled models rather than types and caused the transformation of the territorial type, but not its replacement. Finally, in the period of the development of forms, there appeared, as an accompaniment, albums of typical facades, of drawings of model blocks, squares, which were supposed to be suitable for different situations. Types were formed and transformed not only under their own driving forces, but also under the influence of top-down ideas, while the awareness of other cultures brought a charming eclecticism to architectural images, interpreted in a particularly provincial way.

Thus, at the beginning of the twentieth century a type of Siberian foundation

city was formed, based on the combination of local traditional spontaneous patterns and ideal models of ideal cities or images of St. Petersburg and Moscow of that time. The Soviet period of dominance of the forms of avant-garde and constructivism brought new ideas and ideology, which also influenced type. First of all, it should be noted that the historical cities, which are the focus of this study, as a phenomenon contradicted the basic ideas and ideology of the Soviet Union, which was looking to the future and interested in building a completely different socialist settlement, while the idea of 'capitalist' cities had to disappear with the triumph of socialism. Later, an important case of the restoration of Moscow showed how it was possible to work with historic cities at a strategic level: accelerated industrialisation inevitably shifted attention to the big city. Ladovskii saw the future of large cities as centres of science, culture and social life, and did not believe that urbanisation necessarily led to skyscrapers. The role of the historical centre is interesting in this case. The ultimate goal was to transform historical Moscow itself into a central park of culture and recreation, where the ribbons of socialist settlement would converge. Ladovskii's ideas are important to study when working with large historical cities, as his urban theory was one of the most deeply developed, reflecting the patterns of real urban planning processes, considering the problem not only in space but also in time, perceiving the city as a growing organism - an interconnected urban environment rather than a conglomerate of streets, ensembles and squares. Most importantly, the period brought a redefinition of the dominating concept of type.

The Soviet period of development of the types of cities under consideration is very complex and non-linear. In fact, a closer look will probably bring to the surface several sub-periods or several parallel processes of formation coexisting at different stages. The main historically-formed morphological system, based on the codes described by Caniggia, remained relatively unchanged, constituting one of the morphological regions of the collage city, and was complemented by other types of morphological regions developed on the basis of the most powerful ideas. Among the large number of ideas of the fertile Soviet Union, this work examined several categories of the main ones that influenced or were reflected in the practice of real construction of cities in Siberia throughout the twentieth century. Once again, reality differed from the ideal plan. Ideas landed only partially, where possible, intertwined with the historical fabric, with noticeable bursts of form-shifting in polarities and nodes.

Evidently, in the Soviet Union, the concept of TYPE was consciously perceived

as the basis of architectural language and as a means of communicating new values, which is important. Typology in the Soviet Union was a top-down structure (as opposed to both Caniggian or Rossian notion of type). The Soviet type did not emerge naturally from collective cultural experience but was based on collected statistical data of a socio-economic nature. Thanks to this experience, it became clear that the purge of cultural continuity makes the approach based on pragmatic intellectual methods limited and even risky for local cultures and identities. It can be said that the basis of the new type of classless city of the Soviet period, corresponding to the ideology of communist society and equality, was reflected in the general idea of seriality. The idea of socialist settlement was based on reproducibility, repeatability and, as a result, a specific Soviet typology. This also corresponded to the ideological and economic needs of the time. It is therefore logical that the most successful ideas were planned to be replicated on different scales and in different ways. Perhaps most importantly, a large part of the country was created on the basis of this newly invented concept of type and typology. Thus, the most fundamental and radical change in this transformative period is the change in the very understanding of urban and architectural form (and with form, type): architectural form took on an ideological tone. This was followed by an ideological rupture with the continuity of past form and tradition, resulting in the destruction of the symbols of power of the previous period. Churches and temples that had previously dominated the skyline were demolished or rebuilt en masse.

The development of this phase in Central Siberia was radically different from the similar phase in the capitals: the ideas of the avant-garde did not find a Siberian form in practice. The period of transformation, which left a significant mark in Moscow, left almost no traces in the periphery, changes came much later. The initial changes did have a serious formal impact on Siberian cities: street names were changed to reflect the new ideology. The great Soviet 'idea of the city of the future' practically did not reach Siberian masterplans until the 1930s and physical form until a post-WWII period. Looking at the maps of some cities, one could imagine that someone had moved identical elements around in the structure of the city, as in a game, or the structure of a patchwork or collage. In general, maps from the beginning of the period show continuity and don't show any traces of utopian ideas, except for street names and a couple of new buildings. In the 1930s, urban master plans were drawn up in the spirit of the times, but there was no time to implement or even approve them because of the war, which brought with it evacuated shops and factories, often arranged in a chaotic manner. In the

post-war period, however, the ideas of the early period began to germinate in the historic cities of Central Siberia. What unites all the cities, however, is the presence of the old polarity at the confluence of the main rivers-roads, the polarity that later survived the polar-antipolar transformation and was eventually transformed into a cultural or administrative pole. It is usually linked to the second pole by a linear polarity that determines the direction of the city's development along one of the main rivers. Minor elements of urban identity, such as secondary important nodes, originally created for fire protection pools, are usually still linked to the linear polarity and still represent an important historical memory of the cities. It was in such a multi-layered, complex and gradual way that a new type of settlement - the Soviet 'collage city', the skeleton of which was the supergrid - emerged and took root.

There were many powerful ideas in the early Soviet Union, many of which are still influential but under-researched. These ideas are not the focus of this study. Rather, it is important to describe those that directly influenced the Siberian cities under consideration and to focus on the ways in which they intertwined with local urban forms, demonstrating the resistance of tradition and continuity. For example, the number of following ideas formed the new morphological regions of the resulting collage-like city in the process of intertwining. While the historical centres were a concentration of culture and production, the garden villages and linear settlements on the periphery became the way of life in nature, and the task of socialist culture was to harmonize the two. The decentralization of large cities was seen as a step towards the creation of a new city. An important principle was established, which was later applied to the historical cities of Siberia: suburban industrial settlements, developed according to one of the models of ideal cities or a collective image of these models, were initiated on the periphery of historical cities, mainly along the already existing directions of external development. In the post-war effort to purify and simplify, in the atmosphere of scarcity, all the ideas of the early Soviet period were reduced to a structural minimum. The concepts can generally be divided into urbanism (Sabsovič, A. Vesnin) and desurbanism (Okhitovich, Ginzburg). The suburban sprawl of working settlements of individual houses was perceived as a sign of the beginning of the collapse of compact settlements. A 'new settlement' (Okhitovich) - the antipode of the theory of the socialist city, the 'socially reconstructed' villa-based development of Howard's Garden City, the dispersal of settlement into individual residential cells (detached or blocked) scattered over a large area in nature. Okhitovich and Sabsovich were united in their rejection of



the capitalist metropolis: Sabsovich believed in cities of limited size, while Okhitovich rejected all compact settlements. The reality of the historical settlements was somewhat different: the rejection of these concepts of big cities by the proponents made it difficult for many real urban planning processes to communicate with them. For instance, the city of Krasnoyarsk remained village-like until the 1970s, which surprisingly did not contradict the concept of a garden city with individual workers' villas, a resilience in action: literally, when there was no financial support for changes, people carried on as before. According to the main principle of this study, the idea first 'run-in' in the cities of central Russia, followed by remote Siberian cities, transformed beyond recognition on its long journey to the Siberian city. It was planned not as the dissolution of the city into the countryside but the urbanization of the countryside, not the combination of factory work with rural labour but the industrialization of agriculture, not the allotment of land to workers but the liberation of the peasants from individual farming. However, the line proved to be too thin: in fact, the workers built the same village houses as before, while at the same time working in the factories, or settled in barracks. The morphological regions consisting of village-like workers' settlements could be found in the historical Siberian cities under consideration.

The next strong group of concepts can be summarised under the name 'linear cities'. Okhitovich's residential belts with cultural and public facilities along the ribbon of the residential zone connected to the industrial poles were partly reminiscent of Caniggian's matrix streets or the linear settlements of Soria I Matta, Spain; Benoit Levy, France, which connected existing compact settlements to industrial, cultural and social centres. The 'new settlement' influenced the projects of I. Leonidov (compact placement of industry with a linear layout of the residential zone). The flow-functional scheme of N. Milutin's 'Sotsgorod' offered industrial enterprises placed parallel to the residential development, closer to the residential quarters, allowing the linear city to develop in two directions. The urban area was spatially 'layered' in the following order: 1) the railway area; 2) the area of industrial and municipal enterprises and complementary facilities, scientific and technical educational institutions; 3) a green strip (protection zone) with a motorway; 4) a residential area with: a) a strip of public facilities; b) a strip of residential buildings; c) a strip of children's houses; 5) a park area; 6) a zone of state gardens and dairy farms; 7) a water basin (river, lake, large pond) adjoining the city line from the residential area. Inspired by these ideas, the entire right bank, and the development of the left bank of

the Krasnoyarsk River were divided into these zones along the river and the motorway. Okhitovich's residential belts with cultural and public facilities along the ribbon of the residential zone connected to industrial poles, or I. Leonidov's compact placement of industry with a linear layout of the residential zone, or N. Milutin's linear scheme of linearly placed industry could be found in modified and intertwined modes in the development of historical cities in Siberia, which began to grow extensively by means of such new morphological regions, with the preservation of the morphological region of historical center.

The next powerful concept was that of the micro-region (Mikrorayon). E. May's group developed a project for Magnitogorsk with its Magnitogorsk Iron and Steel Works, first for 120 thousand, then for 200 thousand people - a compact social city in terms of layout, consisting of the same type of blocks of low-rise buildings: the socialist city knows only one class - the class of workers. The aim was to create equally favourable living conditions for the entire population, both in terms of the internal organisation of the dwelling and in terms of its lighting, ventilation, economic and cultural services and communication facilities. In addition to linear settlements and the idea of the garden city, the general idea of the micro-district or microrayon - the apotheosis of typological thinking in the Soviet Union - contributed significantly to the growth of historical settlements, which were also integrated into the historical parts. The majority of not only Siberian, but also Soviet cities were rebuilt and expanded on the basis of the microrayon as a unit. Most importantly, the creation of the built form of such microregions was artificial and didn't lead to the creation of a social form.

When it comes to residential buildings in Soviet cities, it is also important to mention the waves of Stalinist neoclassicism and its successors, followed by the products of 'purification' - industrialisation and brutalism. Interesting is the dynamics of decorative trends: constructivist house > forms of constructivism intertwined with the local interpretation of neoclassical details > industrialized multi-family concrete block from the 1970s. During the Stalinist period, interesting adaptations of classical Italian palazzo models with a chain of sequentially arranged gardens appeared, which were used for university complexes (Tomsk) or complexes of administrative buildings (in Krasnoyarsk), etc. Such buildings and complexes often appeared on the territory of greater or lesser polarities and became a manifestation of the ideology and dominant values of the era. Elements of Soviet culture appeared locally in the new plans from the beginning of the transformative

period as a manifestation of the new ideology - houses of culture and palaces of administration in the nodes and polarities of historical cities. Since the 1930s, there has been a conscious reorientation away from socio-typological research towards the development of ceremonial compositions.

Thus, the principle of the fragmented structure of the urban collage, of the interweaving of different morphological regions, including the spontaneous traditional fabric, became fundamental for the development of big cities. A large number of new ideas, born in the first decade of Soviet power, grew into the existing reality in different ways, sometimes in parallel, sometimes sequentially, in the form of different flashes of trends: During industrialisation, for example, the ascetic ideas of Constructivism were developed and put into practice; in the pre-war period, new ideas and technologies intertwined with old, already familiar classical motifs; the ideas of new cities, linear settlements were embodied in a simplified form in suburban settlements for factory workers and, above all, in factories evacuated during the war. The gaps were filled gradually, with consolidation and the emergence of more advanced building technologies. The Soviet period, in particular, brought regularity and the repetition of identical modules - according to Caniggia, serial elements organised into a serial composition. The super-grid was clearly manifested in the structure of the pre-revolutionary historical parts of the cities, which were formed on the basis of the main streets of the orthogonal network of the historical fabric. The super-grid, superimposed 'from above', which later formed the basis of the cities, united 'ideal' factory settlements developing on the periphery and large areas of handicraft development of quite spontaneous working quarters. The role of the urban void, 'embodied' in disproportionately wide streets and huge squares without any particular programme, not always framed by facades (unlike a traditional Italian city, for example, where a square or a street has a façade, and the façade belongs to the street space no less than the building), constituted an 'embodiment' of power. The form of polarities changed according to the changes in ideology. The maps show the emergence of restructuring processes on embankments decorated as boulevards, new bridges and metropolitan centres, but also within the existing planning structure: new micro-regions of concrete blocks replace traditional wooden fabrics. The appearance of 'communal flats', the changing functions of former estates and villas, the disappearance of private property changed the social structure of the cities and the distribution of public/private areas. The added morphological regions, i.e. the elements of the collage city, extended beyond the natural morphological boundaries, the historical logic and structure were largely preserved, while the historical

wooden fabric was gradually destroyed with its restructuring into micro-districts on the periphery of the centres. In the 1960s, the aversion to the old city was so acute that entire districts were demolished without regret. In the 1980s, when there was much more new than old, the special charm of the old town, with its narrow streets and small courtyards, was appreciated again. Perhaps in the case of Siberia, collage was the best of all possible ways of development, and the worst outcome could be total demolition. In cultural terms, continuity of development suggests that each transformation should preserve the best of what was achieved in the previous phase and add to it what was missing.

Finally, Siberian cities are usually considered as replanned without taking into account the historical continuity. This thesis aimed to illustrate that this approach is not fully relevant by showing that the cities were characterized by strong morphological continuity and cannot be studied as entities formed by morphologically isolated periods. The processes of revealing the local language and reading the intrinsic characteristics of the urban form showed a relative continuity also at the strategic level, following the principles described by Caniggia and shared, with minor differences, by various places around the world. Siberian cities are united by the presence of the old polarity at the confluence of the main rivers-roads, the polarity that survived the polar-antipolar transformation and was eventually transformed into a cultural or administrative pole. It is usually linked to the second pole by a linear polarity that determines the direction of the development of the city along one of the main rivers. Minor elements of urban identity, such as secondary important nodes, originally created for fire protection pools, are usually still linked to the linear polarity and still represent an important historical memory of the cities. If we were to summarise the development of the Siberian city in Caniggia's terms, the Siberian wooden fortress was based on organic elements assembled into an organic composition, then the pre-revolutionary Russian Siberian city consisted of organic elements grouped into a serial composition, and the Soviet city consisted predominantly of serial elements formed into a serial composition. Speaking in terms of urban morphology, it can be argued that major socio-political changes, as a rule, quickly and directly changed the polar and nodal elements of the urban hierarchy, while traditions and local historical identity, which ensured the continuity of development and the connection of generations, were reflected in the vernacular and the urban fabric on a human scale, relational or community-based level. During the Soviet period, the dominant form of housing was 'revolutionised' from the manor house to the apartment block,

in parallel with the disappearance of private property. Newly invented Soviet typology became the manifestation of the break with the tradition, but paradoxically Soviet types contained the degree of continuity, which should be highlighted. Besides, the traditional way of life resisted for a long time: the map of 1967 shows the dominance of traditional wooden types. The stability and resistance of vernacular traditions against the background of socio-political transformations can be seen as a manifestation of local identity in the historical physical fabric. The Soviet period can also clearly demonstrate the ineffectiveness of 'invented' functional typologies. This phenomenon can be described as traumatic for both the social and physical fabric of the city. The whole structures of historical parts remained within the collages of exponentially growing cities, remained an element of such collages, connected by supergrids of streets. Finally, the low-density cities have been always defined by the dominance of voids over volumes. These voids are represented by enormous empty squares or wide streets that are not completed by the vertical of a significant building, but on the contrary open to nature - usually a huge river, a meadow or a park. Void is reflected in Russian and Siberian culture, from poetry to painting, and in the Soviet period it acquired an important ideological connotation. In the following research the typification of voids is important. The codes of form presented in this work can be interpreted by means of modern architectural languages and can largely inform projects for the development of architectural environments.

