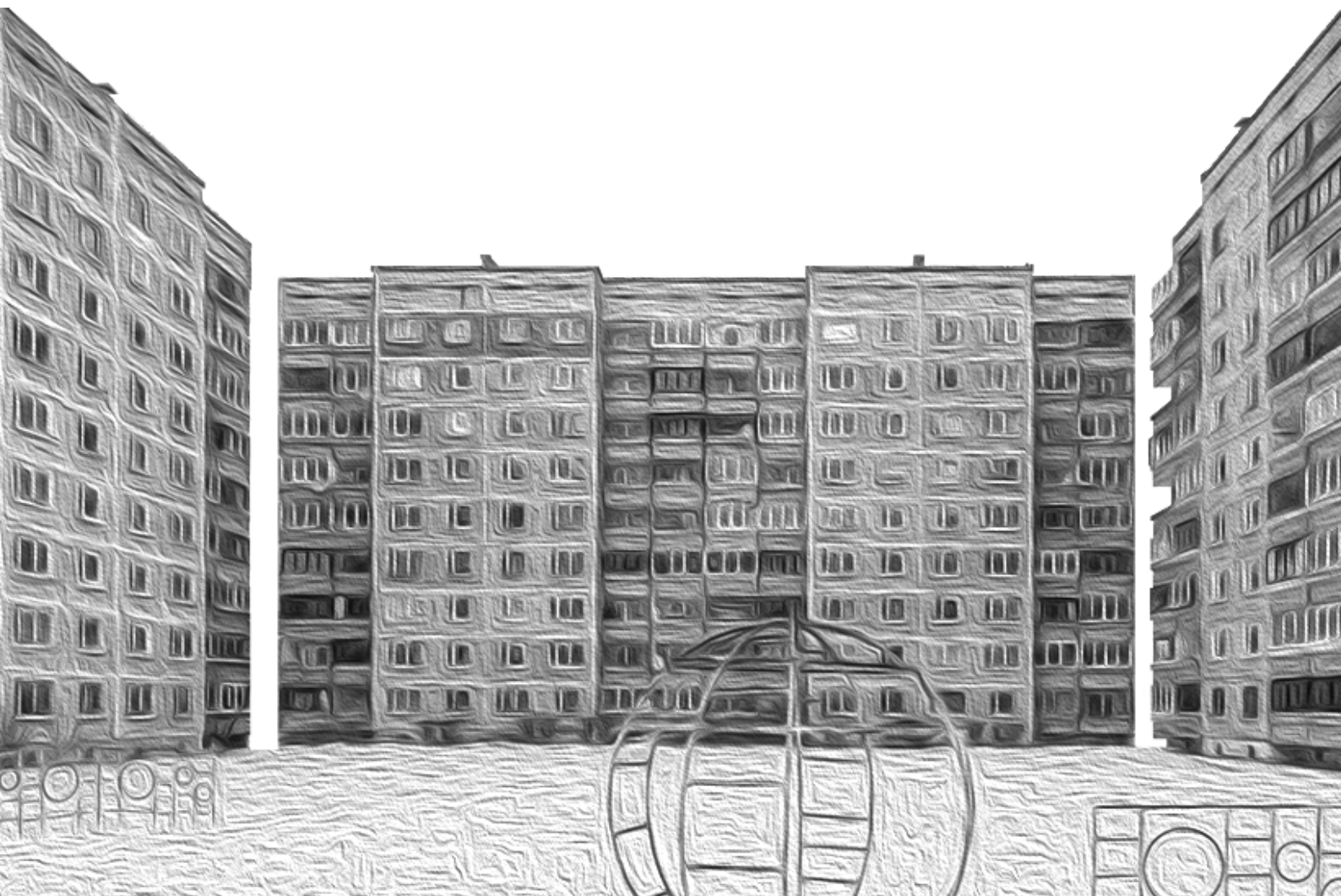


# ***BEYOND* GENERIC**

**RETHINKING HOUSING DESIGN**

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## INTRODUCTION

As I wander through the streets of Tallinn, I am captivated by the architectural layers that define this city. Each building tells a story, reflecting a rich history that spans centuries, from medieval fortifications to Soviet-era constructs and contemporary designs. The different styles not only shape the physical landscape but also influence the social fabric and atmosphere of the city.

