

Mining Safety
A business imperative



Forward

Safety has always been a vital issue within mining operations. Globally there is increased pressure for mines to operate safely and move towards zero harm. Best practices have used programmes such as behaviour-based safety to produce significant improvements. However, it seems that improvements have plateaued and that new insight is required for the next breakthrough.

At Deloitte we identified the issue of mine safety as a business imperative, something which absolutely had to be addressed in order for mines to operate successfully in the future.

Safety is a field where much work has been done, so our efforts have been focused on bringing new innovation to this intractable issue. The discipline of complexity science in management offers some new insights that we have applied while conducting our research.

Our research is not focused on empirical analysis, where a reductionist view produces charts and metrics to define the issues. It is a narrative-based approach that seeks to analyse the holistic interaction of the complex mining environment. We interviewed 19 people representing unions, mining organisations and safety experts to understand why our traditional approach to safety initiatives will not deliver future improvement. Finally we discuss where future solutions may be found.

We trust that our insights will assist in meeting the objective of zero harm in our mining industry. We would like to thank everyone who contributed their time and thoughts towards developing this report.

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Executive Summary

Mining in South Africa is a technically challenging environment. Over the years many technical solutions have been developed to overcome the barriers. These technical solutions have been guided by an army of technical experts, including miners, engineers, geologists and chemists. Management disciplines have planned and directed the various resources, often using a command-and-control style to achieve results. However these approaches are no longer adequate for the demands of a mining operation today. The demands for the social license to operate are global and mining safety is a key business imperative.

The Cynefin framework has been used successfully in dealing with organisational complexity and policy formulation. We applied this framework to the issues of mining safety to develop some new insights into this complex problem.

The saying goes, “if a hammer was the only tool I had available, then every problem would be a nail”. Similarly, there is a tendency to look at safety as a structure problem, which can be solved through technical solutions and compliance to a set of rules. ‘Work to rule’ is the most devastating tool available to a trade unionist because it is simply not possible to do business if everyone follows the rules. Mining is a people business, with people with multiple roles and worldviews that interact and play out at any given time. The result is a high degree of interaction that makes it impossible to predict or order, but where it is possible to provide appropriated leadership. The requirement on leadership is therefore to use a new set of tools to address complex problems. It therefore becomes important to represent and measure the overall “attitude” to safety. To this end, the Cynefin framework provides a ‘sense -making’ guide for leadership action.

Deloitte Mining conducted research into the mining safety issue by applying some of the latest thinking from the field of complexity science.

Introduction of a Sense-Making Framework

The Cynefin Sense-Making Framework

The Cynefin Sense-Making Framework (ku-*nev*-in) was originally developed as part of a knowledge management tool by Professor Dave Snowden as a lens through which to see problems and systems with fresh perspectives. Subsequently the award-winning model, published in the Harvard Business Journal, has been extended as a strategic tool. In a world of increasing complexity, the framework helps leaders distinguish between five types of issues facing leaders defined by the varying nature of the relationship between cause and effect. The emphasis of the framework encourages leaders to diagnose and understand situations and to then act in contextually appropriate ways. The main benefit of using the Cynefin Sense-Making Framework is in the assistance gained by individuals, teams, leaders and organisations to understand in which context they are operating within so that they can make better decisions and avoid the problems associated with applying solutions that are not contextually relevant. The framework essentially helps us understand two components of the world we live in: a world of order, where cause and effect are related and outcomes are predictable and repeatable; and a world of 'un-order'

where cause and effect are present, but not immediately discernable, nor predictable. The framework then further distinguishes between the types of order – Simple and Complicated – and un-order – Complex and Chaotic. In addition to the Simple, Complicated, Complex and Chaotic domains, the framework unpacks a fifth domain, known as 'disorder', when we face issues that escape understanding, and that we cannot place within one of the four main domains without breaking it up into smaller discrete parts.

The Cynefin framework is a vital tool in any leader's decision-making toolbox as it helps us make sense of the Complex domain, which is more prevalent in business than many leaders would admit. Our legacy of business sciences has made us assume we operate in a world of order. Problems arise when we try and implement ordered solutions to un-ordered problems. Hence, Complex problems require a new decision-making approach that is open to different, often counterintuitive, responses. Each of the domains in the framework requires a distinctively different operating modality. In essence, the way a leader is to manage a problem in the Simple or Complicated domain is to find the right solutions based on the facts of the situation, an approach most of us

are familiar with. On the other hand, in Complex and Chaotic situations, there is no immediately apparent solution and the most appropriate action is to sense the emerging dynamics of a situation and employ pattern-based management.

Simple Order: The Domain of Best Practice

A Simple-ordered situation or problem is the easiest to diagnose. This is because cause-and-effect relationships are clearly evident to everyone. As a consequence, the solution is self-evident and requires very little debate. The accurate diagnosis of Simple problems requires straightforward management and monitoring. The operating modality in the Simple domain is: *sense, categorise, and respond*. One needs to purvey the facts, categorise them and employ the best-established practice when dealing with that particular problem. In an analogy, a Simple domain problem is akin to running out of petrol while driving a car – the problem is easy to categorise by inferring information from the petrol light flashing on dashboard, and the solution is self-evident i.e. find a petrol station.

