

CHARLIE CLEMOES — INSULATION/ISOLATION: A FAMILY DRAMA

What was the starting point for your research project?

My project started completely differently to how it ended up. I started with the aim of using the research time to make my theory teaching at Gerrit Rietveld Academie's Architectural Design Department more grounded. I ended up writing a short story about a family Christmas dinner and insulation, and producing a highly subjective video about enclosure in the allotment just outside my back garden. This is because, firstly, I mistook the fellowship for a program where Rietveld and Sandberg Instituut teachers could improve an area of their teaching; and secondly, at around the same time that I was awarded the fellowship I received word that I had been selected for a year-long artistic residency at Jan van Eyck Academie, Maastricht, which twisted the scope of what I could do. On the one hand, I became free to focus entirely on my own practice, on the other, I had a lot more going on.

What has been your approach for the fellowship research project and how does it relate to the role of research in your practice?

Following on from the last answer, I saw the combination of the fellowship and my residency as a good excuse to try my hand at creative writing. I particularly wanted to see if I could use it as a tool in pursuit of one of the main drivers in my practice: making complex things—"totalities" or "hyperobjects" if you will—immediate and comprehensible.

When is architecture sustainable, or when are structures ecological? What stories do we tell ourselves about eco-architecture?

Architecture is sustainable when it sustains all life, which means that almost every claim of sustainability by architecture firms is false. Architecture is a fossil fuel industry.

Espinosa Family Residence, Isca, 24 December 2022, 13:52

"Hearth, shelter, home or home base are intimate places to human beings everywhere." So says humanist geographer Yi-Fu Tuan.¹ His colleague Ted Relph says more, "Home is the foundation of our identity as individuals and members of a community, the dwelling-place of being. Home is not just the house you happen to live in, but an irreplaceable centre of significance."² Home protects you from the elements. It's an island. It insulates and isolates you from everything that is uncertain, brief, and changeable about the world. Your home is so certain, so continuous, and so repetitive, it's understandable that you would care less about the decidedly less personal mess of relations and materials that combine to make your home, any home, possible. But I think I've figured out a way of making you care about the whole mess, even without experiencing it dearly. It's hard, but I promise you, you'll feel better, you'll feel relieved from the guilt and misery of having to . . .

"What's this got to do with anything?" Julian trails off from his text just as he hears his mum calling him from downstairs. Given to quick and sudden movements, he abruptly closes his laptop and jumps up from his desk, tense at the disruption to his flow. It occurs to him only then that there's a dull pain running down his thigh. He puts his hand in the back pocket of his jeans to find his keys which he'd been sitting on for the last hour without noticing, or maybe he *had* noticed but it was only a very dull nuisance that he'd been able to drown out in a single-minded attempt to seize the moment and finally start writing this text about the building industry after weeks of talking about it and talking about how to make something lively out of something so dry. He sighs, knowing that it's Christmas Eve and he won't get anything else done now for a few days. If only the subject wasn't so dry, maybe he'd have started sooner.

His family, the Espinosas, are having their Christmas meal in the kitchen. They're sat around a plain but solid pine table

1 Yi-Fu Tuan, *Space and Place: The Perspective of Experience* (Minnesota: University of Minnesota Press, 1979), 147.

2 Edward Relph, *Place and Placelessness* (London: Pion Ltd., 1976).

Architects are fossil fuel workers. This is because, to quote a headline figure, building is responsible for 40% of global carbon emissions. Even carbon-neutral buildings are wrapped in plastic. The sand used to produce concrete and reclaim land destroys whole islands in places like Cambodia. But this is just speaking of environmental sustainability; the construction industry is also inherently unsustainable in social terms. It thrives off of displacement and depends upon a global workforce that is frequently brutally exploited—especially if we look at the whole process, from mining to manufacturing and all the way to building. But none of this really matters because the word “sustainable” is so utterly vague so as to be essentially meaningless. In his book *Keywords: The New Language of Capitalism* (2018), author John Patrick Leary explains that any and all actors can lay claim to sustainable practices due to the temporal lag of counterevidence: “the final proof that our current practices are actually unsustainable will not come until after we are dead.”

