The Terrifying Mystery of the Cave
Interview With Georgina Voss

Georgina Voss
gsvoss@gmail.com

Abstract
The exploration of systems that Georgina Voss proposes engages with their affective dimensions and the complex interplay between visibility, power, and the unknown, reimagined as *The Terrifying Mystery of the Cave*. This metaphor shifts focus from the expectation of solutions to an acknowledgment of the profound complexity and enigmatic nature of systemic challenges. Drawing on perspectives from cybernetics to design theory, this analysis interrogates the mechanistic metaphors dominating system thinking, situating them within broader socio-political and historical contexts. A central focus lies in the tension between what is visible and what remains hidden — what occurs "backstage" — and the ways these obscured layers shape the visible outcomes of systems. Deterministic framings of systems as controllable entities are critiqued, emphasizing their human-made origins and deeply ingrained ideological structures. The unknown emerges as a generative space, where unknowing becomes a means to rethink complexity and disrupt reductive narratives.

In this conversation, Georgina Voss, author of *Systems Ultra: Making Sense of Technology in a Complex World* (2024) takes us into the intricate realities of systems, peeling back their layers to expose their messy, human-made origins and the forces that shape them. She challenges the comforting illusion of systems as orderly and controllable, instead spotlighting their sprawling complexity, the emotional responses they provoke, and the power structures quietly embedded within. For her, the unknown isn't a barrier: it's a provocateur, pushing us to question how systems come to be, what they demand, and what they hide. From the techno-utopian myths of design's saviour complex to the daunting scale of automation, her reflections invite us to reconsider what we think we know about systems. Through sharp critique and moments of dark humour, Georgina Voss compels us to ask: are we designing systems, or are they designing us?

BM   Can you share an overview of your work on systems? I was struck by your approach insisting on the affective dimension — the pleasure, the awe, the horror. How does one deal with systems' unfathomability?

GV   I've been working around technology for a long time. After my first degree in Biochemistry, and through my subsequent studies in social sciences and the humanities, looking at how technologies operate, I've always been fascinated by their human and cultural elements. When I studied Biochemistry, I liked ways to use jokes, limericks, and ridiculous things such as memory aids, for example, to help remember what enzymes do. For my doctoral research I studied the adult entertainment industry, a difficult topic because at that time, there was little prior research on this industry. I went to a lot of trade fairs to find people willing to talk to me. One of the things I noticed was the amount of 'swag' you get in these environments — pens, mugs, squishy toys. I loved their incongruity. Here's an industry seen as immoral, deviant, heavily stigmatized and yet at the same time, here are exactly the same promotional widgets you'd find in any other trade fair. It made me think about what happens when a serious narrative which is being told about a 'thing' like technology somehow spills over into something more ridiculous — a squishy toy — that turns into the signpost to 'something else'. The 'something else' is what interests me.

When *Systems Ultra* started to come together, I'd had an artistic practice for around 8 or 9 years. I came to artistic work later on — self-taught in places, and supported through collaboration and peers, around complex technologies. I always preferred working with different approaches, from performance to visual work to multimedia. But there is a substantial difference between what gets made as a contained outcome, and the body of work that goes into making it; one is always bigger than the other. Like my boxes of stuff picked up from trade fairs, I had loads of material that I'd pulled together when making other works — material around the edges. Whilst that approach of sifting through the offcuts was the genesis of my book, it was spurred into motion through two other events.

The first was a project in San Francisco with Deb Chachra, Sherri Wasserman and Ingrid Burrington, looking at the military history of the Bay Area and its influence on contemporary technology cultures. The project was hosted through an artist residency at Autodesk's digital fabrication workshops. Our title was Situated Systems. 'Situated' (from Donna Haraway's situated knowledges) referring to how we would situate ourselves in both the Bay Area and the materiality of the workshops. 'Systems' covered everything else — the interconnected technology, the historical, infrastructural systems we were looking at.

The second event came in setting up a multidisciplinary creative studio with the design scholars Tobias Revell and Dr. Eva Verhoeven. Again, we needed a name. We didn't want to limit our scope by calling it a critical technology lab, as that didn't reflect our multidisciplinary focus across programs and disciplines. So we went with Supra Systems Studio (SSS). SSS was an important starting point for me in asking: how do we approach systems through critical and creative practice? There was lots of material around this. Donella Meadow's wonderful book *Thinking in Systems* (2008) is exceptional on structure, dynamics and process, but not much focus on politics or culture. Anthropologists like Valerie Olson (2018) had looked at how the idea of systems manifests in places like NASA. Tega Brain, an artist and engineer based in New York had been doing important work on systems, but had not yet written her excellent essay "The Environment Is Not A System" (2018). I felt there was something missing. What did a system feel like? How were they experienced? Timothy Morton's (2013) work on hyperobjects was useful for thinking about huge and overwhelming things like climate change or the Internet from the perspective of affect. Still, this framing felt limited because it gives a lot of traction to feelings of overwhelmment, but doesn't really take context or agency into account. I felt uncomfortable with the notion that something like the Internet is just too much, too complicated, as if complexity means that you cannot grasp it. For me, a key element was that these technological systems are human-made. They are the product of specific ideological agendas; they have power structures baked in, and they exist in and on human culture and society.

