

# The Problem with Root Cause Analysis

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## Abstract

*An 800 person forum comprised of Root Cause Analysis (RCA) practitioners from all over the world tried to define “Root Cause Analysis.” They could not agree on an answer. A smaller group was formed, composed in part by at least 5 major RCA consultants. They could not agree either. Several major Professional Societies have tried to define root cause analysis with the same results – disagreement!*

*Each person, consultant, or organization will define “Root Cause Analysis” differently, because the depth pursued in an RCA is dependent on what the inquirer is willing to see. When a person only wants to understand the physical mechanisms of their problems, or to only see problems in their “Management Systems,” that is all they will see. RCA has become whatever people want it to be.*

*This is the problem with Root Cause Analysis. It means different things to different industries – even different things within the same industries. It is even difficult to find consistency within the same companies, or even sites within a company! It almost seems as if we’ve created an endeavor (called Root Cause Analysis) that does everything but look at “root cause!”*

*We are the root cause of our problems – each of us and all of us. We always have been and we always will be. Our attitudes, beliefs, and assumptions about life cause us to behave in errant ways. Things that go wrong are the only phenomena that prompt us to reconsider these kinds of things. Unfortunately however, it seems that most Root Cause Analysis (RCA) methods encourage people to look at just about everything besides themselves.*

*This paper will describe an effective, proven way to help people see themselves as part of their problems. It is opposite to the blaming and finger-pointing of the past, because instead of telling people their problems, this technique will describe how to help people discover their own role in things that go wrong. It is an introspective, evidence-based exercise that is life-changing to those who are willing to participate.*

## INTRODUCTION

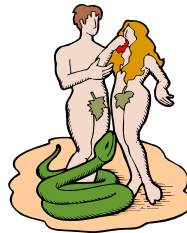
There are many “Root Cause Analysis” methods, procedures, and approaches on the market today. None of these methods define “root causes.” They say they do, but they do not.

The people that develop Root Cause Analysis methods, as well as those who practice these methods, have confused one another. No-one can agree on “what is a root cause,” and yet most people say they’re defining “root causes.” Saying it differently, everyone says they do “Root Cause Analysis” these days, and yet everyone is doing something different. Think about it... hundreds of thousands of people all over the world are doing “Root Cause Analysis,” with few people having the same understanding of what it is. Few other pursuits in life exhibit such a variation in understanding.

The phrase “Root Cause Analysis” has become problematical.

## THE PROBLEM WITH ROOT CAUSE ANALYSIS

Although the general pursuit of a “root cause understanding” seems ultimately worthy, business people do not appear to want to pursue this understanding. This might be because when they pursue “the cause of the cause of the cause of the cause...” they quickly find themselves addressing things that appear to be outside their control. Inquiries of this sort begin to question “how Joe was raised as a child.” Even more, the way Joe’s parents and then grandparents were raised can easily become “causal factors,” as well as many other cultural and societal issues of each age. This “cause of the cause...” pursuit appears to be never-ending, and in-the-limit would seem to take an investigation back to “the beginning of time” (literally).



Because we do not intend to trace our problems to “the beginning of time”, we choose other ending-points for our inquiries. Even more, we choose what kinds of things to look for, and by default, what kinds of things to ignore. Each Root Cause Analysis consulting company has chosen to pursue different kinds of issues, in different ways – each of them calling their product “Root Cause Analysis.”

Companies hire these consultants to train their people in “Root Cause Analysis.” Typically, after being trained, most companies “pick and choose” what they want to embrace (from amongst the consultants advice). Everyone involved, from the consultant, to the trained company, to the individuals within the trained companies have made choices: “this is the depth I’m willing to probe; these are the kinds of things I’m willing to ask; this is how far I’m

willing to take the inquiry.” **Hundreds of thousands of people all over the world are doing “Root Cause Analysis,” based on millions of limiting choices – splintering, diluting, and confounding the endeavor called “Root Cause Analysis.”** A few years ago an 850 member web-based forum, with Root Cause Analysis professionals from all over the world, tried to define “what is Root Cause Analysis.” They could not come to a consensus! Everyone is doing Root Cause Analysis, yet no-one agrees on what it is.

This present situation is absurd (at best), and deadly (at worst).