and they're surrounded by framed family photos and a magnet board of postcards on one wall, a large abstract painting on another, and the kitchen itself running alongside windows that overlook the back garden. Julian arrives and plants himself in a chair at the end of the table. For a while, he just sits and surveys the scene. He sees his mum, Jill, doing the same, but she's standing up and doing it more discrete-like, camouflaged somewhat in her usual, sensible, muted colors: grey fleece vest over brown knitted jumper and, over that, a faded apron with an abstract pattern on the front. Small and slight, her whole demeanor is quiet. She has an air of worry and she only ventures a smile occasionally, but she's generous with her attention and loud in her laughter when she participates in conversation. From her base position in front of the sink, she moves from time to time around the room, sometimes sitting down to Julian's left, sometimes moving across to the oven to check the food. The rest of the family remains seated. In his usual seating position is Julian's dad, Joe—tall and somewhat slow in his movements, but dominant in conversation. His clothes are worn out and his jeans are sewn up with patches sewn discretely underneath. Unlike Julian, Joe still has hair and it's still got color despite having just recently entered his eighth decade. His brother, Julian's uncle John, is sat next to him. John also still has a full head of hair, despite nearing eighty, but he's a lot greyer and more weathered than his brother and more tired. That said, sometimes there are flashes of a much quicker and sharper wit, though it's mainly residue from his younger self. His clothes are neat, but he's worn out.

Opposite Julian, are his two sisters Beatrice and Eleanor. Everyone always knows they're sisters and people often stop and frown at their loud laughter and peculiar turns of phrase. The family gathered here know it's better either to leave them to it, talk over them, or join in. Both wearing a combination of knitwear and smart casual sportswear, leggings, and immaculate trainers they only differ in their choice of colors. Beatrice, the younger by two years, is somewhat bolder in her color choice; today it's turquoise leggings and floral print vest top. Eleanor, the older of the two, happens to be strikingly well-coordinated with her mum's muted color palette, despite the difference in style. Her three-year-old Harriet sits next to her, and sometimes on her knee, but the child wanders off to the adjoining room that used to serve the siblings as a playroom. It's full of toys but they're a bit old and broken, so she's not wholly content being left on her own in there.

Conspicuously absent was Julian's older brother Jake, who had decided to spend his first Christmas with his partner and their two children.

Julian's scene remains uninhibited until Uncle John turns to him to ask: “So what are you doing at the moment?”

“I'm still in The Netherlands. Right now, I'm doing this

essay project, it's nice. I'm basically just given space to do my thing . . ."

"So what's your thing?"

"Well, at the moment, I'm researching the construction supply chain."

John starts to lean in and adjust his hearing aid to make sure he's hearing Julian properly. "Construction supply chain?" He says it loudly, probably to hear himself better but it also gives his question a force that makes everyone else tune into the conversation, even Beatrice and Eleanor.

"Yeah, you know, the materials used in construction: concrete, cement, bricks, tiles, insulation. I'm basically trying to trace the journey a material makes before it reaches the building, what goes on before it gets there, and, yeah, who it comes into . . . contact with?" He hesitates in his delivery, John makes him nervous.

"And someone's paying you for this?" His tone isn't dismissive, as such, he's more baffled that someone could do something like this and live off of it.

"Yeah, not much, but it's enough," is Julian's answer.

"But I still don't really understand. Why are you doing this?"

Julian's mind briefly wanders to a meeting he had had with his advisor two weeks ago.

Oud Academy, Gockanje, The Netherlands, 22 November 2022, 11:10

Julian is sitting across from his supervisor Sophie. They're both wearing layers because, as she had told him in one of their first meetings, the Oud Academy is colder and older than its modernist pretensions would suggest—at least until you spot the single-glazed windows running up the high ceiling and the radiators that probably came with the building.

He guesses Sophie is in her early forties. She smiles kindly, with her whole face and wide eyes, and she smiles often. So often, in fact, that it's in the crease her cheeks make when she smiles that Julian spots one of her few wrinkles. He offers her some tea from the pot he's brought with him and then pours her a cup with a slightly excessive caution; her clothes are too neat and clean to brook any spillage.

