Systems Thinking and Stories

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As an educational practitioner interested in teaching systems thinking, I have been very interested in a particular group of learners: young people. Partly, this is because young people seem to be a where educators can find high leverage. It seems practical to start early, rather than having linear ways of thinking become deeply ingrained, needing to be unlearned before progress can be made. At a more personal level, like many parents I have both experienced the natural desire to help my own children and grandchildren learn about systems and understand connectedness.

This desire to teach children sparked an interest in using stories that capture systems principles. This paper, will consider why stories are an effective way to teach people about systems, principles that guide me as I write, and the processes I have found valuable when creating stories.

Something Missing

Like many others, part of the appeal of Systems Thinking is the feeling that it addresses an important need. Something has been missing in the way we think about and study a variety of subjects, and seeing systems fills this important gap. Understanding what is missing provides an important context to the use of stories.

Management researchers and writers such as Senge (1990) and Johnson and Broms (2000) have framed systems thinking as part of a shift from a mechanistic view to a more natural, living systems perspective. The mechanistic approach involves imposing one's will on the world around you, with plans and control systems that enable you to produce desired results. Block (1993) describes this world view as 'patriarchy', where we are geared to solve problems through strategies of control and consistency directed from those at the top of hierarchies. What is missing from this view is an appreciation for relationships which, if nurtured, allow results to emerge spontaneously with people who feel they are working in partnership.

It may seem paradoxical that a 'natural' understanding of the world might be missing in how it we think about some of the most important aspects of life. Presumably, natural systems predate machines. How is it that mechanistic thinking might be the 'default' approach for many people?

Cultural anthropologists might explain the paradox using 'dilemmas' (Hampden-Turner & Trompenaars, 2000). Cultures form in communities when they have to deal with challenges that typically take the form of dilemmas. A dilemma exists when there are alternative ways of acting, both of which are desirable in some way, but where both options cannot be taken at one time. When a community adopts one approach—and thus ignores the alternative--and the preferred approach produces good results, when the dilemma presents itself again people are inclined to make the same choice. And when a choice is made repeatedly, it starts to become a taken-for-granted response, accepted as the way things are done in the community and no longer needing to be justified. The alternative approach, however, feels increasingly awkward and hard to justify. Where it is repressed, the community misses out on the benefits it might bring.

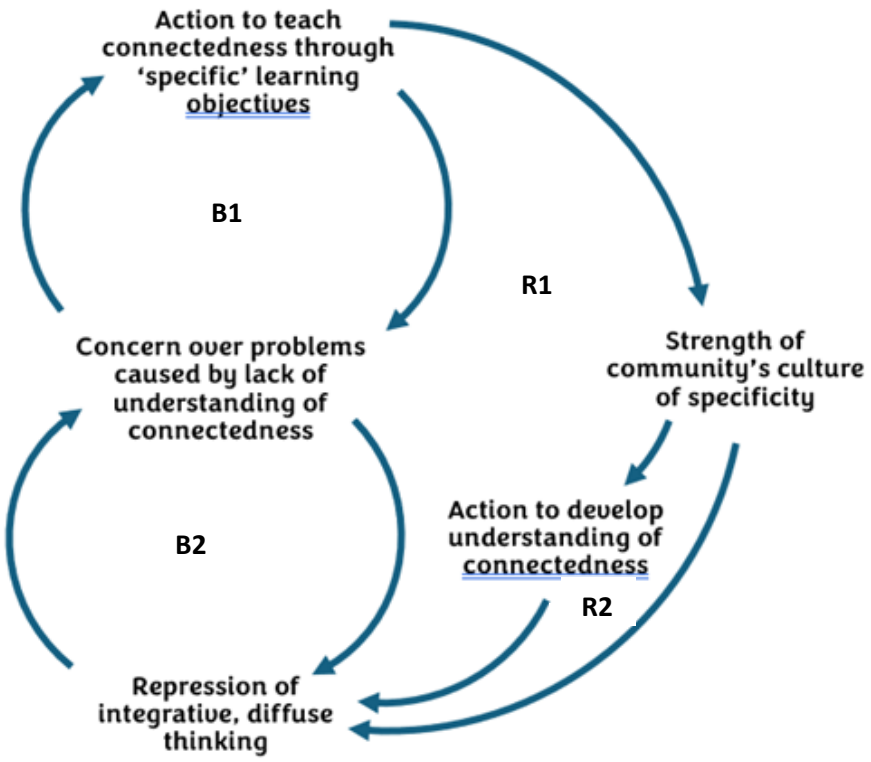
Hampden-Turner and Trompenaars (2000) describe a common dilemma as the choice between *specificity* and *diffuseness.* Some communities show a preference for dealing with clearly measurable specifics, dividing complex challenges into discrete parts. Other communities are comfortable with a more diffuse, fuzzy understanding of the 'whole' rather than its parts. As you might imagine, the more 'natural' or ancient approach to this dilemma, in communities unaided by analytical tools, is a

tendency to diffuseness. When something is not well understood, diffuseness lends itself to mystical explanations.