Walking through the Tallinn Old Town feels magical because of the preserved medieval architecture; the materials, colorful houses, and narrow streets make it clear that the old town was constructed for the human scale (Figure 1). The Kalamaja district mainly consists of old and new wooden housing, and the atmosphere is pleasant and welcoming. In Telliskivi and Rotermann Quarters, old factories have been transformed into vibrant cultural centers where different time layers, materials, and scales create dynamic places to experience (Figure 2). However, I noticed that in some newly developed areas, I did not want to linger. Surprisingly, these areas frequently featured recent housing developments. I began to wonder what influenced the changes in the atmosphere.



*Fig. 1. Tallin's Old Town.*



*Fig. 2. Rotermann Quarter.*

After a discussion I had with Mihkel Tüür, an Estonian architect with multiple residential projects in Tallinn, it became clear that many new residential developments are primarily designed for the upper class (Figure 3). He mentioned that the developers usually request spacious apartments and luxurious materials making housing not affordable for the broader society. Moreover, these projects must be designed rapidly, and developers often prioritize “contemporary” aesthetics, without considering its influence on the residents or the surrounding context. This issue is not unique in Tallinn; during the current construction rate, land prices exceed construction rates and attract investors that want to gain profit from the housing projects, but as more and more construction takes place, the prices do not fall (Steiner, 2018). This leads to gentrification and a housing crisis, which accelerates housing production even more, leading to almost mass-produced and generic architecture.





*Fig. 3. Vesilennuki development, Noblessner, Tallinn (2023).*

In Tallinn, I saw a construction site and new developments everywhere I looked. It feels as though the city is transforming so quickly that intervention seems almost impossible. One way to change the direction of this seemingly unstoppable machine would be to change the city regulations, for example, by making it mandatory to include a certain percentage of affordable housing and greenery in each development. However, as an individual, I can not suddenly change the direction of this economic reality. But as an architect, I have the opportunity to influence the design while this machine is still in motion.

My fascination with housing stems from a deep understanding that homes are more than mere shelters; they embody the cultural identities and collective memories of communities. With this research, I aim to develop a design framework that integrates cultural narratives into efficient design, ultimately creating spaces that resonate with people and enhance their quality of life.

## **PROBLEM STATEMENT**

The global housing crisis together with gentrification has significantly influenced architecture. New residential projects frequently prioritize speed and profit over the social and cultural needs of communities, leading to impersonal and generic housing. This trend undermines the emotional well-being of residents and disrupts the social cohesion of neighborhoods.

As urbanization increases, architects are challenged to rethink design approaches that incorporate historical context and cultural identity in the design. While computational design has the potential to revolutionize housing by optimizing resources and creating adaptive solutions, its application often lacks a meaningful connection to local cultural identities and historical elements. The challenge lies in developing a design framework that meets not only practical requirements but also the cultural and emotional needs of inhabitants, ultimately contributing to a more inclusive and vibrant urban environment.

## RELEVANCE

This project proposes a design framework for future housing developments, adaptable to diverse urban contexts while respecting each city's unique heritage and identity. By integrating measurable cultural and historical insights into the design process, I aim to create housing that resonates deeply with communities. This approach not only enhances the social and emotional experience of residents but also uses technology for greater impact. For example, computational design could contribute to cultural relevance in a more practical sense (Hnin, 2022). The framework seeks to demonstrate how housing can be both efficient and culturally relevant, offering a model for future urban development that prioritizes community engagement and long-term livability.

## RESEARCH QUESTION

*How can we measure and integrate architectural parameters that resonate with a culture emotionally and resist generic architecture while ensuring efficient building design?*

## HYPOTHESIS

Integrating architectural parameters that resonate with a culture emotionally not only reduces the perception of architecture as generic but also enhances the well-being of residents. By developing a framework that quantifies and incorporates these parameters, architects can efficiently create context-sensitive and culturally relevant designs that respect local heritage and enrich the quality of life.

