THE WAY OF THE QUALITY WARRIOR

ASQ 1401 GREATER EL PASO MEMBER MEETING FEBRUARY 16, 2021 KEITH FONG, SS MBB

Presentation title: "The Way of the Quality Warrior"

Venue: Zoom meeting, American Society for Quality Section 1401 Greater El Paso

section member meeting Date: February 16, 2021

Time: 6:30PM

Presenter: Keith Fong

Keith Fong is certified as a Six Sigma Master Black Belt, Shainin Red X Master, and Robust Engineering Coach. He worked for a Tier 1 Automotive supplier where he started as a product design engineer. He became a continuous improvement specialist where he dedicated 20 years to leading, teaching, and coaching continuous improvement. He is 2021 chair of the the Greater El Paso Section 1401 of the American Society for Quality.

BENEFITS FOR YOU Different perspective and ideas about Quality Useful models for implementing Quality concepts Ideas to make you more effective

The goal of the presentation is to provide these benefits.

AGENDA

- Quality
- II. Roles
- III. Mind
- IV. Situation
- V. Strategy
- VI. Skill

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The presentation is broken into six sections.

Section 1 is about defining quality

Section 2 is about the roles of the quality department and individuals in quality

Section 3 is about virtues, attitudes, and spirit

Section 4 is about situations the Quality Warrior faces

Section 5 is a very brief look at strategies for understanding

Section 6 is about essential skills and practices



Quality is Goodness

The Expected is transparent

The Unexpected is delightful

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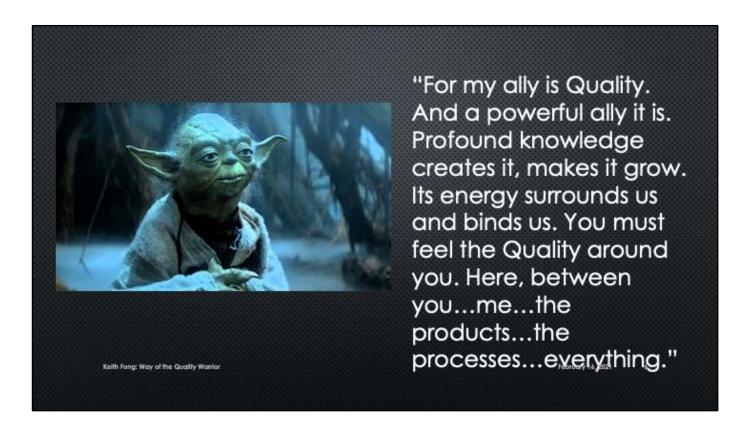
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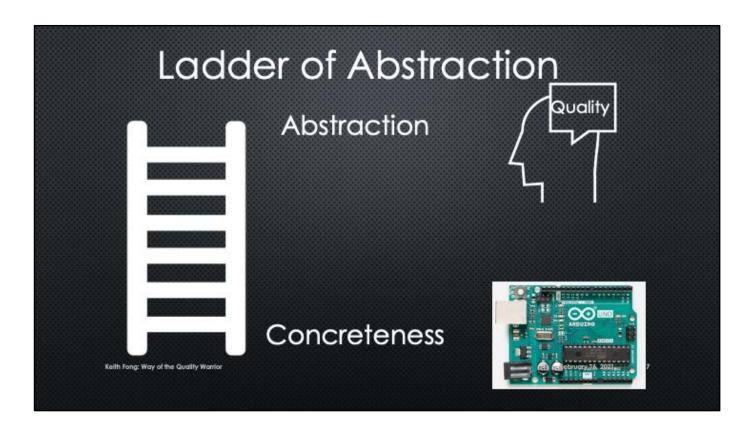
Quality is about how good something is, whether it is a service, a product, or an experience.

What the customer expects should be transparent. For example, when you flip a light switch, the light turns on as you expect. You do not think about whether it may or may not light. In contrast, if your mobile phone fails to connect regularly, you may adapt your behaviors to accommodate the phone and it is not transparent.

For things that occur that are unexpected, quality means that they will be delightful. For example, you are at a restaurant and you order a meal and you get dessert even though you weren't expecting it. On the other hand, perhaps you ordered a product and when you receive it, you discover it is lacking essential components that should have been included. That is dissatisfying.



When Yoda is instructing Luke Skywalker on Dagoba in the Star Wars movie "The Empire Strikes Back" about the Force, he's really giving a lesson about quality.



One of the challenges about quality is that it is an abstract idea. The more abstract a concept is, the more it's meaning is tied to the individual's perspective, experience, beliefs, and expectations.

