TOOLBOX

THE SYSTEMS THINKER®
BUILDING SHARED UNDERSTANDING

VOL. 19 NO. 9 NOVEMBER 2008

A GROUP PROCESS FOR SYSTEMS THINKING

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At first blush, systems thinking may seem like something we can apply by ourselves. While that may be possible for simple dynamics, a systems thinking examination of an organization or other entity is most effective when a diverse cross-section of the system gathers together in one room. For example, if you want to understand the organizational dynamics in a university, you'll do much better with a diverse group and not just the deans at the table. The most effective analysis would come from including a sampling of staff, students, administrators, faculty, alumni, and so on. For complex environments, "solo systems thinking" is an oxymoron.

Given the different personalities and perspectives involved in any work setting, how can a group productively undertake a systems thinking analysis? This article presents one model of how to do so. In addition to competency in the systems thinking concepts, a group process for applying them is critically important. A group process not only serves as a roadmap to keep the analysis on-track, but it can also help break established thought patterns that might otherwise become blind spots.

One of us (Richard Karash) wrote about effective group process some years ago in *The Systems Thinker* ("Six Steps to Thinking Systemically," Vol. 6, No. 2.) Our views have evolved since that article.

A Learning Cycle

First, we propose that a group process for applying systems thinking is most effective when it is regarded as iterative. One way to represent such an approach is with a *learning cycle* (see "A Learning Cycle"). Going back a hundred years, many authors have emphasized the power of such a learning cycle. Following the chain backward, we see contributions by Peter Senge, David Kolb, W. Edwards Deming, Walter Shewhart, John Dewey, William James, and Charles Sanders Peirce. Our version of the learning cycle contains four major phases: Observe, Explain, Design, and Act.

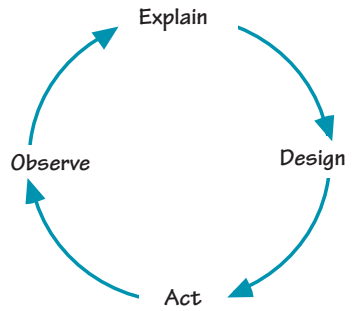
A group initiates this learning cycle by *observing* something happening in the world. We begin by focusing on what they see. What's changing (brings in patterns and establishes historical context)? What's of interest here?

The second phase is to develop an adequate *explanation* for the phenomena the group has observed. In the context of systems, we mean explaining why and how the system in question behaves the way it does. What is the underlying structure that determines the events and patterns that we see?

The third phase is to *design* changes to the system. What about the system isn't working the way we would like it to? What about the system is working the way we would like it to? How can the positive behaviors inform how we should make changes?

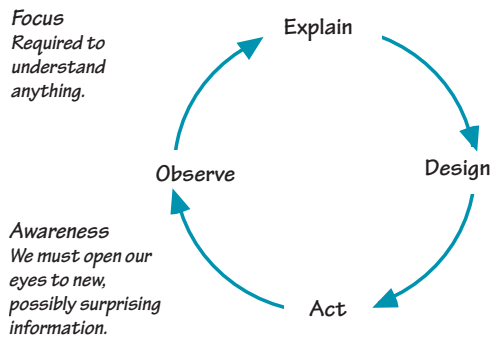
Finally, we *act* in the world, trying to apply our understanding of the system to improve it. Of course, we want to anticipate the possibility that our actions may result in at least some unanticipated consequences. We adjust our plans to manage all the consequences of our actions, to the extent we can foresee them. As good systems thinkers, we don't just stop with action. We want to monitor the results of our actions. From this point, the cycle repeats.

A LEARNING CYCLE



The foundation for our group process is a learning cycle.

THE ASSOCIATED STANCES



An appropriate stance facilitates each transition around the learning cycle.

TEAM TIP

Because group choices flow from a shared understanding of what's important, take the time to discuss your team's values regarding the situation you are analyzing.

These four major phases, however, are not enough. Besides performing these steps, it's critically important to adopt an appropriate stance or outlook as we go about each of them. In "The Associated Stances," these stances are represented between each of the four phases.