According to Hampden-Turner and Trompenaars, Western communities made a dramatic shift from diffuseness to specificity. The Protestant revolution was a marked change from the more mystical approach of Catholicism. Later, Newtonian physics and the Industrial Revolution continued to embed specificity more deeply as a preferred mode of thinking.

It is easy to see why communities would become enamored with specificity. The ability to analyze problems, set measurable targets, and distinguish between reality and fantasy generate progress and productivity. The danger arises when, in pursuit of specificity, communities repress its opposite, diffuse thinking, and miss out on the benefits this complementary approach to thinking can contribute to life. Taken too far, analysis and specificity divide complex wholes into disconnected parts. In an effort to be 'objective' living systems—including people—end up being treated as objects.

To make things worse, when communities recognize that something is missing, the preference for specificity can shape how they respond. People in a community might recognize the problem, and even espouse the need for greater connectedness and to have children learn about complex systems. But the default approach for the community, shaped by the established preference for specificity, might be to make this the specific responsibility of teachers, who teach systems principles as a separate, disconnected topic, with learning assessed by testing retention of explicit knowledge. In this case, the 'cure' would be to take a highly specific approach to the need for greater diffuseness. In other words, this would be a symptomatic solution that simply reinforces the strength of the cultural preference for specificity.



The Causal Loop Diagram shown above outlines how a Shifting the Burden systemic structure can emerge. Concern over problems caused by lack of understanding of connectedness is a symptom that points to a culture that represses diffuse thinking. The fundamental solution (Loop B2) would be to create deep understanding of connectedness using approaches that encourage elements missing in the culture. Unfortunately, in a culture that values specificity the default, symptomatic solution is to use approaches to learning based around specificity, such as using clear learning objectives and testing (Loop B1). Such an approach, of course, is assumed to be best left to experts.

The side effect of a specific approach is that it further strengthens the culture of specificity so that the community is less likely to adopt diffuse approaches to learning about connectedness (Loop R1) and more inclined to repress integrative, diffuse thinking (Loop R2).

The potential for Shifting the Burden sets the scene for the use of stories as a diffuse approach to creating a deep understanding of connectedness.

Constructing Stories

As writer and storyteller Linda Booth Sweeney 2008) explains, from ancient times stories have been used as a way to pass wisdom from one generation to the next. Folktales provide insights into complexity. They provide a way to explain and understand the world around us, and often feature a systems principle that sheds light on what might otherwise seem counter-intuitive or inexplicable.

Specificity and diffuseness, however, are complementary. The more you do one, the more you create the need for the other (Johnson, 1993). The need for a deeper understanding of diffuse interconnectedness has arisen as a result of an unbalanced pursuit of specificity. It would not make sense to respond with an unbalanced pursuit of diffuseness. The need to pursue this balance can shape how we construct stories.

Many stories have a 'mystical' element, such as animal characters who can talk, immediately putting the story at odds with some specific knowledge held by the audience. This creates a challenge for a storyteller: while a story is a more naturally diffuse way of teaching, the goal is not to eliminate specific knowledge, and care needs to be taken so that diffuseness is not taken to an extreme. What is involved in finding an appropriate balance?

Importantly, stories need to be engaging, holding the attention of the audience. This means that there needs to be a degree of tension in the story which, when resolved, leaves the audience feeling satisfied (Fritz, 1991). A storyteller needs to manage the tension that the audience experiences as the story progresses. An engaged reader will want to keep turning the page to find out what will happen. In the *Billibonk and Frankl* books the characters are generally presented with a challenge or mystery that needs to be solved, and there is a degree of personal risk for them if they cannot find the solution. And if readers are going to be interested in reading the next book in the series, solutions to problems need to be plausible and satisfying. They need to connect with the experiences of the reader, rather than relying too heavily on mysterious forces.

The audience will also be engaged by the characters in the story (Snyder, 2005). Adding characters to the plot adds rich diffuseness based on the experience of the reader. As readers feels the tension created by story, they empathize with characters they like imagining how they must feel. The *Billibonk and Frankl* books have contrasting lead characters, an elephant and a mouse, which allows readers to see and identify with a variety of qualities. A challenge for the storyteller is to create distinct and consistent characters. In *Billibonk and Frankl*, each main character is given a distinct personality based on Seagal and Horne's (1997) work on human dynamics.

A further principle of good writing is to understand that one will never have “the final word” on any subject (Zinsser, 2012). The danger of trying to include everything leads to too much specificity and not enough space for readers to form their own diffuse understanding of what is happening.

Swiss cheese provides a useful way of thinking about achieving balance. Swiss cheese is famous for its holes. Swiss cheesemakers were deeply concerned, therefore, when holes started to get smaller and even disappear. What, they wondered, was happening in the cheese-making process to make it so different from the past? One current suggestion—that provides a handy simile for storywriters—is that cheesemakers have traditionally collected milk in buckets that were never completely clean. Minute wheat particles in the buckets found their way into the milk and were ultimately responsible for holes. Recent efforts to improve hygiene and the quality of the process made the buckets too clean for holes.

