Changing systems through mental model leverage points: Creating faster, deeper action on the climate emergency

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Abstract

This paper argues that government action on the climate and nature emergencies has seen targets set that do not align with what is required to keep global warming to 2 degrees centigrade. Further it argues that that plans have been set cannot deliver even these insufficient targets and that current action against them is too slow, at insufficient scale, or implemented in ways that do not deliver the planned benefits. In seeking to contribute to guidance on how to ensure faster, broader and persistent action on these emergencies and other persistent inequalities, this paper presents Donnella Meadows's Leverage Points framework. It then sets out the current, sparce guidance on how to intervene at the most powerful mental model leverage points, points that have the ability to shift systems rapidly. It does so with the intention of contributing to sustainable marketing, marketing's understanding of systems theory and to provide advice on how to guide systems change. Rather than focus its advice downstream to consumers, it focusses on policy makers whose influence can produce the structures making sustainable lifestyles possible.

Keywords: Systems change; Leverage points; Behaviour Change

Track: Social Responsibility & Ethics

1. Introduction

For decades governments, businesses and most individuals have failed to act in accordance with the scientific consensus that human activity is causing climate change and dramatically effecting biodiversity (IPCC, 2022, Watson et al., 2019). Whilst these different constituents have of course taken action, it is just that overall, targets have been set that are too low, plans have been devised that cannot deliver what they promise, and actions taken on these plans that are too slow and at insufficient scale. In addition, implementation has occurred in ways that do not deliver the expected outcomes and some actors continue to actively undermined global and national attempts to coordinate and finance the action required by scientific advice (Brulle, 2018). These failures are evidenced by the continued increases in global greenhouse gas emission and extinction statistics (IPCC, 2022, Watson et al., 2019) with business failures highlighted (McKenna and Ghosh, 2022) .

Two-thirds of global greenhouse gas (GHG) emissions are either directly or indirectly connected to household consumption (Ivanova et al., 2016). Therefore, addressing consumption levels as well as what is consumed, how it is acquired, used, and disposed is fundamental to international global efforts to keep global warming to less than 2 degrees centigrade. However along with others (IPCC, 2022), this paper contends that considering the short time left to avoid this level of warming, and the scale of the task required, it is national governments and hence policy makers that possess the power to act at the scope and speed required. Hence attention should be focussed on how to shift this audience. So to support efforts to ensure faster, broader and persistent action by citizen-consumers to live sustainable, ethical lifestyles, this paper aims to: Examine how to enact systematic, institutional and structural changes by influencing individuals with agency over government actions. To address these requirements, we must therefore look at literatures examining ideas capable of deep, persistent and fast action across scales.

We start therefore in Systems Theory and in particular this paper turns to Donella Meadows's seminal leverage points framework (1999) which sets out places to intervene in a system to create rapid and powerful change. In particular, it focusses on the most powerful leverage points, mental models, from which the whole system, its properties, structures and outputs emerge. This paper will first introduce this framework, then set out the current but sparse advice on how to intervene at these sites, before exploring gaps in knowledge.

In addition, these outputs can help guide a range of audiences actively engaged in the fight against the climate and nature crises. These include citizen-consumers and provide another focus for their action beyond changing consumption habits or participation in the third sector (Friends of the Earth, Greenpeace) and grassroots movements, such as Just Stop Oil.

This paper contributes to explicating the use of Meadow's framework within marketing and marketing sustainability literature for the first time. In doing so it also contributes to efforts to support transformative action toward leading sustainable lifestyles which recognises both planetary boundaries (Richardson et al., 2023) and Defila and Di Giulio's (2020) 'corridors of consumption'. Whilst focussing on sustainability and climate change, by bringing together guidance on how to change systems and a tool to do so, it contributes to efforts to address other areas of persistent inequalities including health, social care and education.

2. Systems Thinking and Leverage Points

A system is a set of entities (actors, species, organisations) connected via a flow of resources, information and power (Meadows, 2008). Systems thinking recognises the complexity and interconnections between entities within the world and attempts to make explicit the underlying structures and mindsets that shape the natural and social worlds.

Systems thinking is well established in Marketing (Domegan et al., 2020, Shapiro and Layton, 2019) and in how the sustainability crises are conceptualised and can be addressed (Adetunji et al., 2003, Thomas, 2018). Leverage points as a metaphor has gained some traction within Marketing systems thinking (see Conroy and Allen, 2010, Domegan et al., 2020). However, work using Meadows's Leverage points framework is sparse (Luštický and Štumpf, 2021, Priefer et al., 2016) despite significant recent interest within the sustainability literature (Leventon et al., 2021). This and responding to Wymer's (2011) call that work is required to direct interventions to where they can be most effective (a call reiterated by Domegan et al. (2020)) represents the literature gap for this paper.

