EXPLORING HEURISTICS OF SUSTAINABILITY: THEIR USE AND IMPACT

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I investigate how heuristics of sustainability impact how and what we build. Sustainable construction is extensively discussed in research and the public domain. Sustainability comprises environmental, economic, and social aspects, making it difficult to agree on a single-term interpretation. Hence, different heuristics of sustainability are used. In my professional environment in Germany, I seek to explore them using autoethnographic material. I also draw on interviews with construction professionals and laypersons. I aim to identify sustainability heuristics, their use and impact in practice. A dominant heuristic is that sustainability is expensive. This heuristic has an autopoietic character - it reinforces itself. Other heuristics - sustainability is an obligation and is complex and bureaucratic - often reinforce the former heuristic. It can be anticipated that a divide in the construction sector will develop between those who can and will embrace sustainability and those who cannot and will not.

Keywords: sustainability; heuristics; autoethnography

INTRODUCTION

During a building physics lecture with some civil engineering bachelor students, we discussed the sensible amount of thermal insulation. One student said the following:

> Regarding the thermal insulation of perimeter walls, we do the bare minimum required by law, nothing more. Everything else does not pay off.
>
> "Seriously?", I thought.

The statement made me think and triggered what is called my 'sense of significance' (Emerson, Fretz and Shaw 2011). Autoethnography depends on events that resonate with the researcher's interests. That was such an event.

I knew that this stance regarding thermal insulation was not unusual, but I did not think it was common among engineers. To the student's understanding and that of the student's colleagues at their workplace, the amount of thermal insulation required by German law is already more than economically viable. To the student, more insulation appeared to make no sense whatsoever. The student seemed unnerved by the ongoing debate about sustainability, and it seemed to be more of a burden than something worthwhile to strive for.

On the contrary, the academic debate about sustainability usually revolves around the notion that it is desirable and necessary to become more sustainable—not only

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narrowly focused on the construction industry but even more so in the real estate sector regarding the whole lifecycle of buildings. Yet this student accounted for a view of sustainability that differed completely from the one supported in academia. In essence, the student said, “Sustainability is a pain in the neck.”

I wondered how this young person’s understanding of sustainability influences their and their colleagues’ choices. Therefore, I seek to explore how different sustainability heuristics influence what we—as construction professionals—promote and build. Its aim is to sensitise others to the critical importance of how actors perceive and understand sustainability, aiming to foster and promote sustainability efforts.

I will briefly explain autoethnography and give some background on why I think this exploration is important. I will then use vignettes to showcase and interpret sustainability heuristics.

METHOD

As the topic is introduced, it becomes evident that I use personal experiences within the construction sector as a basis for my research. Since 1999, I have been running a 25-employee construction business in the wider Berlin area. These interactions and experiences are documented as fieldnotes, using the autoethnographic approach. Autoethnography, a subgenre of ethnography, differs in that it focuses on the researcher's own environment. Both ethnographers and autoethnographers observe a research setting, take brief notes during interactions and events, later develop them into longer fieldnotes, and analyse these fieldnotes for insights and theories about the observed cultures (Hammersley and Atkinson 2007).

For the presented research, I used experiences from my role in the construction business. However, I sought to incorporate conversations I had while teaching at university and with peers in business about sustainability. One may call these conversations ethnographic interviewing (Sherman Heyl 2001). But I also make use of what is called call 'memory work' (Ellis, Holman Jones and Adams 2022); to write from memory vignettes about events in the past.

Once I heard the student talking about thermal insulation, it raised my interest in the topic. Because I researched identification with sustainable construction solutions, I already had issues around sustainability on my watch. However, the conversation with the student made me more watchful regarding sustainability heuristics - how people around me and myself make sense of sustainability. Reflexively, I must admit that I raised questions consciously and subconsciously that I may not have asked otherwise. Conversely, I may have missed exploring my environment regarding other questions about sustainability. Yet, that is a problem with all research (Pirsig 2014), but more obvious in autoethnography.

BACKGROUND

Many construction management researchers discuss fundamental shifts and disruptions necessary in the construction sector (Darko, Zhang and Chan 2017). Usually, these authors ask for changes in legislation and policies. Some point to the necessity of fundamental shifts in thinking about sustainability (Du Plessis and Cole 2011).

However, the point I like to raise here is to focus on small changes which seem unimportant but may grow in significance (Rilke 1929) or as Berlin (2013) very vividly described: often, it is not the big strategy that wins the battle but the tiny detail

that makes the balance tip. In Berlin's case, it was not the grand strategy but the ordinary soldier that decided the battle. I am looking not so much at the big policy strategies which others researched (Darko, Zhang and Chan 2017) but what happens on the individual - personal - level. Because it is often overlooked how sustainability is lived and enacted on a personal level and how sustainability issues are "negotiated on the ground" (Schweber 2017: 302).

