System-shifting design

An emerging practice explored.

Design Council

THE POINT PEOPLE

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Colophon

Assembling and provisioning
the new system

Introduction

There is huge potential, in the UK and internationally, to leverage the resources of designers in the transition to a more regenerative and just world. But to do so, the field of design must evolve the practices needed to support that transition: what we are terming a 'systems-shifting' approach.

In the last couple of years, there has been a noticeable and welcome increase in designing for system change. The pandemic has made starkly obvious the inter-connections that shape our world. But it is not yet clear that we have the right ways to address complex issues. We have seen many advocating a fusing of design and systems thinking. However, in practice, this too often means taking elements of each and simply merging them together. Rather, they must inform one another, deeply and reflectively acknowledging the complexity of the major societal challenges we are facing, and create a new practice that transcends. Moving us beyond hubristic or rationalist approaches to systems, a mindset of thinking, not doing, and of practices that fix the current rather than create an alternative.

The interest in this type of design reaches back some decades with the connection of design to living systems and cybernetics in the 1970s. But overall, the field is still emerging – from a Western perspective at least. There is a growing body of research and practice around systemic design that sees the integration of design and systems thinking practices and how they inform each other[1], which is brought together by the Systemic Design Association[2], and a practice around Transition Design[3].

There is also a transnational critical design field that questions and challenges the dominant white, Western and anthropocentric position in design[4]. Those in the field argue for indigenous and ecological design[5] and the systemic power shift it both requires and creates. There are other designers who are working at the edges of this field, feeling the need to work more deeply and hopefully, not necessarily connected to academia. Many of these designers are working in isolated pockets especially as conventional Western design practices and the economic models that govern them tend to impede designers experimenting with new approaches.

Over 2020, Design Council and The Point People brought together practising designers from across an array of disciplines to take part in group discussions and interviews. We wanted to engage these practitioners in a wider conversation about designing systemically, what the practice is, how designers need to work, and how the design system needs to change to achieve this potential.

By 'designing systemically' we mean both design as practiced with an awareness of the wider system context and perception of interdependence ('system-conscious design'), and with the specific objective of changing a system ('system-shifting design'). We are interested in exploring the latter as a practice that is expansive and transcends rather than simply merges design with systems thinking.

We're publishing this at a point in time where we feel that a synthesis of emerging approaches is needed, including sensing what is needed, practice that might guide us, and how the design system itself needs to change. This is particularly pertinent as designers consider their position around the climate crisis with the galvanising movements that COP26 and the new European Bauhaus herald.

Our primary audience for this text are the 1.69m people working in the design economy in the UK as well a the system[6] that sits around them, including design educators and design commissioners. We think designers have valuable skills that can help the world transform. We recognise that there are many more people who have design skills but are not working directly in the design economy (2.5m people in the UK)[7] and, as much of contemporary design practice comes from western tradition, there are other indigenous and natural ways of knowing that designers can learn from. There are also many indigenous peoples that are 'designers' both in the way we typically think of a designer and using design skills in different ways. We are also conscious of growing recognition of the design capacity of other living things: animals, plants, micro-organisms, and the relationship they have with human-led design.

We recognise that this is evolving knowledge, not a comprehensive overview. We have tried to reach out to places that highlight our blind spots and provide useful critique. We have uncovered many new paths and appreciate that there is still so much more to know. Three considerations are worth highlighting that show us where else we might want to look.

It is important we acknowledge that our approach is inevitably guided by our position as white women, all trained in design from a western-centric view. It is vital to us that this work stays open to new or previously marginalised ways of seeing and understanding without colonising these practices. For example, when we use the word 'alternative', this is written from a Western perspective, and we recognise that these types of living are not radical or new in some cultures.

We ourselves are practitioners. There is a rich field of academic study that we have been able to draw on through selected readings and conversations, but it has not been within the scope of this work to undertake a comprehensive overview.

We have deliberately focused our engagement with people from more formal design backgrounds who are engaged in consciously designing for systems, as a means of understanding how they are thinking about, applying and expanding their design practice. As we acknowledge earlier, our daily lives are rich with design activity that is not the purview of professional designers, and many groups of people are creating and shaping the systems they are engaged with, using their innate design capacity as part of other traditions, disciplines and backgrounds.

We put this out as an offer, or an invitation, for others to build upon our ideas, and as a provocation for designers to experiment with new approaches and for the western design 'system' to consider how it needs to shift.

1   Jones & Sevaldson (2019), Buchanon (2019), Ryan (2014) and van de Bijl-Brouwer & Malcolm (2020)
2   https://systemic-design.net/
3   Irwin, et al. (2015)
4   Led by design academics such as Tony Fry, Anne Marie-Willis, Arturo Escobar & Ezio Manzini and brought together here by Claudia Mareis & Nina Paim (eds) (2021), Design Struggles: Intersecting Histories, Pedagogies and Perspectives

5   Ginsberg, A D, & Chieza, N (2018). Editorial: Other Biological Futures. Journal of Design and Science
6   By design 'system' we mean the different people and organisations within the system – designers, educators, commissioners etc, as well as the relationships, power dynamics, governing values, worldviews that shape how it works together
7   Design Council (2018) Designing a Future Economy https://www.designcouncil.org.uk/resources/report/designing-future-economy-report

Methodology

This paper is the result of ongoing conversations with practicing designers. Over the course of 18 months, we convened a group of between 15 and 20 designers nine times, held 16 in-depth interviews, and synthesised our findings throughout, sharing at the Relating Systems Thinking & Design Symposium 2020 and at a session with designers we had engaged, incorporating feedback into the final draft. A more detailed methodology can be found at the end.

Introduction workshop [10 designers]

Event

100+ attendees

06 conversations

Feedback workshop [08 designers]

16 interviews

Synthesis

RSD9 Talk

Draft 01

Feedback workshop [16 designers]

Draft 02

Diagram showing how we created this paper
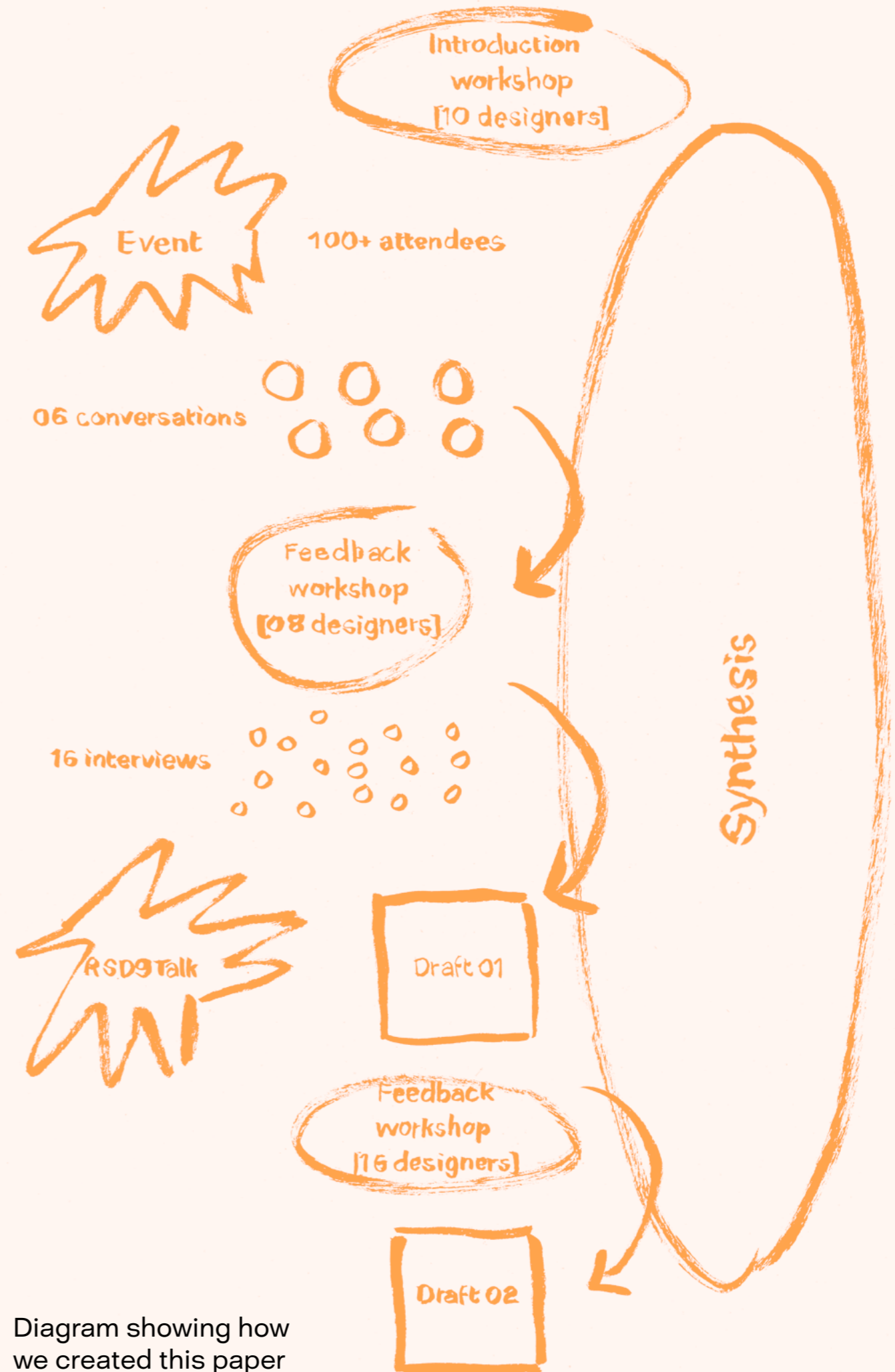
The design we have and the design we need

1. The design we have and the design we need

As new challenges appear, there is general agreement that many of our current systems are failing us, designed as they were for a different time. Even worse, as they have grown out of balance, these systems may now actively contribute to the challenges we face – climate change, racial injustice, inequality, an ageing population, poor mental wellbeing. We are at a critical juncture, as these social and environmental challenges combine, where our ability to exist within what economist Kate Raworth calls the 'doughnut' of societal and planetary boundaries[8] depends on making profound shifts in how we consume, organise and care.

In short, it depends on our collective ability to make and to remake the *systems* we live by – systems for wealth, property, ownership, consumption, welfare, wellbeing, for example – at a deeper level.

This is not a technical challenge, but a *creative* one. We have plenty of new technologies. But realising their positive benefits requires collective social imagination. Throughout history, significant advances in technology have only led to periods of widespread societal benefit once they have come together with a new, shared idea of how to live[9].

This puts greater demands on leaders in all parts of society not just to *manage* the systems we have, but to *create* the alternative systems we need and to share the power to do so.

Many have embraced systems thinking as a tool to understand the nature of these complex systemic challenges. To act on them, we need the capacity to move from system thinking to system innovation. As the UK Governement sets out in its recent Innovation Strategy, design is core to succesful innovation, as it takes ideas and makes them real.

A major constraint to transformational change is the fact that most innovation starts from the vantage point of our current systems. We have become very good at making systems work better: optimising them, making them more efficient, elaborating their features. As a result, most of the investment in innovation goes into extending the lifespan of systems that are, at heart, no longer fit for purpose.

Creating the systems we need now is not about fixing the problems of the old. It means looking beyond the problems inherent in the current model to the potential for a different system to emerge. This requires different ways of perceiving, a different mindset and different skills. We need less of the emphasis on diagnosis, analysis and evidence-based decision-making that has been the mainstay of management practice in recent years. Instead, we need more of the propositional: the imagining, perceiving, making and mobilising needed to realise a new systemic opportunity[10].

Design can play a major role in building the capacity of system innovation that we need for society to make the transition to different, better systems. To do so, we need to evolve our current practice, designing not only in a *systems-conscious* way, but a *system-shifting* way.

Three challenges for current practice

Design has made huge advances in the last few decades. 'Design thinking' is now taught to MBAs and public leaders alike. A user-centred design ethos has led to significant strides in putting citizens at the heart of the redesign of public services. New fields of design have grown up to support a service economy and growing tech industry. Design tools are now widely available to people, democratising access to what many have argued should be a core skill[11]. While it is often still mired in the constraints and traditions both of the field of design and the field to which it is applied, this development has provided greater scope. There has been some freedom to evolve as design thinking is applied to many different fields and this has brought with it some exciting new tools and ideas.

Various design movements have underpinned that shift along with user-centred design: strategic design, participatory design and place-shaping, service design, transformation design, transition design. Each continues to drive the evolution of design practice.