In moving from observing to explaining, we must have a *focus*. We can't look at everything; efforts to explain *everything* will necessarily fail. Where should we direct our attention? What is energizing and important? From there, we need to be open to following threads wherever they lead, as long as the threads remain interesting.

The systems thinking analysis helps you understand why and how things are happening the way they do. But this analysis alone won't tell you what to do. In moving from explanation to action, we are guided by our *values*. Group choices flow from a shared understanding of what's important. While data collection is an important step, the answer will not be in the data; it will be in our *interpretation* of the data, and interpretations are always projected through the lens of our values.

For example, a common problem in industry might be the decision of whether to spend money on preventative maintenance or save money in the short run and accept breakdowns as they occur. What should you do? It depends on your values. If reliability of production is not that important or if you're thinking of selling the business, deferring preventative maintenance might be a valid strategy.

A systems thinking model cannot tell you what to do; it can only help you understand what's happening. Adding the overlay of your values in the specific context will help you make the transition from analysis to decision-making. As a result, a team that tries to make such interpretations without clarity around shared values will be greatly handicapped.

As we move from designing to action, we need the stance of scientific *discipline*. We all would like to have certainty, but certainty is elusive. In the real world, we act all the time on uncertain knowledge; we simply have to be "sure enough." We must admit the fundamental limitations of human objectivity and treat our conclusions as theories, some more certain than others. Through reflection and consideration, we need to pay attention to the questions, "How sure are we? What actions are we ready to take and what has to wait for additional certainty? How could we increase our certainty? What do we not know?" and "How can we best test and experiment to gain more certainty?"

Of course, there are dangers on both sides. If we keep pursuing certainty, we risk "analysis paralysis." Meanwhile, we can also make mistakes by running with uncertain conclusions too early. Balancing these two opposite risks is a fundamental role for leaders.

Finally, as we implement our design changes and act, we need another kind of discipline, the discipline of *awareness*. It is human to see only what we are looking for, for example, to see only the desired effects of our actions and not the unanticipated ones. How can we be more aware? How can we ensure we are open to unexpected information that we may not be looking for? This is not a matter of performing certain steps or following a recipe. It's a matter of our state of mind, opening our awareness and paying attention. By doing so, we position ourselves to observe effectively for the next iteration.

Breaking It Down into Steps

Now that we have described how to move around this core learning cycle, we can represent the process as a list of specific steps that a group can follow in sequence ("Specific Steps").

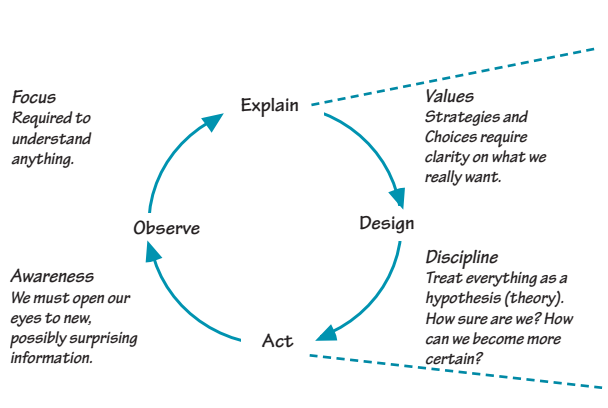
1. Listen to the Story. All systems have a story. Listening to this story is the first step in observing the system. Try to "listen from the heart."

2. Draw Graphs. Stories happen over time. As you listen to the story, what are the trends? What in the system is changing over time? What is holding constant? Of which dynamics can you draw behavior over time graphs?

3. Establish Your Focus. At this point, it's important to start to refine your focus. What's important to you in the story? What's interesting? To encourage a stance of inquiry, try stating your area of interest as a question. It is normal at this stage for data collection to proceed like an accordion: You start with a little data, draw a few graphs, draw more . . . until suddenly you realize you have to prioritize and cull some of what you've collected.

