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PART IV

POLICY AND ETHICAL LABELLING

Nudging leverage points: influencing transformative policy change

Research handbook on ethical consumption

Nudging leverage points: influencing transformative policy change

Iain Black, Julia Leventon and Craig Anderson

1 Introduction

When faced with achieving net zero by 2050, as the minimum required to keep anthropogenic global warming to less than 2 degrees, words are wind and medals will not be given out for trying. It is the concentrations of carbon dioxide, methane, nitrous oxide and a host of other greenhouse gasses in the atmosphere that ultimately matter and all need to be reduced. Globally, all life forms on this planet are in the decade of success or failure. If we do not achieve our 2030 targets, we will not achieve our 2050 targets. Whether we have tried might make us feel a little better but will be thin gruel to our children and grandchildren if we do not stop carbon dioxide concentrations reaching 450 parts per million (ppm). This is the level at which we have a 50% chance of keeping warming to within 2 degrees. We are currently at 421 and growing at 2.5 parts a year. We should remember that 2 degrees warming, whilst sounding small, will bring dramatic changes to Earth's systems ability to maintain conditions that allow for human life.

For over 50 years governments, businesses and individuals have failed to act according to the growing scientific consensus that human activity is damaging Earth's systems, including changing the climate and dramatically effecting biodiversity. This is not to say that these different constituents have failed to act, it is just that overall, they have acted too slowly, not at sufficient scale, have set targets that are too low, have set plans that cannot deliver these targets or have implemented plans in ways that do not deliver the expected benefits (see, for example, IPCC, 2018; 2022).

Indeed, some countries, businesses, groups and individuals have actively undermined international supra-governmental attempts to coordinate and finance the action required by the scientific advice (Brulle, 2018; Dunlap and McCright, 2011). For example, at COP26 in Glasgow in 2021, over 500 lobbyists for the fossil fuel industry registered as delegates and as such represented the largest single group at the conference (Corporate Accountability, 2021). Their influence has been subsequently linked to the weakening of the conference's final agreement, when countries heavily reliant on coal power forced a change in the text from 'phasing out coal', to 'phasing down unabated coal' (Daley and Newell, 2021).

Within this book examining responsible, ethical and sustainable consumption, this chapter focusses on how to address these issues of timing, speed, scale and scope of government action relating to persistent issues of inequality and harm. It will focus on sustainability and climate change where the actions being taken do not match that which is understood to be required in the time available to avert catastrophic impacts (Watts et al., 2021).

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These four response themes are not particular to climate change and other planetary emergencies such as biodiversity loss (Pörtner et al., 2021) but are observed in other areas where persistent inequalities exist, such as poverty alleviation, health, social care and education provision. For example, action over many decades focussed on alleviating child poverty in the UK has failed to address its broader economic and institutional causes and as such, in 2019–20, 31% of children were assessed as still living in relative poverty (Office of National Statistics, 2022). Hence, the contribution of this chapter is designed to be broader than climate change mitigation and adaptation.

As two-thirds of global GHG emissions are directly or indirectly linked to household consumption (Ivanova et al., 2016), transforming how much and what we consume, and how we acquire, use and dispose of goods and services is central to the success or failure of keeping global warming to 2 degrees. We argue here, along with others (IPCC, 2022) that it is now national governments that hold the key to the scope and speed of action required, as consumer action is constrained by systems, institutions, structure and infrastructure under the purview of central government. Therefore, to address how to ensure faster, broader and persistent action by citizen-consumers (Soper, 2004) towards living sustainable, ethical lifestyles, we seek to examine how to enact the required systematic, institutional and structural change through government actions.

The ability of national governments to act quickly and to affect every facet of society and the economy has been shown through responses to the Covid pandemic. This period acted as a reminder of what governments can achieve when displaying their authority through monetary, fiscal, legislative and narrative powers for the common good and against an agreed threat. The employee support schemes implemented in countries such as the UK, USA and Australia act too as a reminder that even the largest companies and wealthiest individuals are impelled to act if governments will it so. At a broad level therefore, this chapter explores what is required to motivate governments to react in the same way to the threat of climate systems disruption and species and ecosystem collapse.

Whilst focusing on the need for government action, it is important to recognise the role those other actors play, such as business and the third sector, who simultaneously constrain and impel governments to act. Neither do we intend to reduce the role of the individual to a position without agency nor power – policymakers are also individuals, are influenced by individuals and as such retain agency within the systems and subsystems within which they are nested. Instead, we seek to investigate how to empower actors to enact systemic change.

This chapter seeks to contribute to efforts to support transformative action towards leading sustainable lifestyles in which ethical environmental and social consumption plays a central role. We address this from Defila and Di Giulio's (2020) notion of 'corridors of consumption' which define minima and maxima for core service needs (thermal comfort, nutrition, participation, agency, etc.). Translating the concept into policies would make it possible to induce fundamental changes without imposing specific lifestyles on individuals and without demonising consumption.