Design has many of the ingredients needed to tackle systemic challenges. It has highly developed methods for dealing with complex, open-ended questions, framing opportunities and moving forward in unknown territory. Importantly, it is not only about navigating complexity but imagining and creating new value; while it has an affinity with system thinking, design is about the act of creation – what it takes to bring something new into the world.

However, for design to help build the capacity for more fundamental system innovation, there are three challenges to consider.

8   The economist Kate Raworth draws our attention to a set of societal limits (poverty lines, basic human rights) and planetary limits (water scarcity, overfishing) that form an inner and outer boundary (the doughnut) we must live within for an acceptable quality of human life to be sustainable on our planet

9   The economist Carlota Perez, who studies the patterns of long economic cycles, calls these periods 'Golden Ages', where new ideas of how to live (for example suburbanisation in the 1930s) mean that a majority of people can benefit from technology (automobiles and roads) developed in a preceding period. We may be on the cusp of a golden age as a result of a transition to a green economy, if we can develop a shared picture of post-carbon living

10   A systemic opportunity points to a fundamentally different kind of value to be realised through a fundamentally different operating model. Because a systemic opportunity is by nature unfolding, it is only realised through collaborative innovation, where one innovation builds on the one before to open further possibilities and unfold the value of the full system

11   'A design literate population will be able to make judgements about the instrumental and social effectiveness of design decisions.... The constantly emerging new realities require continual design activity at all levels of society.... Self-governance, reinvention and participation are not possible without competence in design. Design is self-creating coherence'. Banathy (2013)

Also: Papanek (1985), cited in Banathy: 'any attempt to separate design, to make it a thing by itself, works counter to the inherent value of design as the primary matrix of life'

Firstly, characteristics of current practice

Some of the key characteristics of current mainstream design practice that have made it so popular in recent years may be unhelpful when it comes to creating next-generation systems:

User-centric

A focus on the 'end-user' has been hugely important in reorienting the activities of commercial and public services to produce real outcomes or benefits to people rather than serving the interests of the organisations involved. However, that can come at the cost of design for sustainable and equitable future systems by prioritizing the needs of customers over workers, and people over planet. Working with systems requires a focus not on atomised individuals, but on the relationships between us all, and not on individual needs alone, but on the shared needs of humanity. If we start from an understanding that we are part of the earth, not separate from it, what might be 'centred' instead?

Designing out risk

All innovation is a risk, and a huge part of design's appeal has been as a means of managing that risk, for example through the strategies designers use to build empathy with end-users and prototype solutions to spot and resolve errors early. However, as design has become widely adopted as part of commercial development, it has also increasingly been shaped into a more reliable, rational and therefore incremental process. We see this in many forms: as co-design to find solutions that fit better with current lifestyles; agile development to make customer-focused improvements, according to feedback loops based on current system logic; and prototyping used to validate pre-existing assumptions. In large part, this is to fit into a management logic that seeks control and certainty, to advance but not to transform. In order to shift to new systems, we need to evolve practices that drive the use of co-design, iterative development and prototyping in service of deeper transformation and towards new, not existing paradigms.

Solution-focused

Design is billed as creative problem-solving, delivering workable solutions to discrete problems. This means the design process is most often taken to be a process of defining – or isolating – a problem and resolving it through a product or service solution. That is then seen as the end of the process. Even if the design team goes on to practice continuous improvement, it is carried out with the understanding that the fundamental elements of that solution remain unchanged. As a result, projects are commissioned to fix one bit of a system in isolation. But the dynamic nature of social systems doesn't lend itself to static solutions and the unfolding nature of a systemic opportunity means that design work is never 'done'. Working with dynamic systems requires us to give up the illusion of control and the promise of the finished solution.

'The design brief has been going in the wrong direction – trying to isolate the problem, rather than show the complexity of it. Therefore we lock a solution onto the isolated problem.' Bruce Mau

Secondly, a need for design that drives transition

For design to contribute to society's capacity to make these shifts to alternative systems, not only do designers need to work in a more systems-conscious way, they need to design for the processes that drive the transition itself.

Many designers are involved in designing whole systems – 'product-service-systems', digital platforms, and other technical systems – which require a high degree of system sensibility. In many instances, the system in question is complex but relatively contained. What interests us is the role that design now needs to play when it comes to the process of more fundamental societal transformation – and what more we can ask of or expect from design.

When society has undergone significant system shifts in the past (for example, the transition to automotive modes of transport, the formation of a welfare system, suburbanisation), historical patterns show us that that process takes place through a combination of changes at three levels[12]. A shift in landscape conditions (wars, climate, economic crises, societal values) at a macro level puts pressure on the current 'regime' (the way that institutions, policies, markets, rules and regulations are configured), creating cracks or openings for change. At the same time, at the micro level, innovations developing in niches, in the form of new technologies, lifestyle habits or social practices, start to join together to form the kernel of a different system, that interacts with the 'regime' to change the rules of the game. This nascent system gains ground by attracting the resources released as the old system opens up. Unlike 'disruptive' innovation, there is rarely a complete displacement of the old system, rather, we see a hybrid of the old and the new. We are in the middle of one such transition to plant-based diets as the rise of vegan lifestyles and meat-free innovations combine with societal attitudes towards climate change are putting pressure on mainstream food systems to change, which needs to be done in a way that benefits people on different incomes and without other adverse effects on the environment.

However, whilst we know how system transitions happen, we know much less about how to orchestrate *deliberate* or intentional shifts and – as we will go on to say – how to do so in a way that doesn't assume linear causality, which critics might say is a flaw of design thinking in a complex world. The process of transition typically involves many actors over a protracted period of time – often several decades. The Vegan Society was first formed in the 1940s, for example. Additionally, most of these historical shifts have been *emergent*. That matters because right now, we don't have the luxury of long periods of time to make the shifts needed and because some shifts (e.g. the rapid automation of work) threaten to leave large groups of people behind.

So, an important question for design is how to contribute to accelerating deliberate transition (or intentional emergence), and doing so in a just and equitable way.

Meeting that challenge will require us to expand both knowledge and practice. We need to develop a better understanding of how to connect innovations and propositions at these different levels to increase the pressure and opportunity for change. That will involve new 'objects' of design – for example how to design not only the products, services and operating models that exemplify a new system, but the supporting conditions and transitional activities that help a system to shift. It will involve aligning different schools of thought on how to understand systems with different design strategies for change; and integrating other forms of expertise related to transition into design practice. Movements in design education, such as Transition Design[13], are already paving the way.

'I take up assemblage as an imperfect descriptor to avoid the hubristic assumptions of a systems view. Stating "I am studying a grasslands assemblage" instead of "I am studying a grasslands system" produces a remarkable shift in expectations and assumptions. This simple substitution dismantles subtle assumptions of fixed categories of knowledge, as well as assumptions that engineering and control are always possible. Instead, it foregrounds uncertainty and acknowledges the unknowability of the world.' *Tega Brain, The Environment is not a System*

12   See: Geels (2006) This refers to the 'Multi-Level Perspective' (MLP) model developed by Prof. Frank Geels at the University of Manchester. The MLP explains socio-technical transitions as resulting from the interplay of developments at three analytical levels: niches (the locus for radical innovations), socio-technical regimes (the locus of established practices and associated rules that stabilize existing systems), and an exogenous landscape. The regime forms the 'deep structure' that accounts for the stability of an existing system, and this level is of primary interest, because transitions are defined as shifts from one regime to another regime. The MLP does away with simple causality in transitions. There is no single 'cause' or driver. Instead, there are processes in multiple dimensions and at different levels which link up with, and reinforce, each other ('circular causality'). The MLP also demonstrates the degree of agency present in transitions: trajectories and multi-level alignments are always enacted by social groups.

13   Irwin et al. (2015)

Thirdly, underlying structures of current practice

There are many underlying structures of the current 'design system' that are deeply entrenched and this context makes it difficult for designers to operate in new ways:

Currently, design is situated within a traditional economic worldview. Quantifiable inputs should lead to quantifiable outputs to ensure return on investment. This is reinforced by the business models of design and linear theories of change. Design is commissioned as individual, discrete projects. Commissioners tend not to recognise that value is produced over the long-term and is attributable to numerous different efforts. This may be because their own funding models and governance work against this perspective, or because to do so could be seen to diminish their own contribution. The intelligence generated from this work – in the form of intellectual property – is often held individually rather than shared openly for others to progress it further. The value of intangible assets of design, which often sit at the edges of the scope of the commissioned work: new knowledge, but also the new framing, relationships and goodwill, is not captured, recognised and then further invested in. Indeed, why would a commissioner invest in something that sits beyond their remit?

Governance and regulation vary within design practice, from standards and review processes within architecture, the built environment and advertising, to the rules that govern the design commissioner's world such as health regulation and private shareholder needs. This means that ethics are essentially 'optional' in much design work. This can make it more difficult for those designers wanting to question the brief to ensure that multiple perspectives are included and the interests of the collective are prioritised over consumer or business needs.

Any designer embarking on this journey will undoubtedly encounter these barriers, and so as well as design practice, the context in which it is undertaken must change.

To meet these three challenges, design needs to evolve new practices, supported by changes in the system of design itself. The good news is that there are pockets of new practice developing that we can draw on and strengthen. In the following section, we explore what we can learn from these.

Box 01. Background reading.

What it means to design for systems

A system is a set of interconnected elements that function together to achieve a purpose. When looking at systems, it is vital to acknowledge the relationships between elements as well as the elements themselves. These relationships lead to emergent properties and behaviour that could not take place without the elements interacting. This means that a system is more than the sum of its parts.

There are different types of systems: engineered systems (e.g. computer software), social systems (e.g. a local community), living systems (e.g. a forest). In this paper, we are primarily referring to social systems, what Peter Checkland calls 'human activity systems', rather than natural, or purely technical systems. These can be formal and informal; whilst there is a formal health-care system, the system of activities that go into producing good health is broader than that. However, these social systems are inextricably coupled with the systems that make up our biosphere.

Systems are complex, dynamic, unpredictable, connected at multiple levels, and emergent. They can't be controlled in the sense that typical causal logic would suggest. However, we can intervene at leverage points[14] that have greater power to influence change, or by purposefully creating new systems to transform situations for the better. Different schools of thought about systems – from cybernetics to ecology – are aligned with different ideas about how to bring about positive change.

What can be 'designed'? While some systems emerge organically, in modern society it is hard to escape systems that are the product of intentional human action. Humans have designed complex systems such as our financial and education systems, which, in turn, shape other systems that we inhabit.

Designing for systems involves questioning the way that the boundaries of systems are perceived. As well as designing 'parts' of a system and the way they interact, for example in the form of products, platforms and services, the objects of design include other things that shape system conditions and behaviours e.g. narratives that influence assumptions and beliefs about what a system is for, routines that shape social practices, structures that make different sets of relationships possible, operating models that change the way that authority, resources or information flow, or framework conditions that encourage different system activities.

When it comes to systems, innovation might take several forms and you may find yourself acting from several positions:

- Improving an existing system, its performance, health, efficiency etc.

- Transforming a system from 'inside', reorienting the purpose of its institutions and relationships, repurposing its resources and components, changing its operating culture.

- Creating a new system from 'outside', assembling new elements and actors, nurturing relationships from which a new system with a new purpose can emerge.

'As much as systems thinking is a step forward from silos, it's problematic. Because it comes originally from 1960s, cybernetic, technocratic theory, it has an unfortunate illusion of control - that you can model these things, or tweak a few levers, the water will flow through the model in the opposite direction and all the risks become opportunities. I don't think it's that at all. I don't think the world is controllable in the way that this abstract reading of systems implies. Systems are to be engaged with on the ground, which means systems doing, not systems thinking.' Dan Hill

14   Renowned systems thinker, Donella Meadows, sets out these 'leverage points' in order of effectiveness, or greater power to transform http://www.donellameadows.org/wp-content/userfiles/Leverage_Points.pdf

Box 02. Background reading.
Design thinking and systems

System change comes about through the actions of many different types of people with different types of expertise, both acting directly and creating enabling environments. However, embarking on deliberate system innovation means that people come up against specific challenges – the need to reconcile conflicting perspectives, the paralysis that can be induced by too much system mapping. It is here that design attributes – in particular its propositional nature – come to the fore. These can be under-recognised in how 'design thinking' is commonly understood.

