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Systems Thinking

We all know that leaders should help people see the big picture. But the actual skills whereby leaders are supposed to achieve this are not well understood. In my experience, successful leaders often are "systems thinkers" to a considerable extent. They focus less on day-to-day events and more on underlying trends and forces of change. But they do this almost completely intuitively. The consequence is that they are often unable to explain their intuitions to others and feel frustrated that others cannot see the world the way they do.

One of the most significant developments in management science today is the gradual coalescence of managerial systems thinking as a field of study and practice. This field suggests some key skills for future leaders:

• Seeing Interrelationships, Not Things, and Processes, Not Snapshots. Most of us have been conditioned throughout our lives to focus on things and to see the world in static images. This leads us to linear explanations of systemic phenomenon. For instance, in an arms race each party is convinced that the other is the cause of problems. They react to each new move as an isolated event, not as part of a process. So long as they fail to see the interrelationships of these actions, they are trapped.

• Moving beyond Blame. We tend to blame each other or outside circumstances for our problems. But it is poorly designed systems, not incompetent or unmotivated individuals, that cause most organizational problems. Systems thinking shows us that there is no outside—that you and the cause of your problems are part of a single system.

• Distinguishing Detail Complexity from Dynamic Complexity. Some types of complexity are more important strategically than others. Detail complexity arises when there are many variables. Dynamic complexity arises when cause and effect are distant in time and space, and when the consequences over time of interventions are subtle and not obvious to many participants in the system. The leverage in most management situations lies in understanding dynamic complexity, not detail complexity.

• Focusing on Areas of High Leverage. Some have called systems thinking the "new dismal science" because it teaches that most obvious solutions don't work—at best, they improve matters in the short run, only to make things worse in the long run. But there is another side to the story. Systems thinking also shows that small, well-focused actions can produce significant, enduring improvements, if they are in the right place. Systems thinkers refer to this idea as the principle of "leverage." Tackling a difficult problem is often a matter of seeing where the high leverage lies, where a change—with a minimum of effort—would lead to lasting, significant improvement.

• Avoiding Symptomatic Solutions. The pressures to intervene in management systems that are going awry can be overwhelming. Unfortunately, given the linear thinking that predominates in most organizations, interventions usually focus on symptomatic fixes, not underlying causes. This results in only temporary relief, and it tends to create still more pressures later on for further, low-leverage intervention. If leaders acquiesce to these pressures, they can be sucked into an endless spiral of increasing intervention. Sometimes the most difficult leadership acts are to refrain from intervening through popular quick fixes and to keep the pressure on everyone to identify more enduring solutions.

While leaders who can articulate systemic ex-
planations are rare, those who can will leave their stamp on an organization. One person who had this gift was Bill Gore, the founder and long-time CEO of W.L. Gore and Associates (makers of Gore-Tex and other synthetic fiber products). Bill Gore was adept at telling stories that showed how the organization's core values of freedom and individual responsibility required particular operating policies. He was proud of his egalitarian organization, in which there were (and still are) no "employees," only "associates," all of whom own shares in the company and participate in its management. At one talk, he explained the company's policy of controlled growth: "Our limitation is not financial resources. Our limitation is the rate at which we can bring in new associates. Our experience has been that if we try to bring in more than a 25 percent per year increase, we begin to bog down. Twenty-five percent per year growth is a real limitation; you can do much better than that with an authoritarian organization." As Gore tells the story, one of the associates, Esther Baum, went home after this talk and reported the limitation to her husband. As it happened, he was an astronomer and mathematician at Lowell Observatory. He said, "That's a very interesting figure." He took out a pencil and paper and calculated and said, "Do you realize that in only fifty-seven and a half years, everyone in the world will be working for Gore?"

Through this story, Gore explains the systemic rationale behind a key policy, limited growth rate—a policy that undoubtedly caused a lot of stress in the organization. He suggests that, at larger rates of growth, the adverse effects of attempting to integrate too many new people too rapidly would begin to dominate. (This is the "limits to growth" systems archetype explained below.) The story also reaffirms the organization's commitment to creating a unique environment for its associates and illustrates the types of sacrifices that the firm is prepared to make in order to remain true to its vision. The last part of the story shows that, despite the self-imposed limit, the company is still very much a growth company.

The consequences of leaders who lack systems thinking skills can be devastating. Many charismatic leaders manage almost exclusively at the level of events. They deal in visions and in crises, and little in between. Under their leadership, an organization hurries from crisis to crisis. Eventually, the worldview of people in the organization becomes dominated by events and reactivity. Many, especially those who are deeply committed, become burned out. Eventually, cynicism comes to pervade the organization. People have no control over their time, let alone their destiny.

Similar problems arise with the "visionary strategist," the leader with vision who sees both patterns of change and events. This leader is better prepared to manage change. He or she can explain strategies in terms of emerging trends, and thereby foster a climate that is less reactive. But such leaders still impart a responsive orientation rather than a generative one.

