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Architectural Roots of Ecological Crisis

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In architectural design, sustainability is primarily thought of as a technical discourse concerned with mitigating the harm that the construction and use of buildings cause to their environment—minimising the energy that buildings consume, the waste they produce, and the habitats they destroy. While there is an urgent need to reduce (and, when possible, reverse) the harm caused by the built environment, these types of responses are not the full extent of the possibilities and responsibilities to address environmental concerns that come with designing architecture. In this presentation, I draw on the work of anthropologist and cybernetician Gregory Bateson to explore ways in which architectural design might contribute to addressing the underlying causes of present and future ecological crises, in addition to responding to the immediate symptomatic challenges that these crises give rise to. Writing in the context of the emerging environmental consciousness of the 1960s and 1970s, Bateson understood one of the root causes of ecological crisis as the *epistemological error* or *hubris* of Western culture's tendency to see humans as separate from, above, and in competition with their environment and each other. This hubris has been supported and propagated by processes of marginalisation and colonialism, which have dominated many ways of knowing and doing. Here I argue that hubris is implicitly reinforced by the conventional built environment, which (literally) constructs a sharp distinction between human and ecological worlds. Connecting ecological thinking to architectural theory through Bateson's characterisation of the former as an inversion of traditional Western cosmology,

I sketch out an enriched role for architectural design in relation to ecological crisis, including but also going beyond mitigating the ecological harm caused by the built environment.

KEYWORDS: architecture, ecology, cybernetics, sustainable design

RSD TOPIC(S): Architecture & Planning

Presentation summary

In architectural design, sustainability is primarily thought of as a technical discourse concerned with mitigating the harm that the construction and use of buildings cause to their—minimising the energy that buildings consume, the waste they produce, and the habitats they destroy. Some design approaches go further by giving back to the environment in some way, for instance, by creating new habitats that replace those lost elsewhere. There is an urgent need to reduce (and, when possible, reverse) the harm caused by the built environment, as there can be no adequate response to the climate and biodiversity crises without making these changes. These types of responses are not the full extent of the possibilities and responsibilities to address environmental concerns that come with designing architecture, however.

In this presentation, I explore ways in which the aesthetic (spatial, communicative, experiential) qualities of architectural design might contribute to an enriched role for the built environment in addressing present and future ecological crises. By future ecological crises, I mean those that are currently being produced by the ways in which present ones are navigated, however well-intentioned these efforts are.

Writing in the context of the emerging environmental consciousness of the 1960s and 1970s, anthropologist and cybernetician Gregory Bateson (1972/2000) understood one of the root causes of ecological crisis as the *epistemological error* (p. 487) or *hubris* (p. 498) of Western culture's tendency to see humans as separate to, above, and in competition with their environment and each other, contrasting this attitude with indigenous ways of knowing (p. 501). Hubris can be replicated and reinforced even in

design that aims to be sustainable, with the result that it is hard to identify and address. Given architecture's traditional role in shaping understandings of humans' place in the world, the design of the built environment provides opportunities to act on this underlying error. In suggesting this, I follow Bateson's own argument for the importance of aesthetic (not just technical) engagements with ecological systems and build on some of the ways in which Bateson's ideas have entered design discourse (Boehnert, 2018; Goodbun, 2011; Goodbun & Sweeting, 2021; Perera, 2020; Rawes, 2013; Sadler, 2008).

Hubris

Bateson warned against ad hoc solutions to environmental problems that focus on symptoms and leave underlying causes in place. In testimony to a committee of the State Senate of Hawaii in 1970, later published in *Steps to an Ecology of Mind* (Bateson, 1972/2000, pp. 496-501), Bateson identified three drivers of ecological crisis, naming these as population, technology, and hubris (Figure 1). Each of these has the potential to be self-reinforcing and to reinforce each other, producing a runaway system. While the environmental issues at hand have shifted focus in the decades since, Bateson's diagnosis remains pertinent, especially in thinking through the complications of design's relationship with ecology.