'Design thinking' has come to be used in recent years as a catch-all term for a combination of thinking styles and practical techniques that designers use, and that can be learnt by non-designers, to solve problems creatively or achieve breakthrough innovations. There is no hard and fast definition but it usually includes some combination of the following: empathy, problem-framing, ideation, synthesis and prototyping. Making these approaches explicit has been a huge part of design's success in recent years, making it more accessible and less mysterious. However, it has also tended to reduce what is still a rich area of study to a set of tools and processes to follow.

When designers are working with systems, they are not applying 'human-centred design' tools to solve system problems. They are drawing on a more fundamental set of thinking and doing capacities that help them to create new situations in complex, dynamic environments. Stepping into these acts of creation and improvisation is important for anyone who wants to move from system thinking to system innovation.

These capacities include:

- Integrative thinking – the ability to hold the tension between opposing constraints or points of view, and generate a new model that transcends both[15].

- Abductive reasoning – discovering what could be. This contrasts with deductive and inductive logic. Designers progress by forming an idea of the 'what' (the value that could be produced) at the same time as the 'how' (the means of producing it). This dialogue between what and how helps to unfold a systemic opportunity.

- Perspective-taking – the ability to move between the subjective and objective, which helps to take on different vantage points, see how patterns at a micro level are reflected at a macro level, and keep both in play when designing.

- Propositionality – making propositions for how the future could be, which in turn depends on the capacity for daringness and non-conformity that allows designers to focus energy on the possible and the promising, rather than the right or the certain.

- Reflexivity – the ability to reflect-in-action. Designers do this through sketching, prototyping and improvising in real-time. This is not about 'testing' an idea but rather about stepping into a mode of being in dialogue with a dynamic context. By making a move to change the situation, you reveal new possibilities – the context 'talks back' to you – and you respond to this 'back talk'[16] by changing your appreciation of the situation.

- Synthesis through making. The ability to take in diverse information, be changed by it, synthesise it and give form and expression to your new understanding.

These capacities are valuable when working with system innovation because they help us to:

- Stay orientated to the future potential state;

- Keep multiple perspectives in play without getting stuck, and find ways to transcend conflicting viewpoints;

- Move forward even when where there is no consensus on the nature of the challenge or goal;

- Stay in action without foreclosing options, suspending binary decision-making and instead using prototyping to probe the situation and reveal resistance, energy for change and promising paths forward[17];

- Share our new (untested) understanding generously by making something that can connect and spark with others;

- Not to compromise but instead use invention to work through 'system barriers'.

They also reflect more of an engaged, ongoing process of shaping or crafting as a means of leading system change.

However, the common conception of 'design thinking' has also been the subject of critique more recently as stemming from a primarily western, modernist, rationalistic tradition[18], e.g. the belief in the individual over the relational, the value of 'newness', the centrality of man as protagonist, the separation of living things and matter. There is a growing community of design theorists, academics and practitioners[19] who see design as ontological (i.e. that the things we design produce ways of knowing and being and therefore design us), and therefore argue for greater plurality in the worldview and practice of design, beyond its current white, Western and anthropocentric starting point. As we evolve our understanding of how to design for next-generation systems, aspects of design thinking that better reflect other traditions are likely to become more important.

15   Danah Abdulla reminds us that Albert Rothenberg calls this 'Janusian thinking' after the Roman god that looks both ways, Abdulla, D. Disciplinary Disobedience, in Mareis & Paim (eds)

16   See: Schön, Donald, The Reflective Practitioner

17   See Snowden and Boone (2021)

18   See: Escobar, n.d. Notes on the Ontology of Design

19   Brought together here by Claudia Mareis & Nina Paim (eds) (2021), Design Struggles: Intersecting Histories, Pedagogies and Perspectives

Designing systemically: in practice

2. Designing systemically: in practice

2.1 Stories from the frontiers of practice

We are in a liminal space. The new practice we need is still emerging. What follows is a small sample of stories from the frontiers of practice. We think that together, these show some of the common attributes of design practice as it changes to be better suited to shifting systems.

Proposing a public kitchen that questions assumptions behind our modern food systems

Design Studio for Social Intervention (DS4SI), Boston
Shared by Kenneth Bailey and Lori Lobenstine

In Western society, it's generally assumed that someone has access to a private kitchen. This assumption is materialised through many designed objects such as the layout of houses, the sizes of ovens and pots, and 'family sized' ready meals. However, this social arrangement of private kitchens—embedded with its ideas about the primacy of nuclear families—may be creating negative effects ranging from food waste, to loneliness, to the overproduction of consumer goods.

Kenneth and Lori questioned this starting assumption by asking 'If kitchens were public – like libraries, schools, and basketball courts – how could that rearrange social life?' Rather than leaving it as an open question, they created and ran a temporary Public Kitchen to give people in their neighborhood a sense of what this could feel, look, and literally taste like. Over 500 community members joined DS4SI for a week of fresh food, cooking competitions, a mobile kitchen, recipe sharing, food-inspired art, food justice conversations, and more.

Starting in Boston, the project not only challenged assumptions about the need for individual kitchens (and the equally strong assumptions about a 'public kitchen' being for people in poverty), but it also created a space where folks from all walks of life got to build new relationships with each other—from a grandmother who finally shared the secret ingredient in her chicken, to neighbors who brought greens from the community greenhouse where they farmed, to the local church deacon who shared the church's large scale cooking tools.

Linking residents, artists and activists through design is key to DS4SI's work. As Kenneth and Lori say, activists know a lot about power, about what is wrong with the current system, and ideologically where they want to move to, but it is the designers and artists who can show what change could look and feel (and taste!) like in reality. As they imagine how public kitchens could rearrange social life, they suggest the power of communities, artists and activists to collectively imagine, prototype and build the world they want. 'This is what we call "propositional politics",' says Kenneth. 'We believe new arrangements like the Public Kitchen have the power to rearrange relationships, not just between community members but also between the community and the governments meant to serve it.'

Reframing nightlife from a crime hotspot to a festival

Design Innovation Research Centre,
University of Technology, Sydney
Shared by Kees Dorst

10 years ago, the Kings Cross area of Sydney was notorious for its late night alcohol-related disorder. The public authorities had exhausted all the traditional crime reduction tactics such as increasing security or implementing early closing hours. Nothing was working. They brought in Kees Dorst and his team at the Designing Out Crime Research Centre, a collaboration between the New South Wales Attorney General and the University of Technology Sydney. Kees used his emerging 'frame' methodology to dig into the underlying assumptions and values of the current system. At their root, the values were about safety and security, which was creating opposition between the authorities and the businesses. Kees proposed a new set of values, focused on identity and vibrancy, and asking the question 'what if Kings Cross was the best music festival in the world?'.

By reframing the core values and purpose of the system, he brought in different stakeholders, gave them different roles, and therefore opportunities for innovation: increased transport in and out of the area, staggered opening times, provided food trucks and seating areas for 'unconscious sobering', as well as more public toilets. There was a massive reduction in alcohol-related crime, and it sparked a shift in the way that the city council saw itself, from enforcers of regulation to stewards of partnering organisations towards a collective goal. More widely, this work shifted thinking across the world, with the rise of the concept of the 'night-time economy' and a network of Night Mayors in cities around the globe.

However, a sobering event 10 years on triggered reflection. Two young men lost their lives after a night out, prompting the city to revert to a crime-reduction approach. The doctors in the hospital and the federal state Government had not been involved in the initial reframing, and although the original partners understood the reframe, the overall public narrative had not shifted. Therefore it was easy to revert back. As Kees Dorst reflects: 'Never miss a major stakeholder, always work on all levels, change the public narrative'.

Designing resources & space for communities to imagine alternative futures

Emerging Futures Fund,
The National Lottery Community Fund, UK
Shared by Cassie Robinson

The Emerging Futures Fund was set up by The National Lottery Community Fund (NLCF) during the Covid 19 pandemic. It sits alongside their emergency funding response. The intent of this funding programme was to seed a UK-wide infrastructure for community sensemaking, narrative creation and collective imagination, lifting communities up out of the present crisis and enabling them to perceive entirely different futures. Investing in infrastructure is a long term commitment that builds capacity – it finds ways to scaffold, support and strengthen what is emerging. Through the funding programme, NLCF wanted to lay the foundations for the tools with which communities can bring their insights and ideas to the table. Over the longer NCLF envisage the infrastructure being anticipatory, too. It will help to build a way for people and communities to anticipate challenges.

The funding programme was designed to resource and create spaces for others to imagine and seed alternative possibilities through provocation and speculation. The grants were framed as enquiries so that they could encourage propositionality in ways that bring the potential system into being, and prototyping to reveal possibility, not to validate existing assumptions.

Cassie designed the fund to be open-ended so that it can support emergence and an unfolding and generative process that opens up an imagination space for others to fill, respond to, and build on. Beyond the grants themselves, other actors have been resourced to 'tend to the collective', actively trying to build more collective awareness of aligned work in different regions and communities, connecting funded initiatives with other local groups and hosting spaces for relationships to deepen.

Through resourcing a wider team made up of policy and systemic narrative expertise, a digital producer and archivist and a community weaver to work alongside the funding programme Cassie's team are working to join up the 52 grants and assemble and connect distributed acts into a bigger narrative. They are also 'provisioning' the new system, funding the work, organising the material and 'infrastructuring', e.g. creating conditions and providing scaffolding so that the work can grow and connect over time.

A proposition that repositions trees as core urban infrastructure
Dark Matter Laboratories, UK
Shared by Indy Johar

Trees used to cover where many of our urban cities now stretch. But, for the last couple of centuries our urban planners have simply seen them as isolated units to provide green respite from brick and concrete. Wardens have been appointed, at best to protect them and at worst ensure that their roots didn't damage roads and foundations and that their branches posed no threat to pedestrians.

Trees are far more fundamental to life than that and yet we don't treat them as part of the infrastructure of our cities and how they grow. Indy and the Dark Matter team have a new approach to trees, seeing them as co-inhabitants.

By seeing them as co-inhabitants, they are assigning a different value and narrative to trees – one that changes our fundamental assumption about them – and then focusing on how the deep structure of governance and economics would need to shift for trees to be valued in this way (what they call the Boring Revolution).

They are working propositionally and have set out a series of visual suggestions for how this happens at a legislative level and have designed a model for a New Forest Infrastructure where measures of success come from how well ecosystems are maintained rather than how many trees are planted, and where we see infrastructure as natural as well as man-made.

But to achieve this, they also recognise that we require a socio-cultural shift of our human perception to increase empathy towards urban trees, and create a different social contract with the green environment that surrounds us. Indy gives the example of the Melbourne initiative, where people emailed trees, as a way that designers need to think about designing interactions that create these connections.

Inherent in all of Dark Matter Labs' work is work that values the role of imagining and alternative possibilities through provocation and speculation, and using prototyping to reveal possibility, not to validate existing assumptions.

Designing democratic building & planning interventions that disrupt an entrenched housing system
Open Systems Lab, London
Shared by Alastair Parvin

Alastair's work began with a well-known challenge: *Why is it that wealthy countries have housing crises?* As he began to map the complex knot of drivers behind the problem, what he found is that beyond the many simplistic answers that we are often given to this question was a 'stack' of historically entrenched systems that shape the way we design, build and own homes. Those includes production systems, knowledge systems, regulatory systems, and systems of land rights, many of which were designed in the 20th, 19th – or even the 11th century. Though seemingly abstract or invisible, these legacy operating systems are often the keystones that shape how we collaborate and compete with each other and hold today's inequalities and injustices in place.

The approach that Alastair and his team at Open Systems Lab take is to look for leverage points within these systems where a small intervention might create ripple effects through the wider stack. They work with stakeholders who continue to have vested interests in the existing system, to understand it and to begin to imagine better ones. They prototype, test and share innovations that are useful right now, but also begin to disrupt and reshape the wider system.

For example, the aim of WikiHouse is to put the ability to build healthy, zero-carbon homes into the hands of every citizen, community and small local business. Communities can take control, building homes anytime they want and creating local jobs and pride in the process.

The aim of Plan is to make the planning system simpler, more accessible and more transparent for ordinary citizens and those who do not have the resources to hire experts.

The aim of Fairhold is to allow families (or communities) to own their homes or neighbourhoods at an affordable price, freeing them from private rent and insecurity.

A common theme across these interventions is an ambition to democratise access to knowledge and capabilities that are historically locked into the hands of specialists, or large, well-capitalised companies.

They also exemplify a particular approach to changing systems, which is to build new solutions or infrastructures that can exist alongside the current ones and slowly outperform them; then to share those solutions for others to adopt or imitate. As Alastair quotes from Buckminster Fuller, 'You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete'.