## SUBQUESTIONS

*What parameters contribute to the perception of architecture as generic, and how do they affect the mental well-being of residents?*

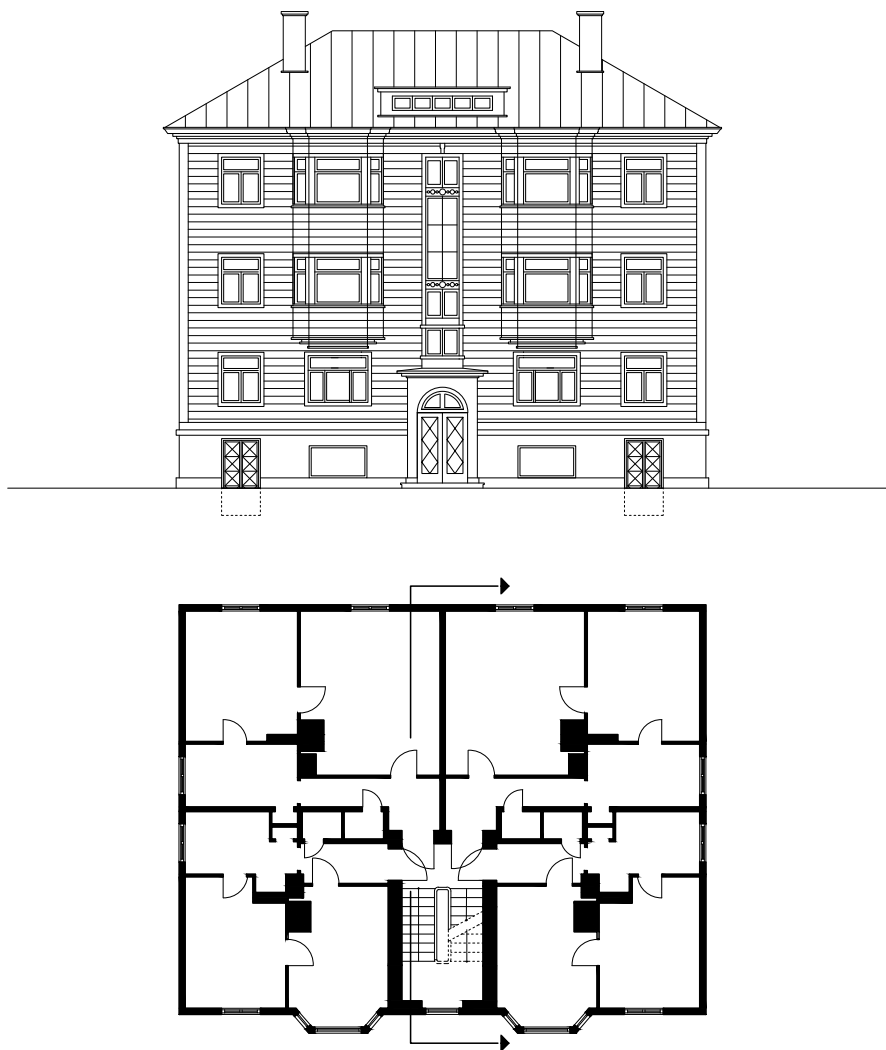
In this research, I use the term *generic architecture* to describe architecture that emphasizes standardized forms, materials, and design principles, often prioritizing efficiency, uniformity, and mass production over contextual or cultural considerations. To identify the specific architectural elements that make the design look generic, I will compare existing projects that could be classified as generic architecture. I will focus on form, materiality, pattern repetition, ornamentation, and the relation to human scale (Figure 4). Additionally, I will carry out a survey to determine how this type of architecture could affect the mental well-being of inhabitants. This analysis will inform the design framework by identifying specific characteristics that should be avoided or modified in order to foster more emotionally engaging and context-sensitive architecture.



*How can cultural, historical, and contextual characteristics in architecture be measured and quantified?*

The cultural and social fabric deeply influences how people live, interact, and feel within their environments. Capturing these characteristics requires both qualitative and quantitative approaches. Firstly, I will conduct a comparative analysis of different housing typologies in Tallinn, including traditional buildings, Soviet-era housing, and recent developments (Figure 5). I will focus on elements such as area per 1 person, room functions, spatial organization, typology, and the balance between private and public areas. These elements can offer insights into cultural preferences for interaction, privacy, and living standards.

Additionally, I will assess how materiality, scale, ornamentation, and spatial layouts respond to the local culture and historical context. To address the complexity of architectural design and its cultural dimensions, I will develop techniques for analyzing spatial and cultural patterns and transforming these insights into inputs for computational design. By doing so, I aim to create a framework that makes culturally and contextually sensitive design more systematic and efficient.