Earlier explored the relationship between identification and sustainability (Grosse 2022). The initial vignette underlines the need for research into "processes, understandings, and motivations which produce observed patterns and systems." (Schweber and Leiringer 2012: 491).

Here, I seek to understand how mental shortcuts—heuristics—frame one's choices about sustainability. It further develops my earlier thoughts since identification is closely related to what I embody. Heuristics help to deal with complex problems by simplifying them to use ready-to-hand tool (Heidegger 1927) to provide manageable answers to the problems one faces. Hence, these heuristics are closely related to what I am rather than "having justified beliefs" (Hukkinen and Huutoniemi 2014: 177). Therefore, heuristics are "an attempt towards a more embodied understanding of knowledge" (Hukkinen and Huutoniemi 2014: 177) as sort of decision-making on autopilot (Kahneman 2012).

Heuristics are necessary as we ought to deal instantly with everyday problems. Kahneman (2012) calls them 'system one' or fast thinking. We "rely on a limited number of heuristic principles." (Tversky and Kahneman 1974: 3) They are a rule of thumb that helps us make our daily decisions. Heuristics are what we think how things generally and related to sustainability work (Gash 2020). "In general, these heuristics are quite useful, but sometimes they lead to severe and systematic errors." (Tversky and Kahneman 1974: 3)

As heuristics are an essential part of the management discourse, they shape "the reality of the construction industry" (Green 1998: 384). Hence, my aim is to unveil some sustainability heuristics and explore their impact.

Heuristics and sustainability have been explored in other industries (Gash 2020, Huutoniemi and Tapio 2014). However, as far as I learned, no research is available on how construction professionals use sustainability heuristics. Therefore, I try to demonstrate the prevalence and importance of these shortcuts. They strongly influence decisions and, hence, the sustainability of the built environment.

Observations

Heuristics are simplifications (sometimes oversimplifications) of causalities in our environment. Therefore, they often comprise the reduction of complexity.

Reduction

The predominant response I get when I talk to people about sustainability and ask them what they understand as sustainability is that it is about reducing the carbon footprint. Usually, it is about energy consumption while using the building. When I ask students of civil engineering and architecture, the answers are the following:

> "Sustainability is saving energy."
>
> "It is to retrofit buildings to make them more energy efficient."
>
> "Thermal insulation is sustainable."

This reduces sustainability often solely to the environmental aspect and on top of saving energy in use. This reduction is also prevalent in research as Pan and Ning (2014: 673) reviewed research on sustainable building and found that "more than half of the articles focused on the environmental aspect only." Further, these articles "largely examined the element of carbon emissions and/or energy consumption per se," leading to overlooking other aspects and their interdependence (Pan and Ning 2014: 674).

However, some of the heuristics I recorded also focus on the materials used. For example:

> "Building with timber is sustainable."
>
> "If one wants to build sustainability, one has to use natural materials."
>
> "You know thermal insulation is sustainable but not if it's EPS (expanded polystyrene foam)"

During a longer conversation over a coffee in my office, a colleague - himself a contractor - very proudly reported the following.

> "Listen, we reused the old brick. You know, I got these workers from Eastern Europe, and they cleaned the bricks from the walls we demolished, and we used them. When it came to the ceilings, we made them the old way: timber beams and a board between them. I got some clay from a pit a couple of kilometres away and boards on top. We reach very good noise reduction without using any concrete. If that's not sustainable, what else."

The heuristic used is quite broadly said, "saving energy", and using "natural materials" is sustainable. Although it is an important first step towards sustainability, it mobilises just a very narrow view of sustainability. Some solely look at the energy consumption in use, whereas others also focus on the used material. They usually differ slightly in the emphasis on one or the other. The problem is that they merely focus on a narrow environmental sustainability perspective and fail to include considering the whole value chain and the project life cycle. Hence, they do not account for the environmental impact along the project's life.

Further, it does not take social and economic aspects into account. Later in the conversation, the colleague mentioned that his clients were "quite well-off," both getting a considerable salary, so they could "afford it," which leads to the second heuristic.

It's expensive

After stressing the environmental aspect, sustainability is usually associated with additional costs. This heuristic of sustainability says that it is expensive to build sustainably. It draws on the notion that you do something for the environment at your expense. To become eco-friendly, one must spend extra money.

