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# PLANS AND SPECULATED ACTIONS

## Design, behaviour and complexity in sustainable futures

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### Abstract

Design and sustainability are enmeshed. Many visions of a sustainable future assume large-scale changes in human behaviour, in tandem with scientific advances. A major component of this is design which relates to people's *actions*: the design of products, services, environments and systems plays an important role in affecting what people do, now and in the future. This has become known, in recent years, as design for behaviour change, behavioural design, or in the case of specific focus on sustainability, design for sustainable behaviour. However, planning anything around human action is bound up with assumptions and – in the case of much work around design for behaviour change – determinism. Design which adopts a singular, linear vision of the future, and future human behaviour, does not deal well with the complexities of humanity, culture and society. How can we 'plan' for sustainability while embracing this complexity? Is it possible to use speculation and reflection to think through some of the potential consequences and side effects? In this chapter, we introduce questions that designers interested in futures, sustainability and people's actions can use to explore speculative approaches to future human behaviour.

Keywords: design, sustainability, futures, behaviour, complexity

### Introduction: design, sustainability and human (in)action

> An interventionist is a man struggling to make his model of man come true.
> – Argyris and Schön (1974, p28)

Both design and sustainability are about futures – bringing into being a world where humanity and other forms of life will 'flourish on the planet forever' (Ehrenfeld, 2008, p6) or where we can 'go about our daily affairs … [knowing] that our activities as civilized beings are expanding our future options and improving our current situation' (Sterling, 2005, p44). Design might be one of the mechanisms by which much of our current predicament has

come about (Papanek, 1971), but perhaps 'the future with a future for "us" can only be reached by design' (Fry, 2015, p8).[1]

Thus, design and sustainability are deeply enmeshed. A major component of this is design which relates to people's *actions*: the design of products, services, environments and systems plays an important role in affecting what people do … now and in the future. What has become known in recent years as design for behaviour change, behavioural design, or in the case of specific focus on sustainability, design for sustainable behaviour (Wever, 2012; Lockton et al., 2008).

While well intentioned, this approach is often centred on quite small changes in current actions, with short timeframes, rather than long-term futures. In this context, different understandings and definitions of 'sustainability', and degrees of ambition for change, complicate the notion: What kind of behaviour? Whose behaviour? What kind of sustainability? What (time) scale of sustainability is applied and whom is it geared towards? Is the intended change in behaviour a reduction in some unsustainable behaviour, or a shift to something very different? Is this sustainability defined solely in anthropocentric terms, or is it framed as something more systemic? These questions are crucial to many of the subjects discussed throughout this book.

Although work in this field is currently commonly framed at the level of everyday interaction with products – using heating or air-conditioning more efficiently, or recycling packaging – at a higher level, large-scale changes in human action are central to many visions of societal transitions to more sustainable futures (Irwin et al., 2015). In many cases, scientific and technological advances would need to go hand-in-hand with people, *en masse*, changing the way they act for potential environmental impact to be achieved, whether through adoption of new everyday practices at home and at work (for example, new diet choices, telecommuting), decisions about capital investment or purchases (for example, installing photovoltaics or home DC networks), or – more fundamentally – changes in assumptions, attitudes, political norms and worldviews (for example, de-emphasizing economic growth).

### Design futures as speculated action

More radical visions may require radical changes to the way we act, but may also mean we need to be more attentive to the way we act, and act more carefully, and in a more considered way rather than disruptively. Whatever happens with changes to our food, our energy use, our methods of travel and our everyday ways of life, design is going to be central to public engagement with these issues, but also to the way in which the scientific community – in proposing and developing such changes – considers its impact on society.

Design affects *what* people do, and what people perceive they *can* do. Everything around us that has been, or is being, designed, from the layout of our cities to the infrastructure of our governments to the way our doctor's surgery receptionist welcomes us, in some way influences how we engage with and make use of it, how we make decisions, what is easy and what isn't. It also, over time, affects how we think, and how we understand the world that we're part of, both individually and together as a society.