Considering all this and the immediacy of action required, we must look at literatures capable of deep, persistent and fast action across scales. We start therefore in Systems Theory and the notion of leverage points, defined as those intersections where small changes can lead to significant impacts in the whole system (Meadows, 1997). The leverage point framework on intervening in a system is well known within the sustainability literature generally, though it is less visible in the ethical, responsible and sustainable marketing literatures, something we seek to remedy here.

Recently attention has turned to its applicability to act as a powerful lens through which to identify and guide action to transform (Woiwode et al., 2021; Wamsler et al., 2021) and scale up (Moore et al., 2015) behaviour change (Leventon et al., 2021, Newell et al., 2022). This work includes recent recognition of the individual's role in influencing leverage points (Leventon, 2021) but this nascent literature has yet to explore if and how it can be combined with another powerful set of interventions, those set out in behavioural science (Thaler, 2009).

Behavioural science, and by extension the paradigm of 'nudge' (Thaler and Sunstein, 2008) seeks to leverage behaviour change as part of attempts to design policy. Coming from the perspective of libertarian paternalism (Sunstein, 2014; Thaler et al., 2013), behavioural economic interventions attempt to influence people's choices without restricting their right to choose. This alignment with the dominant political paradigm has contributed to behavioural insights being embedded into policy decision-making globally at a quite remarkable speed.

Whilst nudge-based interventions have shown to be successful in achieving policy aims across contexts (Barker et al., 2021; Cai, 2020; Kwan et al., 2020), critics argue that it can be used to avoid stronger interventions when such paternalism may be required. In this sense, it can be argued that behavioural science emphasises the individual too much, and the system too little (Chater and Loewenstein, 2022). However, proponents argue that it is part of a toolkit that the presence of 'soft' interventions does not rule out the use of 'hard' ones (Harford, 2022).

Van der Linden and Weber (2021) posed the question, 'Can behavioral science solve the climate crisis?', and in answering this, they highlight a range of cognitive, emotional, social and political barriers faced by those seeking to take appropriate action on climate change. Indeed, the term 'climate crises' was adopted to increase a sense of personal worry, challenge the habits and routines in which most behaviours play out, as well as emphasise the level of scientific consensus on climate.

By highlighting the rich and multifaceted contribution of behavioural science to the climate crisis Van der Linden and Weber and others (see, for example, Thaler et al., 2013) raised the question of how these behavioural processes impact the policymaking process itself and those seeking to influence governments and systems at leverage points. Hence, through its focus on, and success at, influencing individual choice aimed at achieving health and environment-related policy goals, behavioural science represents a useful frame from which to seek to influence systems change.

Therefore, having explored the context around the mental model leverage points and current advice directed to those seeking to intervene at them, we will then set out relevant biases, heuristics and choice architecture that can guide inventions, so that individual action at these places might can be triggered, encouraged and maintained. This will include, for example, how policymakers can be encouraged to imagine different economic paradigms outside the current globalised market orthodoxy. Further, what support can be provided to citizen-consumers (Soper, 2004) in the same pursuit, supporting not only changes to their consumption habits, but in doing so reforming markets and providing visible alternatives acting as role models for change.

Hence, this chapter seeks to examine how to nudge leverage points; it will also build on relatively sparse guidance (see, for example, Chan et al., 2020) regarding how to support individuals to implement interventions at these powerful sites. Therefore, we seek to contribute to a range of related literatures and themes, though primarily we aim to figure out how to enable individuals acting within and between policy spheres to make systemic

changes, which in turn enables and supports ethical and sustainable consumption. This chapter is set out as follows; it will provide more depth on systems theory and leverage points before identifying specific mental model leverage points upon which we focus and the current behavioural research setting out how these can be influenced. As a way of narrowing the field for which lessons behaviour economics can add to this, we will first set out the roles and characteristics of these mental models

2 Systems thinking and leverage points

Systems thinking is a way of thinking that recognises the complexity and interconnections between entities within the world (see Meadows, 2008). It seeks to make explicit the underlying structures and mindsets that shape the world, including in natural systems (e.g. ecosystems) and social systems, and the connections between the two. Within this way of thinking, a system is seen as a set of entities (actors, organisations, species, materials) that are connected via a flow of resources, information and power. Within sustainability research, the term social ecological systems (SES) has become popular to understand the interactions between people and their environments (see, for example, Ostrom, 2009), particularly within research relating to biodiversity conservation. Systems thinking is also employed in considering specific economic sectors as systems in themselves (e.g. the food, textiles, or energy systems), or cities as systems, particularly within transitions research and social–technical transitions work (see, for example, Geels, 2018). Seeing sectors as interconnected systems is increasingly being picked up within sustainability policy. For example, within the European Union’s Green Deal, the farm-to-fork strategy takes a systems approach to the sustainability of food.