The conversation with my student, with whom I started my paper, vividly illustrates this heuristic: "Everything else does not pay off." Yet the student is by no means the only one taking this shortcut:

> In a meeting where I acted as a consultant, an investor talked to different construction companies that had sent bids for a larger residential construction project. We already talked to one firm's representative, who explained the firm's bid. Their proposal was ambitious but realistic regarding energy efficiency and the used material.
>
> Now, the second bidder appeared. He talked us through his quotation and explained what they wanted to do. When we touched on energy efficiency, we learned he's not

> willing to build in a standard similar to his competitor's. He simply argued, "A higher standard than the medium standard is wasted money."

Again, the "sustainability is expensive" heuristic was used. He argued that he already checked it with different previous projects and was not even willing to explore the matter regarding the current project. "I already know the result - it's too expensive to pay off."

At this point, it could have been worthwhile to explore the narrative that led to his conclusion. Understanding a narrative—like Green and Duman's (2023) approach to construction policy—could yield a deeper understanding of the heuristics' roots. However, I chose to explore the impacts of heuristics and their workings once they are in place.

When sustainability is seen as expensive, it becomes something one has to comply with and some boxes to tick (Murtagh, Roberts and Hind 2016). The "expensive" heuristic also resonates with Schweber (2017) when she writes that environmental, economic and social considerations must be reconciled. The problem with this reconciliation is that we do not know the future energy costs. We even do hard to guess them roughly. Hence, we don't know what to reconcile. Although, most agree on the expectation that they aren't likely to fall but to increase significantly. Often, these expectations of sustainably rising energy costs are not sufficiently considered. That may originate in an inability to grasp, without detailed calculation, the effect of compound interest or exponential growth. Therefore, the heuristic of expensiveness prevails and guides decisions.

During a lengthy talk with a befriended architect, I mentioned the claim that sustainability is not economically viable. I knew that he was passionate about this topic, and I also knew that he would take the bait. He started to talk passionately about sustainability. I recount what he said:

> "I had this project with these very conservative Bavarians. We planned for an energy retrofit of a 1990s residential housing complex. I was about to present my proposal to get the go-ahead from these staunch conservatives. Sure, they had resentment about anything that looked "green". I knew they would tier me apart if I started discussing eco-friendliness. So, I avoided mentioning eco-friendliness and just talked about the commercial advantages of our concept. Solar energy is for free, and geothermal energy is too. I demonstrated how it would pay off very soon and mentioned in the passing that as a "side-effect", it is also environmentally friendly. And you know what, they approve, we built it, and it works."

He knew the investors' heuristics, and he actively mobilised their heuristics to pursue a sustainable approach. He emphasized the economic benefits of his proposal and only mentioned eco-friendliness in passing.

He is very much convinced and passionate about moving sustainability forward. This certainly supports Du Plessis and Cole (2011: 447), claiming "the most effective change will happen through changing the mindset and values of stakeholders". This change must have happened to him long before we met. However, I am unsure whether he changed the mindset and values of the Bavarian stakeholders in the project. Still, he succeeded with his sustainable approach. Particularly because this project was and is more economically sustainable -in other words, more profitable than other options.

> Similarly, a few years ago, when I presented a proposal for a project, I highlighted that our design would be very energy-efficient and that we would plan to build according to a relatively high standard. We discussed our ideas and concepts with the board

> members. Later, when the conversation became much more informal, one of the board members said: "Investments in building physics always pay off." In other words, he - a civil engineer - firmly believed that investing in thermal insulation always outweighs the cost of energy. This was even before the current energy price hike.

However, it did not consider that a surplus of thermal insulation could result in inefficient resource use because too much insulation consumes more resources than it might save later. Still, contrary to the student, this person thought thermal insulation way above the minimum standard was economically sustainable.

These accounts demonstrate issues where a conflict between economic and environmental demands does not always exist. Hence, the "expensive" heuristic might, as Tversky and Kahneman (1974) warn, lead to severe mistakes.

It ought to be expensive

Later in the conversation, the befriended architect mentioned another event.

> He recollected a conversation with some environmental activists. They visited his house, which was a landmark regarding energy efficiency. Here, too, he only focussed on the economic benefits of green building. That, however, did not go well with the activists. They somewhat questioned how something eco-friendly could be economically viable.

In other words, eco-friendliness could not produce a profit for them. If so, it became highly suspicious. Here, the very same heuristic is mobilised. Yet, it worked in the other direction. It demonstrates that the "expensive" heuristic is supported by both camps—those who oppose sustainability efforts and those who support them.