Creating a new infrastructure for civic participation

Participatory City, Barking & Dagenham, London
Shared by Tessy Britton

Tessy Britton has a vision for a new kind of 'participatory infrastructure' that can underpin the life of cities. It is the basic set of structures needed for residents to initiate and take part in hands-on projects that shape daily life in neighbourhoods, building friendship and trust in the process.

This participatory infrastructure is made up of shops, maker spaces, replicable business models, insurance and accounting provision, teams of project designers, and shared tools and assets. It underpins a growing ecosystem of collaborative projects – from storytelling to bulk cooking, food growing, tree planting, trading, making and repairing, and cooperatives producing circular economy products.

For the last ten years Tessy and her Participatory City team have been developing and refining this – starting by doing, and learning by experimenting in context. Since 2017 over 6,000 residents have become part of the flagship ecosystem in Barking & Dagenham, co-creating over 150 practical neighbourhood projects. From this, she has now developed 'Universal Basic Everything': the missing neighbourhood-level complement to universal welfare provision. 'We couldn't have anticipated this unless we were working with live people in a live context... It's all grounded in what we're seeing and experiencing.'

It is very different from traditional, existing models of participation, from volunteering to neighbourhood projects, which often become locked in to committee-based decision-making structures. This is the opposite. Instead, project designers from Participatory City set out a different, open-source philosophy for participation, which is generative – it is about opening up ideas and project models for replication, as a means of being fully inclusive. 'One thing that's really good is that it doesn't require consensus. People can diversify. If a project doesn't fit with where their head is, they can start a new project with the principles.... It takes the conflict out of it.' The team has created a set of design principles that promote this philosophy, and that all residents subscribe to which provides a liberating structure as people are free to do what they want within that mindset.

She has found that her designers are having to work in different ways too. 'We're very familiar with a specific design problem, many ideas, you sort the ideas and you select the best one. Then you gather resources and execute.... the design process that we're using, which we've learned from citizens themselves is that you have a bigger vision with a general problem rather than a specific one. And you're constantly mapping people, resources, skills, spaces, and so on. And then you design many projects using many resources – these multiple projects contribute to solving those bigger problems'.

The project developers engaged by Participatory City have to develop new initiatives and ideas with people, and through delivery, not beforehand. 'This aspect of it is quite complicated because it involves a synthesising process, and you're doing that with people. The people who don't get stuck have had some design training...It's a difficult role because they also have to do delivery. That sort of mode switching is cognitively very demanding – [project designers] might have those switches two and three times a day.' The need to embed these core productive skills in front-line practice is a general theme across system-shifting initiatives.

The Participatory City Foundation is spreading this approach through complementary research projects and a school of participatory systems and design to other locations outside the UK.

2.2 System-conscious design: common approaches

We have looked for features and approaches that are consistent throughout the examples of praxis we have seen. All the designers we spoke to were working in a **system-conscious way**, and a specific number were working in a **system-shifting way**. First, we set out the former.

Holding the fullest complexity

Instead of isolating a problem and seeing it as something to be fixed, they view it as a 'phenomenon', the product of a wider set of system dynamics. They expand the brief, recognising the interrelatedness of different parts of a system and the relationships between them. This means they are designing interventions to have a positive effect on the surrounding system as well as to benefit the people involved.

Designing for the collective

They see the unit being designed for as explicitly about the collective – neighbourhoods, societies, ecological systems – rather than isolated individuals. They focus on the multiple, the plural and the relational.

Engaging and convening multiple perspectives

Recognising that no-one has a true picture of the system; they invite multiple perspectives and bring in marginalised voices from the edge, using integrative thinking (see box 2) to form a course of action even where there is no consensus.

Recognising themselves as part of the system

Recognising their own assumptions, worldview, and impact on the rest of the system, by working with others with different perspectives to check their biases.

Working with the invisible

Designers are often accused of being overly concerned about 'things' in a superficial way, turning every design challenge into an app, for example. System-conscious designers recognise that the interactions and dynamics between people, things, and environments are just as much the 'material' of systems as those 'material things'. They make this tacit knowledge visible and design tangible things to mediate those dynamics, without letting go of the symbolic power that objects and designed environments embody in their own right.

Using prototyping to probe and to form

Prototyping is often reduced to a means of testing preconceived ideas or validating assumptions. Here, designers are using it initially as a means of sense-making – probing and provoking a system to reveal where there is resistance or energy for change. Possibilities are formed, not in the studio, but in real-time, in relation to people's responses.

Allowing for emergence

Building the skills and capabilities in others to design, and spaces for further creativity.

'Systems are constantly changing. For change to occur there must be an interplay between forces activating the change, and others resisting change. If a ceramist has an idea for a clay pot, the form cannot come into being if the material does not present resistance to the potter's hands.'
Anna Birney[20]

'Co-design, that process of creation, it then spreads, it becomes a seed, it's a porous process, seed-like, and people take it away and build something, tangible or intangible, like relationships or networks.'
Akil Scafe-Smith

We're interested in inviting further exploration of how to move from system conscious to system shifting design.

Systems-conscious

To improve the health of existing systems, designers:

Hold the **fullest complexity**

Design for the **collective unit**

Engage **multiple perspectives**

Recognise the self as part of the system

Works with the **invisible dynamics and social structures**

Use prototyping to **probe and form**

Encourage **emergence**

Systems-shifting

To drive more fundamental system transition, designers make 'things' that:

Challenge the deep structure of a system

Work at three levels of a system to drive change

Facilitate a shift in the make-up of a system's purpose, power, relationships and resource flows

Support the transition from one system to the next

Operate together, not as single solutions but complementary elements

To do that they:

Start from different ways of knowing

Assume interdependence from the outset

Take a stand

Focus on the potential system, designing propositionally

Consider it an unfolding and generative process

Design-in-action through making

Tend to the collective

Invest in a longer time-horizon

Build in a new set of system values

Collaborate with other change disciplines

Seek shift and depth over scale

2.3 System-shifting design: an emerging practice

System-shifting design: what

Many are using the skills we've discussed to significantly improve the health and effectiveness of current systems. However, a growing group of designers are going beyond that to develop the kind of focus and practice needed to drive more fundamental system transition.

We think that the *things they are designing* have five characteristics. They are:

Challenging the deep structure of current systems

Underpinning every system is a set of beliefs that determines how that system sees its mission or purpose and the logic it operates by[21]. In turn, this dictates the design of rules and relationships that determine – and often reinforce – our behaviour and values and is borne out in physical objects, spaces and social practices[22]. These designers are digging into these deeper layers, the 'deep structure' of a system. That might mean setting out a new social philosophy that changes the purpose of a system, challenging a fundamental assumption and so shifting the beliefs on which the logic of the current system rests (as in Dark Matter Lab's case), or re-engineering a key piece of the system's 'code' from which many other actions flow (as Alastair at Open System Lab is doing). In most cases, they have a critique of the current system, and a set of principles that characterise the system they want to move towards[25].

Working at different levels of a system to drive change

In addition to developing new, tangible products, services and business models at the micro level, designers are finding ways to contribute to or reinforce broad changes happening at the macro level, for example by shaping new narratives, paradigms, and values (which some call 'meta' design); and at the meso level for example by working with policymakers or regulators to design new frameworks (as Dark Matter Labs and Open Systems Labs are doing), designing new relationships between organisations or institutions, collaborating to shape new markets and educations, designing the platforms and infrastructure that can support a new system to grow (as Participatory City is doing).

'Simply updating traditional products with potentially transformative [biodesign] technologies still reinforces current systems and markets, and their ecological impacts, rather than reinvent them as promised.' *Daisy Ginsberg and Natsei Chieza*[23]

At the micro level, designing and making system-shifting 'things'

A new product, place, service or organisational model that, through its design, facilitates a shift in the make-up of a system, or allows a new system to form. The most powerful can unlock system change by facilitating one or more of four shifts[24]:

- In purpose

  For example by changing people's mental models of what the system is for. This is seen in the system for crime reduction or hosting the most successful late-night economy as in Kees' example.

- In how power is distributed

  For example by designing models that share knowledge or ownership differently, such as Alastair, who is working on open systems innovation.

- In how the flow of resources is channelled

  For example through services that open up underused assets, such as Participatory City, or experiences that recast resources to make new purposes visible as in Kenneth and Lori's public kitchens.

- In the relationships between new and different actors that make up the system

  For example the nightclub owners in Sydney.

Each of these shifts combines to have a reinforcing ripple effect on the wider ecosystem. The design of these 'things' also gives form to the new philosophy at the heart of a new system. Like a fractal, these can be the smallest possible expression of the new system that can work at different scales, and connect with other similar expressions into a bigger narrative. These do not need to be the 'answer' – and indeed can be speculative propositions – but should invite further possibility. Cameron Tonkinwise recently described this as 'a myriad of micro co-designs that will murmurate.'

'It feels like too many people in the "design meets transitions" space are hanging out in the "design policy" space (which is "design thinking" meets "systems thinking") and not enough doing regular material designing of the things that would actually affect everyday practice change.' *Cameron Tonkinwise*[25]

21 For example whether the purpose of a criminal justice system is assumed to be about incarceration or rehabilitation, or a health system about treating illness or promoting wellness, changes the methods it uses

22 What Escobar calls 'ontological' design, Escobar (2018)

23 Ginsberg and Chieza (2018)

24 See: Four keys to shift a system in: Leadbeater and Winhall (2020)

Investing in activities that help the system to transition

These are not solutions per se, but innovations or activities that are designed to create conditions conducive to transition. They range from:

- Convening and strengthening relationships between diverse system actors to develop the relational capacity for a new value-system to form. Not just recognising interdependence but intentionally designing things that deepen it.

- Platforms for action, e.g. setting up a forum or vehicle through which a new system activity can be enacted, developed or funded.

- Transitional tools, like a new data set that allows something new to be measured and therefore valued by a system, or a new professional education that develops new capacity amongst front-line staff – both of these help to develop the credibility and authority needed for a new system approach to take root. This includes boundary objects – Kenneth and Lori's public kitchen, for example – speculative products that embody what a new system might feel like.

- 'Provisioning' the new system, e.g. providing other people building it with tools and resources, e.g. knowledge-sharing platforms, open-source data, principles or code, an umbrella narrative.

- 'Infrastructuring'[26], e.g. creating conditions, standards or frameworks that help new system activity to grow, aligning actors towards emerging practices[27] or building the 'secondary' innovations needed to enable parts of a new system to work together (such as the development of trust-scoring-type tools in the early days of sharing economy systems).

Creating, not single solutions, but multiple complementary things that can operate together

Designers see what they are creating as one part of a bigger ecosystem and work to join the various elements, to assemble and connect distributed acts into a bigger narrative.

'Their role [prototypes as boundary objects] is not to serve as functional prototypes of a concrete solution, they are a tool for exploring the invisible adjacent possible. They generate a "feedback experience" that is realistic enough to detect dispositions and to inspire further decisions. The results of this exercise of voluntary exaptation opens the door to radical, unbounded innovation which can find fertile ground when crisis itself pushes us to question our fundamental paradigms.' *Alessandro Rancati and Dave Snowden*

System-shifting design: how

In order to work in this systems-shifting way, *how* they are working follows these principles:

Starting from a different place

Finding ways to access different philosophies, sources of knowledge, more-than-human and full-body intelligences, plural worlds and different ways of feeling and perceiving, all to shift how they see and experience the world and challenge the assumptions and boundaries of current Western-dominated and anthropocentric systems. Without – and this is critical – appropriating or colonising this knowledge, but using it to promote plural ecological and indigenous cultures. Designers are understanding these alternative ways of knowing and designing interactions that allow others to do so as well.

'It is imperative to find ways to learn from indigenous ways of knowing, without again exploiting them as a mere resource for design's continued conquest.' *Claudia Mareis and Nina Paim*

'Research with other cultures reveals things about our own social practices that question the invisible/norms. Encounters with difference allow you to say 'things need not be this way'. It shows that different systems are possible, or gives the possibility for systems to be otherwise.' *Ahmed Ansari*

Designing from a collective viewpoint

The starting point of any design work comes from a perception, and worldview of inter-dependence, and designing from that position. What is assembled or perceived or considered at the outset influences how the work develops.

Taking a stand

Implicating themselves, holding on to the radical point of view, rather than being a neutral facilitator.

Using their design skills propositionally to bring the potential system into being

Focusing on the potential system over the problems inherent to the current, e.g. not mapping the current system but potential states, systemic opportunities, plural worlds. Valuing the role of imagining alternative possibilities through provocation and speculation, or creating spaces that allow others to imagine. Using making and prototyping to reveal possibility, not to validate existing assumptions.