BM   You mention objects. What is their role in 'translating' narratives around systems? For instance, in your book you write about metaphors to explain the hold that certain stories around technology e.g. technological determinism have on the social imagination.

GV   Objects can be useful starting points, but I've always been nervous about taking the single object in case I impose too much onto it. Dismantling objects — looking at where they came from and how they were made — can be a way to pay attention, particularly to what isn't visible on stage but lurks behind. Sociologist Erving Goffman's (1949) concepts of front stage and back stage come to mind here: the visible presentation versus the hidden structures that support it.

Think of a museum exhibition and the difference between looking at the exhibition itself, and considering how it was put together. Back stage encompasses curatorial decisions, material limitations, political and institutional constraints, and budgets — elements that are minimized or invisible in the finished product.

But surfacing what is hidden can be difficult. Some elements may be protected by NDAs, others obscured by the sheer complexity of computation, and some purposefully over-looked — like when a male author casually credits his wife for research, transcription and household labor at the end of his book. What happens backstage is imbued with mecha-nisms of power, which the thing at the end also contains but not necessarily explicitly. The questions I'm interested in are: where did this thing come from? What is it doing here? How does it work? Not only its genealogy, but also its impact, its implications, its effects.

BM   What do you think are the dominant stories shaping the design of systems today?

GV   I think it's the other way around. The idea of the system is the metaphor, as design scholar Dan Lockton (2021) states. If you treat something as a system, you treat it as being mechanistic, behaving through input-output action-reaction patterns, and you assume it to be mappable. For instance, I was recently at an event where a speaker was describing the behaviour of bees in a very mechanistic way: if only (they implied) we understood the path of bees and their patterns, then everything else would follow. Through variables such as velocity of movement, speed, and so on, the behaviour and thus the essence of a bee could be collapsed down and coded into an information point. In other words, if a bee can be treated mechanistically, only then can it be understood. In her essay, "The Environment is not a System", Tega Brain (2018) discusses this point elegantly. It feels natural to talk of systems in this mechanistic way; likewise, the expectation is that a problem has a mechanistic solution. What this per-spective misses is the capacity to look and take in the larger, messier, context.

A recent example emblematic of this approach is the announcement by Wes Streeting of the potential use of weight loss medication in the UK to address and "solve" the employment crisis. This wilfully ignores how weight gain itself arises from the intersections of different forms of work — zero-hour, low-wage, precarious — together with larger embedded socio-economic issues such as the cost-of-living crisis, NHS access, food deserts, fractured supply chains, and more, all of which affect stress, mental health, and more. To engage with any of those things requires a larger, holistic approach. It is extremely difficult. The proposal to use weight loss medication is a medical fix, a technofix, based on the idea that if you could just fix things in the body — abstracted and fictionalised as a discrete, individual, singular entity — then the economic machine will right itself.

BM   When would you use the term 'holistic' rather than 'systematic' to describe a complex structure?

GV   Holistic is a broader framing of a subject. It concerns the bigger picture. It signals some sort of pullback — a situation where you start with something in frame and then, as you pull away, you see there's more going on than you thought. Think of how a cinematographer would approach it. Systematic refers to a thing with many moving parts; something structured. If a simple system is A plus B, a complex one is where a third element, C, is introduced. Thinking systemically implies a recognition that things interconnect in many ways. The classic systems definition from Meadows tells us that all of these things act on each other, directly or indirectly, and they have patterns of behaviour, some of which are designed in and some of which are emergent.

BM   You write extensively about cybernetics as one of the important contexts of your analysis of systems. Can you tell us more about the influence of cybernetics on how systems are perceived and designed today?

GV   Cybernetics' influence on all of this is, of course, huge. The historian Paul Edwards (1996) describes how the first wave of cybernetics came to an end in the 1960s. To give a quick historical recap, cybernetics was funded extensively during WWII and the immediate post-war period afterwards, but never fulfilled the enormous potential it had offered. One strand which did come out of cybernetic research was a powerful metaphor: Command and Control. This was also when, through the emergence of computer chips, transistors, and microprocessors, the ideas and theories that had been abstractly talked about through cybernetics could be made real through Cold War technologies.

The other strand, which Edwards describes, is the counter-cultural element: the weirder stuff, picked up by Stuart Brand and his ilk. Creative strangeness comes from this thread, pushing the limits around what it feels like to be inside these strange systems, both through "be-ins" and psychedelics, but also through cybernetic art. Together, these two strands allow us to recognise how oddities become increasingly naturalised as policy, feeding into operations, protocols and modelling, leading into what we have today.