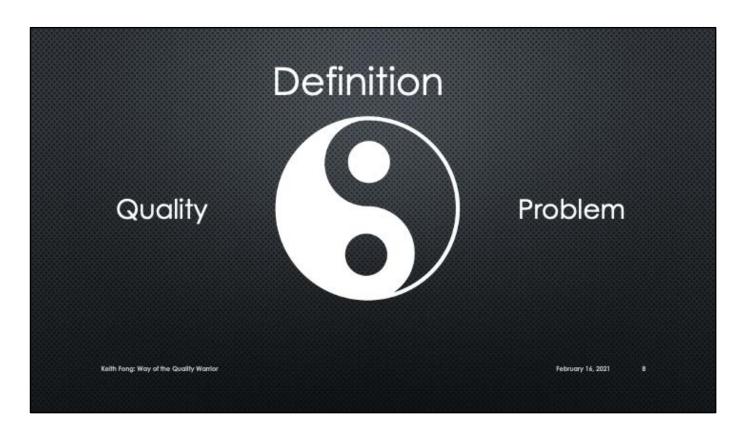
An useful model is the "Ladder of Abstraction." When we talk about creating, monitoring, and improving quality, we have to move up and down this ladder. Here, the bottom of the ladder represents "concreteness." Something is physically existing. For quality, that can be physical dimensions of a part, the actual interaction between a patient and a caregiver. At the top of the ladder is the idea, the experiences.

Another way to think about this is quantitative requirements are near the bottom of the ladder. The qualitative customer expectations (satisfaction) are at the top. They are not separate—they're both on the ladder.

Ladder of Abstraction (from "Language in Thought and Action" by S.I. Hayakawa) Example from concrete to abstract: Atoms and molecules that make up a cow, cow named Bessie, cows, livestock, farm assets, assets, wealth.

Other examples (from sixminutes.dlugan.com): PB&J sandwich—food—nutrition; Samsung Galaxy phone—smartphone—web device; you—citizen of your town/country—society

Here: Arduino – electronic device – functions – quality



To define quality, I think you have to see it in the context of its opposite, a problem. You can't know joy without sadness, light without dark, or life without death. The yin and the yang give us the chance to define quality in a general/universal way that applies to our current world where we sell products, processes, and experiences.

If you think of definitions of quality from the giants in the 20th century, they seem focused on physical objects and products. For example, Joseph Juran said quality is "fitness for use." Philip Crosby defined it as "conformance to requirements." Those are not wrong, but I don't think their complete. In the 21st century, so much of the economic activity is not in physical goods, but in services, information, and experiences. We need a definition that works for that.

Definition

Problem: The extent that reality does not satisfy customer expectations

Quality: The extent that reality fulfills customer expectations

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This definition for problem highlights that customer expectations are not satisfied, they're unmet. The greater the difference between expectations and the reality the customer experiences, the greater the dissatisfaction.

The definition for quality is about fulfilling expectations.

The yin and yang here is: dissatisfaction—fulfillment.

For a quality organization, this highlights the demand for Voice of the Customer knowledge. It should be noted that customers often cannot articulate what they really want. They'll tend to ask for more and better of what they already know. Customers may not know what your organization is capable of or where the state of the art is going.

At the time of the introduction of the Apple iPhone, the Blackberry phone was dominant and its physical keyboard was believed to be a critical feature. While texting remains a commonly used function, physical keyboard input wasn't a required feature—the virtual keyboard brought greater screen area which improved the other functions on the phone. Blackberry's dominance in the phone marketplace evaporated and Apple grew enormously on the sales and profit of the iPhone.



Expectations are changing—they are constantly increasing. The Kano Model speaks to that—when someone experiences something better, that becomes their new expectation. Expectations are influenced by your product or service, the product or service of your competitors, and by the customers experiences with other, unrelated interactions they have.

Shown here are televisions. The Sony Trinitron television was known for its picture quality—it was top of the line in the 1990s. Now, Sony produces the Bravia model flat screen television with 27x the resolution, greater image quality, sound transmitted through the screen, voice control, the ability to connect to the internet, and more energy efficient.

Beyond the products within a company, there are experiences with other companies so, for example, a person's experience with Amazon.com could influence their expectations of their experience with their mobile phone service provider and their car insurance provider.

Increased expectations are opportunities for the Quality Warrior

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Increased expectations are opportunities for the Quality Warrior because the advanced abilities and skills we have are more valuable to achieve the increased customer expectations. "Working harder" isn't going to attain the levels of quality that customers are expecting now and in the future.





When you think about most functions that in large companies are in separate departments (though in small companies these functions are often combined), most people will describe the same basic function for the department. We all can agree that the "Sales" department is trying to sell our service or product. Security is protecting the facility, goods, and, perhaps, IT infrastructure. Housekeeping cleans the facility. Shipping delivers our products.