At the meso-level, identical traditional patterns have been preserved and resisted even in an atmosphere of radical change. First of all, the spontaneous communities of wooden settlements with their introverted nature, with entrances to the houses from the yards and high fences, refer to the old concept of the nest. Their existence until the end of the Soviet era, or even today, illustrates the resistance of culture at the relational or intermediate level (the level of the community as opposed to the level of the citizen or the level of society constituted in the urban structure). The estate itself, the 'usadba', with its plasticity and irregularity, as the main morphological unit, has largely defined the scale of the historical part, even after the periods of transformation. The strong differentiation between public spaces (streets, squares) and private spaces (the collective privacy of the family hidden behind the fence of the estate), or 'clean' and 'dirty', is still emphasised by the necessary presence of a transitional space between public and private, inside and outside, or the necessity of taking off one's shoes to enter a clean or private space. The traditional need for a space of passage between

the private and the public led to the construction of second doors at the entrance to the flat, to gardening - the fencing off of small individual front gardens with flowers and vegetables in the courtyards, in the vestibules, in the tambours. The inhabitants of the first floors added balconies. Garages were built in the courtyards. The traditional habit of numerous storage rooms in the traditional Siberian house forced the inhabitants to convert balconies into storage rooms, to complete numerous storage rooms in the apartments themselves in the form of mezzanines, to create improvised collective storage rooms in the courtyards.

The study is valuable for a number of reasons. First, as already mentioned, it conceptualises the historical data available on the urban form of the specific category of cities - colonial or foundation cities, originally located at a distance from the colonising cultures and developed under the periodic influence of external ideas, forming local identities through the intertwining of the local and the new, in the context of the lack of historical data and archaeological excavations. It enriches international literature and culture by bringing Siberian cities into the intensified scientific discourse. Usually, Siberian cities are considered as replanned without taking into account the historical continuity. This thesis illustrates that this approach is not fully relevant by showing the presence of a distinct historical continuity. The study highlighted and practically illustrated the difference between the variety of definitions of form and type and the influence of the dominant concept on the development of urban form. Importantly, the work shows how the transformation or evolution of the concept of type for the certain place, which defined the urban form of the cities under consideration. The given work reconfirms the effectiveness of the extended typological-processual approach to urban morphology as the basis of the research methodology aimed at the conceptualisation of the urban form of a certain type of Siberian foundation cities - underexplored urban context. The second and third chapters of the given work aimed at demonstrating the possibilities of typomorphological reading in the study of the history of the development of historical settlements. The conceptualisation proposed in the work can be used as a basis for architectural and urbanistic projects of non-destructive development of the historical territory, contribute to the decision on the location of the building, its spatial, constructive solution and functional content, help in the development of the master plan, landscaping design, etc. through the grammar, type and typology translated in local designs. This is particularly important for Siberian cities, since not many historical maps have been preserved and are available: urban form reading allows

to propose hypotheses of formation and transformation, to fill in the gaps of morphological genesis. It is safe to speak of the great potential of the physical form of the city and historical maps as the imprint of a series of measures taken once in accordance with the solutions to existing problems that were relevant at that time. Knowing the layers of local palimpsests, architects can practically choose which layers or values to reinforce in projects. Morphological hypotheses should be proved and or developed further.

The connection between phenomenology and typological-processual approach to urban morphology, which was revealed during the literature review, deserves a separate investigation. Finally, since our perception is type-based, typification is necessary and inevitable in the process of reading and interpretation of form. Indeed, human action and perception are imprinted in physical forms. The psychologist Arnheim argues that 'certain arrangements of lines and shapes correspond to certain emotional states, or rather we should say that certain structures have certain limited possibilities for receiving content, we do not play a Viennese waltz at a funeral' (Norberg-Schulz, 1968). 'Our actions presuppose an organisation of the environment [...] The objects, or the form we give to the world, are expressed in our behaviour' (Norberg-Schulz, 1968). In practice, continuity in the development of urban form facilitates continuity in immaterial forms (human behaviour), building palimpsest. By reading and reproducing urban form, we can potentially facilitate the reproduction of immaterial forms. However, not everything that is important is always imprinted in urban form. Le Roy claimed that we need to 'use the potential of drawings as diagrams to methodically analyse buildings and their design, both typologically and morphologically, and thirdly, to recognise psychology as an important aspect of the reality of architecture' (Jacoby, 2013). Plato (like Aristotle) compares the impressions that perceptions leave in the memory to the impressions of a signet ring in wax. Type here means either the impression or the perception itself (Ritter, Gründer, & Gabriel, 2007). So, we can only experience our concrete life-world relatively, through typification. Therefore, perhaps type is an answer, and tangible and intangible forms should be studied in parallel to better define typologies. Knowing what kinds of associative perceptions, relations, behaviours, feelings or sensations exist in relation to certain types in architecture, is it potentially possible to consciously design such architectures of spaces, expecting continuity or a certain set of reactions or perceptions from the viewer or the inhabitant of the environment? Therefore, shouldn't the morphological notion of type

acquire a phenomenological understanding in order to become a means of transition to phenomenological form production, an 'entrance door' to the practical production of phenomenology-based architecture? With the deep and extended understanding of type, architecture will not be limited to designing simple tangible parameters of form, but will also take into account the principles of perception at a deeper or higher level that goes beyond materiality. This work has shown a persistent continuity in the development of local characteristics of urban form at the relational, intermediate or neighbourhood level. Traditions and local identity, which ensure continuity of development and connection between generations, are reflected in an intermediate, relational or so-called meso-scale - the scale of community, that is taken into account by relational approaches in various disciplines, based on relationships within a social group, the quality of life depends on it. Thus, the typological approach can and should be further refined and clarified by situational typification or the specificity of social relations at the intermediate level. For example, a community living in a given area may, according to its own rules, define the boundaries of the residential area, which will be different from the existing physical, individual or institutionalised cadastral boundaries. It is at this level that the type is often formed, which carries local cultural specificities and identities. It is important to note that this level of research can and should be used in design practice, especially when dealing with cultural objects and the historic environment. The given research also highlighted the importance of the intermediate scale.

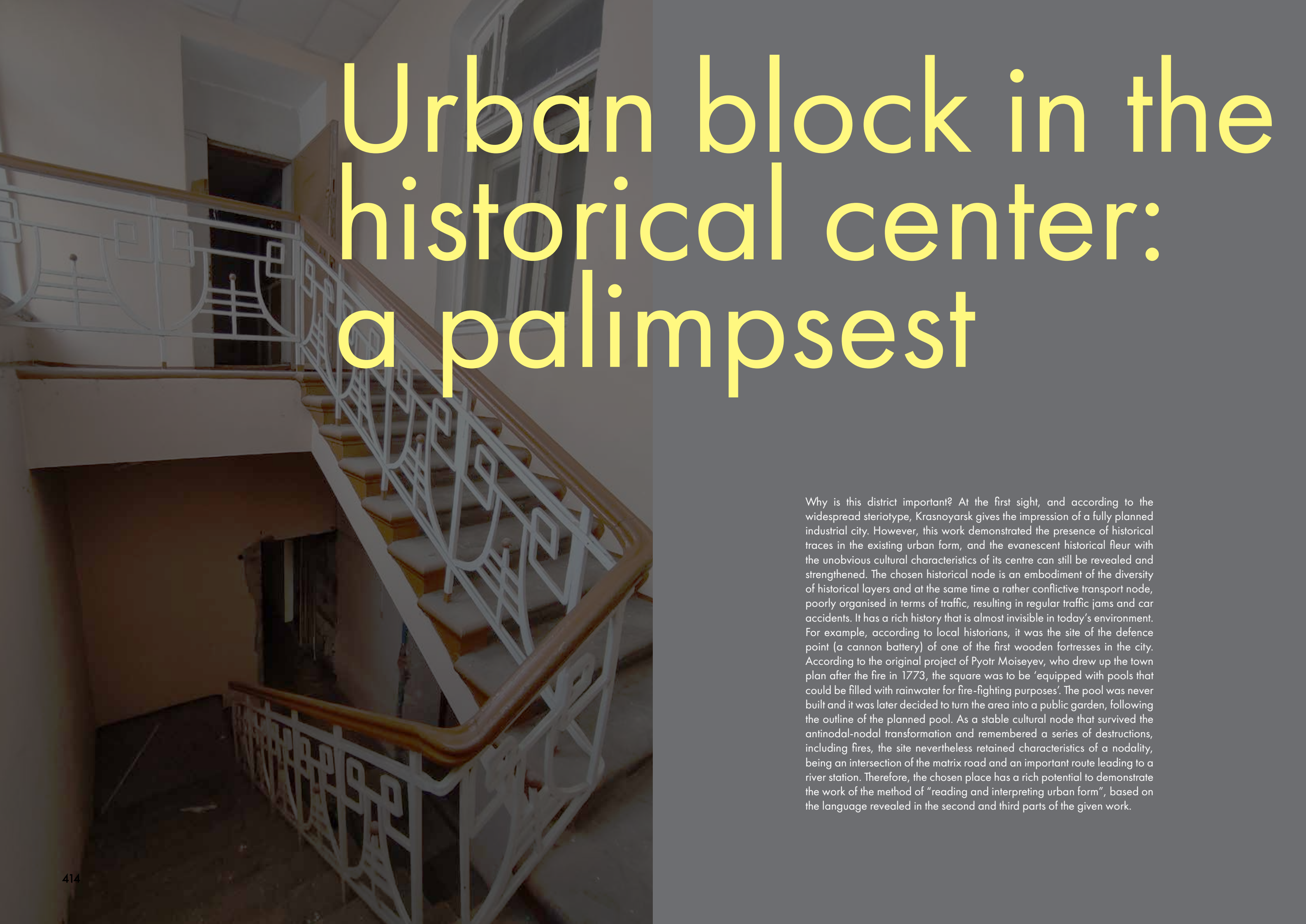




# READING, INTERPRETING URBAN FORM

Illustrative Appendix





# Urban block in the historical center: a palimpsest

Why is this district important? At the first sight, and according to the widespread stereotype, Krasnoyarsk gives the impression of a fully planned industrial city. However, this work demonstrated the presence of historical traces in the existing urban form, and the evanescent historical fleur with the unobvious cultural characteristics of its centre can still be revealed and strengthened. The chosen historical node is an embodiment of the diversity of historical layers and at the same time a rather conflictive transport node, poorly organised in terms of traffic, resulting in regular traffic jams and car accidents. It has a rich history that is almost invisible in today's environment. For example, according to local historians, it was the site of the defence point (a cannon battery) of one of the first wooden fortresses in the city. According to the original project of Pyotr Moiseyev, who drew up the town plan after the fire in 1773, the square was to be 'equipped with pools that could be filled with rainwater for fire-fighting purposes'. The pool was never built and it was later decided to turn the area into a public garden, following the outline of the planned pool. As a stable cultural node that survived the antinodal-nodal transformation and remembered a series of destructions, including fires, the site nevertheless retained characteristics of a nodality, being an intersection of the matrix road and an important route leading to a river station. Therefore, the chosen place has a rich potential to demonstrate the work of the method of "reading and interpreting urban form", based on the language revealed in the second and third parts of the given work.



One of the historically rich blocks, the importance of which is underestimated today and almost invisible at first sight, is attached to the selected historic node. Firstly, the selected block is adjacent to the matrix road, which has long been a linear pole. Secondly, the urban fabric of the block has undergone significant changes over time and today the traces of almost all possible eras can be found in it - from several important architectural monuments and the oldest stone building to the remains of industrial buildings from the Soviet era, which were recently demolished, and buildings from the most recent period, which illustrate the modern architect's view of working with the historical environment (the historical monument is physically incorporated into the new office centre). According to local historians (Gevel E.), there used to be a monastery chapel near the wall of one of the first fortifications, the Great Ostrog, which ran roughly along the western boundary of this quarter, while the wall of an earlier fortification ran roughly along the eastern boundary.

As mentioned above, there is much to uncover, and the following morphological sketches of ideas are intended to demonstrate this. They don't offer ready-made solutions or 'scientific discoveries', but rather the first hypothesis and some ideas that emerge naturally between reading and interpreting in the process of reading urban form. Nor does this interpretation claim historical accuracy. Rather, it is a tool for an architectural understanding of the genesis of form in the city. Finally, following the principles of phenomenology-based architecture, hand-drawing has been used as a research tool for a potentially more sensitive and meaningful design.

Zooming in further, one could find an important historical mansion that has survived the history of radical changes and is currently abandoned. Built at the end of the XIX century, the building belonged to the family of

merchant I.G. Gadalov. After the building was completed, a grocery store was opened on the ground floor and the second floor was rented. In 1987, during the work on the identification and certification of architectural monuments of the Krasnoyarsk Territory, the Laboratory of the Architectural Heritage of Yenisei Siberia (at the Krasnoyarsk Institute of Civil Engineering), Yu. Grinberg, O.P. Gulevich and K.V. Yamshchikova compiled primary historical documentation, from which it could be clarified that this building was made in the rational forms of the eclectic period (with 2 store-houses) - in 1876. Since 1913 (according to the local historian I.F. Potapov) there was the office of the city administration (on the ground floor). In 1918 the nationalised management of the river navigation company was located here. In 1923, the building housed the provincial military recruitment office. On 21 August 1931, by order of the People's Commissariat of Health, the Eastern Siberian Water Health Department was established there. In 1994 it received the title of a clinical institution. In 2010, a fire broke out at the cultural heritage site. No emergency and conservation measures were taken. Repair and restoration work has also not been carried out. The building is not currently in use. The monument has retained its original appearance, with some of the original structural elements (roof, window sashes) being replaced with new (different) ones during the repair and restoration works (and doors in the 1970s). This property of I.G. Gadalov is an authentic source of the history of Krasnoyarsk architecture of the late XIX - early XX century - the period of eclecticism and a valuable object of architectural heritage, which is of special importance in the city. Moreover, a cursory glance at the building's plan reveals a number of transformations that have taken place in the building, making it especially interesting for the urban morphology. The existing form of the building, formed by the serial repetition of rooms and closed in a ring, makes it similar to the nodal building of the palazzo type, the possible genesis of which is well represented in the urban morphology and could therefore enrich the project.

