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SAFETY SUCCESS STORIES

Real stories of real successes implemented at real organizations by real people like you

A COMPILATION OF SAFETY SUCCESS STORIES FROM ACROSS THE GLOBE

Introduction

This booklet was compiled by Jeff Dalto and was made available for download at SafetyDifferently.com. Many thanks to Jeffery Lyth for facilitating the download by hosting the booklet.

Primary thanks for this booklet goes to the many contributors. They are all listed on the next page, and we're deeply indebted to them all. Please read their books, attend their conference presentations, join in on their webinars, read their blogs, listen to their podcasts, and connect with them on social media.

Jeff Lyth helped come up with the idea of a guide in which people told stories about successes they had experienced and what led up to those successes. Many thanks to Jeff for that good idea.

This guide, and another compiled earlier by the same editor, proudly claims kinship with the book titled *Nova Visao de Segurança no trabalho Capa*, which was compiled by Paulo Gomes, Gilval Menezes, and Hugo Ribeiro. Jeff Dalto sees these guys as brothers of sorts due to our exchanges and collaborations in recent years, and he encourages you to buy their book (and follow them on social media). All proceed from their book will go to a worthwhile charity, so buying the book is a win/win for the world.

I hope you enjoy this booklet and benefit from its stories. More importantly, I hope you share your own success stories with others so we can all learn from one another. Pass it on. And please be well and keep in touch.

Also, thanks to Adrian Thompson for the cover image for this guide!

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HOP Mentor and HOP Coach

We are passionate about Operational Learning[1]. One of our favorite topics to mentor on is how to mix and match the ingredients of a Learning Team to create a space for Operational Learning within an organization's normal meeting rhythms. Here's the story of how one organization got creative with the structure of their Operational Learning given their real-life constraints.

The Topic: Pre-job briefs

Many teams start the day off with a pre-job brief. The focus of most of these discussions is to present information to the workforce about upcoming activities and to share a relevant safety topic. Many organizations encourage worker feedback in these sessions, which seems to work with differing levels of engagement.

It is fairly common for workers to mention pre-job briefs in the operational learning sessions we conduct. We have (more often than not) heard comments that don't paint these meetings in a good light. Statements like, "Yeah, they're not very helpful." Or, "The supervisor just kind of talks at us for a while." Or "People aren't really paying attention unless we are talking about overtime or something." Despite this (fairly universal) feedback, many organizations continue to hold these meetings without a deliberate strategy to improve them.

Perhaps your organization is different. Perhaps your pre-job is interactive, informative, and helpful. If so, keep up the good work. If, on the other hand, you would like an idea on how to make them more effective, please read on. We are seeing an opportunity to do deeper Operational Learning during these sessions.

The Change: Turn pre-job briefs into mini learning and improving sessions

One leader (let's call him "Tom") set out to make their 30-minute pre-job brief an ongoing Operational Learning session. Each morning Tom used 5-10 minutes of their meeting to cover the communications needed for that day. He carved out the next 15 to 20 minutes to do Operational Learning. Take a look at the general structure Tom created:

- Day 1 –Tom asked the team to think about things that were frustrating - what was "eating their lunch?" He requested they think about it throughout the day, discuss it amongst themselves, and bring some thoughts the next morning.
- Day 2 – The team brought several process and equipment frustrations to the meeting. Tom wrote them down on the white board. They discussed what they wanted to work on first and settled on a frustration with a piece of equipment.
- Day 3 – The team taught Tom about how they operate the equipment. He jotted notes on the white board.

[1] For more (hopefully useful) information on Operational Learning and its ingredients, take a look at the end of this section.

- Day 4 – Tom asked the team to teach him anything else he should know about the equipment and the team dove into greater detail. After the discussion, they defined the parts of the equipment operation that needed the most improvement.
- Day 5 – The team brainstormed possible ideas for improvement (within the areas defined on Day 4). They picked a couple of ideas to "trystorm."

The following week . . .

- Day 1 – The team worked on a prototype of one of their ideas. They started with a simple mockup.
- Day 2 – The team continued to discuss and work on their idea. They showed other operators (that were not in the pre-job brief) to get feedback and additional input.
- Day 3 – The team made a couple modifications to the prototype based on the previous day's discussion.
- Day 4 – Tom ran the team's design through the appropriate engineering channels and requested that the prototyped changes be made to the actual equipment.
- Day 5 – The team put together a short video clip (using a smartphone) telling the story of their improvement to share with the organization.

After building this basic process (give or take a few days), the team began to make improvements every 2-3 weeks, addressing several work challenges and frustrations. As you can imagine, the more challenges the team was able to work on, the more inspired they were to continue.

Tom created a simple (but brilliant) Operational Learning rhythm. Due to time constraints, he didn't have the flexibility to bring operators together to run traditional learning team sessions. Tom was able to create the sequence of "Learn-Soak-Learn, Define, Brainstorm-Try-Improve" within their routine pre-job brief meeting.

Here's the story of the first area the team worked on.

The Story: Teaspoon's Aching Shoulder

The site manufactured a product that was sent through conveyors to a large diverter valve that often had to be manually manipulated from one flow direction to the other. The diverter was old and had become difficult to operate, so the company decided to replace it with a new one. The new equipment was appreciated by the operators, but unfortunately the design was very similar to the old one - even though the components were in great shape and worked properly, the actual force needed to move the diverter valve was not much better.

The operation of the diverter valve was the first struggle that the team decided to focus on. After teaching Tom about the diverter valve operation, they started to brainstorm how to change the design to make it easier to manipulate. The team pulled the old diverter out of the scrap pile and used it for prototyping. Working with their maintenance team, they changed the latching mechanism first. The change helped, but the force to switch the valve direction was still quite high. A fellow worker, not part of the original team, looked at the prototype. He suggested that they change the pivot point so that the force of gravity (acting on the material in the diverter) would work to their advantage. Brilliant idea! They made the modifications and it worked. After a few more tweaks and engineering approval, they had the maintenance team make the modification to the new diverter, and it fixed the problem.

After all the changes had been made, Bob had the opportunity to see the diverter valve prototype, still sitting in the maintenance shop. While he was looking at it, an incredibly built, hulk of a man walked up and introduced himself. They all called him "Teaspoon." Teaspoon told Bob that he was one of the operators who had to go up on the catwalk to manipulate the diverter. The force needed to move the valve had been so high that his shoulder would ache. But since the changes, he didn't mind the task at all. In looking at Teaspoon's build, it was clear that if *he* was aching from the process, most of the rest of us could not have done it at all. What stayed with us about Teaspoon's part of the story is how appreciative he was for the team's efforts. A small amount of time invested with the right people removed a routine operational struggle, all by retooling an already existing meeting.

Helpful Tidbits: A Little on Operational Learning

Operational Learning is a Human and Organization Performance (HOP) technique of learning from those closest to the work that has proven to lead to the development of improvement actions that increase system resilience by:

- Addressing deviation-prone rules
- Identifying error traps and operational struggles
- Improving or adding defenses that reduce the consequences of human error.

The ingredients of Operational Learning are:

- Psychological safety: including techniques that help create and maintain a space where people can be honest in how they communicate
- Multiple points of view: getting multiple perspectives on how the work is done
- Being teachable: asking questions that are open ended, avoid putting people on the defensive, and encourage people to describe context
- Holistic discussion: Learning about the realities of the work including good days and bad days (the good, bad and ugly) rather than focusing on the details of a specific event
- Multiple (short) sessions: short sessions of discussion with "soak time" in between. Soak time is just that - time to "soak" on what we learned. Soak time allows the team members to process the conversation, giving us a clearer mental picture of the system and its weaknesses. During soak time, the team members often think of additional information they would like to share, and the facilitator(s) often think of questions they wish they had asked.
- Separating learning from improving: organize the discussions to learn, THEN define problems, THEN improve

If you have a forum in which people already come together, see if you can add in these ingredients to create your own Operational Learning rhythms.

Bancroft, Kym; Harvey, Steve; McConachie, Tony

HSE practitioners

A common criticism of pre-task risk assessments (e.g. Take 5's) is that they are overly bureaucratic, onerous, repetitive, and sometimes a 'tick-and-flick' activity that does little to achieve what they are intended for: to identify and mitigate the task risks. Many safety leaders are aware of these challenges,

which is highly concerning because it could mean the workers have habituated to the activity, and therefore the cognitive process of assessing risk in possibly complex work may be skipped. Is telling the workers to persist through the frustration the answer? Will increasing the auditing of the quality of the risk assessments fix the challenges? Possibly in the short term, but with large amounts of paperwork ending up back at the office with no-one reading them, it drives a lot of negativity towards the value of the process.

Anecdotal feedback from field workers indicated to us that this was a challenge in our organisation. The feedback suggested there was a significant amount of drift from Work-as-Imagined when it came to this risk assessment practice. Stories ranged from people completing them in bulk at the start of the week to ease the administrative burden upon arrival at each site, to people not using them at all and creating a gap with the system. There was a significant amount of check boxes over multiple pages that saw the worker filling in the form separate to the workgroup and the actual conversation on the job planning and management of associated risks. It was clear that from an operational perspective this was driving a lot of unhelpful administrative time and taking people away from the important aspect of having a collaborative conversation about the hazards and how to control them.

The health and safety team were keen to learn more about the frustration and improve the quality of field risk assessments using the principles of decluttering designed by David Provan and Drew Rae. To better understand the challenge, we embarked on a three-month ethnography study to examine how the Health & Safety Management System contributed to operational safety, and the relationship between the workers actions and the elements of the system. Through this discovery, we found that the pre-task risk assessment was a consistent source of frustration.

Feedback included:

> *"They add no value. Just used to cover your arse."*
>
> *"It's a long process for a job we do everyday."*
>
> *"Get rid of a lot of the content that isn't relevant once onsite."*
>
> *"They stay in the folder. Get rid of it."*
>
> *"We just talk through the work anyway."*

To further triangulate this feedback, we conducted a Safety Clutter scorecard survey, aimed at further understanding all stakeholder views on the value (or non-value) of all safety activities in the organisation, including the pre-task risk assessment. Out of 23 safety activities, the pre-task risk assessment was in the bottom 5 of value add.

In developing a solution, we used a Human-Centred Design methodology of discovery, creation, implementation, and review. At a high level these are the steps we followed:

- Structured discussions were had with Voice of Intent (Executive Sponsor), Voice of Experience (frontline workers who use the process) and the Voice of Design (H&S team)
- Data was captured and themed against recurring themes, contradictions, unique ideas, gaps, and problems/opportunities to move ahead with

These themes were then analysed using the different "voices" to help craft up opportunities into action that help to meet operational objectives. This included a Project Plan with activities to align with Objectives from the H&S Strategy.

The Learning Team process also helped us to understand the current pre-task risk process from a Work-as-Done perspective, and to design the solution in collaboration with the workers. This gave us the rich stories around what parts of the process were helping and which parts were a hindrance.

The concept of decluttering the pre-task risk assessment, based on the discovery feedback, was then taken to the board and the executive for consideration and endorsement. We anticipated that a common objection would be that it would compromise the legislative obligations of the organisation. To pace this objection out, we strongly considered the legal obligations in undertaking pre-task risk assessments by engaging with leading H&S Lawyer Michael Tooma to provide a review and recommendation on a path forward to ensure all legal obligations were being met.

What we discovered in our consultation with legal was that there was no legal requirement to record the risk assessment outside of confined space and diving. There was a benefit when the work was complex and in having confirmation or verification of the additional controls that were put in place. Specifically:

> *"There is no express obligation to implement documented risk management processes in the WHS Act, Regulations or Codes of Practice. Whatever obligation exists relates to proactive management of the risks. Documentation of that process is only necessary if it assists in traceability of implementation of risk controls and review of the effectiveness of those controls"* Clyde & Co.

Following endorsement from the board and the executive, we then embarked on the design phase.

In doing this, we gathered a team of frontline staff and asked them to take a critical look at the existing document. We created a space where they could be frank about the value the process had in helping them manage safety. The team told us that there was very little in the existing process that they use and that they normally have a team meeting before they commence work to discuss. We gave them a red and green marker and asked them to put a red line through what was not helpful and a green tick against what they thought added value. This gave us the idea about creating freedom within a framework for them to utilise.

Through these discussions with the field workers and frontline managers, the "CHAT" was designed. The *"Conversation Hazard Awareness Tool,"* a guided conversation tool for assessing and mitigating risk in the field was developed. It consisted of seven questions to risk assess any job that fell into the criteria of basic and routine. It was designed with risk competence in mind, and to be a proactive, structured, and systematic approach to worksite safety that removed administrative burden and aligned Work-as-Imagined with Work-as-Done.

To implement the CHAT, a training program was developed that walked the field workers through the change process, the feedback we had received, the design process, the reiteration, and the final solution and how to implement it. We trained the workers in how to apply the CHAT through scenarios that were specific to that team being trained. It included a verification of a competency component which Leaders undertook out in the field. A further leaders training program was rolled out equipping them with the skills to verify competency.

Post-intervention feedback indicated that this was the most value-adding safety project the workers had experienced during their time in the organisation. They were very grateful that the health & safety team and leaders had listened to their concerns and involved them deeply in the process all the way from creation through to implementation. Involvement from the workers included a naming competition where a long list of creative suggestions was put forward by the workers, with CHAT winning in the end.

Despite removing the requirement to record the pre-task risk assessmentma, we found that some workers found it beneficial to record it, stating they liked writing it down. A few were concerned about personal liability if something went wrong, and even though they knew it offered nothing in terms of prevention or risk control, liked the 'security' of the written document. So, a written version of the CHAT was retained for workers preferring this.

We also considered how we could use technology to assist in building a stronger culture on the pre-task risk assessments. The CHAT was embedded in the work planning process by being attached to work orders that were issued to workers so it was always visible. All the frontline workers have smartphones, so we encouraged them to take photos of the worksite and use text messages, voice-to-text notes, etc. Some groups had created a Microsoft Teams page that allowed them to share the work that was being done. This also allowed the health & safety team to cascade messages across the other groups.

Regular project updates were shared with all stakeholders through our reporting on strategic initiatives. When the project concluded, a summary video of the field workers perceptions was collated and shared throughout the organisation. Some of the feedback included:

> *"This was the first time a safety change has involved us in the solution."*
>
> *"Finally, a safety change that doesn't make our life harder."*
>
> *"An easy-to-use tool that encourages collaboration on the job."*
>
> *"I love it, easy to remember and encourages conversation on the stuff that matters."*
>
> *"Less paperwork and more focus on each other and the job at hand."*

The solution felt highly intuitive. It was driven by the frontline workers. We listened to their frustrations and empowered them to build the solution with us, and we took the components forward to the blunt end for endorsement.

In retrospect, change of this nature with a well-ingrained practice such as this is challenging. Whilst the problem was clear and the negative impact on operational safety was evident, the resistance to shift to a solution that doesn't 'feel' safe and puts so much trust in the frontline worker is highly threatening to some leaders. To be successful in this change, it is imperative to work with these stakeholders and allow the time for them to become used to the idea that people are the solution. Mitigations such as regular checks to see that it is working effectively, and helping senior executives feel more comfortable with the change at hand, is imperative.

At the end of the day, this change initiative meant that we were upholding safety as an ethical responsibility to the frontline worker, instead of prioritising the bureaucratic activity of recording the risk assessment.

In summary, pre-task risk assessments were found through consultation and collaboration to be hindering operational safety rather than assisting the frontline workers with risk management. Through a process of human-centered design we were successful in 'decluttering' the process and aligning work-as-imagined with the work-as-done. The result was a worker-led design, the CHAT, a conversation-based risk assessment which was extremely well received by the frontline workforce.

Barker, Andy

Director of Business Development, Paradigm Human Performance

This is a story I call "Safety has no purpose."

We have a 2-year project, replacing domestic electricity meters across a large geography. The safety rules are difficult. To switch off the power requires agreement from a householder, and it can only be done by the power company, not us contractors. The power company always seem to have something else to do and the household doesn't really want their power off.

A new safety manager joins the company, and within 2 weeks is notified of an arc-flash accident. It appears arc-flash accidents are fairly frequent, and intensive-care treatment an inevitable consequence, as are various tragically permanent injuries.

Obvious questions: what did we learn from previous investigations, and what do we find when we do site visits? Investigations tell us that everyone knows what they are supposed to do, but technicians decide to work live and their risk-taking behaviour results in them injuring themselves.

Inspections don't really happen, as technicians are hard to track down with loads of reasons that are explained away due short duration work across multiple locations. So, in 1 year of a 2-year contract, we only have a handful of inspections, and they say that everyone has what they need.

But why do we only have a handful of inspections?

When we join a company, we see ourselves contributing to purpose. Think about what your company does, and then how you tell people about it. Hopefully you have some pride in not only what your company does, but in what you do to help deliver purpose. Certainly the stories you tell will normally edge towards positives, or you need to find somewhere else to do what you do!

Sometimes contributions to purpose aren't always obvious or direct, but the stronger the connection, the better feeling you have about your contribution, about your "value."

To over-simplify, we get meaning from our jobs when we contribute to purpose. People that don't help us contribute, we tend to withdraw our engagement from, people that help us in our purpose, we tend to engage with more. Helping means we are better able to contribute value to purpose. Help makes us more!

Think about how helpful HR, Finance, Procurement are to you. Think about how you would rate their contribution to the company. Something necessary, to be tolerated, or something that you will actively act to help?

Back to the case study.

- The Project purpose: replace old analogue meters with digital smart meters;
- The Project Manager's purpose: plan and manage the resources to replace those meters;
- The Engineer's purpose: to define the engineering instructions to replace individual meters;
- The Supervisors' purpose: to plan and allocate meter replacement tasks to Technicians;
- The Technicians' purpose: to replace the meters;
- The HSE teams' purpose: to support safe working practices, to find and pursue improvements in meter replacement safety

So, obvious links from purpose to job role, easy to see how the work you do adds value to purpose.

So why won't anyone talk to the HSE team?

The services provided by the HSE team were simple to understand: 1) write safe working practices, 2) train the team in safe working practices, and 3) check up on work as done and report out.

In reality, the services were a checklist asking: are you trained, do you have PPE, do you have a permit, do you have a fire extinguisher? Stuff that we all know about, hasn't changed since the beginning, but that missed out on 2 critical aspects: 1) didn't seek to understand if the equipment was de-energised, and 2) didn't ask the technicians if they had what they needed to perform their tasks safely.

At the point of delivery, isolations weren't always easily achievable, and HSE services didn't appear to want to know about that. Live working was frequent and HSE services didn't appear to want to know about that. Checklists went back to say everyone has everything, reports from HSE told leadership that everything as planned was OK.

So, the purpose of HSE is to complete checklists that don't ask the right questions and report to leadership that issues are the fault of technicians, the least powerful people in the organisation. What accident investigations actually said was: HSE did their job because the rules as written are OK, techs didn't comply. Message for the front line: HSE informed leadership that the accident was your fault and nothing changed. Leadership and HSE don't care enough to change.

The purpose of HSE is not to protect the safety of technicians, it is to complete checklists, fulfil their own purposes to their own ends, maybe even to protect leadership or the company itself.

How do you make changes?

HSE had to work out how to align purpose. Aligning purpose means finding common ground and helping on shared purpose. To deliver meter replacement, that means helping the technicians get what they needed to be successful, to listen to the technicians' story about what they needed to stay safe, and tell their story to clients and leadership. Not what HSE thinks, what technicians say. Regardless of how difficult it is, isolations need to happen.

So, HSE did the right thing with the truth, and helped on purpose. They took the risk of challenging the status quo and supported the changes that the PM, Engineers, Supervisors, Technicians, and HSE needed to make to their jobs to deliver safety at the front line.

Trust follows selfless help.

Help makes me more, and we welcome more. Doing your own thing for your own purpose doesn't help and I could care less, as that is the amount of care you show in your actions. Your purpose is demonstrated by what you do on purpose.

By listening and then changing HSE services to be helpful, all felt connected to each other's purpose a little more and it became much, much easier to collaborate and contribute to company purpose. Help drives trust, trust drives collaboration, collaboration and engagement improve performance.

Since then, the company has seen its longest period ever free from arc-flash accidents; hopefully it's stuck. Being listened to built relationships: one engineer insists on buying me lunch every time I show up. The social side of safety is allowing people to influence what impacts them, treating opinions with dignity and respect. People got the difference between doing things that help others as opposed to doing what you think helps. So they have a new method of working that is conversational and caring v. not listening and confrontational, so consultation leads to better outcomes, as listening to all opinions means a well-informed decision v. an approach from a single perspective, which by definition is less well informed and less likely to be successful.

Barrett, Andrew

Chief Connector, Coach, and Host, Safety on Tap Podcast

My last 'job' - in a health and safety role before starting *Safety on Tap* - was working for the National Broadband Network in Australia. This government owned company was responsible for designing, building and maintaining the multi-technology wholesale broadband internet network nationwide, a $50 billion infrastructure program.

I started working there providing HSE advice to the operations unit.

Quick aside, NBN basically does three things:
1. design/engineering for the technology and the physical build of the network

2. construct it, and
3. maintain, repair and augment the network.

All infrastructure projects are similar - whatever happens, for better or for worse, Operations are left holding the can for a long time.

A few years working with Operations, in a startup-esque company with a LOT of money to spend and a LOT of work to do, taught me a lot about change, innovation, and risk appetite. It also quickly became apparent just how amplified small issues/risks become when the roll downhill to Construction and then onto Operations.

In practice, locating a roadside equipment cabinet too close to the road creates risks for every single worker accessing that, country-wide, for 50 years. Locations of underground assets which join huge bundles of cables, may mean blocking pedestrian paths in the narrow city streets.

NBN acquired other networks too. And then discovered that pole-mounted cables in many areas are dangerously close to the live electrical cables on the same poles. Pole-mounted equipment required awkward working at heights, thousands of times over, and the associated training and equipment and rescue provisions. We also acquired a network covering an entire city, which had systemic earthing issues (i.e., workers and home-owners could be electrocuted).

None of these risks were new, surprising, or difficult to tackle.

But the pace of the build, and the scale of the network amplified the risk profile immensely.

I found myself suggesting, nudging, escalating, workshopping, yelling about the small things which became enormous for Operations.

My final year at NBN was a blessing and a curse. A restructure of the entire HSE function shifted everyone's responsibilities, and created a new role - the HSE in Design Specialist. The Head of HSE and I had a great relationship, and he said he created the role in part because I had been such an effective advocate for the design and construction risks and issues rolling downhill to Operations.

My mission, if I chose to accept it, was to take that role to try and fix what I had been advocating about for years.

I accepted.

I committed to 12 months to get things headed in the right direction for HSE in design, and then would leave. And that 12 months were probably the simplest, least complex of my entire career, and arguably the most impactful.

I began by seeking to understand before trying to change anything. I spent weeks and weeks meeting people, sitting beside people, going to project steering meetings and meeting vendors and contractors.

I started to engage key stakeholders in the question "what could good really look like for us?". (I didn't realise it at the time but this is what David Cooperider and others would call a 'generative metaphor'). We talked about what the stonemason building the Sagrada Familia in Barcelona must have felt, knowing his foundations would support a masterpiece of architecture well after he was dead.