What does the Quality department (whether it's "Quality," "Supplier Quality," "Advance Quality," etc.) do?

The Quality Department does not create quality

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I think we can agree that the quality department does not create quality. The function of the department is not obvious.

Quality departments commonly produce a lot of documentation, but what is the purpose?

ONCE UPON A TIME...



Students: Product Test Lab technicians (New hires to 10+ years of experience)

What is the key function of your job?

Consensus answer: "Pass parts"

What could go wrong?

My answer: Generate reliable, meaningful, timely data

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I was giving a Measurement System Analysis class to a group of Product Test Lab technicians. The group had new hires to technicians with more than 10 years of experience. The labs are a part of a technical center and test new products under development as well as samples from the manufacturing plants and returns from customers.

I posed the question to the class: What is the key function of your job?

The consensus answer was "pass parts."

What could possibly go wrong if you believe your key function is to "pass parts?"

What do you do when your job is to pass parts? If part fails, do you retest until it passes? Do you adjust the measurement system so that the parts pass?

Once, the prototype assembly team reversed the electrical leads on a batch of sensors. All of the sensors failed the function test. The test lab technicians realized the leads were reversed so they reversed the connections in the test stand. Now all of the sensors passed the test. The sensors were shipped to the OEM where they all failed. OEM team was unhappy. However, the test technicians accomplished what they thought was their key function, passing parts.

I say their job is to generate reliable, meaningful, timely data. It's the product design engineer's responsibility to design a product that is capable of satisfying customer expectations, expectations that should be assessed by the test team. If the product parts can't pass the tests, then the product design engineer needs reliable, meaningful, and timely data to revise the design.

This leads to what I believe is the true function of the quality department (on the next slide).

ROLE OF QUALITY DEPARTMENT

What is the role of a Quality group in an organization?

The primary role of a Quality group is to **reveal** the true state of products, processes, and the business.

The secondary role of a Quality group is to **improve** the true state of products, processes, and the business.



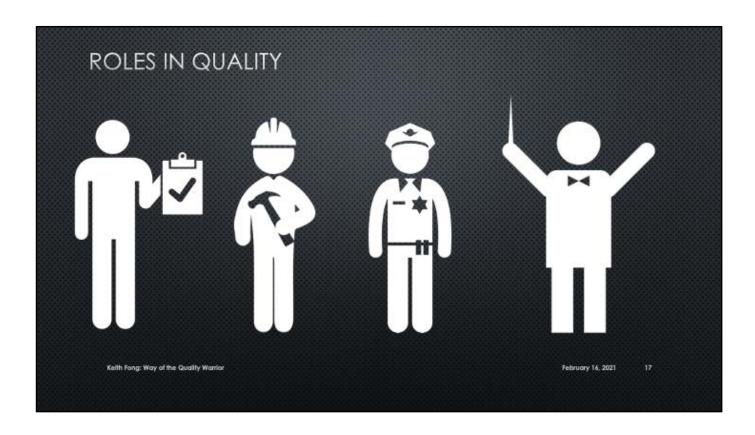
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I think that a quality department's primary role is to reveal the true state of the products, processes, and business. The secondary role is to improve them. Quality professionals should be more skilled tools and methods for revealing the state of the business—essentially they have x-ray vision.

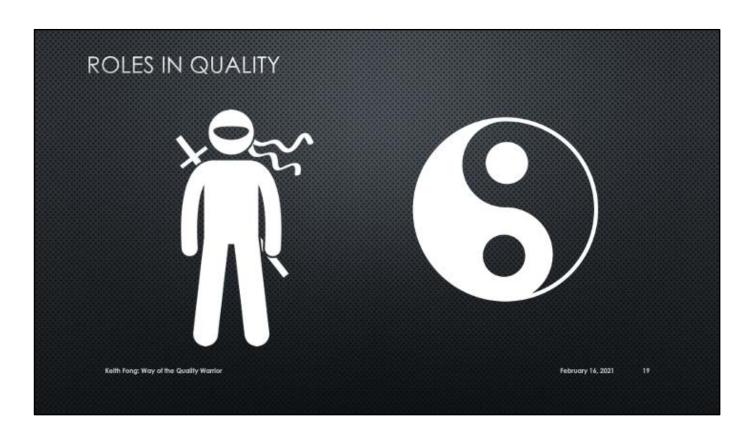
Another way to look at it, is the quality department creates the instrument panel for a business or a process. Just as you can look at a speedometer to know your speed when you're driving, the quality team should be gathering, analyzing, and presenting meaningful information to drive the business (whether we're talking of the entire company or we're talking about a specific process)