So, part of the cybernetic legacy is the idea that anything can be modelled and controlled, with its more than a nod to mathematics, and the notion of technical scientific expertise, imbuing modelling with a sense of authority, accuracy, objectivity, and 'rightness'. All of this pertains to a longer history of systems, all the way back to the Enlightenment, implying that working with a 'system' demands a certain kind of rational sensibility. You cannot be chaotic or emotional. This framework has a fundamental implication: it strips away the whole context. Every time a Command and Control model is created, it can be lifted from its starting condition; it hovers. The model can now shape the context, rather than the context giving rise to the model.
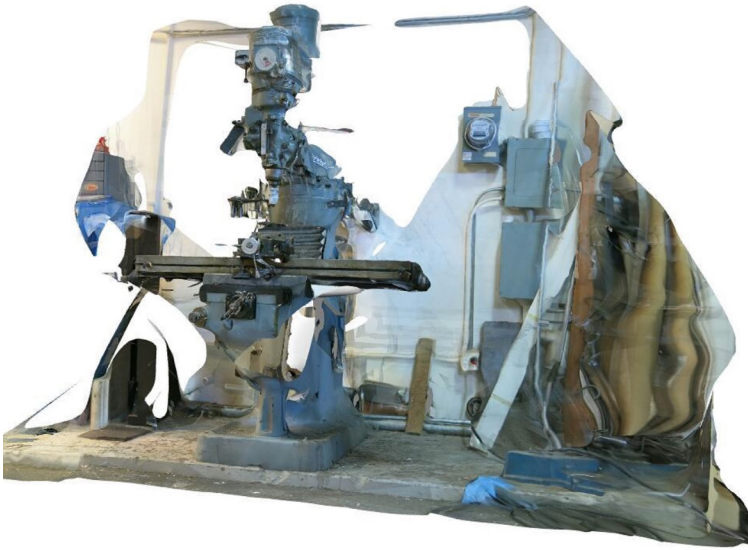
BM   This makes me think of how automation enacts systemic predictions of behaviour and affect, which in turn sustains algorithmic governmentality. In its most dystopian sense, it can be seen as the ultimate manifestation of Command and Control. Where are the possible spaces for resistance against these overwhelming entities?

GV   It depends which systems we're talking about. If you refer to pervasive digital systems then even proto-digital projects like "Project Cybersyn" encountered similar problems (Medina, 2011). I would suggest collective action may be a route, though this is not an area I've focused on in my work. But collective action can be useful. If something is being experienced in a system by someone, it is probably being experienced by someone else too, somewhere in the same system. Think of platform workers. Madhumita Murgia (2024) writes about Uber delivery workers experiencing the hard edge of a system which prioritises speed and forces contractors to drive faster under dangerous conditions. The inaccessible algorithmic infrastructure of delivery platforms is where these issues gather and coalesce. What Murgia, and others argue is that to understand how systems work, you need to look at where the impact lands and on who. In the case of Uber workers, their common experience allowed them to mutually recognise how they were collectively impacted by platform systems, and take collective actions including withholding labour through strike action and fighting for better working conditions through regulatory change. Because these digital systems are so pervasive, any kind of effective resistance has to involve collective action. Individual disavowal cannot work. Think about the argument of 'why don't you just stop using smartphones?', which is effectively meaningless when everything gets accessed via your phone — bank accounts, government services, restaurant menus, and so on. Opting out isn't an option.

BM   And yet, we still have stories of building better Futures through Technology. So let's talk about the design of systems. You write about the genealogy of "wicked problems" and how a mode of analysis whose intent is to resist formalization became an institutional label. How can design move beyond it and shake its saviour complex?

GV   The concept of "Wicked Problems", named by Horst Rittel and Melvin Webber, is often used now as a short-hand for complexity, a neutral analytical tool; even, aspirationally, something to be solved. But Rittel and Webber intended this framing as a caution, warning against the application of systems-led solutions to complex social problems. There are assemblages which are ultimately 'unsolvable' in a way which would satisfy all of their moving parts, and so the challenge comes in considering which parts to prioritise, which then requires firm political standpoints. I wonder if it's a naming problem — if calling them 'the terrifying mystery of the cave' would offer a different perspective.

BM   ...almost mystical? Getting back to a sense of sacred or the divine?