'Designers have the ability to synthesise intentionally and create these knots of possibility into the future. They are doing propositional analysis, not analytic analysis.' *Indy Johar*

Designing-in-action

Engaging with the materiality of an emerging system in real-time. Rather than moving between the studio and the field to test things out, these designers are embedding themselves in context and designing in direct relationship with the world. Through their hands-on work they are making a move and seeing how the context responds, changing their appreciation of the situation in relation to that response – in an almost simultaneous process of synthesis and action. They design according to how the world designs back. They keep their assumptions light and open to change. In this sense, making is a kind of strategy, where the resistance of the material – in this case the dynamics of a situation – is integral to forming the path forward. They are 'building a boat while sailing it.'[28]

Considering it an unfolding and generative process

Which continues over the longer-term and is open-ended and improvisatory. Seeing the things they design as opening up a space to invite others to design into. Rather than providing an answer, designing something that is radical or 'over-offers', which opens up an imagination space for others to fill, respond to, and build on, and embracing plurality. Opening up the intent so that others can build on it.

'You can't think what can I do to manipulate or force a future, but what can do that makes it more likely that the emergent properties, the new part of the system that we can't predict, will unfold'. *Daniel Christian Wahl*

Tending to the collective

This could be described as designing in more interdependence, more contingency, making the collective stronger, building more collective awareness, and investing in the entwinement. For example, a design which deliberately heightens the need for maintenance, for repair, for care, for nurturing and tending of shared resources and spaces, creating intimacy and atmospheres[29]. Or designing for deep participation over time, collectively growing something and deepening relationships.

'In the collective, we don't see colonialism as just the occupation of lands or the subjugation of people; we believe it starts with this foundational separability that interrupts the sense of entanglement of everything, that interrupts the sense that we are part of a metabolism that is the planet and that we belong to a much wider temporality within this metabolism. This separation takes away the intrinsic value of life within a wider whole.' *Vanessa Andreotti*[30]

Investing in a longer time-horizon

- Finding ways to be there for the long haul
  Seeing it as a longer-term mission, changing their role as it progresses, and finding alternatives to a consulting model that allows them to partner with the mission for longer (see 3.1 for the various roles involved).

- Building the capacity for an ongoing development process
  E.g. building into their models the capacity for self-development (for example, the way that Participatory City is investing in the capabilities of its project developers for ongoing synthesis and creative development), developing design skills and capacities in communities, building in learning systems, care and maintenance.

'A bottom-up approach is closer to evolutionary processes, wherein small mutations to a system's elements have the power to reverberate to powerful effect if given the space to proliferate. For designers, then, the approach must be to reframe the problem, identify potentially catalytic agents, seed bottom-up effects and let the system play.' *Jamer Hunt*

Building a new set of system values into their designs from the beginning

These values underpin next-generation systems: regenerative not extractive, decolonial, more-than-human, circular, relational, distributed, participatory etc.

Collaborating with other disciplines

Working with people have something else to offer on how change happens, e.g. activists, journalists and narrative builders, ecologists, artists, entrepreneurs, philosophers.

Seeking shift and depth, not scale

Scale is not always a means of changing systems. In fact, many innovations get co-opted back into the very systems they set out to change. These designers are experimenting with different ways to grow and deepen their system-shifting impact, not only replicating their designs but infusing their intentions out into the world.

'Scaling up is wrong. Rather, scale out. How can I take the DNA of ideas – and make it relevant to local places?' *Daniel Christian Wahl*

25 https://twitter.com/camerontw/status/1360453466217324546?s=20

26 Karasti (2014)

27 Moegerlein (2019)

28 Star and Ruhleder (1996) analogy of infrastructuring as building a boat while sailing it, referenced by Moegerlien

29 Moegerlein (2019)

30 https://dark-mountain.net/the-vital-compass/

'Atmospheres, like infrastructures, exist between things. They emerge through relationships...I grew increasingly attentive to the possibility that atmospheres were the means through which we might redesign ourselves by reorienting how we related within the realm of the present...When we are immersed in atmospheres that enchant us, we open to forces that might ordinarily seem inert from a modern / colonial world-view.' *Kirsten Moegerlein*

'Allocentric design recognises the value of species by seeing them as nodes in a wider network of interdependencies – a system in which diverse agents design the world together, and experience it side by side...When design is interested in sustainability only as a way of maintaining the anthropocentric status quo – of keeping humans at the top of the pile – it fails to combat the logic at the core of the current crisis.' *Tomasz Hollanek*

System-shifting design: themes

These approaches are consistent with system thinking and theory but go beyond it to suggest a portion of what is needed for deliberate system innovation.

We feel the 'what' and the 'how' above comes together into three themes for future practice. As we did this work, we realised that these speak to three different understandings of systems theory[31]. The concept of emergence is closely connected with complexity science or complex adaptive systems[32]. Alternative intentions and the idea that humans shape systems is more closely connected with a social systems view or social systems design[33]. Assemblages of interdependent, heterogeneous entities and focus on collectives reflects work in Science and Technology Studies and Anthropology[34].

A core part of systems shifting design is the process of holding the space for multiple ways of understanding what a system is and fusing together plural strategies for change.

Alternative intentions and deep remaking
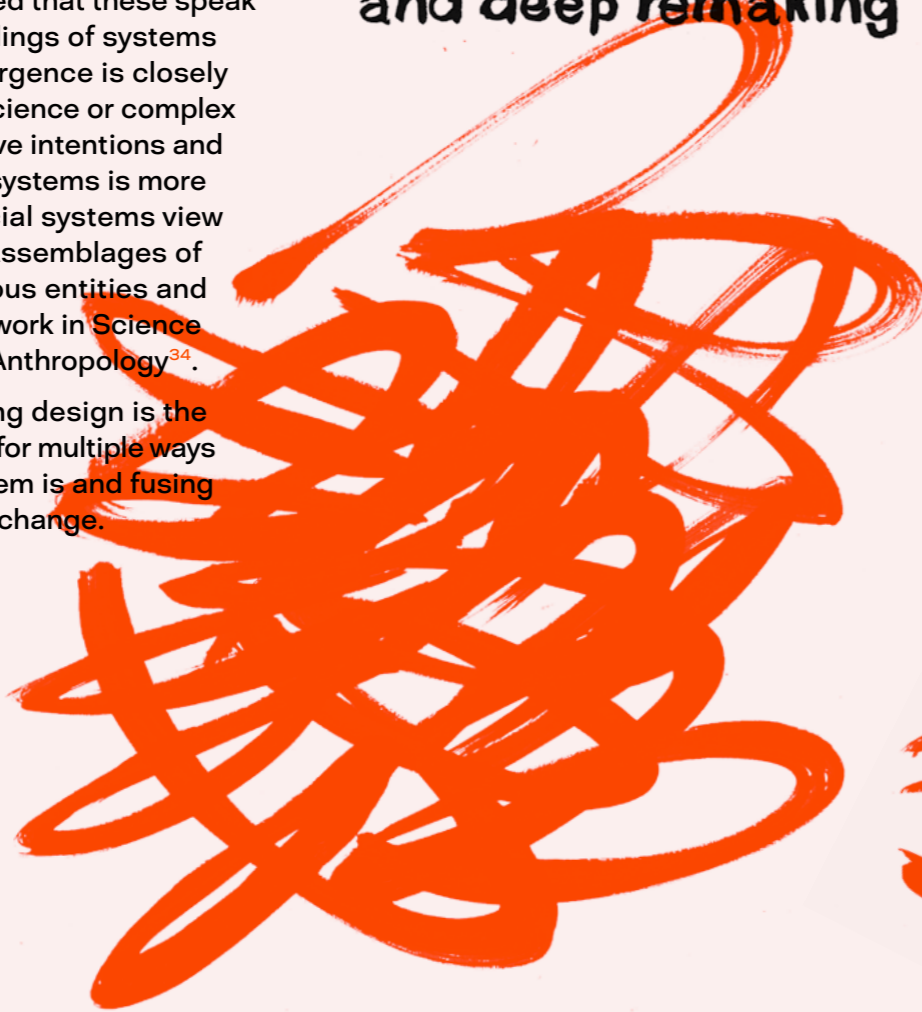
- Taking a radical stand and working to an alternative intention /philosophy.
- Accessing and valuing different intelligences, perception and worldviews.
- Starting from the perception of interdependence, the lens of the collective or the 'in-between spaces' where things connect (the relationships, the spaces of street and community life which are not 'neatly' commissioned), and design explicitly for this area.

Emergent possibility and generative plurality

- Reconfiguring the relations that unlock or invite new behaviours and activities. Following the logic: *if this, then what else...?*
- Revealing new systems by supporting others to embody/experience/imagine alternatives. Valuing imagination as an infrastructure for the alternative.
- Opening up an invitation and an intention so that others can build upon it in a plurality of ways.

Assembling and provisioning the new system

- Designing platforms, contexts, infrastructure and properties that allow more of the new system to emerge, or what's emerging to be perceived differently.
- Tend to the collective: actively entwine, design in and reinforce interdependence to allow the system to grow and new things to emerge from it.
- Bring together an ecosystem and create a narrative that aligns and binds together.

31   Or in fact, Josina Vink generously shared her wisdom with us
32   Holland (1998)
33   Banathy (1996). Metcalf (Ed.) (2014)
34   Latour (2018)

Implications for design practice

3. Implications for design practice
3.1 Roles

Through observing designers working to shift systems, we can see that they are finding different positions from which to act. These allow them to put new approaches into practice. This is helpful for other designers to see how they can act, and for the 'design system' to understand how they need to facilitate this type of action.

Visionary propositioner

Someone who, through their practice, is exemplifying the different philosophy behind a new system. They find ways to create self-initiated research to develop new frames or ways of knowing which they keep waiting in the wings until the right opportunities and partnerships present themselves to create tangible demonstrations of what is possible.

New system entrepreneur

Someone who has forensically dug down into the roots of the current to understand what needs to shift, finds a market moment in the current, and then creates a product or service that embodies that deeper change and that people can start buying and using now.

Pro-activists

Someone who poses questions about what might be possible, loosens up the current system and creates spaces for imagination and co-design and then places it in the hands of others who can take it forward and build on and enact it, for example, community members and activists. They are passing over the baton of possibility.

Coaching consultant

Someone who plays the 'double brief' with a client, coaching them to use design to understand and reframe their current problems while also lifting their eyes to their potential new roles and values from which more radical interventions can come. Who can take into account two extreme views and create a third one into a pathway forward.

Intention weavers

Someone who uses their role as design commissioners or convener to bring together different organisations and people across the system, across and beyond design, with a similar alternative intention or shared interest in the benefits of a new system, and build interdependencies between them.

3.2 Tensions

This way of working presents a number of tensions or dilemmas for designers:

- Intentional emergence: we need to balance a bold mission with opportunity for emergence; direction with diversity/plurality; giving up control without becoming passive. We need to know when to be bold, provoke and take a radical stand, and when to notice and steward the sea change in beliefs and views that heralds a paradigm shift. We need to take a radical stand, not be a neutral facilitator, while simultaneously inviting multiple ways of knowing. These are not binary positions, nor should the designer find compromise between the two. Rather, they form a paradox from which a new type of skill or capability can grow, like a graceful dance between these spaces.

- Design itself has grown out of a worldview of which we need to be able to step outside[35]. We have to be able to dig into our assumptions and redefine our base-line of what 'design' is, recognising that there are more ways of designing than our educational frameworks.

- Working on twin tracks, facing both ways: having to serve the demands of the current system at the same time as building the new. We must pay close attention to the power of the voices that benefit from current resources and processes, and create pathways for new voices.

- It takes a long time. This is a different timescale for designers to work with; the system is never 'done'. Some of design's value comes from being naive and 'superficial', moving from project to project, transferring ideas. Is it possible to both commit over the longer term and rejuvenate creativity?

- There is a mismatch between current business models and the kind of longer-term engagement that works for system change.

- Value is diffuse: rather than being wholly attributable to the designer, value arises from the interacting elements of the system and all those that work to create it.