Progressively, systems thinking is being used as an organising framework to bring together various disciplines and ways of knowing. Indeed, under Ostrom’s (2009) SES framework, there are core subsystems that interact in a social ecological system: social, economic and political settings; related ecosystems; resource units; resource systems; governance systems; users; interactions; and outcomes. Disciplines can interact in focussing on specific subsystems and can be brought together to create more holistic understandings of the overall system. Similarly, there is a persistent false dichotomy between research considering individual change (e.g. social psychology, behavioural science), and that targeting systemic change (political economics and political ecology) that climate scholars are seeking to bridge (Newell et al., 2022). Thinking in systems may help to bring together and position these schools of thought relative to each other, to see individuals within these broader political economies and understand how they shape each other (Leventon et al., 2021).

Leverage points is a core concept in systems thinking for sustainability, particularly with regard to creating sustainability transformations and transitions. As originally conceptualised by Meadows (1997), leverage points are places to intervene in a system to create change. Leverage points is an instinctively visual metaphor of the system being levered into a new state. Thus, some leverage points are shallow (pushing near the fulcrum) and create only small changes; deeper leverage points shift the system into a whole new position.

Meadows originally outlined 12 points, which have been categorised according to four broad systems properties (in increasing depth) of materials, processes, design/structures and paradigms (Abson et al., 2017). This final grouping, also described as ‘mental models’ (Fischer and Riechers, 2019), consists of (1) the power to transcend paradigms, (2) the mindset or paradigm out of which the system arises and (3) the goals of the system. These represent the three most powerful leverage points and have the potential for deep transformation; however, they are considered the hardest to devise and to measure and therefore assess success (Angheloiu and Tennant, 2020). Conversely, most of the

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interventions by governments and companies focus on the least powerful points. Examples include carbon offset schemes whereby units of carbon are commoditised. This changes the materials in the system, with money being spent to offset carbon emissions, but by not fundamentally engaging with the paradigm, the underlying neoliberal logic of the economy. Indeed, it reinforces it. A second example is companies producing ‘sustainable’ fashion lines. This changes the materials in production and perhaps logistics, but does not tackle the paradigms of rapid consumption inherent in the notion of fashion.

In Meadows’ description, the characteristics of systems paradigms and the ability to transcend paradigms are the deepest leverage points because they necessitate and prompt change at the shallower leverage points too. In this way, transcending a system’s paradigm pushes structures to change and reflect this new intent, which then creates a new need for different processes and materials. To use an example of transport systems, shifting the system paradigm away from individual private transport for all and towards collective public transport for all creates conditions where the system designs and (infra)structures are rapidly diverted towards this paradigm; it pulls attention away from road building and towards railway investment. However, intervening in materials, by changing from diesel to electric to fuel private cars, or in processes (like building tunnels for cars) can be changed without ever changing the system paradigm. For these reasons, this chapter will focus on interventions on these mental models.

<p:a>3 Leverage points to transform consumer lifestyles

<p:text>Leverage points work to date has been picked up, particularly by social ecological systems (SES) thinkers, to look at place-based SES and how these can be transformed (Chan et al., 2020; Riechers et al., 2021). Here, work engages with the framework as a boundary object for pulling together diverse perspectives and understanding (Fischer and Riechers, 2019). Perhaps interacting with the emphasis on values emerging from IPBES¹ (Mattijsen et al., 2020), work in this arena places emphasis on the role of people’s values in shaping relationships to nature, and the potential of engaging with human-nature-connectedness as a way to engage with these values to leverage change (Ives et al., 2018; Mattijssen et al., 2020). In exploring ways of reconnecting, or preserving connections, emphasis has been given to the role of community embodied knowledge (Donkers, 2021) and indigenous knowledge (Burgos-Ayala et al., 2020). Thus reconnecting or preserving connections itself represents a shift in paradigm to reflect different ways of being in the world, and different ways of sense-making and interacting with the world and each other. This work, and work more broadly in sustainability science, has tended to focus on intervening with individual citizens, and more specifically on inner transformations as a way to shift systems (Ives et al., 2020). Within this way of thinking, engaging with individual consumers to change mindsets, and thus prompt broad changes to consumption behaviours, becomes a pathway to transform consumer lifestyles.

However, there is also recognition that it is often not the individual that can change, and that their ability to act is constrained by broader political economies and systems of power; indeed, it is often these systems that need to change (Lahsen and Turnhout, 2021; Stoddard et al., 2021). Issues such as availability, price, and cultural norms all shape whether or not sustainable consumption is a practice that can be adopted, regardless of values (see, for example, Middlemiss, 2010; 2018). Davelaar (2021) thus frames systems as being like onions, whereby individuals (as systems) are nested within, and connected to, other systems that shape their possible actions. Creating change through leverage points therefore demands that we remain cognisant of the complexity and inter-related nature of systems; this is what Meadows termed ‘dancing with systems’ (Meadows, 2001). The challenge here is to identify

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which systems are the focal systems of change to unlock transformation, in order to target deep leverage points within that system (Leventon et al., 2021). Indeed, what is a deep leverage point for an individual may actually be a shallow leverage point in the deeper power, economic or social systems that need to change (Leventon et al., under review).