GV   Or something that enacts, distorts, and complicates the subject at hand. Maybe similar to Plato's shadows, but really more about how creative and artistic approaches to knowledge as something embodied, ephemeral, and experiential — something expansive which engages different epistemologies beyond those reified and reproduced in 'traditional' Eurocentric design education and culture which frame design as solutions-oriented. I'm thinking also of Danah Abdulla's work around decolonising in design — conceiving of design as an opening of possibilities through negotiations with the givens (Abdulla, 2025).
      Right now, the dominant narrative is 'If we just had enough of the right data, we could figure out whether God exists or not', which takes us right back to control and the drive to know. The idea of the not knowing and unknowing makes me think of Sara Hendren's writing on "do good" mentalities which pervades work around design and disability, and the horror show of many of the 'curative' devices that get designed in this context which functionally misunderstand or steer past the full lived experience of who it is being designed for, and what is truly wanted or needed (Hendren, 2020). The ugly and unspoken element here is the expectation that the person or community being designed for, or on, is going to be so grateful to those brilliant designers and their generous offerings.

BM   The OpenDebate section proposes Unknowns as a generative space. Because of its legacy, design has had the opposite approach, the modernist notion of design as knowing better, even in some participatory and codesign projects this is often the underlying narrative

GV   In his recent writing, Silvio Lorusso (2023) emphasizes the professionalization of design. As a designer, you offer services that must be sold as problem-solving. If you have 'addressing complexity' as part of your menu of offerings, you also have to sell ways of solving complexity. Lorusso suggests that, instead, it's perhaps more realistic to embrace the insolvability of chaos.

BM   Isabelle Stengers makes a similar point when she draws on *Whitehead* to talk about how professionalisation puts us in "grooves" where methods are used to simulate a kind of "knowability" of reality that is a fiction.

GV   Yes, which takes us back to cybernetics. If you build a model, stripped from context, elevated and hovering, you are now in a position to apply this model to whatever you want. The crucial issue here is that this manoeuvre, this stripping, is not done out of goodwill, but is directed as a form of governance. This shapes the nature of professionalised services, but also how design students understand how they exist within these worlds. What are young designers going out into the world to do? Are they leaving education with a grab-bag of

ready-to-implement models? Do they know their own place in this? Do they understand what design cannot do? If automated tools are increasingly inhabiting the design space, then where is the designer in all of this?

BM It seems to me that the challenge is how can students meaningfully take onboard and unpack those wicked problems while operating within normative systems (educational, academic institutional) that may be limiting or constraining or simply not allowing meaningful responses. So, how can they learn and experiment especially when issues of powers and politics may not even be on the table?

GV When I've taught technology ethics to engineering and design students, it's to foster a process of asking questions, being critical and considering how things might be otherwise. In my book I mention the writer Wendy Liu, who wrote *Abolish Silicon Valley: How to Liberate Technology from Capitalism* (2020). She began in computer science and mathematics, and worked in and founded several start-ups. As she writes, she found herself confused — not by the technics of what she worked on, but by the larger political and cultural structural forces operating around the tech industry. It was only later when she acquired the kind of critical education that we're discussing that she could make sense of it all. This knowledge might not be enough to abolish Silicon Valley, but it was enough to steer Liu in unanticipated directions. Part of any education is acquiring the tools to understand one's surroundings.

BM You also write about system literacy. Would this be something else to add to the education a designer should cultivate to grasp system complexity, alongside critical thinking, future literacy and so on?

GV Perhaps. What is needed, certainly, are ways of learning how to break down some of the predetermined assumptions around systems — 'literacy' becomes a way of thinking and knowing. The questions 'Where does this system come from? How is it imposed? What does it demand of us?' ask that we become aware of its history and context. It's so important to remember that not only are there many technological histories of labour, materials, politics, colonization, globalization, but also that these elements intersect. This, I feel, is missing from a lot of design education, which unfortunately can feel very ahistorical. Everything comes from somewhere! If you don't understand this, you'll work with assumptions that remain untested and you'll risk not being able to know a system for what it is. I would be nervous about a systems literacy that did not bring in politics, history, theory, and critical thinking. The risk is that you remain hovering. It can be difficult to bring the critical element in to design education. There will always be students who ask, 'But why am I learning this?'. Particularly if they've taken a course with the expectation that they will learn something tangible, reproducible, and professional, the question of 'Why am I doing this "loose" stuff?' is likely to emerge. Bringing edu-

cation back to lived experience, or a lived experience, has been the cornerstone of ethics education around technology for a long time. This happens in two ways — by asking students what experience they are drawing on, and through a longer longitudinal view. Also, remember that for a long time, subjects like engineering ethics and computer ethics were seen as 'soft' subjects taught by women. Men worked with technology; ethics was a nice little thing on the side. You see this mechanism at play in the classroom and baked into other structures shaping education pathways. Then you have the professionalisation of ethics and critical thinking, which doesn't necessarily work to address or take down the systems we have, so much as nudge them gently from the inside whilst keeping the overall entity intact.

I was at an event with someone from a major social media company, whose job was something like 'Socio-Technical Systems Expert'. I thought, so, you analyse socio-technical systems at this company, which has and continues to be complicit in disinformation, misinformation, censorship and human rights violations, so what is any of this ultimately for? Will it always be co-opted?