'There is, thus, an important tension within a design justice approach between dealing with the larger, long-term forces of structural inequality and the need to make something concrete in the here and now that can contribute to sustaining, healing or empowering a community.'
Sasha Constanza-Chock[36]

'Design is moving from a Newtonian lens of seeing the world as a material that we can "masterplan" through a procedural lens where designers can host stakeholders together in a problem-solving process to a regenerative lens where we are designing in relationship with the world and humans cede that we are overlords of nature.' *Indy Johar*

35   Escobar (2018)

36   Design Justice: Community-led Practice to Build the Worlds we Need, (2020), MIT Press https://design-justice.pubpub.org/

3.3 Charting the shift and a new language

It is clear that we need more evolved and explicit theories of how change happens through design. Understanding the preconceptions and limitations of current practice provides a picture of the character of future design practice. We are able to take the characteristics that design currently values itself by – user-centricity, de-risking innovation, and a neat, solution focus (chapter 1) – and consider what alternatives can further our practice.

Current mainstream characteristics	Future characteristics
Individual	Collective
Agile, de-risking innovation	Transformative
Problem solving	Possibility-giving
Static solutions	Dynamic conditions

Table showing current and future characteristics of design practice

Individual to collective[37] or shared

Rather than focusing on a specific set of user needs, designers will be working towards humanity's collective potential. They will be encompassing not just humans but all living organisms and materials. Designers will be creating things not just for individual groups of people to use, access and enjoy to meet their own needs but for our (in its most expansive sense) shared needs. Our notion of who is a designer will have shifted, democratising what is counted as design, and valuing natural, non-human design. Together, they are making things that can harness and regenerate creative energy, behaviours and resources. Designers will be caring for the system as a whole – how it is working, how it connects and positively reinforces itself.

- **From user centred to collective, or planet-centred[38]**

  Rather than focusing on individual user needs or a target group, understanding common values and what people and other living things alike can do for each other.

- **From personas to relationships**

  Rather than seeing people or objects in isolation, seeing them as shaped by the relationships and interactions they have with everything in the system around them.

- **From facilitation to entwinement**

  Not just bringing people together, but intentionally creating connections and trust and deepening interdependence.

Designers will see how everything is connected and how their design intervention will put a different set of relationships into motion. Rather than just seeing these as 'externalities' at worst, or 'unintended consequences' at best, designers are designing for this wider ripple effect. They are making this ripple effect visible and sharing the wider value that it creates.

- **From linear theory of change to an emerging value constellation**

  Which designers need to sense as it seeps and grows out rather than being able to plot from left to right in advance.

Agile to transformative

Current work is incremental and agile in order to de-risk innovation. Rather than making a better, smoother, faster version of what we currently have, designers will be imagining alternatives and intentionally designing objects, places, and services that reveal what that could be, and/or will create properties which make it more likely to emerge. To achieve this, commissioners will be demanding new ways to experiment with deeper transformation.

Designers will be taking a more radical and intentional stance on what new systems need to be for, rather than acting as neutral facilitators of user needs. That is not to say that they won't be working with what currently exists. Designers – particularly commercial ones – will be working on a 'twin-track', designing immediate and incremental outputs to build trust and goodwill while raising imagination and awareness of the possibility of alternatives. Commissioners will be asking for this 'double brief'.

- **Design research to alternative intelligence**

  Rather than investigating a current problem, looking for alternative ways of thinking about and perceiving the world.

- **System mapping to world dreaming**

  Moving from looking at current systems to see where to intervene, to creating a shared consciousness of what the future could be.

- **Minimum Viable Product to Minimum Viable Purpose**

  Looking for the smallest possible expression of the new system – in the form of a design – that can trigger a move toward the new ideal.

Problem-solving to possibility-giving

Designers and commissioners are in agreement that a problem is never solved and instead we need a whole set of interventions to shift to a just, regenerative society. A new type of 'emergence design' will be formed where designers are working directly on interactions and the elements that bring different people and relationships into being together with alternative intentions from which further innovations cascade. They will be deliberately designing more interdependence into new systems as a way for innovation to happen. Scaling will be talked about not as one design growing bigger, but as an intention diffusing more widely and its roots going deeper. Being humble will be less about co-design and welcoming other people's ideas, but more about designing the 'invisible' infrastructure from which imagination and creativity can grow, and opening up intentions so that others can build on them.

- **From blueprint to springboard**

  Rather than creating a plan to be followed, creating a basis which can be adapted and used as a springboard.

- **From pattern library to intention bank**

  Creating a bank of concepts with their underlying logic, intention and principles that can be used by others, and that are not to be just borrowed from, but picked apart, rebuilt and paid back with 'interest' in the form of more knowledge.

- **From scaling up to diffusing out**

  Rather than continuously developing one specific idea, communicating the intention behind it which others can then build upon and develop with knowledge and skills from different perspectives.

- **From quick win to slow appreciation**

  Valuing and holding the space for things to emerge over the longer term.

Static solutions to dynamic conditions

Designers will be holding their design briefs in a 'looser' way, applying their skills, not to a fully formed, discrete system, but to a longer-term process of dynamic change. They recognise that 'we design and the world designs back'. The 'end form' of the design is now less important than the way in which it encourages conditions for intentional emergence; the 'object' will be the temporary 'things' that are needed to support transition. Designers will be engaged in unbuilding (old systems and old assumptions) at the same time as assembling. The intention will be to see how resources (people, expertise, materials) can be re-perceived, reoriented, repurposed, regenerated, and to understand the emotional change associated with that.

To do this, designers will be learning to operate at each level of the system including the 'meta' level of societal narratives, values and philosophies. They will be connecting innovations together, not just to create new innovation, but to strengthen the pressure and opportunity for change. They will need to recognise different theories of transition and create new approaches to change-making through collaboration with a much wider expertise related to change, from activism to psychotherapy and storytelling.

- **From market fit to market-shaping and culture-fit to culture-shaping**

  Preparing the ground for new values and ideals to take hold.

- **From a business model canvas to a societal storyline**

  Rather than designing a whole process, creating potential and framing ideals to encourage a shift.

- **From a prototype to a seed**

  Rather than a temporary thing to test and iterate an end product (making a single thing better), a temporary thing from which a new system can grow (a thousand flower bloom).

- **From combination innovation to kinetic innovation**

  Not just combining things to create something new, but to create a groundswell or pressure to create a whole system shift.

Above, we have considered approaches to practice and the values that lead practice. Both must evolve before we can design with a systems-shifting approach. The two are closely linked but do not map perfectly onto one another. How can we use these new values to drive the move to new practice?

37   We've used the word 'collective' throughout this paper because of its roots in collectivism – https://en.wikipedia.org/wiki/Collectivism and the idea that collectivist societies emphasise the needs, wants and goals of a group over the needs and desires of each individual. These societies are less self-centred and have social values that revolve around what is best for a community, society and the planet. The word also relates to ideas of the collective conscious - https://en.wikipedia.org/wiki/Collective_consciousness, and collective action, and shared interest - https://link.springer.com/article/10.1007/s13280-019-01284-w However, some of our contributors preferred the word 'shared' feeling that 'collective' was too boundaried

38   Many designers are searching for a new term to describe a type of design which is beyond the human-centred, which encompasses the collective, shared needs of all living things. Designers are using society-centred, planet-centred, earth-centred, humanity-centred, allocentric. None of these quite convey what we mean, and the lack of the right word here is part of the bigger problem in that it demonstrates how we don't currently value this wider entity

Invitations
for exploration

4. Invitations for exploration

What we have set out is an emerging set of design principles based on pockets at the frontiers of practice, and a collective sense from designers that there is a need to work in a new way. It is not 'evidence-based' in the rational, scientific way that so much design has come to value. In fact, we aim to directly challenge this approach. Therefore this is an open invitation for us to explore together through *doing,* to act, reflect, learn, share, and open for others to build on. Firstly, we set out some provocative questions for designers working on their projects. Secondly, we set out some speculative ideas to help us collectively reimagine some of the structure of the 'design system' itself. We want to use these illustrations of what could be, to ask, *'if this, then what else?'*

Questions for 'individual' designers:

Within your own practices, how can you start to adopt some of these new principles and what can you share about what you learn?

- What is the current worldview that you are designing from? What is a radically alternative (to you) purpose or philosophy for the system you are working in? How can you frame your work differently? What can you make that embodies this, and allows others to experience this as a possibility?

- And how does power need to shift to value the source of new types of thinking?

- What can you design that creates properties, relationships or values that allow other interventions to emerge?

- How can you bring together an ecosystem of different organisations connected together to create new possibilities? What if your design was to deepen and strengthen connections and interdependencies between them?

- How can what you're currently working on connect up or layer onto something else?

Speculative ideas to help us collectively reimagine the design system:

In groups, use these provocations and speculative ideas to reimagine the structures that underpin the current design system. Click on the orange text to take you to a visual provocation which you can build on.

What are the new tools, materials and language of system shifting design? What do we need for revealing and making? What would it look like to have a new knowledge system that allows designers to learn from and build on each others' intelligence around new purposes and intentions? Can we build a new language around collective design that is as transformative as user-centred design?

New Materials & Tool Library

What new governance and regulations could support this type of design?

Design Assemblies

What new design jobs and roles would we see if this design was commonplace? What new infrastructure do we need in order to connect and create interdependencies between designers working in new ways?

Jobs Portal

How can we make visible and value what this design produces? What are the properties that we need to design that make it more likely for more of the system to emerge? How can we make visible and value the 'invisible' work of creating these properties, and other work like building relationships, connections and tending to the collective experience, from which innovation emerges?
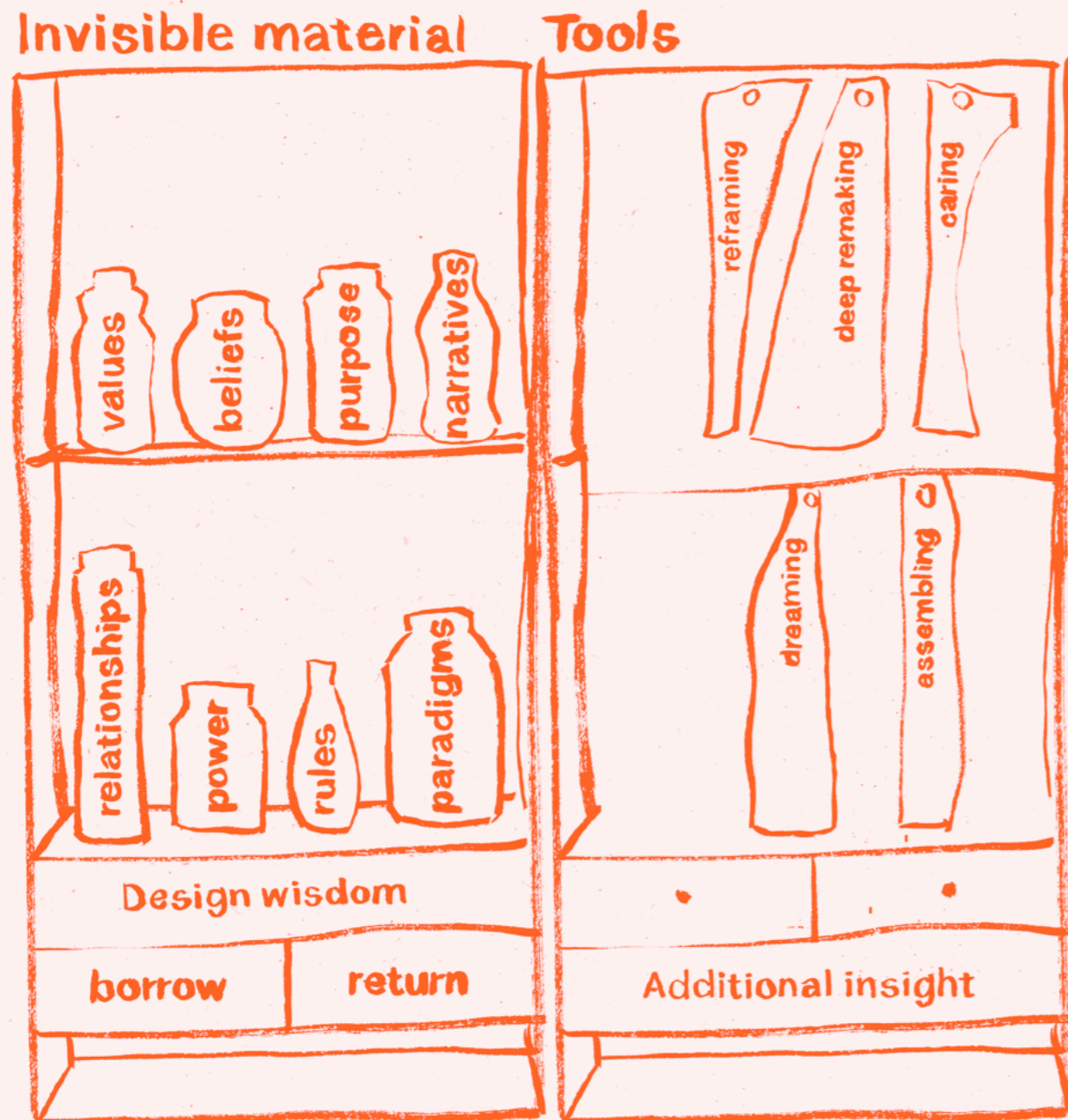
Awards

What do new commissions and contracts for this type of design look like? How can you provide space for radical alternatives? How deeply can you allow designers to play with, reimagine and 'overshoot' the answer? How can you commission the 'invisible' infrastructure that helps a new system to emerge?