Stories also depend on holes, particularly when the intention is for them to teach. Readers need to feel that they can add to the story, connecting the experience the characters are having with what is happening in their own lives. A wonderful aspect of stories is that sometimes the reader will draw a lesson or make a connection that goes well beyond what the storyteller had in mind.

Of course, the more expertise you have about the topics dealt with in the story, the more tempting it is to act like an over-zealous cheesemaker and be explicit about all the possible lessons to be learned. As a storyteller, though, if you were to fill in all the holes by making application completely explicit, you would make the story less engaging for readers who want to have a diffuse experience and draw their own conclusions. People—parents, grandparents, teachers—using stories to teach do well to keep this in mind. When talking to learners, carefully frame the questions you ask in order to create holes for them to fill.

Storytellers can also leave holes as they prepare their stories. While having a clear direction for the plot is important, holes can be left that allow for the unexpected. For example, if a storyteller has distinct characters in mind and a clear sense of the personality of each, when two characters are in dialogue, how they respond to each other can emerge naturally. The characters themselves will be filling in holes, sometimes to the surprise of the author.

Systems Stories

The type of story you create will to some extent depend on the audience. Basic principles, such as the need for tension and resolution, apply. The amount of tension you include, however, is based on what will be engaging for the audience. There is also a lot to be said for the approach taken by educator Maria Montessori. Rather than creating activities aimed at a particular age group, she created the activity first and then watched closely to see which children would be interested. You can create stories in a form that you like, or which work for your particular child, and at the same time be prepared for the unexpected; that children from different age groups, or even adults, may find the stories appealing.

Many stories, such as the folktales mentioned earlier, aim at illuminating one idea, or one systems principle. Creating such a story might involve thinking of a situation in which understanding the principle is critical, having characters experience what happens when the principle is ignored, then having an “a-ha” moment when a character explains the principle and captures the lesson in some memorable way.

As children become independent readers and develop the cognitive power to deal with more complexity, stories can do more, introducing the reader to new possibilities. Senge (1990) gave a

pointer to an important possibility when he described *systems archetypes* as “simple stories that get retold again and again” (pg. 94). We can use this insight when creating stories; systems archetypes provide an outline that becomes the structure for a story’s plot. Indeed, the archetype definitions provided in Senge’s (1990) book *The Fifth Discipline* read like the ‘loglines’ screenwriters use to capture what the story of their movie is about (Snyder, 2005).

The *Billibonk and Frankl* stories are built around archetypes such as Escalation, Tragedy of the Commons, Shifting the Burden, and Accidental Adversaries. In the first book of the series, *Billibonk and the Thorn Patch*, two archetypes were included. Later books recognize that there is no need to try to do too much at once and allow one archetype to be played out in full.

A systems archetype provides guidance on how the plot of a story can develop by describing the structure of how a situation can develop, usually in an undesirable way that allows tension to naturally build. Systems wisdom regarding how to achieve leverage with this structure provides storytellers with guidance on how the tension can be resolved.

Older readers are also more capable of seeing connections between what characters in the story experience and their own lives. This creates a challenge for the storyteller to resolve: what relationship will the characters have to the system being explored?

In simple stories, the main characters can be outside the dynamics being considered. For instance, a story might describe how a character, a little girl named Bridget, learns about a natural system such as the water cycle. While this system plays an important part in Bridget’s life, she is not essential to how it works. She may be fascinated or concerned—experiencing emotions with which the audience can empathize—but it is as if she is a bystander and observer, rather than an active participant in the system.

More complex stories might explore systems in which main characters are directly involved. For example, Bridget might find herself part of an escalating conflict. She needs to develop sufficient self-awareness to realize that she is contributing to whatever is going wrong. Likely, she will need to change as part of the resolution to the tension. This character development for Bridget can make the story more engaging for the audience, as well as prompting them to consider where they might be experiencing the same system dynamics or how they might apply the systems tools used in the story.

Conclusion

Stories are a liberating way for people of all ages to learn about systems and interconnectedness. They are also an important way for storytellers to deepen their own understanding of systemic structure, how behavior changes over time, and how to find leverage.

The best way to build your capability as a storyteller is to start telling stories. Find an audience. Think about an aspect of systems thinking they might need to understand. It might be a principle or a pattern of behavior relevant to a challenge they face. Then experiment. Think of characters that would appeal. Make sure you and your audience have fun together. Perhaps you can co-create the story. Observe the reaction of the audience. And keep trying.

As we’ve discussed, cultures differ in how they resolve the dilemma of specificity and diffuseness. In a highly specific culture, roles are assigned to people who are then expected to stick to what they know. If you are from a culture of specificity, it’s natural to think “I’m not a storyteller. I’m not qualified. I can’t create stories.” Of course, in diffuse cultures people don’t become storytellers and then start creating stories. They become storytellers *by* telling stories. Why not see what impact you have on the learning of yourself and your audience!

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