When we see consumers as being nested within broader systems that shape their behaviours and mindsets, there are two directions that can be taken to create systems transformations. The first is to start with individuals and shift their mindsets and behaviours. In doing so, if enough people adopt a new behaviour, this places outwards pressure on broader systems to change in response. An example would be an increase in demand for sustainable products, such that the companies change to meet this demand. Such pressure can also be seen in these same companies then pushing even further outwards in seeking better sustainability regulation to support their bottom-up initiatives (Beyers and Leventon, 2021). A second pathway is to intervene in the paradigms and mindsets embedded within these broadest systems to unlock changes in all systems nested within. In this direction, tackling paradigms and mindsets around consumer culture would unlock behaviour changes across a broad range of political, industrial, commercial and individual actors.

Paradoxically, even when pursuing broad system change, engaging with the mindsets of individuals is important; but here it is the mindsets of those who have the power to enact change that count the most. Systems, after all, comprise of people (as well as non-human entities) who have the ability to change that system by doing things differently. For example, Nielsen et al. (2021) have outlined that high-net-worth socio-economic actors (who are therefore high CO₂ emitters) can be change agents by both demonstrating sustainable behaviours, and instigating sustainable practices within their own companies and communities (Whitmarsh et al., 2021). Such key people would also include those setting economic policy and goals and who shift the paradigms embedded within our economic systems. This suggests looking towards policymakers and civil servants at international, national and subnational levels. Bolton (2022) finds that encouraging civil servants to think one step beyond', or on one leverage point deeper than their current focus, can set in motion transformative change.

<p:a>4 Intervening at leverage points: who intervenes with whom?

<p:text>Turning to what is currently said about how to activate leverage points, the advice available is typically targeted at academic audiences or those who are part of organised efforts to effect systems change. To prepare for the task, Leventon et al. (2021) warn those seeking to intervene that they should avoid thinking that the system can be controlled or understood externally or that a fixed view is possible. Further, individuals need to be comfortable with transdisciplinarity, and loss of specialism, expertise and agency (and therefore relative status). This will also involve asking questions of personal biases and seeking how to recognise and overcome these. To bridge worldviews, there is a need for a shared language (and a shared understanding of this language), objects and perspectives (Leventon et al., 2021). It is also thought to be important to be able to embrace uncertainty, remain as a learner of the system, and that actors should question their role in the system so that they remain able to listen to what the system is telling them (Meadows, 2001).

In research settings these demands often lead people into transdisciplinary, co-creative approaches based around deep engagement in specific places of communities (Pereira et al., 2018). Here, the engagement in processes of reaching shared understandings is often a transformation of worldviews that collectively leads to changes in mindsets and behaviours (Hakkarainen et al., 2021). Though it should be noted that the transformative potential of such approaches is often limited by broader academic systems (Fam et al., 2020), and indeed

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the political, social and economic systems that these places and communities are nested within (Feola et al., 2021).

Outside such deep engagement and knowledge creation processes, we face greater challenges in unravelling who intervenes with whom to shift mindsets and create transformations. Indeed, if we are looking towards shifting mindsets in government and policymaking settings, there is a very real concern of creating change while maintaining democratic legitimacy. For example, civil servants, even where their mindsets are towards sustainability, are unable to act on this if it is against the direction set by their elected representatives (Poulter and Bolton, 2022). So, the key is to address the mindsets of elected representatives, and the paradigms they are setting and enforcing.

However, democratic systems of the kind we see in Europe and North America are not well designed to respond to the electorate's concerns on issues such as climate change (Runciman, 2018; Willis, 2020) and broader sustainability. The timeframes and spatial scales of climate change impacts do not align well to electoral cycles and electable issues. Runciman (2018) describes how the impacts of climate change are still an imagined future in the lived experiences of the electorate in the Global North. This intangibility and the diffuse nature of climate change mean that current democratic systems are failing to address it for four reasons: (1) the short-termism of government decision-making; (2) the role of scientific knowledge in decision-making; (3) entrenched power; and (4) the limited opportunities for the electorate to have input in decision-making (Willis et al., 2022). Indeed, at both national and sub-state levels, spaces for discussion with the electorate about policy options with regard to sustainability are limited, controlled or disputed (Kersting, 2021).

Whereas those with proposed solutions and changes can directly lobby decision-makers, there are concerns over lobbying itself as it has become subverted by powerful actors. Franta (2021), for example, highlights that whilst it is clearly effective in shaping priorities for decision-makers, often intentions reinforce the current economic paradigms. These approaches also risk a kind of *cockpitism*, whereby policy is shaped by science and imposed by top-down governments without the buy-in and mandate of constituents (Hajer et al., 2015; Willis, 2020).