Maybe this is a better starting point for critical thinking and work on systems: if everything is, and always will be co-opted, then we go back to the original questions, where is power concentrated? What are the weak points? Which institutions are we trying to change, and how? Part of being critical is being able to recognize when a possibility or action might be shut down, and why. One must cultivate awareness of the larger forces, structures and contexts which shape these dynamics. A good question might be: what is the smallest possible task I can do in the larger system I am in?

BM   Is it a matter of gaining as much visibility as possible? I am thinking of the opacity of algorithms and the insistence on explaining and opening the black box, failing to consider the epistemic and ontological implications at play. Is transparency enough to grasp a system? I also think of Kate Crawford and Vladan Joler's *Anatomy of an AI System* (2018).

GV   This is about mapping, and takes us back to Meadows. You have a structural, relational understanding of your system, but does it include power? What can you do with the map? There's also the visual effect of a large complex map, in which attempting to capture as many of the component parts as possible can lead to spectacle, but can also feel overwhelming if you want to do anything with it. There's an excellent paper by Shannon Mattern on "Infrastructure Tourism" (2013) in which she asks of these projects which attempt to make something enormous like the Internet present in some way — So what? What now? Maybe these interventions do bring elements of these systems to the foreground; maybe they will push audiences to be more aware and mindful; maybe nothing will happen at all.

One of the things I write about in *Systems Ultra* is the discussion around the common aphorism, by Susan Leigh Star
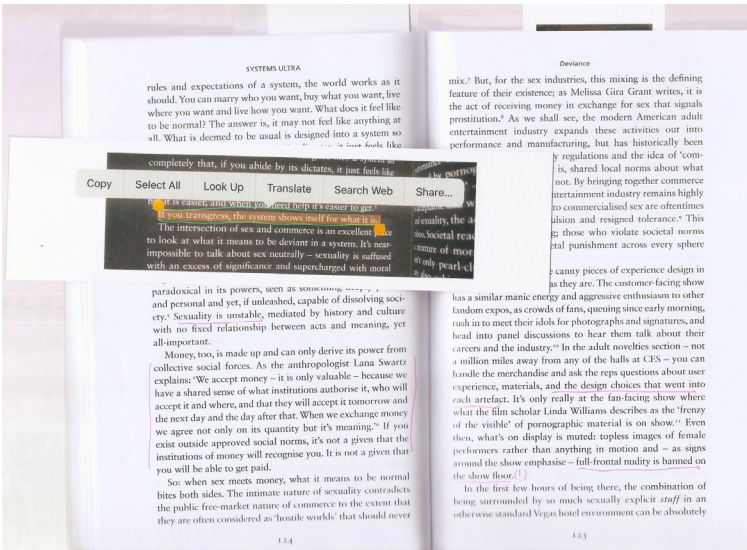
Fig. 3
"Excavated" (Mare Island Extension Kit). Credit: Georgina Voss (as part of Situated Systems), 2016.
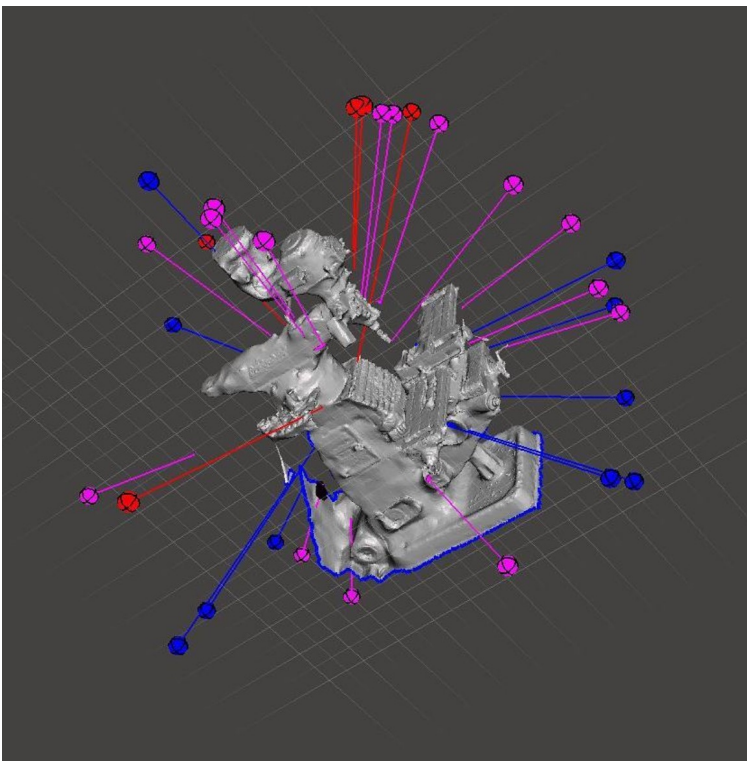

Fig. 4
"Insert/Avert". Credit: Paul Bailey, 2024.