### A POTENTIALLY DEADLY SITUATION

In today’s world, where most people are going as fast as they can, few people spend much time thinking about “why things go wrong.” When people are forced to start doing root cause analysis (usually because of governmental mandates), they try to fit it into everything else they are already doing. Typically, people search the internet or talk to contacts in other companies to find a quick way to fulfill this requirement. They find various offerings of Root Cause Analysis, each suggesting something different – none of them addressing “root cause.” They pick something they like (from amongst all the offerings), then start doing their Root Cause Analyses.

But when the people who’ve given little thought to this think they have arrived at a “root cause” understanding of something (consciously or subconsciously), they naturally stop their inquiry. In our fast-paced world, this has caused many people to have been lulled into a false sense of security. They think they have understood the root of their problems, but they have not. Suddenly and unexpectedly ugly, even deadly problems continue to emerge, all caused by unacknowledged and underlying issues that were hiding behind the cloak named “Root Cause Analysis.” Because of this, **it could even be said that the endeavor we call “Root Cause Analysis” has become one of the causes of our problems.** The repetitive misuse of the phrase has lulled hundreds of thousands of people into believing that they actually have a “root” understanding of something, when they’ve only scratched the surface.

### CLOUDED IN UNNECESSARY COMPLEXITIES



Think about the “root cause analysis methods that exist today,” and what it takes to be able to use them proficiently. Does it really require days and days of training to “learn from things that go wrong?” If so, shouldn’t we be sending our spouses and children to “root cause analysis” classes to help them learn from their problems? What about the billions of people

who have lived since the beginning of time who never learned root cause analysis? How did they survive?

The reader might respond: *“It is not appropriate to compare the billions of people who have lived since the beginning of time to today’s human societies. We did not have complex, highly hazardous processes capable of instantly destroying significant numbers of human beings until recently. These days, therefore, we are almost forced to understand why things go wrong to a much deeper level than ever before.”*

Although this might be true, it is disturbing to see what many people are doing to “understand why things go wrong to a much deeper level than ever before.” Our complex systems seem to be the starting and ending point of our inquiries. Many investigative methods compare the state of things after an event to the way things were designed to have been. For example, if barriers were designed into a facility to deflect unintended releases of energy, “let’s check the condition of the barrier in our root cause analyses.” If procedures were developed as part of the design process, “let’s check to make sure people followed the procedures.” When investigative methods use the “system” as their starting point and ending-point, they will be as complex (or as simple) as the system they are investigating.

Something is wrong with this kind of investigative method – seriously wrong. What if the causes of the problem have nothing whatsoever to do with the system?

One person said: *“Having to restrict myself to finding flaws in the “system” reminds me of the board game called “Life.” The underlying assumption of the game is that a person has to go to college to be successful, which is not true. The same thing happens with investigative methods that force us to look for system-related causes! What if the causes are not system-related?”*

It is the premise of this paper that above paragraph is severely understated. Whereas the person asked “*what if the causes are not system-related,*” the author suggests “*the root causes of our problems are never system-related!*”

### HUMAN BEINGS CAUSE PROBLEMS, NOT SYSTEMS

We are the root causes of our problems. We always have been and we always will be. The common thread, even when pursuing the causes of the causes back to the beginning of time, is people. Whether addressing “the way Joe was raised as a child,” or “the way Joe’s parents raised him,” or any of the “cultural” or “societal” influences, the common thread is people.

People cause problems, not systems. Even more, it’s the same kinds of people-issues that caused “yesterday’s problems” that will cause “tomorrow’s problems.” The only constant factor throughout human history is humanity – and we’re the same today as we were yesterday.

Therefore, in the midst of trying to learn from things that go wrong there is something fundamentally wrong when we avoid looking at ourselves. Yet think of all the investigative methods in existence today. Most (if not all) seem to intentionally side-step people. How often have we heard “it’s not people that cause problems, it’s our systems.”

Think about where this kind of thinking takes us. If we think it is not people that cause problems, but rather our systems – and if our systems are becoming more and more complex – then identifying the causes of our problems will also be a complex endeavor. The corresponding investigative processes will consume a lot of manpower and energy, focusing people on the intricacies of their systems, slowly but surely insulating them from the real causes of their problems – themselves! It’s like being wound inside of a ball of yarn, impossible to escape.



The situation is so serious that it could be said that any investigative method that discourages people from looking at themselves is in itself a significant cause of our problems.

### HELPING PEOPLE TO SEE THEMSELVES AS PART OF THE PROBLEM

It is time to reorient our investigative methods – to intentionally, even aggressively creep out of the ball of yarn that obstructs our understanding. Instead of side-stepping people, we ought to be focusing on people. This does not mean, however, a return to “the blame game.”