Design research often also involves consideration of how broader social influences affect what people do, and how people's relations and actions individually and collectively help construct what society, community and culture will be in the future. Whether we consciously take account of it or not, design is enmeshed in an overall system of relationships between objects and between people which may often be invisible (Burckhardt, [1980]2012). The sociological concept of practices as units of analysis (rather than behaviour) – 'the mundane

activities that make up most of what people do in their daily lives, such as bathing, cooking, laundering and cleaning … socially shared entities with a certain persistence *over time and space*', as described by Kuijer et al. (2013) – can offer a useful analogy for designers in exploring various futures. Not least as by considering the transformation of people's actions in socially and culturally situated contexts above the level of the individual, we may be able to develop a more thorough understanding of design's role for larger, potentially systemic changes.

When we bring together considerations of design, futures and behaviour, we are essentially looking at *speculated actions* in the context of sustainability. With *speculated actions*, we propose to interweave elements of Design for Behaviour Change (DfBC) with elements from Critical Design, more specifically, Speculative Design (SD). This pairing works from our perspective, due to its common shared referent of object-orientedness for interaction. This shared referent supports both surfacing the relata between the two approaches, and also highlighting the troublesome aspects of object-orientedness. Both areas of design take human behaviour as their main subject for exploration, but differ fundamentally in their current approach. DfBC takes an interest in the perspective of *influencing* human behaviour towards change, whereas SD takes it as subject for exploration, towards unfolding the unexpected, the yet unimaginable. One may say, SD takes an approach of both exposing and mapping human behaviours and conditions that have not materialized yet, but are likely to be brought into being. These two approaches may seem incompatible at first glance, but often enough, both the design stances of DfBC and SD have one shared problem in common – their self-referentiality obfuscates the agency of the designer or other decision makers. On a more positive note, we see potential to use both stances as a comparative backdrop for each other. We draw on our own research around design, behaviour and sustainability (Lockton) and experiential speculative futures (Ranner), but take this synthesis in a new direction. In this chapter, we reflect on and explore some of these ideas, taking into account the complexity of systemic change.

## This? Plans, assumptions and determinism

Design can be at once a proposition and a statement, the 'This?' and 'This!' in Dilnot's (2015) pithy encapsulation. Tonkinwise (2015, p2) argues that designs are essentially 'criticisms of things about the present. Design criticises (the present) by making (future) alternatives'. Design can be seen as 'a conversation for action … [about] what to conserve and what to change, a conversation about what we value' (Dubberly and Pangaro, 2015, p74), involving 'a process of observing a situation as having some limitations, reflecting on how and why to improve that situation, and acting to improve it.'

By putting into place certain conditions and affordances and not embodying others, design is also a form of *prediction* about the future, along the lines of Brand's (1994) approach to architecture. Like many prophecies, it can become self-fulfilling: design to some extent 'creates' the future which it claims to predict. It is that particular process that we would like to be taken less lightly – when preconceived assumptions are being normalized into predictions, and therefore lend one possible design configuration (of the many that exist) more legitimacy. This is significant, as it determines the following steps of modulation into material making. We inhabit and interact with the results (and in some cases the aftermath) of other people's predictions; we 'live the surprise results of old plans' (Holzer, 1983–1985). We are living in the ruins of other people's visions: and our children will live in the ruins of ours.

Certainly, not all design is planning, 'trying to pin the future down' (Dunne and Raby, 2013, p2) but there is a substantial overlap. Design which aims to evoke or produce changes

in human action, on a large or small scale, necessarily involves having models of human behaviour and human nature: assumptions about how and why people will act and change what they do, and how to motivate and persuade them to do things differently. Even probabilistic approaches to futures model a limited set of possibilities; moreover, *all* design is essentially modelling (Alexander, 1964; Ayres, 2007; Dubberly and Pangaro, 2007), and every technology embodies a hypothesis about human behaviour (Greenfield, 2013; Lockton et al., 2012). Designers cannot escape having a model of humans (Froehlich et al., 2010), and they also cannot escape the socio-historical context that had shaped their understanding of possibilities in the first place (Ranner, 2012).