This is not to say that increasing democracy should not, or cannot, play a role in triggering mindset change, as providing additional routes towards engaging both electorate and decision-makers (Willis et al., 2022) can increase involvement and reflection. Citizen's juries, for example, are increasingly being shown to give elected representatives a mandate to act on climate change (Wells et al., 2021). However, the extent to which these work to shift mindsets, and have a tangible impact on policy, is not clear (Willis et al., 2022). Further, protest and civil disobedience, both democratic rights of citizens, are argued as mechanisms to engage mass public, demonstrate the importance of an issue, and signal to decision-makers that there is a clear mandate for change (Gardner et al., 2021). Indeed, there is a convincing argument for the role of protest in creating systems change, and clear examples in recent political history (including the end of Communism in Eastern Europe and the Arab Spring). In addition to the 'Greta Effect', examples of direct action with clear impacts in the climate sphere include two hunger strikers (Angus Rose in the UK and Guillermo Fernandez in Switzerland), who both managed to secure scientific input to government through their actions.

As the influencers move closer to the decision-makers within systems, it becomes important to recognise that policymakers and elected officials are routinely asked to consider broad and complex problems at distant temporal and physical scales. These conditions trigger well-known construal-level biases (Trope and Liberman, 2003), paying attention to that which is

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present and close in time, space and culture – something seen at COP26 in Glasgow, Scotland, where political minds focussed for the duration of the conference but moved to the next crises soon after. Tröger and Reese (2021) discuss the importance of understanding the intentions of both the systems influencers and the decision-makers and that subsequent interventions need to recognise the normative positions of the individual actors within an overall system.

These conditions, and the systemic changes desired, are likely to prompt deeper change in the individual. Woiwode et al. (2021) explored the requirement for ‘inner transformations’ both as individuals and collectively, and discuss the importance of one’s sense of self, and the role that religion and spirituality, through reflection and dialogue, play to prompt and support inner and collective change.

<p:a>5 How to intervene at mindset leverage points

<p:text>Moving from this guidance to researchers, change agents and decision-makers to current advice on how to intervene at the three mental model leverage points, shows this to be somewhat scarce and builds a picture of the need for courage, self-belief and mental energy. This is expected; as changing the system requires you to work against entrenched power, self-interest and, by the very nature of the task it sets itself, asking people to imagine what they have not before imagined.

Concerning the *power to transcend paradigms* (Meadow’s most powerful leverage point, see Section 2 above, ‘Systems thinking and leverage points’), Simmons and Gregory (2005) focus on providing a method for developing interventions and action consistent with the broader approach set out by Meadows.

Basing their approach on grounded theory (Glaser and Strauss, 1967), Simmons and Gregory propose grounded action, and set out how the acceptance of and setting aside of preconceptions, seeking openness, and rigorous use of coding (through multistage open, selective and axial coding processes) allow a deep understanding of the systems upon which you seek paradigm change. Olson and Raffanti (2006) apply this in educational systems. The advice on how to intervene at the second most powerful point – *changing the mindset or paradigm out of which the system arises* – relies on building agency in the actors and encouraging an inherently difficult task. The power of this leverage point is that by helping decision-makers recognise that other paradigms are possible, they become free to consider these and therefore consider deep transformation. This point can be illustrated by the ubiquitous and often unhelpful advice given that to address a challenge, one should ‘think outside the box’. To do this, however, people have to recognise that they are in a box in the first place and that any box (paradigm or mindset) constrains thinking.

To support this shift, Thomas Kuhn (1970), writing about great paradigm shifts in science, provides suggestions that rely heavily on the knowledge, power and agency of those seeking the shift rather than of those in power. He suggests that to help people understand that new paradigms are possible and hence to change to these, you should keep pointing at the anomalies and failures in the old paradigm.

To highlight alternatives, Kuhn advises that ideas and critique should be clearly located in the new paradigm or mindset and should be communicated loudly, consistently and with assurance. This acts to seek to change paradigms partly by modelling an alternative and by taking people outside the system and it allows them to see it as a whole. He also suggests a form of entryism, where people who acknowledge the new paradigm are placed in positions of public visibility and power. Finally, rather than spending time with ‘reactionaries’, time is better spent working with change agents and with open-minded people in the middle ground.

From a sustainability perspective, it is easy to find work that offers alternative paradigms around which to base social and economic systems, embodying different *goals of the system*. Since publication of *The Limits to Growth* (Meadows et al., 1972), there has been significant work examining how the GDP growth goal of our current system is incompatible with hard planetary boundaries (see Haberl et al., 2020 for a review). Alternative goals such as degrowth, sufficiency, and well-being (Coscieme et al., 2019; Black and Cherrier, 2010, Black et al., 2015; Soper, 2007) have been articulated and in recent years; well-being, in particular, has become increasingly popular (Black et al., 2017). The power of this leverage point is that everything within a system, all the infrastructure, institutions, stocks of money, knowledge and materials, rules and processes, work towards achieving it. Hence, for the fast, deep, broad transitions required, changing the goal leads to existing infrastructure becoming available to work towards the new aim. As an example, the current goal of our roads network could be expressed as ‘to allow cars and other motor vehicles to move quickly and safely’. If this is changed to a goal ‘to allow those engaged in active travel to move quickly and safely’ then quickly roads can become cycle paths and paths for walking, running and skating and there is reduced need to spend on building separate infrastructure.