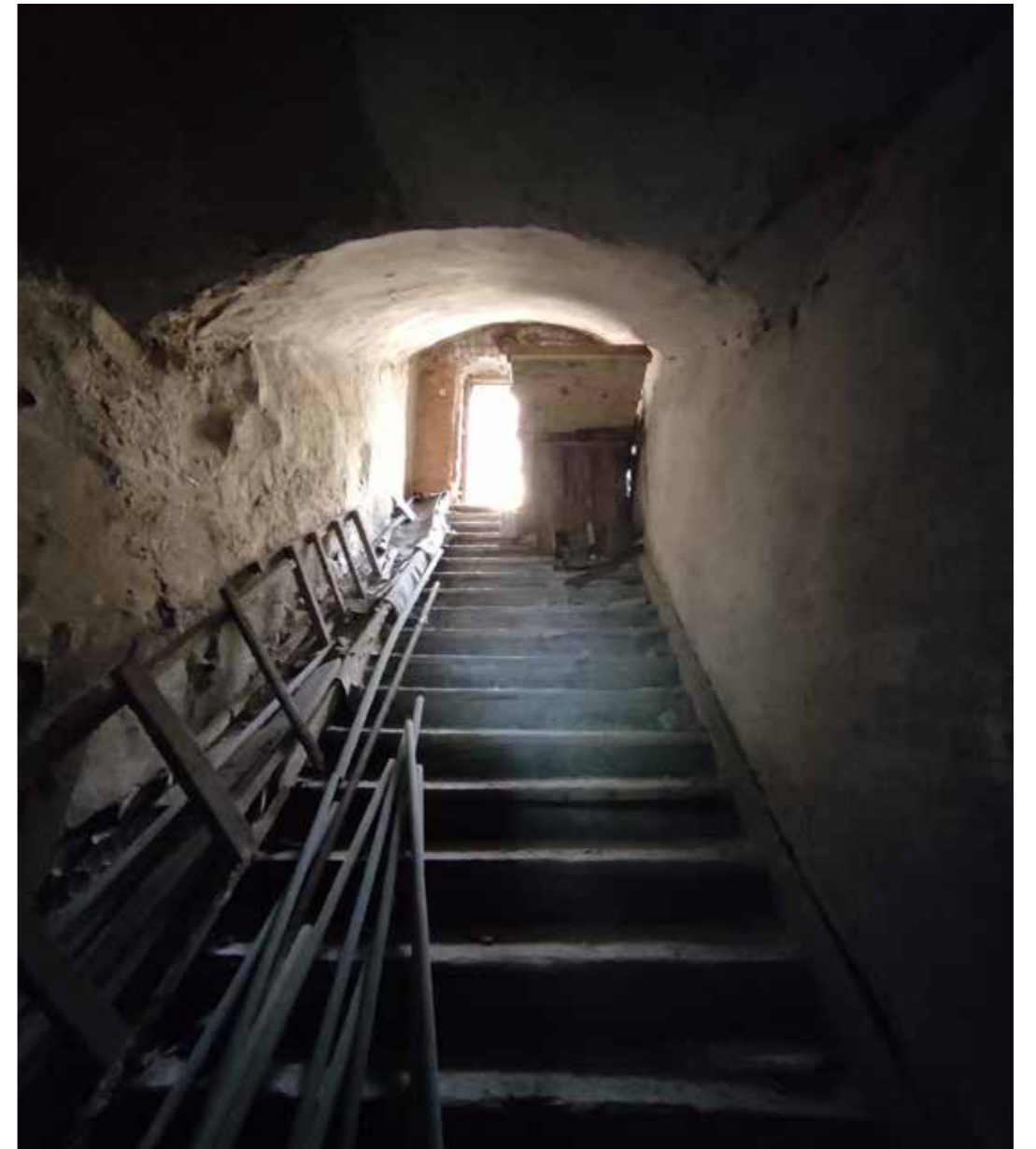


Figure 158. The details of old mansion. Photographs: M. Ogleznev.

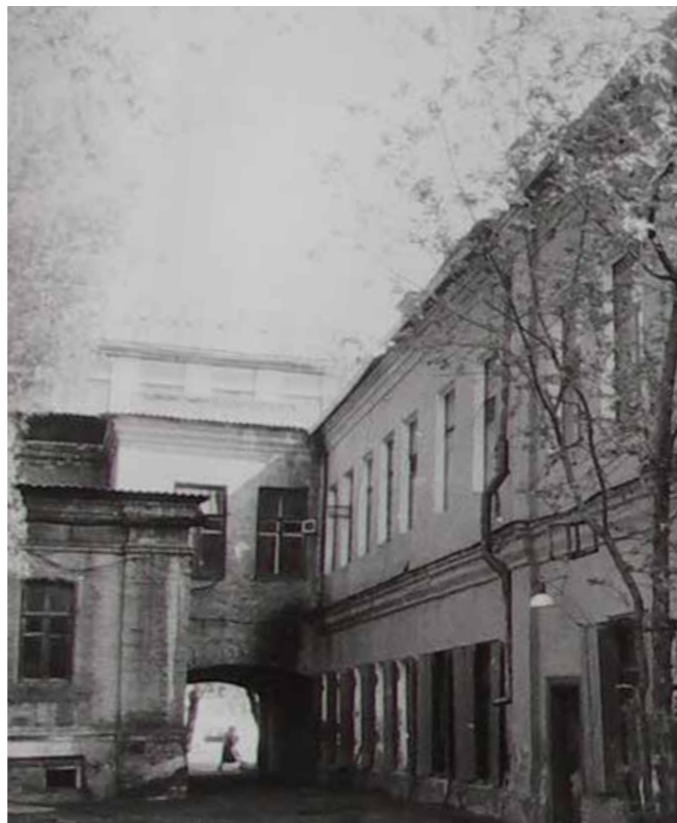


Figure 159. The historical photographs of the buildings of block (Photographs are provided by Krasnoyarsk Regional Local Lore Museum)..

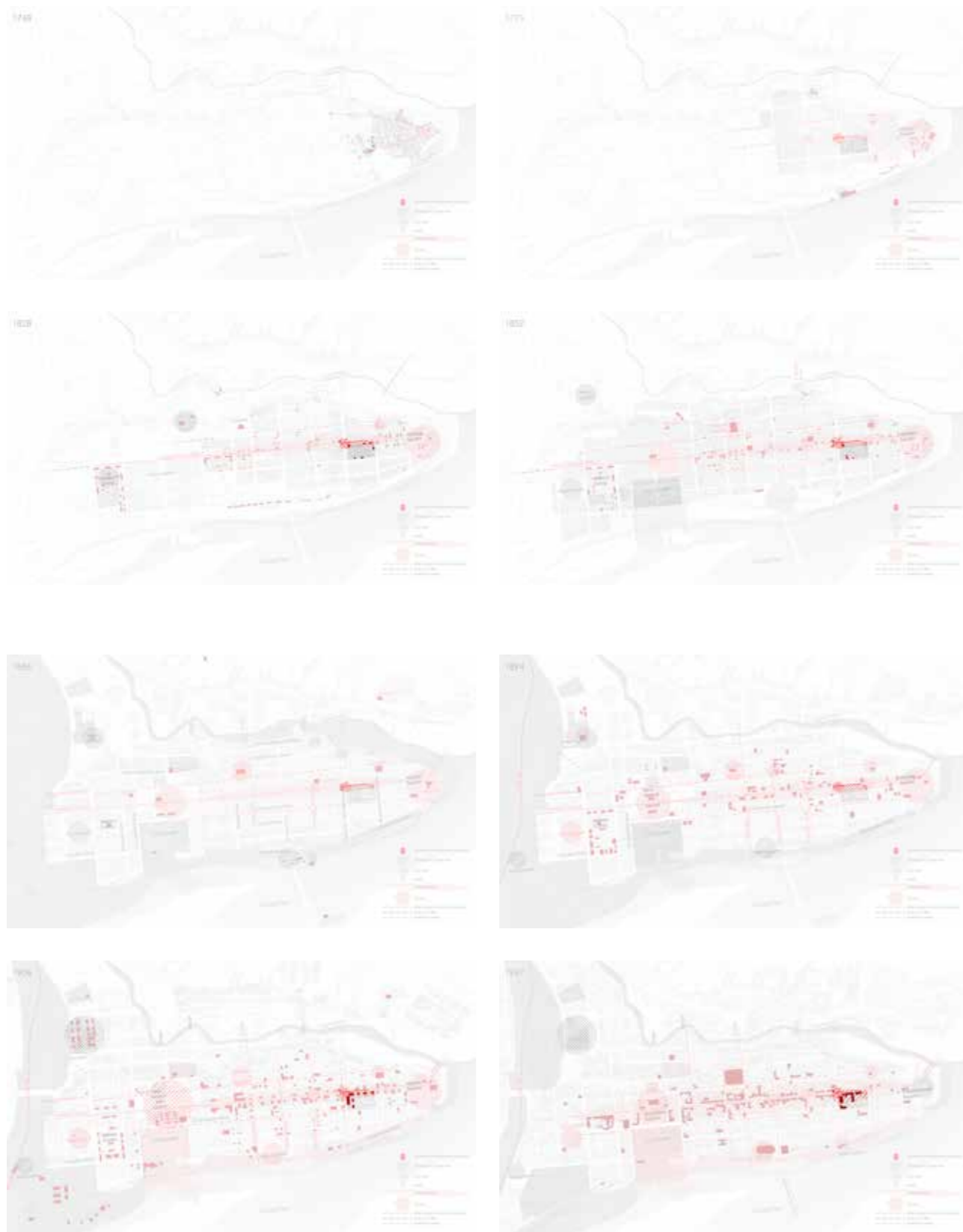


Figure 159. Historical block in the process of formation of Krasnoyarsk city center.

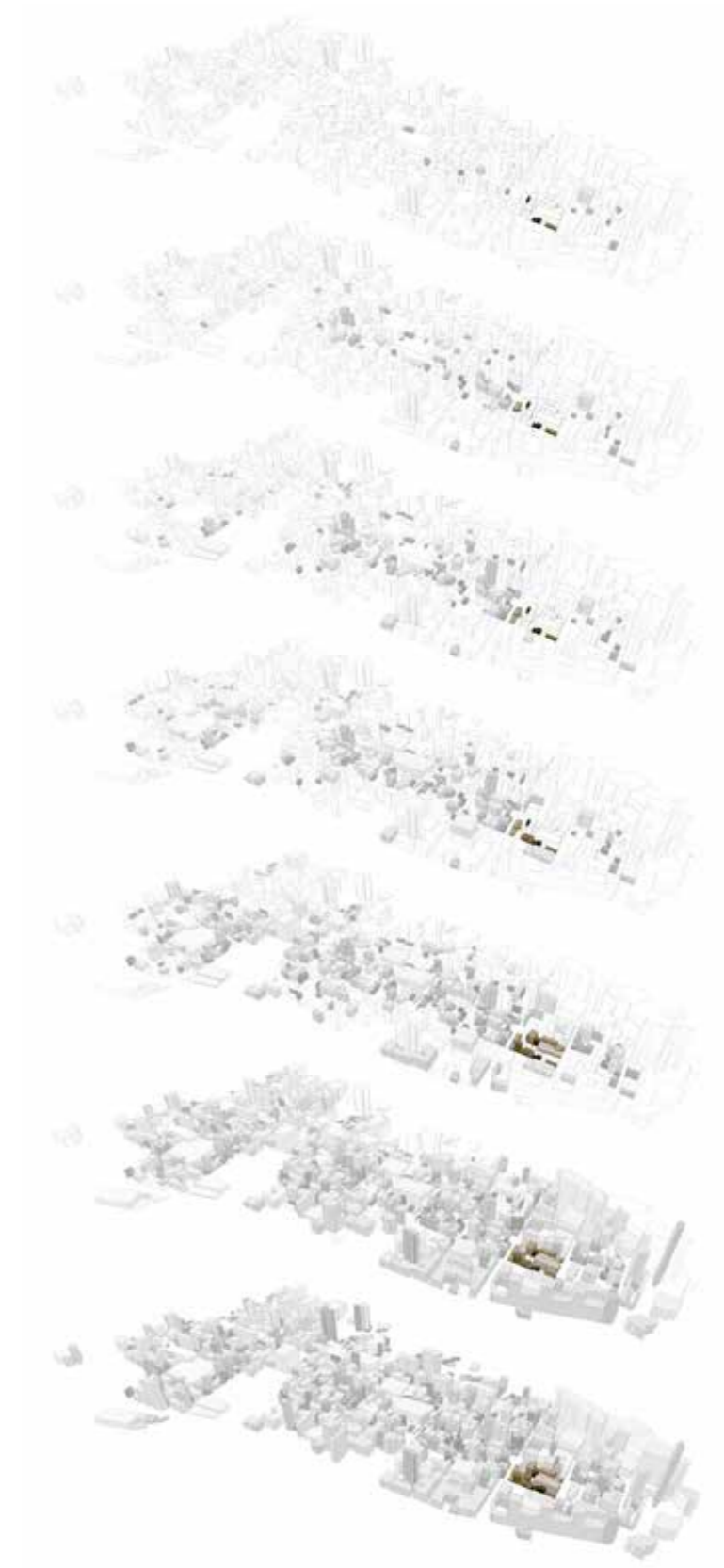


Figure 160. Historical block in the genesis of urban form of Krasnoyarsk.

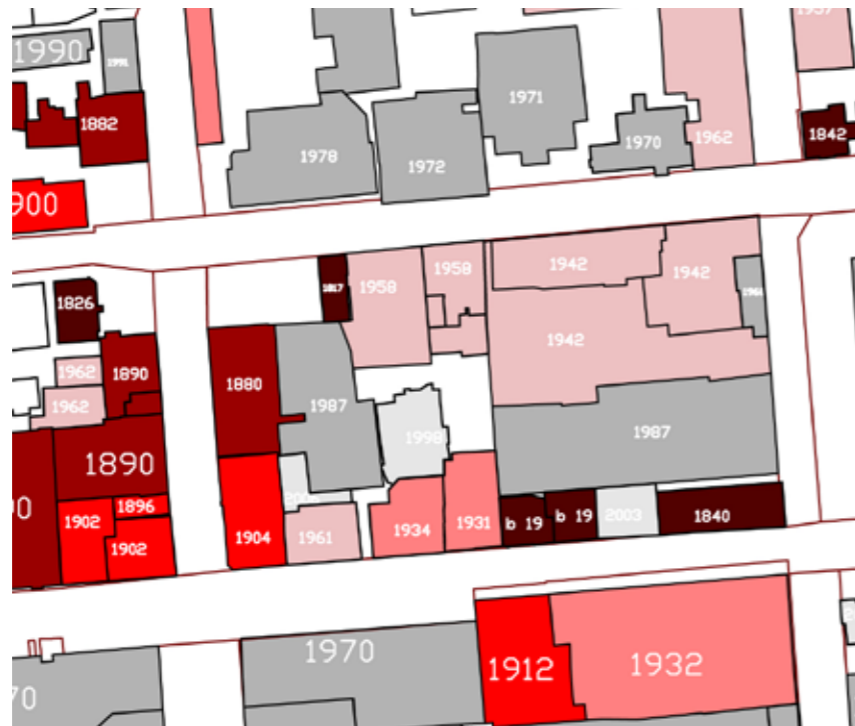


Figure 161 The existing buildings and years of construction on the cadastral map.



Why is this building socially and culturally significant? The 'PUBLIB Project: Archaeology without a Shovel' can prove its importance. In 2021, 12 artists from all over Siberia, led by Grecht and Tanya Chernomordova (St Petersburg), attempted to restore the historical and cultural significance of an abandoned merchant's villa. The artists were not satisfied with a simple study of the mansion, they went further and deeper - they studied 'all the stones and nails' in the neighbourhood, collected thoughts and rumours: 'What is a 'cultural heritage object' nowadays? How do you find history under your feet and above your head? How can everyday life be museified? The aim of PubLab is to trace the impact of art on urban space and citizens. Representatives of urban and local communities were involved in the process. The building is also attached to the art museum (located in the other Gadalov villa). In the future, it is planned to open an exhibition hall of the Museum Quarter in the building, thus uniting two estates.'

Figure 162. The periods and years of construction of the existing buildings on the cadastral map.



Figure 163. PUB-LAB: the photographs of organisers.

This project aims to facilitate local cultures and identities at an intermediate level of community relations and at the centre of local cultural activities. In cities with a reliance on small businesses and local communities, polycentrism and dispersion of the structure, the dominance of the concept of 'pole' is less clearly visible. Therefore, if the city is focused on residents and the development of local cultural tradition, it is necessary to give priority to the development of local nodes. The selected node and the corresponding neighbourhood illustrate the diversity of historical layers, but their heyday was between the mid-19th and the beginning of the 20th century. The newly emerging nodes provided orientation, served as centres of social significance, and their functions were often reflected in the street names. These were the centres of social life, the places of the most important architectural complexes of old Krasnoyarsk. This period corresponded to the positive complication of the social and cultural life of the city, which, together with the variety of nodes and decentralisation, brought with it various educational and cultural buildings. This is why this period should be morphologically highlighted in the project as the most 'identity-forming'.