The first of these three drivers, population, needs some reframing from the context of the 1970s in which Bateson was writing. Bateson (1972/2000) refers to "population increase" (p. 498) and "the population explosion" (p. 500), which were concerns of the time. It is not the number of humans per se, however, but the demands that the human population places on the planet through consumption that are at issue, and these demands are globally and socially unequal. These demands accelerate even for a static population because of commitments to economic growth and rising living standards. While one can conceive of the rate of increase of these demands slowing (degrowth, more efficient use of resources, increasing environmental awareness), it is difficult to imagine how to halt or reverse this growth in a managed way. It is politically difficult to agree on courses of action, such as reducing living standards, and there are ethical difficulties in doing so because of the intersection with social and global injustices.
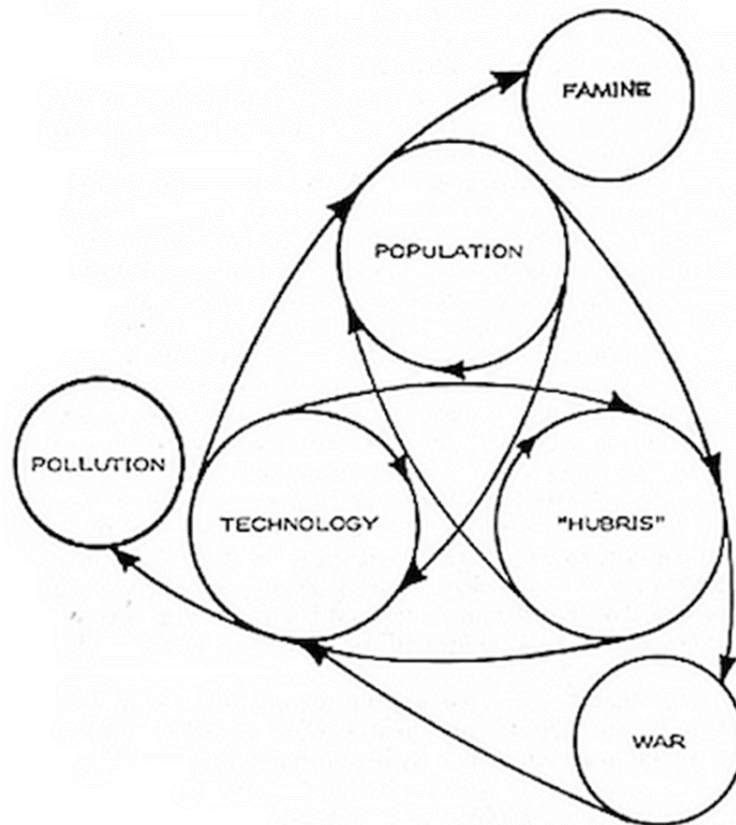
Figure 1. Gregory Bateson's diagram: "The dynamics of ecological crisis" (Bateson, 1972/2000, p. 499). Reproduced for the purpose of criticism.

The growing demands of human society drive developments in technology to meet these demands. In turn, technologies make other technologies possible and prompt the demands of human society to grow further. It is, again, difficult to imagine how to reverse this, as humans become dependent on the technologies they develop. For instance, it is not possible to simply step back to pre-industrial agriculture because society has become dependent on the increased yields that industrialisation made possible. Referring to the example of DDT, Bateson (1972/2000, p. 497) articulates this structure of dependence on ad hoc measures as a kind of addition.

The third root of ecological crisis that Bateson identifies is the hubris of Western culture's conception of humans as separate from the environment on which they depend. Hubris is excessive pride or overconfidence. It is one part of the peripeteian

structure (the dramatic reversal of fortune) of Greek tragedy, which seems apt as an analogy for human-made ecological catastrophe. Hubris is made manifest in attempts to bend ecosystems to human will. While the most obvious examples are where humans destroy their environment to extract resources or to make human habitats, sustainable design itself is not immune from hubris. Even well-meaning attempts to address ecological problems can be manifestations of hubris in the sense that they can proceed from humans' belief in their own expertise and unilateral action. Trapped between the urgency of action and the slowness of understanding and engaging ecological systems (Wilson, 2022), designers do not escape hubris with ease.