She lets Julian talk for most of the first ten minutes of the meeting. When he finally pauses, she hits him with a direct question. "What is it about insulation that interests you?" Her accent is slight, raised in Gockanje but educated more recently in London, she sounds almost southern English, although, coming from southern England, Julian knows better.

He pauses for several seconds, furrows his brow, turns awkwardly in his chair, and takes a sip of tea, then answers, "I

like that it has this meaning beyond just being a material. Like, it's also about putting up a barrier against the outside world, creating a space that's unaffected by everything else." Sophie nods as Julian continues. "And I like that it's called 'isolation' in other languages, like Spanish and French, and Dutch?"

"Yes, *isolatie*, but you're aware that your wider project is very technical, right?"

"Yeah it's really boring, I know, but it's also really important. I think we need to make it more dramatic and human."

"So is your idea to follow on from what you were saying in some of our earlier meetings . . . about the horror of confronting people with big complex things?"

"Yes! The construction supply chain is a big complex thing, but it's not something that presents itself obviously. It's a totality not given in immediacy . . . not something felt in an immediate sense. Like what Mark Fisher says about patriarchy, it doesn't enter the room and say 'I'm the patriarchy,' but that doesn't stop it from having a very material effect on our everyday life."

Espinosa Family Residence, Isca, 25 December 2022, 14:14

After a brief pause, momentarily lapsing into a glazed look, Julian returns to John's question with a wry smile: "I guess, think about it, do you know where these plates came from, like, who makes them?" As he mentions the plate, Julian lightly grasps his between the side of his forefinger and the tip of his thumb. "Or, do you know anything about the materials used to make this fork?" He does the same with the fork.

Julian's dad cuts in, "It's stainless steel, so that would be iron, some chromium, maybe a bit of nickel."

"Thanks, dad . . ."

Julian's mum, meanwhile, who had been quietly following the conversation since John had raised his voice stands quietly poised by the sink as Julian is talking about the utensils. She thinks, "He doesn't know where they came from either, I do."

Interrupting her train of thought, John cuts Julian off, "Do you know where the plates come from?"

Jill sees her chance and answers John's question, "The plates are old. I picked them up on sale from Habitat. I'm pretty sure they're made in England actually, that's probably why they closed down. The cutlery's from Ikea. I probably wouldn't get them from there anymore."

Bellevue Park Community Hut, 13 February 2020, 19:30

Jill was hanging around after a film screening put on by the local Socialist Workers Party in a small hut in the middle of the

play park she used to take Julian and his sisters and brother to, and now takes her grandchildren to. With their winter coats still on and having suffered long enough sitting on the hut's cheap institutional chairs—no doubt inherited after the demolition of the nearby school that she had sent all her children to—the audience had dwindled to a keen few. The talk had been about working conditions in this metal products factory in Guangdong where the workers were exposed to toxic chemicals all day, working seven days a week on piece rates without healthcare coverage and without paid leave. After the film, there is a talk with a woman from Human Rights Watch. Jill stays behind to ask the woman what she can do.

"Not much," the woman says, with an exhausted and somewhat resigned look, although she manages to hold herself with a confidence that Jill admires, "I suppose maybe you should try not to buy things from Ikea? You saw in the film that they're one of the main clients of this factory. Maybe buy locally if you can. But that's probably difficult, so maybe just keep things for longer or buy second-hand. Or just find out where things come from and think about it."

Espinosa Family Residence, Isca, 25 December 2022, 14:17

"Great, but why bother with all that?" Uncle John interrupts before Jill can finish. Beatrice and Eleanor both frown at John, and Beatrice opens her mouth to object but before she can say anything, Jill quickly turns to them to continue her story, leaving Joe to turn to Julian and say, "Julian, what you forget about John is he basically just thinks things are okay." He slowly wags his finger at his brother as he says it.

The two brothers were born ten years apart. Unlike Julian's dad, John dimly remembers living really poor after the war, he even sometimes forgets that he didn't actually live through it and he talks as if he fought in it. Unlike his younger brother, John likes being comfortable. He thinks he knows what it's like to be really uncomfortable, and comfort means not thinking too hard about anything.