The gap in knowledge really lies in knowing how to create the process of shifting from current systems towards those that embody alternative paradigms. Angheloiu and Tennant (2020) discuss similar steps to those of Kuhn (1970), suggesting that there is power in articulating, repeating and insisting upon a new system goal. There are numerous pieces of research emerging from various academic disciplines that seek to address the question of how to create transformations; including (but not limited to) work on political economy, transitions, and behaviour change. Currently, there is emerging consensus that systems transformation requires behaviour changes across levels, from individuals to decision-makers, particularly in creating changes to political economies to unlock wide-scale behaviour change (Whitmarsh et al., 2021, Newell et al., 2021). With this consensus comes a recognition that the mindset of individuals (as well as the systems they live within) is a key component of change. Individuals with a mindset towards sustainability will both create changes in systems (by making different decisions), and will support changes that happen to them (e.g. through different policies/regulations) (see, for example, Tröger and Reese, 2021). However, they do so while also being constrained by the current status quo.

This again represents an agentic set of actions and builds a picture of additional support that is required through behavioural science and choice architecture. How can it support individuals to take these risks and continue to advocate in the face of rejection and powerful interests? How can coalitions be formed amongst the existing individuals and organisations seeking different system goals, such as those proposing well-being, degrowth, or even a smashed patriarchy?

<p:a>6 Interventions guided by behavioural science

<p:text>The preceding sections set out mental model leverage points and guidance to those seeking to intervene in them. Exposing this to a behavioural science lens reveals underlying conditions of the decision context faced by decision-makers and those seeking to intervene. From here it is possible to identify seven broad issues and related biases and heuristics from which to guide subsequent interventions. These are:

<p:bl1>Systems are persistent and embedded.</p:bl1>

<p:bl1>Systems are social in nature.</p:bl1>

<p:bl1>Systems change is complex and persistence is needed.</p:bl1>

<p:bl1>Success at changing systems is uncertain.</p:bl1>

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<p:bl1>Change agents need to consider framing.</p:bl1>

<p:bl1>Interventions can backfire.</p:bl1>

<p:bl1>Change agents need to build and maintain agency.</p:bl1>

<p:b>6.1 Systems Are Persistent and Embedded

<p:text>Efforts to change any system need to recognise the numerous biases that support the status quo and maintain existing power. A key insight here is the status quo bias, which refers to the tendency to maintain a previous decision by actively choosing the default or doing nothing (Kahneman et al., 1991). Those in a system are also prone to system justification, where they defend existing social, economic, and political arrangements and disparage alternatives. Together, these biases tend to affirm an individual's belief that their success and familiarity with a system validate the decision to maintain it. Rosy retrospection, where the past is remembered more favourably than it was experienced at the time, also supports the established system (Mitchell et al., 1997).

Power structures are also maintained because of confirmation bias (Nickerson, 1998), where there is a tendency to focus on information that reinforces one's own preconceptions. Informational prompts can be used to challenge this, but can lead to a backfire effect, when people react to unwelcome information by supporting their original belief more strongly (Nyhan and Reifler, 2010).

Persistence of systems is also supported by the sunk cost effect, which manifests itself in a greater tendency to continue an endeavour once an investment (money, effort, time) has been made (Arkes and Blumer, 1985). Whereas change agents can intervene here by giving decision-makers clear advice about the success or otherwise of the endeavour, it is important to avoid social desirability bias, where people tend to give socially desirable responses instead of true preferences (Fisher, 1993). Hence interventions must create sufficient psychological safety for honest advice to be offered (Edmondson, 1999) and accepted .

<p:b>6.2 Systems Are Social in Nature

<p:text>As systems are social entities, influencing leverage points requires consideration of groups and pervasive and obvious organisational biases that can lead to discrimination and a lack of consensus. The in-group bias is the tendency for people to give preferential treatment to others they perceive to be members of their own group identity (Brewer, 1979). This can build on affinity bias, where we relate to those to whom we have something in common (Stocker, 2015) and leads to people placing value on attributes that do not have rational value to the choice being made, for example, the football team you support, when choosing a plumber. It can also combine with out-group homogeneity where in-group members are seen as diverse whilst outsiders are seen as similar (Park and Rothbart, 1982). Essentially this is a form of irrational 'othering', as in-groups are far more likely to be less diverse. Unfortunately, in attempts to counter this, implicit association tests and unconscious bias training may not be effective (Forscher et al., 2019). Whereas choice architecture can be changed to remove the most biasing information (from which these biases form, i.e. not requiring religious affiliation on a job application), there is only so much that can be obscured.