The first period of formation left the following traces in the considered place, possibly defining the current configurations (archeological excavations were not conducted). The directions of the external roads, their positions and forms defined the positions of city gates and the main internal roads of the first wooden fortifications. The approximate positions of the former city walls [2] were later transformed into streets (numbers refer to the fig. 170). According to Gevel's research and the superimposition of the oldest maps, the south-eastern corner of the block - the intersection of two important roads - is the location of the former gate [1]. The location considered was initially antipolar, marked by the monastery chapel [3] near the city gate. A 'natural' feature of the city is the presence of 'void' - an empty field within the town [4], a meadow separating the town wall from the neighbourhoods, etc., together with the 'poetic' or even 'melancholic' connection of the settlement with the landscape. Low density is still an important characteristic of place, therefore the radical densification may destroy the identity of the place.

The new regular plan of 1775 was a geometrically 'corrected' expression and reinterpretation of the old spontaneous plan, while maintaining the hierarchy of elements at a fundamental, strategic level, such as the number, position and hierarchy of streets, the main direction of development, the positions of the main nodes and poles, the organisation of spontaneous blocks within this hierarchy is the specific expression of continuity in urban form, and the selected block is a visible embodiment of this principle or planning module. Therefore, these strategic characteristics should be revealed and highlighted.



Figure 164. Historical block (in yellow) and the genesis of urban tissue.



Thus, the second phase saw the introduction of regular structure, which ultimately resulted in the intertwining of regularity and spontaneity to create a unique local urban form. Instead of Catherine's ideal neighbourhoods, with an even distribution of plots and perfectly planted houses, with corners marked by special corner houses, in fact, between the fragments and episodes of regular plans and the intrusion of the author's architecture, real life took place on, with its imperfections and the dominance of vernacular traditions. The nests of connected estates - 'islands' of development with gaps between them in the structure of local villages, and the synthetic combination of a free plan with a regular one, characterised the selected block: 'organic elements grouped in a serial composition' - a result of interweaving of spontaneous and regular building structures. This structural principle is visible in the existing form of the considered block and should be emphasised.

Each estate of that period resembled a 'fortress' - the introverted, fenced-in courtyard house with the significant importance of the notion of family privacy. In fact, according to the photographs and the remains of later materials, the perception was the same: the block was a collection of attached small 'fortresses', completely surrounded by fences (later - stone firewalls), not transparent. Thus, the block was perceived as a unit, the internal structure of which was less important, spontaneous and changeable. The grids of blocks, initially planned similarly to those in St. Petersburg, created a series of rectangular, elongated 'islands' formed by the traditional spontaneous wooden fabric of the 'usadba' houses with their plasticity and irregularity - introverted 'nests' or communities of courtyard houses with their charm of wooden urban fabric, marked by the mansions of estates of rich merchants built in the islands of peasant estates. The imprints of this principle can still be seen in the block under consideration, based on the traces and historical maps, informed by the principle that the plots of land traditionally varied between approximately 1500m<sup>2</sup> and 2500m<sup>2</sup> [5]. A careful analysis of the configurations and traces shows that the initial structure of the estates still defines the existing configurations and should be highlighted.



Figure 165. Historical block and the genesis of urban tissue. a - the general principle of spontaneous block in Krasnoyarsk; b-d - changes of urban form.

In the 19th century, streets and internal squares were perceived as empty spaces between communities or as islands of communities of the attached houses. In a traditional Russian city, roads began to be called streets only in the XIX century. In Krasnoyarsk they were rarely paved, but it is still possible to find an originally paved street from the end of the XIX century in the old districts. The paving material consisted of large uneven cobblestones tightly packed in the pavement, and it is possible to reproduce similar method in a project with the use of contemporary techniques. The space between the buildings and the street, currently divided by a fence as a means of pedestrian protection, is a product of the recent period. The project proposes the reorganisation of the currently inadequately structured road system and their intersection in the considered node into a paved continuous space between the buildings, combining car traffic and pedestrians, to delimit the transit character of historical routes and give priority to pedestrians, to reduce traffic speeds, making the space safer, reinforcing the historical memory of the dominance of the road-void, a space between. [7]

Two of secondary nodes of the old regular plan (previously planned for fire-protective pools) were transformed into small parks at the intersections of the main street Voskresenskaia (now Mira) with cross directions in the XIX century. They were called 'pedestrian' squares - Vladimirskaia (the node chosen for this project) and Pokrovskaia, where fire pools were previously planned. The pool wasn't built in the selected node, but instead a small park was organised in the centre [8] - an echo of Catherine's quest for ideal regularity and landscaping, which belatedly reached Siberia in a transformed manner. These intersections (the current Mira/Parizhskoi Commune and Mira/Surikova Streets) were widened and organised in the form of wide nodes, 'polarised' by the Pokrovskaia Church and the houses of important merchants. Thus, these nodes are also the important memory of the city. It is proposed to interpret this principle. Gevel also mentioned the front yards - 'kurdonery' (where buildings were placed deep in the plots with little green squares in front of the street), which began to form in the period of classicism and continued in the period of eclecticism with the construction of large public buildings, they framed the selected node (Gevel, 2012). Since the original connotations of the forms were not available, new connotations developed: the Italian concept of the piazza took on an inhuman scale in St. Petersburg (the ideas of pompous paved squares of St. Petersburg framed by ideal rhythms of facades) and ended up in Siberia as an urban void framed by fences of estates. Photographs and paintings of the XIX and early XX centuries give an idea of this phenomenon at

the historical node under consideration: instead of intersecting wide avenues there were wide unpaved roads, drowning in mud in autumn and spring, during the rains. Catherine's pompous regular parks landed in Siberia in the form of cosy, fenced irregular squares with natural greenery, and the chosen node is no exclusion. It is possible to reinterpret a cosy little green zone in the middle of a crossroads, organising the existing chaotic traffic differently - rather in the form of a roundabout or a small green space in the middle of a paved road with slow movement together with limited access of traffic. In addition, the reference to Catherine's quest for 'regular' greenery can be embodied in the centre of selected block in the form of small regular park or gardens presumably at the place of the demolished building [9].

Interestingly, the phenomenon of 'gated communities' is still visible in the city (it reappeared after the fall of the Soviet Union), with the stable importance of fence and fencing. The transition from the house to the street was made by the gates of the estate, rarely by the direct entrance to the house. This tradition has been preserved for a long time and was visible even in the Soviet period, in the construction of apartment blocks. The method of organising direct street entrances was inconvenient for the estate, as there was a need to make another exit to the site, and additional doors meant the additional heat loss [10]. In front of the house or behind it, there were often mini-gardens - 'palisades' where cherry trees, sea buckthorn, raspberries and currants grew. Today, instead of 'palisades', lawns in front of the buildings serve the same purpose, and this should be revealed, but reorganised in a less rigid way. The same phenomenon can still be found in Krasnoyarsk, where citizens organise home-made mini-gardens in front of the windows of the first floors of large apartment blocks. The traditional principle should be retained: it should be possible to enter the building only after entering the inner courtyard.

The city was getting a new 'face' in the form of ensembles, merchants' villas in the XIX century. Peter set up a special architectural committee, headed by Betancourt, whose job was simply to examine, approve, reject or modify projects for new facades. As a side effect, the separation of the façade from the house was not in doubt, but even played the role of an unconditional ideal (Glazychev). Individual representatives of the buildings that have survived to the present day confirm what Glazychev said about the combination of traditional plans and exemplary facades. Of particular interest is the frequent phenomenon of combining a facade from an album of exemplar facades with a plan that came from a wooden log house. The consequences have been visible for a long time. In fact, this separation and inconsistency between facade and plan is still found in the typology. For example, the mansion in Krasnoyarsk at Mira Street, 29 (one of the buildings of the block under consideration), built in 1817, when albums of typical facades were already appearing, has the typical plan of a traditional log-wooden house, but has already acquired a 'exemplar' facade, which is proved by the logical discrepancy between the plan and the facade of the building. From a research and typological point of view, however, it is the transformation of the existing type under the influence of external models and ideas, the interweaving of the existing vernacular tradition with external ideas and 'styles', reinterpreted according to local materials and technologies. It also forms the 'provincial charm'. In addition, decorative elements from the Baroque architecture of stone houses penetrated into the decoration of wooden buildings - curled volutes converging into a palmette, curved window aprons. Ultimately, the awareness of other cultures brought a charming eclecticism to architectural imagery, interpreted in a particularly provincial way. Interestingly, Stalinist classicism combined the forms of constructivism with the reinterpreted decorative element of classical architecture, sometimes in a quite elegant way - again, the intertwining of local and foreign. The selected blocks contains the wooden buildings with the 'exemplar' facades and the Stalinist decorated multifamily houses - important imprints of both epochs.

Since the Gadalovs occupied most of the plots on different sides of the square, it is safe to say that the identity of the whole node was defined by the name of the Gadalov family. The Gadalov dockyard was located at the southern end of the street connecting the node with the Yenisei River. This emphasises the importance of highlighting the unity of these nodes. This unity can be

emphasised in the project by paving the selected Dubrovinskogo Street from Matrix Road to the Yenisei River, giving priority to pedestrians and naturally reducing the speed of traffic and accessibility.



Figure 168. The complex of Gadalov's estates and its connection with the direction of former docks - now the river station.

The following characteristics of traditional housing should be taken into account when designing new buildings in the selected area in the process of renovation. Usadba initially consisted of two parts - courtyard house and vegetable garden, combining undivided work and living functions [12], builders tried to orientate the house towards the sun so that they could make the most of solar energy through openings, usually the windows of the main rooms and exterior doors were oriented to the sunny side if possible. The Siberians designed the wooden pitched roofs of their houses with particular attention to rainwater drainage and thermal insulation, these roofs together gave the sculptural appearance of the block of communities of this type of houses. Importantly, house included significant amount of storage in a private yard space [13] and 'niches' right in the bodies of walls of multifamily blocks (analogous to the niches in the body of huge stove) for the economy of space survived until the middle of XX century. The characteristics described, which show stability over time, indicate the local values of this society and should be taken into account when planning the development of the historic area. The described set of formal principles should be a basis for new projects and the projects of restoration within the considered block, which still contains the number of estates.

In the early period of its existence, the city was completely destroyed by two major fires - in 1773 and 1881 - in addition to the constant small fires. The new planning structure of the city, almost completely burnt down by the first great fire, was based on rectangular blocks with double-row farmstead buildings

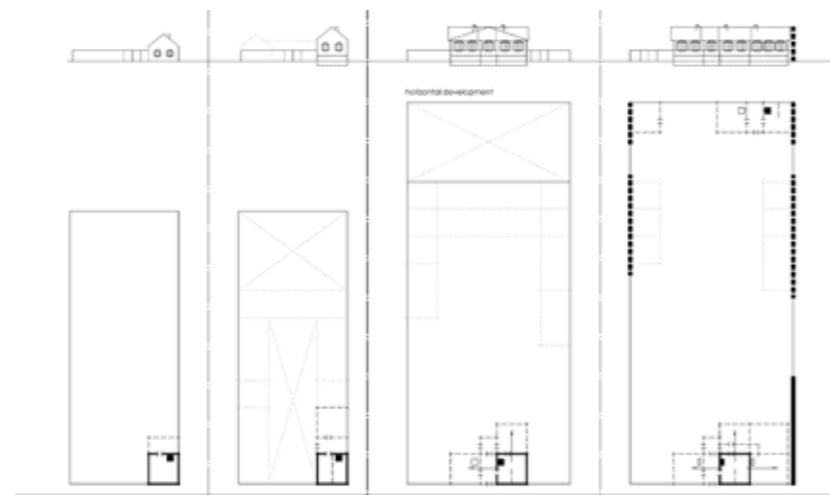


Figure 166. Typical structure of the estates

(Bykonya, 2013; Gevel, 2012). Firewalls, which appeared as a preventive measure, as manifestations and memories should remain or be restored [6] in the block under consideration.



Figure 167. a. Fire wall; b. 'organic elements grouped in an organic composition' + 'serial elements grouped in a serial composition' = 'organic elements grouped in a serial composition'.

In the late Soviet period, the reconstruction and redevelopment of the central part of the city corresponded to the development of new forms of social life and ideology. Morphologically, 1914-1941 is the period of the beginning of restructuring processes: from the historical patriarchal city, Krasnoyarsk gradually turned into an industrial city, which affected the scale, the notions of public/private spaces, the naming of streets and squares, the absence of private property, etc. The Soviet period brought a number of changes to the selected block, including a change in the scale of interventions and, most importantly, the industrial fleur, here embodied in the chocolate factory (left as a footprint and should be revealed).

The urban form of historical core did not change significantly in the Soviet period: the map of 1967 still shows the established structure of spontaneously organised joined estates. The 'collage' principle of development and fragmentary approaches prevailed: early and late Soviet blocks were inserted into the district without taking into account the existing forms. The chosen block is the embodiment of such a collage, the irreversible imprint of history [14]. Today, we cannot completely demolish or erase unbalanced elements, and this makes no sense, but there is a chance to harmonise elements of the palimpsest. Glazychev argued that the idea of the 'garden city' has been reinterpreted into an 'effective' micro-district, which, with the growth of large cities, has taken the place of the old quarter (Glazychev, 1987). As a matter of fact, in a big city the links between neighbours, who were forced to settle down together immediately, are much less important than the contacts at work, which resulted in the absence of clearly defined spatial boundaries, in psychological difficulties in recognising spaces as 'one's own', etc., and therefore the mikroregion did not become a formative unit in social terms. In the early Soviet period, several blocks were built near the perimeter of the selected district - forms of Stalinist architecture, but simplified as much as possible; they should remain as a record of time, but efforts should be made to facilitate community relations and connections in the district by strengthening existing social processes and creating spaces with an open agenda (e.g. communal gardens on the footprints of former estates). [5]

Architectural and urban form in the Soviet period became explicitly, deliberately symbolic, sometimes in a negative way. Some buildings disrupt the overall

structure and connectivity to such an extent that they should probably be left in the block in the form of a footprint rather than a distinctive physical form. By chance, the high brick block was built in the centre of the district in the place of the former monastery chapel during the late process of densification, which happened quite often in the Soviet period. In the same year (1987) a large extension of the confectionery factory was built, which was completely out of scale and has recently been demolished, but the footprint of it should be revealed [15].

The scale of the fabrics became radically different: the streets can be roughly divided into streets of metropolitan significance and the significance of neighbourhoods (nested principle). An enlarged scale of cells also appeared naturally within the historical territory before the urban revolutionary processes in the form of a hierarchy of streets in the orthogonal grid - some of them of metropolitan significance, some - of local significance. They formed superblocks, supergrids, which were later transformed into Soviet microdistricts. It is important to decide whether the selected node should be included in the supergrid or not: if it is included, it risks losing the characteristics of local cultural dominance and being incorporated into the larger economic and infrastructural networks. Therefore, the district should be included in the network of local significance.

The chosen area is also important because of its linear polarity. All the master plans established the importance of Mira Street as the main planning axis and development vector. The fact of development of linear polarities in Siberian cities can tell about the less strong and less centralised power structure, which was an inherited feature of remote Siberian cities, which, despite all controversies, were associated with freedom. The selected node belongs to the linear polarity, but the node itself is the focal pole, which makes it important, but local. That is why qualitative changes in the selected district can provoke qualitative changes in the larger territory, the place can be an exemplar and a point of bifurcation. The identified specifics (1-15) should then be interpreted by means of modern architecture and design in the development projects. It is important to note that the majority of the selected features (5-13) belong to the XIX century.