"That's not true. Just because I don't live like a monk—" John pauses a moment and Julian looks over at his dad in time to see him wince momentarily, "—doesn't mean I don't care about the world."

"Ok, but I know you. You don't like to think about the connections between things, things just happen and that's all anyone needs to know." Julian thinks back to his advisor Sophie's suggestion to look up the concept of the windowless monad from the philosophy of Leibniz.

He gets out his phone and finds the Wikipedia definition, which was about as far as he'd got at this point, and decides

to bring it up to his dad and uncle, "The windowless monad: an entirely self-contained, isolated, and indivisible entity that also doesn't experience things or morph into something new except within itself." Seeing that she's started to pay attention, as he speaks, he nervously glances over at his sister Beatrice, a philosophy graduate. "Do you know much about this concept?"

"Leibniz is pretty dry. But the monad is quite useful. You see it used a lot in critiques of mainstream histories. You know, like, 'this happened and this happened and this happened,' but don't for a minute think that the same forces made this, this, and this happen. Then you're a conspiracy theorist."

John cut in, "Oh so you reckon there's a bunch of illuminati masterminding world events?"

"No I obviously didn't say that but—"

Seeing an argument coming, Jill jumps in to steer the subject back to Julian's project. "Julian? Isn't this something you should talk to Jake about?" Jake, her son and Julian's older brother is an architect.

"I already did! It was really nice, the most I've spoken to him in quite a while."

Online video call between Gockanje, The Netherlands, and Bridgestowe, England, 12 December 2022, 22:13 and 21:13, respectively

Julian calls right after Jake has put his two young girls to sleep. To Jake, it's a pleasant surprise. Conversations with his brother are rare, always enjoyable, but usually relatively brief. This time, though, it ends up going on for well over an hour.

Julian starts by explaining that he's researching something to do with Jake's profession and he says that he needs some background information. He starts with a rambling explanation of what he's trying to find out. Talking up the importance of the work that Jake does for a living, with overly elaborate theory, afterward Jake remembers "immediacy" and "totality" coming up a lot. It's all sugarcoating for what is eventually a pretty blunt question: "What do you actually do every day?"

Jake answers as best he can. "So . . . Right now, I'm doing this style guide for the junior architects in the practice. I guess I'm not doing as much on the computer as I did when I was at that level, mainly I'm facilitating other people's work, meeting developers and contractors. Right now we're doing this housing project: eco homes."

"Oh yeah? How's that?"

"There's quite a back and forth with the client. They're asking quite a lot of us, for very little money."

Julian cuts in, "See, what I don't understand is how that's an eco project. Like, how do you know it's eco?"

Because of how the building performs."

"What do you mean by 'performs'?"

Jake didn't really have a good answer for that. Which still pissed him off when he wrote about it the following morning in his diary.

Espinosa-Gates Family Residence, Bridgestowe,
England, 13 December 2022, 06:30

It's still dark and Jake is sat upright in bed, bleary-eyed, knees bent, and arms stretched writing in a diary that balances awkwardly on his bony thighs. He is coming to the end of his second of three pages and starting to write some more lucid lines, "I spoke to Julian last night. Fuck. I love the guy. We don't just get on cos we're brothers . . . we're proper friends as well. But sometimes he can be pretty insufferable." Jake is lucid, but he's also more urgent as he can hear his two girls playing downstairs and knows that they will come in at any moment and he'll probably have to stop before he's finished. "And I feel like he judges me for not showing enough interest in things. He's interested in a lot of things but like, who gives a shit about performance?!"

Online video call, Gockanje, The Netherlands, and
Bridgestowe, England, 12 December 2022, 22:13 and
21:13, respectively

The questions Julian asks Jake are confronting. From green homes, they're now talking about how much choice he has over the materials he uses in his buildings. Jake starts by talking about bricks. His bosses recently regretted specifying brickwork on one of their projects. "Bricks look nice, they weather really well, and they're robust, so they don't need much looking after. Like, say a tenant wants to put up a basketball hoop, they won't completely ruin the facade, but they're not great insulation and they cost a lot of energy to produce, and now, with rising energy costs, the figure my bosses originally specified for brick costs only covers the ugliest ones."

