

## Systems thinking and the Demand Driven Adaptive Enterprise A complex adaptive system and a disruptive innovation

Clayton M. Christensen introduced the term “Disruptive Innovation” in 1995. This concept has become a favorite management jargon used in boardrooms, conferences, papers, etc. since. It is described by Christensen as “a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors”<sup>1</sup>.

This definition points to the results that a disruptive idea produces. But it does not indicate why such an idea displaces the established current competitors and achieve significant success. The explanation to this phenomenon is of the highest importance because it would allow ideas/proposals/innovations to be evaluated as potential disruptors in their environments. As the expert Lila says in *The Missing Links*, “Excellence is the result of having mastered the what, the how, and also the why. Without the why’s you cannot motivate people to learn new things and pass this knowledge on to others.”

Let us look at the disruptive concept from the perspective of Systems Thinking. This is the correct approach for studying Organizations simply because they are Complex Adaptive Systems and therefore they must be analyzed from this perspective.

Donella Meadows is one of the pioneers and a true giant of Systems Thinking. In addition to all her radical contributions to this body of knowledge, she published a seminal article in 1997 called “Leverage Points: Places to intervene a system”<sup>2</sup>

She defines leverage points as “places within a complex system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything”. 12 types of leverage points and their order of effectiveness are identified in figure 1. The power to shift paradigms to deal with new challenges is in the top of the list.

As almost all of the thousands of improvement projects that we have seen in companies during the past 30 years working in manufacturing focus in the low-level leverage points: constants, parameters, buffers and stock and flow structures. For example, reducing scrap, defects, inventory levels, lead times; implementing, SMED, Six-Sigma, etc., etc. No wonder a company requires hundreds or thousands of these kinds of projects to really produce a radical change in its performance.

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<sup>1</sup> <http://www.claytonchristensen.com/key-concepts/>

<sup>2</sup> <http://donellameadows.org/archives/leverage-points-places-to-intervene-in-a-system/>

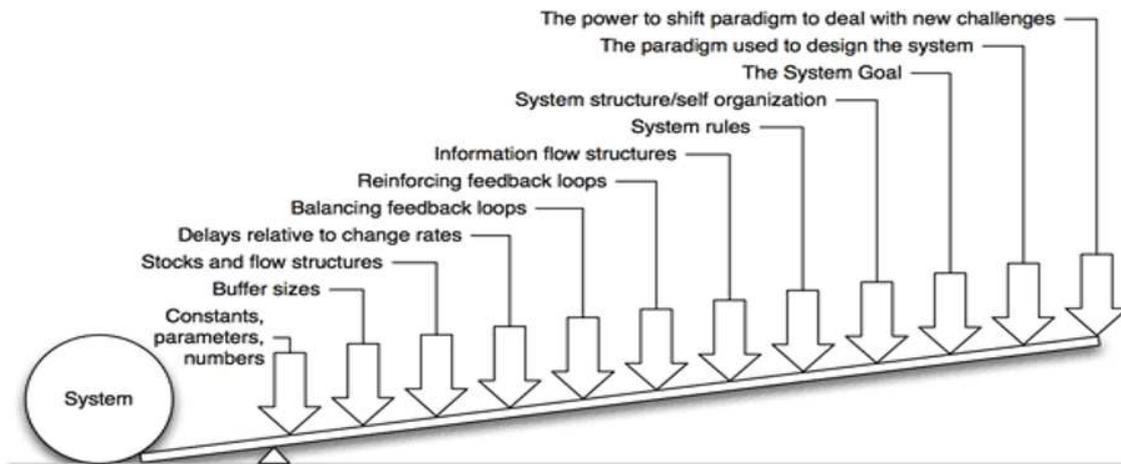


Figure 1.

Leverage points to intervene in a system in increasing level of effectiveness, according to Donella Meadows.

The Demand Driven Adaptive Enterprise (DDAE) makes use of ALL these leverage points. This is simply

The DDAE starts with a change in the meta-paradigm of management science from reductionism (silos, functions, areas) to systems thinking defining companies as Complex Adaptive Systems.

The DDAE moves down to a change in the paradigm used to design and manage the system; from reducing unit costs to improving flow of relevant information and materials. This shift requires a new structure, new policies, new rules and new KPI's, reducing delays in the arrival of information and materials, the real cause of the bull whip effect in supply chains, as demonstrated by Jay Forrester, the Father of Systems Dynamics and mentor of Mrs. Meadows, in his groundbreaking work of 1961<sup>3</sup>.

The goal moves from efficiency (low cost) to effectiveness (service levels) and obviously moves down to dealing with stocks, flows, buffers and parameters. Feedback loops (positive and negative) are continuously used in order to size and dynamically adjust buffers, redesign the system and align strategy with operations in a bidirectional process induced by Demand Driven S&OP.

The unavoidable conclusion is that such an idea, one that uses ALL possible levers in a system, must be disruptive. It has shown to be so in the early adopter companies and has provided significant positive results.

But Mrs. Meadows also gives a warning in her brilliant paper: *"The higher the leverage point, the more the system will resist changing it."* Be prepared.

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<sup>3</sup> <https://www.amazon.com/Industrial-Dynamics-Jay-Wright-Forrester/dp/1614275335>