Next, let us zoom in from the scale of a block to the scale of a building. The following morphological reading of the building transformations has been made on the basis of the existing state of the villa and the drawings recently made in the process of survey. The proposed genesis of the transformations is a morphological hypothesis. The form of the building appears to have undergone several transformations before acquiring its present appearance. The following 'symptoms' can be identified that lead to morphological conclusions. For example, the form of the openings is explicitly different in different parts of the building - both on the planes and on the facades. In some parts, windows have been transformed into doors, which is also evident in their shape. The difference in height of the floors is also visible between these different parts, marked by the presence of stairs and ramps. The corner angles between these connected parts of the building are close to 90 degrees, but not 90: for example, 87. The foundations of these parts are also structurally different, as are the load-bearing schemes of the upper floors. The roof plan shows the connections between the added parts of the building. Alterations and additions also took place vertically. Minor late alterations are also visible on a small scale: internal doors, niches, partitions. All this makes it possible to formulate the hypothetical genesis of the building and can be reinterpreted in future projects. In the revitalisation projects, it is important to highlight the phases of development in the project, to remove the most recent parts, possibly replacing them while preserving the footprint and form. It would be interesting to use the cellar as, for instance, a wine vault, to make an opening in the courtyard where the house was demolished and to show its footprint, and the footprint of the chapel.

The phenomenon described in typomorphology can also be found in Krasnoyarsk: the villas of the rich underwent a transition to specialised buildings, which brought a specific serial character. The building considered in the current project resembles a serial nodal building of the palazzo type, born as a result of the series of transformations. This category of the closed building usually develops in a nodal building with a covered courtyard.

In sum, the text above did not offer the exact interpretations, but rather highlighted the moments in the reading of the existing urban form (based on the revealed language) that should be interpreted, but not in the form of a text, but in the form of a physical urban form or project.

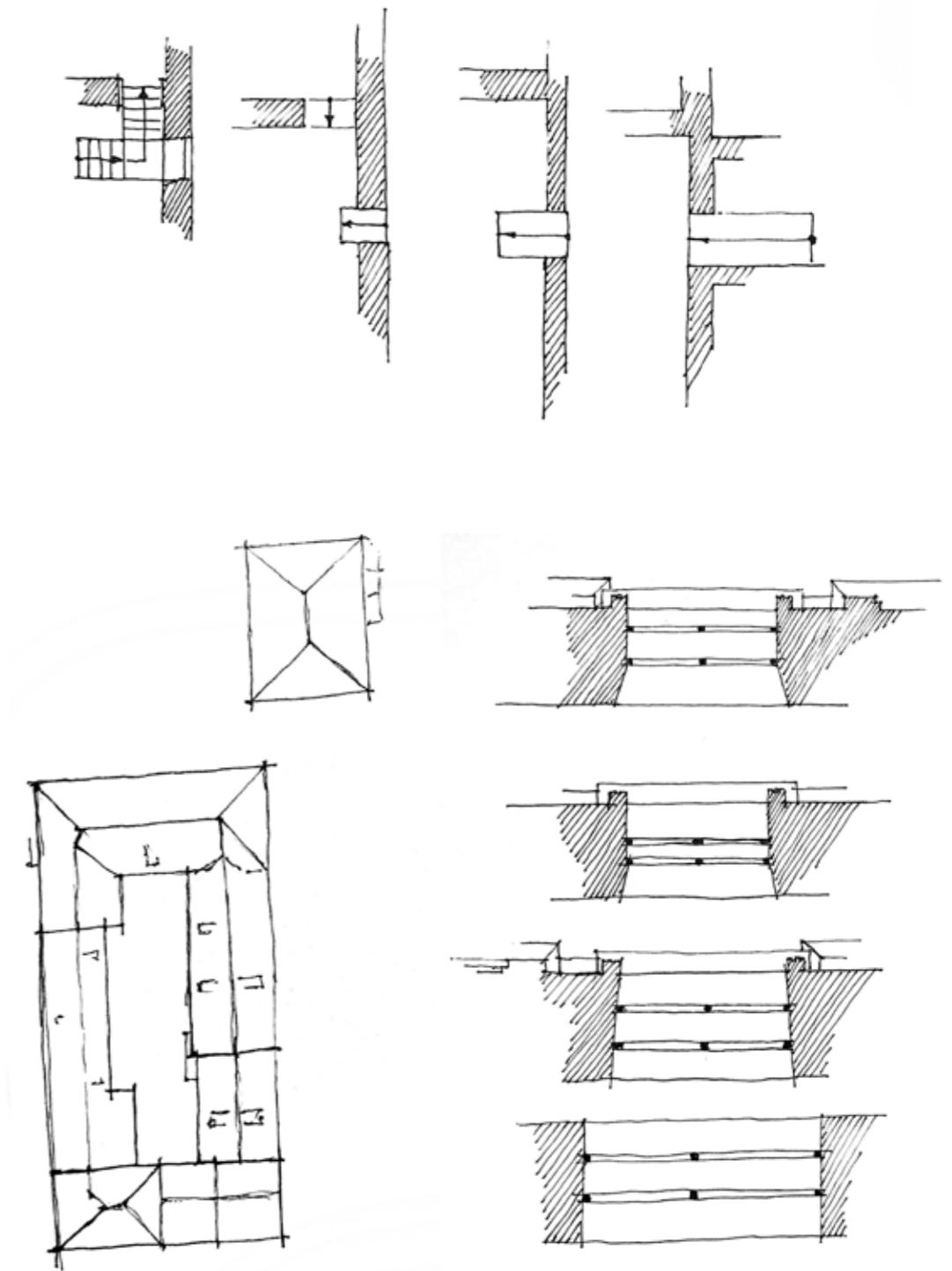
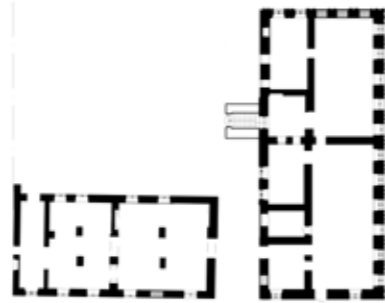


Figure 168. Morphological 'symptoms' of transformations.

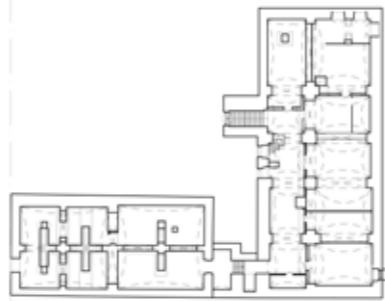
upper level



ground level

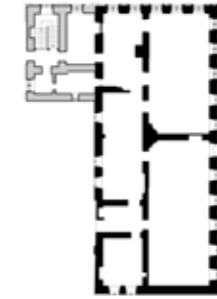


underground level

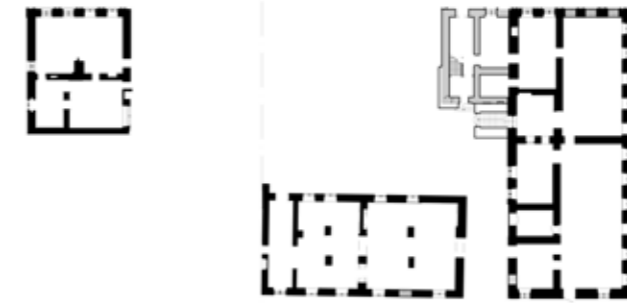


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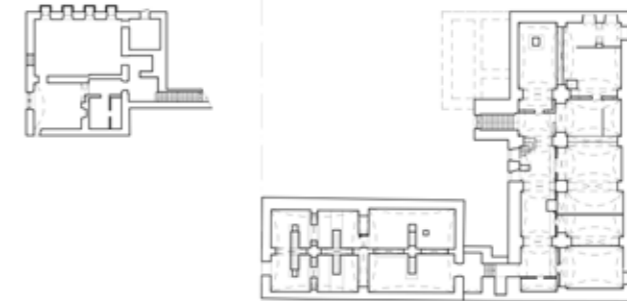
upper level



ground level



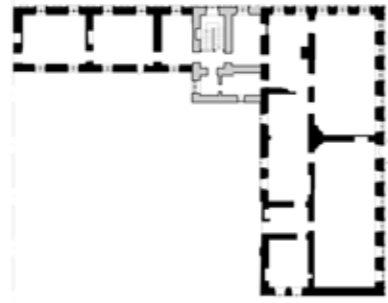
underground level



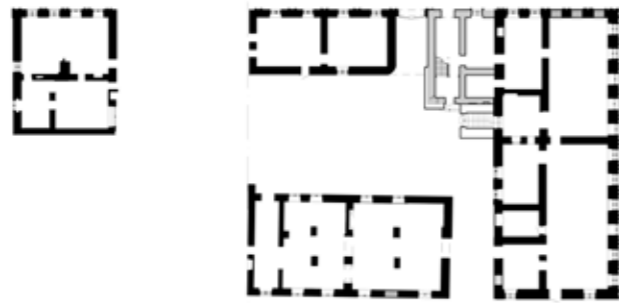
1.

Figure 169. Morphological formation of the mansion: stages 1-6.

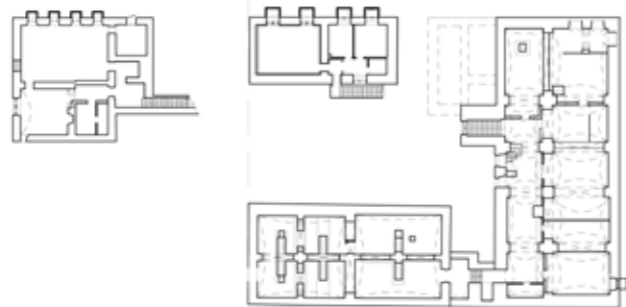
upper level



ground level

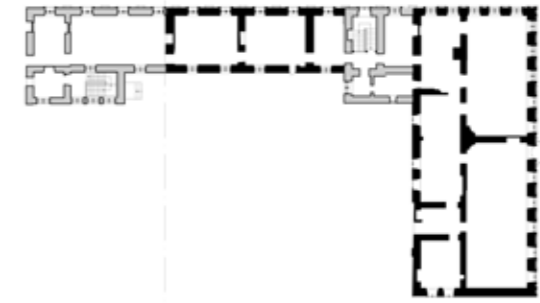


underground level

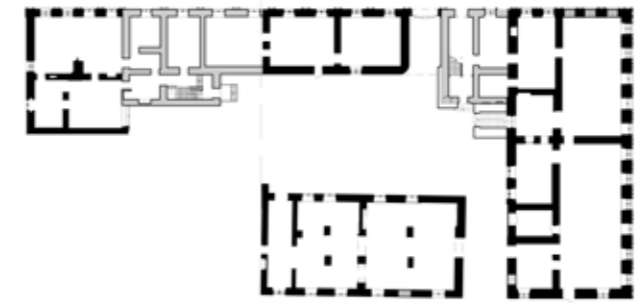


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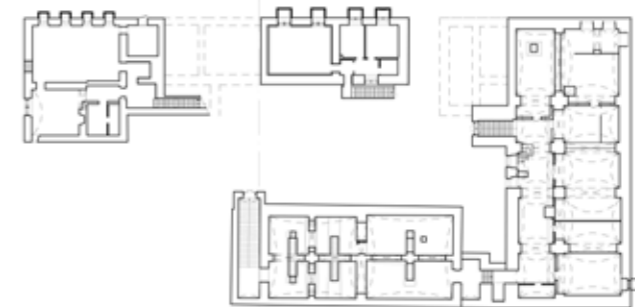
upper level



ground level



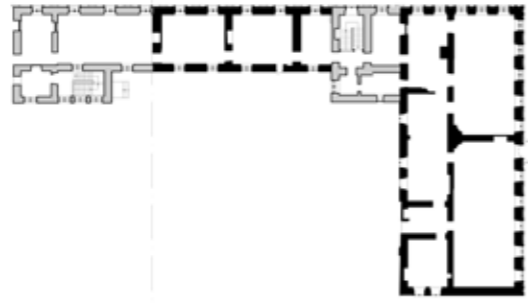
underground level



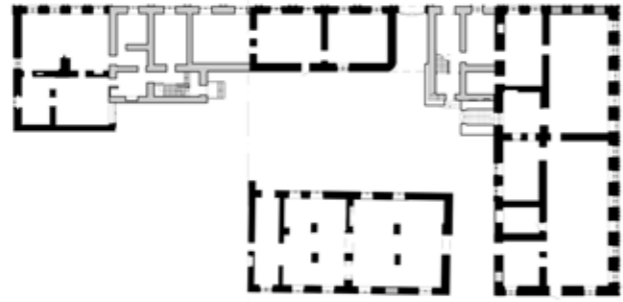
2.



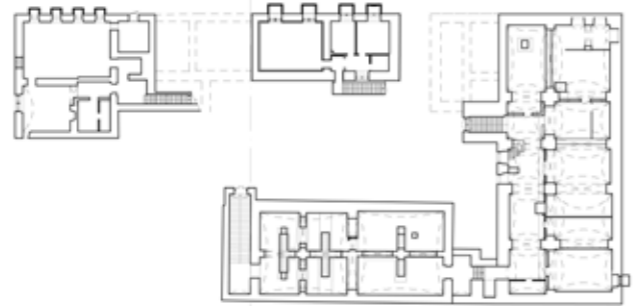
upper level



ground level

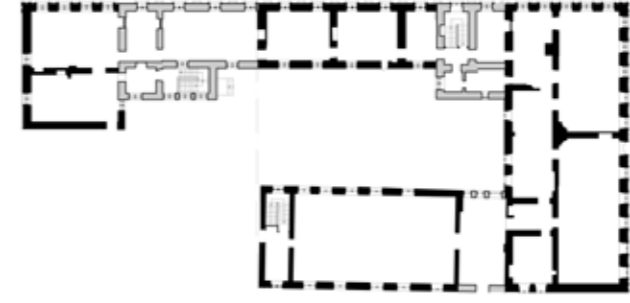


underground level

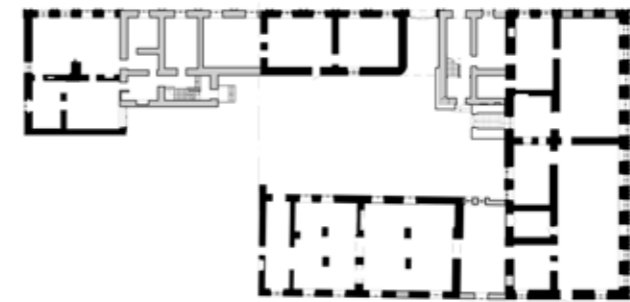


3.

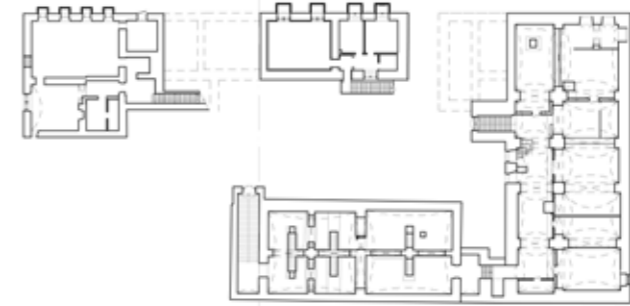
upper level



ground level



underground level



4.