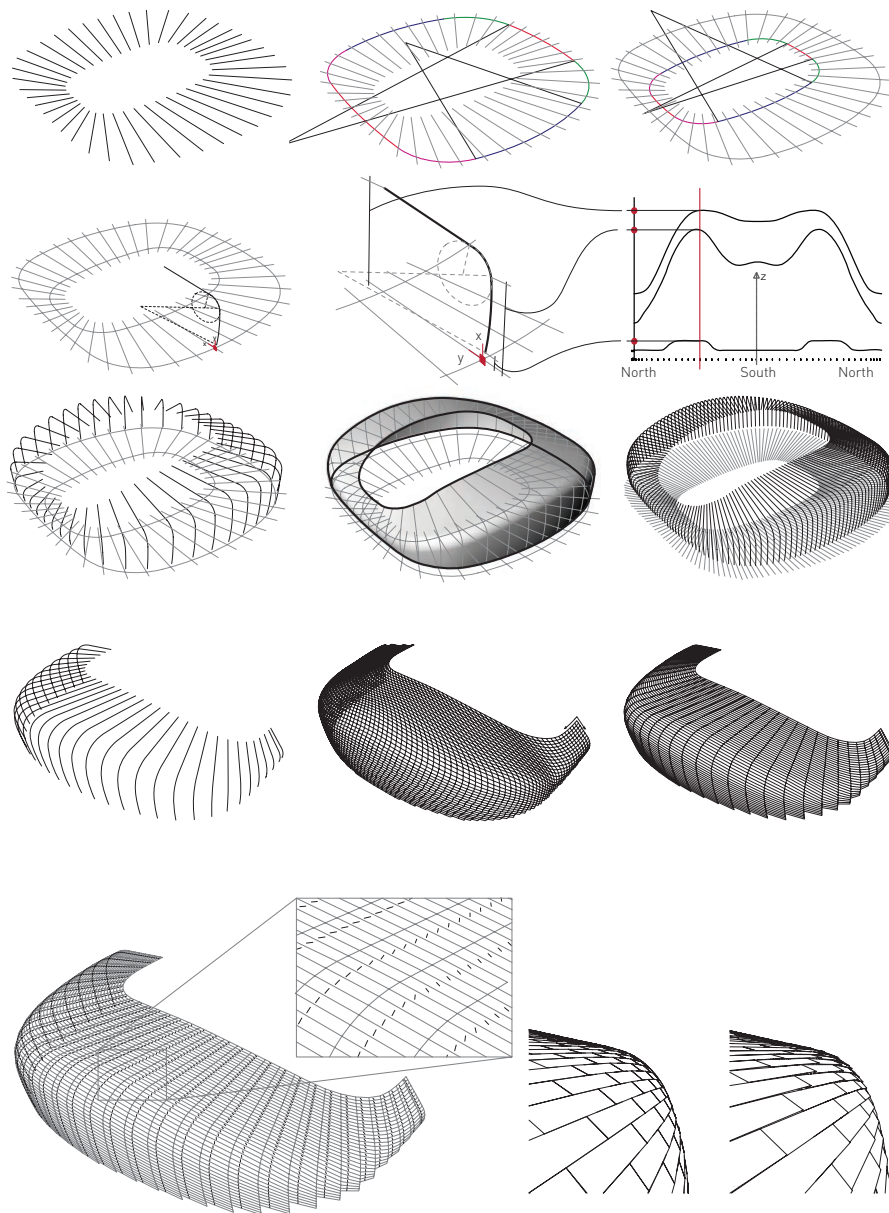


*Fig. 5. An example of Tallinn-style house analysis (by Athina Pappa).*



*How can computational design techniques be optimized to generate efficient and culturally resonant architecture?*

Computational design (Figure 6) has the potential to generate highly efficient architecture solutions by automating complex calculations related to space planning, material optimization, and environmental performance (Jabi, 2013). However, I will develop a methodology that incorporates local cultural and historical data into the design process. The goal is to create a workflow that balances modern computational efficiency with a deep sense of place and cultural heritage. For example, this design strategy could include fixed constraints, such as load-bearing structures, area per person, and orientation towards the sun, based on the site location. When the fixed values are defined, there will be options to adjust more flexible values, e.g., building form, ornamentation, and materials, to align with the cultural context.