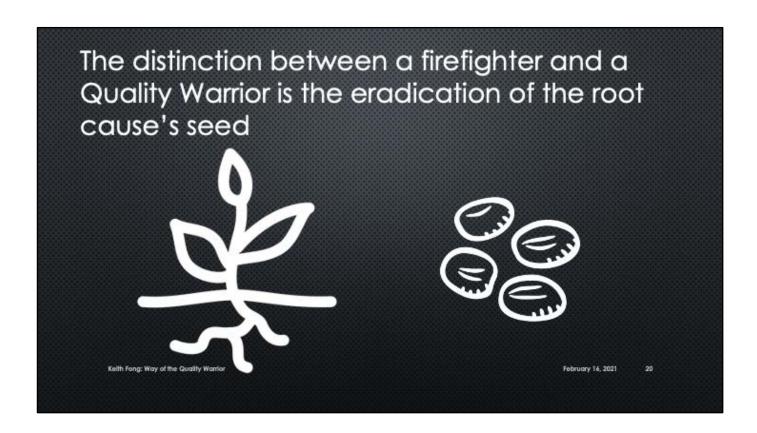
Roles in quality include an inspector/analyst/technican—ASQ started as ASQC (Quality Control), there are builders (Quality Engineers, Reliability Engineers), Process Auditors, and the Quality Manager. Do the roles competently and you'll be invisible.



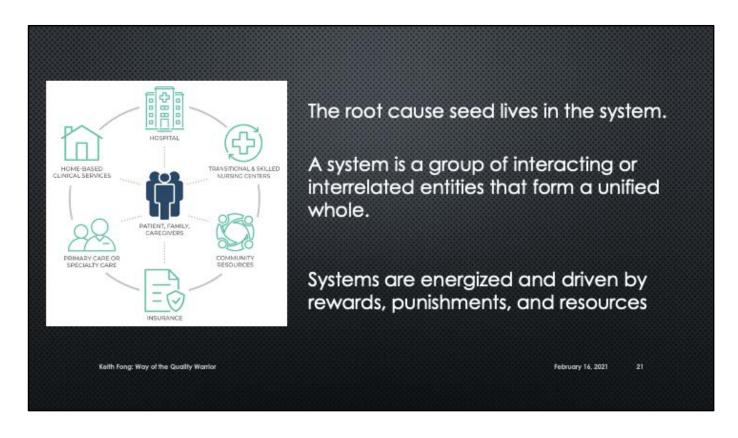
The role which brings visibility to the quality professional is the problem solving role. The visibility comes from crisis—there could be threats which are existential Often, the problem solver in a crisis situation is called a firefighter. The firefighter is a rescuer who comes to save the day. It's exciting, challenging work and, when you "save" the team, you get a lot of positive recognition.



Looking at certifications, there is already the idea of the warrior. There are green belt and black belt and master black belt. There is the idea of the teacher and the apprentice. A firefighter and a warrior are different even if both are fighters.



The Quality Warrior and the firefighter both have to deal with immediate crises. The difference with a Quality Warrior is that the eradication of the seed of the root cause's seed is the objective, not just making a crisis end. In fact, a Quality Warrior doesn't wait for a crisis to occur to act, the Quality Warrior is scanning the horizon for threats that could be coming.



The Quality Warrior understands that the seed of the root cause lives in the system. Often, the cause of a problem is a person's actions, but that is not the root cause. Rather than blame a person, the root cause lives in the selection, training, and/or support.

It's important to understand that energy that drives a system is rewards, punishments, and resources. Behaviors that get rewarded tend to get repeated. Behaviors that are punished can die or go underground. Allocation of resources can sustain or starve behaviors, too.

If firefighting (reacting to crises) is strongly rewarded, you'll tend to find that you have a lot of fires. If people who report small problems get yelled at, don't expect to hear about problems until they're crises.



The Quality Warrior's first responsibility is to bring order to chaos, understanding to confusion

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In a crisis, the Quality Warrior's responsibility is to bring order to chaos. Often, there are many activities performed by many people that are occurring that are not coordinated and going in different directions. The Quality Warrior's skills in analysis and problem solving can help the team focus efforts. It's also important that the Quality Warrior be a calming presence—when there is someone in an important role who is calm, the frightened and frantic team members can shift their focus from fear to executing the tasks to find the cause. However, if the Quality Warrior loses his/her cool, it can make the situation seem hopeless and even more distressing to the team.