4. Explain the Important Dynamics with a Diagram. With an appropriate collection of graphs of behavior over time, begin to explore possible causal connections between them by drawing causal loop diagrams. Are there patterns that give you a feeling of deja vu? Why might that be? Is there a systems archetype that might be relevant? (For more on causal loop diagramming conventions and archetypes, see

SPECIFIC STEPS



Specific Steps

1. Listen to the Story
2. Draw the Graphs
3. Establish Your Focus
4. Explain the Important Dynamics with a Diagram
5. Add the Values Overlay
6. Design Changes to Improve the System
7. Test Your Theory and Your Actions
8. Act

…and Observe with Open Awareness

Specific steps put the learning cycle and stances into action.

www.pegasuscom.com/cld.html and www.pegasuscom.com/sysarch.html.)

You can make a systems thinking analysis more effective by not only looking deeper into the system, but also into the mental models of your group and yourself as an individual. A key tenet of systems thinking is that each of us is a component of any system we are analyzing. Be honest with yourself: What has been your contribution to this system? How might your own behavior be unintentionally enabling the very dynamic that you are hoping to change? What thought bubbles could you add to the choice links in your diagram that would represent the thinking behind your or other's actions?

It's easy to criticize others. Assuming that everyone in the system is acting reasonably and responsibly from their point of view encourages you to understand the motivation of other players.

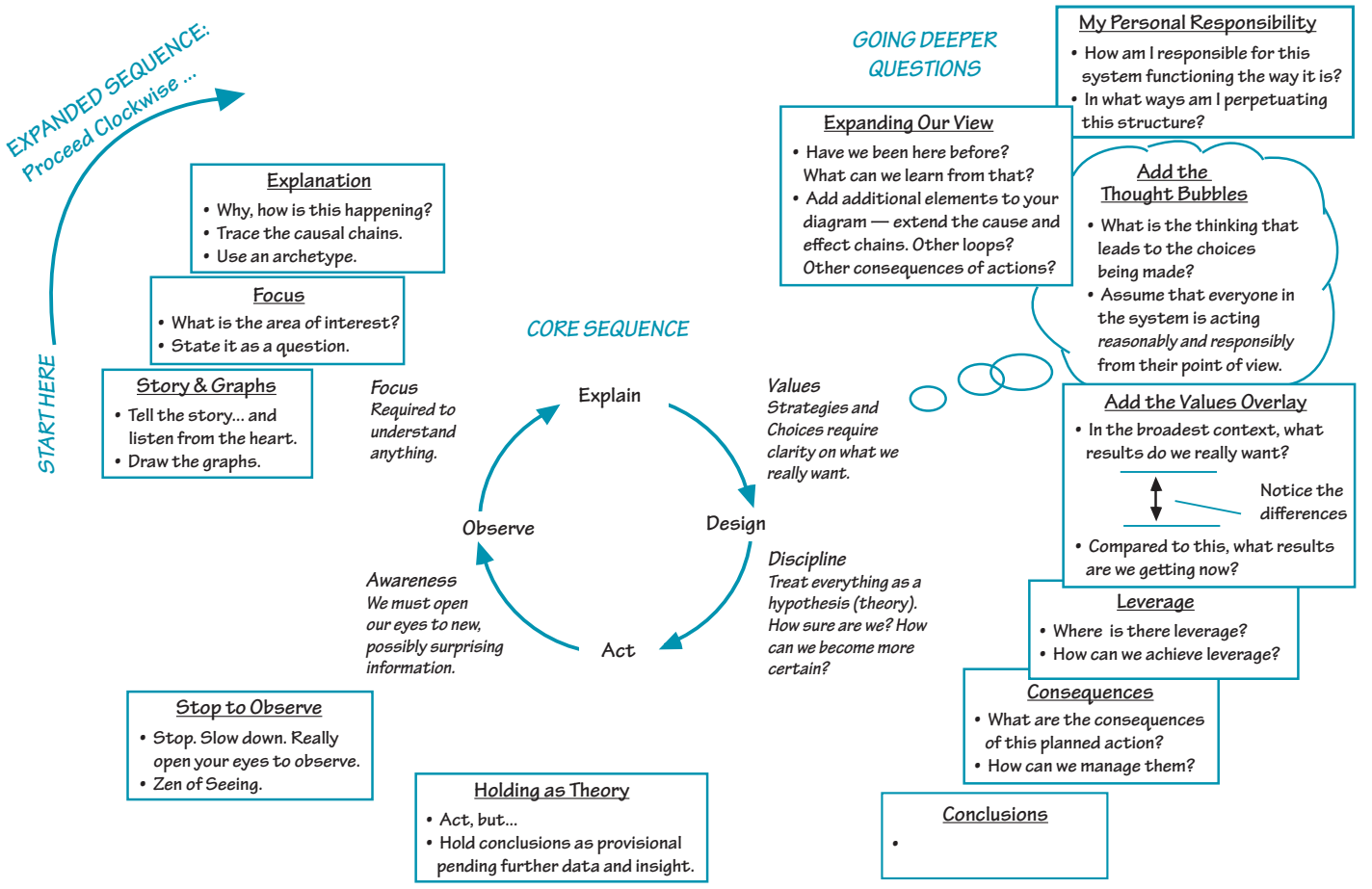
5. Add the Values Overlay. Once you have a causal loop diagram of the system, your group needs to add its values overlay. What's important to you? What are you trying to accomplish? Be clear about the gap between your highest aspirations and current reality. Robert Fritz refers to this dynamic as "creative tension." This tension will inspire innovative solutions. Don't be afraid to see and feel this gap.