Bateson (1972/2000) suggests that hubris is the easiest of these three roots to reverse and that "*optimistically*" (p. 498), correcting one of the three may be enough to avert catastrophe. From today's perspective, however, it would seem that action on all three fronts is needed and that addressing hubris is no less straightforward than the other two. It is tempting to associate hubris with other people: with adherents to whichever political and philosophical commitments one objects to. Systems thinkers might locate hubris in reductivism, constructivists in realism, and so on. But setting oneself apart from others *is* part of hubris. Thinking one has overcome hubris *is* a form of hubris. Escaping hubris is not as simple as reaching some "correct" epistemology (as Bateson sometimes seems to imply), as surely to see oneself as having done this would be hubris itself. How can one take hubris seriously enough to examine oneself?

The most extreme example of ecological hubris is perhaps geoengineering—proposals to use technology to control the temperature of the planet in response to the climate crisis. These projects would enframe the planet using technology. One might even say they effectively turn the planet into a building (an interior space). The limitations of geoengineering proposals, whether sulphuric aerosol injection or giant space mirrors (Adam, 2007; Milman, 2022), are most obviously their treatment of symptoms (temperature) rather than causes (greenhouse gas emissions). The justifications given for them recognise this, arguing that they buy time while other (technological) solutions are developed.

Getting outside of this (technologically centred) framing, one may also recognise greenhouse gas emissions and the failure of the world to reduce these as symptoms of

deeper problems entrenched in modern society (hubris). From this expanded perspective, the problem of geoengineering (and any other climate technofix) is not just that it treats only symptoms but that it reinforces hubris, *intensifying the causes* of the deeper crisis by building human overconfidence in being able to manipulate ecosystems through technical expertise. It is possible to save the world in ways that go on to destroy the world, depending on *how* one does the former. Actions are not just what we do, but the things that are produced by the ways in which we act. Means are also ends, having consequences.

Geoengineering would have uneven global effects. Reducing the amount of sunlight falling on the planet would have variable consequences in different parts of the globe. Yet the power to decide over how to do this would rest with those countries that control the technological infrastructure. If enacted, geoengineering would be one more instance of the way that the hubris of Western culture has been supported and propagated by processes of marginalisation and colonialism, which have dominated many ways of knowing and doing. And systems thinking itself is not immune from this (Goodchild, 2021; Soriano, Vink, & Prakash, 2022).

Conventional Western epistemology is not the only shit epistemology. But it is the shit epistemology that has been globalised through colonialism and the internationalisation of design during the 20th century. A limitation of this paper, and my work generally, is its emplacement within Western culture. I lean here not just on a Western thinker (Bateson) but also, below, on the Eurocentric architectural tradition within which I was educated. Yet, unmaking hubris is not as straightforward as adopting an alternative epistemology. To pick up another epistemology without critically addressing one's own may distort the former through the latter. Appropriation is one manifestation of Western hubris, after all. By focusing on some of the inflection points in Western traditions, I hope it is possible to open some cracks from within in which it is possible to dwell in different ways.

Building hubris

In addition to its many technological and practical shortcomings, geoengineering can also be criticised *architecturally*. By enclosing the planet as if it is a building, geoengineering performs a hubristic conception of the world. A similar performance occurs in much more mundane architectural environments and experiences. Hubris is implicitly reinforced by the conventional built environment. Buildings (literally) construct relations between human and ecological worlds. For the most part, these relations take the form of sharp distinctions (such as walls and windows) that separate the two, allowing humans to exert control of who and what enters and leaves. The character of this distinction is partly a function of climatic regulation but also one of control—of who and what is permitted where.

