P4. Graduation Studio Reflection

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1. The theme of the studio

Construction techniques, as a practical application of materials and technologies, has been developing steadily throughout human history. Building technologies, on the other hand, as a critical approach to the applicability of construction techniques within our context, is a relatively new field of study. For me, the relevance of the BT studio lies in the fact that it doesn't only enlist the existing constructive systems, and proposes the most appropriate scenarios where to apply them, but instead looks at the problems that these systems were originally designed to solve, and questions if they are still solving them in the most current and effective way. When I decided to focus my graduation project on the topic of "Facade Value" I committed to apply the same critical approach to the way in which we envision and produce building envelopes.

Value is a unique term in the sense that it can be extraordinarily vague when it refers to the object of study, and yet extremely specific when it looks at the subject who is weighing it. This means that a constructive system, such as a facade, can have almost infinite types and layers of value, depending on the discipline that studies it, and the interests and involvement of the subject doing it. In my opinion, this topic fits very well within the context of BT because it has allowed for a multidisciplinary approach to the initial question: "Are facades being produced in the most effective way, or are there still ways to increase their value for the benefit of all parties involved?". This brought into question such technical aspects as the production methods and materials involved, as well as wider concerns such as the way in which these products are financed, the strategic relevance they can have to the institution(s) that owns and uses them, and the impact they have on the ecology and economy of their society. Each one of these aspects has to be evaluated -because value is a subjective term- from the point of the view of the different parties involved: from the producer of the system and his client, who are directly involved in making decisions, to society and nature as a whole who might eventually suffer the consequences.

The complexity of balancing all these methods and motivations meant that the project was under constant risk of branching into one of its subtopics. To me, this is a natural consequence of a studio which tries to bring together disciplines that have lately drifted apart due to over-specialization. However, I think with the right guidance these branches were generally avoided and I am satisfied with the project's conclusions, though a lot of work still remains on the specific way of applying each one of them.

2. Methodical approach

As I mentioned, the methodical approach of the studio was to understand how the specific studied system works, as well as the main forces and actors involved, and then look for new solutions that match this frame and appeal to all parties' interests. This is in some ways the opposite to what some of us are used to in architecture studies. While in many cases architectural projects are approached from the point of view of collecting a series of known solutions to a project that roughly fits them, most of the projects in the BT group were based on defining a series of problems (which might or might not be currently faced by existing technologies) and then develope the systems that would allow us to face those problems in the best possible way.

From this point of view, I consider my project to have followed the methodology of the studio. I started by using research compiled by one of my tutors (Alexandra Den Heijer in her book Managing the University Campus), and then developed scientifically projected data on the benchmarks and parameters of commercial facades being built, over the last 15 years or so, by universities in The Netherlands. By extracting this data, and using industry standards from different literary sources, I identified the main inefficiencies that could eventually be attacked by a new business/industry model. Studying different ways in which other industries produce and market their products, I decided to apply a product-service system approach to the production and commercialization of facades. This resulted in my work going through diverse stages of development, some impulsed by technical aspects associated with Building Technologies, and others modified by the point of view of the market, following a Real Estate mind-set.

In the end, in order to produce a series of comparable design strategies (since my results are mostly ways of applying resources, more than design proposals) I had to learn, to some extent, about adjacent engineering interests such as value engineering, cost estimation, financial scenarios and production techniques. For me it was very interesting to learn about this range of concepts, since each one of them provided further focus to a central question that was too broad to provide a single answer.

3. Research and Design

Research and data evaluation has been the main objective throughout most of my graduation process: From understanding the concept of "value" and its relevance to the different stakeholders in a project, through the analysis of a range of buildings within my scope of study, and up to the exploration and comparison of the ways in which the (architectural) construction industry differs from other manufacturing and service-providing industries. This process of balancing the ways in which we, as building designer, do things, against other practices such as automotive or product design, gave me a better understanding of the overall impact of new financing and production methods, which had to be developed before setting the frame for new design proposals.

The final design sketches are in themselves part of the research. More than design proposals for any specific location or building, they are potential strategies for producing cost- and resource-efficient facades. They aim to fulfill different combinations of client/user needs while optimizing material use, facilitating the application of circular economies and reducing the risk of waste generation. Our current way of producing building envelopes is a one-size-fits-all approach, in which decisions are limited to slight cosmetic and financial variables, instead of offering radical solutions to questions such as: "how long should the facade last?", "When is it better to invest which resources?'", or "what will happen to all the materials at the end of its service life?". By coming up with a range of schematic proposals, the final goal was to evaluate how successful these scenarios would be at answering these and other questions, and to what degree they would fit into the business model of leasable facades and product-service systems.

4. The project within the wider social context

The efficient use of resources - whether material, financial, technological or others - is the fundamental question of our time. However, the path towards it has been in many cases pioneered by "green" solutions, which might be effective at immediately lowering raw material use, but which frequently disregard important design factors - such as cost and durability - which might eventually undermine their more widespread use potential. Such solutions, in many cases, end up being applicable to a small, privileged sector of society, but are economically unfeasible to the rest. The main objective I set for myself when starting research on this topic was that any conclusions achieved had to fit within a wider social context: be appealing to industrial practices as well as potential clients and users, and that any suggestions provided could be universally embraced by all parties without hindering the interests of any. In other words, it had to be proven that efficiency can, if we change the relation between businesses and clients/users, turn out to be in the best interest of all.

The goal was to develop a model that could be applied to the production and implementation of almost any kind of construction technology, or even product manufacturing. Facades have been used as a single case-study, in part due to the specific expertise of my advisors on this topic, but the general strategy towards the use of resources (money, time and material) are universal to most, if not all, production activities. It is an effect of the "instant culture" of our generation, where smartphones provide the answers to questions in a few seconds, to think that effective solutions have to provide instant results. It has been a primary concern of my work trying to close the gap between what is generally seen as better (because it's more appealing in the short term) and that which can turn out to be universally better in the long run.

Instead of designing a new system and then hoping for the market to absorb it, I think it is important to understand what the needs and problems of the market are, and then develop a system that will try to appeal to the different interests, weaknesses and concerns of the diverse forces involved. Product-service systems, as a strategy for business relations and resource management, is one approach which I believe has huge potential in the sense that it necessarily binds together key stakeholders, forcing them to work together towards the common goal: Maintaining and improving our life-style today without compromising it tomorrow.