In non-crisis times, the Quality Warrior works with teams to create understanding our of confusion. For example, the team may not have a clear understanding of the Voice of the Customer. The Quality Warrior could guide ways of understanding the Voice of the Customer or help the team develop ways to better understand the Voice of the Customer perhaps through additional surveys, understanding who the customer is, and so forth. The Quality Warrior could help a team analyze their data and extract meaningful information.



It's rare that a quality warrior has the power of hierarchical authority. The quality warrior cannot order people to do things under a threat.

The influence of a quality warrior comes from how people view the quality warrior. Basically, it is the power of reputation and personal regard. This can be extremely powerful.

BUSHIDO

- Righteousness—rigorously just, honest
- Courage—take risks with intelligence and strength
- Benevolence/Compassion—the powerful care for the weak
- Respect—the treatment of others at all times
- Integrity—speaking and doing are the same
- Honor—how you decide and execute show who you are
- Loyalty—serve those to whom you are indebted
- Self-Control—hew to what is right and decided

The eight virtues of the Bushido apply to the Quality Warrior. To the extent we behave consistently with them, our ability to influence is developed.

These can be summarized with the questions: Can I trust you? Do you care about me?

ATTITUDES

- Optimism—belief that improvement is possible
- Skepticism—wariness of self-deception
- Curiosity—a desire to learn and understand
- Humility—the people we serve bring knowledge and ability that must be respected

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The attitudes of the Quality Warrior are the tip of the spear. Because quality is an abstract idea we have to be careful not to undermine ourselves.

First, we have to believe that improvement is possible. Otherwise, how vigorous will be your fight to make things better?

Second, skepticism must be ever present so that we don't fool ourselves or allow others to fool us.

Third, curiosity makes us open to learn and understand—there is so much that we don't know.

Finally, humility is required because, as experts, we are not the only holders of knowledge and skill. The people we work with have knowledge and skill and that must be respected or else we will, deservedly, be viewed with distain. Everyone who has survived to adulthood has proven they're able to solve problems and manage risk. Can we help them do both better? Yes, I think so, but I also believe, if we're humble, they will also teach us because we don't know everything and they will have experiences and insights that are lessons for us.

I've worked with consultants who dismissed the knowledge and ability of the people they were training and coaching. The consultants had the "best" method and

everyone else's way of doing things didn't count. Imagine how the students felt to be in a class where the instructor didn't respect them.

SPIRIT OF ATTACK

- The Quality Warrior doesn't wait to be told to act
- The Quality Warrior is mindful of the organization's direction
- Seek opportunities improve status knowledge
- Develop skills of others, formally and informally
- Identify and propose improvements that enhance the systems
- Document and share the impact and lessons

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For the Quality Warrior, the spirit of attack is an essential quality. Passively waiting for directions and instructions is antithetical to the idea of Quality Warrior.

The Quality Warrior constantly seeks opportunities to improve the awareness of the true state of products, processes, and business. If action must be taken, then the Quality Warrior advocates for that.

The Quality Warrior helps others become more capable.

The Quality Warrior seeks to make the systems better.

The Quality Warrior shares what happens to both teach, but also to build enthusiasm and morale in facing the challenges. The funny thing about overcoming a painful challenge is how quickly the victims forget about the suffering. You can't build on what's forgotten.





Apollo 13 is a terrific movie. There is a pivotal point in the movie where the realization is that crew won't make it safely back to Earth unless the power and cabin atmosphere are addressed. Flight Director Gene Kranz (played by Ed Harris) tells his team to figure out how to get them back with margin. After making the assignments, his last words walking out are "Failure is not an option." It's dramatic, but there was already a failure—failure is what put them in this situation.



One of the challenges for Apollo 13 and portrayed in the movie was filtering the carbon dioxide out of the air. A square filter had to function in a round hole. To find a workable solution, what did the team have to do? Try many ideas and fail many times.

The failure of the command module (the explosion of the oxygen tank) made the team ready to learn.

Failures lead to learning which lead to success. Failure is the teacher.

Failure is always looming Failure can be a killer We have to provoke failure as much as we can when we have control

The Quality Warrior knows that failure is always looming over us. Nothing is perfect. The question on the Quality Warrior's mind: Is whatever we are doing good enough that it satisfies all of the expectations?

Failure can be a killer, both literally and figuratively. In a figurative sense, a project can fail and be cancelled and perhaps people are reassigned or laid off. In a literal sense, lives can be lost. Continuing with NASA, the loss of the space shuttles Challenger and Columbia came from failures. For the Challenger, a seal on the solid rocket booster failed to contain the hot gases which led to the main fuel tank exploding. For the Columbia, insulation on a strut fell off and damaged the insulating tiles in such a way that the heat of reentry was able to attack the vehicle structure. In both cases, the failures had been seen before, but had not been catastrophic.