And then I started connecting people. When engineers were designing something new, I would introduce them to construction and operations people. Wary of the potential for an 'ambush', I coached them all like this: 'try and understand what it's like for them'. We talked about John Godfrey Saxe's poem about the Blind Men who went to see the Elephant - all of them right and all of them wrong at the same time.

We started seeing opportunities, and I nudged the conversations with the language of risk and risk reduction. Bring that equipment down from the pole to a ground-level access point. Create a design hierarchy which started with roadside cabinets being pushed back far away from the road, away from high-speed areas, away from intersections. Don't install electrical equipment in areas likely to be submerged in bad weather.

None of this was technically difficult, but it often was practically difficult. Influencing vendors, dealing with legacy equipment, fighting time pressures for technology release dates. We strengthened the governance process so senior leaders had the process and the language and the arguments to push back on pressure and create space and time for the engineers and designers to listen to construction and operations, and better manage risk.

And rather quickly, "what could good really look like for us?" started to emerge from the chaos of a nationwide infrastructure project. Most impressively, at its core, the individuals and the three divisions they worked for started to behave less like 'me, and them' more like and 'us.' There were probably 20 people in total who had the greatest impact, because they understood each other, and found the opportunities to make small changes which would be replicated across thousands of kilometres, tens of thousands of equipment locations and hundreds of thousands of worker-hours in the network's whole-of-life.

And in my final week, 12 months after I took the job, I was asked be a well-meaning colleague 'where's the HSE in Design Procedure then?'

And I smiled at how much they'd missed the point, all the while I was pretty confident that my efforts were much closer to hitting the point.

Berry, Clifford

Senior Director, Head of Business Excellence at Massachusetts Biologics Operations, Takeda

The following story is told from the perspective of two different quality deviation investigators who are faced with the same opportunity to learn from an undesired outcome. The story is a real-life example of how the manner in which we think about people, work performance, and systems determines the effectiveness of our learning as well as how we then attempt to adjust systems to create more operational success. In one case the learning leads to no improvement, and in the other case relationships are strengthened and systems are changed that improve the capacity for things to go well.

The financial cost of the batch loss was over one million dollars. The impact to patients potentially could be a delay in the delivery of life-changing medicine. As the story was told by managers the day after the failure, the cause was an operator error where a manufacturing associate using scissors severed the tubing between a bioreactor containing product located in a manufacturing room and an in-service media tote located in an adjacent room separated by a wall with an iris valve. The tubing passes through

the iris valve to connect the media tote to the bioreactor. The intended action was to use the scissors to sever a different run of tubing nearby from an out of service media tote, a task that the manufacturing associate had executed successfully many times before that day. The empty media tote would then be rolled out of the room and replaced with a full media tote. This is a familiar beginning of a story where the organization has a need to learn about some work in order to improve the capacity to make things go well.

What typically would happen in the biopharma manufacturing industry is a quality deviation investigator would ask the manufacturing associate if he was using the procedure when the work was being performed. The manufacturing associate would answer yes to that question. Then the quality deviation investigator would ask the manufacturing associate to explain why he cut the wrong tubing with the scissors. The manufacturing associate would then explain that he might not have been paying enough attention to their work when he cut the tubing, and that he accepted full responsibility and would strive to do better in the future. In some organizations this response is what is believed to be the only acceptable response to explain a failure during an investigation. The quality deviation investigator would then return to her desk where a flowchart would be used to select an error category and cause type that would be included in the written report as the cause of the failure.

The flowchart contains boxes connected by lines with arrows, where the words in the boxes are a mix of terms related to culpability, performance modes, and generic error types. Then the quality deviation investigator would ask “why” five times, a 6M Fishbone Diagram might be created where Manpower is the bone of interest and other bones could be ruled out, and finally a cause code would be selected from the Deviation Management System database and listed as the “true root cause.” That cause code might be Operator Error, Complacency, Distraction, or maybe Violation.

Once the cause is selected, then a corrective action would be assigned that is intended to address the selected cause. A common corrective action is to revise the procedure to include more steps and notes. This time, maybe the corrective action would be to coach the person who made the mistake and also provide an awareness communication to other manufacturing associates to alert them to be careful when doing this task in the future.

This approach in response to a deviation within biopharma is not exaggerated or far-fetched. The approach described here is unfortunately very common. The current investigation process used by many biopharma organizations leads to little to no real learning about work, perpetuates organizationally endorsed blaming of workers, leads to event recurrence, and frustrates everyone involved.

There is a different approach that is taken by quality deviation investigators at a small number of companies and plants that has proven to be far more effective when learning about work within complex systems. This approach involves learning about work from the perspective of the worker. The quality deviation investigator would go to where the work occurs and ask the manufacturing associate to describe how they have been successfully performing this work in the past; severing the tubing from an empty media tote that had been disconnected from the operating bioreactor. This conversation is not an interview that feels like an interrogation. Rather, humble inquiry is used by the quality deviation investigator to learn from the person who is the expert in the work. The manufacturing associate would walk the quality deviation investigator through how the work is typically performed, and describe all the factors that can increase risk to the unit operation. The procedure is reviewed before the work begins, then placed nearby where it can be referenced if necessary. There are parts of the procedure that are

very detailed and cannot always be done exactly as prescribed. For example, there are usually two workers assigned to the area. However, it was not unusual when the second worker would be assigned to a different part of the factory based on workload, even though the procedure contained guidance that a second worker was to provide an informal, undocumented check to make sure the correct tubing was to be cut. The manufacturing associate then explains that the second worker was reassigned on the day of the most recent failure. The quality deviation investigator then remarks to the manufacturing technician that the two media totes in the room appear to be nearly identical in appearance and are located within three feet of each other. Also, the tubing that runs from each tote is identical in appearance, opaque, and also located closely together. These factors make it very understandable how a person could mix up the two different tubing runs and cut the tubing for the in-service media-tote. The manufacturing associate voices agreement that the workplace factors are not ideal, but the work goes right most of the time.

The quality deviation investigator states that she is not an expert in this work, and remarks that there is inherent risk in the current design of work. Then the quality deviation investigator asks the manufacturing associate what he would change in the work to make future performance more likely to be successful. The manufacturing associate pauses before responding. The pause is not to brainstorm an idea. The pause is to consider if he is safe to share the truth about his work and what must be changed.

> *"I'm never going to cut the wrong tubing again. I feel embarrassed about the batch loss. It's a horrible feeling. Yesterday I did this same work, and rather than cutting the tubing like the procedure says, I instead coiled the tubing up and passed it though the bottom of the tote and rolled the empty tote out of the room. Once the tote was outside the room, then I cut the tubing from the bag inside the tote."*

The quality deviation investigator has learned about the work from the perspective of the worker. The investigation report will explain how the work is done and the risk that is present as the result of the work design. The corrective actions in the report changes the design of the work to how it was described by the manufacturing associate where the empty media tote is now removed from the room before the tubing is severed. The organization is pleased with the learning, implements the changes to the work, and thanks both the manufacturing associate and the quality deviation investigator. Following the change in work design that removes the risk, a batch loss has not recurred from severing the tubing connecting an in-service media tote to a bioreactor.

This example where the worker was engaged as a partner in event learning that led to real systems improvement occurred at my manufacturing site, and is a case study in how we now learn the right lessons from failure while also enhancing psychological safety.

Bradbury, Wyatt, MEng, CSP, CIT

Adjunct Professor, University of Alabama at Birmingham

Being a professor at the University of Alabama at Birmingham affords me an opportunity to learn from the stories of our students around the world. As a degree program that explores human factors, we celebrate the stories of our students who can apply human factors and prevention through design to their organizations.

Incident events occur where socio (people) and technical systems interact. These intersection points often present great opportunity to review the systems in place, implementing higher-order controls that increase capacity and redundancy.

In one story, an assembly plant had seen a change from assembly of one product to another of a very similar but distinct production. The employees had performed the original, complex assembly numerous times and were familiar with the work instructions and processes. Engineering had also done a remarkable job at trying to design the systems to meet their separate specifications yet have similar overall construction.

The event that triggered this opportunity was the installation of a 300 lb. subsystem to the bottom of the equipment being assembled. Employees were using a lifting table to raise the equipment into place and then maneuvering it before bolting and securing. All in one moment, the subsystem was on the ground and employees were scurrying out from under the equipment.

The initial investigation stated that employees were not following the procedure and failed to use the lifting table to support the equipment until bolted. The corrective actions were for the employees to be re-trained on the process. As the investigation continued, the employees were consulted about the overall installation process to determine how they think it could have been improved. It was at this point of bringing the front-line employees into the conversation that the organization realized this was a significant opportunity for change.

In speaking with the employees about the installation procedures, the team realized that the procedures had not been altered from one product to the next, but the conditions of the installation were significantly different. The prior product had ample space for employees to raise the subsystem on the lifting table, maneuver it into place, and bolt it to the product. However, the new product had just enough room for the subsystem to be raised and laid, unbolted, on the hangers. The lifting table then had to be removed so the employees could awkwardly squeeze their hands around and through, trying to bolt the subsystem to the product. This meant that any inadvertent bumps could send the subsystem to the floor.

This realization, following engagement with the employees, resulted in a re-sequencing of the installation so that this equipment could be installed with more room to maneuver and access the bolts, supporting a reduction in risk of the equipment falling and a reduction in the ergonomic hazards for the employees awkwardly reaching around or through other subsystems to secure this one.

As incident events occur, it is critical that we engage our employees to discover what is “dumb, dangerous, or different” from the procedures and processes they are expected to follow. In reality, they are probably adapting more than realized, resulting in increased risk that may not be understood or identified.

It is also important to understand the assumptions present in the process that may not be accurate in the reality of the work taking place. We need to know where organizations are imagining work will take place a certain way, supported by specific conditions that may not be present or the same as work is done, thus forcing our team to adapt based on their best judgement and expertise. Collectively, understanding the prior assumptions and conditions in reality helps better establish the context of the

work that is taking place and allows for conversations and perspectives that can support prevention through design and prevention through re-design, thereby supporting our employees in working well.

Brookes, Richard

Group Head of Health and Safety, South Staffordshire Plc

I have worked in several businesses, in different industries. Leisure, retail, telecoms, aviation and water utilities. If I'm honest I don't think I have done one single thing that delivered a significant performance improvement. However, I do believe that lots of little things done well and often has started these organisations asking better questions.

I've learned that one of the most important ways to start is by building deep and meaningful relationships, gaining 'trust' and then layering the conversations you have. Chatting with people at every opportunity to discuss and develop the awareness of the principles of modern safety thinking. Being ready to challenge people when they default to 'take more care', it always happens in response to a bad outcome. It's up to you to start the conversations and to be a broken record. You should feel like you have said the same thing a thousand times. I've learned to use the bad outcomes, or the high potential events to double down on the narrative. But….never say I told you so. You are allowed to think it….just NEVER say it.

Be ready for backward steps…people will struggle with the new concepts and people all go at different speeds. You are challenging decades of engrained theory and practices. You need patience…I'm not blessed with it, but I am getting better. If patience isn't you either, then resilience is an important attribute. There are sleepless nights and dark days, where it feels like it's all on you. There are detractors, sniggers, funny looks. That's normal…you are asking people to change, it's hard, keep going. In my experience resilience can run out, so find a mentor or a coach to help recharge the batteries.

I have made the mistake (more than once) where the thing that worked in one business can be lifted and shifted and it'll work the same way in another…it rarely does. I think I've discovered that it's rarely one size fits all. A deep understanding of what the organisation does, how it does it is a key aspect to understand what could work. The general people culture and local beliefs and values will help you make sense of frontline work. Getting excited about safety when teams don't get basic levels of employee care…aren't going to create the appetite to change.

Start from where they are and empathise. I find empathy with senior leaders is very important. I think we tend to see them as masters of all and the owners of everything. But, they are accountable for thousands of people and to shareholders. A senior leader who embraces doing safety better as showing extreme courage. They deserve credit for just giving it air time. You have to tailor your language and conversations to what makes most sense to the operation. That language can be different between leaders, managers and frontline teams. Flexing to all so it makes sense is vital. Don't go in shouting about 'work insights', or 'learning teams' if no one understands what they are…call them something else. If it makes sense to people…use it.

Find your bright spots. It really doesn't matter how dark and traditional and resistant to change an organisation seems to be….there are always people in the business who will be interested in doing it better. It's slow…but then hey… if it was easy everyone would be able to do it! You have to let people

come to you, let it become their idea and you've embedded the change for good and it becomes sustainable.

Don't feel you need permission from the organisation. You may not get it in a clear cut signed sort of way! Just start with the bright spots and see what happens. Try and be brave…try new things even if you don't know if they will work.

How do you know when you're being successful? I could give you a developed suite of indicators but I'd be making it up. In my view knowing you're getting somewhere is tough to detect. I've learned to listen to the language people use. Before you know it they start saying things like…'well…its work as done isn't it'. You walk away with a smile. It's brief, but bright and it keeps you going. Another good indicator is reding through the investigations into events. The questions start changing from 'who' went wrong, to 'what'. The content begins to consider the error traps, the system weaknesses rather than the person should have done this or that. Finally, talk to frontline teams. Ask how they feel about safety…in my experience they can be very honest!

Busch, Carsten

Senior Advisor, Occupational Safety (Norwegian Police Directorate); Tutor in Human Factor & Systems Safety, Lunch University; Owner/Founder/Senior Enabler/Head Mythologist, Mind the Risk; "The Indiana Jones of Safety"; Author, Safety Myth 101, *Veiligheidsfabels 1–2–3*, *If You Can't Measure It… Maybe You Shouldn't*, *Preventing Industrial Accidents*, and *The First Rule of Safety Culture*.

Introduction

Traditionally, we have been taught that the purpose of incident investigation is to identify causes of incidents. We start from what happened and work back in time to see which chains of causes we can find. But what if these turn out to be questionable assumptions? What if there are restrictions that prevent us from investigating the incident ourselves or that factual material is not accessible? In certain cases, not looking at what happened can be an advantage, because you are not lured into a trap of looking at obvious things that will not bring any real improvement and instead are forced to look at how the system is put together and has developed.

In this article, I will share some personal experiences that partly fly in the face of established safety practice. They might be described as "new view by accident," or perhaps rather "new view by serendipity." This just illustrates in a different way how failure and success come from the same source in sometimes unexpected ways.

Disaster Strikes

It was 24 March, 2010, sometime after lunch time. I was sitting in a small meeting room together with a colleague of mine, discussing the update of an emergency plan of one of our locations. My telephone chimed, announcing a text message. My wife asked what had happened with that train crashing in Oslo harbour. This was the first time that I experienced personally that the news and social media were faster than internal emergency signals.

I looked up and asked my colleague, "Have you received an alert about a train crash?" As the emergency coordinator, he should have. He started looking at his phone when I heard the fast-paced clicking of high

heels in the hallway. “Okay”, I said, “Seems they alerted higher up in the system.” And indeed, seconds later our safety director (famous for walking in high heels on almost all occasions) burst into the room. A train had crashed, killing several people, and we needed to call in the crisis team now. That was the start of some interesting days and a follow-up that would dominate my working life for some years to come.

At first, we were absolutely in the dark about what had happened, but slowly information came in. We quickly turned our attention from the rail tracks in the harbour, where people had been killed and injured and a building had been demolished, to Alnabru shunting yard about eight kilometres away. Here a set of railcars had started to roll uncontrolled. They proved unstoppable going downhill. By the time the cars arrived at the harbour they had speeds of 100 km/h. No barriers stopped them. They went right through the building at the end of the tracks. Half of the cars ended up in the harbour.

You can find more about the accident on Wikipedia (it even has an English page) or read the report on the website of the national accident board. On their website you can also find an animation of the event.

Investigation. Wait, no.

Question was, how could this have happened? Poring over maps of the area, speculations started in the crisis room. That afternoon the regional director heading the crisis team decided that we would initiate an internal investigation to find out what had happened, and more importantly, what we would do to prevent something like this from ever happening again. Investigators from the central safety staff had already gone out to secure evidence and liaise with police and the national accident board. So, we started drafting up a plan of who to involve, talk to and what information we needed.

However, the formal green light and appointment of lead investigator were not forthcoming. Growing impatient, we received a shocking decision from the highest level a few days later: there would be NO internal investigation. We were merely to support the national accident board’s official investigation and rather concentrate on creating some barriers to prevent recurrence.

In retrospect, I can understand and support some of the reasons for the decision. One problem is that these were not communicated very well to us, and so I still have to guess what was behind them. I assume that an important factor was the PR-debacle after the Åsta accident where my organisation had gone out with information too quickly. Also, management tried some containment, because it was pretty obvious that our organisation had most likely done something blameworthy (or at least let something happen in a place it had responsibility). That’s fine, and as said, I understand it now and might have understood this if it had been explained at the time. Lacking that explanation, the effect for our department was totally different.

Outrage!

We were fuming:

1) Here was the biggest accident in ten years and WE WERE NOT GOING TO INVESTIGATE! Which, by the way, was our obligation per regulations and management system. It went against every rational safety

thought. I probably realised too little at the time that organisations rarely make rational decisions. Often, they are steered by political or bureaucratic considerations[2] or plain "randomness."[3]

2) We were ordered to sit and wait for what these nitwits from the accident board would come with. To us, this was not only a clear signal of lacking trust and confidence from the upper levels with regard to internal expertise, but it was also an insult to professional pride.

3) As indicated by the word "nitwits," in our eyes the accident board was neither particularly competent nor independent, as they had demonstrated over several investigations. Most people working in the rail section were former train drivers and biased against the infrastructure manager (also with another thing in mind: typically, the infrastructure manager has better funds to implement measures, rather than railway undertakings). And how would we know that we reached another conclusion than the accident board if we did not investigate ourselves?

Having said that – credit where credit is due. The accident board managed to deliver a really, really good report. Against all expectations.

4) Waiting for the accident board's review would mean a huge delay before we would gain knowledge about 'causes' (those were the days when I still was totally into Tripod and the like). The accident board did not need to deliver a report until a year after the event. Experience had shown that they typically used this period to the max. An internal investigation would have delivered 'useful' stuff much quicker.

In the end, all of this wasn't too bad. The accident board delivered a temporary report relatively quickly and involved us very well (without compromising their position, well done on their part) and we got the opportunity to positively influence some of the recommendations.

When things work in you favour after all

Having left the initial outrage and frustration behind me, and having grown professionally, I must now acknowledge that what at first seemed to be an incredible decision from a professional safety point of view proved to be the best thing that could have happened to us.

As soon as we got the temporary measures in place, we started focussing on an overall risk assessment for the entire area. Before the accident, there had only been some fragmented risk assessments and whatever we could find was heavily outdated. Due to the accident and the high media and political profile, anything dealing with Alnabru had top priority. While the sky was not the limit, it was pretty close (the organisation put aside several millions for whatever needed to be done). Therefore, I had the opportunity to hand-pick a very talented junior safety advisor to provide full-time support for this work for several months (as I was not able to dedicate all of my time to only this job).

Not hindered by the burden of an investigation (the "what happened, and why" question), we approached the job how I might do it now. We thoroughly involved the various groups on location, mapping all their 'work-as-done,' identifying the conflicting objectives and obstructions to do the work safely and efficiently. Along the way we got a pretty thorough overview of the infrastructure and its weaknesses. The same applies to organisational factors such as communication, flow of information,

[2] Allison, G.T. (1971) *Essence of Decision: Explaining the Cuban Missile Crisis*. Boston: Little Brown.

[3] Cohen, M.D., March, J.G. & Olsen, J.P. (1972) A Garbage Can Model of Organizational Choice. *Administrative Science Quarterly*, 17 (1): 1-25. doi: 10.2307/2392088.

competence, responsibilities, and management. This work created the foundation for many of the system improvements implemented in the years that followed.

Who would have thought that the order not investigating a major accident could be a blessing in disguise? Had we done an ordinary investigation, we might have focused too much on what happened, and less on the whole system and the context in which the accident happened. While we at the time felt that we were handicapped by not investigating, we were given the opportunity to break out of the usual pattern and make some quantum leaps forward!

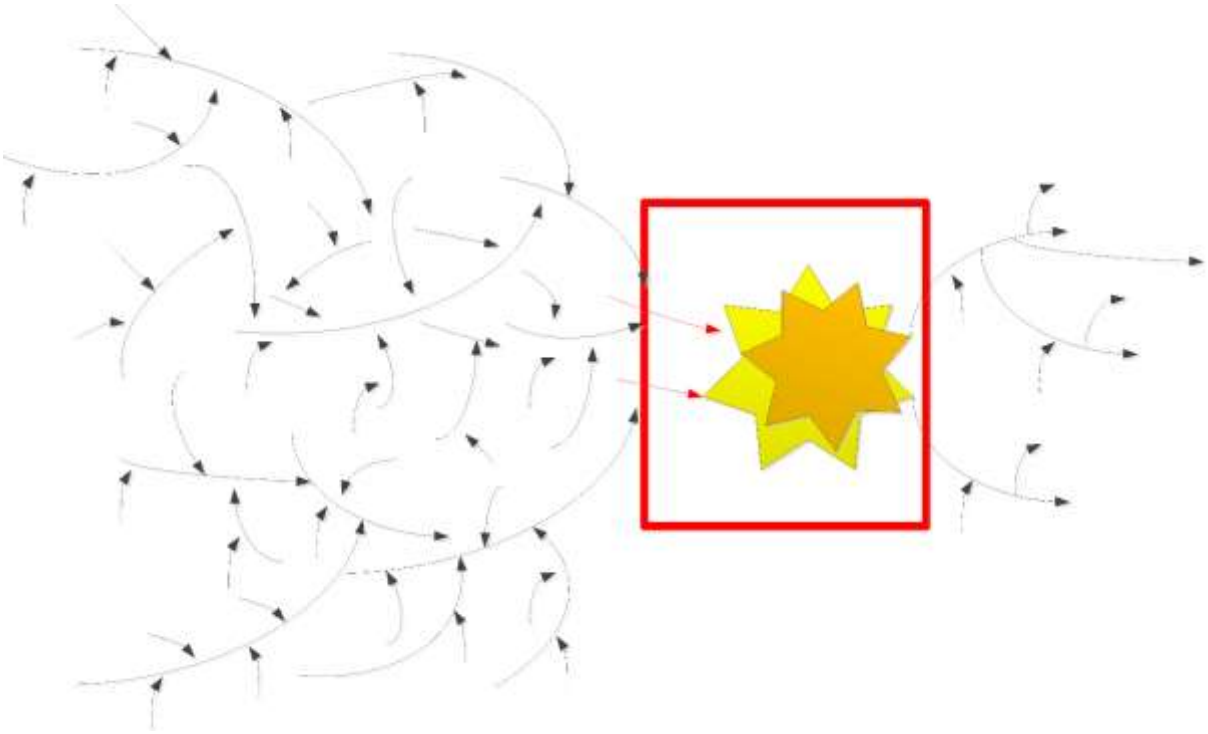
Let's try that again!

