

What can be said about the definition of insulation?

LSRM Final assignment
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I INTRODUCTION

Research should not be submissive to design, but correlate with it. Jorge mentioned in his lecture that research plays an important role in each step that is taken from the context up to the presentation of the project. To develop and make yourself grow as an architect, means you have to gain knowledge about the context you are designing for. Therefore research is needed. Focusing on research methodologies and teaching the relevance of it in relation to the architectural practice, will eventually benefit ones architectural career, as it will deepen the understanding and will lift the architectural design to a higher level.

The thought about what kind of role I want to take on as an architect is something that was introduced to me at the beginning of the course and never left my mind. The topics discussed got me actively thinking about the knowledge I had gained during the previous years and what values I pursue as an architect. Going through this evaluation process was very important to me because of the context I had chosen for my graduation project. Namely a settlement located in Johannesburg, South Africa, a context not familiar to me. The biggest questions that arose were what did I want to do exactly and what would be the best way to introduce my plan?

Visiting the settlement Zandspruit in Johannesburg during my vacation broadened my understanding of the current living situation in the country. It left a strong impression on me. But despite the bad living conditions, the strong community feeling was what inspired me most. After the visit I knew I wanted to learn more about the lives of the residents and help improve the settlement, using the strong community feeling as a key point.

Jorge told in his lecture that by defining for ourselves what the meaning of architecture is, and by enrolling ourselves for a certain studio, we commit to working according to a system that works from these ideas. I enrolled into the Architectural Engineering studio where I received the freedom to create my own project. The studio focuses on integrated design, and strives for innovative solutions in all fields. These innovations can only be created by the help of research.¹ The goal of my project is to create innovative solutions that improve the living conditions of the residents of the settlement, making it fit right in with the believe of the AE studio.

The housing conditions in the settlement can be seen as below minimum, as they lack basic services and don't provide any thermal comfort or safety. The technical faults mentioned can be traced back to the building method applied. A lot of improvements can be introduced in this field, but it is important to take into account the cultural context before you can start introducing solutions. Besides this notion, the question what and how I wanted to contribute also played an important role at the beginning of my research. After a short analysis of the current situation in the settlement, I came to the conclusion that instead of presenting them an entire new building method, I'd rather focus on improving the existing one by focusing on the technical flaws. Knowledge of residents may lack in this field, or it isn't on top of their priority list. My research revolves around finding easily manageable solutions, with the main focus being insulation. My research question is formulated as follows:

'Can a properly functioning insulation be made out of waste materials alone?'

II RESEARCH-METHODOLOGICAL DISCUSSION

The main methodology I will use to answer my research question will be 'research by design', which is a practice-based research approach. Other methodologies supporting my work will be a literary study and praxeological research. The choice for a practice-based research is due to the attitude towards

designing. As it is, the outcome for this type of research doesn't necessarily have to be a textual report, but can also be displayed in a creative new way.² My own research will describe a set of experiments done with waste materials, after which I will present an artefact. But before these experiments can be done, a literary study into the habits and culture of the residents is important. This information is needed to create a clear overview of how this designing process should be approached.

The praxeological research also plays an important role in the collection of information before the actual design begins. This type of research focuses on studying human action and conduct.³ Examining the local way of building, the materials they use and their supply chain, among a lot of other things, will give me a better understanding of the freedom and restrictions I have whilst experimenting. Coming up with a production process that might prove to be too difficult or requires tools that nobody has available, will soon prove to be not feasible. Answering questions related to this praxeological research can partly be done by reading books and articles, but analyzing my personal photos and videos can also provide a lot of information. Besides these methods, the contacts I have in Johannesburg also have a bunch of knowledge I can address. Although it should be noted that handling this information might require some extra caution. As their understanding of the culture and live in the settlement is bigger than mine, they also do not live there. My questions about the settlement will most likely be answered from their own interpretation of the situation, albeit being pretty accurate, and not reflect the actual situation that is going on. Coming from completely different backgrounds which each our own profession, relevant information could be lost due to different interpretations.