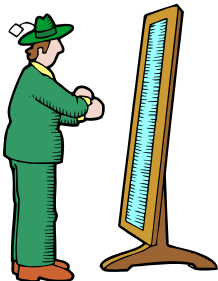
On the contrary! Imagine a world where everyone looked at themselves rather than pointing fingers at others people and things. This is introspection, not blame. Our RCA efforts ought to encourage, even require, introspection.

One of the most frustrating findings of formal Root Cause Analyses is that many of the underlying causes of major incidents are known **AHEAD OF TIME**. Warning signs almost always precede major incidents, but are neglected. Frustrating equipment, people, and systems are usually recognized, but often ignored until they result in disaster.

It is people that ignore and neglect these problems. In the limit, people cause problems – ALL people. We either do things we should not have done or neglect to do things we should have done. Although most people easily see these qualities in other people, it is rare to find individuals who

can see their own role in things that go wrong.

Along these lines, a method has been discovered to help people see themselves as part of a problem. It is a very simple method – one that can be used at home and at work. The method requires people to consider one fundamental question:



*What is it about the way I am that contributed to this event?*

In a home situation, the above question is usually all that is necessary. In a work situation, a bit more preparation is usually required to get the desired results.

If an undesired event occurs at work, and if it is being investigated using RCA, the following foundation is usually set prior to asking the fundamental question:

1. A list of “stakeholders” is identified (based on the facts of the investigation). Stakeholders are people whose behavior ought to change as a result of an incident.
2. The stakeholders are all gathered into a room at (at the same time).
3. The following statements are made to the stakeholders:

*You are about to experience a process that might cause you to lose some sleep.*

*Losing sleep (if we’ve caused you to think about some important issues) is good.*

*In order for this process to work we ask two things of you in the next few hours:*

*...that you be willing to see yourself as part of the problem.*

*...that you try to understand one another’s actions to such an extent that are convinced you’d have done the same thing.*

4. After discussing the above statements, a summary of key facts is presented to these stakeholders.
5. After presenting the facts, the stakeholders are asked to answer the question: *What is it about the way you are that contributed to this event?*

Important: The stakeholders must answer this question themselves, one at a time.

Although this is a very simple process, it will generate a lot of stimulating dialogue.

*Note: The facilitator of this dialogue must be strong, compassionate, and yet insistent on making things visible.*

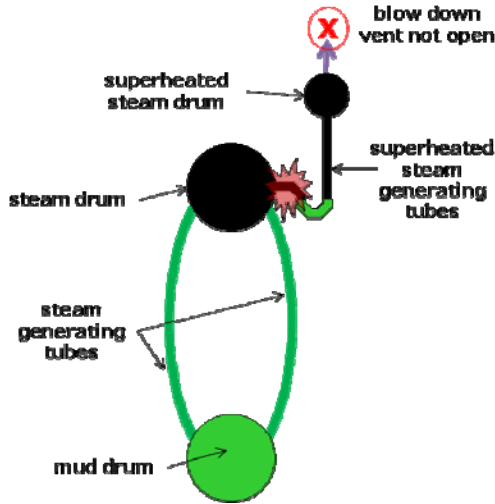
### EXAMPLE

Several years ago, a refinery experienced a partial plant shutdown due to a sudden drop in steam supply.

As one boiler was being taken off line (for scheduled maintenance), another boiler was being started-up (after being maintained). While this boiler was heating-up, several boiler tubes burst. The boiler had to be immediately shut down, forcing the concurrent shutdown of several refinery units.

The investigation almost immediately revealed that it was some of the superheated steam generating tubes that had ruptured as the boiler was being heated-up. Further investigation found that the blow down vent on the super heater

drum was not open during startup, as required in the startup procedures.



Since the blow down vent was not open, water in the low spots of the superheated steam generating tubes could not flash-off as intended – thereby blocking normal steam flow through those tubes. Hot spots developed in those tubes, which then burst under normal pressure.

The rumor floating around during the investigation was that the incident occurred because “operations did not open the blow-down vent.”

It is misleading, however, to say that “operations” did not open the blow down vent. This implies that the whole operations department was supposed to have simultaneously joined hands to open the vent. This, of course, is ridiculous. It was not “operations” that “didn’t do it.” The investigation revealed that it was one specific operator that failed to open the vent.

Specific, individual people cause problems.

The investigation, therefore, began by focusing on this one particular individual to understand why he did what he did.