It is our task, as Quality Warriors, to provoke failure as much as we can when we have control. Do we understand the customer usage and expectations? Are our tests and evaluations appropriate and sufficiently rigorous? When the failures occur in our facilities, we can learn and improve.

We also have to be mindful when we see evidence that things are not performing as they should and understand and communicate the risk to the organization.

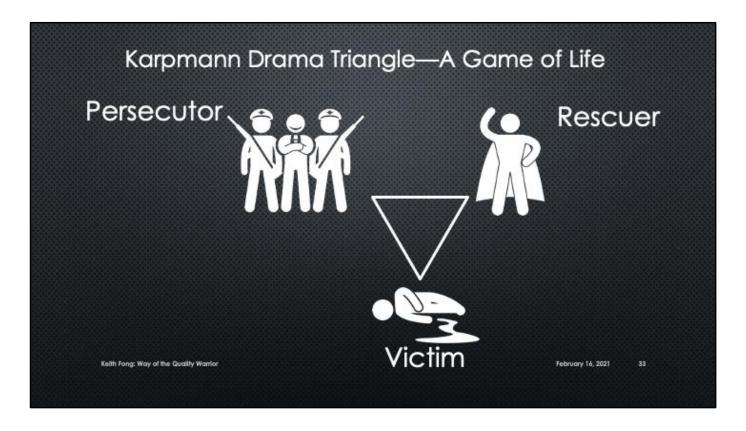


As you solve problems and seek improvement, you will find that people under stress can behave in two ways—above the line or below the line. Everyone will act in both ways at some point, but it is a question of where you typically dwell.

If everyone is acting "Above the Line," then you'll have a functional team.

However, if, under stress, the team goes "Below the Line," the Quality Engineer will have to be prepared to manage the dysfunction that may present themselves.

Reference: "The Oz Principle" by Connors, Smith, and Hickman



Stephen Karpman proposed something developed from Transactional Analysis that has come be called the Drama Triangle to describe the way dysfunctional relationships act.

There are 3 roles—Persecutor, Rescuer, and Victim. It is a game—it has to be played and it starts with one of the roles initiating the play. The game is played by 2 or more people, the more players, the more intense and destructive the game can become.

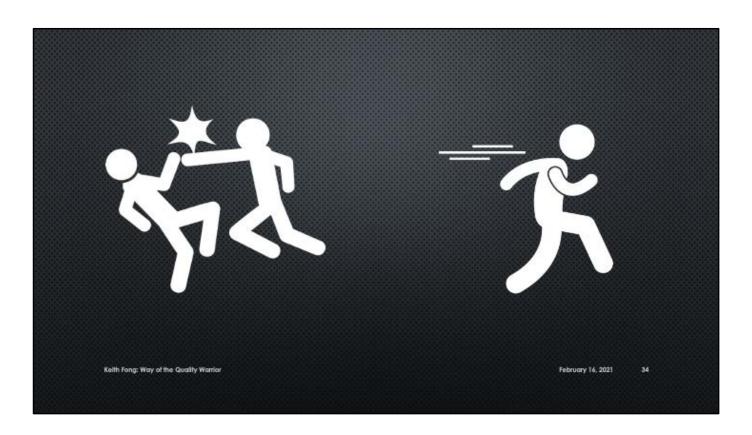
It's important to realize that the roles are not fixed, in fact, the roles shift many times. That's what makes it a Drama Triangle.

For example, the Victim can plead for help and the game starts when the Rescuer accepts the invitation to "save" the victim. If the Victim isn't sufficiently grateful in the Rescuer's mind, then the Rescuer can become a Persecutor accusing the Victim of a lack of gratitude. Or, the Victim can become the Persecutor by attacking the Rescuer for making things worse which puts the Rescuer into the Victim role.

The importance of becoming acquainted with this model of human behavior for the Quality Warrior is that knowing this game exists can help you recognize when an invitation to play is made. You can choose to not play and create the dysfunction. Not knowing the model and the roles can make you susceptible for those evil geniuses who want to pull you into this dysfunctional behavior.

Karpman proposes models for more functional behavior including the Compassion triangle and Wisdom triangle that are based on the same foundation.

Reference: "A Game Free Life" by Stephen B. Karpman, MD



Other behaviors/reactions that the Quality Warrior has deal with in stressful situations is the "fight or flight" reflex. Some people become combative under stress and others try to flee. These traits had Darwinian value in the evolution of man, but may interfere with resolving the crisis of the moment.



"A problem well-stated is half-solved" Charles Kettering

Which product or process is affected? Who is the customer? What is the customer's complaint? Where did the problem occur? When did the problem occur? How big is the problem?