(1999), that systems only become visible when they break, which isn't necessarily a useful way of thinking about presence. Let's go back instead to Goffman's 'front-stage' and 'backstage', foreground and background. We can become inured to visible things in the world around us very easily. You may live in a city with a high homeless population which over time becomes part of the backdrop. Being aware of something, and having the will to care and to act, is less about visibility, and more about what we choose to pay attention to, and why.

BM   Let's talk scale. My understanding of scalability is that you have different parts that can snugly fit into each other and expand, but there is always something that falls off the edge, something that cannot be expanded. What do you think this unscalable is?

GV   You can scale a lot of stuff if you take materiality off the table. This is part of why scale is so desirable in digital spaces. If you're working with software, you can execute scalability at the touch of a button. I remember chatting to a friend at a major tech company and talking about how mind-blowing this was. They were running a small design team, working on software updates, refining, testing and then deploying. And bam! Millions of people's phones around the world update. That is the incommensurability between the size of the team and the volume of devices that their work hits.
Another important point is the neatness of scale. Things that can easily scale do so with only slight or minor differences between the small and the large. But most things don't behave like this. Instead, as they grow, they differentiate — think of the difference between a cell and a hand. And of course, ideas can scale too, or at least they can spread, be picked up and find new forms in different soils, different situations. To circle back, true 'scaling' is imbued with a notion of immateriality. But most of the world is not immaterial. The lust for scale and the desire for control which runs alongside it leads us back into questions of Empire and colonialism, as it concerns expansion and the imposition and manifestation of power through violence and coercion. If we think about these elements through a technological lens, then the question is, how will control be exerted at scale? Will it be through compulsory platforms, mandatory access points, unchangeable requirements?

BM   Another element of scale is its inhumanity. In your book, you use the example of the Rotterdam container port. What happens when the scale of a system is no longer predicated to what is recognisable as human? I think about planetary computation, and its physical, tangible infrastructural assets which seem to have become non-human.

GV   This reminds me of something that happened during the COVID-19 pandemic, when access to vaccines became limited, not because of production of the vaccines themselves, but because the capability to manufacture the glass vials was under pressure. That was a problem of scale, where you

didn't necessarily need something handmade, or produced at the human scale. Instead, you needed the efficiencies of mass manufacturing to produce as much deliverable medicine as possible. The inhumane nature of industrial scale is necessary to meet the needs of a global emergency. At the other end is what happens when inhumane scale lands. A port like Rotterdam is constructed to meet planetary scale: increasingly rapid supply chains, global competition between ports themselves, with automation introduced to bridge this gap. And yet, the material world still exists. Container ships are being built at the very limits of how big ships can be. The port itself was subject to deep dredging to get those ships in. Underneath it all is the hum of capitalist systems. Through the lens of critical futures thinking, we can ask: what will these sites and structures look like in ten years' time? Are they going to get bigger and bigger, or will they turn around and fold back in on themselves? As the automation at Rotterdam shows, supply chains need both scale and speed. If you cannot scale, then you must go faster.

BM   What about the emblematic image of the Ever Given, the container ship stuck in the Suez Canal in 2023 with the tiny digger nearby? What was so poignant about it was to witness the enormity of scale (with its speed, traffic, flows) and at the same time, this puny, human-driven equipment needed to solve the problem.

GV   Definitely — this wasn't some mega-scale Deus Ex Machina arriving down from the heavens to lift the Ever Given out of the canal. It was what it always is — something smaller, human-operated, and very hazardous. Any machine that requires a human input is open to the uncertainty and malleability that the human element brings. The human can shift and adapt; it is the counterpart to the fixity of the machine. Regardless of whether the machine fails, or continues to operate as it should, it is the human who sucks up the excess, acts as buffer, absorbs the effort. This dynamic also depends on the condition in which the machine in the system is being deployed. For instance, the difference between using a tool for something which is contained, personal, familial, social, where someone can have a more intimate and controlled relationship with it, versus something done in a larger extractive system, if we're framing this in Marxist terms. It is interesting that over the centuries — despite the fact that we live longer, are a little bigger and more robust due to better diet and advanced medicine, and that giving birth is far safer now — despite all of this, the human body is fundamentally unchanged.

BM   Would you say the body is a system in itself?

GV   Not as a mechanised version. Body metaphors are exceptionally common in and around systems — look at how systems theory suggests a biological imperative to flow, where disruption to flow becomes a threat to the resilience of the system. One main impetus in the founding of cybernetics came from biology research, when scientists began thinking

of biological forms as input-output systems, for instance the Austrian biologist Ludwig von Bertalanffy. In the 1930s he was one of the main initiators of this approach through his work on general systems theory which described systems as structures with relational components (Drack, Apfalter & Pouvreau, 2007). Shortly after, he joined the Nazi Party where he linked his philosophy of biology to Nazi ideologies of totalitarianism, and in particular, of *Führerprinzip*, the leader principle. Terrible decisions can be made because they operate within a 'natural' order of a system.