### UNDERSTAND THE TRIGGERING SITUATION

*Note: the following sections are based on the Situation-Filter-Outcome Model™. Briefly, this model understands “life” as a series of situations that present themselves to us on a daily basis. We each “see” these situations through our personal “filters.” Our behavior (the outcome) is dependent upon the condition of our filters. More information about the S-F-O™ Model can be found in the references.*

People do things in response to situations. Every action (or inaction) is a result of a situation that presents itself to someone. Even boredom is a situation that triggers behavior. All of life is situational.

When trying to understand why people do what they do, it is imperative to understand the triggering situation, i.e., the circumstances surrounding the decision-point. The best way to understand these circumstances is to ask the person involved in the incident.

It is vitally important that all the stakeholders hear and understand these circumstances.

There were 9 stakeholders in this exercise: the Operator, a 2<sup>nd</sup> Operator, a Union Representative, two Foremen, the Training Supervisor, the Plant Engineer that worked in Utilities, the Manager of Utilities, and the Refinery Manager. The following dialogue took place in the presence of all these stakeholders.

Although the Lead Investigator knew what the Operator would say (through extensive interviewing ahead of time), his job was to make sure the information was re-presented in front of (and in the midst of) all the other stakeholders.

*Note #1: as you read the following dialogue, be assured that this is a true story.*

*Note #2: Underlying each of the following comments was extensive dialogue. After each section of the dialogue, a summary was written on flip chart paper. You are about to read what was written on the flip charts.*

Lead Investigator (in the presence of all the stakeholders):

*Is it true that you are the person that did not open the blow down vent?*

Operator:

*Yes.*

Lead Investigator:

*Could you tell us the circumstances surrounding your decision not to open the vent?*

Operator (said in the presence of all the stakeholders):

*I arrived at work at 7:00 AM. I was sitting in the break area waiting for my assignment. I’m new in this refinery – I’ve been here for 4 weeks – and this is how I get my daily assignment.*

*My assignments are new every day. They put me in different areas to help me get experience throughout the refinery. Each of my assignments has been temporary.*

*Like I said, I’ve only been here 4 weeks. Prior to this job I used to work at Wal-Mart. Prior to that, I used to work in the fast-food restaurants. I applied for this job because I wanted more out of life than working at Wal-Mart.*

*The foreman did not give me my assignment until 8:45 AM. I usually get my assignment at about 7:30 AM. When he finally gave me the assignment, he told me to report to the “Area A” foreman.*

*When I arrived in Area A, the foreman was mad because I was “late.” He yelled at me and, pointing to the top of the boiler said “get up there and blow down those tubes.”*

Lead Investigator:

*How old are you?*

Operator:

*22 years old.*

Lead Investigator:

*Are you a certified boiler operator?*

Operator:

*No!*

## NEXT UNDERSTAND THE THOUGHTS THAT CAUSED THE BEHAVIOR



Human beings cause all of our problems. We behave inappropriately. But our behavior is caused by our thoughts. There are no exceptions. Every word spoken, and every action taken are caused by our thoughts. It is imperative, therefore, to understand the thoughts that caused the problem. Our thoughts cause our behavior.

Lead Investigator:

*Do you remember the thoughts that went through your mind when he told you to “blow down those tubes?”*

Operator (thoughts are underlined):

*Yes. I remember thinking that the rumors I’d been hearing were true. You see, everyone complains about this foreman. They say he’s difficult to work with. When I got to Area A and the foreman saw me, the first thing he said was: “Where in the #X!!%\$\$ have you been? You were supposed to be here at 8:00 AM. The boiler is already being fired-up.” So he pointed his finger to the top of the boiler and shouted: “Get your butt up there and blow down those super heaters.” He scared me.*

*Then, I remembered thinking that I’d better do what I’m told. But I didn’t know what he meant. I remember thinking “what does he mean by blowing down those tubes?”*

*I found another operator and asked him how to do it. He told me, but could not go with me. He was busy doing something else.*

*I went to the top of the super heated steam drum. It was already hot up there. I heard crackling noises and metallic noises like my radiators sound in my home when they are heating up. I remember feeling scared.*

*I climbed the ladder to the top of the super heated steam drum. There was small platform to stand on (2 feet by 2 feet). I remember thinking: “There’s no room on this small platform. I’m going to get boiling water all over me if I try to do this!”*

*Then I remember thinking: “This is probably just busy work, like the other work I’ve been doing around here.”*

Lead Investigator:

*What do you mean? What kind of work have you been doing since you were hired 4 weeks ago?*

Operator:

