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Leverage Is Fractal, Relative ... And What Else?: We need a theory of leverage in systemic design

Lest we stand in the wrong places with levers that are too short

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Donella Meadows's 1997 "Places to Intervene in a System" is the cardinal resource on leverage points: places in a system where the littlest effort yields the greatest reward. As was her hallmark, Meadows's treatment of leverage points was clear, concise, catchy, and constructive. Through storytelling and simple tables, she provided a compelling framework, ranking twelve types of leverage points in order of effectiveness. However, Meadows did not qualify her taxonomy of leverage points with much more than eloquent argument, feedback from colleagues, and her own experience. So, while the legacy of leverage points is certainly evidence that Meadows was on to something (published in *Whole Earth Review*, "Places to Intervene in a System" has been cited thousands of times), it is surprising that Meadows's work has not been formally critiqued, validated, or advanced more since it was first published. Yet, as a result, the logics of leverage woefully lacks nuance. In her attempt to dispel the myths of leverage points, Meadows may have perpetuated their status even further, leaving a theory of leverage untouched for decades.

I call for novel, critical perspectives on leverage in systemic design. A deeper understanding of leverage and other features of systems will help systemic designers better understand the nature of systems and design better strategies

for accelerating systems change. For example, in this presentation, I argue that Meadows's "Places to Intervene in a System" fails to appreciate the fractal and relativistic nature of leverage. Leverage is fractal because we can find leverage points for leverage points. For instance, we can decompose systems phenomena into subsystems and search for leverage in these subsystems. Leverage is relative because someone's power over a system depends on what they have the ability to influence directly. Thus, identifying a "local" leverage point may be more important than identifying the system's "global" leverage points. I show how systemic designers can account for these factors in leverage analysis. What else can we learn about leverage? Was Meadows's original typology exhaustive? Are they truly ranked in the correct order? What other features of systems can we identify and use? By asking these questions and beyond, we challenge our assumptions about a hallowed concept in systems change, unlocking the possibility of advancing our theories of leverage for the first time in decades.

KEYWORDS: leverage theory, leverage points, systemic strategy, systems change, theory

RSD TOPIC(S): Methods & Methodology, Methods and the worlds they make, Sociotechnical Systems

We need a theory of leverage in systemic design

My aim in this presentation is to challenge systemic designers to develop a modern theory of leverage. I ask, "How does leverage work in complex social systems?" in service of learning how to design high-leverage strategies for systems change.

On Places to Intervene in a System

The fundamental resource on leverage in systems work is Donella Meadows's (1997) "Places to Intervene in a System," published in *Whole Earth Review*. The article was a concise, compelling work. Meadows sought to dispel myths around leverage points: places in a system where a little effort yielded significant impact. She presented a

typology of leverage points: twelve kinds of phenomena that systems thinkers might address in pursuit of systems change, ranking these types in order of effectiveness.

“Places to Intervene in a System” has since been cited thousands of times, and its influence stretches deep into systems change practice. However, as evidence for the typology, Meadows (1997) provided only her own (albeit vast) experience and vague feedback that had resulted from sharing it with analysts and activists. In fact, by her own admission, it was a work in progress:

[I want to] place the list in a context of humility and to leave room for evolution. [...] So, what you are about to read is a work in progress. It’s not a simple, sure-fire recipe for finding leverage points. Rather, it’s an invitation to think more broadly about the many ways there might be to get systems to change. (p. 3)

Others have certainly built on the work: David Abson and colleagues (Abson et al., 2017) reframed Meadows’ leverage points with a focus on sustainability transformations, subdividing the twelve leverage points into four system characteristics (parameters, feedbacks, design, and intent, in increasing order of effectiveness). Kania, Kramer, and Senge (2018) combine Meadows’s ideas with the iceberg model (Stroh, 2015, p. 46), organising six conditions for change in an iceberg model structure. Fischer and Riechers (2019) iterate on Abson et al.’s (2017) realms, arguing that adopting a leverage points perspective (1) integrates both causal (cause → effect) and teleological (effect → cause) orientations to designing systems change; (2) identifies deeper interventions; (3) recognises interactions with one another; and (4) provide common objectives for inter- and transdisciplinary/multimethodological approaches for systems change. Abson et al.’s (2017) four categories are also reflected in Birney’s work for the School of System Change (Birney, 2021). In my work with Peter Jones (Murphy & Jones, 2020a), we adapted Meadows’s ideas, using graph theory and systemic design philosophy to show how other phenomena (such as bottlenecks and signals) might also be sought-after features of systems.

However, these projects are the only substantive advancement of Meadows’s work since it was first published — and they do not critique or validate the original concepts at all. As a result, the logics of leverage woefully lacks nuance. A deeper understanding

of leverage and other systems features would help systemic designers better understand the nature of systems and to design better strategies for accelerating systems change. This presentation is, therefore, an echo of that 25-year-old invitation — a call to again “think more broadly about the many ways there might be to get systems to change” (Meadows, 1997, p. 3).

What might a modern theory of leverage give us?

There are at least a few ways in which a modern theory of leverage for systemic design could be profound. For one, Meadows’s conceptualisation of leverage points is rooted deeply in systems dynamics, based on concepts like stocks and flows, anchoring Meadows’s typology of leverage points in systems dynamics’ classically mechanistic view of systems (Sterman, 2009). While this provides obvious utility if you have systems dynamics models to work with, it is less useful in social systems where soft systems approaches are a better fit (Forrester, 1994; Lane & Oliva, 1998). This makes Meadows’s typology hard to generalise to many challenges in the sociotechnical systems that are often the focus of systemic design. A modern theory of leverage would rethink leverage in the context of systemic design philosophies and methods. For another, some of Meadows’s places to intervene in a system are not easily actionable. (Again, as she herself wrote, she was not writing a “simple, sure-fire recipe for finding leverage points”). This is especially true for the more effective leverage points at the end of her list: those that fall in the “design” and “intent” categories from Abson et al. (2017). In fact, Meadows’s (1997) description of these leverage points tended towards the spiritual or metaphysical:

If no paradigm is right, you can choose whatever one will help to achieve your purpose. If you have no idea where to get a purpose, you can listen to the universe (or put in the name of your favorite deity here) and do his, her, its will, which is probably a lot better informed than your will (p. 19).

While it was important for Meadows to underscore the significant role these features play in a system, we are left without a clear understanding of how to access these most powerful leverage points. A modern theory of leverage would, therefore, provide design principles for addressing these concepts in systemic design strategy.

This presentation concludes by highlighting three novel features of systems leverage as a way of illustrating the possibilities of advancing a modern theory. First, leverage is fractal. As hinted at by Fischer and Riechers (2019), we can find leverage points for leverage points. For instance, we can decompose systems phenomena into subsystems and search for leverage in these subsystems. These “chains” of leverage points form the basis for powerful strategies for systemic change (Murphy & Jones, 2020b). Second, leverage is relative. Someone’s power over a system depends on what they have the ability to influence directly. For instance, the rules of a system might be high-leverage, but generally, a policymaker can change those rules much more easily than a student activist. Thus, for the activist, identifying a “local” leverage point may be more important than identifying the system’s “global” leverage points. Third, while identifying leverage points is clearly an important activity in the design of effective strategies for systems change, identifying other types of phenomena might also be crucial. For instance, “bottlenecks” are systems features through which change propagates: they are the lynchpins of system behaviour (Murphy & Jones, 2021). Finding and addressing bottlenecks and other features might be as important as leverage points in the pursuit of systems change.

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