BM   This perhaps shows how important it is to not know. How would you see the theme of this issue from your system's perspective, around the relationship between designer and the space of unknowns?

GV   I think not knowing and unknowing can be interpreted in two ways. First, as knowing how — how do you know? For example, some students bring a deep, lived experience of systems and structures that work against them. Perhaps they've come from another country and had to navigate the UK Home Office's bureaucracy and border controls. Not experiencing this context is itself a form of unknowing. Do you know something because you've grown up with it, or because you've read about it? There are lots of ways of knowing.
But I also like the idea of the metaphor of the cave as a form of friction and resistance. This raises the question: What is the purpose of knowing? Think of von Bertalanffy's support of Nazi ideology. I think back to my time as a biochemistry student in the late 1990s, when media interest focused on locating the so-called 'gay gene'. This narrative implied: 'If we find what makes homosexuals homosexual, then...' — and I wanted to ask, then what? Cure? Change? Track? It was horrifying to see queer lives medicalized, reduced to biological causality. This hunt raised questions: For what? So what? It exposes the tension between knowing and unknowing — what assumptions underlie the completeness of this knowledge? Does a gay gene imply desire, identity, or something else?
This reductionist response was aligned with a political agenda, using scientific objectivity as a shield for prejudice and discrimination. At the time, same-sex marriage wasn't legal, Section 28 banned the 'promotion' of homosexuality in schools, and the first lesbian kiss on TV sparked moral outrage. In such a context, ascribing biological causality to oppressed communities perpetuates harm rather than addressing it. It's a Trojan Horse — a reductionist response aligned to a political agenda using scientific 'rationality' and 'objectivity' to reinforce and justify discrimination and hatred.

BM   What do you do with knowledge? In my book *The Power of Maybes* I have researched unknowing, through Nicholas of Cusa's notion of 'learned ignorance': you must focus on what you do not know.

GV   I would push back by thinking about the distinction between power and knowledge. I'm thinking of science studies scholar Brian Wynne's work on lay knowledge and expertise. In his essay, "May the sheep safely graze?" (1996), he explores the case of sheep farmers in the North of England who had been subjected to costly regulatory constraints because of radioactive contamination which was allegedly caused by the 1986 Chernobyl nuclear accident. However, the source of radioactivity was the nearby Sellafield nuclear complex, and thus the government experts who were responsible for those policies — and the economic costs to the farmers — were mistaken. What Wynne examines is how institutionalized scientific knowledge, as embodied and enacted by the UK government, neglects specialist forms of lay knowledge which farmers held — what they knew — about landscape, territory, and their flocks. This is not to romanticize agrarian life but to emphasize that there are multiple, co-existing forms of knowledge which arise through experience and understanding of everyday life. I'm also thinking of the feminist scholar Sara Ahmed's (2024) work on problems and causing a fuss. As she writes, "When you expose a problem you pose a problem. It might then be assumed that the problem would go away if you would just stop talking about it or if you went away".

BM   There are unknown unknowns, as Rumsfeld said. There is a long legacy of how not knowing in a more metaphysical sense can be said to be the very human condition; even the mystical aspect of existence.

GV   This makes me think of Naomi Klein's book *Doppelganger* (2024) on conspiracy theories. She explores the affective dimensions of systems, looking at, amongst other things, the entangling of pervasive digital technologies, vaccine delivery, supply chains and more, that emerged during the COVID-19 pandemic. These assemblages can feel strange because they are strange: they operate through peculiar, more-than-human modes; they are very hard to get a handle on. What Klein identifies is how this strangeness can get weaponised. Add in a fearful moment in time, and you have a perfect moment for conspiracy theorists to intentionally move in and take advantage, to exploit, this gap of knowing, this un-knowing, and a widespread shared feeling of destabilisation, and fill it with targeted and politicised notions of big pharma-biometric implant-5G-forced vaccine dictatorships. Some of this is fully manufactured; some tap into genuine fears. Women, people of colour, indigenous peoples, people with disabilities, and all the intersections thereof, have historically been done over by medical professionals, and so these weaponised conspiracies also exploit legitimate concerns. What Klein argues is that conspiracy theories are

wrong in terms of facts but right in terms of the feelings they tap into. Any intervention against conspiracies which ignores or overrides these feelings will be lacking.

BM   That's an interesting way of framing conspiracy theories as what can create some explanation of otherwise unfathomable and over-complex systems — they are not just bodies of knowledge; they are modes of knowing.

GV   Where the modes of knowing the world, or your world, not even a world but just your bit of it comes into it as well.