*Fig. 6. Computational design as a design tool. Aviva Stadium in Dublin, Ireland.*

*What design strategies can be employed to ensure that housing design remains affordable and responsive to varying socio-economic conditions?*

Affordable housing design requires solutions that optimize resource use and minimize construction time (Jocher, 2018). I aim to identify adaptable architectural solutions without compromising the quality of housing. By analyzing case studies of successful affordable housing projects, I will develop a framework that includes adaptable design approaches, efficient spatial planning, and sustainable material choices (Figure 7). The strategies will prioritize flexibility, allowing adjustments based on the socio-economic conditions of different communities. Computational design tools will be used to optimize the modular configurations based on the financial constraints and available resources in different contexts. The outcome will be a set of design rules that can be adjusted to suit both the budgetary requirements and the unique cultural characteristics of each community.



Fig. 7. Adaptable housing example. Unité(s) Experimental Housing / Sophie Delhay architecture.

## RESEARCH FRAMEWORK

### KEY TERMS

*Generic architecture* – architecture that prioritizes efficiency, uniformity, and mass production and makes buildings feel impersonal or disconnected from their context.

*Cultural resonance* - the emotional connection that architecture can foster with local communities.

*Cultural identity* – the collective memories and historical experiences that have shaped the culture; the ways of life that are passed down through generations and define the way of living in a particular culture. In architecture, it influences the layout of buildings, materials, and creative expressions.

*Gentrification* – the socio-economic issue that addresses how rapid development and market-driven priorities can harm local communities.

*Computational design* – a tool for optimizing housing designs to balance efficiency, flexibility, and cultural resonance.

*Affordable housing* – housing that is economically accessible while still providing quality living spaces.

*Adaptable design* – a design approach that can contribute to adaptable and cost-effective housing solutions.

## CONCEPTS, THEORIES & METHODS

To support my investigation, I aim to develop several theoretical frameworks that are crucial to my research. *Phenomenology* is an important theory in this research because it helps me understand how the design of housing influences people's experiences and feelings, particularly how they perceive their living spaces (Nelson, 2011). Phenomenology could be combined with *Typo-morphology* (Leite & Justo, 2017) in terms of composition, materials, details, and proportions. The *Collective memory* concept will guide me in understanding how architecture can serve as a physical manifestation of cultural and collective memory (Moliner & Bovina, 2019).

To design a framework that is not only affordable but also can accommodate evolving social needs, I will investigate *modular and adaptable design* principles that have already been extensively studied in the field of architecture (Habraken, 1999). To synthesize these theories, I will also explore how *computational design strategies* and data-driven methods can enhance the creation of culturally sensitive and efficient architecture (Tedeschi, 2014), and research how algorithmic thinking can be applied in creative industries (Beer, 2023).

For my design and research methods, I will use comparative *case studies* to examine housing typologies from different periods in Tallinn and identify key characteristics. *Surveys* will help me gather qualitative data on residents' experiences and perceptions, and provide insights into the lived experiences of Estonians. Additionally, *spatial analysis* will be used to study the configuration of housing layouts and their relationship to green spaces, examining how these elements influence community well-being. Finally, I will employ *design simulation* and prototyping to test and refine my proposed framework, so I can evaluate how various cultural and contextual parameters influence design outcomes and how to adjust the framework accordingly.

## DESIGN STRATEGY

As the pilot project for the design framework, I plan to create a mixed-use, affordable housing development in the heart of Tallinn. The chosen site presents unique challenges: it is surrounded by different architectural layers, sits near natural landscapes, and is located in a city with a distinct history and cultural identity (Figure 8). These elements will profoundly influence the design, making it an opportunity to integrate contextual sensitivity and innovative architectural solutions. If the pilot project is successful, the design framework can be applied to another site in the world.