An intriguing facet of the "expensive" heuristic is its autopoietic character. Autopoietic systems can maintain and renew themselves (Varela, Maturana and Uribe 1974). The concept stems from biology but is also adopted in social sciences (e.g., Luhmann 1995). Relying on and acting on the heuristics offers further evidence and reinforces the "expensive" heuristic. In other words, if one invests in an expensive but sustainable heating system that turns out to be more environmentally friendly but does not pay off, it offers further evidence to the claim that environmentally friendly systems come at a higher price.

Obligation

Unfortunately, this leads investors to brag about their environmentally friendly buildings, whereas they invest as little as possible to achieve this (sometimes exaggerated) level of eco-friendliness - what is usually called greenwashing, as described by Delmas and Burbano (2011). However, if sustainability pays off, greenwashing is not necessary. This is particularly important if, as in the first case, sustainability is seen as an obligation, a mere pain in the neck. The "expensive" heuristic reinforces this impression and makes it worse. It leads to strengthened autopoiesis, and subsequently, a mindset change becomes even more difficult to attain.

If opting for a green and sustainable option is economically viable, the "expensive" heuristic is significantly challenged. That could slowly lead to a mindset change Du Plessis and Cole (2011) called for.

Yet, a mindset change is already underway in some places. The less sustainable offer was dismissed during the board meeting I mentioned above. The person in charge argued that the firm cannot afford to do something of a lesser sustainability standard because it contradicts the organisation's values and reputation. The common

conviction appeared to have been that a sustainable building would be a more valuable asset and a prestige investment in their books.

This incident showed that "the interpretation of these concepts [of sustainability and sustainable development] is not fixed, but instead evolves over time to generate different variants of sustainability in response to larger societal drivers and improved understanding" (Du Plessis 2009: 343).

Still, it is a narrow edge where the "obligation" heuristic reinforces the autopoiesis of the "expensive" heuristic or helps to overcome it.

Too complex

Sustainability is a very complex problem due to the different demands. Therefore, heuristics are necessary, but they should be used with caution. It appears that many actors in the industry - particularly in higher management positions - understand the necessity of building more sustainable buildings, but the complexity frightens them.

The other day, I talked to a construction manager in a midsized construction company. They work predominately in the housing sector for private investors. He explained why and how sustainability is important to his company. He knew much more about it than many in the industry. Apart from environmentally sustainable construction, he was aware of other aspects of sustainable construction. He said, "Sustainability is so much more than energy efficiency."

Subsidised loans and additional public funding require his company to gain a sustainability certificate for its project. Otherwise, it will be difficult to place it on the market. Sustainable building is a marketing instrument for them; hence, I couldn't help but suspect some amount of box-ticking and possibly some greenwashing.

Then he said, "I can't do that [getting the certificate] besides my regular job. This is an entire full-time job." It amounts to a bureaucratic monster. Other accounts support this view. Even those trained in sustainability certification told me about their reluctance to file for certificates because of the administrative effort and resulting cost needed.

Smaller companies will struggle to build the administrative capacities to get a certification. Hence, they regard sustainability even more as a "pain in the neck," like my student from the very beginning of this paper. Hence, the autopoiesis is even more reinforced. Therefore, it appears to become a dividing line between those who embrace sustainability and those who despise it - the bigger actors with more bureaucratic capabilities and the others.

CONCLUSION

My observation highlighted that sustainability is often reduced to environmental sustainability. Hence, other aspects are neglected. This is strongly associated with higher costs that do not pay off. This "expensive" heuristic has an autopoietic character as it reinforces itself. However, experiences from different projects demonstrate that this is not necessarily the case. Subsequently, the "expensive" heuristic gets increasingly questioned.

On a different level, sustainability is seen as an obligation—legally and/or morally. This may shift the balance in some cases towards more sustainable practices but may also cause resistance. It reinforces the autopoiesis of the "expensive" heuristic and leads to more box-ticking and, eventually, greenwashing.

The bureaucratic effort to acquire sustainability certifications may divide the construction sector into those who can and do acquire the certificates and those who don't. Subsequently, frustration about sustainability may grow in smaller firms and foster resistance against the idea.

It is promising to see that economic success and sustainability—not greenwashing—do not exclude each other. However, larger upfront investments and bureaucracy are needed to achieve positive revenues. Whether they are affordable to smaller companies and if they are willing to invest remains to be seen.

I did not explore how they came into being. Therefore, exploring the narratives on which the heuristics rest appears to be promising. Still, this research highlights very few sustainability heuristics. It showcases their mechanics and indicates their impact.

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