This separation is sometimes heightened by the aesthetics of architecture. Consider, for instance, the Farnsworth House designed by Ludwig Mies van der Rohe for Edith Farnsworth (Plano, IL, USA; completed 1951). Its form and material contrast with its surroundings, with the built form held apart from the ground and human and natural worlds seemingly corresponding to inside and outside, respectively (Figure 2). The glass walls open the interior to its surroundings, which Mies expressed in terms of letting the outside in (Friedman, 2006, p. 138). This mode of connecting to nature actually implies a separation: "Nature, too, shall have its own life…If you view nature through the glass walls of the Farnsworth House, it gains a more profound significance than if viewed from outside" (Mies van der Rohe in conversation with Christian Norberg-Schulz, quoted in Friedman, 2006, p. 139).

But the implied idea of separation is an erroneous one—what is outside is not natural, and the human world inside is subject to its environment, as becomes explicit when the building is flooded by the nearby river (Figure 3).

Bateson expresses hubris as not just humans seeing themselves as against nature but also as against each other. And indeed, the human-ecological hubris performed in the Farnsworth House intersects with human-human hubris in the architect's attitude to the client. Mies treated Farnsworth as "a means to an architectural end" (Friedman, 2006, p.

138), with the "pure" architecture that sets up the binary contrast with nature also neglecting the client's needs and desires in its absence of programmatic consideration.

A more complex example is the Flower Tower, an apartment block designed by Edouard Francois (Paris, France; completed 2004, Figure 4). This building might be casually called "green," because of its use of planting as part of its facade. It is claimed that this "embodies the expression of desire for nature in the city" (Flashback: Tower Flower / Edouard François, 2012), and it succeeds in blurring the boundaries between architecture and environment. It seems like this is the sort of architecture which makes the relation between humans and nature more ambiguous, an antidote to the sharp boundaries of the Farnsworth House.

But look closer—what idea of nature is this? What idea of humans' place in the world is being performed? A species from somewhere else in the world (bamboo) is enframed within the architecture, with giant concrete plant pots integrated into the structure. The building, along with countless others, positions nature as something under the control of humans. That is, architecture can embody hubris not only by excluding it but also by the manner in which it is included.

Figure 2. Farnsworth House. Ludwig Mies van der Rohe. Photograph by Carol M. Highsmith.[1]

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[1] Image in Public Domain.

https://commons.wikimedia.org/wiki/File:Farnsworth_House,_Plano,_Illinois_LCCN2011631294.tif

Figure 3. View of the Farnsworth House flooding. Ludwig Mies van der Rohe. Photograph by Miles Baker.[2]

Figure 4. The Flower Tower. Edouard Francois. Photograph by Fred Romero.[3]

Reading Western cosmology upside down

The ways in which hubris is cultivated or countered by architecture are not solely about how living things are (and are not) integrated. It is possible to understand architecture's communicative and spatial qualities as articulating ecological ideas. One way of doing this is by connecting some of Bateson's discussion to architecture's traditional role in situating humans within the world, a role that has, for the most part, been downplayed, forgotten or confused in modernity (Vesely, 2004).

Bateson references the traditional Western cosmological idea of the "Great Chain of Being" (Lovejoy, 1936) as part of the context of the Lamarckian theory of evolution:

> In the mid-eighteenth century, the biological world looked like this: there was a supreme mind at the top of the ladder, which was the basic explanation of everything downwards from that—the supreme mind being, in Christianity, God;…The ladder of explanation went downward deductively from the Supreme to man to the apes, and so on, down to the infusoria.

> This hierarchy was a set of deductive steps from the most perfect to the most crude or simple. And it was rigid. It was assumed that every species was unchanging.

> Lamarck, probably the greatest biologist in history, turned that ladder of explanation upside down. He was the man who said it starts with the infusoria and that there were changes leading up to man….