"So does that mean clients are gonna stop preferring bricks?"

"Yes, exactly. We're probably going to see a lot more timber frames and cladding from now on, but you asked about the choices we have as architects: there's a list my boss gives to the contractors," he explains, "It's basically a list of priorities, and if we put too much on there the contractor is going to get annoyed, or just ignore them! Overall, I'd say our practice probably has a choice over no more than about 20% of the materials." Jake wouldn't have thought much about this answer were it not for Julian's momentary expression of shock at the figure of 20%.

Julian tries to hide his disbelief, but that just makes it worse. Then he does this thing he often does where he tries to hide

what he thinks Jake should think by asking a really specific leading question that he obviously knows the answer to. This time, he says something like "Have you looked into where most of the calcium sulfate dihydrate that goes into drywall comes from?" Jake hasn't done this and Julian evidently has. Jake gets progressively more uncomfortable as the questions keep coming, his mouth agape as he tries to keep up. He starts to feel like he's being grilled. When Julian references this book about infrastructure and ISO measurements, Jake loses his patience.

"Look," he says, "I'm really not so interested in the theory of it all. I don't think about architecture that much beyond doing it right."

"Really? But don't you think it's interesting to think about the story of the materials?"

"No, I basically just think things are ok." He was responding to the general tone of Julian's question rather than the one Julian had just asked. "Most of us are doing our best. A lot of it's out of our hands anyway."

"I don't doubt it," Julian responds.

"Why do you have to ride me so hard, just cos I don't know as much as you?"

"What do you mean?"

"Ahh, anyway—I'm getting tired. I should go."

Espinosa Family Residence, Isca, 25 December
2022, 14:18

"But mum," Julian said, "I think he got a bit annoyed with me at first. He hung up in a huff because I was asking too many questions." Jill looked concerned. Julian noticed her lip trembling. She hated it when her children argued. "It's ok," continues Julian, "I called him again a week later, it was much better."

Online video call, Gockanje, The Netherlands, and
Bridgestowe, England, 19 December 2022, 21:32 and
22:32, respectively

They're mid-way through the conversation and Jake is much more confident now. No time for a mouth agape. He had spent the spare moments he had at work over the past week browsing YouTube and Wikipedia and the Designing Buildings Wiki. "Julian I think your problem is—you're still convinced there's some way of following the supply chain backwards. There is no golden thread from end user to raw material extractor."

"You're right," Julian replies. "I think it might be better to pick a building material and find out how it's made and what it's made of. Like 'what is insulation made of?'"

Julian stops to write a note:

No place where contractors list the materials they use.
 No clear information about who supplies materials.
 Probably proprietary anyway, and not in contractors'
 interests to make public.
 Who cares anyway?

He circles that last bit, thinking of the most recent meeting he had with Sophie. Then he writes:

Instead: look at where in the world these materials
 are made.
 Find out what's happening in some of those places.
 What's the balance of power?
 What is it like to work in those industries?
 What's it like to work and live there in general?

While this is going on, Jake is dwelling on Julian's last question, "What's insulation made of?"

Bridgestowe, England, 15 December 2022, 16:32

Jake should be working but he's scrolling YouTube because since he started taking an interest in Julian's project it's started suggesting "how it's made" videos and he finds them incredibly satisfying to watch. He's already seen a few from this "Convoluting History" series so he clicks on "A Convoluting History of Plastic" as soon as he sees it.

It starts with the stars, which is where some of the lighter elements that emerged after the big bang (hydrogen and helium) fused together to form the heavier elements (carbon, oxygen, and nitrogen). Later, these last three combined with hydrogen to form amino acids, which make up proteins, which in turn make RNA and DNA, the basis of all life on Earth. On it goes like that for a while, talking Jake through the archaeological periods until it gets to explaining how all that dead life built up over time and under pressure.

. . . that oil sat there crudely for a while before anyone found any good use for it. But eventually, just over a century ago, chemistry really got going, fractional distillation separated the various hydrocarbons in crude oil in the mid-nineteenth century, chemists first started producing plastic at the beginning of the twentieth century and then just under ninety years ago, in 1937, Otto Bayer synthesized polyurethane in the labs at IG Farben . . .