BM   I think of situations in which well-meaning designers parachute themselves with their blueprints for 'better', and then clash with modes of knowing based on other universes of reference. Perhaps a skill designers could cultivate is how to work with this incommensurability, which expresses not simply a plurality of viewpoints, but a multitude of experiential-based worlds.

GV   I think this calls back to the points that people like Sara Hendren, Aimie Hamraie, Kelly Fritsch (2019), and many others make in their work and writing around how disabled people are effective agents of their own world-building, and that these practices are not at all the neat, comfortable, containable rubrics that many designers have been taught to work with and impose. Instead, 'crip technoscience' (as Hamraie and Fritsch call it) is necessarily messy and contradictory, precisely because it exists in those interfaces where people's own experiences meet an often uncaring or even hostile world. This raises the question for designers: what are you really bringing to the table? To continue the faith metaphor, are designers rocking up into unfamiliar spaces, clutching their design toolkit which not only imposes the formula of 'design' but the model of the world which this formula embodies. What might an apostasy of this framework look like?

Georgina Voss
Artist, writer, and educator. Her work explores the presence and politics of large-scale technologies and heavy industry, through performance, multi-media installation, and long-term research projects. She is the author of *Systems Ultra: Making Sense of Technology in a Complex World* (Verso 2024). Voss co-founded and led the creative studios Strange Telemetry, and Supra Systems Studio at University of the Arts London; and was co-founder and director of the creative studio, Strange Telemetry. She has exhibited and performed at institutions including transmediale, Auto Italia South East, TAC Eindhoven, STUK, V&A London, Brighton Digital Festival, Deutsches Technikmuseum Berlin, Tate Modern, and London Digital Festival; and has published in *The Guardian*, *Harvard Design Magazine*, *HOLO Magazine*, *The Atlantic*, *Journal of Homosexuality*, *Science and Culture*, and more. She holds a Ph.D. from the Science Policy Research Unit – SPRU, University of Sussex.

References

Abdulla, D. (2025). *Design Otherwise: Transforming Design Education in the Arab Region*. Bloomsbury.

Ahmed, S. (2024). Living a feminist life. In T. Carver (Ed.), *Feminist Theory: Two Conversations* (pp. 229-232). Springer Nature Switzerland.

Brain, T. (2018). The Environment is not a System. *A Peer-Reviewed Journal About*, *7*(1), 152-165. https://doi.org/10.7146/aprja.v7i1.116062

Drack, M., Apfalter, W., & Pouvreau, D. (2007). On the making of a system theory of life: Paul A Weiss and Ludwig von Bertalanffy's conceptual connection. *The Quarterly review of biology*, *82*(4), 349-373. https://doi.org/10.1086/522810

Edwards, P. N. (1996). *The Closed World: Computers and the Politics of Discourse in Cold War America*. MIT Press.

Goffman, E. (1949). Presentation of Self in Everyday Life. *American Journal of Sociology*, *55*(1), 6-7.

Hamraie, A., & Fritsch, K. (2019). Crip technoscience manifesto. *Catalyst: Feminism, theory, technoscience*, *5*(1), 1-33. https://doi.org/10.28968/cftt.v5i1.29607

Hendren, S. (2020). *What Can a Body Do?: How we Meet the Built World*. Penguin.

Klein, N. (2024). *Doppelganger: A Trip into the Mirror World*. Random House.

Liu, W. (2020). *Abolish Silicon Valley: How to Liberate Technology from Capitalism*. Watkins Media Limited.

Lockton, D. (2021). *Metaphors and Systems. Proceedings of Relating Systems Thinking and Design* (RSD10), 2021 Symposium, Delft, The Netherlands, 2-6 Nov. 2021.

Lorusso, S. (2023). *What Design Can't Do: Essays on Design and Disillusion*. Set Margins Press.

Mattern, S. (2013, July). Infrastructural Tourism. *Places Journal*. https://doi.org/10.22269/130701

Meadows, D. H. (2008). *Thinking in Systems: A Primer*. Sustainability Institute.

Medina, E. (2011). *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile*. MIT Press.

Morton, T. (2013). *Hyperobjects: Philosophy and Ecology after the End of the World*. University of Minnesota Press.

Murgia, M. (2024). *Code Dependent. Living in the Shadow of AI*. Picador India.

Olson, V. (2018). *Into the Extreme: US environmental systems and Politics Beyond Earth*. University of Minnesota Press.

Star, S. (1999). The Ethnography of Infrastructure. *American Behavioral Scientist*, *43*(3), 381. https://doi.org/10.1177/00027649921955326

Voss, G. (2024). *Systems Ultra: Making Sense of Technology in a Complex World*. Verso.

Wynne, B. (1996). May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide. In S. Lash, B. Szerszynski, & B. Wynne (Eds.), *Risk, Environment and Modernity: Towards a New Ecology* (pp. 44-83). Thousand Oaks/Sage Publications. https://doi.org/10.4135/9781446221983.n3