*I’ve been sweeping floors, taking out trash, washing blackboards, and other housekeeping chores.*

Lead Investigator:

*What did you decide to do in response to these thoughts?*

Operator:

*I decided not to blow down the tubes, and I didn’t tell anyone because I was scared. I just didn’t think it mattered!*

Lead Investigator:

*In retrospect, what do you think you should have done?*

Operator (after much dialogue):

*I should have told the foreman that I didn’t know how to do it. I should have insisted on more guidance.*

## ASK EACH PERSON THE FUNDAMENTAL QUESTION

Lead Investigator:

*Thank you very much for sharing all of this, but now I’m going to ask you our fundamental question. Looking back at this, what is it about the way you are that contributed to this event?*

Operator:

*I am overly timid.*

*I don’t like to ask questions because I don’t want to look stupid.*

Lead Investigator:

*Thank you for admitting this.*

It is important to remember that all of the stakeholders were present when the above dialogue occurred. Discussion and debate was encouraged (and occurred). After hearing the dilemma of the Operator in the above example, attention turned to the other stakeholders.

One at a time, each of these stakeholders were asked the fundamental question. For the sake of brevity, this paper will only review the Area A Foreman’s response, as well as the Plant Manager’s response.

Lead Investigator:

*We’ve all heard the situation presented to this Operator, as well as his thoughts that lead to his actions. You’ve challenged just about everything he said, but after hearing all the evidence you have all agreed that everything we’ve written on our flip charts is true.*

*So now let’s turn to the Area A Foreman.*

*Sir, after hearing everyone’s comments, what is it about the way you are that contributed to this event?*

Area A Foreman (after much discussion):

*I scare some of my operators.*

*I assume that people assigned to my area are qualified to operate my equipment.*

*I do not pay enough attention to new people coming into my area.*

*I generally do not ask people if they have any questions. I assume they'll ask me if they don't know something.*

It is important to reflect on the power of the above statements. We did not tell the Foreman that these traits were true. The Foreman told us that these traits were true. In other words, the Foreman “confessed” his faults in front of all the stakeholders, just as the Operator confessed his faults.

One at a time, each stakeholder was asked the same question, i.e., “what is it about the way you are that contributed to this event?” As each person participated, starting with the Operator, continuing with the Area A Foreman, momentum built-up. It became easier and easier for each stakeholder to talk about “the way they are.” Their answers became more and more revealing.

The final person that was confronted was the Plant Manager, who was also identified as a stakeholder.

Lead Investigator:

*By now, Mr. Plant Manager, you know the question I will ask: What is it about the way you are that contributed to this event?*

Plant Manager:

*I turn my head with some of our supervisors who lack interpersonal skills.*

*I know that we sometimes put people in positions where they don't know how to perform, and I haven't done anything about it.*

*I have not allowed time for highlighting problems that might have become invisible to us.*

*I have not paid enough attention to our training philosophies.*

## **THE INTENT OF AN RCA OUGHT TO BE TO CHANGE THE WAY PEOPLE THINK**

At the end of this process, the stakeholders agreed on a few action items that they thought were appropriate. But the

end objective of this process should not be action items! Instead, the objective of any probe into something that has gone wrong should be to change people – to help them see themselves as part of the problem – to help them change the way they think about things – to help them change the way they are.

Of course, there is no guarantee that anyone will suddenly and irrevocably change as a result of this process. On the contrary, it takes a long time for people to see themselves as part of their problems when they've become so accustomed to blaming everything else.

It is a drip-by-drip process – one that has no chance of working until people start going down this path. Eventually, however, healthy people will connect the dots – see their own role in things that go wrong – and do whatever they need to make the necessary changes.

## **IN SUMMARY**

There is a problem with Root Cause Analysis these days. The problem is that it focuses on everything except “root cause.” We are the root causes of our problems. It is not our equipment or our systems, nor our society or culture. We, each of us – all of us – are the root causes of our problems.

This does not mean we should return to the practice of blaming one another for things that go wrong. On the contrary, our Root Cause Analysis should help one another be introspective.

Imagine a world where everyone would look at themselves rather than pointing fingers at others. Really! Try to imagine it.

## **REFERENCES**

- [1] The Holy Bible, Matthew 7:5, “You hypocrite, first take the log out of your own eye, and then you will see clearly to take the speck out of your brother's eye”
- [2] More about the Situation-Filter-Outcome Model™: [The Latent Causes of Industrial Failures – How To Identify Them and What To Do About Them](#)