Fast forward a few years. Meanwhile, I had changed jobs, now working in the corporate occupational health and safety department of an entirely different organisation. One of the things I am allowed to work with is organisational learning. A serious accident happened in one of our districts. The accident nearly cost the life of one of our employees, and the district chief mandated an internal investigation. As the region did not have much experience with this kind of work, they requested help from our department. Soon, I found myself on a plane, flying out to assist them.

We drew up a plan on how to conduct this investigation. It was a clear objective to adopt a "new view" approach that would look beyond simple answers such as "human error." The plan was to approach the event with a systems approach with appreciation for context and history. We planned to avoid normative language as much as possible.[4] Also, we had to deal with another factor because a criminal investigation had started as well because it was suspected that whatever had happened had most likely involved breaking some rules and regulations.

When the report appeared a few months later, it started by explaining the approach, explicitly making clear that its focus was on the system and the event's context. The report would, however, not touch on the accident itself – as illustrated by the picture below. That way, it was possible to avoid any conflict with the criminal investigation. Besides, focusing on the accident itself would most likely lead to the conclusion that someone had done something he shouldn't have done with something that shouldn't have been there. Any action after that would have been aimed at a new rule, perhaps a checklist and compliance.

[4] I really need to emphasize here that this is so much easier said than done. The first day, we had a great session where people talked about everything connected to the case. I made notes which were to serve as the basis of drawing an influence map. When I returned to my hotel that night to clean up my draft, I realised that it was filled with normative statements as "low priority", "bad follow-up" and so on. I sat down and redid everything.



Instead, the report described the circumstances in which such an event could emerge. There were some similarities with Vaughan's notion of Normalisation of Deviance[5] where a culture of production (getting the job done) and a production of culture (this is how we solve our problems here) coupled to structural secrecy (reports of substandard conditions and problems remained at the lower levels) created a situation where improvisation was the way how things were done. There were also parallels to Turner's incubation period[6] with cultural beliefs that turned out not to correspond with reality, and plenty of 'decoys' that drew attention away from other systemic issues.

To be honest, management was a bit at a loss on how to deal with this report. Here were no clear recommendations of broken parts to fit. There was no smoking gun. Instead, they had a choice of either doing very little, or making some major changes which were not popular in times with tight budgets. Luckily, they started working on the latter option after all.

Final reflections

We can learn several things from these cases. First, Heinrich already taught us that the consequences of an accident are not very relevant[7]. Whether someone is killed, seriously injured, or gets away with a near-hit is often a case of random factors. In the second case, the presence of some well-trained, very determined colleagues who saved the victim's life by swift and effective action.

However, we can extend Heinrich's lesson. Not even the accident or unwanted event is all that relevant because it often does not matter what exactly happened at the time. There is no need for "Who did what and when?" The conditions in which these things happened, and which allowed the accident to

[5] Vaughan, D. (2016) *The Challenger Launch Decision (expanded edition)*. Chicago: The University of Chicago Press.
[6] Turner, B.A. (1978) *Man Made Disaster*. London: Wykeham Publications.
[7] Heinrich, H.W. (1929) The Foundation of a Major Injury. *National Safety News*, 19 (1): 9-11.

unfold can teach us plenty. This again brings the advantage that people have less to fear when they talk. It is not about them and what they did or omitted. It is about the everyday work and the context in which it happens. Also, the actual incident may rather be a distraction (the infamous "smoking gun" effect) from "bigger" or more important underlying issues and the system as a whole.

If someone remarks that this is like doing a proper, non-linear risk assessment without attempting to put things in a matrix, or quite similar to an audit that is interested in learning and inquiring about improving instead of checking compliance… Indeed, there are many similarities. Maybe the level of detail and the language can be a bit different. The most important notion is probably trying to understand and a desire to improve.

One could very well use this approach also for everyday situations. Learning from everyday work as advocated by Hollnagel[8] and others. However, let's not forget that the actual incident also provides a sense of urgency that is normally absent. This again presents us an important window of opportunity for improvement. This window of opportunity and the sense of urgency allows us to review those underlying elements. A review that at other points in time most likely will not get the attention and priority, or whose results will be downplayed. After all, nothing has happened so far and "We've been doing this for 30 years."

It is sad, but sometimes the best thing that can happen to safety is an accident. Even from a "new view" perspective. If I have the choice in the future, I will probably choose a similar approach again.

Buschard, Eric

Safety Director, Monarch Construction Company

Truth be told, it's not always easy. In fact, it's likely very hard to affect real change. Lasting change is almost supernatural; it exists but uncovering it, well, I am not really sure I have done that yet. Time will tell. The construction industry can feel like one step forward and two steps back much of the time. Contained within is our approach to handling this. It is not easy but if it were easy, everyone would be doing it.

Understand the work. We must understand the work. I must remember that I no longer do the work but I did at one point and I cannot forget that. Having once done the work is both a blessing and a curse. I need to better understand these things due to bias and blind spots. To have worked next to most in the field, to have formed relationships and friendships, to have built trust- this is important. I understand the work, or I used to understand it. Things change and when things change, you have to change your approach. I still have a better idea than most about our work but the distance is ever widening. I often fantasize about going back on tools, both secretly and openly. To me there is a serenity in the chaos with doing construction work. Get out and do the work to understand the work. Help if you can. This is how the divide between operations and safety became even greater than what it was. We want to understand and we learn by doing.

[8] Hollnagel, E., Leonhardt, J., Licu, T. & Shorrock, S. (2013) *From Safety-I to Safety-II: A White Paper*. Luxembourgh: Eurocontrol.

Next, we built force multipliers. One person is all that is needed. It is really that simple; just one person who truly listens to the message and that is enough. Similar to how one seed is enough. Plant ideas of a better way of doing things. Do this in a measured and accurate way. Do this in a slow is steady and steady is fast sort of way. Start small with one person. My one person was a carpenter and now he is a Superintendent. He quickly moved through the ranks with (I hope) some help from our new way of looking at things. He is not perfect as goal conflicts run rampant in a young and hungry new manager. He does his best and that is all we can ask of him. I am not really sure what influences our new approach have had on him and what he carried with him from the beginning but one thing I do know is that he is quick to discuss his shortcomings. He is quick to look at and learn from his failures. He is honest and clear and he does not pull punches. He will likely keep safety close to him for a long and lasting career. There are a handful of force multipliers spread throughout our organization now. This number has continued to grow and as it grows, it forces out the bad seeds. It is too uncomfortable for them, I suppose.

Lastly, we put an end to speaking down to the workforce. We speak openly and honestly, from a place of respect. We speak in large groups and discuss the work. We uncover failures but it's not perfect by any means. There is a lot of room for us to grow but we took the first step, we started. We struggle when we study work at a field level. We did not sign up for manual labor construction work to do paperwork but we did sign up to get better. In the end, it doesn't matter because we just want to get better. When we really try and we complete all the parts a little better than the last time we did them, we get better. We are not perfect but we certainly strive to be.

Today, the safety approach from a general contractor in Cincinnati, Ohio is improving. We are decluttering and we are basing our decisions in reality. We are improving; sometimes a lot and sometimes a little. It is often said there is nothing new about new safety- we have to disagree.

Butcher, Ron CSP, CMIOSH

Safety Director

I was working for an Independent Power Producer in Southern California. Organizationally, we had experienced several issues related to hazardous energy control within our generating facilities that needed to be addressed before a casualty occurred. Internally, probably like most industrial facilities there was no small amount of internal conflict between our operations and maintenance teams.

Drawing on representatives from each of the three stations, including management, we formed a review team that took on the task of creating a hazardous energy control program that met the requirements of 29 CFR 1910.269, NFPA-70E and the California Title 8 rules for both High and Low-voltage while also meeting the needs of the diverse population of interests (management, operations, maintenance) and needs at each station.

While it took several meetings, drafts, discussions, challenges and more than a few cups of coffee, the individuals comprising that team generated a comprehensive program, job-aids and self-paced training materials that met the needs of all parties and regulators while delivering a pragmatic process that facilitated their individual successes. One of the unique challenges was the incorporation of what we called the Hazardous Condition Permit to Work that, while representing the Energized Electrical Permit

described in NFPA-70E, encompassed all forms of potentially hazardous energies within these operating facilities.

I have since identified most of what we did through the lens of what I've learned as a mediator. That experience reinforced the need for safety practitioners to remain neutral or "omnipartial" in advocacy with all audiences toward removing the conflict inherent with most of what safety compliance generates. It's through that advocacy, that values are realized and truly synergistic solutions are generated and prepared for actionable results through final agreement. From my experiences in and out of safety, we (organizationally) need to do a lot better at bringing those diverse audiences to the table of discussion and developing solutions. At the end of the day, we're all trying to solve the same problems, just from differing perspectives.

Carillo, Rosa Antonia, MSOD

Preisident, Carillo and Associates; Author, "The Relationship Factor in Safety Leadership"

Mending broken relationships is hard because it demands a strong sense of Self and the willingness to risk rejection. To lead such a recovery effort we need personal awareness of our assumptions, the willingness to set them aside and listen with an open mind.

Leaders tell me that the ability to do this comes as the result of learning from personal loss experiences. It takes such an experience because leaders are usually successful people. They have a sense of self-confidence and certainty in their ability to maintain control that comes from overcoming challenges. Unfortunately, it usually takes a significant loss to question this view of reality.

One of the leaders I most respected in this regard was Karl Henderson. He was a regional Southern California Edison manager overseeing several electrical power generation plants. At the time, the OSHA recordable rates at one of his plants were far above the norm and there were constant disputes with the union. I could sense his irritation when we met and he told me he was meeting with me because of a corporate mandate to participate in an employee empowerment program. I shared with him about building relationships to get employee engagement and a personal leadership development model that included the importance of self-awareness and willingness to listen.

He told me he had tried every other program without success and that he was really fed up with the negativity and resistance of the people at this plant. Still, he had to do it so we began the work.

We did an employee perception survey and the findings were as expected. Trust was non-existent, "management doesn't care about us, or safety, and we are asked to perform unsafe jobs" and so forth. I recommended that Karl take the results to every shift and listen to the operators. He did, and when we talked about it he would remark on how much he was learning about the difficulties the operators were facing—especially with the shift structure. We then held a three-day trust recovery workshop as described earlier where we were able to uncover specific issues of concern, but more broadly they were able to discover that no one was really listening to each other.

Karl sat through all the workshops. This was very different from other leaders of his standing who would come and kick things off then disappear. This is under the guise of leaving room for employees to speak up. Unfortunately, even if they do speak up, who is listening? The supervisors are there but they often don't have the power to address many of the plant issues.

Karl kept returning to the control rooms for conversation and updates. He recruited volunteers for a safety team with employees and supervisors. He gave them a budget and together they addressed the safety concerns of employees. Two years later the same perception survey was given and the scores had improved 22% across the board. Their OSHA recordable rate dropped from 28 to 3. Their reputation as the most negative plant in the company had changed to the one with the most successful safety team. They continued improving until Karl's death a year later. At his funeral the room was overflowing with employees saying their good-byes. Karl had successfully transformed *disgruntled employees* into *supporters*. His was a journey of personal growth because he had tried many things to breakdown the barrier of mistrust, but he had never realized that connecting with people and listening could make the critical difference.

As Karl's story demonstrates it is possible to restore trust even when employees have associated you with the problems. I was called back to work with the same plant ten years later. Under new ownership, it was back to being the most "negative." The new union president refused to support safety efforts to enlist more employee engagement. The plant manager remained uninvolved and conditions did not improve even though we attempted to reinstate the safety team. It isn't the program that improves safety performance; it's how the leader engages with it. So even if trust has been built with an approach, continuing with that program doesn't insure it will be maintained unless the new leader continues to build relationships, listen and act on concerns.

The economy goes through cycles and we don't always have control over decisions and events that have a negative impact on the people working in the organization. We don't have the final say over organizational changes, layoffs or the corporate policies that don't allow for flexibility to address individual needs. Nevertheless, when leaders take the time to listen, get to know people, and show they care about them, animosities decline or disappear and people remain collaborative even during hard times.

Chadwick-Jones, Diane

Former Director of Human Performance, BP

This is the story of how the redesign of a Just Culture algorithm helped a company transform its understanding of the causation and prevention of accidents.

In some organisations the term "Just Culture" simply describes a situation where learning and speak-up are more highly valued than the urge to blame and discipline. In such an environment, the organisation learns about the system issues that are causing difficulty for the workforce, so that they can be addressed before incidents happen.

Some other organisations have adopted a Just Culture process, often a decision tree, which is intended to help an organisation respond in a considered way, when individuals do something that contributes to an incident. Unfortunately, processes can have a counterproductive effect if not carefully managed. The process can be used as a substitute for a proper enquiry, loaded language can lead reviewers to focus on the contributions of people rather than system issues, and worst of all, the process can come to be seen as part of the discipline process by leaders and workforce alike.

Although a decision-tree process is not essential to a Just Culture, a process that has been carefully designed to avoid some of these pitfalls can provide clear data on the contribution of systems to safety, as well as greater fairness in the organisation.

Many still believe that incidents are caused by the front-line workers. As well as blame being an instinctive reflex, poor analysis of what happened reinforces the blame. We can think that people were the problem: “if only THEY would follow the rules,” “if only THEY would try harder,” “if only THEY would pay attention.” But no amount of punishing or re-training or threatening seems to make any difference.

So let’s look at better quality analysis. Here’s what happened when we took a closer look at cases of so-called “rule-breaking.” From 18 months of cases, we saw that most events were caused by problems with procedures, lack of resources or training, and the workplace setup being confusing. This type of data can cause a fundamental change in approach for organisations, to look beyond what happened on the day of an incident and track back to the workplace influences upon people.

What was the problem we were trying to solve?

All companies want to learn from what does not go to plan, whether the work is successful with problem-solving or whether an incident occurs. The Just Culture process, (*Managing the risks of organizational accidents*. Reason, 1997).), has been a popular framework intended to help managers better understand system influences and decide how to respond in cases of error or “rule-breaking.”

However, there were indications that the original design could have the opposite effect. This was in part due to the use of language from criminal law such as “violation,” “reckless,” and “negligent,” with emphasis on judgement of the intentions of the individual. This can create a priming effect leading to blame, shifting attention away from system influences.In 2012 we re-designed Reason's framework, creating one informed by studies in cognitive and social psychology, organisational justice, systems thinking, and the modern view of incident causation.

How did the organisation re-design the Just Culture process?

Interviews and focus groups were conducted with leaders who used the Just Culture process. Four key points were found: leaders were keen to support a re-design to further foster a fair culture; they wanted decoupling from disciplinary measures and instead to link to existing Human Resources policies; they asked for a limitation on who could apply the process so as to promote consistency of application; and they needed training and case studies to assist with the future implementation.

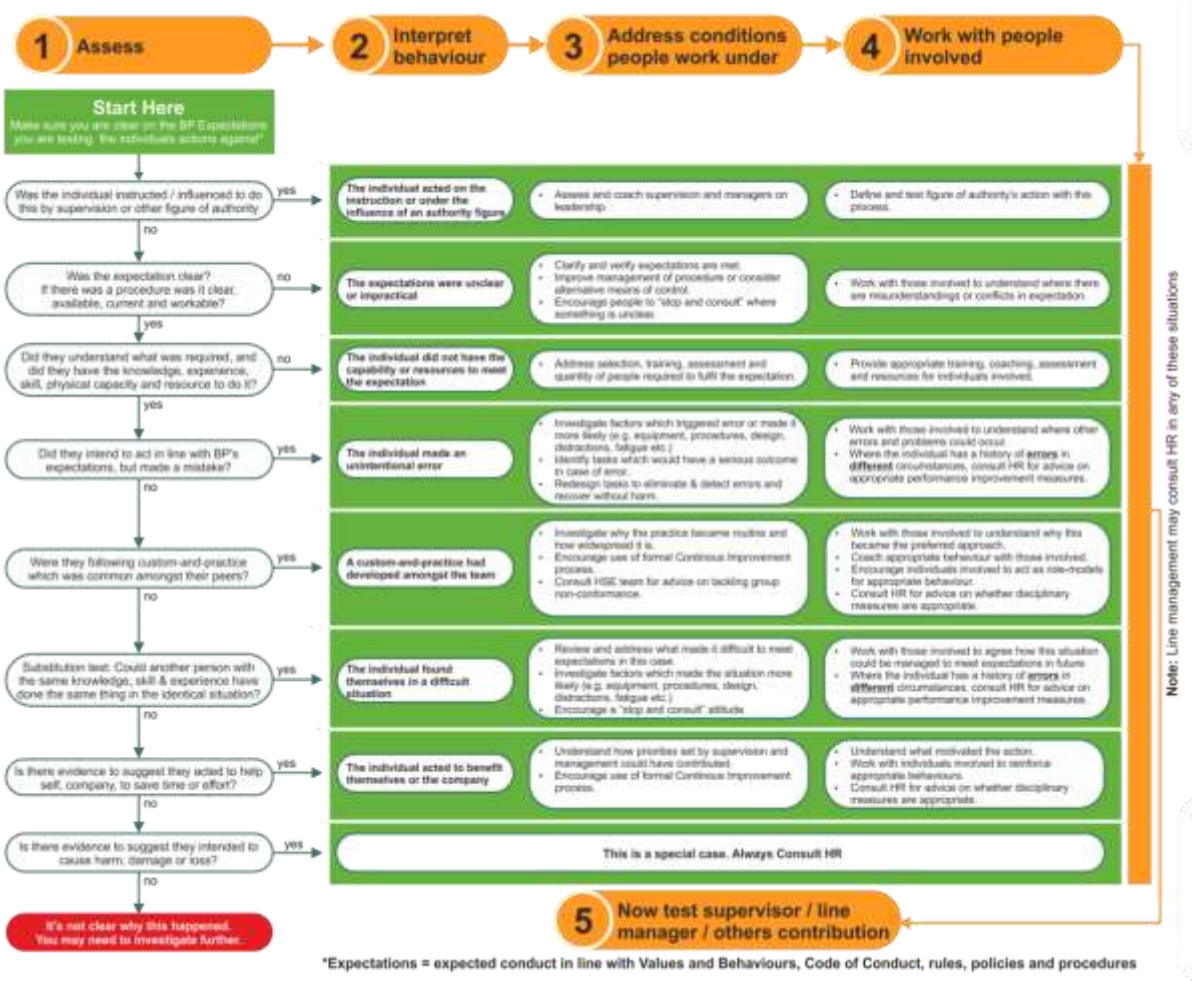
The design combined business feedback and external research, as well as practical expertise from incident investigators. Options were tested in workshops and when a design was agreed, it was tested at pilot sites. The new process was used alongside the original to test for gaps and value. The new process did not miss insights and actually gave more information about the most useful improvement actions.

The re-designed Just Culture process used questions for leaders, usually after an incident investigation or other undesired event. It did not use the word “violation” or words that primed the use towards blame. The eight Just Culture questions were:

1. Was the individual instructed/influenced to do this by supervision or other figures of authority?
2. Was the expectation clear? If there was a procedure, was it clear, available, current and workable?

3. Did they understand what was required and did they have the knowledge, experience, skill, physical capacity, and resources to do it?
4. Did they intend to act in line with company expectations, but made a mistake?
5. Were they following custom-and-practice which was common amongst their peers?
6. Substitution test: could another person with the same knowledge, skill and experience have done the same thing in the identical situation?
7. Is there evidence to suggest that they acted to help self or company to save time or effort?
8. Is there evidence to suggest they intended to cause harm, damage or loss?

Depending on the answers to these questions, the tool then led users through possible responses, starting with a system view (ac “Address the conditions that people work under”) before considering the role of individuals (“Work with people involved”)



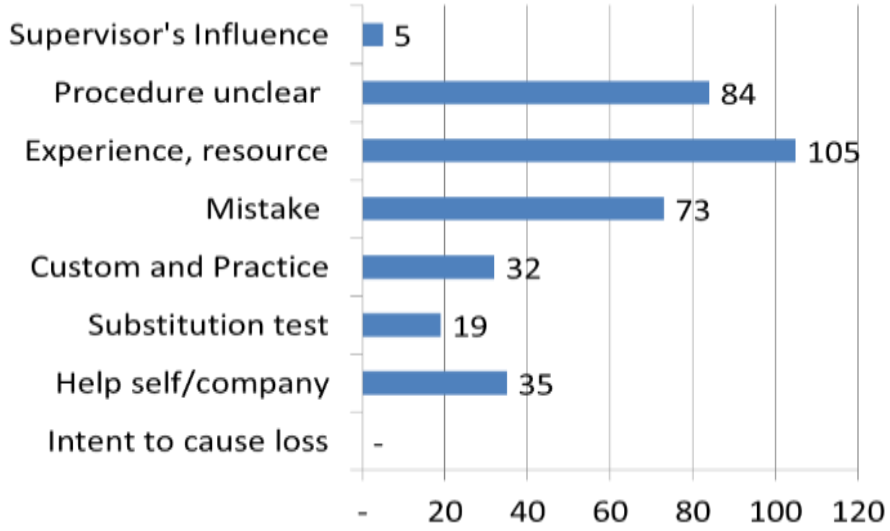
The tool was only to be used after a proper understanding of what happened (such as an investigation or enquiry), and if the questions could not be answered it was an indication that more investigation was required.

Also, the tool prompted application of the question set up the hierarchy. The front-line worker, although closest to an incident, is only one of many roles whose decisions may contribute to a situation leading to an incident.

To support quality and consistency of application, structural organisational changes were made: a new governance process was put in place, a new training course was designed and systematically rolled out globally, and a database was established to document Just Culture reviews and enable learning by establishing potential trends.

What did we learn?

The cases were recorded in an electronic database and analysed by subject matter experts in culture. 353 Just Culture cases were completed as of the end of October 2016. In the chart below, the x axis shows the number of primary contributing factors. The value by each blue bar indicates the frequency of findings mapped to each Just Culture question. Approximately 90% of cases were attributed to system-level issues. The data supports external research (Occupational accident models - Where have we been and where are we going? *Journal of Loss Prevention in the Process Industries,* 19(6), 664–682, Attwood et al., 2006), which suggests that incidents are most often attributable to system weaknesses rather than simply to “rule-breaking” and mistakes.



Based on this study and wide-ranging engagement with internal and external stakeholders, these opportunities for improvement were identified, which are offered as guidance for an effective Just Culture process:

- A Just Culture process should not be a substitute for a proper understanding of what happened and why. Clarification of the boundaries between the Just Culture process and incident investigation is essential to prevent its use as a primary incident investigation methodology.
- Loaded language such as ”violation” primes blame and should be avoided.
- The Just Culture process should be separate from disciplinary processes to avoid incorrect judgments.
- The tool should only be used by trained managers to avoid misinterpretation.
- A central database for Just Culture reviews enables additional analysis, quality control, and trending to promote effective organizational learning.

