Lining Out

Georgina Voss

Writing about systems is difficult and ugly. This isn't surprising: Donella Meadows says that text alone is an inadequate way of approaching systems.

Words and sentences must be structured

one

at

a

time

in

linear

logical

order

;

but

systems happen all at once. To engage with them properly requires using a language that shares some of their properties.

Enter graphic design, which has been closely enmeshed with systemic concepts. I'm less interested in the specific aesthetic forms which graphical modes take. I am interested in the work that they do and their political consequences.

The very history of system – as Clifford Siskin describes it, in the singular – comes from a desire to understand and conceptualise the world, ultimately completely. This process of conceptualisation is tightly wed to what Siskin calls a 'culture of diagram'. In his astrological treatise, *Sidereus Nuncius* (1610), Galileo recorded his observations of moons moving around Jupiter through a series of delicate pictograms, sliced between paragraphs of text. The very concept of system enabled a visual epistemological shift: through seeing and using space in new ways, one could now *draw* conclusions from observations (Ong, 1956).

Modern systems theory emerges out of this concept through a deployment of the concept of 'system' to explain technological conditions of modernity. This framing is grounded in cybernetics – a grand theory of information and control in biological and mechanical systems. Developed from further sky-staring through World War II anti-aircraft research, cybernetics centres around the problem of human-machine relationships and the question of how to integrate the two into one whole system. In doing so, cybernetics intimates that systems are inherently closed and graphable, rather than messier open assemblages (Olson 2018). This urge to create controllable completeness was instrumental in the "closed world" American political imaginaries developed around Cold War military strategy.

Here,
alliances of military
and industry experts were
funnelled into national spatial control projects
to shape new forms of systems engineering in which the
world could not only be known as a universalised form
organised by function but also manageable
under the command
of a larger
purpose.

Even when stripped of militarised purpose and put to socialist use, the systemic alignment of form, function, and purpose remained. For the control room of the Chilean scheme from the early 1970s, *Project Cybersyn,* four graphic designers were hired to draw – by hand – the steady stream of flow charts and diagrams depicting national production activity. In the opening essay to this volume, Francisco Laranjo writes about how, within graphic design, the concept of systems is profoundly rooted in form and reinforced by rapid reproducibility and scale. Branding, signage, and display systems find their kin here.

A "culture of diagram" offers a simpler, more certain way of seeing the world. "I think", Donella Meadows says of using visual forms for explicating systems, "you'll understand this graphical language easily" (Meadows, 2009, p. 5). But it also creates a narrowing of vision which abstracts, away from political consequences. As James C. Scott says, "The great advantage of tunnel vision is that it brings into sharp focus certain limited aspects of an otherwise far more complex and unwieldy reality." (Scott, 1998, p.11) This simplification, in turn, makes the phenomenon at the centre of the field far more susceptible to careful management and calculation.

This raises the question: management by whom? The marrying of form and function also carries politics and intent. Consider again the design of *Project Cybersyn's* control room, which embodied structural qualities of systems dynamics, but also embedded political assumptions about who was in control. The room was modelled after a gentleman's club – low lighting, a bar where Pisco sours could be mixed – and female clerical work had all but been abolished from the space

But rewind a little. It's 1967 and the Cold War is still going strong. The second edition of Stafford Beer's *Cybernetics and Management* has just been published. Up in New York City, the first ever Consumer Electronics Show – CES – has opened its doors. Here, the sold state electronics rolling around in service of the closed world spill over into the public arena. Spread across several hotels on Sixth and Seventh avenues, CES has 200 exhibitors and 17,500 visitors who wander the sites, taking in the wonders of pocket radios and integrated circuits. The show is a success. The following year, little radios, small enough to wear on the wrist are on show; for those who want something heftier, a portable executive telephone is also on display – weighing in at 19lb, it requires an FCC licence to operate.

Technology does not sell itself, and CES is a carefully designed and managed space. At the 1969 show, Tonemaster televisions perch on tall imposing plinths which are wrapped in op art swirls. In 1971, reel-to-reel tape recorders recline on carpet-coloured platforms, dramatically lit by spotlights and surrounded by ferns. The following year, the show appears to be designed by Lego by way of Richard Scarry: a grid-system toy city of foreshortened perspective made up of ochre and blue carpeted walls, all cut through by bright red roads. Each suburb plays home to a different spectacular technology.

Colour televisions dominate the first few years of CES; later, VCRs, laserdiscs, VHS and personal computers make their way onto the carpet. Interesting shifts emerge around how emerging computational technologies are framed. CES goods are for the better part luxurious-but-accessible; aspirational, future-facing, but also familiar. But computational technologies are also magical. In a *TIME Magazine* issue entitled *Computer Software: The Magic Inside The Machine* (1984), journalists describe computers as being able to 'conjure up' programs. Teenagers are framed as 'whiz kids'; technology entrepreneurs are framed as full wizards.

