Systems Thinking

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Introduction

System dynamics is the study of complex systems, including such human systems as families, organisations, cities, and nations. If you look deeply into any system and analyse the relationships between members, you will find infinite complexity.

In a systems approach to a problem, you start by realising that there is no inherent end to a system. There is no such thing as a complete theory. The quest is to look at a problem more comprehensively. The resolutions come from rethinking how we deal with complexity. We all deal quite effectively with many highly complex tasks, like driving our cars.

How do we do it? We go through a process not unlike what someone goes through to become a concert pianist. Very few people start out playing Mozart. You start out playing something simple, like the scales. At each level we start with a degree of complexity, just within the bounds of our conscious ability or our normal awareness to grasp. Even though our normal awareness only handles a limited degree of complexity, somehow we do learn to deal with incredibly complex tasks.

Even a great pianist will often begin playing a new piece at a slow tempo. Gradually he picks up the tempo as he "grasps" the piece as a whole. When the time to perform the piece comes, the pianist no longer requires any "self-conscious," waking awareness to concentrate on where his fingers go. He frees that part of his awareness to focus purely on the aesthetic.

That process is analogous to how we deal with complexity generally. It suggests that parts of our mind deal with complexity much better than our normal, self-conscious, waking awareness. The key to educating people in systems thinking is to use a developmental process -- to replicate what the pianist goes through. Eventually the concert pianist can simply look at a piece of music, which to our eyes is hopelessly complex, and absorb it with his self-conscious awareness. He may still have to practise it, but his ability to deal with complexity has expanded. A rapport has developed within his own consciousness between his self-conscious awareness and a more automatic level of consciousness capable of dealing with much greater complexity. Scholars of complex systems have never explained how, out of the hundreds that try and fail, some people are able to masterfully lead complex organisations. We can't explain these successes (other than as blind luck), because we assume the only way people can master systems is through a self-conscious, rational process of analysis -- and few, if any, executives have the tools to do this.

In fact, people who succeed in handling complexity are working in an intuitive domain we don't even consider in our educational theories. Only through the integration of that intuitive domain with the normal, rational awareness domain will we transcend mere modelling. In our work with business executives, we start with simple models that are just within the person's ability to grasp. We use these until executives no longer have to think about them very much, and then we step up to more complex models. Simply accepting the complexity is a major step toward developing that intuitive sense. But it is very difficult for business executives to accept that complexity because many of them need to see themselves as being in control. To accept it means they must recognise two things at a gut level: 1) that everything is interconnected, and 2) that they are never going to figure out that interconnectedness.

One implication of that realisation is very liberating, because not only are you never going to figure it out, but neither is anybody else. It creates an inherent equality.

Through learning and experience and their own growing awareness most people will discover that they are never going to completely figure anything out in their lives. Some can't handle that whereas others sit back and laugh. With this growing awareness two common beliefs: first, that people can control an organisation from the top or at a distance; and second, that you can ever fully understand a system or figure it out are being dismantled. Dismantling these beliefs is critical to piercing through the hierarchical mentalities that dominate most organisations. Most people have grown up in an authoritarian environment where their parents, teachers, or bosses provided the answers. They are absolutely convinced, deep down, that people above them know what is going on. That mentality weakens them as individuals and weakens the organisation as a whole.

When a group of people collectively recognise that nobody has the answer, it transforms the quality of that organisation in a remarkable way. We learn to live with uncertainty, because no matter how smart or successful you are, a fundamental uncertainty will always be present in your life. That fact creates a philosophic communality between people in an organisation, which is usually accompanied by an enthusiasm for experimentation. If you are never going to get the answer, all you can do is experiment. When something goes wrong, it's no longer necessary to blame someone for screwing up -- mistakes are simply part of the experiment.

I have always felt that the potential of system dynamics was to empower people and to support the human capacity to create. But we have not clearly articulated a notion of personal power commensurate with the nature of complex systems. Most managers think they have power by virtue of controlling things. In fact, it's a facade of control -- a mutually supported illusion. Subordinates pretend they are being controlled, and superiors pretend they are controlling. At a deeper level, most people know that's not happening, but the illusion has to be chipped away. Only then is the soil fertile to grow empowered people. Only then can you start to find out how people create. They don't create by figuring things out and by controlling.

Ideas about Causability

Most people only look at events and talk about cause in a social system as "who did what to whom."

Our present notion of causality is like the billiard balls of Newton, but we're beginning to see that this is far too oversimplified for most situations.

System dynamics looks for the causality that underlies the longer-term patterns of change in complex systems. We assume there are underlying interrelationships at deeper levels in systems and that once one understands this level, one has unique abilities to influence change. We can't ever understand those levels completely. However, we can reach plateaus of insight. Certain individuals have extraordinary skills at getting people to have those sorts of insights.

Of course, systems differ with respect to how much tolerance from error they have in their component parts. You might think that in a symphony orchestra there's room for a little sloppiness, that the person in the back row can be slightly out of tune and no one will notice. But if the orchestra is ever going to give a genuinely exceptional performance, everybody will have to be at his or her best. Life is both hierarchical and equal. Both are perspectives that have the same validity, and they are commensurable.

The simplest and most direct way to transcend the hierarchical value system is for people to see for themselves that they do matter. Once people experience genuine alignment, they will not settle for being meaningless cogs.

Different companies work at this in different ways, but it comes down primarily to telling the truth rather than blindly accepting traditional values. It is true that in many ways the contribution of the chief engineer is more valued, but that person who screws in the bolt has to do his or her job right or the whole system can fall apart. At the level of performance, of final results, reality imposes a fundamental equality on things.

You can't simply tell a person that his or her performance is as important as the president's and get them to believe it. They have to discover it for themselves. It's unlikely that you will succeed in trying to convince someone that they are more important than they believe. Yet one of the skills of effective leaders is creating an environment wherein people naturally grow. While trying to talk people into greater self-esteem is only focusing on the symptom, there are ways by which people can be aided in discovering their true value and potential. The first task for the manager is to see the unique greatness that is there, to intuitively recognize the inherent potential in each individual, and to take a stand in his or her own mind for individuals realising their greatness.

If the assumptions we hold in our consciousness tend to manifest, then the beliefs we hold about each other, especially the people who work for us, have a first-order effect on the behavior these people exhibit around us. We often assume that when people do not hold themselves in high regard, the problem must be with them, but the problem may lie in the interactions between them and ourselves. From a systemic perspective, the most influential changes to facilitate another individual=s development are often within our own minds.