"IG Farben, where have I heard that name before?" Jake thinks. He searches the company's Wikipedia and sees that its history stops around 1945. "No kidding, they manufactured Zyklon B." It was the chemical the Nazis used in the gas

chambers; he dwells on that connection for weeks.

Online video call, Gockanje, The Netherlands, and
 Bridgestowe, England, 19 December 2022, 22:40 and
 21:40, respectively

"Yeah stick to one material. Because even one material has a long history, and it's usually ugly and messy . . . and always at the expense of people in the Global South." Julian had a puzzled look until he realized Jake was responding to the question he'd asked several minutes ago. "But anyway," Jake continued regardless, "there's this article I wanted to talk to you about in the *Architects' Journal*. So it was saying that only one of the houses longlisted for the 2022 Royal Institute House of the Year award received an A-rating for its energy performance."³

"I remember you got a bit annoyed when I asked about performance before, but seriously, what does high-energy performance actually mean?"

Jake had an answer this time. "Well, it's worth talking about Passivhaus, the one house that did get an A-rating is a good example: the Ostro Passivhaus."

"I've heard of Passivhaus before but never really gave it much thought. Is it like *thee* gold standard for sustainable housing?"

"No, it's actually just a performance-based certification. Like, it only measures the building's capacity to regulate temperature efficiently. That's what everyone means when they say a building is high performing." He sent Julian a link to the Passivhaus website.

"You might have noticed their definition says nothing about the materials you need to use."

"So does this mean they can use really unsustainable materials?" Julian asks.

"Oh, yeah completely. For a building to perform well," Jake said, "you have to wrap it in plastic"

"So when groups like Insulate Britain talk about insulating houses they must be talking about plastic."

"Exactly! Retrofitting the UK's current housing stock is going to be a mammoth uphill struggle. We generate more moisture than we used to. We have more showers and we do more cooking. And so, if you want to upgrade your house you have to install a lot of equipment, starting with a heat pump, which means finding space for a storage tank, then you have to change the radiators to underfloor heating. And those are some of the easier parts, along with adding insulation and upgrading the heating and stopping drafts, but it still involves basically gutting the entire house."

"And the harder stuff?"

3 Gino Spocchia, "RIBA House of the Year 2022: Only one A-rated home in running, again," *Architect's Journal* (16 November 2022), <https://www.architectsjournal.co.uk/news/riba-house-of-the-year-2022-only-one-a-rated-home-in-running-again..>

"That's basically impossible. What you really need is MVHR. That's Mechanical Ventilation with Heat Recovery: a heat exchanger that extracts hot wet air from the wet rooms and recycles it to heat fresh air that comes into the house. But this would require loads of pipes in the ceiling. There's so much equipment that goes into new buildings. All of it's trying to minimize the energy consumption of the building when it's used."

"So you're saying you end up losing a lot of space putting in all this stuff . . . which I guess then eats into lettable floorspace?"

"Exactly, exactly. And obviously developers aren't so happy about that."

Espinosa Family Residence, Isca, 25 December
2022, 14:19

Julian's dad Joe, has been reeling off various chemical formulas for cement and sand and plastic for the past few minutes with an authority that he's perfected after three decades teaching high school chemistry. He exudes a confidence belied by his audience, which had fallen to one and a half as John starts dozing.

He is eventually stopped by Julian who says, "It was actually Jake that got me onto looking up how polyisocyanurate foam is made. That's the material that most insulation is made of. Look at this video I found about comfort by Dow Polyurethanes. There was also this video they erased from their YouTube account. I'm not sure why, but I wrote down this part that gets pretty glassy-eyed about the role of insulation . . ."

Our society is in a never-ending battle to control the temperatures all around us: the temperature of the air in our homes and our buildings the temperature of our water and the temperature of our food from transport to supermarkets to our kitchens to our coolers we cater to our most basic human needs by constantly managing temperature. A more sustainable society depends on human ingenuity and material science to insulate more efficiently which saves precious energy reduces greenhouse gas emissions and reduces costs for home and business owners.⁴

"I love the smell of nonsense in the morning!" Julian's dad says with a grimace.

