# Problem Identification—Simple Gap Analysis and the 5-Whys

Unfortunately, systemic learning disabilities are all around us. This week, you will discuss and analyze two examples of systems and will apply simple gap analysis techniques to identify potential learning disabilities and violations of the laws of the fifth discipline. Gap analysis is exactly what it sounds like—it is part of problem identification, and it addresses your identifying gaps in how a system is performing relative to how you think it could or should perform.

The "5-Whys" quality management technique was developed initially by Sakichi Toyoda for the Toyota Motor Corporation as a simple way to teach everyone in the company to perform what we can call effect-cause-effect (E-C-E) reasoning. The goals of both the simple (5-Whys) and complex (theory of constraints) forms of E-C-E reasoning are the same—to link specific, measurable outcomes (usually undesirable), with suggested causes, and to build long causal chains that identify "root causes" of multiple symptoms.

The essence of both techniques is to continue to ask penetrating questions until you've reached a saturation—or core root causes.

## The 5-Whys Technique in Action

The 5-Whys gap analysis technique is very simple, which is both its strength and its limitation. Start with the Opportunity Consultants, Inc. case, for example. Read the case and note what you think are the major "outcomes" (both good and bad) that OCI creates as a system.

Then, in Excel, Word, Visio, or another chart/diagram software program (or beginning by hand with a pencil and eraser, which is a very good starting point too!), place what you think are the fundamental "outcome variables" at the top of your chart. (Note: Be sure that the high-level outcomes are "orthogonal" with respect to one another. That means you should make sure that the outcomes themselves are relatively independent of one another as concepts and are not "shades of a theme.")

Then, for each of the major outcome variables, ask yourself, "Why does this outcome occur?" (This is the first level of "why?") Try to think systemically and rigorously—and identify as many "causal variables" as you can that you think you have evidence (or you think is a reasonable inference) to explain the outcome. Do some of these "first order" variables link to multiple high-level outcomes? That is okay; show the links by drawing lines between and among the two levels of analysis.

Now, repeat this cycle for the first-order variables. They are now outcomes. Why do they occur? (This is the second level of "why?") Again, link these "second-order" variables within your emerging E-C-E diagram. Repeat to identify "third-order" variables.

Repeat to identify "fourth-order" variables. Note that you should begin to see larger "causes" that link to multiple outcomes and that the diagram should begin to look like a "tree" in shape—i.e., it bulges in the middle and begins to taper as you get to "root causes."

Drive one more level to identify fifth-order, or "potential root cause" variables. You should now have a

relatively simple set of effect-cause-effect relationships! Congratulations; you've now completed your first simple gap analysis, which also is a form of systems diagram!

**Examples of 5-Whys Effect-Cause-Effect Diagrams**
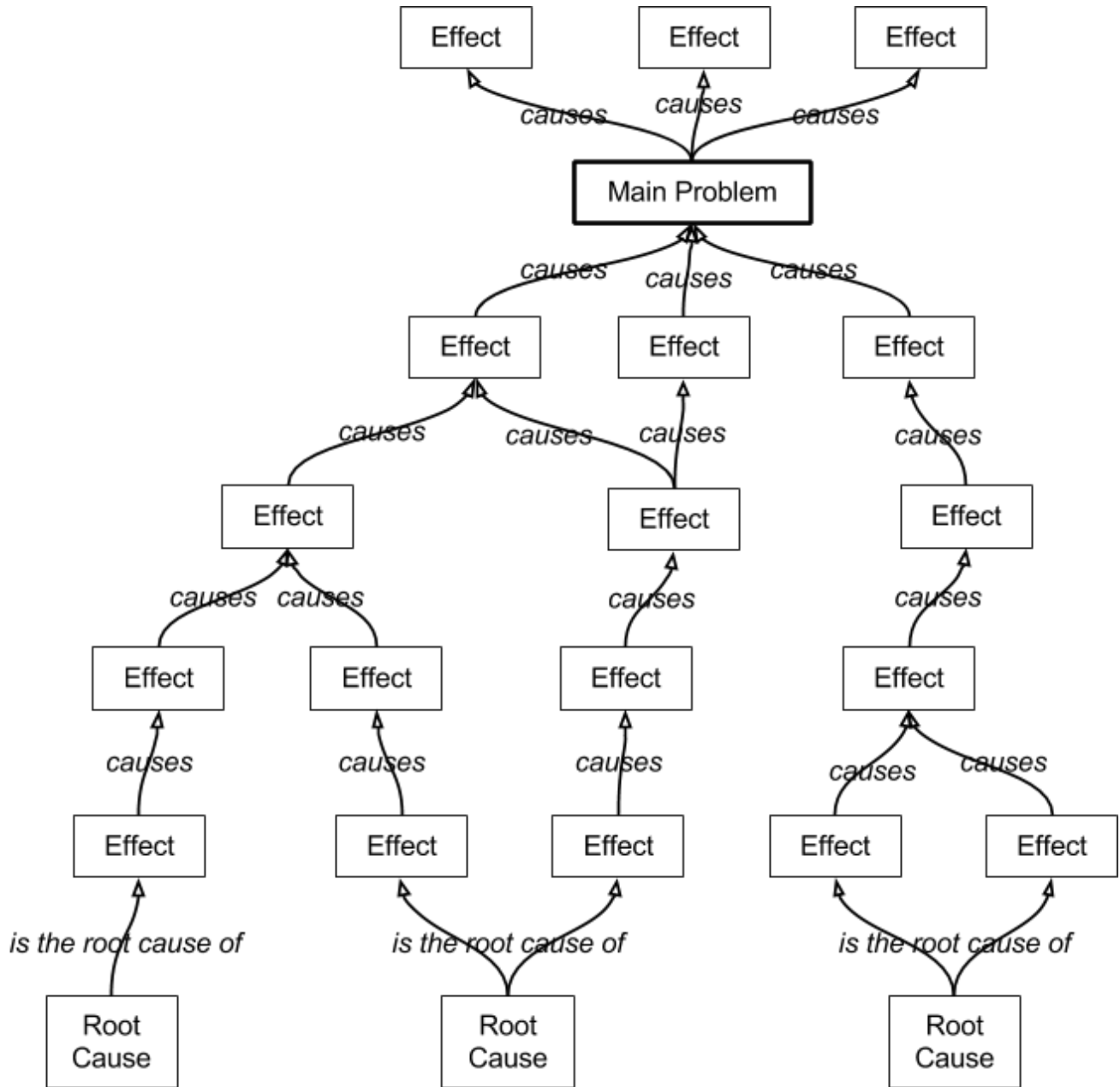
**Cause-Effect Tree using Five WHYs**

| Effect | Effect | | Effect | Effect | Effect |

Effect                          Effect

**Core Issue**

WHY?

WHY?    Cause          Cause              Cause

WHY?    Cause   Cause   Cause   Cause   Cause   Cause   Cause

WHY?        Cause    Cause    Cause        Cause   Cause   Cause   Cause

WHY?    Cause    Cause      Cause      Cause   Cause    Cause    Cause

WHY?            **Root Cause**              **Root Cause**

Effect of the Main Problem

Effect of the Main Problem

Effect of the Main Problem

Secondary Effect of the Main Problem

**Main Problem**

Cause of that?

Cause of that?

Cause of that?

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Cause of that?

ROOT CAUSE?

ROOT CAUSE?

ROOT CAUSE?

ROOT CAUSE?

ROOT CAUSE?

ROOT CAUSE?