Leverage points is a central concept in systems thinking, particularly regarding the transformations and transitions required by living within planetary boundaries. Meadows (1999) conceptualises leverage points as places or points to intervene in a system to create change. The visual nature of the metaphor of the system being levered into a new state, allows us to understand that some points are weak (being near the fulcrum) and can create only minor changes and that stronger leverage points can shift the system into whole new positions.

Meadows originally outlined 12 leverage points, categorised according to the systems properties of where they act and therefore their strength: Materials, Processes, Design/Structures and Paradigms or mental models (Abson et al., 2017). This final grouping, 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, and are the most powerful points with the potential to support deep transformation. They are also the hardest to devise, measure and assess for success (Angheloiu and Tennant, 2020). An important insight here is that most of the interventions by governments and companies even when framed as transformational, act at the least powerful points. For example, carbon offsetting schemes alter the amount of material in the system (carbon) but by not engaging with the underlying neoliberal paradigm of growth end up reinforcing a root cause of the climate and sustainability crises.

Acting at the mindset and paradigm level also stimulates change at the shallower leverage points and changing systems goals, or the paradigm from which the system emerge, leads to all the materials, process and structures changing to act toward the new goal as well as creating the need for different processes, materials etc. For example, in a transport system, shifting the system paradigm from individual, privatised transport towards collective public transport for all, creates conditions where the road infrastructure and related space can be rapidly moved towards this paradigm (i.e. can be used for active travel) and shifts investment from road building to railways and active travel. In contrast, by changing from diesel to electric private cars (the material level), or processes (building car tunnels) can be done without ever changing the system paradigm. It is for these reasons that the paper recommends both this overall framework and the mental model leverage points, as worthy of consideration. In addition, it seeks to set out existing knowledge and guidance on how to intervene at this level.

2.1. Leverage Points to Transform Consumer Lifestyles

Recent work using leverage points in the sustainability literature has explored its use as a lens by which to identify and guide action to transform and scale up behaviour change through focusing on the individual and their role in influencing and maintaining systems (Leventon et al., 2021, Woiwode et al., 2021). By also focussing on the individual’s role in systems change, this work extends the role of the individual taken by other powerful behaviour change lenses such as 'nudge' (Thaler and Sunstein, 2008). By refocusing the intervention from the individual to the system, it addresses a critique of behavioural science that it over-emphasises the individual and under- emphasises the systems within which they live (Chater and Loewenstein, 2022) Nudge and behaviour change campaigns are also more often aimed downstream at the consumer (eat less meat, cycle more, drive less), this paper focuses even further upstream (McMahon, 2022) on the policy maker and their influence on systems.

Leverage points have also helped social ecological systems (SES) thinkers consider how to transform place-based SES (Chan et al., 2020). This work emphasises the central role of values in our relationships to nature, and how connections between humans and nature can help engage with these values and hence leverage change (Mattijssen et al., 2020).

This work in SES on individuals, has focussed on the role of inner transformations as ways to shift systems (Ives et al., 2020). Here engaging with individual consumers to change their mindsets in order to prompt broad changes to consumption behaviours, is seen as a potential avenue to transform consumer lifestyles. As consumers are nested within broader systems that shape their behaviours and mindsets (Davelaar, 2021) there are two directions that can be taken to create systems transformations. The first is to start with individuals and shift their mindsets and hence behaviours so that if enough people adopt a new practice or action, this places outwards pressure on broader systems to change (Beyers and Leventon, 2021). A second pathway is to intervene in the paradigms and mindsets embedded within the broadest systems so to unlock changes in all of the systems nested within it. In this way addressing paradigms and mindsets around consumer culture would unlock behaviour or practice changes across a range of political, commercial and individual actors.

2.2. Intervening at Leverage points

This section sets out current thinking on how to activate and create change at leverage points. An early consideration is that those who seek to intervene must remain cognisant of the complexity and inter-related nature of systems (Meadows, 2001). In doing so, this helps with identifying the focal systems that can unlock transformation so that deep leverage points can be targeted within that system (Leventon et al., 2021).

These conditions and the systemic changes desired, are likely to prompt deeper change in the individual. Woiwode (2021) explored the requirement for ‘inner transformations’ both as individuals, and collectively, and discussed the importance of sense of self, and the role of religion and spirituality, through reflection and dialog.

In preparation for developing programmes to intervene, Leventon et al., (2021) warns actors that they should avoid thinking that systems can be controlled, understood externally or from a fixed view. Individuals also need to be comfortable with trans-disciplinarity and loss of expertise and hence agency. Preparing to intervene also involves recognising personal biases. Other advice discusses being 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). Tröger and Reese (2021) support this by highlighting the importance of understanding the systems influencers and those in the system. An early tasks to support the advice above, is to learn the shared language with those whose paradigms you seek to shift (Leventon et al., 2021). Engaging with the processes required to reach shared understandings can itself lead to transformations of worldviews that together change mindsets (Hakkarainen et al., 2021).