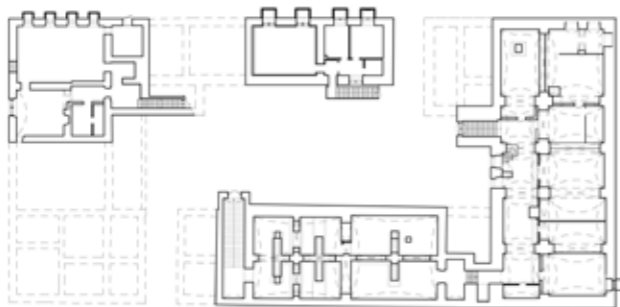
upper level



ground level

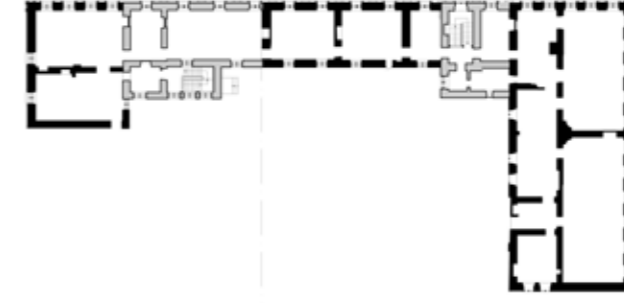


underground level

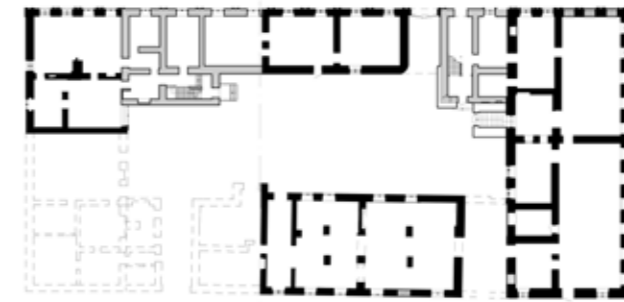


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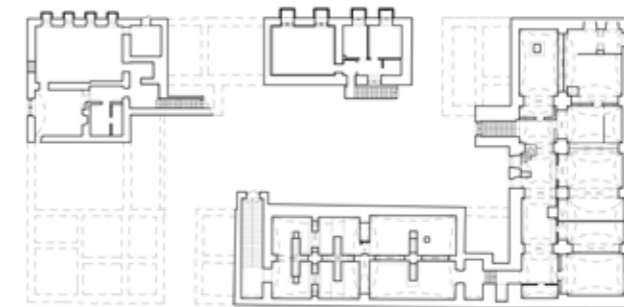
upper level



ground level



underground level



demolition.

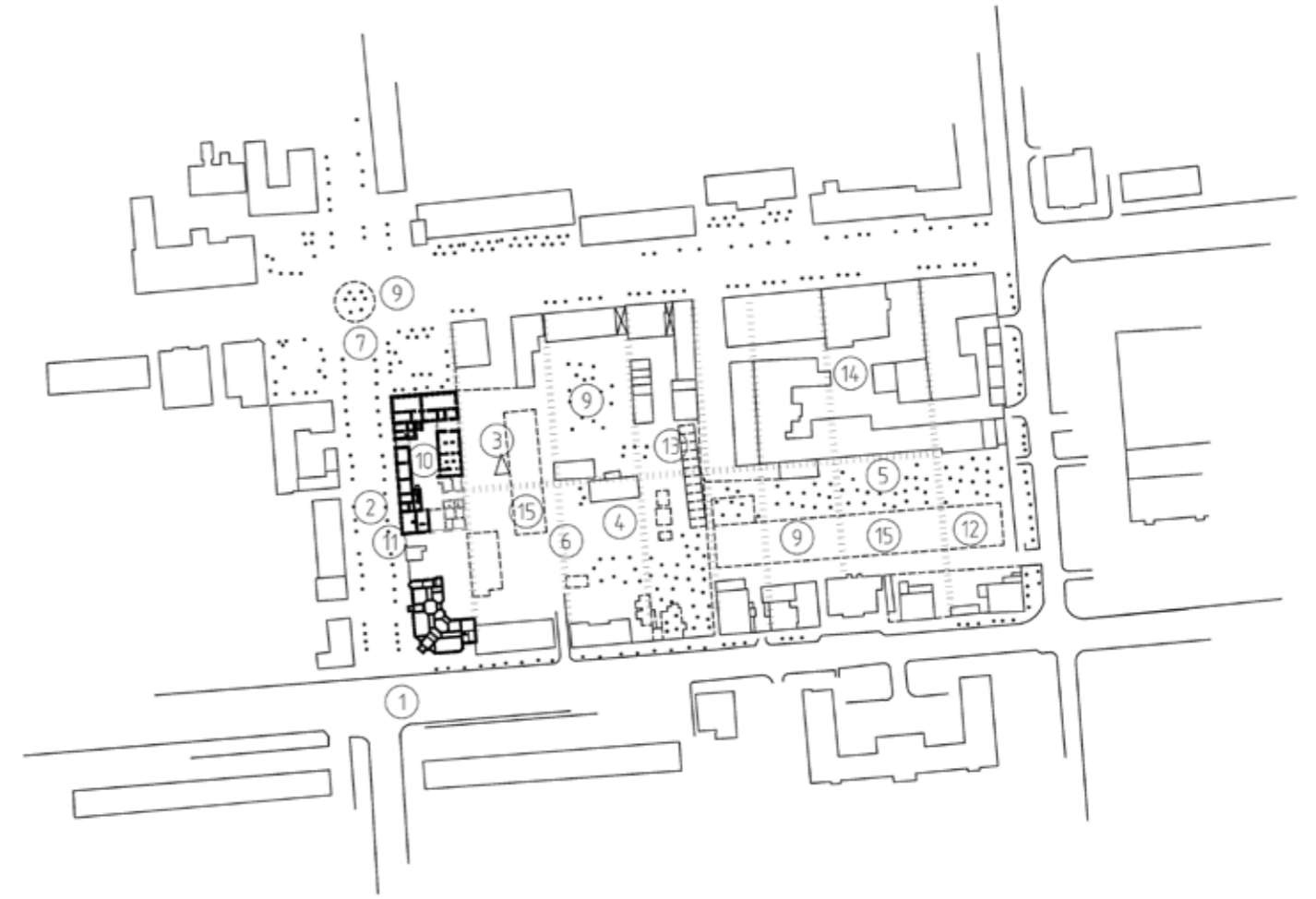
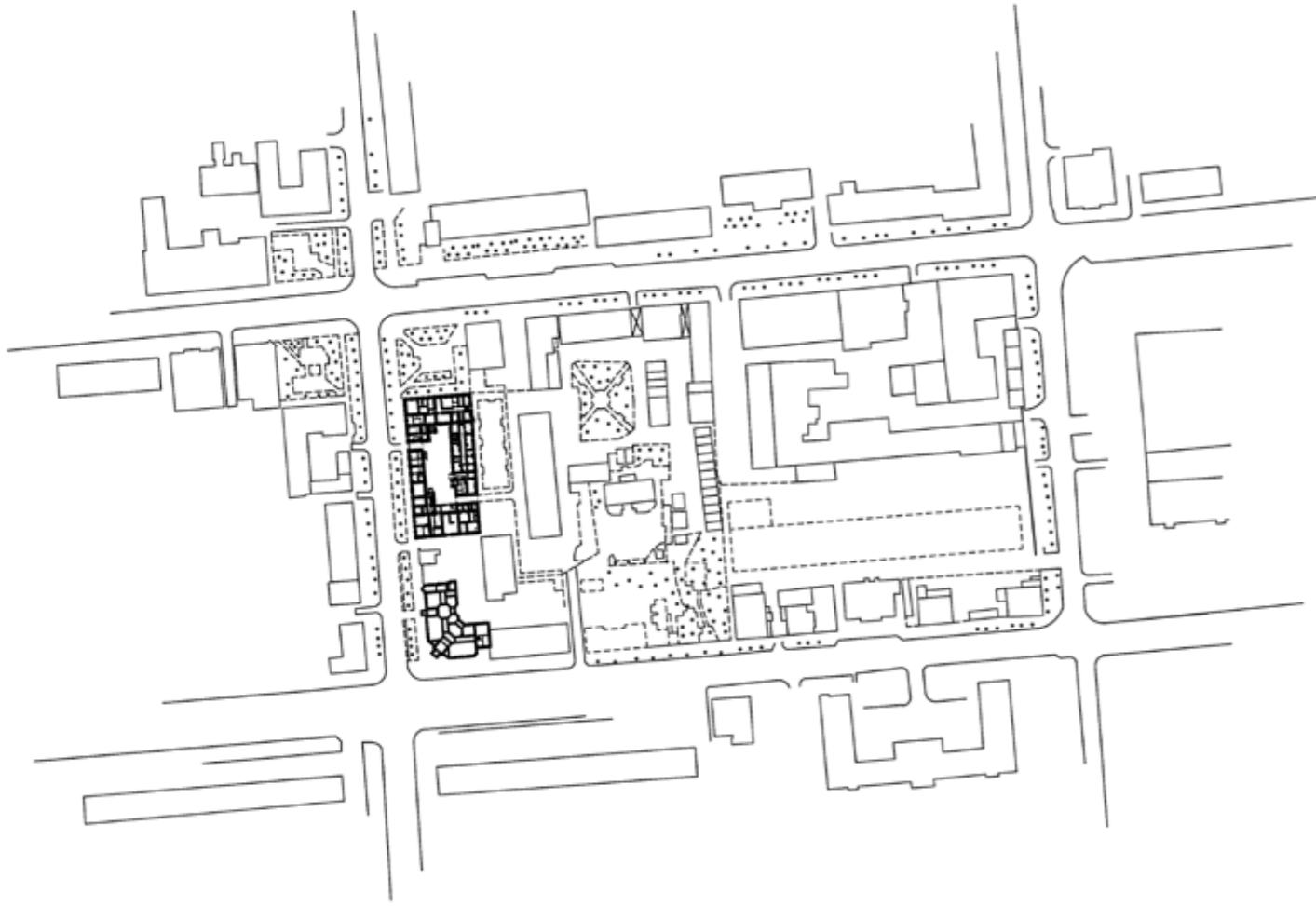
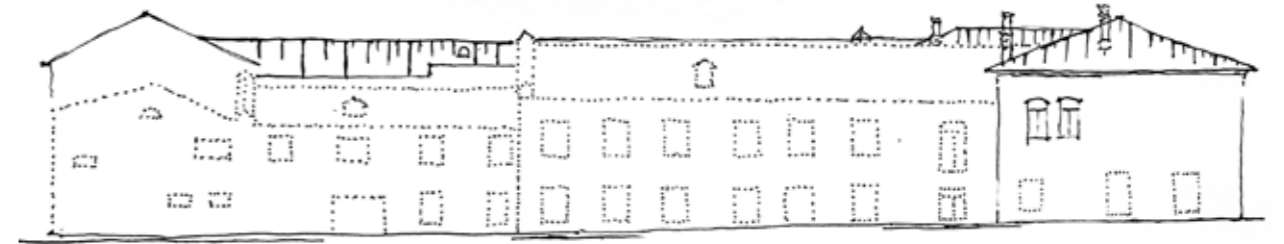


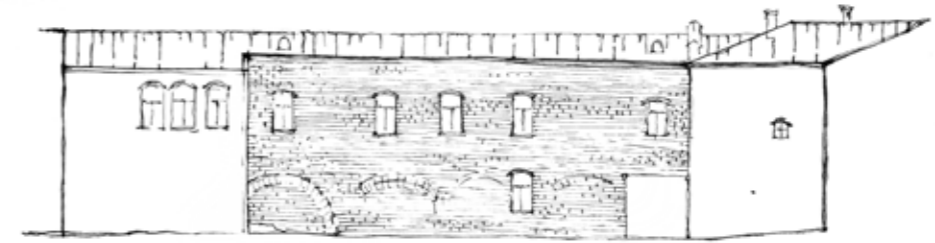
Figure 170. a - the existing masterplan; b - proposed masterplan (numbers are marked in the text).



Figure 171. The existing facades.



demolishing the latest additions

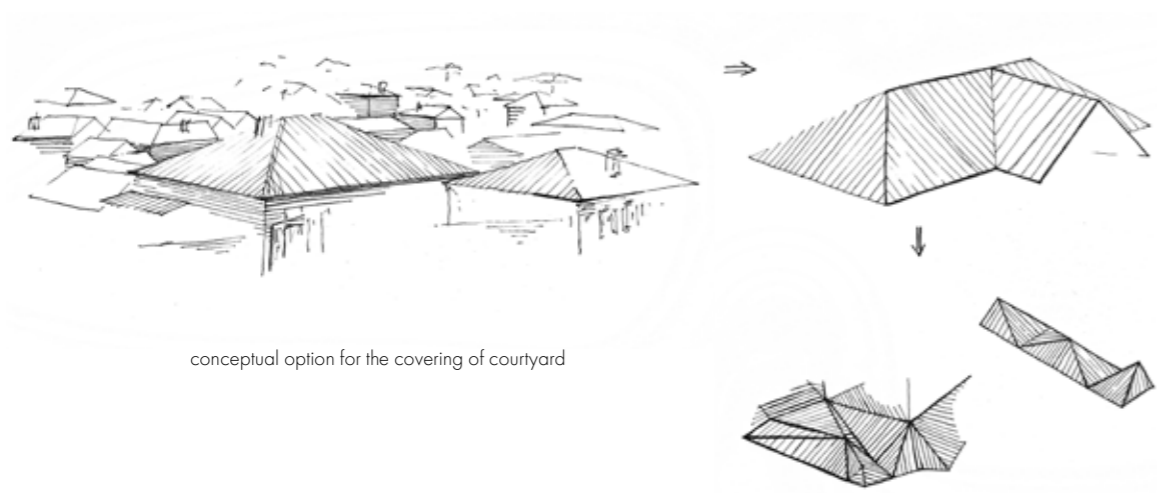


cleaned facade of the inner courtyard: revealing arches and the morphology of changes

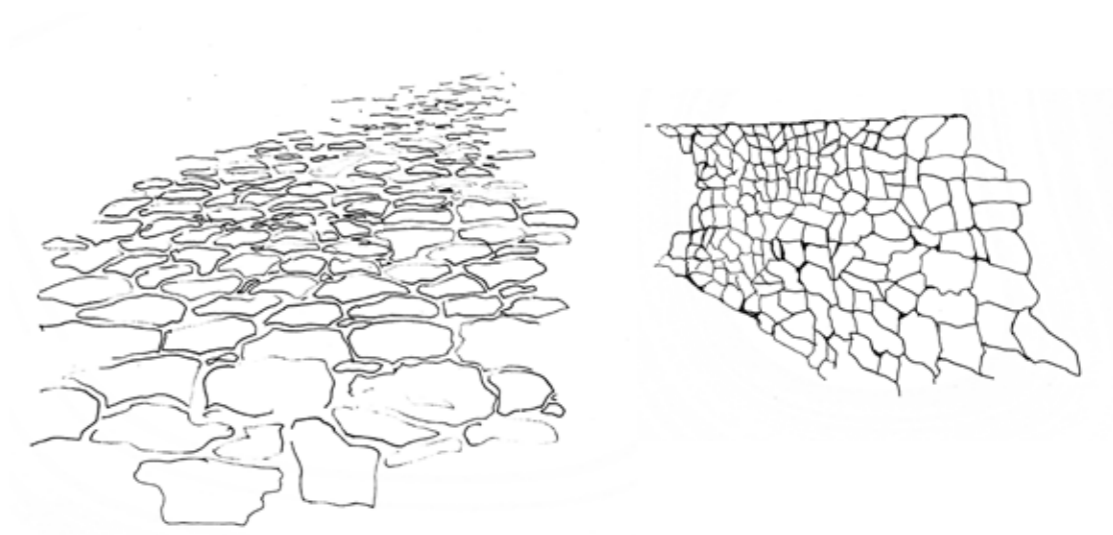
paved road



Figure 172. The proposed changes



conceptual option for the covering of courtyard



pavement option

the structure of firewall



Figure 173. One of the options for a project. New additions in yellow and a courtyard cover is in light yellow.