Assumptions about people, how they (will) live, how they (will) make decisions, and what (will) affect their behaviour are integral to the whole programme of design that considers the future. Of course, though, all modelling involves simplification, and so any vision which specifies how design changes what people do will inevitably not capture the complexity of human nature, in a number of ways, whether it is a proposal of what *should* be, a speculation of what *could* be or an assertion of what *will* be. Indeed, any vision that proposes a 'coherent' future where large numbers of people all undergo the same shift in behaviour or practice, and act in the same way, is fundamentally a mismatch for our experience of the variety of human behaviour throughout history. Just as we now have both William Gibson's unevenly distributed pockets of the future (NPR, 1999) alongside – and interacting with – pockets of the past, it is likely that our future will involve the same complexity. It may be, however, that the models in use or espoused by designers (or clients) imply or lead to a singular, linear vision or narrative of the future, thus effectively presupposing it and perhaps, then, bringing it into being.

## *Variety and complexity*

> The ultimate goal of design for behavioural outcomes might be to discover an 'inverse transform' between behavioural and design variables; that is to say, given there is a set of behavioural objectives, it is possible to determine what design characteristics are needed to achieve these objectives.
>
> – Watson et al. (2015)

The quote from Watson et al. highlights one common issue in many treatments of design and behaviour: a top-down determinism (Broady, 1972) modelling people in a way which simply does not match the complexity and interconnectedness of real-life behaviour and practices. People's actions, now and in the future, are deeply enmeshed with social and cultural contexts, power structures, and other people's actions, and more nuanced than any singular vision can ever capture, which highlights the inadequacy of strongly reductive approaches (Lockton, 2012); appealing as these models might be to some engineering mind-sets. While assumptions and issues around modelling people are not necessarily always *explicit* stances taken by designers or researchers, they embody tensions that arise when a new approach touches on areas which have previously been the preserve of other disciplines with different traditions, expectations and aims.

Every discipline which deals with people, however tangentially, has its own models of human behaviour (Gintis, 2007) – assumptions about how people will act, what people are like, and how to get them to do something different (Weinschenk, 2013). Many issues with assumptions in design for behaviour change can be characterized as *deficiencies in inclusion*. This means both

the extent to which people who are the targets of the behaviour change are included in the design process for those 'interventions' (this terminology is itself revealing), and the extent to which the diversity and complexity of real people's lives, in a social and cultural context, are reflected and accommodated in the measures proposed and implemented.

Should designers attempt to recognize the diversity and heterogeneity of people, across cultures (e.g. Spencer et al., 2013), across different levels of need and ability, and across situations, 'maintain[ing] the messiness of actual human beings' (Portigal, 2008, p72)? A stance of committing to engaging with the complexity, the variety (Beer, 1974), of real life – rather than simplifying it away – stands in opposition to the notion of designing a perfect 'solution' to a problem, or even, perhaps, the approach of running large randomized controlled trials on behaviour change (e.g. Haynes et al., 2012), without seeking to understand, qualitatively, why the measures work on some people but not others.

People, societies and their actions are diverse, even in the face of attempts to design this away, or treat it as reduced (Scott, 1999). Along these lines, Brynjarsdóttir et al. (2012, p947) characterize much design for behaviour change around sustainability as 'a modernist enterprise', focusing both on individuals at the expense of broader social considerations, and on narrowing the broad scope of sustainability into 'the more manageable problem of "resource management"' (ibid., p948).

Much design work around behaviour, nevertheless, employs a kind of 'standardized model of a person', treating humans as if they were predictable, often identical, components with 'failure rates' and 'compliance rates', for example, as seen in some data-based approaches to the Quantified Self and Internet of Things technologies (Fantini van Ditmar and Lockton, 2016). As Greenfield (2013, p37) argues, this perhaps 'willed blindness to … complexity' is found in approaches to future human interaction with the built environment as much as it has often been in the context of information technology (e.g. Suchman, 1987).