*Fig. 8. Project location in Tallinn.*



## **PRELIMINARY CONCLUSIONS**

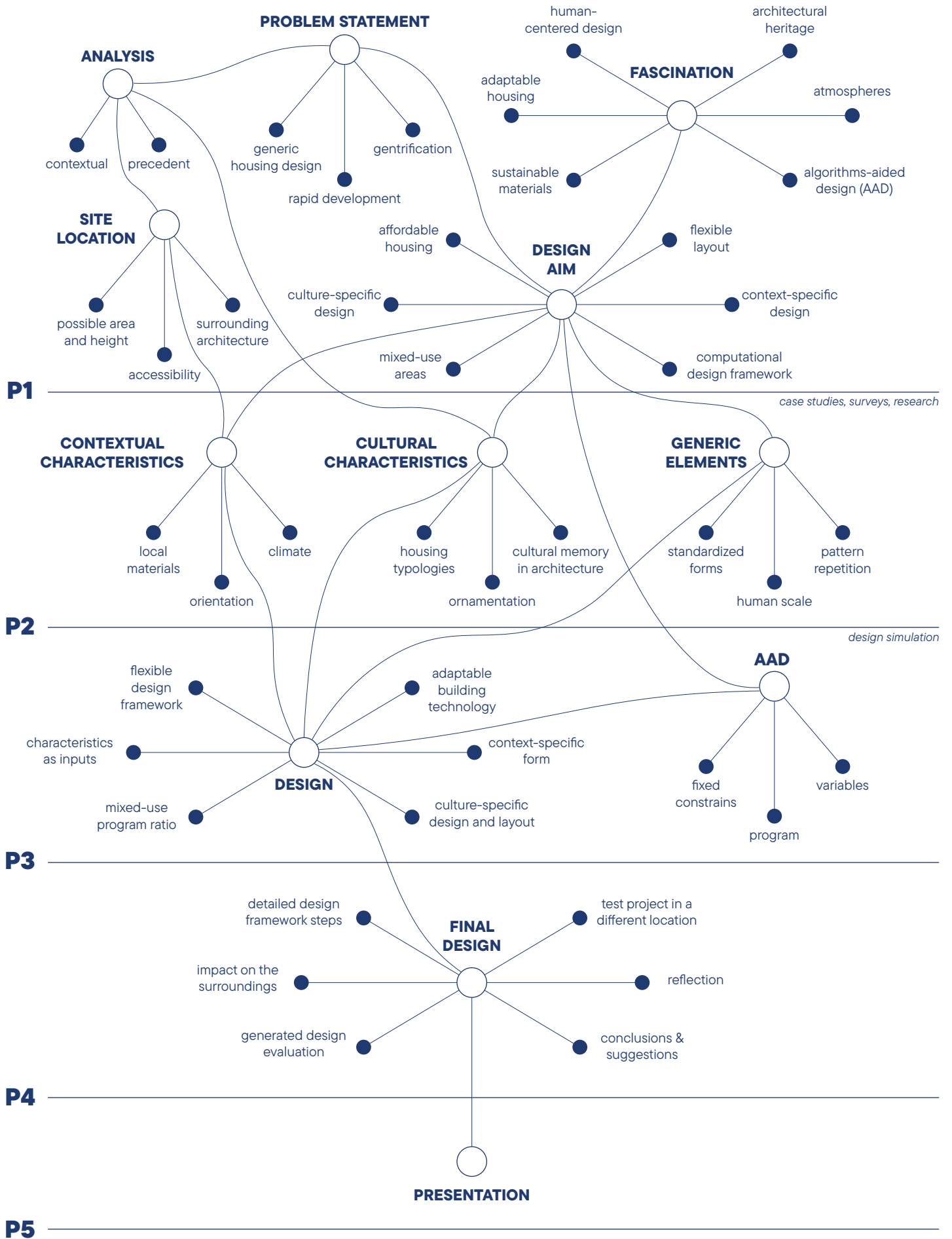
I anticipate that housing designs that are responsive to a community's historical context and cultural nuances can foster a sense of belonging and improve residents' mental well-being. The integration of cultural and historical elements into design is crucial for creating more meaningful and vibrant urban spaces and less generic architecture in general. Moreover, I believe that computational design can bridge the gap between efficiency and cultural resonance. By incorporating cultural and contextual parameters into generative design algorithms, architects can produce contextually appropriate and efficient housing solutions. To make housing developments both affordable and adaptable, architects must consider flexible and modular design strategies that respond to socio-economic variations while still integrating cultural and contextual aspects.



# RESEARCH PLAN DIAGRAM



photography, mapping, drawing



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Fig. 8. Project location in Tallinn.