This is a different type of sell: one centred on charisma and heroism. Magic is about power and magical worlds are populated by heroes who are defined by presence to, and acquisition of power. Max Weber writes about how one of the key elements of magic is charisma: a certain something which endows those who have it with exceptional power and qualities: you know it when you see it; when you *feel* it. Magicians and their magical objects – in this case, personal computers – are permanently endowed with charisma. They are extraordinary, compelling.

Overwhelming reactions to modern technologies, and the men who sell them, are not new. In his work on the *technological sublime* (1994), David E. Nye describes how encountering certain types of technological forms can instil a sense of awe, or wonder, or arousal, or even horror rising up the spine. These deeply visceral feelings arise from the spectacle of confrontation with impressive objects. As Nye notes, whilst these technological forms might be large and impressive – railways, airplanes, space vehicles, even bridges – there is nothing inherently charismatic about them. Spectacle is a construct, and a lot can be done with good framing and presentation, some fireworks and song.

Whilst Nye's focus begins with a moment of reinvigorating a 'desacralised' landscape with transcendent significance at the turn of the 20th century, overwhelming and charismatic technologies – or rather, technologies which are being framed as overwhelming and charismatic – continue to seep into CES into the 21st century. Cars are the exemplar form of this shift. As fast-moving vehicles, they have the potential to be sublime; as objects packed with code, they have the potential to be magical. Since 2014, journalists at *The Verge* have pointed out that CES has been threatening to morph completely into a car show: each year, the event gets more and more car-heavy, saturated with self-driving cars, self-drifting cars, and a massive rise in 'car-connected technology (Ziegler 2014).

Technology leaders also exemplify these charismatic framings. Take Elon Musk, a man with the energy of a man who is seven double nitro brews to the wind and and very excited about his heart rate.. Musk is the founder of SpaceX, a private aerospace company that's aiming for – in their terms – space colonisation; CEO of the automotive and energy company Tesla; and founder of Open AI, an artificial intelligence company. He's also smoked cannabis on podcasts; demanded dank memes on Twitter (but not moths); and, at the time of writing, embroiled in a defamation lawsuit with a British diving hero.

Musk is one of the most recognisable CEOs in the engineering and infrastructure place: whilst his public persona is a hot flaming mess, those flames catch the eye Charisma is not about niceness: people don't need to be pleasant to be compelling. The older roots of the "sublime" can refer to monstrous nightmare fuel of vast, unreal or monstrous architectures.

What are you paying attention to?

In her formative essay, *The Ethnography of Infrastructure* (1999), anthropologist Susan Leigh Star argues that many aspects of infrastructure are "singularly unexciting" and exist as some forgotten background. It takes effort to unearth dramas present in system design or restore narrative around dead lists.

Which background, though?

As writer and artist Ingrid Burrington puts it, "The language of 'invisible' and 'hidden' around network infrastructures assumes a particular situated perspective is the dominant one rather than acknowledge what certain hegemonic cultures choose not to pay attention to." (Burrington, 2019) Simplicity and tunnel vision fixates our eye to the foreground; sublime charisma keeps the eye there. All of this is amplified by the *expectation* that to engage with systems means placing that charismatic visual culture of diagram front and centre.

Ursula le Guin warns of the dangers of creating heroic stories because they set up the assumption that without a hero, there is no narrative. If technology, for example, is seen as a heroic undertaking – Herculean, Promethean, conceived as triumph (and ultimately as tragedy) – then offerings about things which aren't heroic or technological are far less interesting. Changing the hero into a *better* schematic, or a more *likeable* CEO (sorry Elon) still maintains the same structure of attention.

Heroes also make it difficult to engage with knotty systemic politics. The same issues which have shaped how certain technological forms are received as charismatic – enabled by a focus around form, branding, and marketing – also slide into their critiques. Kinjal Dave describes how political critiques of emerging technologies – algorithms, machine learning, artificial intelligence – is still focused on an individualistic critique. The terminology of 'stereotype' and 'bias' that permeate these discussions is still borne of individual perception. What these processes don't do is name or locate the systemic harms of these technologies – regulatory forms, organisational activities. Describing an algorithm as being 'biased' treats that technology as though it were a flawed person (hi, Elon) rather than an institutional force. Rather than considering the structural power of institutions, one can become captivated by the hot mess of the technologists involved.

Charismatic narratives and singular critiques generate political will for entire systems, which form-based approaches of graphic design have long been pushed into service for. In doing so, they blind the eye to the fact, to the structural politics which systems wreak. Nye argues that those who are dazzled by sublime encounters with something spectacular, are often too deeply moved to reflect on the historicity of their experience, with what feels like a unique and precious

moment with reality. It's hard to think critically about something when you're enthralled in its headlights.

If we are to know systems; to parse their structural power, we must refuse simple pleasures, easy readings and compelling charismatic affect and work towards more careful attention and a more nuanced focus. Writing about systems is difficult and ugly. Moving away from heroic narratives and forms is hard. But a narrowing of vision can also be a bright spotlight; dazzling,

spectacular,

and

distracting.

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