The data contradicted traditional thinking that the majority of accidents are caused by human failure and confirmed the ”systems-thinking” view of incident causation, showing that error and breaches are the outcomes of organisational weaknesses. The key finding of the analysis, that 90% of actions not in-line with expectations were found to be workplace-induced, was used to help shift the mind-set in the organisation and reinforce managers' understanding that most non-conformant behaviours are influenced by system weaknesses; strengthening employees' trust by emphasising that this was not a disciplinary tool; and encouraging a speak-up culture where the front-line staff felt able to raise concerns when non-conformances or error-producing conditions were observed.

The peer-reviewed academic paper with further detail is “From individual behaviour to system weaknesses: the re-design of the Just Culture process in an international energy company. A case study”, Bitar et al., 2018.

Estey, Joe

Performance Improvement Specialist, Lucas Engineering and Management Services

We’ve been involved in moving many organizations away from the traditional ‘find it, fix them, forget them’ mentality in incident reviews and causal analysis.

Initially, three forest-products manufacturing centers (plywood composite board and lumber) and two corrugated box plants used interviewing and the *Five Whys?* method as a way to identify and correct issues related to safety, quality and production. When an issue had been identified, or–more likely–couldn’t be concealed, the immediate response was to interview all the guilty parties and determine how much pain to inflict so they would not commit the same error or mistake again.

After years of seeing this vicious cycle repeated and no improvement on the horizon, these two organizations that were conducting interviews and asking the Five Whys were not only failing to find the cause of the events, but were often being led down the roads of preconceived outcomes and predetermined solutions. We helped them establish a top-to-bottom, side-by-side review of their processes and realigned the whole system to a proactive evaluation process rather than a reactive investigation effort.

It starts with teaching all production, maintenance, and support staff what an ‘incident looks like.’ This is not consistent with the approach that only certain incidents that ‘cost a certain amount in terms of loss’ or ‘injure a person to a certain level of disability’ are worth evaluating. Our approach is to scrap threshold tables and severity indexes and ask a simple question: “Can you learn something from what happened, regardless of whether it was consequential this time or not?” If so, evaluate it. Instead of open-ended, opinion-based interviews, such as asking someone involved in the event “Why do you think it happened?” and “What would prevent it the next time?”—neither of which can provide meaningful responses based upon a myriad of cognitive biases and ‘noise,’ we taught those closest to the work to observe error traps, flawed defenses, latent conditions, and active errors, and to analyze incidents and near-misses using these lenses.

They learned that a learning team works best in situations where even if an incident didn’t occur, the way work is planned and executed needs to be improved, and that causal analysis restores a system

back to the way it was before the error, mistake, or incident, but rarely improves the system. In this way, both approaches can yield dividends to the organization but only if they are widely invested.

The companies also eliminated interviewing as the source of event information and used tools like the comparative timeline, barrier analysis, and cause-and-effect tree, which asks deeper and wider questions about the conditions prior to and during an incident, rather than "What did you see?" and "Did you notice anything?"—again, both subject to biases and overshadowing once the incident has occurred.

Since the training, teams at the facilities have trained many members of their crews, rather than having just a few people possess all the knowledge, which has led to not only a better understanding of the causes of a near miss or incident but continuous improvement in the work planning and execution effort overall. As one sawyer at a mill stated: "This doesn't change only the way we look at near-misses and potential incidents, but at the way we plan and perform the work. It becomes part of our everyday problem-solving effort."

Gantt, Ron

Director of Operations, Reflect Consulting Group

One client I'm working with wanted to redo the way they assess their safety performance and set their sites up for success. However, they wanted to avoid the traditional audit approach, which is typically reductive, top-down, and generally seen as unhelpful by their workforce. They spent a lot of time arguing over what each finding meant, what score should it be, or what color-ranking applied. And, importantly, they weren't really learning much that they didn't already know, and therefore there wasn't much they could do with the information.

So we decided to completely start from scratch and ask what it is we were trying to achieve. Rather than looking at safety (or quality or environmental performance) as a separate aspect of organizational performance, we decided to look at it as something that emerges from setting up the organization for success and responding to real-world changes.

To that end, the organization had a set of principles, called their 'success factors,' that they used as a guide for what makes a successful site. This included things like financial performance, teamwork, good scheduling and budget, leadership, operational plans, design, etc. Of course, each of those things is aspirational, and how that works in practice is another thing. But then it hit us - what if we created a process designed to help us see how those things were working in practice and what we could learn from that? Then we would not just be trying to fix issues at any one site. We would be validating the entire operational model the organization uses to set itself up for success. To put it another way - *we said this is how we were going to build teamwork at our sites. How is that working at this site and what can that tell us about how we think about teamwork as an organization?*

Conceptually, the idea excited people. But how to do it in practice, in a way that doesn't become just another audit? We decided that turning this into another checklist wouldn't fit with the concept we were working with. Instead, we decided to use an inductive approach. In addition to looking at already existing data (e.g., financial performance, survey results, etc.) we would go out and talk to people at the site at various levels, gather stories about how work is happening, and then analyze those stories by

asking *what can each story teach us about how the organization working in practice?* Basically, we saw each story as an outcome of how the organization's systems and processes were working in practice (regardless of how they were intended to work).

From this we would identify not only examples where systems and processes were falling short and where there were gaps. We would also identify how people were filling those gaps to keep things running. We could also see examples of where things were working great. This gave us the potential to learn deeply about the system and respond appropriately to allow for success to be more sustainable in the future (i.e., resilience). For example, one site was working exceptionally well, primarily due to a unique combination of leaders at the site who were working well with each other and with the workforce. However, we identified this was due to chance, not because of anything the organization was doing intentionally. This led to a robust discussion about how leaders are chosen for sites, how leader success is measured, and how good leadership practices are shared across sites.

In addition to the inductive approach, we also identified that collaboration was key for this process to work. This means we needed a diverse team to lead this new process at each site, but we also wanted to bring in site members onto the team as much as reasonably possible. For this reason, the team leading the process at each site would include members from different parts of the organization, such as safety, design, frontline supervisors at other sites, executive leadership, etc. This diversity in perspective allowed us to not only interpret information from different perspectives, it also allowed us to make connections between what we were learning at the site in question and other parts of the organization.

To avoid biasing the data gathering portion of the process, we opted to have only process team members do interviews and focus groups with site members. However, beyond that, site members were brought into the process team for all other aspects. This means they helped in interpreting the results and in identifying opportunities for improvements. Bringing in site members onto the team allowed us to better make sense of what we were seeing and provided additional context. Further, site team members felt like they were a part of finding ways to make their site better, rather than merely being picked up.

We piloted this new process at a couple sites of various sizes to test the concept in different conditions and to work out the bugs. We found some opportunities to tweak and improve the process, but people involved in the process were unanimous that the process was far more productive and helpful for both site members and team members. People were sharing lessons learned across different sites. Sites were not only identifying opportunities to improve performance, but also were identifying innovations that the workforce implemented to keep things running that they could sustain and, in some cases, expand. And leadership got a better feel for how their systems and processes were working in practice, not just at the site, but across the organization. Currently, the organization is working to roll out this process more broadly using a phased approach based on different size projects. And we are training and coaching team members across the organization so they can conduct these learning processes in a scalable way moving forward.

Gomes, Paulo

Self-declared "positive deviant" fascinated by the power of human factors to positively impact the conditions in which humans work; professional experience working in multinational corporations around the world in construction, mining, and oil and gas sectors.

What happened: On 17/02/2017, a novice tyre fitter attached a deflation tool to a valve stem in preparation for deflating a 63' tyre prior to a tyre change on a haul truck at a mine site in Australia.

Whilst in the process of unscrewing the valve stem to release the pressurised air, the internal shaft of the deflation tool unexpectedly came loose from the main body of the tool, resulting in a sudden release of pressurised air and propulsion of the shaft towards the tyre fitter's chest. The tyre fitter was immediately taken to the first aid room for a check-up. However, they did not sustain any injuries. This event was classified as a high-potential incident.

Upon the investigation, the following issues were identified:

- The top part of the tool could potentially be unscrewed whilst turning the shaft to remove the valve stem.
- This type of event was a normalised risk by the workforce. It was identified that 8 out of 10 of our experienced tyre fitters had already experienced a similar event with the use of the same tool. Their comment was, "after the first incident with this deflation tool, every tyre fitter learns where they should position themselves, which is "outside of the line of fire."

Potential Solution:
During our Learning Teams exercise, we identified two potential solutions to prevent similar events from happening again:

- First, develop a rubber cover to wrap the deflation tool, preventing the screw located on the top of the shaft from coming loose. We didn't go ahead with this initiative because it would not solve the problem. We would be only hiding the problem until somebody else uses the tool without the rubber cover for some reason and experiences another unwanted event.
- Second, redesign the tool.

I contacted the OEM located on the other side of the globe and proposed that we should work together and redesign their tool, or I would have to ban their tool from our mining operations across four continents. The OEM accepted the challenge and assigned two engineers to work with me on this project. We developed two prototypes and carried out several trials over nine months until we finally created a safer tool for the whole mining industry.

I believe that we (safety practitioners) should strive for improvements at the design phase of our projects to reduce inherent hazards whenever possible.

Harris, Phillip

PCH Consultants, Director

Don't try to boil the ocean!

I have been developing and delivering Human Performance, HPI, HOP, and any of the other similar sets of safety management principles for the last 20 years. One of my biggest regrets has been that I, as an instructor/facilitator, am in-part responsible for the direction in which our industry took the subject away from the human and organisational focus to the singularly narrow direction of trying to fix worker behaviours.

During the recent years, working on large construction projects I have seen some small but nevertheless important indications of change. Most importantly, I have not been trying to teach but to get people to question their own beliefs and open their minds to the possibility that there may be better, different ways of managing safety.

My favourite questions for any front-line leader are: "Do you want to know how work is done before or after something bad happens," and "How do you know if the work was completed successfully–was it because your team is very good or very lucky?"

Many of these leaders respond very well; they become inquisitive and start to ask questions. The most important principles they need to begin with are, firstly, that people will not speak with candor unless they feel that it is safe to do so. An environment where they feel psychologically safe is essential. Secondly, as a leader they need to understand the realities of work, the gaps between work-as-imagined, work-as-prescribed, work-as-done and work as disclosed. The works of Amy Edmondson and Steven Shorrock are key here.

But Senior Leadership are different! They are less likely to change what they do, that which their salary has been dependent upon, at the behest of a safety professional. Generally, senior leaders do just as much as is necessary to satisfy the Board, the Owners, Governments, Regulators, and Industry Bodies that have a say in how things should be done. It is possible for each of us to have an impact, it is possible to start asking questions that identify a knowledge vacuum (thank you Shane Bush for this) within any of these bodies. When such a situation is found there is a natural tendency to want to fill the vacuum.

Asking questions leads to the use of different words and terms that in time lead to changed mind-sets.

A good friend once reminded me that I was 'trying to boil the ocean,' and he was right. We need to take small steps, micro-experiments with principles that show success can have a deeper impact than trying to implement a program that few understand.

For example, following several lock-out/tag-out issues having been discovered, a site safety stand-down was initiated, and root cause analysis of each individual case was performed. A communication was sent to all leaders for them to disseminate to their teams. The information cascaded down informed all staff that the investigations had found that these were 'Human Error' events, and that the staff involved had been identified and punished. Human Performance and Behavioural Based Safety at its finest.

I decided to look deeper to try to understand the local rationale behind the actions performed by the operators. It was only possible for me to meet with one of those involved, a young Asian man for whom the English language was something he was at that time learning. I discovered that the lock-out isolation that he had incorrectly applied was performed some 5 months prior to its discovery.

In their desire to follow the process and complete a Root Cause Analysis, the management missed the opportunity to learn.

The report sent to the management raised some important points:

- Story 1, Root Cause Analysis performed as specified in the procedure, the person responsible for the failure was identified and punished and the company issued a communication to all operators re-enforcing the expectations regarding procedure usage. It was noteworthy to point out that the same corrective actions had been used several times in the past!
- Story 2, the operator had no idea that he had performed the plant isolation incorrectly until he received notification of his punishment. He was not aware that an investigation had been performed.

The procedure, that he freely admitted he may not have followed step-by-step, he found confusing. English was not his first language. The procedures had been translated from his parent language into English and some of the words and terms used he did not understand.

In his Asian culture, procedures are not used as they are in the western world, for him they would normally be only a guide. His leader would normally instruct him as to what he had to do, something that is normal in a culture that has high 'power distance' (Hofstede's "Dimensions of Culture").

The lock-out/tag-out process was itself very different to the process he was used to using in his parent company. Additional comments made were in relation to the time pressures and limited manpower which meant that tasks that usually had two operators were often completed by one.

The good news is that a few micro experiments have recently been performed. Learning Teams have been established and have been run in parallel but independently with Root Cause Analysis investigations. Early indications are promising!

Hewitt, Tanya, PhD

Lifelong Learner, Founder of Beyond Safety Compliance

When I was asked to contribute to this guide, the most significant project I had worked on was internal – not to an organization, but to myself. In so doing, though, there might be some nuggets to share with those who are on their performance improvement journey, be it with Safety II, Human and Organizational Performance, High Reliability Organizations, or with any of the labels that are floating out there that people are using.

"They just don't get it." One strong mantra that seems to be in Western cultures is the belief that we can change other people. It's a pernicious thread that seems to be throughout not only our workplaces, but our social circles, our families, etc. We can change one person – that is ourselves. We can change the way we interact with others, which is how influence works. If we do not like the way leaders act,

ensure that you demonstrate to them how you would like to be treated in the way you treat them – act like the leader you would like to have.

"They aren't listening to me." Listening is a skill that we are not born with, and that few of us are formally taught. Deep, empathic listening takes a lot from the listener – and once again, it behooves us to learn how to do this and demonstrate it before automatically expecting it from others. It demands that we set aside our desired intervention, and truly listen for not only the words used, but the message delivered, which is often communicated emotively rather than intellectually. We need to check our assumptions of a message delivered with the deliverer – as we have our own filters, carry our own baggage, we may inadvertently taint their message with our own emotions and /or intellect, and we need to ensure that we are not playing the schoolyard telephone game that frequently yields a completely different message than the one intended. Take a course on listening – it could change your worldview.

"No one understands me." There are a lot of people in the world, and it is highly unlikely that virtually no one understands you. It is possible, though, that you are not regularly in contact with such people. You need to see how you are spending your time – with people who are bringing you down, who bring out the worst in you – or with OQP – Only Quality People – who serve you and you can serve. That last point is important – if no one understands you, how many people do you understand? And if people do not serve you, do not villainize them – just to realize that perhaps you could spend less of your time with them. If you are trying to launch an initiative in an organization, it is important to ally yourself with OQP certainly at the outset.

"This feels uncomfortable." I don't think anyone wished a global pandemic, and that most people in the world felt a level of discomfort, be it from government interventions, workplace changes, and/or familial interruptions. We have all been affected, but we have responded differently. Those who were removed from their comfort zone and lamented continuously on how they are not happy with the situation did not do as well as those who realized that growth and learning can *only* occur once you exit your comfort zone. While the familiar has a purpose, we need to expand our horizons if we truly want to learn, grow, and reach our potential. Challenge yourself to new experiences (music, foods, activities, people, movies, etc.) to get to be more open minded. As Susan David says, "Discomfort is the price of admission to a meaningful life."

This is but a snippet of my learnings from a year of introspection, but I believe that if we all could take a look at ourselves before we overtly criticize others, if we could orient ourselves towards more curiosity than judgement, we would have a better world. But this all starts with you.

Hogg, Moni

Safety Differently Specialist

Below is a Self-Managing Team approach based on Safety Differently principles. Self-management is very effective for engaging teams to iron out risks quickly, work together to resolve issues, and remain agile and lean.

This approach was developed with two engineering and tech-based start-ups in New Zealand. In both cases, safety management needed to be responsive to a fast-paced, rapidly changing environment, with

a team of highly capable and engaged staff. It was clear that a traditional “command and control” style of safety wouldn’t suit the needs of the organisations or the people. Creating bureaucracy would only hamper the need of the organisation to remain as agile as possible. A safety department can provide well-meaning advice on the systems required to enable safety in a reasonably stable environment, however the design engineers and project teams are by far and away the most qualified to make on-the-ground decisions about designing safety into the burgeoning development of activities and tasks required to manufacture new products and systems.

These three steps provide a roadmap to create a Self-Managing Teams structure:

1. Employees/teams make all safety decisions
2. Teams decide what resources and equipment they need
3. Prompt management approval of Business Cases

Employees/team make all safety decisions

Your teams are actually very capable of making pretty much all your safety decisions. This encompasses:

- Safety rules
- Safety procedures
- Documentation needs
- Training needs
- Critical risk continuous improvement
- Monitoring and checking

Teams decide the equipment/resources they need

The key to Self-Managing Teams ensuring their own safety is the ability to resource themselves. This is the part where trust from management comes in. Treating our people like adults involves giving them autonomy in the company with some of the purse strings. It’s an extraordinarily empowering way to operate. It also shows we mean what we say when we ask them to take ownership for their own safety. We’ve put our money where our mouth is.

Management approval of business cases

The reality is, teams will need a spending limit. An example could be $5,000. However, they will want and need to spend money on bigger ticket items, such as new machinery. In this case, they need to pitch the requirement to higher management for approval. This is an important process to go through, and very good for personal development of team members. For a semi-skilled technician, learning how to put together a business case is the meaning of empowerment itself.

Key benefits/outcomes from this approach:

- The processes, systems, and safety protocols are fit for purpose for your business, meaning greater efficiency, productivity, and safer alignment with work goals.
- Little wastage. Your teams know what they need and make better decisions than centralised functional teams with less bureaucracy. Time is saved, and only necessary plant and equipment are purchased.

- The greatest benefits are more flexible, agile, engaged, responsible, empowered, and trustworthy employees. Giving ownership is a powerful motivator.

Hummerdal, Daniel

Innovation Head

From supply to demand

Management clearly knew which failures they wanted to correct. But it was equally clear that they had no idea how to activate and mobilise different actors across the company to work together and overcome.

Intensely frustrated by a series of breaches of the company's working-at-height procedures, this group of managers were ready to supply a suite of interventions: a strong message, supported by big posters stating what were the acceptable and non-acceptable practices; a safety commitment charter for crews to ceremoniously sign; tighter contracts for the service providers; and other ways of throwing behavioral lassoes around the wrong-doers.

> "Have you tried these interventions before, and if so, did they work," I asked. The group fell quiet.
>
> "What do you suggest," I was asked in return.
>
> "I don't know what the solution is, but I know where I'd like to start. I'd like to understand why the operators didn't use the right equipment, what they're trying to achieve, what they are trying to avoid, and what is important to them. I'd like to try to make sense of this behaviour before I jump to solutions. And the best way I know of doing this is to ask them what it's like to work on this site," I replied.

After some internal politics, I could run focus groups with the crews on site. But on one condition: if the crews didn't bring up working-at-height in the conversations, I had to ask about it.

The operators were not shy. I asked them to share examples of when their work was difficult, and they let me have it. The fact that I promised to take their (anonymized) stories to head office only seemed to fuel their enthusiasm for sharing. The digital voice recorder on the table probably helped to give a sense of importance to what they said, rather than stifling the conversation.

The crews told of equipment shortage. And of competing crews that nicked tools and resources off each other. They told of long periods of asking head office for things and never hearing back. Of reporting hazards and incidents that generated zero change. Of how they had stopped speaking up. About how different subcontractors were stepmotherly treated by the client. And always, to my delight, they brought up the working-at-height situation: how concerned they were, how unprofessional they felt, how quality work was undermined by the push for efficiency, amidst resource scarcity, and broken and fragmented collaborations. Some stories were about safety, some more about frustrations and well-being, some about training, yet others about productivity. A lot came out.

The recordings were subsequently transcribed, and I identified all the events and conditions that had been discussed. Each identified was pasted on to a separate page. Some were only a couple of

sentences. Some stories covered a page or more. I got 150 illustrations about what work was like on site. I then invited crews from the site and the head office managers for a collaborative analysis session. Thirty people came to the session. The stories were organically posted around the room. I asked the participants to pair up with someone they normally didn't work with and read a story together and briefly discuss what it was about. The pairs slowly made it around the room. Quiet, confidential conversations started between the individuals as they gradually built a picture of what work was like on site.

After about 45 minutes I asked the group to come back together and share what they had observed:

> "It's a mess."
>
> "We're a whiney bunch."
>
> "But this is what it's like here."

No one dismissed what was presented. The most senior manager from the head office didn't say anything but looked rather pale.

After the group had validated the stories, they were asked to put stories together that illustrated the same issue. During half an hour the stories were reorganized by the participants. After a while the sorting slowed down and had seemingly stabilised. The subsequent work involved defining the themes - what the conditions and events were that allowed these difficulties to occur. And if time permitted, what their ideas were for doing something about the various challenges.

Everyone stayed engaged. Everyone took the task seriously. There was a sense of importance. At the end of the session, we spoke about the next steps. It was clear that everyone wanted to see things change. And everyone had ideas on what could and should be done. We decided to launch a site improvement team that would work through the identified challenges and sources ideas from the people on site. The most senior leader on site was also part of the group and had access to funding and decision-making authority should it be needed. I stayed involved for the first couple of ideation sessions, but they were perfectly able to generate ideas, to choose between them, and to follow up on implementation progress.

Within a couple of months, the site looked a lot sharper. It was clean, had a fresh coat of new paint, and there were new ways of organising resources, equipment and consumables. Moreover, efficiency was up and fines for late delivery were a thing of the past. The site had gone from problem-child to becoming a centre of excellence. And the head-office had found a role in being supporters of what came out of the site. There was no need to supply solutions. A demand had been created, a sense of autonomy and ownership awakened, and it fueled site improvements for many years to come.

While this was a serendipitous start for me in initiating improvement work, I've since realised that there is much room for a more systematic approach. For example, a better evaluation framework would be helpful. And capacity-building efforts should not be evaluated only in relation to whatever triggered them, what is unwanted, or incident frequency rate. Instead, they should be evaluated on whether they create progress towards a goal or a desired direction, i.e., if the work keeps developing and diffusing out across the workplace. This also requires more active directionality and ongoing engagement between the centre (HQ) and the local sites where the work takes place.

Johns, Adam and Bown, Simon

Safety Practitioners

This story is about a longstanding, largely punitive culture surrounding safety incidents and their investigation, with individual frontline operators often being disciplined for making mistakes or not following procedures in ways that made sense to them.

This was resulting in very limited learning and improvement, and a culture of fear regarding making mistakes and reporting them. Preventing the recurrence of such incidents was therefore a challenge, due to a hyper-focus on the individuals involved and what they did wrong, rather than how the system and environment they work in may have created the conditions for what happened. There was little attempt to understand why an individual's decisions and/or actions made sense to them at the time, but ultimately led to an undesired event.

Here's the context:
A UK urban rail operator that has been operating for over 30 years. Many frontline staff and managers have been working in the operation for over 20 years. However, we now have 3 or 4 different generations carrying out frontline roles, from people in their late 50s / early 60s, to staff in their early 20s. There are a lot of cultural norms that have built up over a very long time, and this has resulted in certain norms for managers and staff regarding safety incidents and information sharing.

