Are you working on the superficial or the fundamental layer?

Here's one way to tell. If your solutions are continually failing, even after successive generations of solutions have been tried for decades, then you're working on the superficial layer.

There's another way to tell. Since the hardest part of analysis is finding the correct root causes, the System Improvement Process employs a formal definition. The **Five Requirements of a Root Cause** are:

1. *It is clearly a (or the) major cause of the symptoms.*
2. *It has no worthwhile deeper cause.*
3. *It can be resolved.*
4. *Its resolution will not create other equal or bigger problems.*
5. *There is no better root cause.*

This checklist allows numerous unproductive or pseudo root causes to be quickly eliminated.

If your solutions don't resolve root causes that pass this checklist, then you and your organization are working on the superficial layer.

Solutions are best called root cause resolvers. How will that change the way you think and work?

Why not count the camel's teeth?

There's no need for environmentalists to pound away at the sustainability problem for over forty years with such meager results. All we have to do is "count the camel's teeth." The proverb is based on an old tale that goes something like this:

Centuries ago, somewhere in the deserts of North Africa, a tent full of wise old Arab philosophers were pondering weighty subjects. After hours of debate the question of HOW MANY TEETH A CAMEL HAD came up. Some felt it had this many. Others felt it had that many. Plausible, clever theories were put fourth why each argument had to be true. Heads nodded after each opinion was presented, until yet another was put forth supporting another opinion.

There was no agreement. After hours of debate a younger philosopher remembered that outside the tent were the camels they all rode to get there. Just as one of those camels poked his head inside a flap in the tent's wall and starting grinning, the young man shouted in exasperation "WHY DON'T WE JUST COUNT THE CAMEL'S TEETH?"

All talk stopped. All eyes spun around and stared at the camel. His big grinning mouth had the answer.

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an analytical approach

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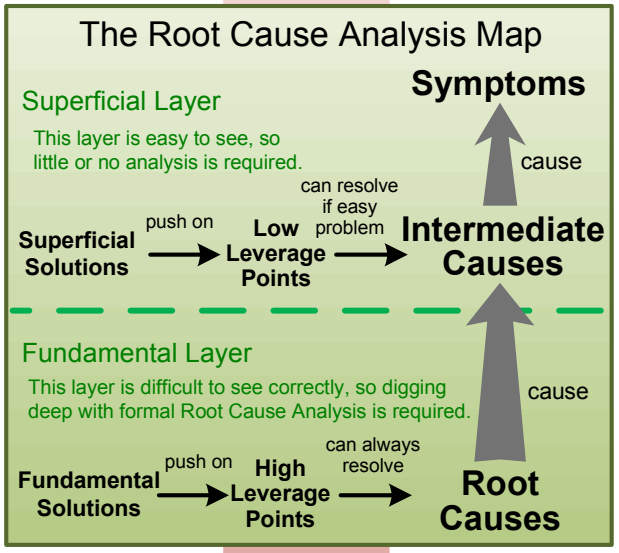
Why Is Root Cause Analysis So Effective?

Because it moves your work from the superficial layer to the fundamental layer, as explained below:



Moving to the fundamental layer works because **difficult problems cannot be solved unless your work generates fundamental solutions that resolve known root causes.**

So how can we make working on the fundamental layer as easy as cooking a fine French soufflé?

We can wrap Root Cause Analysis with a process that fits the problem.

This Thwink.org has done. The System Improvement Process (SIP) was designed from scratch to solve difficult large-scale social system problems using Root Cause Analysis. **The process was iteratively improved over a seven year period as we applied SIP to the sustainability problem.** Every time we hit a brick wall we stopped, improved the process, and continued on. Continuous process improvement is what brought SIP to where it is today.

SIP is **a fill-in-the-blanks framework** that guides you to finding and resolving root causes. The process forces you to ask the right questions at each fork in the road on the long journey from problem discovery to solution. This is not easy, so the process employs several advanced techniques as explained in the diagram.

The key to SIP's effectiveness is **the way it breaks the problem** down to its component parts and then builds it back up into a cohesive whole that can now be understood. That understanding leads to solutions that work.

1. Clarify the Problem

First we define the problem using this standard format: **Move system I under constraints J from present state K to goal state L by deadline M with confidence level N.** This greatly clarifies the problem and moves us right into a systems engineering mindset.

Divide and Conquer

Next comes the master stroke. We divide and conquer.
The one big monster of a problem is divided into **the three subproblems present in all difficult large social problems.** These are:

A. How to overcome change resistance
B. How to achieve proper coupling
C. How to avoid excessive solution model drift

This way we're not trying to solve all three subproblems simultaneously without realizing it. This decomposition can change a problem from insolvable to solvable. The right decomposition is how countless fields of science (as well as business) have solved their toughest problems.

The System Improvement Process (SIP)

1. Problem Definition		**The System Improvement Process (SIP)**		
Subproblems		**A. Change Resistance**	**B. Proper Coupling**	**C. Model Drift**
2. Analysis Spend about 80% of your time here. The problem solving battle is won or lost in this step, so take the time to get the analysis right.	a	Find the immediate cause of the problem symptoms in terms of the system's dominant feedback loops.		
	b	Find the intermediate causes, low leverage points, and symptomatic solutions.		
	c	Find the **root causes** of why the loops in A are dominant.		
	d	Find the feedback loops that should be dominant to resolve the root causes.		
	e	Find the **high leverage points** to make those loops go dominant.		
3. Solution Convergence				
4. Implementation				
Continuous Process Improvement – The foundation of the entire process				

2. Strike at the Root

Each subproblem is analyzed to find its critical structural factors. This centers on modeling the feedback loop structure of the systems involved. Five substeps are used to methodically inspect the system with the problem and identify the critical factors, especially the root causes.

This is the heart of SIP. **Feedback loops are the most powerful forces in the universe.** The important behavior of a system arises from its dominant feedback loops, so understanding these loops is essential to understanding the system.

3. Resolve the Root Causes

Only after analysis is complete do we begin formulating solutions. Each high leverage point is a high level solution *strategy* at the macro level. In Solution Convergence we converge on *tactical* solution elements by **searching the solution space for solutions capable of pushing on a high leverage point in order to resolve its related root cause.** This goes quickly and correctly because while there are millions of plausible solutions to problems like sustainability, there are only a few for each high leverage point.

4. Solve It the First Time

Finally, after root cause resolutions (solution elements) and the analysis behind them have been tested for all key assumptions, implementation begins. What formerly was the hardest step of all, due to constant struggling with solutions that don't work, now becomes the easiest. **If you know what the root causes are, your solutions can *work the first time* because each solution element is aimed at resolving a specific known root cause.** It's a whole new way of thwinking!

Study the Actual System

Notice what we did here. Rather than study the literature, consult the experts, or brainstorm solutions, **we studied the actual system**. This is known in the Arab culture as "count the camel's teeth."

This of course works only if you have a process that fits the problem. Or a camel.