2.3. How to intervene at mindset leverage points

Current thinking on how to intervene at mental model leverage points, is scarce but that which exists highlights the need for bravery and self-belief as well as mental energy and stamina. On reflection this is to be expected, as systems change requires work against entrenched power and self-interest and the difficult nature of the actual task it sets itself- asking people to imagine what they had previously not before imagined.

Regarding advice on the *power to transcend paradigms,* Simmons and Gregory (2005) propose Grounded Action as a method for setting out understanding the system upon which you are intervening at this deep level. They first highlight the importance accepting and setting aside of preconceptions and suggest ways of seeking openness and rigorous coding of research data designed to allow a deep understanding of the systems upon which change is sought. Olson and Raffanti (2006) use this method in educational systems and highlight the transformations experienced by the researcher and educationalist.

Guidance on how to c*hange the mindset or paradigm out of which the system arises* highlights the need to build agency and develop ways to provide encouragement on this inherently complex and difficult task (Leventon et al., 2021). Ideas to support this shift come from Thomas Kuhn's writing's (1970) exploring significant paradigm shifts in science. He suggests that these shifts came about by the knowledge, power and agency of those seeking the change rather than that of the entrenched powerful. One piece of explicit advice to help people understand that new paradigms are possible is that it is important to persistently highlight the failures and anomalies of the existing paradigm. He also describes how critiques of the old and ideas from the new should be clearly located from within the alternative paradigm and again that these should be communicated loudly and consistently. Further advice includes entryism where those working to the new paradigm are placed in positions publicly visible and powerful positions and that time is better spent working with change agents and those with open minds rather than with reactionaries.

Changing the goal of the systems is the third mental model leverage point. Building from Kuhn's advice there are long standing alternative paradigms within which alternative *goals of the system* can be suggested. First the critiques of our current economic system goal are plentiful and long standing (Haberl et al., 2020, Meadows et al., 1972). Alternatives such as Degrowth, Sufficiency, and Wellbeing (Black et al., 2017, Coscieme et al., 2019, Soper, 2007) provide the new paradigms from which new goals can emerge. Similar to Kuhn's advice (1970) at the paradigm level, Angheloiu and Tennant (2020) state that there is power from repeatedly articulating the need for a new system goal and its impacts.

3. Discussion and Future Directions

This paper began with a case being made that government action on climate and the nature emergencies has seen targets set that do not align with what is required to keep global warming to within 2 degrees centigrade. Further it argues that plans have been set that cannot deliver even these insufficient targets and that current action against these is too slow, at insufficient scale, or implemented in ways that do not deliver the planned benefits. In seeking to contribute to guidance on how to ensure faster, broader and persistent action it presented Meadow's Leverage Points framework (Meadows, 1999) and in particular current thinking on how to intervene at the most powerful mental model points.

The paper explored the emerging consensus that systems transformation needs to include individuals, particularly decision-makers in creating changes to political economies and to unlock wide-scale (sustainability focussed) behaviour change (Newell et al., 2021). It then set out current thinking on how to intervene at leverage points generally and then at specific mental model leverage points.

There are however, concerns about an approach focussed on shifting mindsets of policy makers. One such concern is how to create change and maintaining democratic legitimacy. For example, focussing on civil servants mindsets may cause conflict if it is against the agenda of the elected representatives they serve (Poulter and Bolton, 2022). This suggests that efforts to change mindsets should focus on elected representatives.

Democratic systems themselves may not be well designed to respond to the concerns of citizens (Runciman, 2018) regarding sustainability. Electoral cycles are short and elections tend to be fought on concrete issues. The impacts of climate change whilst more present every year, remains an abstract and imagined future or one easily attribute to other forces, for those in the global north. Further concerns over this approach relate to the unseen influence of entrenched power and the limited opportunities to have meaningful input into decision making, as spaces for discussion about policy regarding sustainability are often limited, controlled or disputed (Kersting, 2021).

This is not to say that increasing democracy should not, or cannot, play a role in triggering mindset change by providing additional routes towards engaging both electorate and decision-makers (Willis et al., 2022). Techniques such as Citizen's juries give elected representatives a mandate to act on climate change though whether they shift mindsets and have a measurable impact on policy, is less clear (Willis et al., 2022).

From the proceeding sections it is clear that there are significant gaps in knowledge relating to the detailed *how* of creating shifts from current paradigms to alternatives. Questions that remain include how best to support individuals to take the social, psychological and even physical risks related to advocating for systems change, particular in the face of rejection and powerful interests. Further work is required in how to build shared understanding of complex and abstract notions such as paradigms and what lessons can be learned from where shifts in systems goals have been observed- for example during the Covid crisis which saw the power of states swiftly turned from growing economies to controlling a deadly virus.

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