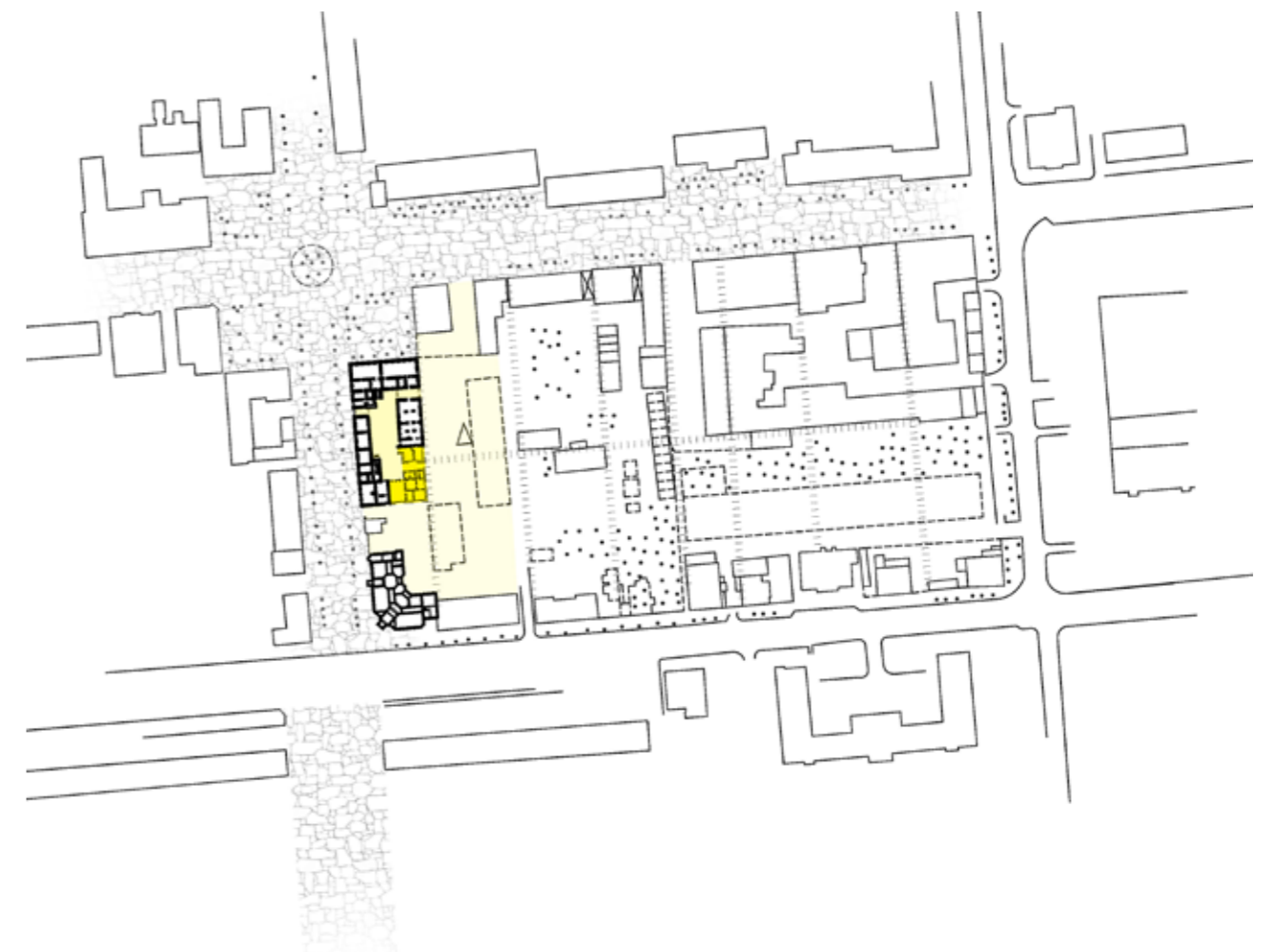


Figure 174. One of the options for a project: masterplan. The united estates for a museum are in light yellow.



Figure 174. Road structure: the existing and proposed condition.



Figure 175. Road structure: the existing and proposed condition.







- Araoz, G. F. (2011). Preserving heritage places under a new paradigm. *Journal of Cultural Heritage Management and Sustainable Development*, 1(1), 55–60.
- Abu-Khafajah, S. (2010). 'Meaning-Making and Cultural Heritage in Jordan: The Local Community, the Contexts and the Archaeological Sites in Khreibt Al-Suq.' *International Journal of Heritage Studies*, 16(1–2), 123–139.
- Alexander, C. (1977). *A Pattern Language. Towns, Buildings, Construction*. Oxford: Oxford University Press.
- Aronoff, M. & Rees-Miller, J. (2017). *The Handbook of Linguistics*. Hoboken, USA: Wiley-Blackwell.
- Aschepkov, E. (1950). *Russian Wooden Architecture*. Moscow: State Publisher of Literature on Construction and Architecture.
- Aschepkov, E. (1953). *Russian Wooden Architecture in Eastern Siberia*. Moscow: State Publisher of Literature on Construction and Architecture.
- Auret, H. (2019). *Christian Norberg-Schulz's Interpretation of Heidegger's Philosophy: Care, Place and Architecture*. London and New York: Routledge.
- Bagashev, A. N., Fedorov, R. Y. & Fisher, A. N. (2015). 'Functional Values of National Architecture in the Context of Traditional Culture of East Slavs', *Vestnik Tomskogo gosudarstvennogo universiteta. Kul'turologiya i iskusstvovedenie*, 3(19(3)), 26–33.
- Barthes, R. (1972). *Critical Essays*. Northwestern University Press.
- Belova, D. (2021). Preserving identity of historical environments in Siberia: A critical literature review. *Architecture and Engineering*, 6(4), 3–13.
- Belova, D., & Schofield, J. (2022). Collaborative experimentation in the urban process: activism and everyday heritage in Krasnoyarsk (Siberia, Russia). *International Journal of Heritage Studies*, 28(4), 538–558.
- Belova, D.A., & Gaikova, L. V. (2019). 'Human component' in Urban and Architectural Heritage Management: Russian Context. In *ISUF / International Seminar on Urban Form / Cities as Assemblages*, (p. 290).
- Belova, Daria A., Gaikova, L. V., & Fedan, A. (2023). The Role of University in Heritage Research and Practice: Siberian Context. *Heritage and Society*, 16(1), 1–21.
- Belova, D. A., Gaikova, L. V., & Fedan, A. (2021, February). Reading urban form as a studio teaching method: case study in Siberia. In *ISUF 2020 Virtual Conference Proceedings* (Vol. 1).
- Bold, J., Larkham, P., & Pickard, R. (Eds.). (2017). *Authentic reconstruction: authenticity, architecture and the built heritage*. Bloomsbury Publishing.
- Brand, S. (1955). *How Buildings Learn : What Happens after They're Built*. Penguin Books.
- Broadbent, G. (1980). Architects and Their Symbols, *Built Environment*, 6(1), 10–28.
- Burdin, E. A. (2013). *Ohrana Objektov Kulturnogo Nasledia v SSSR (1917 – 1991) [Preservation of the Objects of Cultural Heritage in USSR (1917 – 1991)]*. FGBOU VPO 'UIGPU im. I.N. Ulianova'.
- Burke, S. (2014). Icomos: Twentieth Century Heritage International Scientific Committee. *Journal of Architectural Conservation*, 13:2, 143–150.
- Bush, P. (2017). *Integratsiia Ruinirovannyh Obiektov Istoricheskogo Nasledia v Sovremennyi Arhitekturnyi Kontekst. [Integration of Ruined Objects of Historical Heritage into Contemporary Architectural Context.]*. MARHI.
- Bykonya, G. (2013). *Krasnoyarsk: From Past to Future*. Krasnoyarsk: Rastr.
- Caniggia, G. & Maffei, G. L. (2001). *Architectural Composition and Building Typology: Interpreting Basic Building*. Florence: Alinea.
- Carlotti, P. (2021). *The Implicit Project in the Urban Form*, U+D\_urbanform and design, (14), 156–661.
- Casey, E. S. (2001). J.E. Malpas's Place and Experience: A Philosophical Topography (Cambridge University Press, 1999) Converging and Diverging in/on Place, *Philosophy & Geography*, 4(2), 225–230.
- Castells, M. (2010). *The Power of Identity*. Wiley-Blackwell.
- Chippindale, C. (1983). The Making of the First Ancient Monuments Act, 1882, and Its Administration Under General Pitt-Rivers. *Journal of the British Archaeological Association*, 136(1), 1–55.
- Chomsky, N. (1969). *Aspects of the Theory of Syntax*. Cambridge, Massachusetts: MIT Press.
- Chow, R. (2002). *Suburban Space: The Fabric of Dwelling*. University of California Press.
- Conzen, M.R.G., 1960. Alnwick, Northumberland: a study in town-plan analysis. *Transactions and Papers (Institute of British Geographers)*, (27), pp.iii-122.
- Dağlioğlu, E. K. (2016). Karl Popper's Architectural Legacy: An Intertextual Reading of Collage City. *Metu Journal of the Faculty of Architecture*, 33(1), 107–119.
- Dalla Negra, R. (2015). L'intervento Contemporaneo Nei Tessuti Storici, *U+D\_urbanform and design*, (03/04), 10–32.
- Department\_Of\_Agriculture. (1853). *Atlas of Projects and Drawings of Rural Buildinds*. St Petersburg.
- Deschepper, J. (2019). Between future and eternity: a Soviet conception of heritage. *International Journal of heritage studies*, 25(5), pp.491-506.
- Després, C. & Larochelle, P. (1996). Modernity and Tradition in the Making of Terrace Flats in Québec City, *Environments by Design*, 1(2), 20.
- Després, C., Vachon, G., Fortin, A., Gauthier, P. & Larochelle, P. (2015). Inertie Des Habitus et Évolution Des Types Architecturaux Dans l'habitat de Banlieue Au Québec. *Repenser l'habitat : Donner un sens au logement*, 237–277.
- Djalali, A. (2017). Eisenman beyond Eisenman: Language and Architecture Revisited, *Journal of Architecture*, 22(8), 1287–1298.
- Dovey, K. (2008). *Framing Places (2nd ed.)*. Routledge.
- Dovey, K. (2010). *Becoming Places*. Routledge.
- Drury, P. & McPherson, A. (2008). *Conservation Principles, Policies and Guidance*. English Heritage.
- Eco, U. (1968). *La Struttura Assente. Introduzione Alla Ricerca Semiotologica* (Translated by V. Reznik, A.Pogonyailo in 2006). St Petersburg: Symposium.
- Evsina, N. A. (1975). *Architectural Theory in Russia in XVIII Cent*. Moscow: Science.
- Ferencz-Flatz, C. (2014). A Phenomenology of Automatism. Habit and Situational Typification in Husserl. *Phenomenology and Mind*, 6, 65–83.
- Foucault, M. (1972). *The Archaeology Of Knowledge And The Discourse On Language*. London: Tavistock Publications.
- Frampton, K. (1983). *Towards a Critical Regionalism: Six Points for an Architecture of Resistance*. The Anti-Aesthetic, 16–30.
- Gadamer, H. (2006). *Truth and Method*. London: Continuum.
- Gauthier, P., 2014. The morphogenesis of Quebec City's first suburbs, *Plenary Sessions 25*, p.131.
- Gevel, E. (2012). *Image of the City in Krasnoyarsk*

- Urochische. Krasnoyarsk: LAD.
- Glendinning, M. (2013). *The Conservation Movement: A History of Architectural Preservation*. Routledge.
- Glazychev. (2011). *City Without Limits*. Moscow: Territory of the future.
- Glazychev, V. & Gutnov, A. (1990). *The World of Architecture*. Moscow: Molodaia Gvardiia.
- Glazychev, V. L. (1987). *About Our Dwelling*. Moscow: Stroyizdat.
- Golubev, A. (2017). "A Wonderful Song of Wood": Heritage Architecture and the Search for Historical Authenticity in North Russia. *Rethinking Marxism*, 29(1), 142–172.
- Goodman, N. (1985). How Buildings Mean, *Critical Inquiry*, 11(4).
- Gorbachev, V. T. (2016). *Architecture of Siberian Cities in the XIX - the Beginning of XX Century (the Experience of Low-Rise Construction)*. St Petersburg: Kolo.
- Gorbachev, V. T., Tsarev, V. I., Kradin, N. P., Kradin, N. N., I., K. V. & Stepankaia, T. M. (2011). *The City-Building of Siberia*. St Petersburg: Kolo.
- Graham, B. J. (2005). Senses of place, senses of time and heritage. In *Senses of place: Senses of time* (pp. 3-14). Ashgate Publishing
- Griffero, T. (2010). *Atmospheres: Aesthetics of Emotional Spaces*. London: Routledge.
- Griffero, T. (2020). *Places, Affordances, Atmospheres: A Pathic Aesthetics*. London: Routledge.
- Groat, L. n. & Wang, D. (2013). *Architectural Research Methods*. Wiley.
- Guyer, P. (2011). Kant and the Philosophy of Architecture. *The Journal of Aesthetics and Art Criticism*, 69(1), 7–19.
- Haldane, J. (1999). Form, Meaning and Value: A History of the Philosophy of Architecture. *Journal of Architecture*, 4(1), 9–20.
- Harries, K. (1987). Philosophy and the Task of Architecture. *Journal of Architectural Education*, 40(2), 29–30.
- Harries, K. (2016). *Philosophy of Architecture: Lecture Notes Fall Semester 2016*. Yale University Press, 1–311.
- Harrison, R. (2015). Beyond " Natural " and " Cultural " Heritage : Toward an Ontological Politics of Heritage in the Age of Anthropocene. *Heritage & Society*, 8:1, 24–42.
- Harvey, D. C. (2001). Heritage pasts and heritage presents: Temporality, meaning and the scope of heritage studies. *International journal of heritage studies*, 7(4), 319–338.
- Hattenhauer, D. (1984). The Rhetoric Of Architecture: A Semiotic Approach. *Communication Quarterly*, 32(1), 71–77.
- Hayden, D. (1995). *The Power of Place: Urban Landscapes as Public History*. MIT Press.
- Hillier, B. & Hanson, J. (1986). *The Social Logic of Space*. Cambridge: Cambridge University Press.
- Hofmeister, B. (2004). The study of urban form in Germany. *Urban Morphology*, 8(1), pp.3-12.
- ICOMOS, T. A. (1999). *The Burra Charter*.
- Illies, C. and Ray, N. (2009). Philosophy of architecture. *Philosophy of technology and engineering sciences*, 1199-1256.
- Jacoby, S. (2013). *The Reasoning of Architecture: Type and the Problem of Historicity*. diss.... Dr. Ing. Berlin.
- Jencks, C. (2010). What then is post-modernism?. *The Post-Modern Reader, Hoboken, NJ: John Wiley and Sons*, pp.14-37.
- Jencks, C., Branscome, E. and Szacka, L.C. eds., (1992). *The post-modern reader*. London: Academy Editions.
- Jokilehto, J. (2017). *A history of architectural conservation*. Routledge.
- Khan-Magomedov, S. O. (1996). *Architecture of the Soviet Avant-Guard*. Moscow: Stroi izdat.
- Kuhn, T. S. (1970). *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Lähdesmäki, T. (2016). Politics of Tangibility, Intangibility, and Place in the Making of a European Cultural Heritage in EU Heritage Policy. *International Journal of Heritage Studies*, 22(10), 766–780.
- Lanini, L. (2021). *Lo spazio cosmico di Leonidov (Vol. 15)*. LetteraVentidue Edizioni.
- Lanini, L. (2017). *La città d'acciaio. Mosca costruttivista 1917-1937 (pp. 1-215)*. Pisa University Press.
- Lanini, L., & Rakowitz, G. (2019). *Ivan Leonidov and Gianugo Polesello: architects of Metropolis*. Pisa University Press.
- Larochelle, P. (2002). *Forme et Signification d' Un Tissu Urbain Métis: Syntaxe Spatiale Du Vieux-Wendake. Continuité*. (Report)
- Larochelle, P. & Gauthier, P. (2003). *Les Voies d'accès à La Capitale Nationale Du Québec et La Qualité de La Forme Urbaine*. (Report)
- Larochelle, P. & lamandi, C. (1999). *MILIEUX BÂTIS ET IDENTITÉ CULTURELLE*. (Report)
- Lefebvre, H. & Nicholson, D. (1991). *The Production of Space*. Oxford: Blackwell Publishing.
- Levy, A. (1999). Urban Morphology and the Problem of the Modern Urban Fabric: Some Questions for Research. *Urban Morphology*, 3(2), 79–85.
- Lowenthal, D. (1998). *The Heritage Crusade and the Spoils of History*. Cambridge University Press.
- Lowenthal, D. (2014). *The Past Is a Foreign Country – Revisited*. Cambridge: Cambridge University Press.
- Lynch, K. (1964.) *The image of the city*. London: MIT press.
- Lynch, K. (1981). *Good City Form*. London: MIT press.
- Lyons, F. (2019). *The Architecture of Nothingness: An Explanation of the Objective Basis of Beauty in Architecture and the Arts*. New York: Routledge.
- Macarthur, D. (2014). Working on Oneself in Philosophy and Architecture: A Perfectionist Reading of the Wittgenstein House, *Architectural Theory Review*, 19(2), 124–140.
- Malathouni, C. (2013). Architecture Is the Pattern of Human Mind in Space: Claude F. Bragdon and the Spatial Concept of Architecture. *Journal of Architecture*, 18(4), 553–569.
- Malfroy, S (2021) Part I. IN SEARCH OF A SYNTHESIS. Awakening in Florence, pp. 123-146.
- Malpas, J. (2005). Sprache ist gespräch: On Gadamer, language and philosophy.
- Malpas, J.(2008). *Heidegger's topology: being, place, world*. MIT press.
- Malpas, J. (2008). New media, cultural heritage and the sense of place: Mapping the conceptual ground. *International journal of heritage studies*, 14(3), pp.197-209.
- Malpas, J. (2012). *Heidegger and the Thinking of Place: Explorations in the Topology of Being*. MIT Press.
- Malpas, J. (2018). *Place and experience: A philosophical topography*. London: Routledge.
- Malpas, J. (2020). In the Brightness of Place: Out of History to Topology. Jenseits von Polemik und Apologie: Die 'Schwarzen Hefte'. *Diskussion, Heidegger Jahrbuch*, 12.