6. Design Changes to Improve the System. Once there's a consensus on the dynamic of the system as well as the values we care about, you can begin to design changes in the system. What are the most effective leverage points for sustainable change? Which causal relationships represent natural cause-and-effect and which are a result of human choice? Examine the thought bubbles that you added to the links that represent human choice. These might offer an opportunity for leverage by changing the thinking behind them.

7. Test Your Theory and Your Actions. Recheck the proposed action. Does it make sense in the light of your understanding of the system? We're all human, and it's quite possible for outdated mental models and plans to sneak into our proposed actions. Does your action plan make sense in light of our theory of what's going on? These hypotheses for change need to be tested as rigorously as possible. What data can be used to verify them? What might be the unintended consequences of making the proposed changes? What other actors in the system might be able to help advise you? What are your conclusions?

8. Act . . . and Observe with Open Awareness. Finally, it's time to act—

GOING DEEPER ON SPECIFIC STEPS



This figure combines the detailed steps that surround our original learning cycle.

while maintaining the open-mindedness that our conclusions are provisional. Such a stance allows us to see new data and insights. In this way, we set ourselves up to return to the stance of observation: seeing what is—rather than merely what we want to see.

"Going Deeper on Specific Steps" combines these detailed steps surrounding our original learning cycle.

Tips for Applying the Group Process

When we coach groups through a systems thinking intervention, our most frequent technique is simply to call the group's attention to the process. We ask, "What step are you on in the process?" Having the group periodically ask themselves this question helps pull their collective attention back to the process and cuts off unproductive tangents.

We've found that it makes a huge difference if everyone actually gathers within arms' reach of the diagram the group is creating. If you're using a white board or flipchart, have everyone stand up right next to it. It's amazing how this simple act facilitates group engagement.

As ideas arise in the group, slow down to show each idea on the diagram, so the group can evaluate it visually as well as in words. Without this practice, it's easy for a good idea to get lost when the next idea gets the group's attention.

After a group feels that it has reached a conclusion, make sure to take the time to debrief. Focus on debriefing the process, not the diagram. What worked well? What didn't work so well? Did the process work for the introverts in the group? The extroverts? What would you do differently next time to make it better?

And finally: practice! Remember that systems thinking should be regarded as an iterative process. There will never be one "answer." A group that learns something new about itself on each cycle will be more likely to learn something new about the systems they are analyzing. And that can be the most powerful—and fun—result of all. ◘

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