Many talented leaders have rich, highly systemic intuitions but cannot explain those intuitions to others. Ironically, they often end up being authoritarian leaders, even if they don't want to, because only they see the decisions that need to be made. They are unable to conceptualize their strategic insights so that these can become public knowledge, open to challenge and further improvement.

New Tools
Developing the skills described above requires new tools—tools that will enhance leaders' conceptual abilities and foster communication and collaborative inquiry. What follows is a sampling of tools starting to find use in learning organizations.

Systems Archetypes
One of the insights of the budding, managerial systems-thinking field is that certain types of systemic structures recur again and again. Countless systems grow for a period, then encounter problems and cease to grow (or even collapse) well before they have reached intrinsic limits to growth. Many other systems get locked in runaway vicious spirals where every actor has to run faster and faster to stay in the same place. Still others lure individual actors into doing what seems right locally, yet which eventually causes suffering for all.26

Some of the system archetypes that have the broadest relevance include:

- **Balancing Process with Delay.** In this archetype, decision makers fail to appreciate the time delays involved as they move toward a goal. As a result, they overshoot the goal and may even produce recurring cycles. Classic example: Real estate developers who keep starting new projects until the market has gone soft, by which time an even-
tual glut is guaranteed by the properties still under construction.

- **Limits to Growth.** A reinforcing cycle of growth grinds to a halt, and may even reverse itself, as limits are approached. The limits can be resource constraints, or external or internal responses to growth. Classic examples: Product life cycles that peak prematurely due to poor quality or service, the growth and decline of communication in a management team, and the spread of a new movement.

- **Shifting the Burden.** A short-term "solution" is used to correct a problem, with seemingly happy immediate results. As this correction is used more and more, fundamental long-term corrective measures are used less. Over time, the mechanisms of the fundamental solution may atrophy or become disabled, leading to even greater reliance on the symptomatic solution. Classic example: Using corporate human resource staff to solve local personnel problems, thereby keeping managers from developing their own interpersonal skills.

- **Eroding Goals.** When all else fails, lower your standards. This is like "shifting the burden," except that the short-term solution involves letting a fundamental goal, such as quality standards or employee morale standards, atrophy. Classic example: A company that responds to delivery problems by continually upping its quoted delivery times.

- **Escalation.** Two people or two organizations, who each see their welfare as depending on a relative advantage over the other, continually react to the other's advances. Whenever one side gets ahead, the other is threatened, leading it to act more aggressively to reestablish its advantage, which threatens the first, and so on. Classic examples: Arms race, gang warfare, price wars.

- **Tragedy of the Commons.** Individuals keep intensifying their use of a commonly available but limited resource until all individuals start to experience severely diminishing returns. Classic examples: Sheepherders who keep increasing their flocks until they overgraze the common pasture; divisions in a firm that share a common salesforce and compete for the use of sales reps by upping their sales targets, until the salesforce burns out from overextension.

- **Growth and Underinvestment.** Rapid growth approaches a limit that could be eliminated or pushed into the future, but only by aggressive investment in physical and human capacity. Eroding goals or standards cause investment that is too weak, or too slow, and customers get increasingly unhappy, slowing demand growth and thereby making the needed investment (apparently) unnecessary or impossible. Classic example: Countless once-successful growth firms that allowed product or service quality to erode, and were unable to generate enough revenues to invest in remedies.

The Archetype template is a specific tool that is helping managers identify archetypes operating in their own strategic areas (see Figure 2). The template shows the basic structural form of the archetype but lets managers fill in the variables of their own situation. For example, the shifting the burden template involves two balancing processes ("B") that compete for control of a problem symptom. The upper, symptomatic solution provides a short-term fix that will make the problem symptom go away for a while. The lower, fundamental solution provides a more enduring solution. The side effect feedback ("R") around the outside of the diagram identifies unintended exacerbating effects of the symptomatic solution, which, over time, make it more and more difficult to invoke the fundamental solution.

Several years ago, a team of managers from a leading consumer goods producer used the shifting the burden archetype in a revealing way. The problem they focused on was financial stress, which

![Figure 2: "Shifting the Burden" Archetype Template](image)

In the "shifting the burden" template, two balancing processes (B) compete for control of a problem symptom. Both solutions affect the symptom, but only the fundamental solution treats the cause. The symptomatic "solution" creates the additional side effect (R) of deferring the fundamental solution, making it harder and harder to achieve.
could be dealt with in two different ways: by running marketing promotions (the symptomatic solution) or by product innovation (the fundamental solution). Marketing promotions were fast. The company was expert in their design and implementation. The results were highly predictable. Product innovation was slow and much less predictable, and the company had a history over the past ten years of product-innovation mismanagement. Yet only through innovation could they retain a leadership position in their industry, which had slid over the past ten to twenty years. What the managers saw clearly was that the more skillful they became at promotions, the more they shifted the burden away from product innovation. But what really struck home was when one member identified the unintended side effect: the last three CEOs had all come from advertising function, which had become the politically dominant function in the corporation, thereby institutionalizing the symptomatic solution. Unless the political values shifted back toward product and process innovation, the managers realized, the firm’s decline would accelerate—which is just the shift that has happened over the past several years.