CREATING A COMPREHENSIVE SYSTEM OF INQUIRY

BY DAVID REES AND DAVID TODD

A central tenant of system dynamics is the need to model the problem and not the system. As John Sterman points out in his book *Business Dynamics: Systems Thinking and Modeling for a Complex World* (Irwin/McGraw-Hill, 2000), "A model must have a clear purpose and that purpose must be to solve the problem of concern to the client." This focus allows modelers to exclude factors not relevant to the purpose and problem and ensure that the scope of the model is in fact feasible and the results are relevant. To do so, we must first formulate a problem definition. However, defining a problem is often no easy matter.

Many of the issues that we deal with in our consulting work are more like what Russell Ackoff calls "messes" than clearly defined problems. For Ackoff, a mess is a "complex system of interacting problems." You can't touch one problem without affecting the others. Deciding how to depict a problem system can involve a great deal of work.

To enable us to obtain clarity around the problems that our clients face, we have developed an approach that combines some of the key tools of Soft Systems Methodology (SSM), developed by Peter Checkland and his colleagues at Leicester University, with those of system dynamics (SD). SSM places considerable emphasis on "sense-making"—helping groups of people develop common understandings of intricate systems. SD's strength is its rigorous modeling tools that are useful for providing insight into how the system produces the problem behavior. By combining some of the techniques of both disciplines, we attempt to capitalize on the strengths of each and integrate the so-called "soft" and "hard" approaches into a comprehensive system of inquiry.

Understanding the Current World

In a complex system, especially one inhabited by people, there is always more than one way of perceiving the world and many possible paths for moving forward. For that reason, the first step is to try to grasp the multiple realities that exist within the environment in which our clients operate. It is not enough just to accept that people have different opinions; it's important that we understand those various perspectives and give them all a voice before we start nominating areas for change.

First, we need to know what is actually going on in the system—the key activities. Second, we must establish the roles that people play in that system. Finally, we must determine how those players make decisions. Understanding these activities, roles, and decision processes enables us to get a "rich picture" of the current system and how it operates.

Rich pictures are graphic representations of how people see the situation, its main stakeholders, and the key issues that must be resolved.

ACHIEVING THE VISION IN LOCAL GOVERNMENT
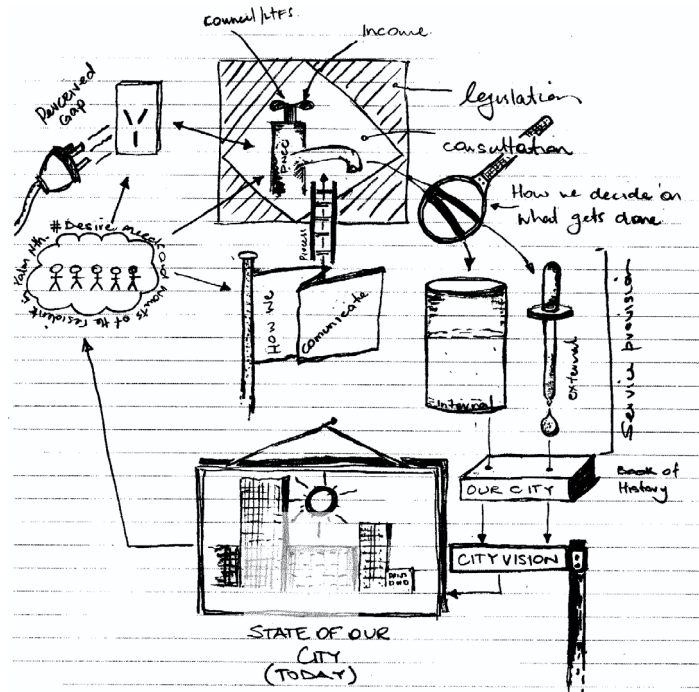
When a city council in New Zealand became concerned about the gap between its vision and what was actually happening, a team created a rich picture. This picture reflects the team's view of what is actually going on in the system, who is involved and what roles they play, and how decisions are made.

Developed by Peter Checkland, these sketches are useful for capturing the complexity of the multiple, interacting relationships in a system and encourage people to look at the whole rather than break it down into its component parts too early in the analysis. When working with people in a problem situation, drawings offer an excellent starting point for a conversation about how different individuals and groups view the organization's functioning. They also help stir people out of habitual ways of discussing the issue at hand.

