

REFLECTION PAPER

Reinis Melgalvis

4687663

Main mentor: Mauro Parravicini

Second mentor: Paddy Tomesen

Third mentor: Michela Turrin

Architectural Engineering Graduation Studio

2022/2023

In this reflection paper, I am looking back at my research and design process in the Architectural Engineering graduation studio. My ambition for the graduation project was to design student housing of increased spatial quality in Delft Campus. This I aimed to address with a parametric evaluation model that would be used extensively in early design stages in order to make more informed decisions with the help of data about evaluated visual spatial quality. In the following paragraphs, I will address the questions of the AUBS Graduation Manual.

What is the relationship between your graduation project topic, your master track and your master programme?

As a student in the architecture track, my responsibility is to design lived spaces and shape the experiences within them. For my graduation topic, I aim to delve into the housing experiences of one of the most financially limited social groups, namely students. Often, these individuals face challenges such as insufficient sunlight in their rooms or a lack of privacy due to their only window facing a busy street. As a student in the master's program at AUBS, I am exploring the potential of new computational technology tools to address this issue in the early stages of design.

How did your research influence your design/recommendations and how did the design/recommendations influence your research?

Besides building a parametric evaluation model that helped me to assign a "score" for the visual quality of each student dwelling unit, I gained valuable insights during my interviews with students while visiting their dwellings. The findings of these interviews were essential in creating the parametric model. For instance, I learned about how different students perceive the quality of daylight (overall brightness), direct sunlight, view, and privacy, and when they consider these qualities desirable. Consequently, my design process was guided directly by the insights I gained as well as the scripted parametric model, which also addressed the level of quality expressed by students and the literature review. On the other hand, my design influenced my research, as the parametric evaluation model and its input were based on the geometry I used during the mass studies of housing units.

How do you assess the value of your way of working (your approach, your used methods, used methodology)?

While there are likely many other research methods that could have been used to construct a parametric evaluation model, I specifically chose to use qualitative methods. I believed that these methods would provide me with valuable insights into student housing quality perception early in the process. Conducting semi-structured interviews within the dwellings of the interviewees allowed me to immerse myself in their living situations and gain a first-hand understanding of their spatial quality experience.

Although a quantitative approach such as surveys might have yielded more objectively comparable results for the parametric evaluation model, I considered qualitative methods like interviews to be more better suited in comprehending the overall perception of spatial quality by students. Unlike surveys, interviews permit follow-up questions, enabling a deeper exploration of the subject. However, to enhance the objectivity of the parametric model, it would be beneficial to study its results using more quantifiable methods and test its outcomes on a broader sample of individuals.

How do you assess the academic and societal value, scope and implication of your graduation project, including ethical aspects?

Traditionally, computational design has primarily been applied to perform straightforward calculations on a larger scale, aiming to assist the design process and enable informed decision-making based on the results. One of the most commonly assessed parameters in the design process using computational methods is the calculation of direct sunlight. However, computational models have the potential to indirectly involve stakeholders who typically do not participate in the design process, such as the end-users.

By thoroughly understanding the user group and their values regarding design qualities, a well-constructed evaluation model can, to some extent, identify areas where the design does not achieve their desired qualities. This, of course, requires comprehensive information from the user group and a computational model capable of assessing it.

Subsequently, the results obtained would need to be validated. In my research and design work, I attempted to construct such a model to represent the desired qualities of students from the early stages of the design process. However, due to time limitations, I did not directly validate these results with the students, apart from seeking their feedback on how they would experience the dwellings I was designing.

Ethically, it is crucial to acknowledge that computational models can be easily misused by developers or other parties, who may manipulate the data to design housing that prioritizes profitability over quality. The quality of housing is always relative, as there is no one best design option. Instead, there are various design choices of higher or lower quality for different contexts and user groups. Therefore, a computational model must be used with caution, and the results should be validated transparently with users. It is essential to explicitly explain how the results are calculated, ensuring transparency and accountability in the design process.

How do you assess the value of the transferability of your project results?

The research findings obtained from interviews and literature review can directly inform the design process to better understand what aspects contribute to perception of spatial quality. Instead of a direct quantitative assessment, these factors are taken into account during design process.

However, it should be noted that the constructed parametric evaluation model can only be used in a different project with certain modifications and primarily for gaining insights, rather than objectively expressing the quality of housing. The model can assist in identifying dwelling units that may be highly exposed (lacking privacy) or where sunlight may be insufficient. Nevertheless, these indications are not absolute truths but rather serve as guides.

Own question 1: Does the parametric evaluation model represent the needs of the student?

While the evaluation model aims to address the qualities that students prioritize in their housing, it is important to recognize that it covers only a fraction of their overall needs. The assessment of quality primarily relies on a limited set of parameters. For instance, when evaluating the view quality, the presence of greenery has not been included. This omission is due to time limitations in incorporating it into the model and the substantial effort required to input 3D geometry representing the presence of greenery.

Furthermore, it is essential to note that student housing units only attempt to meet the most fundamental needs of students. They do not account for the students requirements for social interactions, which are crucial in the design of collective spaces. These aspects, which involve creating spaces that foster social connections and community engagement, are beyond the scope of the evaluation model.

Own question 2: What role does the computational model play along traditional design process

The computational model should be viewed as an addition to the traditional design process rather than a substitute for it. It serves as an additional tool to obtain deeper insights and compare various design alternatives more efficiently. These results can then be utilized to make informed improvements in the design, such as considering different typologies or altering the assembled mass.

By integrating the computational model into the design process, designers can streamline their decision-making and gain valuable insights that might otherwise require significant effort and time. However, it is important to remember that the computational model is not intended to replace the traditional design process, but rather to enhance it by providing data-driven perspectives and highlighting areas that require attention and refinement.