> The logical outcome of turning the taxonomy upside down was that the study of evolution might provide an explanation of mind.

> Up to Lamarck, mind was the explanation of the biological world. But, hey presto, the question now arose: Is the biological world the explanation of mind? That which was the explanation now became that which was to be explained.

> (Bateson, 1972/2000, pp. 433-434)

Bateson's references to Lamarck serve to introduce the idea of ecological relationships in terms of mind, but they also suggest a way of connecting Bateson's thinking to architecture. Part of Western architecture's traditional role has been to articulate the spiritual and spatial world and humans' place within it. While iconographic programmes can make this order explicit, architecture can articulate it implicitly in the organisation of (usually religious) spaces (Vesely, 2004).

Following the human-centric cosmological tradition of the West, architecture often has, but not always, privileged humans' place within the world, reinforcing hubris. However, the abstraction of architectural representation is such that spaces retain meaningfulness in the absence of explicit specifications on how to read it, and, being abstract, *it can be read in both directions*.

For instance, consider the Pantheon in Rome (dedicated c. 126 CE). The building communicates through its overall form (Figure 5), with the geometrical dome above the more articulated lower levels resonating with a traditional Western view of the cosmos as a vertical ordering of heaven and earth (Norberg-Schulz, 1980, p. 153f). The height and diameter of the dome are identical, so the interior would accommodate a sphere, linking the dome (the heavens) with the centre of the floor (earth). It is topped by an oculus open to the sky (Figure 6). As well as tracking the movements of the sun through the day and seasons, the oculus allows rain to enter, falling to the floor below.

Interpreting the space without privileging the intentions of its designers (the meaning of things is not simply what they are intended to mean), it is possible to read the hierarchy of the building both traditionally (top-down from the oculus) *and* in the inverted way that Bateson discusses, where the world as a whole is given form from its parts (bottom-up from the ground). In other words, its abstraction means one might read the Pantheon not just as an architectural model of the world but as multiple models. Perhaps one might even use it as a "model for" reimagining the world, not just as a "model of" it (on the difference between models of and for, see Glanville 2005). If the communicative potential of architectural space can still be effectively harnessed, as some argue (e.g. Vesely, 2004), perhaps architecture's communicative qualities can be reconfigured to challenge the hubris they once reinforced.

Figure 5. Painting of the interior of the Pantheon by Giovanni Paolo Panini, c. 1734.[4]

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[4] Image in public domain.
https://commons.wikimedia.org/wiki/File:Giovanni_Paolo_Panini_-_Interior_of_the_Pantheon,_Rome_-_Google_Art_Project.jpg

Figure 6. Interior view of the dome of the Pantheon. Photograph by Carole Raddato.[5]

Possibilities for an architecture against hubris

There are three examples that I want to introduce in order to highlight the range of situations in which the communicative role of architecture may be found and how the above provocation might be located with respect to a selection of contemporary architectural concerns: urban biodiversity, the circular economy, and virtuality.

First, consider the projects of Marie Davidová (2018, 2020), which will be familiar to many in the RSD community. Davidová frames projects such as TreeHugger (Figure 7) as a kind of inter-species collaboration, a "*living nature co-design*" (Davidová, 2018, p. 402). My colleague Jeffrey Turko has been developing how a similar approach might work at larger scales in Brighton's Master of Architecture programme under the title of "architectural wilding." Thought of in terms of the communicative role of architecture, the impact of these projects is not just their practical ecological benefits for urban biodiversity but also the *idea* of the world they perform as a counterpoint to the hubris of unilateral human interventions in the environment. It is not just *what* is done, but *how* this is done, that is ecologically significant.