However, there is strength in diversity, as this requires participants to be open to alternative viewpoints; hence diverse teams can consider a wider set of information and experience fewer blind spots. Creating this situation once again requires creating sufficient psychological safety for group members (Edmondson, 1999).

Supporting consensus can be supported by a recognition of both hindsight bias and self-serving bias. The latter is the tendency to attribute positive events to one's own character but attribute negative events to external factors (Miller and Ross, 1975). Hindsight bias is where people believe that an event was more predictable after it becomes known than before (Roese and Vohs, 2012). To counteract this, and to support consensus, change agents and decision-makers should write down the decisions at the time of making so these can be referred to later.

6.3 Systems Change Is a Complex Task and Persistence Is Needed

Influencing mental models leverage points requires recognition of the complexity of the task and the persistence needed to achieve it. People suffer at different rates from decision fatigue, where the quality of decisions reduces throughout a long session of decision-making (Vohs et al., 2018). This effort can also lead to cognitive dissonance over the longer term. In complex decision environments with multiple parameters, the effort of making choices leads to justifying outcomes as correct on an emotional level (gut instinct or feels right). This is linked to the paradox of choice (Schwartz, 2004), where decision-makers tend to be more satisfied with their choice when there are fewer alternatives; in turn this understanding suggests supporting decision-makers through appropriate choice editing.

Complex decisions require consideration of large amounts of information and here, it is important to recognise the less-is-better effect (Hsee, 1998), where a less valuable option is judged more favourably than a valuable alternative. For example, it can appear more favourable to only show the most positive information selectively, despite other positive information adding to the cumulative effect. So, in communicating information for decision-making, a smaller amount of information may be more effective.

Another bias related to complexity is that people can tend towards a zero-risk bias, where they prefer reducing a small risk to zero rather than a greater overall reduction in a larger risk, so 10% risk being reduced to zero tends to be preferred over 50% reduced to 20% (Baron, 2003). Along with the previous bias, this reaffirms the potential for focussing on a single risk, rather than multiple ones.

6.4 Success at Changing Systems Is Uncertain

As success is uncertain, it is important to recognise biases affecting how decisions are made under that condition and those biases affecting assessments of the likelihood of success and the scope of the decision-maker's power. People can suffer from a representative heuristic, where their estimation of the outcome of an event is based on an assumed similarity with a known prototype (Tversky and Kahneman, 1974). This means that when making decisions, it is assumed that positive or negative outcomes will mirror common examples, so if something was successful before in many contexts, then we tend to think it should be successful now.

The representative heuristic has been found to interact with the availability heuristic when estimating the likelihood of natural disasters (Dumm et al., 2020). These authors found that homeowners under/overestimate the likelihood of a catastrophe before/after one had occurred. So, action on climate change, worryingly, only becomes more likely after people have experienced its effects. We may also assume that negative consequences from a similar known previous example will repeat themselves in the present. This bias can therefore influence whether a systems-influencing decision is made (or not).

People also suffer from an optimism bias, where there is a tendency to overestimate the likelihood of positive events and underestimate the likelihood of negative. Under these conditions, decision-makers tend to be overly optimistic about the ability to achieve even

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more positive outcomes in the future, even if that is in the face of negative outcomes in the present. This interacts with the planning fallacy, where there is a tendency to underestimate task-completion times (Sanna and Schwarz, 2004).

A review of behavioural science interventions for sustainability has also highlighted the limited effectiveness of setting goals, unless coupled with detailed roadmaps with timely informational reminders and data on them. Goals without specific and clear instruction behind the trajectory towards them are unhelpful. Related to goals setting, commitment devices can be successful when combined with rewards (Osbaldiston and Schott, 2012).

6.5 Change Agents Need to Consider Framing

Changes require an assessment of prospective gains or losses from the proposed modifications. Therefore, change agents should consider prospect theory and loss aversion (Tversky and Kahneman, 1974). Loss aversion is exhibited where losses are felt more painfully than equivalent gains and that sensitivity decreases with magnitude (Kahneman and Tversky, 1979). This means that moving from no loss to a small loss is felt more strongly than moving from a position of small loss to large loss. In turn this can create a pseudocertainty effect, where an outcome can be preferred due to a perceived certainty instead of a probable outcome (Tversky and Kahneman, 1981).

In designing interventions around prospect theory and loss aversion, one recommendation is to embed new ‘losses’ into existing losses and/or gains. This is the basis of the ‘Save More Tomorrow’ intervention, where individuals were encouraged to tie increases in their pension contributions with wage rises, thus delaying higher payments into the less salient future (Sunstein and Reisch, 2019).

In deciding on climate change mitigation policy (as in all policymaking), there are trade-offs regarding the respective losses, making an understanding of loss aversion and prospect theory useful. For example, Osberghaus (2017) explained tendencies of farmers to view increasing investment in irrigation as more certain and crop diversification as higher risk, using these frames. There is a tendency here to stick with the status quo and recoup the losses of existing investments rather than adopting more significant changes in practice.