When applied to futures, the issue is that, as Dunne (2005) notes, *we may end up behaving in the way the models assumed anyway*, because we are configured by the systems and structures in which we live our lives – a curious form of self-fulfilling determinism which is perhaps best countered by promoting a much more pluralistic approach to visions of the future? A related issue is that the narrative created by initial promoters of a new concept (e.g. the commercial concerns behind much of the 'smart city' hype) can end up shaping and dominating the way in which the concept is taken up in government and other contexts, partly by providing the language and terminology, but also by disseminating scenarios in which members of the public act and live in certain ways, 'marked by an odd sideways tense in which present and future are collapsed, and no distinction is made between the subjunctive mood and the indicative' (Greenfield, 2013, p47). There is clearly value in enabling – and provoking – designers to interrogate, surface and make explicit the assumptions and models of people that they, and other stakeholders, are bringing to a project.

### Power and intent

An elephant in the room when discussing design and behaviour more generally, is *power*: the whole phenomenon is centred on the attempt to influence other people's actions, sometimes in an oddly detached way which assumes that the designers (those in power) will not, themselves, be affected by the influence – and so potentially violating Rawls's (1971) *veil of ignorance* principle, ethically. Glanville (1986, p90) puts it in cybernetic terms: 'The idea is that there is a controller who has the power to make the controlled do exactly what the controller wants, without the controller being in any way affected.'

Sometimes this intention to influence is overt; sometimes it's deliberately covert, with the designer's *intent* obfuscated, hidden or simply not explained. Nevertheless, design is always *political*, as Horst Rittel reminded us (Rith and Dubberly, 2006), something Winner (1980, p22) also notes in relation to '*inherently political technologies*, man-made systems that appear to require or to be strongly compatible with particular kinds of political relationships,' with 'politics' referring to 'arrangements of power and authority in human associations as well as the activities that take place within those arrangements.' While researchers such as Tromp et al. (2011) and Dorrestijn and Verbeek (2013) have explored and offered more critically informed perspectives on design for behaviour change – in both physical and digital contexts – many of the themes (emerging mainly from science and technology studies (STS) and actor-network theory perspectives) around the agency of nonhuman actors (Latour, 1992), how users are 'configured' (Woolgar, 1991), the 'inscription' of behaviour (Akrich, 1992) and behaviour steering (Jelsma and Knot, 2002) seem to have received scant attention from design and HCI researchers caught up in the instrumental hubbub of trying to change behaviour.

DiSalvo (2012) considers that *revealing hegemony* through design can be a powerful agonistic tactic, as part of what he terms *adversarial design*. There are parallels perhaps with Zinnbauer's (2015) *ambient accountability*, in the sense of making power relations and the 'behind the scenes' stories more explicit. Revealing hegemony could be particularly pertinent where the objects of attention are systems – or proposed systems – where that hegemony includes an aim to influence behaviour. As such, there is an opportunity to use speculative design as part of a process of revealing forms of hegemony in behavioural visions of the future.

Perhaps because of design's general lack of visibility within academic political science discourse, the ethics and politics of designers' power in influencing public behaviour have not been examined in the depth that might be expected. Although critiques have been outlined (by designers) of other designers' work around behaviour, particularly examinations of some of the 'darker' areas (Savičić and Savić, 2013; Nodder, 2013; see also http://darkpatterns.org), there has been little attention paid so far to the ethics and political dimensions of 'behaviour' in a design futures context, particularly questioning the role that designers may play as instruments of other interests, for example in creating the visualizations and scenarios which are used to promote certain visions of future public behaviour.