"That's the line about napalm from *Apocalypse Now*! Right?" Julian asks. "It's funny you should say that because

Dow Chemical also made napalm."

As he sees the rest of the family getting interested again, Julian starts trying to recount the call with Jake in more detail, gesturing to the ceiling and waving his hands around in a fruitless attempt to draw attention to the atmosphere in the room, the warm air that needs to be kept in and the moisture that needs taking out. Julian's sister Eleanor had been keeping busy with her daughter up until that point.

At the mention of temperature regulation, she interjects: "Ah! You'll like this. What you were saying about temperature reminds me of something in this book I'm reading, *Babel-17* by Samuel Delaney. It's sci-fi." Eleanor looks over at Beatrice, correctly anticipating a grimace of ridicule, which she manages to take some of the air out of by mimicking the look herself. They both laugh loudly. Still, Eleanor carries on and takes out her phone.

"You read on your phone?" Uncle John's face screws up as he shouts it.

"You think I've got time to go and fish out a book with this one?" She bounces Harriet on her knee as she speaks and then hands the baby over to her sister.

She flicks through her phone as she starts to introduce the quote: "So the novel takes place in a future where humans have made contact and allied with several other alien races. In this part, one of the characters is explaining why humans still have a relatively distant relationship with these alien races, ultimately attributing it to fundamental differences in the way they live. It's a bit long but it's good." She breathes in and out melodramatically before starting.

Take the Yiribians, who, despite having enough knowledge to sail their triple-yoked poached eggs from star to star have no word for 'house,' 'home,' or 'dwelling.' 'We must protect our families and our homes.' When we were preparing the treaty between the Yiribians and ourselves at the Court of Outer Worlds, I remember that sentence took forty-five minutes to say in Yiribian. Their whole culture is based on heat and changes in temperature. We're just lucky that they do know what a 'family' is, because they're the only ones besides humans who have them. But for house you have to end up describing . . . an enclosure that creates a temperature discrepancy with the outside environment of so many degrees, capable of keeping comfortable a creature with a uniform body temperature of ninety-eight-point-six, the same enclosure being able to lower the temperature during the months of the warm season and rise it during the cold season, providing a location where organic sustenance can be refrigerated in order to be preserved, or warmed well above the boiling point of water to pamper the taste

⁴ This quote was taken from a video that is no longer available from the original source but which is probably one of the two "unavailable" videos in this playlist: Dow Chemical, "Dow Polyurethanes," YouTube, <https://youtube.com/playlist?list=PL9yqnr8akhTHghzGqM3aWAwjGQwPhu9Ix&si=BHPWpQJ7Q8wpHZpK>.

mechanism of the indigenous habitant who, through customs that go back through millions of hot and cold seasons, have habitually sought out this temperature changing device . . . and so forth and so on.⁵

Julian's eyes beam. "Wow, nice! The home is just a 'temperature-changing device.'"

"Yeah, right? It's just a product of our biology."

Oud Academy, Gockanje, 10 January 2023, 10:20

Julian is sitting across from Sophie. Her eyes are full of attention. For that alone, he really likes her and he really likes these sessions, because often he feels like he can bore people, but she seems genuinely attentive. He had started by bringing up this quote from *Babel-17* which his sister had read to him at Christmas. He had just finished the whole book, it was ok, but that quote was exceptional and exceptionally useful for his recent preoccupation with temperature regulation and comfort and the materials and resources we feel we need to be comfortable at home.

"My brother basically said that a building's performance has nothing to do with the materials it's composed of, or how those materials are made, or where they come from. All that matters is how well it regulates temperature. Making an old building perform well will only work if you wrap it in plastic, and even then it can't do all the things that need to happen to decarbonize building. Even the most energy-efficient new buildings are unavoidably plastic-dependent." Julian keeps on like this for a while, listing everything his brother had said. Sophie listens patiently and speaks only after Julian pauses for a few seconds.