6.6 Interventions Can Backfire

It is also important to recognise how biases work against behaviour or belief change. A well-known example is cognitive dissonance (Festinger, 1964). This occurs when a person is presented with new information that is in conflict with their current action–belief paradigm. In this instance one option is to change behaviour or justify existing behaviour. As behaviour change is difficult and effortful, people tend to justify their existing behaviour by saying it is too difficult to change and that they are doing everything they can. Another alternative is to alter their beliefs about the behaviour by rejecting the new information or positively affirming existing behaviour. They can also point to the lack of alternatives, or they can emphasise the right to free choice.

Typical interventions on cognitive dissonance, as well as making information more psychologically and spatially relevant, tend to use the identifiable victim effect (Jenni and Loewenstein, 1997), which attempts to elicit empathy. As we struggle to internalise empathy on a large scale, the identifiable victim effect helps to provide a direct recipient of a person’s empathy, giving a sense of direct agency over the outcome.

However, support for government action and government policy on climate change has been found to be higher when a more system-wide framing is used, rather than a single victim. The reason for this is that when climate change is presented as part of a system, individual action

can appear futile (Hart, 2011). The identifiable victim effect therefore works better with simple individual behaviours rather than systemic change.

Messages based on the identifiable victim effect are a type of conscience plea and these are most effective at tackling cognitive dissonance when combined with timely prompts at the point of decision-making, such as messaging next to light switches or pleas to recycle on bins (Osbaldiston and Schott, 2012). Interestingly, in the context of wider climate change, conscience pleas may only work when evoking an emotional response for the support of government policy (Hart, 2011).

6.7 Change Agents Need to Build and Maintain Agency

Kuhn (1970) and Angheloiu and Tennant (2020) highlight the importance of consistent, persistent agentic actions. When faced with the prospect that actions could be unsuccessful, a conflation between the fear of a negative outcome and the likelihood of them happening can occur (Sunstein, 2003). Therefore, the use of fear messaging may be counterproductive if it leads to a sense of inevitability about the outcome.

Hyperbolic discounting, the tendency to prefer immediate rather than later payoffs (Laibson, 1997) could lead to discontinuation of the action, so choice architecture should focus on overcoming the desire for immediate pleasure. This is easiest when there is already a predetermined date at which that pleasure will come and again points to the importance of embedding these psychological mechanisms into the design of roadmaps for change.

7 Summary and future directions

We started this chapter by making the case that government action to support ethical, responsible and sustainable consumption is too slow, not at sufficient scale, has set targets that are too low, has set plans that cannot deliver these targets, or has implemented plans in ways that do not deliver the expected benefits. Indeed, it is not unknown for governments to undermine action on a range of inequalities. Specifically considering action on climate change, we have detailed the role that intervening at mental model leverage points with decision-makers and actors across all points of a system can succeed where years of effort have failed.

The power of changing political decision-makers' mindsets is clearly shown in the response to the Covid pandemic. When faced with the need to control this new disease, save lives, reduce suffering and reduce negative health outcomes in those recovering, the governmental and economic systems of many countries became temporarily focussed on providing safety, care and basic service, not GDP growth. These new goals allowed the governments to flex their economic and legislative muscle for the common good. When they did, institutions and infrastructure were repurposed, citizens' consumption choices were changed and amongst the significant costs to mortality and morbidity, positive examples of community and personal resilience building were seen (Rippon et al., 2020).

This chapter does not limit itself to explaining why this scale of action has not been seen in government's responses to the ongoing planetary emergencies; instead it sets out how to influence governments so they do. It also makes the case for using nudge to influence policymakers themselves, rather than just using behavioural science to influence policy outcomes.

By examining systems theory and leverage points from a behavioural science perspective, we have extended existing advice on how individuals working as change agents and decision-makers can be supported to change their mindsets, so allowing rapid systemic changes. Moreover, we demonstrated how the behavioural science lens exposed seven common

contextual issues regarding system thinking and then, from its vibrant literature, set out how an understanding of heuristics, bias and nudge-based interventions can contribute to climate change action and action on persistent inequalities more broadly.

However, this only serves an introduction to what the marriage of leverage points and behavioural science literatures can offer. Future work can build on this by examining in more depth the decision context across the three mindset leverage points and examine the role that mental models play to reduce uncertainty and act as guiding structures in a complex world. Future work should also examine the impact when those making the intervention are part of the in-groups, or are boundary spanners, or when they are external.

In returning to the four questions of the chapter regarding governmental and policy change, we can also zoom out further and consider in the future the pathways through these systems for individuals to exert change. What systems can they intervene in given the political context and their individual circumstances? This requires a focus on systems of democracy.

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1. IPBES, the Intergovernmental Panel for Biodiversity and Ecosystem Services, has recently concluded its assessment into values. The values assessment looked at how values of nature and its benefits are conceptualised and measured.