A basic criticism concerns the ethics of trying to influence behaviour through limiting choice (the euphemistic 'choice editing' – Thorpe, 2010) in the first place (e.g. Perks, 2008) – which directly conflicts with, for example, Heinz von Foerster's (1995) ethical imperative: 'always try to act so as to increase the number of choices'. Sunstein and Thaler (2003) argue in this context, using the example of a cafeteria director choosing how to lay out the items presented to customers. Since in any planning process some decisions will be made which affect behaviour, it is incumbent on designers to consider the impact of these decisions, and try to achieve a 'desirable' behavioural outcome (we might well ask, 'desirable for whom?'). By this argument though, choosing not to think about influencing behaviour is still a decision about influencing behaviour. The decision process should be recorded and made explicit.

Some progress has recently been made around the ethics of design for behaviour change and persuasive technology – for example, Lilley and Wilson (2013), Pettersen and Boks (2008), Gram-Hansen and Gram-Hansen (2013) offer practically applicable perspectives for designers. But these practical perspectives are, necessarily, focused primarily on the here and now, incremental changes to the design of products or interfaces, rather than looking more broadly at the kinds of future humanity wants or needs, on a larger scale.

## Speculation and futures: designing the traffic jam

> A good science fiction story should be able to predict not the automobile, but the traffic jam.
>
> – Attributed to Frederik Pohl (Lambourne et al., 1990)

While design around behaviour change may involve concealing intent, speculation is often about making intent explicit. By presenting possible worlds, possible futures – the 'This?'/'This!' of Dilnot (2015) – speculative design can be open about its intent(s) and motivations, in terms of opening up design as a conversation for learning, reflecting and, perhaps, deciding together (Dubberly and Pangaro, 2015).

One approach for visions or predictions of 'design futures' is to envision multiple possibilities or scenarios, often using a 'cone of possibilities' approach (Candy, 2010), extrapolating current 'weak signals' into scenarios which can then be designed for – *now*, and multiple 'thens'. However, solely considering this approach to design futures potentially misses the process between now and these multiple 'thens' – the reality, messiness, interconnectedness and complexity of how human, socio-cultural, technological and scientific interaction actually leads from now, to then. And it is this process which designers have agency within, if only they engage with its existence and complexity. Equally, we might consider that any approaches which put a single point for 'now' fundamentally miss the complexity of current society, and of history/histories. Thus, we are never starting from 'now' as if it were a fixed point, because 'now' is itself a varied, complex array of perspectives and backdrops.



*Figure 31.1*  The Design with Intent toolkit cards

Source: Lockton et al. (2010)

As we have discussed, much current work on design for behaviour change – in a sustainability context as much as in others – embodies, even if not consciously, a singular, modernist vision for future human behaviour (Brynjarsdóttir et al., 2012), predicated on a normative vision of 'streamlined' people acting in predictable, specified ways. In a cybernetic sense, it is inherently about reducing variety (Conant and Ashby, 1970) and attempting either to simplify the complexity of human action, to simply to ignore it (the 'willed blindness' of Greenfield, 2013). In drafting a version of *normal*, everything else is automatically treated as defective.

Speculative design approaches, in facilitating a pluralistic treatment of futures, can help to open up, and explore variety and complexity in human behaviour. We cannot predict and plan human behaviour as if people are engineered components, so we can only speculate on actions.

One tentative way of applying this thinking can be to use a series of questions to provoke designers, or other stakeholders, to consider and reflect on the possible ways in which design techniques might affect actions in diverse future scenarios, including effects at both the level of individual behaviour and, supra-individually, wider social practices. Essentially, this is thinking through first- and second-order consequences of design decisions – not just immediate intended effects on behaviour, but the side effects, the 'traffic jams' in Pohl's phrase. The *Design with Intent toolkit* (Lockton et al., 2010; Figure 31.1), introduced here, can be used in conjunction with a series of such questions.