Newer and younger staff (both frontline and back office), with different cultural expectations from their upbringing and experience in general society and other organisations, challenge the prevailing approach and its long-term effectiveness in improving safety and other business objectives.

How's how we learned about this issue:
Following safety culture surveys throughout the past few years, there was a clear desire across the organisation to try a new approach to safety. Safety performance, at least as measured by undesired events, had plateaued, and culturally the organisation had a negative cloud hanging over it with regards to safety.

A new director of safety (HSQE) was recruited on the basis of introducing a new approach to safety, largely based on the "New View" concepts and practices. A programme called *Next Platform* was created and a largely new HSQE team was recruited to advance the organisation towards the application of New View principles and to implement the programme.

Here's the approach to the solution:
The main thrust of the programme was to create a more just, learning culture across the organisation, so that not only safety performance could be improved, but also operational performance, staff engagement and wellbeing.

Practically, this has so-far focused on replacing the existing safety incident investigation protocol with the Learning Review approach (see the work of Ivan Pupulidy PhD and Crista Vesel MSc at the US Forest Service.) Other workstreams include Normal Work Studies, Innovation Labs, and an enhanced focus on critical risks and controls.

Learning Reviews use systems thinking and a judgment-free sensemaking approach to understand why things happen and why people make decisions or take actions that make sense to them. The aim of a Learning Review is to ensure that everyone learns from operational work, particularly following undesired safety-related events.

This learning can't be achieved with an overarching culture – or perception – of blame and punishment, because, as Professor Sidney Dekker says, "you can learn or blame, but you can't do both." Hence, Learning Reviews are 'blameless' in their approach, but the Learning Review process takes place inside a Just Culture. More specifically, this is a *Restorative* Just Culture, rather than a *Retributive* one.

A restorative just culture is about restoring trust, confidence and accountability after an undesired event, and acknowledging that the vast majority of such events are the result of mistakes, errors, or simply people doing their best to get the job done in a challenging set of circumstances. The restorative just culture also makes clear what behaviour is not acceptable, so that in a very small number of instances, staff may be disciplined in relation to safety-related events for misconduct and/or reckless or negligent acts.

Here's how we implemented our solution:
Initially, we engaged with the Executive team regarding the principles of restorative just culture and learning to gain buy-in. Following this, we began discussions with department heads, managers, supervisors, and union leaders to explain what we were trying to do, and why.

Initially there was some scepticism, and still is to this day. But that's ok and encouraged because it helps to improve the discussion and hone the processes. The Next Platform programme was divided into three phases:

1. Change the Conversation
2. Change the Approach
3. Change the Outcome

This was due to a recognition that, as this was both a mindset/culture change and a process change, we needed to begin with the language we used to describe and discuss safety. "Words create worlds", so we needed to gradually introduce a new language and set of terminology for safety, whilst slowly phasing out the old language.

One example is replacing 'investigation' with 'learning review'. Another is replacing 'cause' with 'influence'. Once the conversation around safety evolves and advances, the approach can be changed with new processes. We are currently in the process of training over 100 senior leaders, managers and supervisors in restorative just culture and the Learning Review process, putting us in a phase change state between phase 1 and phase 2.

Throughout 2021 we also conducted a trial of the Learning Review process to help us understand its real-world applicability. The trial was largely successful, with significantly more organisational learning coming from safety events and significantly fewer events resulting in disciplinary actions being taken against workers.

We've also worked very closely with our Training, Internal Communications, and Human Resources colleagues, utilising their skills to help us deliver the programme so far.

How workers felt:
Workers were initially sceptical, and this is why it was important to engage the union leadership in what we were trying to achieve. It's not been simple or easy to engage workers en-masse, and I think we've learned that we should've spent more time working out how to communicate the change to workers better.

In terms of individuals who have been exposed to the Learning Review process and the restorative just culture, they have largely had a positive experience, and one that would have been very different under the old approach.

What were interviews are now Learning Review Conversations and are run in an informal manner in order to explore learning about the event and what it can teach us about how normal work gets done, leading to better system-level learning as well as more effective individual learning.

One key change in the method of the discussion is that we ask workers what they think the organisation can learn and what they have learned, or need to learn. This puts the ball in their court regarding their own learning – it's about creating a forward-looking accountability for learning and a culture where self-directed learning is the norm.

How managers felt:
Like workers, initially some managers were very sceptical and some very open to the approach. There is still a degree of scepticism now, but we see that as a good thing.

The main concern was about creating a consequence-free culture, where workers feel they can do anything without fear of punishment. We have spent a lot of time trying to show managers that this isn't driving at that, but creating a fairer culture, where the consequences for the individual are linked to the intent behind their decisions and/or actions, not linked to the severity of the outcome. Once managers understand this and perhaps experience a case where the process does allow for a person to be subjected to disciplinary procedures, much of their scepticism goes away.

Overall, most managers recognise the value in the new approach because it's more humanistic and ultimately aims to make the organisation a better place to work, as well as a safer one for staff and customers. Who wouldn't want to get behind that?

More actions:
We haven't just done this *to* the organisation, we've tried to do it *with* them. In a way this has probably made it take longer to implement, however it's better to bring as many people on the journey with you as possible rather than implement something without their support and watch it die.

'Next Platform' is as much about advancing culture and mindset as it is about changing practical processes. Culture change takes years, it's messy, and it's iterative.

Having an in-house team of passionate advocates of this new approach, with a team leader on the Exec team, has vastly helped the programme. It means we can 'sell' the approach in as many conversations as possible.

How we shared the story throughout the organisation:
The organisation is part of the story because this is a change that affects everybody. We have aimed to

keep everyone up to speed with our collective progress over the past 18 months, however we've not always communicated effectively – but this has been difficult anyway in a pandemic!

Lessons learned and tips to share:
Having a clear communication strategy and plan for all stakeholder groups, and sticking to it, is key. Having an in-house team to drive the change is critical. Ideally advocates at all levels of the organisation who can 'sell the message' as often as possible.

Identify measures of success before you begin. These can be qualitative measures, but you need some baseline measurements to compare to, such as employee engagement scores or other cultural markers.

Be prepared for a long, hard slog with the change. It will be iterative and at times very hard and you may feel like you're going backwards. But keep going. If you're passionate enough and can convey that passion to your people, you will cut through.

Kernick, Gill

Consultant, Author: Catastrophe and Systemic Change

One piece of work that stands out to me is working with a team who dramatically and sustainably turned around performance regarding high-risk defects being left in customers' properties.

Safety performance had been declining for a while to the point that it was of real concern. Practices aligned with blaming workers had proved ineffective (e.g., people who left an error were immediately suspended and put under disciplinary proceedings).

Over a six-month period, safety performance improved dramatically with a sustained impact on performance. More satisfying though, was seeing the team flourish and the leaders grow in confidence as they learned new ways of working and operating.

To challenge myself, and keep this brief, here are eight things we did that I believe were essential to the result (and you will see resonance with some of the latest thinking in safety):

1. Production targets were removed. Front-line workers said that the targets were driving short-cuts, so management removed the targets with the message– do it safely. Performance initially dropped and then recovered.
2. The leadership team took themselves on. They re-arranged their lives and priorities to spend significant time in the field with their teams to understand the issues and to support as needed.
3. We successfully shifted from a blame to a learning mindset. Through a variety of activities, starting with workshops with all supervisors exploring why this was such a critical shift.
4. How incidents were responded to shifted dramatically – with a desire to understand why decisions made sense and to share insights and learnings.
5. We actively encouraged speaking up and workers were acknowledged for coming forward and saying they were concerned they had made a mistake on a job.
6. The chief engineer worked with the front-line workers to de-clutter procedures and communicate clearly the small number of potentially high-risk activities and how to mitigate.

7. We worked through the line. In lone-worker environments especially, there is never one culture, but rather as many cultures as there are supervisors, so we developed and supported the supervisors to set the tone and culture in their teams.
8. Bad news was actively sought and welcomed. The leadership team understood that breakdowns and bad news helped them identify the work to be done.

As a consultant this was a dream team to work with. I did very little apart from listen and offer some ways of thinking and ideas.

The benefits were dramatic, both in terms of the reduction in incidents but the time this saved in investigating and correcting errors after a couple of months created significant extra capacity in the business.

Lloyd, Clive

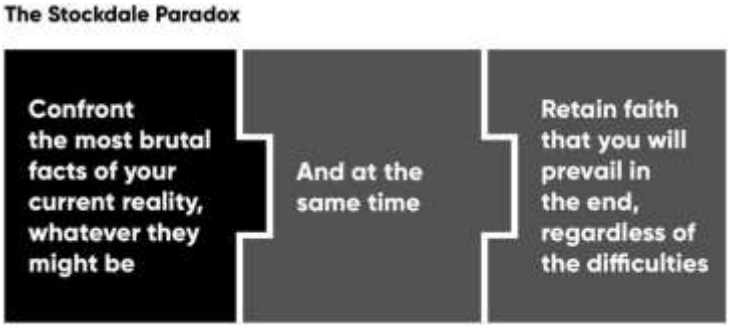
Director & Principal Consultant, GYST Consulting Pty Ltd; Author, "Next Generation Safety Leadership: From Compliance to Care"

The story below is based on a verbatim request from a CEO after he and his team had read through the results of a recent climate survey, and a more comprehensive guide to facilitating this approach can be found in my book, *Next Generation Safety Leadership: From Compliance to Care.*

To me, a good place to begin the ongoing and relentless journey of creating and maintaining trust and Psychological Safety is by introducing regular, structured forums to elicit candor from the workforce. In my experience, leaders who regularly bring their own teams in to share frank and forthright feedback enjoy a number of worthy rewards:

- Teams learn it is safe to share ideas, challenges, and even bad news
- Teams have the knowledge they actively contribute to resolving challenges
- Increased team esteem, pride, empowerment, and satisfaction
- Increased perception of personal control and influence
- Increased trust and psychological safety
- The team just works better

The tool I suggested to the CEO is the Stockdale Paradox, and we helped the client to set up the process I describe below.



At first there were concerns from both the management team and the workforce. From the management side there were fears that they would hear all manner of "bad news," (well hey, you can't fix a secret!) and the workforce was initially fearful that there could be repercussions if concerns were openly shared.

I explained that there are, of course, mutual responsibilities and expectations that are followed during the activity to ensure that candid feedback is expressed and received in respectful ways. For example, input from the group needs to be constructive rather than personal or disparaging. Similarly, leaders need to listen without defensiveness, understanding that the group's feedback is benevolent in nature and derived from a sincere intent to help.

Using the Stockdale Paradox with Your Team

In my experience, it is desirable to facilitate a Stockdale Paradox activity regularly to resolve challenges as they arise. Moreover, when the activity becomes a routine component of a group's schedule, leaders and teams become increasingly skilled at deriving the maximum benefit from the process. The three-step activity does not have to be overly long, although naturally more complex challenges require more time to work through.

Generally, we'll start with two large sheets of flip-chart paper on the wall. On the first sheet we'll give the heading 'Our Brutal Facts.'

Step 1: Identifying Brutal Facts

On this sheet, participants record what the team identifies as current challenges. The facilitator helps the team to get specific about the challenges, as the clearer they become, the more powerful the second part of the activity can be.

Step 2: Control and Influence

The next part of the process involves teaching (or reminding) the team what they can control and/or influence (as well as what they can't). This is usually done by moving through the circles of control, influence, and concern popularized by Covey (2004).

Next, we ask the team to return to their identified brutal facts and indicate for each aspect of the challenge whether they think there are elements they can control, influence, both, or neither.

Step 3: Our Chosen Responses

Once the team is clear about what they can control and/or influence, we move to the second sheet of paper that has the heading 'Our chosen responses.'

On this sheet the team writes down specific actions resulting from what they have agreed they can control and/or influence. The language needs to be specific and action-oriented.

The Stockdale Paradox activity is a fairly simple process; however, when facilitated well (and regularly) it has some enormous payoffs which were evidenced by our client. While there were some challenges (mostly around below par facilitation skills of some leaders, which were rectified via coaching) results of the regular forum included:

- The teams felt involved

- It taught the team that sharing ‘brutal facts’ (bad news) is safe
- As the process helped teams to get clear about what they can control and influence:
- It built optimism and resilience
- It created a sense of ownership
- It increased the flow of authentic communication (‘top down’ and ‘bottom up’)
- It built trust and Psychological Safety

Give it a shot!

Lynch, Elisa

Head of Organizational Learning & Performance

Writer’s block…

Imposter Syndrome…

Christ On a Bike I’ve surely improved something somewhere at some time or other…

hyperventilates

Think. Think. Think.

Ok.

When I think of a specific implementation or solution in a ‘New View’ context I find myself coming up short. In general, my technical experience in implementing solutions, improvements, etc. has all been based around traditional safety management systems. Broadly speaking this has been taking small to medium organisations from very low compliance and engagement with health and safety to a marked increase of compliance and engagement (insert impressive statistic here).

However, the manner in which I’ve achieved those improvements has always been the same. Start from a place of empathy, understand the context, absolutely have the craic while I’m at it.

As Brené Brown says, organisations are made up of “people, people, people.” And “people, people, people are just people, people, people.” I like talking to people. It’s the best part of my job. Conversations are fun! It also happens to be the quickest way to gain insight into both the problems and successes within the business.

However, it never ceases to amaze me, specifically in companies where there is a disconnect between management and operations, how ingrained legacy issues can be, and how much havoc assumptions can cause. (None of us are immune to making assumptions, and it can be hard habit to break – ask me how I know…). A simple challenge of assumptions can shift a dynamic so fast it will make your head spin.

As an example, when I hear absolutes or binaries, I know it’s time to scratch at the surface a little bit. Many variations of the following exchange have led to some of the biggest improvements I can recall to date:

Foreman: Our excavator broke down, so we can't get this trench backfilled in before end of shift.

Me: Can you not hire in another machine?

Foreman: Head office don't like us hiring equipment. Ever. But we're still expected to get the job done on time regardless.

Me: Since when do we not hire stuff?

Foreman: Since always!

Me: A dumb priest never got a parish! I bet if you gave them a quick call and explained, they'd get a machine on hire to you this afternoon.

Foreman: They won't.

Me: Humour me, give them a call and see.

(Notice the following words are absent from the conversation: safety, risk, hazard, control, compliance, non-compliant, unsafe, policy, Safe Operating Procedure)

Learnings:

- Way back when, there had been an aversion to hiring in equipment unless absolutely necessary as it was seen as dead money. This somehow evolved into "we never hire equipment/they won't let us". One phone call and 2 hours later, much to the surprise of the Foreman, there was a hired machine on site.
- Interestingly, during a follow up chat with management, they were equally surprised that people assumed they never wanted to hire equipment. They absolutely understood the need for ad-hoc hiring to keep a job ticking along and made sure to communicate that out to all sites.
- You can talk about safety without talking about safety

So. I don't have examples of snazzy New View policies or fancy interventions. I can't describe an expensive culture change overhaul program rollout. I've yet to find a silver bullet or a comprehensive "how to New View." I do know that you don't have to be working for a big organisation with huge teams and budgets to be able to take a different approach, have an impact, and see improvements. It doesn't have to be fancy. Just help people get what they need to get their work done as safely as possible.

To finish, what I know for sure is that the more time I spend talking to People, People, People, the better the outcomes tend to be. Just give it a go, one conversation at a time.

MacPherson, James

Founder, Director, Chief Operational Risk Consultant, Risk Fluent

I wanted to talk about two clients I have worked with, so a slight drift from the scope of the article (insert joke here about "article as done vs article as imagined"). There is a reason for this though. I think that we often look at the end result of something and celebrate it. However, we rarely talk about how or

where to start, and this is the question I get from listeners of the podcast and from clients all the time. The other reason I want to talk about these clients in particular is because the situations have really challenged me. They are both such a great example of how it's not as simple as the books, keynotes and podcast interviews (yes, I am also guilty of this) make out it is.

Client one, a huge company that manufactures large machinery and moves it around the factory. Lifting operations is a serious and fatal risk. I walk onto site on the first day and see all the red flags (or at least what I believe to be red flags). The mirror on the wall with the line "this person is responsible for safety," "zero harm" all over the walls, you get the picture.

However, when we talked to the senior leaders on site, something interesting happened. Without any prompting, other than us asking questions about how they deal with error from the shopfloor, the most senior person in the company turned to me and said, "Look, I know that people come to work to do a good job, but I don't think we help them do that." Well, you could take that line out of any New View book. So, we knew it wasn't the leadership that was the problem.

We started to really dig into the safety systems. One thing was clear really quickly; housekeeping was a huge drive and focus, so much so that when we asked shopfloor staff about safety they said "yeah, it's safe here, it's really clean." Not one employee talked about the lifting operations; the lift plans were covered in dust. Ironically, it was recent incidents involving lifting that prompted us to be called in.

Interestingly, a lot of staff asked us not to take their names down when we were making notes. All of the shopfloor staff complained that there was no safety team presence; we looked into that. The safety team were drowning in processes and plans and reports from every direction. The risks here were mostly managed, but there were areas that needed to be more resilient.

Because of this, we had time to pitch and plan to move forward with improvements, which included the following:

- Educating leaders, managers and staff on how humans and organisations work together;
- Educating leaders, managers and staff on how organisational culture develops over time from the day-to-day interactions;
- Increasing employee involvement in risk management and work design;
- Decluttering the system and prioritising the risks.

Client two is really interesting because it is one of the few cases I've seen where everything needed work. There were tangible risks on site that needed to be fixed immediately; there were resourcing and leadership risks; there were capacity issues; plant and machinery were in horrendous condition; site welfare was inadequate; the list goes on. We didn't have the luxury of time here to pitch and plan to move forward. A lot of things needed immediate improvement and operations needed to cease in some areas because of the sheer risk to life.

But here we had moral and commercial aspects to consider; it isn't as simple as stopping work altogether. We were in talks about shutting the site down, which involved putting people out of work, costing the business serious turnover, turnover that would contribute to the money we needed to spend on improvements. Irony!

Working with the managers, some operations were stopped and others were shifted to different areas. We had to "pick our battles" and hit the immediately serious and fatal risks that we could fix right away. Then we had to work fast on building a foundation of basic risk management, so to speak, to earn us the time to deliver the more "new view stuff." But here's the catch. We had to do the "new view stuff" at the same time. It wasn't a case of Safety 1 first, then Safety 2. It had to be simultaneous because we needed a mindset shift from leadership to get them to engage and ultimately grant us the budget we needed.

So, we were concurrently:

- Onsite, showing face, talking to people showing them we care;
- Stopping/adjusting/fixing work with immediate risks;
- Talking and coaching leadership to ensure we could spend our time in the right places;
- Accepting better, but not always best, because to quote the wonderful Peter Jenkins, "sometimes better is better than best."

The reason I wanted to focus on these clients is because the situations were so totally different from each other, and in all of the books and conversations I have over the last few years, I'd never really found a concrete solution to where to start. I didn't want to write about our successes and drive more change for changes sake. I wanted to tell you how we started, with two very different but equally challenging clients. You must start with the problem before you go into solution mode; define the problem. Then, learn about the problem, dig deep to find out what the contributing factors are.

Next time you read something like this guide or a book try:

- Understand your reasons for wanting to change;
- Define the problem you are trying to solve;
- Learn about the problem; what is contributing to the problem? Carry out an ECFA.
- Find out what other people think about the problem. Do they think it's even a problem?

If you have too many problems and can't see the wood for the trees, then:

- Get help;
- Prioritise and pick your short-term battles;
- Accept there is a risk because you can't solve everything overnight;
- Accept that sometimes better is better than best;
- Then start back at point 1 for each problem.

Mazulewicz, Jake, PhD

Founder & Owner, JMA Human Reliability Strategies

How Sandy Transformed Investigations into Event Debriefs

Imagine a research laboratory where 1,000+ scientists and technicians work on some of the most advanced projects in the nation. Particle beams. Vaccines. Supercomputing.

There's enormous potential to help humanity, and serious risks too. Toxic chemicals. Radioactive liquids. Fragile, expensive superconductors.

For decades, leaders at that laboratory relied on a Control-Based Approach to errors and incidents. Decades of rules, procedures and compliance accumulated to create a culture of fear.

Many employees were scared to admit that any project went anything other than 100% perfectly. And when something went wrong, the investigation that followed felt more like an "Inquisition." The result? Many front-line technical experts tried to comply with increasingly frustrating rules and learned to not say anything unless they had no other choice. Leaders scratched their heads and wondered why employees were so disengaged. Countless insights, ideas, and innovations were likely lost forever.

I was invited to teach workshops and advise leaders in that Laboratory. One of the core concepts of the Learning-Based approach I teach is Psychological Safety. Instead of "punishing their way to excellence" by treating errors as failures, I show that the world's most successful High-Reliability Organizations (HROs) treat errors as opportunities to learn and improve their systems. So, the most effective long-term way to reduce unwanted errors and incidents is to eliminate blame and finger-pointing and create more trust, Psychological Safety and continuous learning.

Sandy participated in one of my first workshops at that lab. She was an expert, full-time, senior Investigator. For 20 years, Sandy worked in high-hazard industries trying to understand complex incidents and errors and how to prevent them. After my workshop, she told me that she had, *"been looking for an approach like this her whole career."*

Still, Sandy knew that trying to change 30+ years of tradition & bureaucracy in a highly-regulated workplace was an Olympic-level challenge. I worked with Sandy one-on-one several times over the next 2 years. I showed her practical methods including the Substitution Test, and After-Action Reviews. Sandy ran dozens of low-cost, low-risk micro-experiments or "pilots" to find out what worked and what didn't. I gave guidance and feedback when needed. Sandy attended more sessions of my workshops, each time, soaking in more nuances of core concepts like Psychological Safety, and the System View vs the Person View of errors. In my workshops, Sandy started to share some powerful, real-world results she was getting from transforming traditional investigations into learning-based Event Debriefs. Eventually, some of the lab's regulators attended my workshop, too. Their feedback was reserved, but quite positive.

Word started to get around.

Skepticism turned to curiosity.

Curiosity turned to interest.

And fear changed to cautious optimism.

But the biggest challenge lay ahead.

Before Sandy started this journey, investigations were not only punitive, they were slow. They regularly burned up 3-6 months of time and effort before any results were published. By that time, most people's memories of the original event, and their motivation to learn from it, had simply evaporated.

For two years, Sandy kept streamlining and simplifying her Event Debriefing process. She built trust by keeping the process 100% transparent to executives, regulators, other event debriefers, and every employee whom she debriefed.

By the spring of 2020, Sandy had refined her process so well that she and her team reduced the average analysis time from 3-6 months to only thirty-two (32) days! And quality remained high. The new Event Debriefing process included thorough fact-checking, causal analysis, a review of human and organizational factors, and clear, actionable conclusions.