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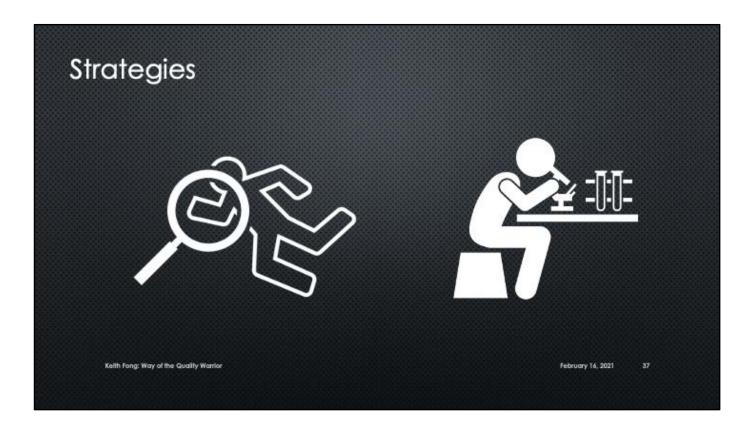
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In terms of strategy, it can't be overstated how important it is to understand the problem.

Is it a found problem (existing process, product, service that is deviating from standard of performance)? Is it a created problem (extending or innovating into a new process, product, or service)?

Understanding the problem will lead to selecting the approach more likely to result in understanding and improvement in the most expeditious way.



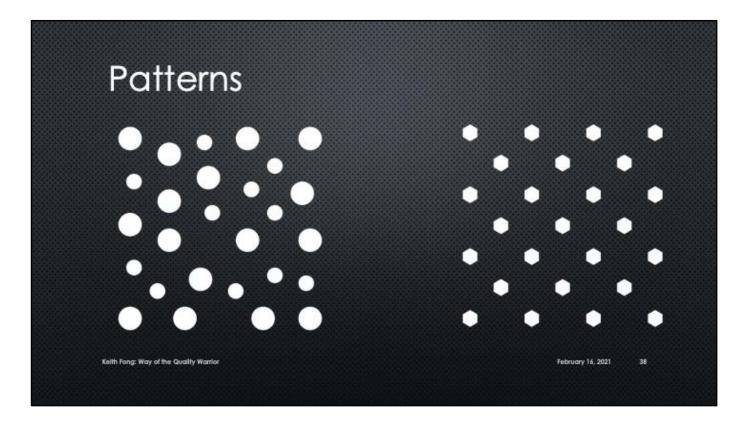
There are 2 basic strategies for learning which I'll call the forensic approach and the scientific method.

The forensic approach is used for reactive problem solving. Something already exists and has failed; you're trying to understand what is the root cause driving the deviation from expectation. You look at the evidence to eliminate possible sources of the root cause—it's the process of elimination.

I call it the forensic approach because it's basically the way television crime dramas presenting finding the perpetrator of the crime. It starts with the crime, the investigators gather evidence which eliminates some portion of the population as suspects and the evidence gathering goes on until the perpetrator is identified.

The scientific method approach uses hypotheses to drive experiments. The inputs that you think are important are put into an experiment and you evaluate the results to see the effect of those inputs. I call it the scientific method because this is what is commonly taught as the scientific method in the United States schools.

Both methods work, but they are suited for different applications.



Look at your data in different ways to find if there is a non-random pattern. Is there a cause-and-effect relationship. Stratification analyses such as families of variation analysis and multi-vari are particularly powerful.

The search for patterns is innate so use all the tools available to see if there is a non-random pattern between causes and effects.

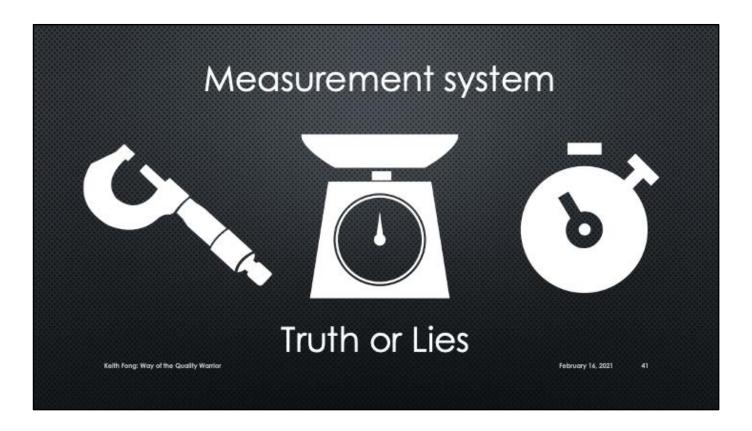




Using data to drive decision making is the essential discipline of the Quality Warrior. The data has to be gathered and then analyzed to turn it into meaningful information. This can require multiple iterations of analysis. It's common that some of the data doesn't reveal anything because it's not relevant to the issue you're investigating. Also, you often have to try presenting the data in different types of graphs or using different analyses to reveal the meaning, if any, in the data.