## *Design with Intent*

In 2005, influenced particularly by Winner (1980), Akrich (1992) and Lessig (1999), the first author (Lockton) started a blog called *Architectures of Control in Design*, which sought to examine examples from digital, product and architectural design where systems had (or appeared to have) been intentionally structured to influence people (users) to behave in particular ways. While this was a critical, or at least reflective, endeavour, and gradually informed by STS perspectives (often thanks to readers' suggestions), it evolved into a PhD project (Lockton, 2013) which, on the face of it, inverted this approach, by not only cataloguing design principles (again, digital and physical, and multidisciplinary) inherent in these 'behaviour change' examples, but presenting them in a *design pattern* format which enables them to be *used* as a generative tool for creating new products, services and environments with a behaviour change intent. It can be used as a 'suggestion tool' to help a form of directed brainstorming, or serve as an exploratory, reflective or teaching tool. The toolkit was developed via an iterative, participatory process, running workshops with students and designers throughout its development to understand how it is being used and how to improve its structure and content. The patterns were extracted – and abstracted – from a literature review of treatments of human behaviour in a range of disciplines. Sustainability related examples were a major focus (e.g. Lockton et al., 2013). With some adoption in industry and design education, the *Design with Intent toolkit* – a *method deck* in current 'design thinking' parlance – has perhaps contributed to growing the field it initially aimed to criticize.

However, the pattern format can still afford a valuable interrogative, deconstructive and speculative function for approaches to design and behaviour, primarily through provoking designers to surface – and question – the assumptions they are bringing to a project, and the potential consequences of design decisions. As Figure 31.1 shows, the toolkit cards feature simple example cases which illustrate the application of the particular patterns.

In the toolkit, 101 design patterns for influencing behaviour are described and illustrated, grouped into eight 'lenses' – categories which provide different disciplinary 'worldviews'

on behaviour change, challenging designers to think outside the immediate frame of reference suggested by the brief (or the client), and helping with transposing ideas between domains. The lenses – architectural, error proofing, interaction, ludic, perceptual, cognitive, Machiavellian, and security – are not intended to be ontologically rigorous, but primarily a way of triggering multiple viewpoints within a process of ideation. The patterns, phrased as questions, are essentially recurring problem – 'solution' instances, to enable questioning whether a 'new' problem situation might be similar or analogous to one encountered previously elsewhere, even in a different context. This format potentially makes the patterns useful for cross-disciplinary transfer.

Although pragmatic applications of the toolkit are often in the context of quite 'immediate' problems (redesigning an existing product or interaction), there is scope for more speculative application.

## *Consequence questions: a list*

The use of the toolkit in exploring consequences can be enabled, simply, by asking a series of questions about any speculated, proposed, or imagined future behaviour change scenario, and discussing, in a group, the – perhaps disparate – perspectives and ideas triggered by these questions.

One way of doing this is:

1  Starting with some theme or situation seem as problematic, with a sustainability and human behaviour focus.
2  Set a time-frame for possible proposals to address the 'problem'.
3  Use the Design with Intent patterns as inspiration to generate speculative concepts or proposals (as outlined in Lockton et al., 2013, or in any way which works) which potentially match the time-frame chosen.
4  Asking questions, or a subset of them, from the following list – *ethics* (*universality* and *veil of ignorance*), *sustainability* (*boundaries* and *practices*), *complexity* (*futures* and *nuance*), *power* (*agency* and *politics*) and *intent* (*side effects* and *humaneness*) – to provoke discussion.

The list is by no means exhaustive, nor profound; the questions are simply based around the kinds of issues that have been raised in numerous workshops and discussions with students, designers and thinkers. Some questions may be most effective at triggering discussion if one or more participants acts as an advocate (devil's, if necessary), initially at least, for the proposal(s) developed from the toolkit patterns. Some questions may, in the process of considering them, suggest improvements to the concept being discussed, or end up splitting it further into multiple possible variants or directions which satisfy different criteria:

1  Ethics
    a  *Universality:* What would happen if this behaviour became universal, i.e. if *everyone* acted or were influenced in this way? Is that what you intend to happen? Would you that this 'should become a universal law'? (Kant, [1785]1993) If not, why not? Whose behaviour should be influenced and whose shouldn't? Why?
    b  *Veil of Ignorance:* What are you assuming *your* status would be in the scenario you envision? Is your behaviour going to be affected by the intervention? Would you still support the idea if you didn't know what place you would have in the scenario,

what skills or background you would have, and whether your behaviour was going to be 'changed'? (Drawing on Rawls, 1971.)