Over three years, Sandy's persistence paid off. Her new non-punitive Event Debriefs generated far more useful ideas than the old blame-based investigations ever did. And the technical experts who Sandy debriefed were no longer scared to speak up. Now, about 5-7 times per year, front line teams *voluntarily* share with Sandy's team priceless success stories and eye-opening cautionary tales. These "Check-ins" are rich with valuable insights, best practices, and lessons learned that seep throughout the culture, and spark powerful discussions that benefit the entire organization. No one is required to share these stories. Sandy simply created enough Psychological Safety throughout the culture that people now want to share far more than they ever did before.

In three years, Sandy transformed a heavily regulated work culture from one of fear and silence into one of trust, Psychological Safety, and continuous learning.

I'm honored to have helped her.

McCarthy, Pete FRAeS Bio

Head of Group Human Factors – Cathay Pacific Airways Group

Over the past 24 months our team has made a concerted effort to grow and embrace the qualities of "safety leadership," alongside extant "safety management" structures – this has enabled us to broaden our lens and take a real holistic "new view" of operational safety.

That all sounds very convoluted! What I mean is that we have taken an approach which builds upon the current Safety Management System (SMS) and structure. The traditional structure gives great insight into performance (benchmarked against imagined or prescribed behaviours) and this has helped contribute to safety performance for decades. Our new approach aims to build upon this and provide insight into the adaptive capacity of the system, understanding work as done, well-being, and many of the performance-shaping factors affecting our teams on a daily basis.

Our New View embraces concepts of Safety II, Well-being II, and a Salutogenic Approach to safety critical performance – this provides new data for our SMS and provides us with context we didn't previously have sight of. Traditional safety management can take a pathogenic approach (looking for detrimental factors, including performance, health, well-being etc), We might instead adopt a "salutogenic" approach, whereby we include a check on what goes well, positive health and positive wellbeing, rather than just those factors which may make us ill or suboptimal.

To structure this approach, I conceptually adopt a guiding model, the "REAL Model" which we are still adapting for our operation:

- Reduce the barriers to support – safety, wellbeing.
- Education and training – safety, wellbeing.
- Active commitment to safety and best practice.
- Leadership development – creating Safety Leaders.

This model guides us across three levels–strategic, tactical, and dynamic:

- Strategic – Reduce the barriers to support, education and training around resilience and wellbeing, leadership development, an active commitment to best practice.
- Tactical – Peer assistance, employee assistance, management assistance.
- Dynamic – Operational learning reviews, critical incident management, individual
- resilience through well-being practice.

Cognisant of the brevity required, I will focus on one element from each level.

Education and training around resilience and well-being: If we speak openly about well-being, and tackle this tricky subject head on, we will almost, through osmosis, inform the system as to the importance of individual, team, and organisational resilience and well-being. We help to create a culture whereby our workforce is confident to share information regarding this with the system. If this level of trust is established, we may for example see a reduction in absenteeism (reactive data), because the system was able to help before someone became ill, burnt out or broken - but also presenteeism (skewed data), whereby the system is at risk, due to someone being on the frontline who maybe shouldn't be (without proper support)!

Peer Assistance/Peer Support: Peer support, and the value of peer support, is well understood and established across many professional domains. The value of peer support to individual well-being is well researched – but what about safety and the system?

• The purpose of peer assistance is to make it as easy as possible for a safety critical worker to have a conversation about issues which could potentially affect their safe professional performance.
• The programme is run independently of both management and employee representative organisations.
• Peers: ordinary frontline workers who are trained in basic listening and stress-management skills, and who have extensive knowledge of company policies, that can assist their fellow worker in addressing their problems.
• These peers are trained, mentored, and supported by a suitably qualified Mental Health Professional (MHP).
• A structure whereby a worker can get confidential help with mental well-being or life-stress issues, either for themselves or for a colleague.

If we create a trusted link between our SMS and Peer Support Networks, we can get a feel for the overall wellbeing in the system. This is really only a finger in the air –but as with the weather, an anemometer may be required to get a true wind-speed reading, but a finger in the air can indicate which way the wind is blowing and how strong it is! For this link to be established, there must be complete trust between all parties. All stakeholders must agree to protect the confidentiality and sensitivity of the data received. All data must be completely de-identified before being presented to the SMS. Trust is key.

Operational Learning: Operational Learning Review (OLR) is a process designed to help us understand the context (the system) that surrounds and shapes people's actions and decisions. It is basically a form of discussion with the frontline operators that allows us to gain understanding and context around an event and then take a systems-thinking approach to safety.

It is specifically designed to facilitate the understanding of the factors and conditions that influence human actions and decisions by encouraging individual and group sensemaking at all levels of the organisation.

The OLR is:

- Non-judgmental
- Curious
- No jeopardy – Just Culture
- Treat the worker as the expert
- Confidential
- De-identified learning

My experience in conducting OLRs is that by creating this learning opportunity for the system, the front-line worker feels free to talk about many of the performance-influencing factors they wouldn't normally include in a report. Relationships, anxiety, workload, and stress have all been discussed during OLRs – this is not as a result of any incident or accident, instead it is simply a result of the whole system wishing to learn.

Anecdotal evidence of system learning from these strategies is very positive, and the approach is well received. Trust and openness are hard won, and therefore the value of the learning gained cannot be underestimated.

We have been very fortunate in that our senior leadership and our safety critical business units have been fully supportive of the strategy. We have been able to have a much clearer view of the context surrounding the operation, and this has never been more critical than this time we now find ourselves operating in.

Menezes, Gilval

Senior Safety Engineer, Nacional Gas - Brazil

I work for an LPG company. LPG is both Propane and Butane and is primarily used for cooking worldwide. In Brazil, it receives a cute name like 'Kitchen Gas.' Propane gas in Brazil still comes in small cylinders. 13 kilograms cylinders. Our company has considerably increased in the past two years since we acquired a portion of the second-largest LPG company in Brazil.

In order to fill several cylinders a day, we have to store vast amounts of propane in our tanks. In Southern Brazil, one of the facilities which we have recently acquired has four tanks, 60 tons each. It requires us to check every single tank multiple times throughout the day. So, before and after each transferring operation, the gas operator is supposed to measure the tanks. There are some ways of measuring a gas tank. Since propane is always in two phases, liquid and vapour, the most traditional way (and when I say traditional, I mean it has been done like that for more than forty years) is to measure the height of the liquid. It is like the gas indicator in our cars. It is pretty precise as we convert the height into volume with some calculations to find out the correct amount.

During my first visit to that facility, I met Gilmar, the most experienced gas operator on-site. He was a senior operator… I would say he was like in his 60s. He was very kind, easy going and knowledgeable. I thought it was a great opportunity to run a 'proactive learning' session. I had just read a couple of Todd Conklin's books, and I fell in love with HOP and its principles.

I asked him to explain what a regular operational day would be like. He was pleased to show me through all the different processes on-site, such as gas transfer, pump systems, compressors, valve handling, etc. I have more than 20 years of experience working with LPG, but I learned several new things that cold morning. Gilmar mentioned that he wanted to show me his invention, which was a tool that he had forged himself, and it was approved by the engineers afterwards. To measure the height of the liquified gas in the tank, the operator had to use a slip tube with markings, similar to a ruler, which would show the point where the vapour gas turns into liquid gas (This is the correct measurement). They constantly perform this task which causes friction between the tubes, sliding one into the other, wearing the gasket inside them. It ends up leaking more gas than expected. So, the gas operator has to tighten the gasket to stop the leakage. There is a sad history of accidents involving those tubes. Most of them slide too fast, consequently hitting the operator's face. To prevent any accidents, the tube must be tightened enough to prevent it from sliding too fast, but it cannot get stuck. Otherwise, the operator cannot read the height of the gas.

That morning, Gilmar taught me an incredible lesson of perseverance and creativity. He had tested many different ways of sliding the tube safely without damaging the gasket. He had even attempted to use the tools recommended by the manufacturer with no success. So, one day he went to the workshop and forged his own spanner-like tool and submitted it to be reviewed and approved by the engineering department.

In traditional safety, his action would be classified as too risky and non-compliant. In process safety, he would be punished. We would think that the facility would be less safe just because of a forged tool. But his innovation allowed him to perform his task safer and faster. The New View of Safety recognises that Gilmar is not the problem. He is a problem solver.

Phillips, Michael G., CSP, OHST, CIT, SHRM-CP

Independent Professional in HSE | OpEx |HOP | HR

At a previous employer, we frequently struggled to identify meaningful corrective actions following a mishap or injury. Most recommendations were informed by how we *imagined* the work *should* be completed or heavily based on hindsight bias. While our intent was to prevent similar incidents from occurring, we rarely invested the effort to understand the incident from the perspective of the worker. Nor did we attempt to consider the process variability which workers successfully navigate most of the time. After any unwanted event, our default response included writing a new procedure and then training all employees on the expectation that if they will just follow the procedure then they will avoid mishap and injury.

As injuries continued to happen, we tried to think more creatively. We added innovative hazard recognition tools, assuming that the more emphasis we placed on constraining the worker, the safer the outcome. We began with a simple "Take2 for Safety" observation card which each worker would sign indicating that they had taken two minutes to check their personal protective equipment and to inspect their immediate work area for unsafe conditions. We then added safe work permits which provided the worker with an all-inclusive, potentially applicable, list of hazard reminders that covered the safety spectrum from PPE and ergonomic risk factors to current weather conditions. These safe work permits were then evaluated for accuracy to make sure that workers were not simply checking random boxes. Since this was difficult to verify, we decided to require the workers to complete a Job Safety Analysis as a final safety assurance activity before the actual work could begin.

Somehow, we convinced management that each subsequent layer of pre-job analysis would essentially filter out any hazards overlooked in the previous activity. Whenever a mishap occurred, we would emphasize the importance of accurately applying the pre-job tools followed by expanding the pre-job requirement to encompass more routine work activities. We believed these "layers of protection" could serve as a reliable model for "defenses in depth" potentially eliminating incidents altogether. Additionally, we extoled the virtues of multiple constraints as a true demonstration of our commitment to an incident-free workplace.

One day while visiting one of my facilities, I stopped by a maintenance shop where several mechanics and electricians were taking their morning break. I had recently started listening to Todd Conklin's podcast and had just finished reading one of his books. I decided to ask some different questions to gain a better understanding of how workers made sense of their work. I asked these maintenance workers to name the dumbest thing we asked them to do. Each one mentioned something unfavorable about our pre-job safety activities. They described in colorful terms how onerous, ridiculous, uninformed, and irrelevant, the pre-job tools had become. I kept the conversation going long enough to learn how much of an administrative burden we had created. Without consulting any of these frontline workers, we had added tremendous clutter to their work regimen and virtually eliminated their ability to adapt.

I asked this work crew if they could identify anything of value in conducting the pre-job safety activities, flippantly suggesting that perhaps we should just stop doing them altogether. What if we limited the use of safe work permits to regulatory compliance only (hot work, confined space, line-breaking, excavation, etc.) and simply rescinded the Job Safety Analysis completely? I was surprised by this crew's response. Many considered the conversations that happened between operations and maintenance during the coordination of these higher risk tasks as being beneficial. They expressed appreciation for the information shared during these exchanges which often involved stories of past injuries and anecdotes

of strange mishaps. Such communication was far more meaningful in offering a chance to learn and possibly improve their hazard controls compared to my multiple pre-job checklists and administrative clutter.

This conversation got me thinking. I spent the remainder of my time at the facility talking with line supervisors, union leaders, other maintenance crews, and frontline operators. It was clear that no one saw much value in the layered checklist approach. But many expressed appreciation for the information sharing and learning. I wanted to preserve these meaningful conversations that happened pre-job and declutter the administrative burden of multiple activities. How might we enhance the learning potential on a more consistent basis?

I had heard about post-job briefs on one of the “new view” safety podcasts. Post-job briefs were different from pre-job activities. Instead of anticipating how the work should unfold, as we might imagine it in an ideal situation, post-job briefs focused on learning about how work actually happened. It asked questions related to what was different than expected, what surprises were encountered, and what disruptions had to be accommodated. Post-job briefs borrowed heavily from the post-incident critiques and after-action reviews that are used to capture learnings following crisis management and emergency response events. Post-job briefs helped illuminate the complexity of work-as-performed and allowed workers to tell their stories of real-time adaptation. I suggested that we conduct a trial using post-job briefs to see how we might increase learning and improving.

The original maintenance crew agreed to conduct the first trial. With the exception of permits required for regulatory compliance, which typically involved higher risk tasks, they would swap their pre-job safety activities for post-job briefs. If we took a few minutes after a job was completed to discuss what went well and what did not, then maybe we would learn more about the reality, and messiness, of actual work. The first few post-job briefs did not produce much learning. Workers were not initially eager to engage in conversation that might delay their departure time. They were reluctant to take time to analyze what went well and what did not when the job was completed without mishap. It was easier to assume that everything was safe since we had an injury-free outcome. They also did not want to “get into trouble” by disclosing shortcuts or potential at-risk behaviors. So, we added time into their day for this post-job brief to take place and assured them that what was shared during the post-job brief was for the purpose of learning and improving, not blaming or punishing.

Eventually, workers started to share commentary on how the job got started, how it evolved, and how it concluded. By continuing to ask questions, we learned that even with successful outcomes, we rarely followed the prescribed work plan. Workers constantly had to adapt to emerging situations. This variability was so very normal, it was not always recognized. After hearing so many accounts of how workers had to adapt to unforeseen, emerging situations, the supervisor asked one of the maintenance planners to participate in the post-job brief. Adding the planner to the post-job brief accelerated the learning process exponentially.

At first, the planner took offense to what sounded like criticism of his work plans from the maintenance crew. But eventually, the planner acknowledged that never in his career had he participated in a meeting where he got such rich feedback from those who used his plans. At that point, the planner started asking more questions, which revealed how much of the planning process had been calibrated on outdated machinery, equipment, operating standards, and work practices. The questions and conversations continued to the point we had to start limiting the duration of the post-job brief sessions.

The operational intelligence that emerged from post-job briefs not only improved crew safety but also favourably impacted machine uptime and availability. We saw improvements in overall reliability metrics like operating efficiency, mean time between failures, and mean time to repair. Accurately making sense of this variability and anticipating different eventualities is challenging during a pre-job brief. But, talking about it immediately after a job concludes enhances learning, creates an important feedback loop for all stakeholders, and gives valuable insights on the effectiveness of safeguards, defenses, and controls. We made the pre-job more about the conversation and leveraged the post-job for learning and improving.

Pupulidy, Ivan, PhD

Professor and HOP Coach

When asked to talk about my contribution to the field of safety, the first thing I consider is the development of the Learning Review for the US Forest Service. Many Safety Communities have been divided regarding how to respond to incidents and accidents. One camp argues for linear causal determination that they feel is based on factual data. The other side approaches accidents and incidents from the perspective of greater understanding to answer Sidney Dekker's question, "Why did it make sense for people to do what they did?"

Both approaches are valid depending upon the nature of the work done by the organizations who employ them. Simple and complicated systems respond well to the analytical frameworks common to linear investigation methods. Complex adaptive systems require greater understanding and respond well to mapping performance shaping/influencing factors. My contribution is centered on the development and application of products designed specifically for the complex systems, which are becoming more common in everyday work.

I began my career as an operational pilot. In the US Forest Service, I saw 26 friends die in aviation accidents in a 10 Year period, which drove me to become an accident investigator. Having completed the US Air Force accident investigation training program to the level of Board President and the University of Southern California "Aviation Safety and Security Certificate Program," I felt well prepared to engage in accident investigation. The US Forest Service, my employer at the time, designated me as a Chief Investigator and trained me in the use of their *Serious Accident Investigation Guide (SAIG).* The SAIG was based on the OSHA investigation guide melded with some Human Factors Analysis and Classification System (HFACS) ideas. We, the USFS, had done many accidents using this approach.

After completion of my training and apprenticeship, I was sent out on my first investigation as a USFS Chief Investigator. I tried to apply what I had been trained to do and found that the situation faced by those involved in the incident could not be fairly represented using the tools I had been given (particularly the SAIG). Guides in the Forest Service are not Policy and can be adapted to fit conditions, but this guide was so biased, in my opinion, that it could not be followed at all. I innovated a solution that was based on answering Professor Dekker's question – *Why did it make sense for people to do what they did?*

The result of this departure from the norm, coupled with years of research and experience, was the development of the Learning Review, which replaced the SAIG in the USFS in 2013. I developed the

Learning Review out of the need to understand complex relationships that contributed to accidents. There are many contributors to the success of the Learning Review, including the leadership of the US Forest Service who allowed me to explore incidents and accidents in a very new way and several professors who contributed both directly and through their research.

Five key assumptions bound the Forest Service and its investigators to the Serious Accident Investigation Guide. The first assumption is that the past is a key indicator for the future. Second, accidents can be universally represented as causal chains. Third, the best way to improve safety is to control or eliminate error. Fourth, correcting or fixing individual system components, alone, can improve safety. Fifth, complex systems behave in a linear, predictable manner. Each of these assumptions and the challenges that emerged during the transformation are presented in this section.

The lessons learned in investigations, coupled with research, led to the development of Transformational Practices, which became the core constructs in the Learning Review:

- The importance of placing actions and decisions in context, including the conditions that influenced decisions and actions.
- Focus groups extend the level of understanding of context beyond the abilities of an accident investigation team.
- Multiple learning products designed for specific audiences replaced traditional one-size-fits-all accident investigation reports.
- Community sensemaking became a valued aspect of the investigative process. Community sensemaking can occur when a community of practice and subject matter experts are included in participatory research.
- Immersive sensemaking occurs when readers, or practitioners, make sense of the information presented in learning products and add to that information with personal experience, to create meaning or significance.

These practices differ from traditional accident investigative processes in four distinct ways. First, they are inclusive in the way that they gather and deliver information. Second, they acknowledge that the information and expertise existing throughout the organization can be valuable to the analysis of the incident. Third, they recognize the differences in the needs of learners, by presenting information developed for specific audiences. Fourth, the overarching goal of the Learning Review is not to answer specific questions or develop ways to correct and/or fix the organization or the people in the organization. If corrections and fixes emerge during the review, then the process is equipped to include them in the recommendations.

The Learning Review is not designed to be static and will continue to evolve, as it should. It remains in use in the US Forest Service and has been adapted for use in other industries around the world.

Read, Brett

Safety Transformation Specialist; Author, Safety Performance Reimagined

Leadership that Creates Sustainable Performance: Introduction

The way we create and achieve performance in many areas of business has changed so much in the last 25 years. However, by comparison, the approach to operational performance and safety has in many

respects stagnated and has not evolved from the 20th century. Why is this? And how can you adopt a 21st-century approach that engages people so that they are not part of the problem but instead are the solution to creating sustainable performance?

I hope this story answers those questions. It is about one of the most successful performance-improvement initiatives that I have consulted on. The story has been presented at industry conferences and conference papers[9] and in my book that I co-authored with Rod Ritchie—*Safety Performance Reimagined – A 4D Approach to Organizational Performance*[10].

Before I discuss the specific performance improvement that I helped my client achieve, it is important to outline a few concepts that are fundamental to the approach that we took.

Creating the Capacity for High Performance

I started my career in the Australian Army and served for 12 years including leadership roles in Special Forces in the Australian Special Air Service (SAS) Regiment. During my time in the SAS Regiment, I learned that we created performance not by focusing on what could go wrong but by creating the capacity for things to go well. Increasingly, industry is understanding this and is making this philosophical shift, which allows us to understand safety not as the absence of accidents but as the presence of capacity for things to go well.

Capacity in this regard has three parts:

1. The capacity of our systems to perform as expected, and to fail safely when the unexpected happens.
2. The technical skills of our people, and
3. The non-technical skills of our people.

Included in this is the understanding that failure is not the opposite of success; it is an inevitable part of the journey. We are playing an infinite game, focused on creating and maintaining performance capacity over time in changing environments.

A significant part of this capacity is our ability to manage risk in complex and dynamic environments. Organizations often treat risk as being static, and as something to be controlled. But in reality, risk is not fixed, it is influenced by many variables, which means that it changes over time and circumstance. So, risk is not to be controlled, it is responded to by skilled and competent people. When this is understood a philosophy of Zero Accidents and zero risk can be recognized as flawed and fanciful.

A failure to understand this is still causing Major Accident Events (MAE's) in high-risk industries and is at the heart of most workplace serious injuries and fatalities. Companies and regulators stuck in this paradigm-time-warp are still relying on statistics such as TRIR, LTIR, and DART as indicators of whether a

[9] Read, B., Zartl-Klik, A., Veit, C., Zamhaber, R., and Zepic, H. (2010). Safety Leadership that Engages the Workforce to Create Sustainable HSE Performance. In: *SPE International Conference on Health Safety and Environment in Oil and Gas Exploration and Production.* Rio de Janeiro, Brazil, 12-14 April, 2010. SPE.

[10] Read, B. and Ritchie, R. (2021). Safety Performance Reimagined – A 4D Approach to Organizational Performance, Pale Horse Media, Phoenix

company is operating safely. But research of fatal workplace accidents in the USA between 2008-2020 show that 62% of all deaths happened in the top-quartile companies as assessed by DART rate.

Commercial aviation has recognized that you are far more likely to die in a plane crash when flying on an airline with a really low reported incident rate.

Accepting that humans make mistakes, equipment fails, and incidents happen is a fundamental philosophy of high performing organizations.

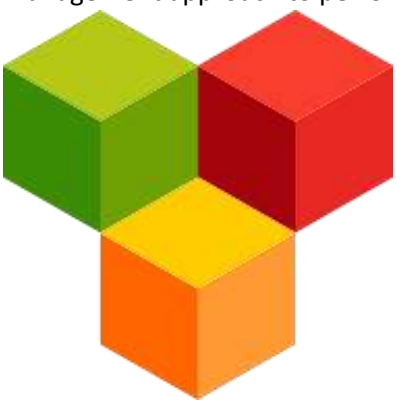
4-Dimensional Performance

Competently responding to risk requires an understanding of the nature of sociotechnical systems and sociotechnical safety to ensure that all factors are being tracked and managed.

Most companies take a 3-dimensional approach that focuses on systems and technology and does not effectively engage the human element in their operations.

In terms of organizational performance, there is a 4th Dimension which is not well understood.

The picture to the left is the icon of 4-Dimensional Performance. It can be viewed two ways. What most people see when they first look at the icon is 3 cubes that have tenuous connections at the edges with a void in the centre. This represents the 3-dimensional approach that a conventional management-focused approach to performance and safety creates. Viewed at the edges or when you look at the pieces individually, they look solid, this is a management view. It is a mechanistic and linear view that focuses on the complicated nature of our systems but fails to comprehend the complex nature of sociotechnical systems. The power of this icon is that it visually demonstrates the failings of a purely management approach to performance. When you have a 3D mindset you are vaguely aware of the 4th dimension that exists in the center, but you can't properly see it or focus on it.