Rich pictures thus offer a way for people to tell stories about the world in which they live and work. In one example, a city council in New Zealand had become concerned about the gap between its vision, which it had spent a lot of time and resources developing with its citizens, and what was happening on a daily basis and during the annual planning and budgeting process. An internal team came together to try to address this disparity. One of the team's early outputs was the rich picture shown in "Achieving the Vision in Local Government," on page 7. These initial pictures are usually developed in response to three simple but powerful questions:

What is actually going on in the system that relates to the issues at hand?
Who is involved and what roles do they play?
How are decisions made?

This picture shows the team's view of what really happened as the city council tried to fulfill its vision for the city. The faucet represents the flow of resources into the city. Through the decision-making process, the flow gets split so that most of the money and attention ends up in the internal "glass" of administration costs and programs pushed by the current group of elected representatives. Only a few "drips" find their way into new initia-

ROOT DEFINITION

This is a system to do … [something] … by … [some means] … in order to achieve … [some result].

tives that are directly focused on achieving the vision.

This picture reflected the view that the needs of the council as an organization and the political agendas of individual councilors drove much of what the group actually did. The optimistic, sunny view of the city promulgated in brochures and council documents, shown as "State of Our City (Today)," is balanced by citizens' frustration with the chasm they perceive between them and the corridors of power. This misalignment is shown by the gap between the plug and the power source, which represents the limited ways in which citizens can get involved in decision-making processes.

The focus here isn't on artistic merit but simply on how people can use pictures as representations of the

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systems in which they operate. These kinds of sketches allow participants to explore and describe their world without any preordained framework placed upon them. Pictures can capture the system as a whole and provide a frame of reference that people can respond to by saying, "I don't see it that way. This is how I would draw it."

The results of the process can be quite surprising. For example, a rich picture that started from a discussion of the outputs of a strategic planning team soon developed into a depiction of unit, management, and board relationships. This shift led to a major redefinition of the role of the strategic planning unit and how it operated within the organization.

Another important feature is that drawing these kinds of pictures requires no special skill or talent. Because pictures are a visual rather than a verbal means of communication, senior staff, who generally have well-developed skills in presenting their perspective, are less likely to dominate the conversation. Furthermore, the very nature of pictures

makes it easy to focus on the relationships between parts of the system—a key aspect of having a systemic perspective.

Understanding the Desired World

Once the group has created a drawing that reflects a common view of the current reality, the next step in defining the problem is to explore why the system exists. Peter Checkland calls this a "root definition" of the system (see "Root Definition").

While Checkland uses these definitions to increase understanding of the current system, we employ them to tease out what people think the system should be doing. When the team that developed the rich picture "Achieving the Vision in Local Government" completed this task, they wrote the following root definition: *"This is a system to enable the council to achieve its vision for the city by linking together all the plans within the organization in order to ensure that the activities throughout the council are clearly aligned."*

Comparing this root definition with the rich picture of what was actually going on revealed a number of important issues:

• The council was not effective at ensuring that most of the revenues were utilized for initiatives directed at achieving the vision. As pointed out earlier, most resources (the glass) went toward basic infrastructure and initiatives being pushed by the current crop of elected representatives while comparatively few resources (the drips) were directly aimed at fulfilling the vision.

• There was a gap between the council's perspective of how the city operated and that of the citizens.

• The citizens of the city were disconnected from the council, preventing them from having significant input into decision-making processes.

Each of these issues was then developed into a behavior over time graph.

Providing a Context

Based on these insights, the council then undertook a major review of expenditures and started the process

of realigning investments to more accurately reflect the vision. The behavior over time graphs provided a focus for the review and for a system dynamics computer model. Because of this process, when management and elected representatives saw patterns of financial expenditure as they played out in the model, they understood the context within which it was developed.

If we are to be truly systemic in our thinking, we need to ensure that our use of systems thinking tools is grounded in understanding all facets of the problem at hand. If we simply focus on creating a model without first exploring the many perspectives that may be present, we are in danger of applying systemic processes to reinforce linear thinking. Rich pictures and root definitions provide effective means of exploring our mental models and defining problems before rushing headlong into what could be an inappropriately focused modeling effort. ◘

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