2 Sustainability

   a *Boundaries:* If you are working with 'sustainability' in mind, what definition are you using, tacitly or explicitly? Is what way will this behaviour change lead to greater sustainability? For whom? Where is the boundary drawn between humans and nature? Is your treatment of sustainability primarily ecological, or does it include a social component? Is the intended change in behaviour a reduction in some unsustainable behaviour, or a shift to something very different?

   b *Practices:* Is this intended to be a short-term change in behaviour, or something longer-term? What level does it frame the problem at? Does it take account of the wider social and cultural context, and the creation or emergence of new practices, or is it about individual people making decisions in isolation?

3 Complexity

   a *Futures:* In what ways does the proposal assume the future will be like the present, or the past, and in what ways will the future be different? What is the *texture* of the future imagined – how 'evenly distributed' is it, in the phrase attributed to William Gibson?

   b *Nuance:* To what extent does the proposal recognize the diversity of the people whose behaviour it seeks to influence? Does it assume particular cultural experience or group membership? How nuanced are the models of people employed? Is it likely that people will experience the design's effects on them this in different ways? Would the proposal enable people to construct their own meanings or understandings, or does it assume that everyone will understand it in the same way?



*Figure 31.2* Design students at Carnegie Mellon University trying out an early version of the consequence questions together with the Design with Intent toolkit cards

4  Power
   a  *Agency:* How much agency would people have over what they do, in this future vision? Would this proposal give one party, or some parties, an advantage over others? Would it create new power structures, or reinforce existing power structures? Or could it break down existing structures, and give different people agency to change the system? Does it remove or increase the choices available to people?
   b  *Politics:* What are the political standpoints, assumptions or worldviews embedded in the proposal?
5  Intent
   a  *Side effects:* What could be side effects of the proposal? What new problems might emerge in a scenario where the proposal is implemented? What technological or environmental limits might we reach? What might the new 'behaviour change' issues be in this future society? How might people subvert or avoid influence on their actions?
   b  *Humaneness:* Simply, does this design approach 'wish us well'? (Scarry, 1985, p292; Dilnot, 1993, p58)

## *A hypothetical example*

Let us briefly look at a hypothetical application scenario: a group of designers are interested in the question of *changing diets in developed countries towards lower carbon food choices*. They are interested in ways of enacting and maintaining a longer-term change in social norms, perhaps by promoting a vegetarian or vegan diet as new normal or the 'default'. The time frame is 2022–2025 (i.e. starting five years from now), but rather than proposing immediately realistic or implementable proposals, they are going to create speculative ideas to explore what they might lead to. One way to do so could be to use the Design with Intent cards, in a group – they pick three patterns at random and see what ideas they suggest or trigger:

- *Material properties*: Can you use the properties of different materials to make some actions more comfortable than others?
- *Are you sure?* Can you design an extra 'confirmation' step before an action can be performed?
- *Desire for order*: Can you use people's desire for tidiness to influence them to rearrange elements or take actions you want them to?

Based on these provocations, the group arrives at one idea, that is a subdermal implant (perhaps inspired by recent material science research; e.g. Tao et al., 2012; Hwang et al. 2012) that people can 'configure' to react to chemicals in certain food types. This configuration could consist of a pleasurable feeling or perhaps an unpleasant 'twinge' when particular foods are encountered in the immediate environment, before they are eaten. This feeling acts as a kind of sensory confirmation step before someone consumes particular food types. Another variant idea could be that the implant causes a visible or tangible pattern (order) or disorder (e.g. a temporary rash) that people prefer to show or feel, or not. Specific Material User Interfaces (Ranner, 2013) could be attuned to show or remind what was eaten, so as to provide individual learning and reflection on personal health and nutrition (Ranner and Lockton, 2015). Another variant idea could be to further the embeddedness of such implants so as even to enhance the purpose of food detection, perhaps in form of a tongue implant that enables the taste of other foods (meat?) to be simulated while eating non-meat foods.