- Malpas, J., 2021. *Rethinking Dwelling: Heidegger, Place, Architecture*. London: Bloomsbury Publishing.
- Maretto, M. (2014). Perché La Morfologia Urbana?, *U+D-urbanform and design*, 1(1), 62–63.
- Meerovich, M. *The Legacy of Constructivism – Soviet Functional Architectural Typology*. Irkutsk.
- Merkulova, M. E. & Merkulova, M. M. (2013). *Wooden Buildings of Krasnoyarsk in XIX - Beg. XX Cent.* Krasnoyarsk: Siberian Federal University.
- Mitrovic, B. (2012). *Philosophy for architects*. Chronicle Books.
- Moore, S. & Kolb, D. (1992). Postmodern Sophistications: Philosophy, Architecture, and Tradition, *Journal of Architectural Education*, 45(4), 241.
- Moudon, A. V. (2019). Introducing Supergrids, Superblocks, Areas, Networks, and Levels to Urban Morphological Analyses, *Iconarp International J. of Architecture and Planning*, 7(Special Issue 'Urban Morphology'), 01–14.
- Nara. (2016). Nara + 20: On Heritage Practices, Cultural Values, and the Concept of Authenticity. *Heritage & Society*, 8:2, 144–147.
- Niven, J. (1996). Meaning in Architecture... Is the Traditional Semantic Model Adequate?. *Architectural Theory Review*, 1(1), 130–134.
- Norberg-Schulz, C. (1968). *Intentions in Architecture*. London: MIT Press.
- Norberg-Schulz, C. (1980). *Genius loci: Towards a phenomenology of architecture*. London: Academy Editions.
- Ogly, B. I. (1980). *Construction of Siberian Cities*. Leningrad: Stroyizdat.
- Oliveira, V. (2021). *Morphological Research in Planning, Urban Design and Architecture*. Springer International Publishing.
- Oliveira, V. & Pinho, P. (2006). Study of Urban Form in Portugal: A Comparative Analysis of the Cities of Lisbon and Oporto. *Urban Design International*, 11(3–4), 187–201.
- Orbaşlı, A. (2017). Conservation Theory in the Twenty-First Century: Slow Evolution or a Paradigm Shift? *Journal of Architectural Conservation*, 23(3), 23:3, 157-170.
- Pareyson, L. (1954). *Estetica. Teoria Della Formatività*. Bologna: Zanichelli.
- Pellegrino, P. (2006). *Semiotics of Architecture. Encyclopedia of Language & Linguistics*. Oxford: Elsevier.
- Pellegrino, P. & Jeanneret, E. P. (2009). Meaning of Space and Architecture of Place. *Semiotica*, 269–296.
- Pendlebury, J. & Porfyriou, H. (2017). Heritage, Urban Regeneration and Place-Making. *Journal of Urban Design*, 22(4), 429–432.
- Pendlebury, J. (2012). Conservation values, the authorised heritage discourse and the conservation-planning assemblage. *International Journal of Heritage Studies*, 19(7), 709–727.
- Pereira, G. E. & Caló, S. (2016). The Semio-Pragmatics of Architecture. *Architectural Theory Review*, 21(1), 62–72.
- Pereira Roders, A., & Van Oers, R. (2014). Wedding cultural heritage and sustainable development: three years after. *Journal of Cultural Heritage Management and Sustainable Development*, 4(1), 2–15.
- Pereslegin, N. (2015). *Istoriia Stanovleniia i Razvitiia Organov Ohrany Arhitekturnogo Nasledia Moskvy v Kontexte Ikh Vzaimodeistviia s Obshestvom v Sovetskii Period. [History of Establishment and Development of Organs of Protection of Architectural Heritage of Moscow in Conte]*. MARCHI
- Piskunova, L. P., Starostova, L. E., & Yankov, I. V. (2017). Recontextualization of Architectural Heritage of the Soviet Avant-Garde: Exhibition Project 'Sverdlovsk Villages: From Architectural Project To Social Experience'. *Vestnik Permskogo Universiteta. History*, 2(2(37)), 85–98.
- Piskunova, L., Starostova, L., & Yankov, I. (2018). «Birth of a Citizen»: Avant-garde Architecture and Transformation of Social Experience. *KnE Social Sciences*, 3(7), 259.
- Poulios, I. (2014). Discussing strategy in heritage conservation. *Journal of Cultural Heritage Management and Sustainable Development*, 4(1), 16–34.
- Prescott, G. (2013). Moscow's Constructivist Legacy under Threat. *Journal of Architectural Conservation*, 19(1), 68–82.
- Preus, A. (2015). *Historical dictionary of ancient Greek philosophy*. Rowman & Littlefield.
- Quilici, V. (1976). *Città Russa e Città Sovietica: Caratteri Della Struttura Storica; Ideologia e Pratica Della Trasformazione Socialista*. Milano: Mazzotta.
- Riegl, A. (2011). *Der Moderne Denkmalkultus Sein Wesen Und Seine Entstehung*. Pubmix.com, Book Renaissance.
- Ritter, J., Gründer, K. & Gabriel, G. (Eds.). (2007). *Historisches Wörterbuch DER PHILOSOPHIE*. Basel: Schwabe AG.
- Rodwell, D. (2002). The World Heritage Convention and the exemplary management of complex heritage sites. *Journal of Architectural Conservation*, 8(3), 40-60.
- Rodwell, D. (2014a). Approaches to Urban Conservation in Central and Eastern Europe. *Journal of Architectural Conservation*, (9:2), 22–40.
- Rodwell, D. (2014b). Sustainability and the Holistic Approach to the Conservation of Historic Cities. *Journal of Architectural Conservation*, 6207, 58.
- Ross, M. (1991). *Planning and the Heritage. Policy and procedures. Conservation In Practice*. Routledge.
- Rossi, A. (1984). *The Architecture of the City*. Cambridge, Massachusetts: MIT Press.
- Rowe, C. (1987). *The Mathematics of the Ideal Villa and Other Essays*. London: MIT Press.
- Rowe, C. (1996 a). Program versus Paradigm Otherwise Casual Notes on the Pragmatic, the Typical, and the Possible. *As I Was Saying: Recollections and Miscellaneous Essays*. Texas, Pre-Texas, Cambridge: MIT Press.
- Rowe, C. (1996 b). Transparency: Literal and Phenomenal. *As I Was Saying: Recollections and Miscellaneous Essays*. Texas, Pre-Texas, Cambridge: MIT Press.
- Rowe, C. (1996 c). Giulio Romano's Palazzo Maccarani and the Sixteenth Century Grid/Frame/Lattice/Web. *As I Was Saying: Recollections and Miscellaneous Essays*. Texas, Pre-Texas, Cambridge: MIT Press.
- Rowe, C. (1996d). The Provocative Facade: Frontality and Contrapposto. *As I Was Saying: Recollections and Miscellaneous Essays*. Texas, Pre-Texas, Cambridge: MIT Press.
- Rowe, C. & Koetter, F. (1978). *Collage City*. Cambridge, Massachusetts: MIT Press.
- Ruzhze, V. L. (1966). *Krasnoyarsk. Issues of Formation and Development*. Krasnoyarsk: Krasnoyarsk Book Publishing.
- Santos, L. & Dufaux, F. (2020). Le Volte Di Place Royale: Le Memorie Archeologiche Alla Base Delle Trasformazioni Morfologiche. *U+D: urbanform and design*, 14, 28–39.
- Scheboleva, E. G. & Rudchenko, V. M. (2012). *Architecture of the Province*. History of Russian art.
- Serikov, A. A. (2007). *Razvitiie Istoricheskogo Centra Krupnogo Goroda Kak Predmet Socialnogo Proektirovaniia. [Development of Historical Centre as a Subject of Social Design]*. Volga-Vyatka Academy of Public Administration at the Department of Theory and Practice of Public and Municipal Administration.

- Serra, M., Slater, T., Muzio, J. C. & Miller, D. M. (1990). The Analysis of One-Dimensional Linear Cellular Automata and Their Aliasing Properties. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 9(7), 767–778.
- Sharr, A. (2007). *Heidegger for Architects* (J. A. Hale, H. Heynen, and D. Leatherbarrow, Eds.). New York: Routledge.
- Shmelina, D. S. (2016). Fundamentals of European Fortification in Typical Projects of Fortifications along the Siberian Defensive Lines of the XVIII Century. *New materials on the history of fortification, vol. 2: articles and materials of the III and IV international scientific and practical conference 'Monuments of fortification: history, restoration, use'*, 84–92.
- Shvidkovskii, D. O. (2013). The Ways of Development of Russian Architecture. *Space and Time. The Spaces of Russia*, 1(11), 103–116.
- Slater, T.R. (1990). English medieval new towns with composite plans: evidence from the Midlands. In *The built form of western cities: essays for MRG Conzen on the occasion of his eightieth birthday*. Edited by TR Slater.
- Spector, T. (2010). Bridging the Gap between Architecture and Philosophy. *Building Research & Information*, 38(4), 428–431.
- Slabuha, A. (2012). *Istoriia Arkhitektury Sibiri. [History of Architecture of Siberia.]*. Siberian Federal University.
- Slabuha, A. V. (2012a). *Teoriia i Metodologiya Restavratsii. [Theory and Methodology of Restoration]*. Siberian Federal University.
- Slabuha, A. V. (2012b). *Arkhitekturnaia Restavratsiia i Rekonstruktsiia. [Architectural Restoration and Reconstruction]*. Siberian Federal University.
- Slabuha, A. V. (2016). Ustanovleniie Istoriko-Kulturnoi Tsennosti Obiektov Arkhitekturnogo Naslediia (Cast2): Kriterii i Metod v Sovremennoi Ekspertnoi Praktike. [Establishment of Historical-Cultural Value of Objects of Architectural Heritage (Part2): Criteria and Method in Con. *Chelovek i Kultura*, 6(6), 9–22.
- Slabuha, A. V. & Merkulova, M. E. (2005). *Rekonstruktsiia Istoricheski Tsennoi Territorii i Zastroiki Goroda. [Reconstruction of Historically Valuable Territory and Buildings in City]*. Siberian Federal University.
- Slabuha, A. V. & Saenko, I. (2016). *Problemy Vyivleniia, Izucheniia, Sohraneniia, Rekonstruktsii i Restavratsii Arkhitekturnogo Naslediia Sibiri. [Problems of Revealing, Studying, Reconstruction and Restoration of Architectural Heritage of Siberia]*. Siberian Federal University.
- Smith, L. (2004). *Archaeological Theory and the Politics of Cultural Heritage*. Routledge.
- Smith, L. (2006). *Uses of Heritage*. Routledge.
- Smith, L. & Waterton, E. (2013). *Heritage, Communities and Archaeology*. Bloomsbury.
- Snopek, K. (2013). *Beliaevu Navsegda. [Beliaevu Forever]*. Strelka Press.
- Strappa, G., Carloti, P. & Camiz, A. (2016). *Morfologia Urbana e Tessuti Storici - Urban Morphology and Historical Fabrics*. Amazon. Books.
- Taylor, W. M. (2013). Philosophy for Architects. *Fabrications*, 23(1), 127–130.
- Tokarev, S. . & Blomkvist, E. (1956). *East Slavic Ethnographic Collection Essays on Russian Folk Material Culture. Ukrainians and Belarusians in the XIX-Early XX Century*. Moscow: Academy of Science Publishing.
- Tsarev, V. I. & Zakharchenko, E. K. (2017). Embankment of Siberian City: Stages of Formation (Krasnoyarsk Case Study). *Vestnik Tomskogo Gosudarstvennogo Arkhitekturno-Stroitel'nogo Universiteta*, 5(64).
- Tsarev, V. V. (2017). *Architecture of Villages of the Nizhnee Prangarie in the XVI - the Beginning of XX Century*. diss... Dr. Arch. Krasnoyarsk.
- Tschumi, B. (2006). *Six Concepts. Excerpt from Architecture and Disjunction*. MIT press.
- Ulinich, N. A. (2012). Development of Russian Native Architectural Typology: From the Country Club to Socio-Cultural Complex. *Science, Education and Experimental Design. Works of Marchi*, (pp. 68–72).
- Vilkovskii, M. (2010). *Sociology of Architecture*. Russian Avant-Garde.
- Wang, Q. & Heath, T. (2011). Towards a Universal Language of the Built Environment. *Social Semiotics*, 21(3), 399–416.
- Waterton, E. & Watson, S. (2015). *The Palgrave Handbook of Contemporary Heritage Research*. Palgrave Macmillan.
- Whitehand, J. W. R. & Gu, K. (2010). Conserving Urban Landscape Heritage: A Geographical Approach. *Procedia - Social and Behavioral Sciences*, 2(5), 6948–6953.
- Zhuravlev, A. M. & Khan-Magomedov, S. O. (1968). *Soviet Architecture*. Moscow: Znanie.
- Zmeul S. G. & Mackhanko, B. A. (2004). *Architectural Typology of Buildings and Structures*. Moscow: Architecture-C.
- Zumthor, P. (2005). *Thinking Architecture*. Basel: Birkhauser - Publishers for Architecture.
- Zumthor, P. (2006). *Atmospheres: Architectural Environments - Surrounding Objects*. Basel: Birkhauser - Publishers for Architecture.



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