The New Contract

What does new design leadership – or leadership more broadly – look like? What would be taught in these courses?

The Curriculum

What if these were the materials, tools and knowledge of design?

Invisible material

values · beliefs · purpose · narratives

relationships · power · rules · paradigms

Design wisdom

borrow · return

Tools

reframing · deep remaking · caring

dreaming · assembling

Additional insight

The Materials Library has grown to include invisible materials and additional tools to shape them, and put them out into the world through the medium of traditional materials such as wood, fabric, metal, bio-materials.

A Design Wisdom Bank allows designers to borrow other designers' insight into the deep structure that needs remaking, properly attributing this through provenance AI, and a returns policy that requires additional insight as 'interest paid'.
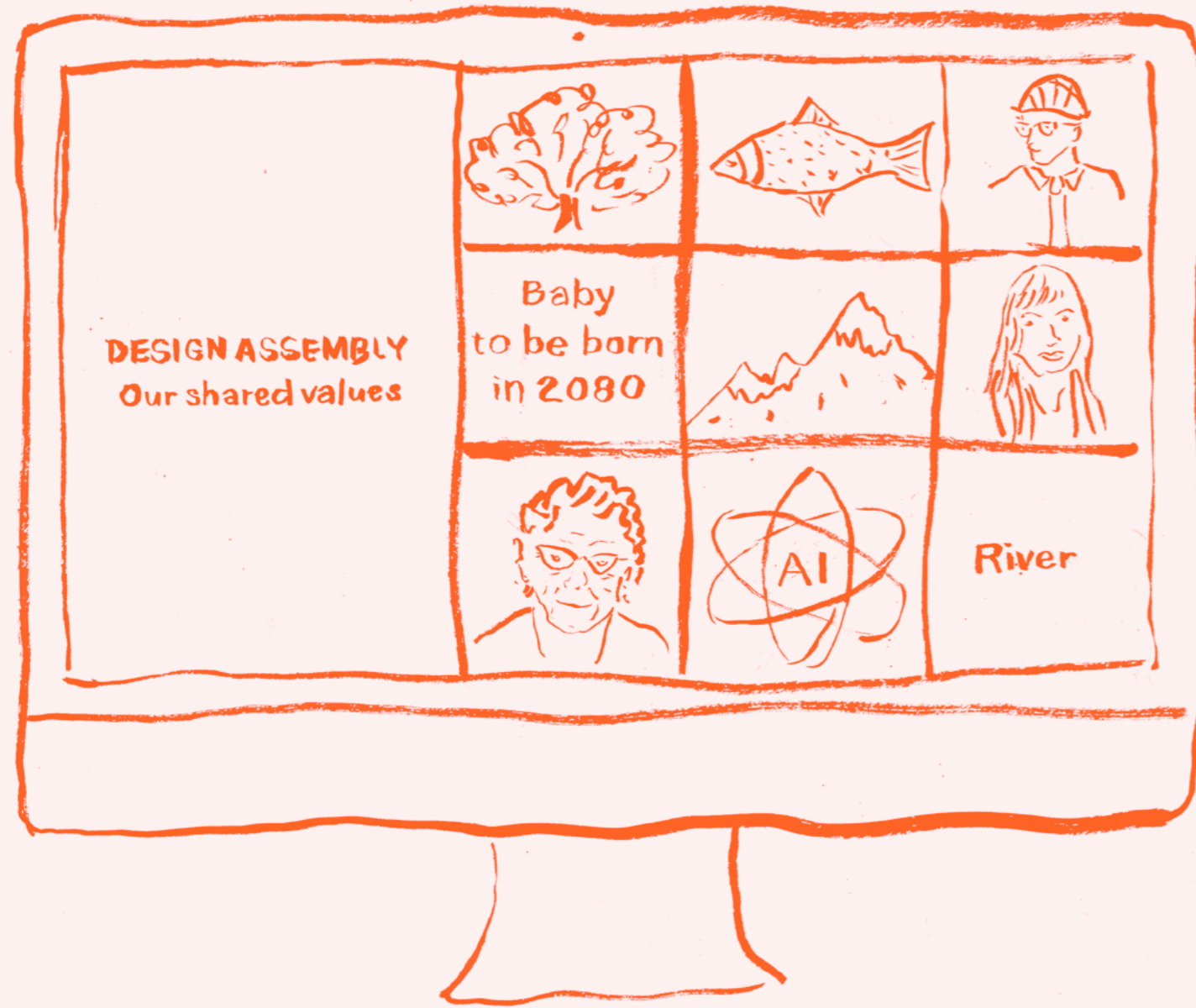
If this, then what else would be in place?
- What would a design course look like?
- What would a Youtube tutorial look like?
- What would standards of excellence be?

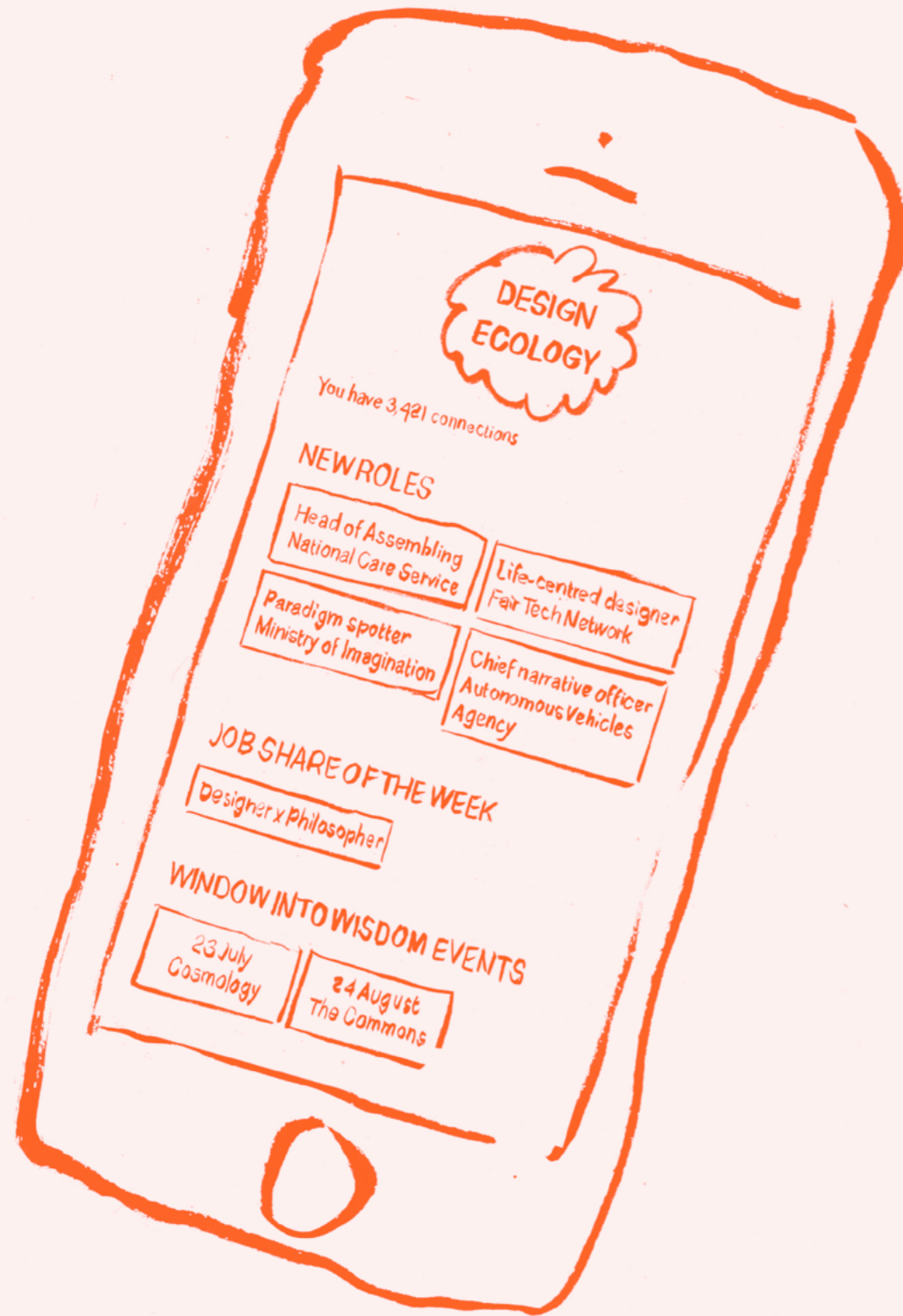# What if this was the way that design was overseen and governed?

The Design Governance Act 2022 has created a new duty that for all transformational projects, a Design Assembly is to be set up before the start of the work to create a set of shared values and ethics to guide the design. Assembly members should include human and non-human beings, and their role is to contribute their different perspectives and ways of knowing so that the design allows plural forms of living to thrive.

If this, then what else would be in place?

- What services would support the set up of these assemblies?
- What else would people and non-humans use their experience of design assemblies to do or create?
- What would standards of excellence be?

What if new design jobs were these ones?

DESIGN ECOLOGY

You have 3,421 connections

NEW ROLES

Head of Assembling
National Care Service

Life-centred designer
Fair Tech Network

Paradigm spotter
Ministry of Imagination

Chief narrative officer
Autonomous Vehicles
Agency

JOB SHARE OF THE WEEK

Designer x Philosopher

**WINDOW INTO WISDOM EVENTS**

23 July
Cosmology

24 August
The Commons

Design Ecology is a digital, global learning community of designers from different disciplines who are not just looking for jobs but learning and sharing practice, finding hidden areas for design and proposing new roles. The app provides the learning infrastructure through connections, events and access to different types of knowledge beyond what is taught in more formal settings.

If this, then what would be in place?

- What would professional gatherings or communities look like?
- What would design course looks like?

What if these were the new types of design awards?

Invisible Infrastructure
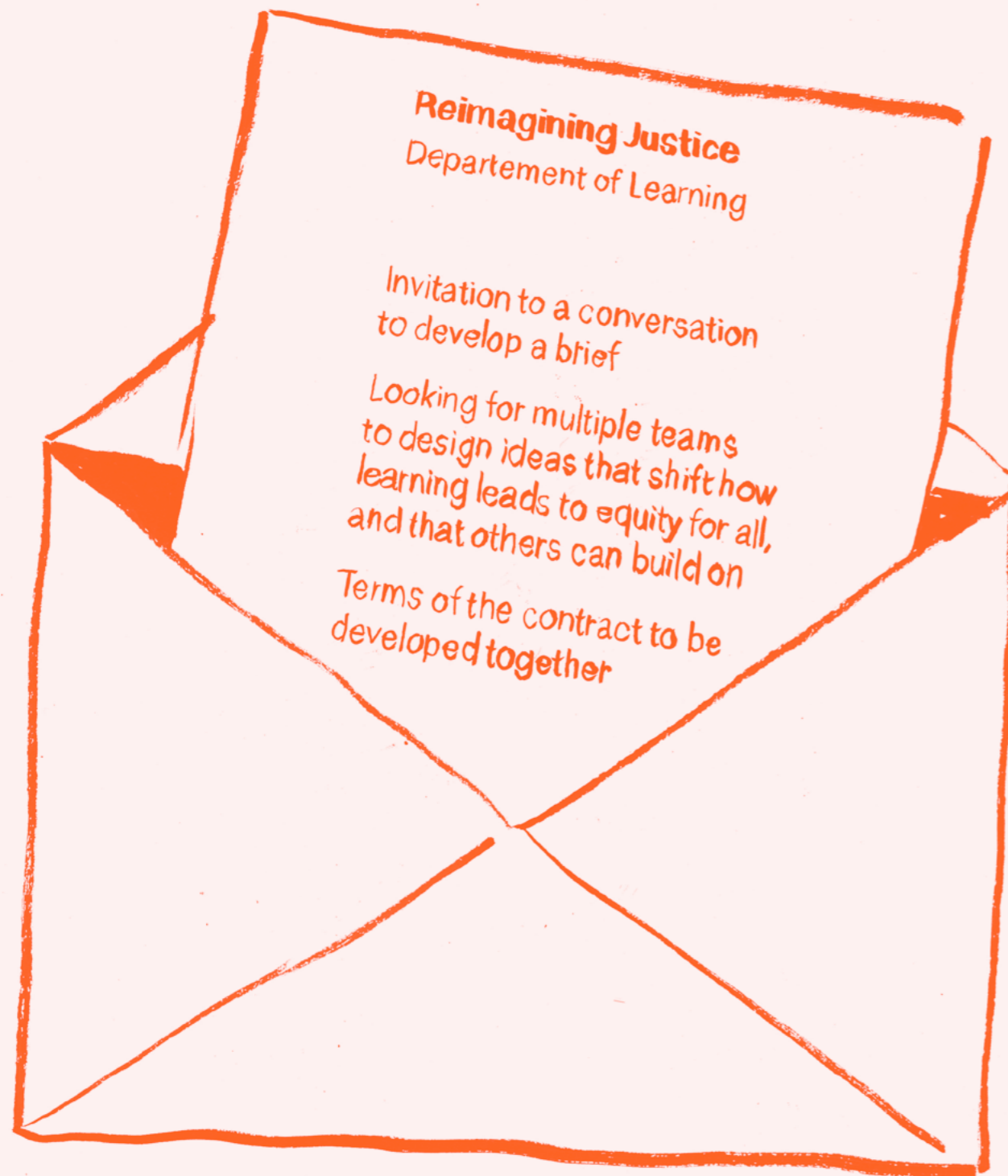
Deepening Relationships