We, as observers, can dislike the ideas and pick them apart as horrifyingly technocentric, but judging the quality or ethics too prematurely would miss the point of such thought experiment – at least initially. Whatever the ideas may be, the aim would be, for the designers in this scenario, that they intend to change behaviour on a large scale, based on the assumption that these types of implants become widespread. In assuming this vision, what happens if they ask some of the consequence questions? They can go through the questions – ethics (universality and veil of ignorance), sustainability (boundaries and practices), complexity (futures and nuance), power (agency and politics) and intent (side effects and humaneness) in a structured manner – and pick ones that seem most relevant to start with, and then extend to others, or not.

Here, perhaps, side effects might be good to start with: what happens to livestock in this scenario? If most people become vegetarian, does a new subculture emerge of dedicated carnivores? How do they get their meat? Does meat become very expensive or even shift its position in socio-cultural context? Do people become addicted to the pleasurable feeling from the implant? Do these implants and their sensation wear off? Do people who are already vegetarians miss out from not having the implant? Do they end up having it anyway? One can see how asking these kinds of questions leads to further questions.

*How* these questions spur discussion is likely to depend very much on the speculative ideas and provocations, as well as the participants, involved – and of course there are no right or wrong answers. It may be that these kinds of questions end up dismantling the ideas, or shifting them in a different direction. It may be that they are mostly too negative, too sceptical, focusing on the problematic aspects of behaviour change rather than the potential benefits – in which case, those benefits will need to be argued. Different focuses and levels of knowledge of sustainability will also affect what is considered in more breadth and depth, and what is not.

However, as a starting point for provoking designers, or other stakeholders, to reflect on the possible ways in which people's actions might be affected by design in these future scenarios, and both the level of individual behaviour and wider social and environmental effects, these kinds of questions can offer perspectives which facilitate a more pluralistic treatment of futures and 'design for behaviour change'. Here, the multiplicity of voices becomes the main focus, and variety and contradiction of ideas the advantage – rather than reducing variety, the *polyphony and completeness* of as many ideas as possible is the goal. In suggesting a deepened cross-fertilization between DfBC and SCD, we may also equip designers with a pragmatic process that allows them to address, mediate, and channelize complexity in the design process in a conducive manner.

## Conclusions

This is an exploratory chapter: we are not claiming to have solved what cannot be solved, by definition. However, given the importance of design in reaching any kind of sustainable future for humanity, and the importance of human actions within that, it is vital for designers who are engaging in considerations of future behaviour change, to reflect upon, and open up, the field of possible futures rather than concentrating on single, linear, deterministic visions.

Speculative design techniques can help to preserve and learn from more variety and complexity in exploring the future, and the potential side effects, consequences and other dimensions of 'behaviour'. They can also enable designers to explore the messiness and complexity of the process between the 'nows' and the 'thens' – a process which designers potentially have agency within, if only they engage with its existence and complexity.

In this chapter, we have outlined a set of questions around ethics, sustainability, complexity, power and intent which designers interested in futures, sustainability and people's actions can use to explore the consequences of speculative approaches to future human behaviour. If they enable a more pluralistic, more open discussion, about design and behaviour change in a futures context – even if there are no answers – then we have achieved what we set out to do.

## Acknowledgements

## Note

1  These are all quite optimistic views of the future. It is worth contrasting the alternative – one in which humanity does not survive – and reflecting on what it might, in turn, mean for design. For example, Wiener (1954, p40): 'In a very real sense we are shipwrecked passengers on a doomed planet. Yet even in a shipwreck, human decencies and human values do not necessarily vanish, and we must make the most of them. We shall go down, but let it be in a manner to which we may look forward as worthy of our dignity.'

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