The other way to view the logo is to allow your mind to picture the three coloured cubes as transparent. You can look through these cubes and see a solid or opaque cube that forms the base, sitting behind the three transparent cubes. Each of the coloured cubes is solidly connected to the base. Imagining the 4 dimensions this way provides a powerful insight into one of the key characteristics of the subjective world of leadership, shared values, common purpose, and culture. That is, you can't directly see these things. The most effective way to understand and improve performance is to view them through objective things, e.g., the work practices, systems and processes that exist in the organization—the first 3 dimensions. You can ask your people to provide feedback on subjective things such as feelings, sense of belonging, and psychological safety but they are only part of the story when it comes to creating organizational performance. Getting all 4 Dimensions working in harmony is the key. Once people understand a 4D approach they can look at the center of the 3D approach and see the gaping hole that is the absence of leadership.

So, what needs to change? The conventional management approach typically only tracks and analyzes 3 Dimensions in business. The 3 Dimensions focus on:

1. Strategy – Production and Schedule

2. Finances – Costs and Resources
3. Systems – including Hardware, Processes, and Procedures

The increasing complexity and complicated nature of business means that it is essential that we get these 3 Dimensions right. If any of these dimensions are not adequately planned or managed to create robust systems, then performance will suffer or possibly fail altogether.

What seems to be missed by too many business managers is that getting the first 3 Dimensions right is not enough. These 3 Dimensions are merely performance enablers—they don't create performance. They are based on systems thinking, and they focus on compliance with that system. They do not create commitment, but every performance-improvement initiative that we have delivered has confirmed that it is committed people that create performance.

The 4th Dimension addresses this gap because it is about *people* and the *leadership* that engages people such that they create performance. A 4-Dimensional approach views workers and operators not as problems but as problem solvers.

We need a paradigm shift; instead of chronic unease about what can go wrong, we need to maintain constant vigilance to ensure we are building the capacity for things to go well. To reiterate, safety and performance improvement, in general, is stuck in the 20th century and is characterised by a mindset of:

- Things go wrong because of people's behaviour.
- Therefore, we need to control that behaviour with layers of systems designed to control people.
- People are seen as being unpredictable and, at worst, unreliable.
- The solution is ever-increasing volumes of rules and procedures that aim to define how systems will operate, work is done, and how people are to behave.
- Rewards and punishment (external factors) are used as tools to influence or control people to behave correctly.

To address these shortcomings, we need to change the question from, "What went wrong?" to a better question: "What was missing that allowed this to happen?" Asking this question changes the relationship between people and to the error. It moves the focus from a 3D blame game to a 4D collaboration that creates capacity by engaging the subject matter experts—the workers. In every case where we asked this question, the people at the coal face had the answer, or understood the issues sufficiently well, that their input was instrumental in developing a solution.

Who CARES Wins

The 4th Dimension of performance is about leadership practices and the engaged and committed workforce that leadership creates. CARES is a framework that helps us understand what leaders do to develop the capacity for things to go well.

CARES is about leadership practices; it outlines the key things that effective leaders do:

- Creating an
- Achievement-oriented,
- Relationship-based
- Endeavour

- Sustainably

Understanding the CARES framework and building these leadership practices in your organization is a game changer. Why is that? It's because CARES is not focused on compliance and what went wrong, tracking failures, and counting accidents; those things have been proven to not lead to sustainable safety performance. CARES is about a commitment to doing things well.

> *"It is not because business is difficult that we do not CARE;*
> *it is because we do not CARE that business is difficult."*
> – *Brett Read*

Great leadership and great results—OMV Austria

Prior to engaging my company, OMV Austria had been engaging a well-known, large global safety consulting firm whose solution required significant ongoing investment in layer upon layer of their safety systems, including ZERO slogans, STOP Cards, and Safety Performance Curves and what we now refer to as a management approach to a leadership issue. The result was an ever-increasing safety bureaucracy and a classic 3D Management approach when what was needed was 4-Dimensional leadership.

Their current approach was based on a performance orientation, not a mastery orientation. The distinction is explained in detail in my book,[11] but in essence it is based on focusing on the outcome–the result (in this case poor performance)--instead of on the underlying skills and competency gap that created the performance.

For many years, OMV in Austria was only compared to other national companies, and in comparison to Austrian construction or steel production businesses, OMV's safety performance appeared to be quite good[12]. A culture developed in Austria where oil and gas production was seen as a very risky business and lost-time injuries were accepted as part of the job. This culture normalized the occurrence of industrial accidents and was expressed in statements such as "accidents happen," "because it is a risky business," etc.

More recently, OMV had started comparing Austria's safety performance to statistics from OMV's international operations (a performance orientation)—and telling the Austrian workers that they needed to improve—however, this only created cynicism. The response from many was, "Those numbers aren't real. They just don't report their injuries in those other parts of the world."

From my perspective as Principal Consultant on this engagement, the task in OMV Austria presented a picture-perfect opportunity to create change. Reinhart Samhaber was the GM of OMV Austria and Rod Ritchie was the GM of HSE for OMV's International Exploration and Production Division. Both had many years of international experience, knew what they wanted, and, moreover, were committed to making it happen. Their CEO was an Austrian who had not had the international experience of Rod or Reinhart,

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[11] Ibid.

[12] Read, B., Zartl-Klik, A., Winter, J.D., Veit, C. and Zamhaber, R. (2011). Safety Leadership that Engages the Workforce to Create Sustainable HSE Performance. In: *SPE European Health Safety and Environmental Conference in Oil and Gas Exploration and Production.* Vienna, Austria, 22-24 Feb, 2011. [online] SPE. https://onepetro.org/search-results?page=1&q=SPE-140854-MS

but he had been visiting OMV's International operations and had seen the difference—he knew that the gap was real, and he wanted to change things.

Our approach in OMV Austria was based on the CARES Framework. We stopped referring to other parts of OMV or other companies. Instead, we built relationships with the frontline workers and focused internally. We did this through dialogue focused on creating trust and shared meaning through questions such as:

- "How important is it to you that you and all of your teammates go home safely each day?"
- "Is that what is currently happening?"
- "What would you be willing to do to change this result?"
- "How can we make that change, what do we need to do differently, what support do you need to make that happen?"

This approach moved the focus from "what was wrong" to "what was missing." The focus was not about blame, it was about learning.

The approach with OMV Austria required a lot of work across all 4 Dimensions of performance. We established a Safety Leadership Team (SLT) that Reinhart Samhaber headed. That team, which included a cross section of key people from different levels in the business, met monthly and steered the change.

Reinhart is a great leader; he instinctively understood the CARES Framework and embraced the leadership practices to create both the relationships and the achievement orientation needed. He attended every Safety Leadership Team meeting, and his leadership was powerful in building the relationship base that was needed to support what everyone wanted to achieve. While he was instrumental in creating huge changes, I never saw him raise his voice or lose his patience. He would very graciously but purposefully challenge the SLT by bringing them back to their Why—which was simply put as "People should not be injured working for OMV". His leadership created the psychological safety that engaged people and made it possible for people to question and challenge how things were done and what needed to change.

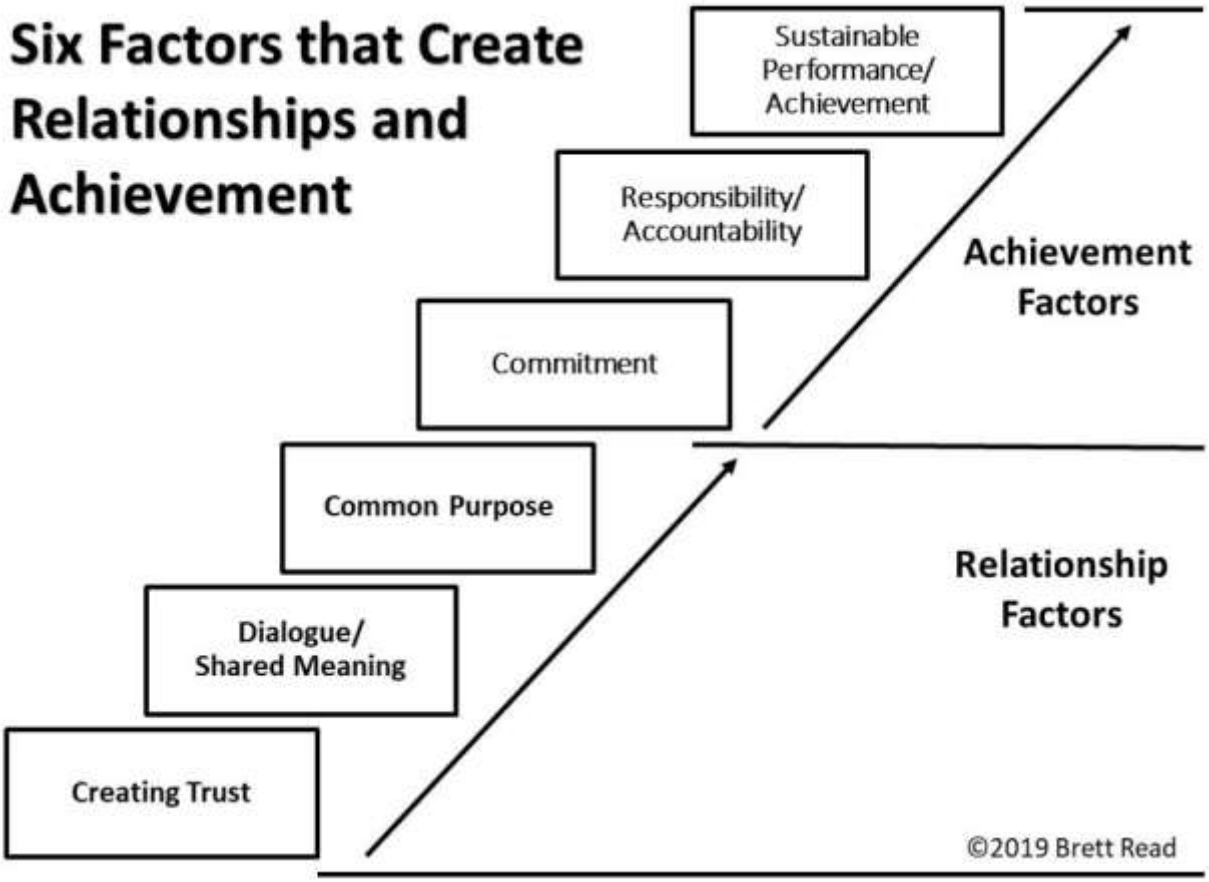
The second thing we did was to establish learning teams in different departments that focused on mastery in their operations. We ran safety leadership and "Train the Trainer" programs to create internal champions who were respected by and could work with the operators on the tools to identify the gaps and what needed to change. The needs in different departments varied. In some areas it required solutions in all 3 Dimensions of business management. For example, production and schedule pressures (Dimension 1), cost or resourcing issues (Dimension 2), or inadequacies in systems and processes to manage workflow and work practices better (Dimension 3) were all identified and addressed.

But the biggest change came about through working in the 4th Dimension and developing safety leadership and ownership among frontline crews. Once the workers could see that their managers were serious about addressing the issues that were identified, the pace and momentum of change ramped up considerably. RAMP became an acronym for the change we were creating:

- Relationship,
- Autonomy,
- Mastery, and

- Purpose.

We knew that everything we achieved was built on a foundation of trust, but as we worked through the changes and created more engagement, we could see that there were four things we did that drove the change. We created a Relationship base that supported the need for change. We gave as much Autonomy to the teams and frontline workers as they could handle. The more skilled and capable they became, the more autonomy they were given. We focused on Mastery. The frontline workers knew what was not going well and what needed to be done better. And fourth, we created a commitment to a common Purpose. This process became the essential elements of what we would later identify as the Six Factors that created Relationship and Achievement.



It took just under three years to create sustainable safety performance where people were not being injured working for OMV Austria.[13] It could have happened earlier but 12-months into the program a major drilling campaign started that doubled the workforce numbers. A number of the departments in OMV Austria's operations created safety-leadership-driven safe operations within the first 12-months of the program; some took longer. Experiencing this truly highlighted the complexities of sociotechnical systems and the subtle changes that make a difference from one situation to the next.

[13] Ibid.

I always find it interesting how varied the process of creating performance improvement can be. How it unfolds and develops depends on so many things—but the solution is always to be found in addressing the gaps in the three capacities I outlined earlier. Managers who are focused on a 3-Dimensional approach always seem to want to work through the capacities in the order that I listed them. They will do a gap analysis to identify the problems in their systems, then they work on the technical skills, and last they pay some attention to non-technical skills. I have come to learn that this is a flawed model. It couples the performance of the organization to the technical skills of the leader. The best leaders focus on developing capacities in the reverse of the order I listed them.

They start by developing the non-technical skills of their operational leaders and teams. When this is done teams and frontline leaders start having powerful conversations about the gaps in technical skills of frontline workers and crews. As they address these gaps and develop the capability of crews to understand what's needed, the crews , workers, and leaders identify the problems and shortcomings of the system. A perfect example of how organizations get this wrong is the Boeing 737 Max crashes in 2018 and 2019, which killed 346 people. Boeing had been faced with the challenge of rival Airbus with their more fuel efficient A320 aircraft. Boeing decided that to avoid the huge capital investment of developing a new airplane (cost factors – Dimension 2) and for speed of getting a competitive product to the market (schedule factors – Dimension 1) it would redesign the 737 aircraft.

Boeing made significant changes to the design including repositioning of the engines on the wings, which meant that the 737 Max would not handle and respond like previous 737 variants. To manage those changes, Boeing introduced a new system so that the new 737 Max felt like the earlier 737s to fly.

That solution was a software fix called the Manoeuvring Characteristics Augmentation System (MCAS). This system (Dimension 3) controlled the pitch of the 737 to make the 737 Max feel like earlier versions of the 737. But Boeing did not tell the pilots flying the 737 Max that this system existed. So when this system failed, which it did in both 737 Max crashes, the very people who were capable of responding and ensuring that the system failed safely were kept in the dark and were not able to understand what was failing.

In OMV Austria, Reinhart Samhaber took a very different approach. Prior to our program technical competence was focused on leaders. They came up with the plans, they gave orders, they controlled how work was done, and the crews just did as they were told. As we discussed this approach it was identified that this way of working had multiple flaws:

- It was exhausting for the leaders, who needed to be on top of everything that was happening 24/7.
- It dumbed down the workers who stopped thinking and problem solving and adopted a "just tell me what you want me to do" approach.
- It didn't handle the complex and complicated nature of the work they needed to do.

As we worked with leaders, the Six Factors helped them understand that their role was not to have all the answers. It was to create shared meaning and a commitment to a common purpose, where the workers understood what was needed and intended and could get on with making that happen.

One example of where this worked brilliantly was in the Drilling and Workover Department. The role of the Workover crews was to maintain the oil and gas wells to ensure that they produced efficiently and

to also attend to breakdowns and failures of wells. Working out why a well has stopped producing requires technical competency of complicated systems and processes both at the surface and sub-surface. It also required that the crews were able to deal with the complexities of factors such as weather or individual technical capabilities to deal with the fault once it was identified.

Previously crew members had been injured because they didn't adequately risk assess the condition of the well and its surroundings. For example, in mid-winter heavily iced-up equipment introduced different hazards and added risk. Previously, production pressures and expectations meant that crews did not feel they could manage the job as they needed. However, it is amazing how quickly that can change when people feel trusted to make decisions and do what's needed to do the job well. The workers actively took responsibility for the worksite and collectively discussed their approach and concerns. Allowing time and taking the steps needed for de-icing was a simple example of how the crews now fully managed the workflow.

The effect of these changes is not just felt in the area of safety. Productivity improved, and there was less rework required as a direct result of better communication, collaboration, job planning, and management. Morale also increased significantly and overall people commented that it was a nicer place to work. Individuals talked about feeling more connected to their workmates and the company. They were happier at work and went home as happier people. These factors are often overlooked until you talk to the partners and families of the workers.

References

[1] Read, B., Zartl-Klik, A., Veit, C., Zamhaber, R., and Zepic, H. (2010). Safety Leadership that Engages the Workforce to Create Sustainable HSE Performance. In: *SPE International Conference on Health Safety and Environment in Oil and Gas Exploration and Production.* Rio de Janeiro, Brazil, 12-14 April, 2010. SPE.

[2] Read, B. and Ritchie, R. (2021). Safety Performance Reimagined – A 4D Approach to Organizational Performance, Pale Horse Media, Phoenix

[3] Ibid.

[4] Read, B., Zartl-Klik, A., Winter, J.D., Veit, C. and Zamhaber, R. (2011). Safety Leadership that Engages the Workforce to Create Sustainable HSE Performance. In: *SPE European Health Safety and Environmental Conference in Oil and Gas Exploration and Production.* Vienna, Austria, 22-24 Feb, 2011. [online] SPE. https://onepetro.org/search-results?page=1&q=SPE-140854-MS

[5] Ibid.

Ribeiro, Hugo

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When we started implementing the HOP philosophy at ICL Brasil, we found a lot of distrust on the part of operators because they thought that we would bring an even greater volume of work to them, so I decided to propose a decluttering process to show that in safety, more is not always better.

I told a personal story to exemplify the idea behind the decluttering process. I told them that I really liked sports, especially bodybuilding, and that at a certain stage of my training I noticed that I reached a plateau even though I was eating well and training hard for 5 days a week. I figured that the training volume wasn't enough and I increased the amount of weekly training to 6 days; to my surprise the physical results didn't improve in proportion to my greater effort. As it was natural to think I took the last step and I started training all 7 days of the week and still the plateau remained, my next step was to look for a specialist professional to tell this story to, after listening carefully to every detail he said to me "did you know that muscles grow during rest? Always more is not always better."

After this day I started to think the same about safety: more procedures, more SOPs, more guidelines, more BBS, more work permits doesn't mean you are improving the safety of your operations or creating it in real time, which is the way I believe it works better. Surprisingly, when I proposed to reduce the amount of work that safety demanded and asked them to point out activities in which we required work permits before carrying them out, but which in their view would not be necessary because it would only add work and bring no value or relevance in the level of safety, and even though they would like to reduce this safety workload, their initial response was that there was nothing they did for safety that was irrelevant or did not add value to the activities.

After ensuring that no one would be blamed if any negative event occurred in activities in which we no longer require a work permit and that all responsibility would be mine, the operators suggested eliminating work permits in 4 tasks:

1. Sealer head replacements
2. Operational area lubrication route
3. Visual inspection of the area
4. Inspection on videojets

Each of these daily tasks required an average time of 25 minutes to issue the work permit, covering not only the completion of the form but also the displacement of service workers between the productive areas until the full service of all work permits for the day. If we think of a month, the time saving was 50 hours, time that was used in planning tasks, pre-startup discussions, reducing production pressure, and also releasing work permit supervisors so that they had more time to issuance of better work permits in jobs where this tool is really indispensable.

Have the courage to question the status quo, things are probably or always have been done the same way because no one dared to question, and remember, both in safety and in bodybuilding, more is not always better, sometimes less is more.

Santos, Rafael, GradIOSH

Health & Safety Leader & Learner, Creator of Além do Zero (Beyond Zero)

This a story of how removing rules, controls and paperwork has increased not only safety, but also (and for a change!) efficiency, morale and even scored the safety people some points with operations. To put it simple, in New View wording, we have decluttered and devolved.

Every safety practitioner with industrial experience will have spent many (I mean many!) hours with the Permit to Work (PtW) process. If they are lucky, they will have issued only a few permits per week and (re)written one or two procedures. If they are unlucky, they will have put themselves in a place where they are perceived as the (mean) regulator, the ones in control of deciding whether the workers will get their permit or not. And this will only happen after extensive scrutiny and assurance that they have filled out the correct forms, checked all the checkboxes, and signed off multiple copies. You can probably relate to that.

At one point, I was leading a team that was walking the unlucky route. I will try to summarise how the cumbersome PtW system worked. For any planned “high-hazard activity” (that meant hot work, confined space, work at height and high voltage), the professional in charge of the activity (certified in his trade, with specialised external training on the type of job at hand and internal training on how to issue PtW) would need to submit a Job Safety Analysis (JSA) for review and approval of the safety staff before the activity, issue a PtW at the job site, then request a Safety person to come to the worksite (can you imagine how long this could take on busy days?) and issue an approval form, named Safety Certificate, then distribute the copies to the worksite and PtW central board (usually far from the activity). As you can see, there were several controls centralised by Safety from the planning up to the final stage, the safety team acted as gatekeepers and nothing would (or should) happen without their awareness and sign off.

For the Safety Team, this process meant:

- Confidence that their oversight was sufficient to keep accidents from happening
- When accidents did happen (which they did), they could divert accountability as it was certain that one of the checkboxes was not properly followed
- An extraordinary amount of extra hours worked as some of them were required to be on site every day after hours and at least one would continue through the weekend
- Some stress of having to stop their daily activities to issue Safety Certificates, sometimes urgent and unplanned
- A lack of confidence that PtW issuers were capable of planning and executing safely on their own

For Operations, it meant:

- Many hours spent on writing forms, signing off, waiting for approval
- Very little sense of capability and accountability, since Safety team was overseeing and constantly “correcting” what they'd planned in the JSA and during work
- Lots of delays on their planned timelines as they had very little control of the Safety Certificate being issued on time (either planned or not)

I will leave it to you to judge which of these are positive or negative and who was “right”or wrong, if any.

Being able and accountable to improve this situation, my team and I decided to take action with the aim of becoming more efficient and improving our partnership with operations (mainly Engineering & Maintenance). Our initiative was twofold, see below.

Part 1 – Declutter: we got rid of any duplicated documentation and unnecessary copies of documents. This meant eliminating the Safety Certificate, reducing the number of copies of each PtW, and simplifying the JSA and PtW forms to ensure professionals didn't need to write the same thing in two forms.

Part 2 – Devolve: we gave back control and decision power to professionals in the disciplines they were trained for and had the actual experience. JSA approval was now required not necessarily by a Safety Team member, but by a list of professionals who were properly trained and certified for the task (for example, high-voltage work was approved by certified electricians; the Safety Team usually has minimal to no experience in electricity in comparison). PtW issuers training improved to include a “trainee” type period where the first few PtW issued were fully supported by the Safety Team; during this time each would be able to put forth their concerns, share experiences, and learn from each other. After the “trainee”period, PtW issuers were free to issue their permits independently of Safety Team final check.

I cannot tell you the transition went smoothly nor that we didn't meet resistance (both internal in the Safety Team and external). But through a lot (and I mean a lot!) of conversations, cooperation, and testing, we managed to get everyone onboard. Especially after the first few weeks of collecting benefits.

What we achieved after just a few weeks of implementation was outstanding. The number of extra worked hours for the Safety Team were reduced to virtually zero, employees were now free to go home and enjoy the weekend with their families as a usual pattern, and come to work after hours only when very specific tasks were planned and our support was requested by operations. Efficiency and adherence to planned hours increased significantly for Engineering and Maintenance, as they had less and more controllable steps to take for each task. Morale and sense of teamwork (OK, I have no real way to measure this rather than my feeling when speaking to frontline staff) between Safety and Engineering & Maintenance teams increased. Safety professionals now had more time on their hands to really understand work as it is done, rather than spend hours between one job site to another issuing more paper. They could focus on the really high risk activities, or where there was something different, difficult or dangerous. And don't even get me started on the sheer amount of paper from printed forms and copies that were archived for decades...