I mentioned before that my focus during the research will be on waste materials. But the definition of what waste actually is might differ between countries, cultures or even the population of one city. It is clear that the amount of waste on the planet is growing, and that all over the world countries are focusing on reduction and recycling of these materials. Statistics on the recycling industry in South Africa show that the country is currently only recycling 10% of all its waste, with 75% of all waste ending up in landfills.⁴ The country still has a long way to go, but the current situation does provide income to the lower class. Whereas in Europe recycling is seen from the focus point of sustainability, recycling in South Africa is done because of economical reasons.⁵ This income is generated by collecting waste from locations like landfills and selling these to recycling centers. The residents from Zandspruit will most likely also earn a little income with this business. This business shows they have access to a lot of materials that to others can be seen as waste. Besides earning an income, these could also be used in an innovative way to improve their living conditions. One man's trash is another man's treasure.

III RESEARCH-METHODOLOGICAL REFLECTION

As mentioned before, the methodology I will be using most for my research will be the practice-based research approach. This term in itself creates a point of discussion and confusion. As this research approach doesn't exist as long as other methodologies, there is not (yet) a solid description of how to conduct a research within this field. This is due to the fact that the terminology used isn't the same in every country, and that the freedom of interpretation of the term creates a difficult scenario of trying to come up with a fixed set of criteria.⁶ As the outcome of the research is a non-traditional product and knows many concepts, the direct acceptance of this research form as academic can be problematic. And according to Biggs, Buchler, Ståhl, and Sandin (2008) this form of research isn't recognized the same all over the world.⁷ Multiple research funding bodies and higher level education institutes with interest in academic research strive to define what research in practices is and how it should be dealt with. Arguments are made against the use of the scientific model in this search, as they claim this traditional definition of research might not be the best structure for defining research in the humanities.⁸

As is clear, a set definition of the term awaits. But within the field of academic research in architectural design there are also discussions going on. The architect Perrone (2001)⁹ claims there

are two main opinions about this topic. The first group sees the research into architectural design as a traditional way of doing research, whilst the latter defends the notion of design as research activities. The big difference between the two is that the first believes other disciplines can contribute to research in the architectural field, while the second believes only architectural design practitioners are capable of doing this. The submissiveness of research to design is created by the first mentioned group. As from my own experience I can agree with Jorge that this is the case in the current situation. I do believe that innovative solutions to the architectural field can be introduced by other disciplines as well, but for the architects it is important to have the design process as research in itself recognized.

Carrying out these researches into design and praxeology revealed questions about the definitions of words used in everyday life and in the architecture profession. The definition of waste I already briefly discussed in the previous part. As this word also plays a big role in my research, the definition of the word insulation is even more important. In the Western world insulating material can be described as a layer that blocks heat transfer and is embedded in the built structure, qualifying to certain criteria. But most likely this definition of insulation won't be the same in a different context with a different culture. The residents of the settlement are living in conditions unimaginable to the Western world, so if an opportunity arises to improve their lives, would they really focus on the technical properties and qualifications of the materials? According to Kiel Moe, modern architecture lacks in using its own set of geographic, ecologic, and energetic engenderment pointing towards its larger system boundaries in practice.¹⁰ Cultural implications are also important in the case of building sciences, and in that way also in the case of creating and using insulation in building practice. It can be said that the Western definition makes insulation part of a closed building system, but it can be argued if this system will work in a different context.

IV POSITIONING

During my research I have experienced firsthand the confusion relating to the term practice-based research. The biggest problem was to figure out exactly what the outcome of my research would be and in how far the experiments needed to be scientifically supported. Looking back at the presentation of the outcome, mine will be somewhat traditional, as it will present an artefact but will be supported by a textual explanation. I do think this is necessary in my case, as there is much information that needs to be taken into account and understood to fully understand the form and purpose of the created artefact. I like to see my research as a contribution to academic research in design practice as a generator of relevant questions for the context.¹¹

The definition of insulation plays the most important role in my research into creating insulating material. To reflect on the statements I projected during the previous part, I believe the boundaries of the definition of insulation should be stretched. I agree with Kiel Moe on the notion that our designs should also take into account the cultural implications, and with that the fact that a closed system won't work in every context. The living conditions in the settlement are bad, and any upgrade on their house will improve these conditions. Seeing they don't have a large income, if any at all, the option of buying the insulation as we know it is not there. And this is where we look into waste materials as an opportunity for life improvement. For my own project I prefer to create an open system, so the residents can find the freedom to apply different materials suitable as insulation, and can do this in any phase of the building process.