Provoking Possibility
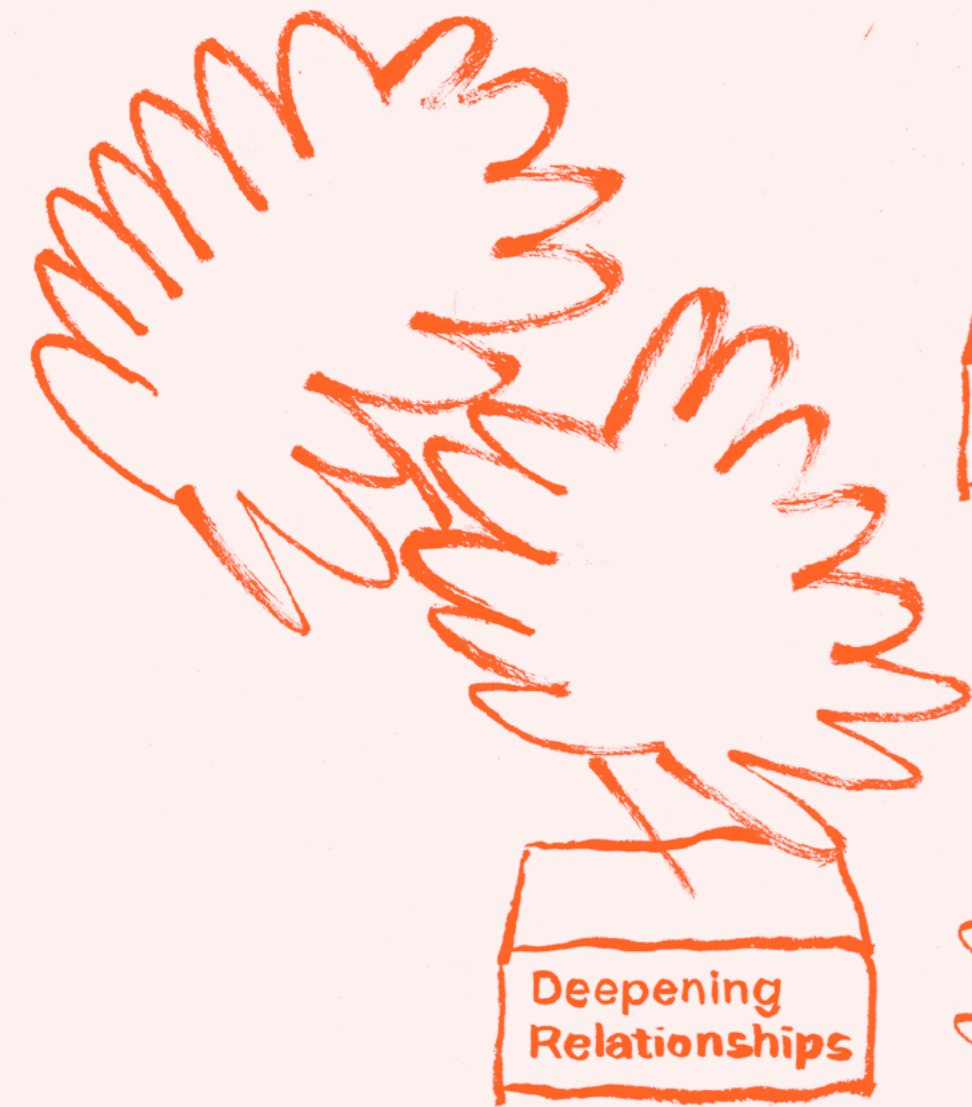
The System Shifting Awards are an annual event to value a new design practice. Categories include: Deepening Relationships, Provoking Possibility, Invisible Infrastructure, Unusual Assemblage, Deep Code Shift. To enter, value constellations of more than 20 people, organisations and non-human forms can apply, with a value attribution system to show the knowledge that the entry has drawn on and wider innovation that it has led to.

If this, then what else would be in place?

- What would design agencies use these awards to achieve?
- How might the award be shared across all their very many contributors?

What if design commissioning was more like this?

Reimagining Justice
Departement of Learning

Invitation to a conversation to develop a brief

Looking for multiple teams to design ideas that shift how learning leads to equity for all, and that others can build on

Terms of the contract to be developed together

An open opportunity for plural designs that shift how learning leads to equity for all, that others can build on.

Looking for teams of: designers, learners, storytellers, activists, translators, regulatory experts, rule makers, gamers, ecologists, actors.

We provide support for the teams to:

- Explore different and non-dominant ways of knowing that might offer a clue to shift from current views about education.

- Develop a series of possible – and impossibly radical – interventions that symbolise a new philosophy about learning equity.

- Deepen relationships between people, non-humans in the new system.

If this, then what else would be in place?

- What would proposals or pitches look like?
- What would the contract look like?
- How would design agencies work together?
- What new roles in commissioning organisations would develop this work?

What if this was a new type of design leadership course?

SYSTEM SHIFTING
LEADERSHIP RESIDENCY

DAY 2

Breakfast	Daily connection with nature
9:00–11:00	Immersive experience of a different knowing: machine intelligence
11:00–1:00	Deep remaking: prototyping possibility
Lunch	Feeding self and relationships
2:00–4:00	Assembling and caring for the new system: who and how
4:00–5:00	Reflective space
Dinner	Digesting and deepening relationships
	Fireside conversation: how to be radical and bold

A new type of design leadership programme focuses on curiosity of different ways of knowing, making things that can deliberately shift the system, and care-fully assembling different configurations of people, organisations and non-human beings.

If this, then what else would be in place?

- What would organisational visions look like?
- What new departments would be set up to deliver these capacities?

Methodology

5. Methodology

Over 18 months, we set out on an enquiry into how design is changing, and needs to change in order to shift systems. We had a set of loose questions which guided our conversations, and we were open to exploring new literature throughout, with key moments of synthesis and playback to the group for feedback.

Signalling intent
(November/December 2019)

We started the work by signalling intent through a blog setting out our intention, a workshop of designers at the Design Museum and an event hosted at Design Council, where we (Jennie Winhall and Cassie Robinson) shared our work and Nick Stanhope, Alastair Parvin & Ilishio Lovejoy spoke.

Group conversations
(March-May 2020)

We held six group conversations on zoom with 15–20 UK-based designers that we think are working in new ways, or thinking about how to. We focused specifically on designers – from different disciplines – who are interested in or working around shifting systems.

(Designers in group conversations)

The topics were:

- Collective Intelligence design – where living systems and machine systems meet

- Learning from nature, regenerative practice and deep emotional learning

- Non-physical designs: invisible dynamics, social structures and relational power

- Role of making & craft in symbolising new systems

- Collective design – designing in interdepencies and working at the unit of the collective

- Codifying paradigm shifts/new goals

The questions we asked were:

- What examples of designing 'invisible' things around a 'visible' service, product, building etc?

- What can we learn from this particular practice? Who is doing it well and what are they doing? How can design reveal these invisible things? How can design act as a catalyst to then disrupt and change them? How can a designer do that when it is beyond their influence (as often is the case)?

- Where is current practice failing and why?

- Why is this theme important in transitioning to new systems?

- What is a metaphor for the new ways in which we as designers need to act?

- What is getting in the way of this new practice happening?

We provided some core reading in advance of each session, and kept a collective intelligence document so all participants could see the content they had produced.

In-depth interviews
(May-September 2020)

From the conversations and initial synthesis, we realised we needed more in-depth conversations, and that we had the opportunity to engage non-UK perspectives. We identified 16 designers (Designers in one to one interviews) working from across different countries and had in-depth conversations. We shared our initial synthesis of the themes, and asked them to respond and describe their own work.

The questions we asked were:

- In your own words, what is systemic design?

- Have you an example of where you've worked in this way?

- Share emerging systemic design attributes (our initial synthesis). What is your reflection on these? Are there any further examples of where you are working in this way?

- What is the role of design leadership here?

- What are the barriers to more of this?

- What has been your design education (formal vs practice)? What does this mean for future education?

Literature & reading
(March-September 2020)

Throughout the work, we were reading widely – across academic literature and design writing. We shared key texts with our conversation participants, and drew it into the emerging synthesis.

Synthesis and initial sharing
(October 2020—February 2021)

We used a miro board to collect together emerging findings, and had regular synthesis sessions where we developed initial attributes of systemic design. Through this, we started to see a distinction between system-conscious and system shifting design, three broad themes, different roles designers are playing, tensions they are facing.

We shared these at the Relating System Thinking & Design Symposium (October 2020) and at a playback session with designers we had engaged (February 2021), listening to feedback and using that to develop the text we are sharing in this document.

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Further designers who are working in this way

We have included six case studies of emerging examples of this type of practice, and we have been inspired by more designers who are pushing the boundaries of design. We include this incomplete list below, and invite you – having read the characteristics we've offered – to add your own from your networks.

Daniela Sangiorgi and her team at the Politecnico di Milano are facilitating the development of a new mental health system across the East of Lombardy Region in Italy[38]. Their work stretches across the micro, meso and macro levels, curating and nurturing a new ecosystem of actors, from innovators to policy development.

Terry Irwin and Gideon Kossoff, alongside developing the field of Transition Design, are working with the community in Ojai, California who are facing water scarcity to rethink their social, economic and production systems[39].

Julian Thompson and Zaisha Smith and Rooted by Design are reframing what we mean by inclusive design, expanding it beyond equality to equity and tackling some of the structural barriers around racial justice.

Orsola de Castro created Fashion Revolution after the Rana Plaza disaster of 2013. It started as an awareness campaign about the use of sweatshops in fashion, but is now working at different levels: reframed narrative of perspective and pride in who makes your clothes; policy, standards & transparency in clothing production; and infrastructure for new ethical skills for designers.

Torange Khonsari's work focuses on providing a new infrastructure for the creation of common good, often through the design of relationships and events, and runs a post-graduate course called 'Design for the Cultural Commons' at the University of East London.

Anab Jain and her studio Superflux use speculation and design fiction to invite visceral experiences around a more-than-human future, including Mitigation of Shock.

Chris Hildrey was nominated for the 2019 Designs of the Year for his work building a new system that gives people with no fixed abode an address and therefore an identity.

Seetal Solanki is building out a new philosophy of material rights – where natural materials have the same rights as living creatures – and using that as the starting point for a series of initiatives that challenge the assumptions behind our systems of production and construction and exemplify new practice.

Cheryl Dahle founded Future of Fish to transform sustainability outcomes in the fishing industry by designing and incubating new innovations across supply chain systems.

Dan Hill's team at Vinnova is taking streets as the starting point for system experiments.

38 See: Recovery-Net: A Multilevel and Collaborative Approach to Mental Healthcare Transformation Daniela Sangiorgi, Fabio Lucchi, and Marta Carrera (2020)

39 Irwin, Terry & Kossoff, Gideon. (2017). Mapping Ojai's Water Shortage: The First Workshop, January 2017