"I think we've become accustomed to living in a permanent state of climatelessness. Architects: they just cater to that custom."

Julian nods vigorously, but he feels the urge to defend his brother. "Maybe that's fair enough, building is happening, we're inside most of the time. But we're facing a future where society as we know it is doomed. We can't just be thinking in terms of what's possible, we need to think about what's necessary. What's necessary is for us to wean ourselves off of hydrocarbons: petrol, plastic, whatever. Which means maybe we need to change the way we live so that we're not huddled inside anymore."

"But what about in the meantime, considering building isn't stopping anytime soon."

"Well, at the very least, we need to rearrange our priorities,

create some new criteria for materials and building practices. You should think about that! Maybe 'performance' isn't as vague and overused as 'sustainability.' Maybe it's more accepting of the fact that everything decays." She turns on her chair and gets her laptop out and after a few moments of typing away and clicking she starts quoting from something. "Moisture gets in. Damp hangs around. Ice expands in cracks. Surfaces wear thin. Particles fall out of suspension. Materials rot. Insects multiply. Animals chew."

"So good! Who wrote that?"

"It's from 'Out of Order,' an old essay from Nigel Thrift and Stephen Graham about maintenance." Julian makes a note and, taking his cue from Sophie's suggestion, he starts sketching a basic schema for building performance.

"From what my brother said, it seems like the choice of a building material is based mainly on its cost and its ability to do its job, say, for our purposes, to regulate temperature, either cooling in the heat or warming in the cold, depending on climate."

"Also its availability, but perhaps you can subsume that under cost."

"Right, it's pretty similar."

"But then, that should have more priority and what we should add is its durability and its embodied energy."

"What's that?"

"The energy required to produce a product, from extraction to transport, manufacturing and processing."

"Don't forget how pretty it is," Sophie says with a smile.

"Right, and also ease of use," he says. "Like, the best materials are the ones that enable deskilling. This is a big reason why certain materials keep being used, like concrete rather than stone. It reminds me of all those conservatives who complain about contemporary architecture being cheap and ugly. You know what I mean?"

"Yeah," she responds. "They're not really prepared to come to terms with the fact that the old style of building depended on a highly skilled workforce of stonemasons. . . and unless they're prepared to return stonemasons to the center of the action—"

"Which they aren't, they're conservatives . . ." he cuts in before she finishes.

". . . Then," she continues talking over him, "they should probably stop complaining."

Espinosa Family Residence, Isca, 25 December 2022, 14:25

"So what's next in the research?" Uncle John asks Julian. It is less than half an hour since Julian answered Uncle John's initial question, but it feels like John has eased up considerably. Julian feels a lot more confident in his answer.

"Well, the other evening I went to the Port of Rotterdam.

5 Samuel R. Delany, *Babel-17* (Orion: London, 2010).

I need to write up my notes from that. We went on this tour where they talked about the wind turbines they were building there, the biokerosene they were manufacturing, but they didn't say a thing about all the oil that was there, there was also a shit ton lot of oil refining going on."

Julian gets out his phone to show John. "Look at this." It was a Google Maps screenshot of the part of the port devoted to oil.

"Wow. They didn't say anything about this?"

"No! Also later on in the ferry tour, the woman just stopped talking as soon as we passed the oil terminal . . . and you couldn't shut her up when we were passing '*het tweede grootste containership in de wereld*,'" he adopts a comical air saying the Dutch part, "but she goes completely silent when it gets to the oil refineries and the oil terminal."

"So you've learned some Dutch since you've been out there?"

"Yes! So I guess you could say it hasn't been a complete waste of time!"

"Julian, I don't think this is a waste of time," John says. "I just don't get it."

Jill asks, "Did you feel nauseous at all?"

"What do you mean?" Julian replies. "Like on the boat, or from the smell of the oil?"

"No, nauseous at how big everything was? Like the nausea in Sartre's *Nausea*."

"Well, yeah. I actually found it quite hard to wrap my head around all the information they were feeding us and everything we were seeing. I ended up having to latch on to small details and all the things that they weren't telling us."

"I always feel nauseous, even when it's just a glimpse."

"Better you feel something than nothing, I suppose."