Second, consider also how the technical and material aspects of buildings might also work *aesthetically* to address hubris. Nearby the room in which I am speaking is a building called the Waste House (Figures 8-9), designed by my colleague Duncan Baker-Brown (2017). This building is notable in being built (almost) entirely of waste material, demonstrating and testing several possible ways in which the building industry can transition to a more sustainable paradigm. But the building goes beyond a technical demonstration of this, making waste and its reuse visible and tangible in the experience of the building and the city, including in the way it was constructed, which involved many of our students. The value of projects such as these is not limited to efficiencies of matter and energy. Enacting the circular economy in the built environment can also be a way of making present the systemic relations in which humans live, embodying them in the environment and making them experienceable.

Third, I want to highlight an RSD11 presentation by Ben Spong (2022), which I think suggests how some of this discussion might land within everyday spatial experiences. Spong described a project for a bathroom mirror that explored and enlivened the

spaces of the flat they were living in during lockdown, assembling an array of intersecting spaces through the interactions of the room, a bathroom cabinet, a LiDAR scanner, an observer, and more. Spong's discussion of the installation draws on Ranulph Glanville's (2010) notion of the zero-space within the drawing of a distinction, itself inspired by an architectural example. Looking into the mirror invites questioning of one's place within (the distinctions of) this room and its context, amongst the physical and virtual spaces of multiple non-human others. The scan of the installation included here (Figure 10) is evocative of a kind of leaking between these worlds. Given that spatial distinctions can also imply ecological ones (the Farnsworth House example), installations such as this could be put to work as an everyday way of putting ideas of the world in question. What if each morning, as I *looked at myself in the mirror*, this experience challenged the distinctions of my world and so my own priority (hubris) within this?

Figure 7. TreeHugger Responsive Insect Hotel, Prague. Marie Davidová. Photograph by author, 2019.

Figure 8. The Waste House, exterior. Duncan Baker-Brown. Photograph used with permission.

Figure 9. The Waste House, interior. Duncan Baker-Brown. Photograph used with permission.
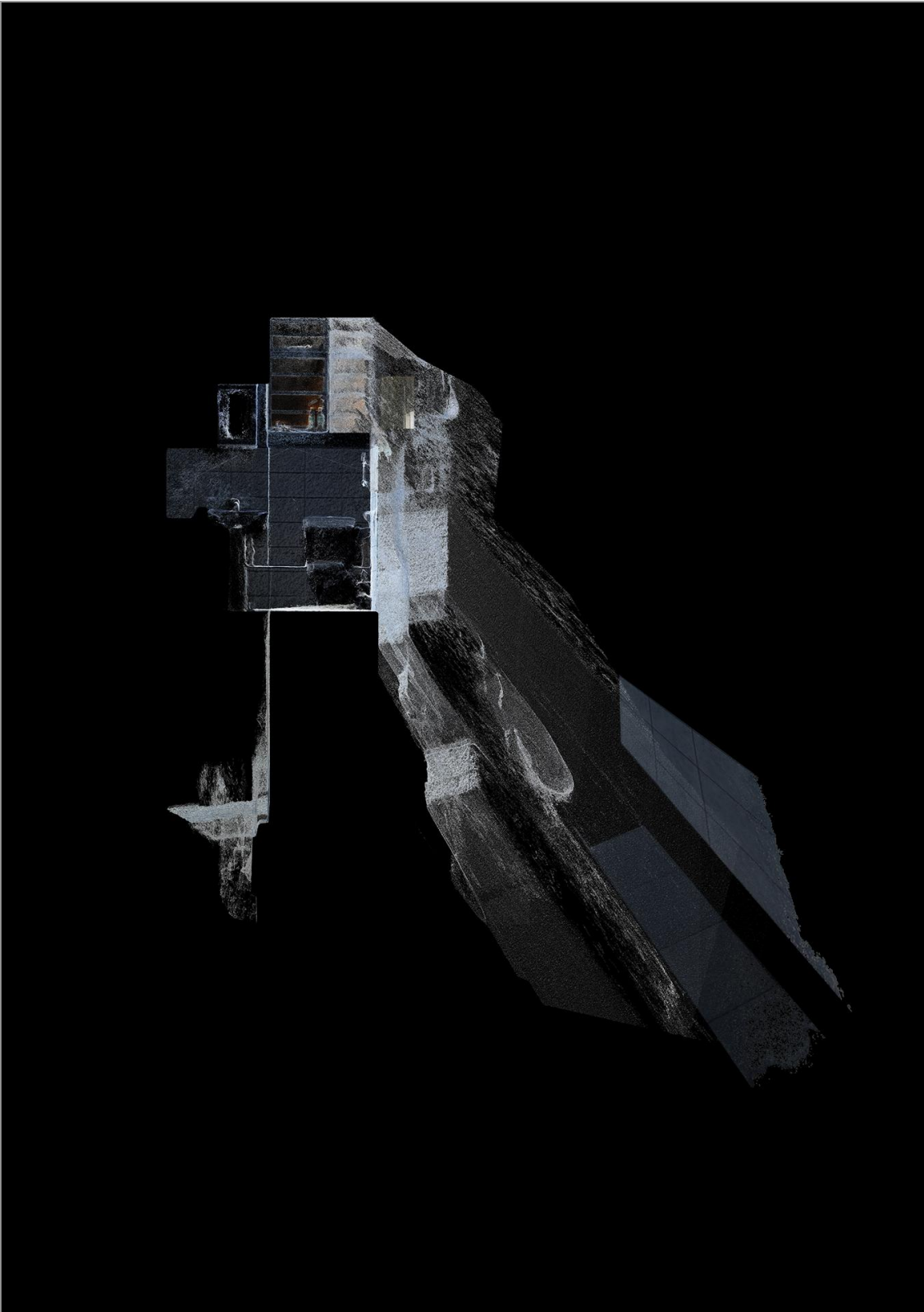
Figure 10. The Mirror in the Bathroom, scan. Ben Spong. Image used by permission.