Serne, Jennifer

Professor of Safety Health Management, Central Washington University

The number one intervention that I put into place at organizations that ask me to help them strengthen their investigations is to tell them to stop acting like investigators and start acting more like investigative journalists. Basically, instead of focusing so intently on finding the facts so that you can discover the causes, focus on learning about the worker’s experience so you can accurately write their story. Put away any assumptions you may have about how you think a job is done, or what work should look like, or what the procedures and training say. You can come back to those later. But you need to start with getting the worker’s real story about their day-to-day work experiences first.

For example, one time an organization asked me to help figure out why some of their workers were seeing increases in their radiation hand dose. They had already done their investigation and they just could not figure it out. The workers had always been pretty well under the regulatory dose limits and

now they had lost a lot of that cushion. In fact, some were now just slightly under the limits, which was pretty concerning. However, their investigation found that the workers were well-trained, compliant with procedures, and were using their provided syringe shields.

It was a strange situation because this work was totally routine. Their main task, which was injecting patients with radioactive materials for medical imaging, hadn't changed, and the patient load and amount of radioactivity in the patient doses had not statistically changed either. So, what was going on here?

Well, I figured it out, and it's not because I am smarter than anyone else. It's because I'm honestly not that clever. So, to really understand anything I find I'm always having to be a pest and ask lots of seemingly "stupid" questions.

I'm not a nuclear medical technician, I don't have a medical background, so I seriously could not figure out what these workers were telling me when I asked them to describe doing these injections. Eventually I just threw my hands up and basically said "Look, can you show me what you are talking about?"

So, we went down to the lab, and they took out an empty syringe from one of the extra doses they get to calibrate their equipment in the morning, so it didn't pose a blood borne pathogen risk, and started to put the syringe shield onto the dose. I watched them do this and I noticed that wow, this process was taking a long time and it looked pretty frustrating. When I asked them what was going on there, that's when I got the context that the in-house investigators had missed.

Apparently, the pharmacy had changed the size of the dose syringes just enough so that the syringe shields were now not a great fit. In fact, not only did it take longer to get the darn things on the syringes, but it also made using these little screws which held the shield on the syringe stick out and poke the technician's hand when they went to do the injection. So, since the shield stayed on the slightly bigger syringe and didn't wobble around without the screws, they just took them off.

What no one realized is that not only was there now more time spent handling the radioactive syringes, but those screws also covered up a few holes in the shielding, so more radiation was coming through those areas the entire time the dose was handled.

Even more interesting, this tech mentioned to me that part of the reason it was taking them so long was that they hadn't messed with the new shielding much. Apparently, it was discovered that some of the techs were better at getting the syringe shields on the doses than others. So, in the name of teamwork it was decided that those techs would enter all the doses into the computer in the morning and put the shields on all the doses at that time to speed things up in the lab. This explained why some of the tech's hand doses went up more than others.

Interestingly, one of the original investigators had in fact noticed a change related to this innovation, but they never questioned it. They casually mentioned in their report that the labels for the doses were being placed on the outside of the shield instead of on the syringe itself but didn't follow up on it. This person was someone who was really experienced in investigation and highly educated in radiation protection, so I was a little surprised that they just left it at that. But when I asked them why they didn't ask about the labels, they said they knew that some paper labels couldn't have possibly had anything to do with increasing dose. And in essence, they are totally right. I mean anyone who knows anything

about radiation would understand that if anything it would reduce dose, but those labels wouldn't have had any effect in either direction on that type of radiation, so that line of inquiry would have been a pretty stupid for a Certified Health Physicist to go down.

I also asked the techs why they didn't mention any of this during the other investigation. I was wondering if maybe there was an incentive not to. I mean how often does industry tell employees to work "smarter" not "harder," in effect asking them to modify the way they go about their jobs to improve efficiencies, but then turn around and punish them when they get caught being innovative? However, in this case, they simply said it had never crossed their minds and they weren't asked about it. I mean they were asked questions related to whether they were following their procedures and training, which tells them to shield the doses. But that guidance was pretty general, and no guidance could have possibly covered all the strange situations one might find themselves in. So, when they were simply asked if they had been following their training and procedures, they answered honestly that -yes, they were.

In essence what I'm teaching my clients to do is stay curious about work and remain humble. Which I know can be hard to do, because workers look to safety professionals to have answers, and there is often a perception that they should immediately have those answers for the work they see all the time.

I think It's easier for me as an outsider coming in because I get into a lot of situations where I honestly wouldn't understand a lick of what was going on if I didn't ask. I mean I think it is easy to humbly admit that I am totally lost because I'm not an airline pilot or nuclear engineer.

But I think it is sometimes harder to acknowledge that we aren't machine operators, or bus drivers, or tile setters, or grocery checkers. And I think that might be because society tells us these are easy jobs that anyone can do because they aren't hard or complex or require a bunch of formal education. But in reality, these jobs are very complex and actually really difficult to do well.

I know for a fact that something isn't automatically easy to do just because it doesn't require a college degree. I mean I have close to 25 years of formal education, from kindergarten to my doctorate. Statistically, I've been in school half my life, yet I can just barely manage to operate one of those self-checkout things at the grocery store! And I'm not ashamed to admit that, because, well, one, I think we all know at this point that I have no shame, but also because being a grocery store checker is just as nuanced and complex as being a professor or a safety professional, or an investigator, any other job I've done.

I really think we could all get a lot more done in safety if we could just stop assuming and admit that we don't know all the ins and outs of other people's work, no matter how superior we are told our position is in the org chart.

So, circling back to the main question, the number one effective safety or performance improvement solution I've applied and why my investigations can be so effective is because I embrace an attitude of showing curiosity about work. I ask questions that focus on curiosity, not just information gathering during my investigations.

So instead of asking "Tell me about the training you were given for your job," which is already a better question than "Why didn't you follow your training," I'll ask something even more open-ended, like "Is the training you received how you would train someone yourself? If not, how would you change the

instruction?" This asks for an amazing amount of context that the first question misses, especially in relation to whether the training actually fits the way the work is done, and it gets valuable information about how training can be improved. It also treats the worker with respect and like the expert at their job- which they are! We all know our work better than anyone else.

And I would argue that this concept goes beyond investigation. It can also improve procedures and training, which are things that get implemented in accidents all the time. In fact, sometimes I feel like we inadvertently treat workers like something that safe work gets done in spite of, not because of. Like we really feel that we must protect them from themselves with procedures, and policies, and training.

I come across investigations where the root cause was determined to be violating procedures or policies or not wearing PPE as instructed all the time. Basically- we are saying that people were not following instructions. However, rarely in these cases do I find that anyone in the organization asked the workers to help develop these directives, or even had the workers review them before they are implemented and made into formal guidelines they will be expected to follow. So being curious about work helps you there too.

The bottom line is that by being curious and asking questions we can go from complaining about workers being part of the problem, to making them part of the solution, which is something that benefits everybody.

Thompson, Adrian

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Intro: An organization I worked with took the ordinary "Timeline 5 Whys (T5Why)" method and applied HOP and New View ideas to it using an adaptation from Erik Hollnagel's ideas about "Work as Imagined vs Work as Done" and the ideas of Todd Conklin and Bob Edwards about the "Blue Line vs. Black Line," aka "Work as Planned vs. Work as Practiced." We then added a unique (at the time) component to the method in which we explored "Work as Normal" for each line item (1) that doesn't align to Work as Imagined/Planned or (2) for which Work as Imagined/Planned seems somehow wrong or problematic. Doing so helped us bring learning from normal work into the method used for every safety event investigated in a global mining company.

Problem: The organization recognized that repeat events were consistently occurring regardless of investigation method and corrective action rigor. They therefore determined that learning the "actual causes" was either not occurring or was not to the full extent that it could. They also felt that the selection of corrective actions was either ineffective or inappropriate for implementation in operations.

Solution: The organization reached out to an emerging Safety-II/New View consultant that knew this mining business's ways and problems and that offered to bring a new and improved method of learning to the business's investigation process.

More than one change was made. Several changes were made in the event

classification space and changes were made to triggers of investigations, investigation methods, and the levels of the organization that needed to be involved in investigations.

However, this story is about one especially practical change that has led to hundreds, if not thousands, of new and genuine learning outcomes.

Method: To visualize this, think of an Excel spreadsheet with rows, or of a row of Post-It Notes on a wall.

First, we changed the "Timeline" component of the original T5Why's tool to Work as Done (WAD), which is where data collected would typically generate a timeline of events, and we called this WAD. Then we added a row above to represent Work as Normal (WAN) above the WAD row--this stream of enquiry never existed in traditional methods. And finally, we added a 3rd row called Work as Intended (WAI), which relates to existing operational procedures, manuals, checklists, etc., that prescribe certain requirements relating to each WAD aspect.

For example:

WAD: “Worker attends daily meeting”
WAN: Worker doesn’t normally attend the daily meeting
WAI: Meetings are required daily as per Pro-ABC-123.

As introduced earlier, once the WAD has been established and is as long and thorough as the initial investigation practices have determined required (through a review of all data collected), we then explored Work as Normal for each line item that either didn’t align to Work as Intended or for which Work as Intended seems wrong, problematic, or obviously contributed to the final situation where the failure occurred.

Therefore, now when we discuss each Timeline step (WAD) with the team, the team needs to ask “Is this what was intended?” “Should it have been what was intended?” or whether this contributed to the outcome. If the answer is “No, it wasn't intended,” or “Yes, it contributed to the outcome,” then the team explores the Work as Normal aspect by breaking off and talking to people who know how the work is and/or can be normally completed - which can only be the workers.

Then once we learn how WAN is done, we lastly assess against the Work as Intended and establish whether the gap is between Work as Done compared to Work as Intended or Work as Normal. This takes focus off how the work was done (the individual) and focuses on workplace norms and culture and leadership as well as on systems, processes, plans and practices. If the WAD was different from WAN and WAI (rare), then we explored this with the teams involved in an open and transparent process. “Disciplinary Action” is never an outcome unless Code of Conduct-type actions occurred, which is extremely rare and something I never saw while performing 100’s of T5Whys.

Results: The introduction of this new method brought about many learnings and improvements; here's the story of one.

A 40-ton compactor (civil earthworks machine) reversed 270 meters without noticing a light vehicle (LV) parked behind it and crashed straight into the light vehicle, crushing the entire bonnet/ hood. Luckily the LV was empty, but the driver was standing only 3 meters away and with their back turned.

The compactor had 6 rear-facing mirrors and a functioning reversing camera. The LV also had previously communicated to the workgroup that it was entering the work area, and the compactor operator confirmed comms by acknowledging "You're good to enter" 15 minutes before the failure occurred.

We conducted a thorough investigation with supervisors, managers, safety professionals, and other experienced operators (the actual operator involved in the event was not available due to roster). During the investigation, it was determined that none of the environmental or other factors identified could have impeded this operator's ability to see the LV and that the compactor operator was either distracted (<enter typical suspicions here>) or just operating with poor practices (such as not looking up, etc.).

But this new method, and my complete rejection that an operator with more than 20 years of experience was on their phone while doing this task or never looked up, would not allow this outcome without one last step, which was to talk to either the operator involved or another with experience on that exact machine.

The eureka moment occurred 2 weeks later when the actual operator of the machine informed me during an informal interview that only one bottom foot glass mirror is used (this mirror cuts off visibility directly behind the machine) and it is impossible to "look up" at a camera or "glance" at a mirror once you're operating at full speed in reverse and holding the machine to the exact line (following the previous compaction pass line). A split second of concentration lost when holding the line will result in veering off course and potentially cause over-correction, and in this case potentially drive off the side of the dam wall (11meters high) he was compacting the soil on. This fact, plus the fact LV's are never left parked in an operating circuit without Hard Controls (bunded area, meant the compactor, who was trying to get the perfect compaction result, merely forgot an LV called up 15 minutes ago from the other end of the 300-meter-long work area and may be parked in their direct path).

Workers' and Managers' Thoughts (outcome of above event): Once we knew this new information, we tested it. It was true. The machine turns by articulating a pivot point in the centre of the machine and keeping a perfect line is very difficult and takes extreme concentration at full speed. Both the management and workforce were glad we were able to share the results and actions that didn't include disciplinary actions. The actions pertained to design (LV parkup zones & compactor pass lengths) and engineering (Collision Avoidance System in all heavily reversed machines).

Workers' and Managers' Thoughts (overall change of method): Many competing priorities in high-intensity, high-risk industries mean that change is not taken on flippantly, and typically for good reason. T5W's had traditionally resulted in "corrective actions" that the business and its people were happy with, so changing mindsets and adding what is sometimes quite a lengthy (mining shift cycles) and difficult (breaking down barriers and getting people to talk honestly) process was not always easy. But as this organisation had the right mindset and executive leaders support from the get-go, the change and its inherent concepts (learning from normal work) have been embedded and are truly believed in.

Implementation: This organisation invested heavily in this adaptation of T5W's method and rolled out training, tools, support, and systems to all supervisors and above, globally. The program is sustained through leadership development programs and mandatory skills requirements for supervisors and above. Dedicated Subject Matter Experts (Facilitators) are pooled regionally and step in whenever an "objective" team is considered necessary (legal).

Summary: Simply changing the wording from Timeline to WAD is not what changed the mindsets of our people, it was the organizational belief behind it all and the desire to truly learn from our failures and bring the most knowledgeable people to the forefront of the solutions.

Walaski, Pam

Senior Program Director, Specialty Technical Consultants, Inc.

Several years ago, I worked as an internal OSH Director for an engineering firm. While developing the strategic goals for the coming year, one of our Business Unit Directors included a goal to increase the gross revenue for a particular type of service – environmental field services (think wetlands delineations, Phase 1 and 2 surveys, pipeline surveys, habitat and species surveys, and the like). Our clients were very satisfied with the work we produced; we had some top-notch biologists, herpetologists, botanists, and archeologists who were very passionate about their work. The Director felt that expanding the service to existing clients and expanding to new ones was a reasonable, if lofty, goal.

Standing in the way was the firm's dreaded total recordable incident rate (TRIR), which was above 1.0 and over what many of our current clients and the clients we would be pursuing had set as their benchmarks. The vast majority of the incidents that made up our TRIR were minor and did not involve time-off work or restricted duty. Regardless, existing clients often required us to spend hours producing reports, programs, and other documents demonstrating what we were doing to lower the TRIR. And while we certainly hoped we could reduce incidents, we also knew how little control we had over that metric and how random much of what happened was. But as a business driver, we had to focus our client-facing efforts on that lagging metric, to the detriment of spending time on addressing other initiatives that would improve working conditions for all of our staff.

When we dug deeper into some of the incidents, a pattern of soft-tissue injuries among our environmental field services staff emerged. Due to the remote environment where most of their work took place, and the challenging terrain, slips, trips and falls leading to bumps, bruises, strains, etc., were not uncommon. In many cases after these incidents, the staff weren't sure about the need to seek medical care, and without any method for assessing these minor injuries, they would proactively visit the closest urgent care clinic, often ending up with a recordable, despite the fact it was a minor injury that may have never really needed professional care.

At the same time, our team became aware of the availability of medical triage services which could provide as-needed professional medical evaluation to our field staff, leading to a reduced need to visit urgent care clinics. We decided to implement this new process to provide our field staff with the type of support they appeared to need in order to perform their job duties and hoped the end result would also be a reduction in recordables. We contracted with a vendor and created a protocol that provided simple instructions on how and when to call, making it clear that if there were any questions about the seriousness of the injury, care should be sought, and that no questions would be asked if the employee preferred to seek medical attention, even if the vendor suggested it wasn't needed.

We believed that if staff were satisfied with the service, regardless of whether they were provided with self-care instructions or it was recommended that they seek medical treatment, they would be more likely to recommend the service to their teammates and/or use the service again if needed, thus creating a snowball of vendor usage. In order to monitor that, we created a satisfaction survey that was used each time the service was used and established a 95% satisfaction rate as a metric showing satisfaction with the service. We also contacted employees if they failed to use the service to determine why not and modified the protocols to remove potential confusion.

After one year of using the service, we went back and looked at our incident records and found 8 soft tissue injuries we believed were properly diverted to self-care and achieved the proposed 95% satisfaction rate for the service. Both of these measurements helped verify that the primary goal of providing our field staff with the type of medical assessment they needed had been successful. While we could not be certain how many of the diverted incidents might have ended up as recordables, we believed the TRIR rate dropped below 1.0 for the first time in several years and the number of soft tissue injuries did as well.

The most important lesson we learned from this program implementation was to focus our efforts on how we could support the Business Unit's strategic goals and engage the field staff on what would make the performance of their job duties more effective, not on reducing a lagging metric. At the end of the day, that metric did go down as a natural consequence of the program's implementation.

Wong, Gary

Complexity Facilitator, Gary Wong & Associates

"Why am I the last one to find out?"

A fatality occurred in an organization where I was an employee for over 25 years. I had left a decade before and stayed connected by offering help as a consultant. A formal accident investigation was

launched but I wasn't part of it. I was brought in by the General Manager who was concerned about the wellbeing of the workforce. My task as an independent was to identify workplace improvements.

I and a colleague chose to take a sense-making approach. This was a major departure from the traditional method of preparing a set of survey questions and interviewing people for answers. We were well-aware how flawed this method is. Survey designers have built-in biases; as humans we inject our own beliefs and preferred leanings into choosing the questions to ask. The interview process then turns into validating our paradigms and selectively hearing what we want to hear to support our claims. In my case, my 25+ years gave me the delusional confidence I knew what was going on, so it was a simple matter of confirmation. Fortunately, my colleague suggested a different approach. We would be ethnographers and listen to experiences as stories. Instead of asking pre-defined questions, we would meet face-to-face with front-line workers and listen. It was couched as an opportunity following the fatality to freely say whatever was on their minds.

Humans are natural storytellers. We met with crews at their headquarters where they were most comfortable swapping stories with familiar workers. While many stories were heard, one story really struck a nerve in me. For one, the gist would not have been on my list of survey questions. Secondly, it was extremely powerful due to the emotional tone that was deeply felt. Here's my recollection of the story. It began with an opinion.

"Management has this idea that employees believe safety has an unlimited budget. We want everything so it's their job to say no. How dumb is that! We're not stupid. Don't they realize we're the head of our households managing a budget for our families? I just sold and bought a new home that cost $300K. I had to go to the bank and ask for a mortgage. They trust me. Yeh, there are times when my young kids ask for something and I have to say no. Or not yet until you're older. Why does Management treat us like children?"

Behind every opinion are experiences that formulate the attitude expressed. We asked if he could tell us a story about a recent experience.

> "In the summer we pointed out a broken plank on a wooden walkway in the electrical power station that could lead to a slip, trip, or fall accident. Our local supervisor put it on his to-do list. Nothing got done but I'm not blaming him. I feel sorry for our boss since he's running around looking after several stations. Easy thing to slip his mind.
>
> It's now winter and snow covered the station. The broken plank was now an invisible hazard. The supervisor apologized and quickly called in a snowplow contractor. This guy does the entire station. What a waste of money!"

Others nodded in agreement. The sub-foreman summarized the general feeling:

> "We understand money is limited. What actually irks us is how Management spends the money. A simple $100 plank fix turns into a $500 snowplow job. And the plank still isn't replaced!"

I submitted my report to the General Manager and spoke about this particular story. He was distraught.

> "Why am I the last one to find out? I thought I knew everything that was happening under my

watch. But everyone knew about the broken plank except me! The noose around my neck is tight enough with the fatality."

The good news is that the GM took action and arranged to give station sub-foremen spending authority. The local supervisor was pleased because the storyline changed from "You need to fix this problem" to "We fixed this problem."

In hindsight, I wish I knew back then what I know today. I would advise the General Manager not to beat himself up. You can't know everything. What you need to do is open your communication channels and invite people to voluntarily inform you so that you aren't the last one to find out. These are the "unknown knowns" – things that everyone knows about except for you.

I later heard that the Purchasing department wasn't happy that corporate purse strings were being loosened to give employees spending power. But that's another story.

Yeston, Marc M.

Yeston Training & Consulting, LLC (a retired US National Park Chief Ranger)

This is a story I'll call "Bad Penguins: An Anecdote about Capacity."

I worked for many years in wintry climates. Slips, trips, and falls dominated the safety meeting discussions, and reducing the number of seasonal falls was always on the agenda. One year the decision was made to integrate a program called "Walk Like a Penguin." Each employee was tasked with watching a clever video, the gist of which was "Penguins are really quite good at walking on ice & we should start walking like them."

So, everyone watched the video, took the quiz, demonstrated their penguin-walking techniques to penguin-walking instructors and went back to work. Supervisors were tasked with filling out trackable "safety walk-around" cards which now included an auditable penguin-walking element.

Then winter came, it snowed, and people tipped over. There was much wringing of hands among the safety pros. Supervisor's weekly requirements for penguin-walking observations were doubled. Those observed failing to walk like penguins were brought in for remedial penguin training.

Meanwhile among the workers, another video began to circulate. The video was easily found by a worker who Googled "Penguin Falls on Ice." Here we were treated to the rather sad image of a penguin, walking like a penguin, who fell on his (or her) *ss. The remaining upright penguins cast stern looks at their fallen mate & make rather demeaning penguin sounds.

A root-cause-type discussion was scheduled and employees walked (very penguin-like) into the meeting. After much discussion it was determined that ice was very slippery and should be mitigated whenever possible. Two action items came from the meeting: (1) maintenance crews would come in even earlier on snow days to shovel and spread salt[14] and (2) each employee would be issued traction devices to affix to their shoes.

[14] This led to an uptick in falls among maintenance workers & a couple of back strains from shoveling (ultimately blamed on "workers rushing and failing to take proper care" --- a story for another day.)

Frankly, the traction devices worked very well and workers loved them. Now they could safely walk like penguins wearing crampon spikes & they appreciated the fact that the bosses were willing to provide them. The only problem---the spikes were horrible on hard or carpeted floors and there was an increase in falls when workers came into buildings from the snow. To mitigate this, the safety office provided benches immediately inside entry doors, they installed hooks for storing the crampons and they put up signs to remind people to remove their spikes prior to starting their days in their cubicles.[15]

Chasing the winter slip and fall issue continued for several years until the safety committee brought in a slip, trip, and fall simulator. If you've not seen one of these, it basically works like this: workers are tethered to a safety harness that eliminates the hazard of a fall, they walk across a very slick surface with very slippery shoes and they "fall" again and again. Then, over a bit of time, their amazing human brains learn the muscle memory of both recovering from an incipient fall and, perhaps more importantly, they learn when to switch from fighting the fall to preparing for the impact. An invaluable skill any skydiver will tell you about.

Imagine how shaky and tense you were the first time you rode a bike or put on ice skates. Your body quickly adapted given the chance. After many falls, you got much better.

I suppose the moral of the story is this: We should do everything we can to prevent falls but we must recognize that even our best penguin walkers will eventually slip. When they do, let's provide them with safer landings. That's capacity.

[15] This led to an uptick in injuries related to accidentally shooting the spike covered bungee cords into the faces of other co-workers using the benches. An improved sign warning of this hazard was added to the existing sign.