Something that is important to understand is that some people are emotionally attached to a particular outcome in the data. Often, it's the person who owns responsibility for the product, process, or service and may have designed it or guided the design. It's their "baby." If the data say their baby is ugly they may resist the results.

This is a reason that when developing a new product or a corrective action, I press the teams to generate at least 3 distinct concepts to implement. Because they have multiple concepts, they can compare and contrast the strengths and weaknesses. They don't develop an emotional attachment. However, it is very common for teams and individuals to come up with a single concept and then it is "their" concept and they have an emotional attachment.



Data drives decisions. Unreliable data will drive poor decisions.

You have to know how to assess a measurement system to determine whether it tells truth or lies. Measurement System Analysis is reasonably straight forward. Skepticism about measurements is always appropriate.

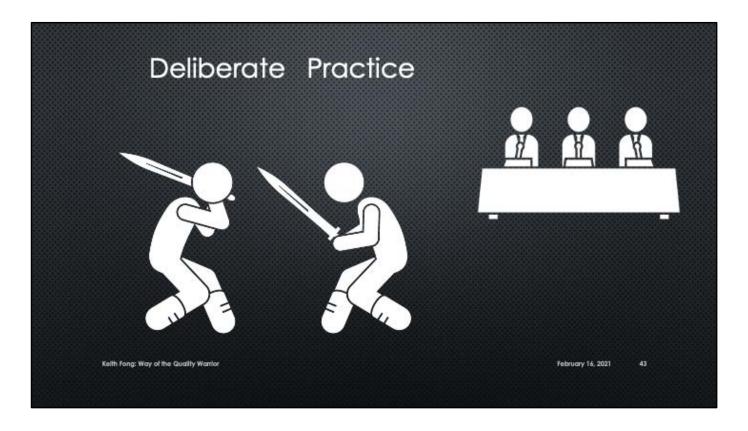


It's surprising how often reports do not include the name of the author. If the author's name isn't on the report, who do you go to if you need clarifications? It could signal that the author lacks confidence in the results or is afraid of potential discontent by the readers.

I know that when I haven't wanted to put my name on a report, it's because I lack confidence and dread defending what the report says. That's a signal to me to address my concerns, but it isn't permission to not add my name.

When you are presenting results, explain what the graphs and/or tables mean. The conclusions should be clear—are things stable? Improving? Worsening? It is common for data to be presented without context or conclusions and left for the reviewer to make their own determination. This is cowardice and professional malpractice.

The Quality Warrior puts his/her name on the report and is clear about what the graphs and analyses signify.



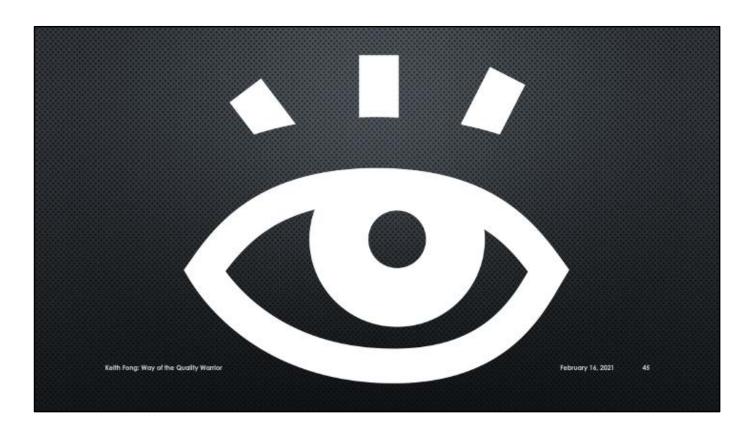
Developing skills requires deliberate practice. Just performing repetitions will not lead to the ability required to make a difference.

Practicing in the quality world is a little bit different than practicing a sport. For example, if you practice basketball free throws, you would establish a set of movements and then repeat and adjust them based on whether the basketball goes through the hoop. The player is really the only variable and the feedback is immediate.

For learning quality tools, generally they are applied in varying situations. You'll follow a set of actions like the basketball player, but you will typically need coaching by someone who is more experienced and knowledgeable to provide the best feedback for growth.



Slide for guiding recap



Questions?