Fuck good intentions

Focusing on hubris can seem like a distraction. Aren't the urgent questions the practical ones? Isn't worrying about ideas, such as how one understands the world and one's place in it, a luxury? Isn't aesthetics? Don't we just need to *get on with it*?

Addressing hubris certainly doesn't remove the need for other kinds of action to change technology and society. But part of the complexity of addressing ecological crisis is that it exists over multiple domains, including the domain of ideas (Bateson, 1972/2000, p. 491), and ideas have a way of impacting everything. Addressing hubris may not be sufficient, but it is necessary. Because it is (or should be) difficult to address one's own hubris, and doing so is in tension with the urgency of action, it is easily neglected.

In design, hubris can be hidden by good intentions and designers' tendency to focus on solutions and outcomes to the problem at hand at the expense of deeper critical engagement (for a selection of practices that counter these tendencies, see Ainsworth & Sutherland, 2021). It is not just that good intentions are not good enough, but that good intentions facilitate hubris, and hubris drives ecological crisis. In a different context, Ivan Illich (1968) warned about the hubris of the West, highlighting the damaging paternalism of well-intentioned volunteers travelling from the United States to Mexico to "help" in a context they do not understand. Human-human hubris intersects and parallels with that of human-ecology. Good intentions facilitate uncritical and ecologically illiterate approaches to the environment, leading to the celebration and (short-term) comfort of sustaining the unsustainable.

Without addressing hubris, apparently successful transformation of technology and society may reproduce crisis in other ways. It matters *that* there are technological responses to ecological crisis, but it also matters *how* these are conceived and enacted because how humans respond to crisis is part of what drives crisis. There are, one might say, crises of the *second-order*, crises in the context of crises, or *deutero-crises*. These deutero-crises need to be addressed as well as those crises that are immediate to hand. As I've sketched out above, architectural design has the potential to make a difference in this task by performing ecological relationships in the spaces that humans inhabit every day.

Acknowledgements

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