My research can be linked to the talk of Marieke Berkers and the article of Avermaete discussing the role of the architect in relation with the users of the end product. The end of the twentieth century marked a period of marginalization of the public, but the interest among architects to articulate their positions towards the people is increasing. The term syndicalist perspective of the architect mentioned in the article spoke to me as it praises the qualities of the local working culture.¹² The main focus for me was that finding the answer to my research question should be done from the point of view of the residents. These people live difficult lives under harsh conditions, so praising their self constructed building practice will be a good starting point of developments in the settlement.

Focusing on the insulation, the creation should be approached on terms of feasibility and take into account the human comfort and physiological response instead of only looking at heat transfer theories and technical properties.¹³

Coming back to the praising of the local culture. I have spoken about carrying out the praxeological research. Most of this was done from home with the available methods like literature and photos, but also from personal conversations with my contacts in Johannesburg. After handing in my research paper I will continue carrying out this type of research, as it feels like the best way to get to know a different culture and context and provides me with information to make my project feasible. The outcome of my research paper will be an artefact and textual explanation, but will also contain sheets that visualize the solutions. These sheets will be presented to the community in an effort to empower them. They should be seen as documents that stimulate creativity and innovation within the community, something that is lacking right now. This form of documentation and transfer of knowledge will shine through in my further design as well. As an architect I want to get my fulfillment out of empowering citizens. The goal of my project is to make this a community based project. The plan will create space and in a later phase a basic house structure, which can be adjusted and extended to the liking of the resident. I will provide the base, but it is within the power of the residents to let their own skills and culture shine through.

¹ Architectural Engineering, Technische Universiteit Delft, 01-05-2019, <https://www.tudelft.nl/en/education/programmes/masters/architecture-urbanism-and-building-sciences/msc-architecture-urbanism-and-building-sciences/master-tracks/architecture/programme/studios/architectural-engineering/>.

² Linda Candy, *Practice Based Research: A Guide* (Sydney, University of Technology, 2006), p.1.

³ Marieke Berkers, "Praxeology" [powerpoint], 2019, <https://brightspace.tudelft.nl/d2l/le/content/124944/viewContent/1274965/View>.

⁴ Only 10% of waste recycled in South Africa, Statistics South Africa, 05-09-2018, <http://www.statssa.gov.za/?p=11527>.

⁵ How recycling became a South African Money-Spinner, Financial Mail, 27-06-2018, <https://www.foodstuffs.co.za/how-recycling-became-a-south-african-money-spinner/>.

⁶ Michael Biggs, & Daniela Buchler. *Eight criteria for practice-based research in the creative and cultural industries* (Hatfield: University of Hertfordshire, n.d.), p.2.

⁷ Michael Biggs, Daniela Buchler, Lars-Henrik Ståhl, & Gunnar Sandin. *Architectural design and the problem of practice-based research* (2008), p.8.

⁸ Michael Gibbons, Camille Limoges, Helga Nowotny, Peter Scott, Martin Trow, & Simon Schwartzman. *The new production of knowledge: The dynamics of science and research in contemporary societies* (London: Sage Publications, 1994).

⁹ Biggs et al, *Architectural design and the problem of practice-based research*, p.9.

¹⁰ Kiel Moe, *Insulating Modernism* (Basel: Birkhäuser, 2014), p. 290.

¹¹ Biggs et al, *Architectural design and the problem of practice-based research*, p.10.

¹² Tom Avermaete, "The architect and the public: Empowering people in postwar architecture culture", *Hunch. The Berlage report on architecture, urbanism and landscape*, 14 (2010), p.49.

¹³ Moe, *Insulating Modernism*, p. 189.