One must however realise that problems can arise in the Simple domain – the biggest temptation is to oversimplify a problem, or to incorrectly diagnose it, and the result is often a collapse into chaos. Using best practices is common, and often appropriate, in Simple contexts. Difficulties arise when one applies best practice in domains other than the Simple domain. The presence of the Simple domain in relation to the other domains highlights two pertinent considerations:

- A situation can easily become Chaotic if one over-constrains the system, and
- It exposes our tendency as managers to continuously apply best practice, as we hold onto the hope that the simplest solution would solve the problem, despite the nature of the problem.

Complicated Order: The Domain of Experts

If one were to increase the complexity of the relationship between cause and effect a notch, the context of the situation elevates to the Complicated domain. Unlike problems in the Simple domain, Complicated problems may contain multiple right answers, and





though there is a clear relationship between cause and effect, not everyone can see it. The operating modality in the Complicated domain is *sense, analyse* and *respond*. In continuing the driving metaphor, a problem that is 'Complicated' in nature arises when your vehicle breaks down suddenly. Multiple signals light up on the dashboard. Opening the bonnet does not change the problem either. You do, however, know that the problem can be fixed - you may not have the expertise or knowledge, but there is someone who you know has encountered problems like this before and who knows how to resolve them... the mechanic. The mechanic will diagnose the problem and resolve it with the appropriate methods or tools. In general, good practice, as opposed to best practice, is more appropriate for problems in the Complicated domain.

Within the Complicated domain, there is a temptation for experts to become entrained in their own thinking, and not to be open to novel solutions that might also constitute good practice. 'Analysis paralysis' is a further difficulty where a group of experts are unable to move to action before adequate analysis of the problem. Unlike problems within the Simple domain, it may take some time to reach decisions

in the Complicated domain, but you can be rest assured that there is at least one right answer.

Complex Contexts: The Domain of Emergence

As an average motorist you are able to deal with running out of petrol, and know when to call on a mechanic when multiple signals light up your dashboard, but put yourself in the context of multiple road users where each is making their own decisions and where each needs to navigate traffic intersections and congestion. This is the domain of Complex un-order. It is in this domain that right answers to a problem cannot be ferreted out through accurately categorising or analysing the problem. It is the domain to which much of contemporary business has shifted. For example, a mechanic walks up an airplane and nothing changes. He can deconstruct it and put it back together and it will still be the same plane. However, a consultant walks into a business amidst rumours of poor quarterly profits, and everything changes in the organisation. Suddenly, unpredictability and change are prevalent.

In this domain, cause-and-effect relationships are not discernable in real time, only retrospectively, and this is

why trying to solve a Complex domain problem with Simple or Complicated domain solutions results in it returning in a different form. Someone once commented that trying to get a grasp on a Complex domain problem is like trying to grab a piece of soap in the bath – it always seems to slip out of your hand. Operating in Complex contexts requires a radically different modality: *probe, sense* and *respond*. And so, leaders need to 'probe' the system first to prompt the emergence of patterns that one can make sense of, and thus intervene appropriately.

It is in the Complex domain that surprisingly simple (not to be confused with Simple order) solutions emerge to Complex problems. The ability to probe complex problems requires a fundamental shift in thinking, from implementing fail-safe solutions that are expensive and totalitarian, towards safe-fail experimentation with multiple, low risk, cheap experiments that are designed so as to be acceptable to fail: it is through these experiments that sensible patterns emerge, and leaders are able to then dampen negative patterns or amplify positive patterns that solve the problem.

The largest temptation is to fall back into traditional command-and-

control management styles where one demands fail-safe business plans with defined outcomes. Linked to this temptation is an impatience that rises, as leaders don't seem to be achieving the results they were aiming for. The experimental nature of probing Complex domain issues rub against traditional failure-intolerance. Dave Snowden says it well: Leaders who try to impose order in a Complex context will fail, but those who set the stage, step back a bit, allow patterns to emerge and determine which ones are desirable will succeed. They will discern many opportunities for innovation, creativity and new business models.

Chaotic Contexts: The Domain of Rapid Response

Navigating traffic conditions requires a special ability, but when an unanticipated incident occurs on the road, such as a child running into the road in front of the car, one simply needs to react, and react quickly. Attempting to categorise the problem is pointless. Analysing the problem is even more pointless. One simply needs to act decisively. In the Chaotic domain the relationships between cause and effect are impossible to determine because they shift constantly and no manageable patterns exist. A leader must first *act* to establish order, then



sense where stability is present and where it is absent, and then respond by working to transform the situation from Chaos to Complex, where the identification of emerging patterns can both help prevent future crises and discern new opportunities. The operating modality is thus: *act, sense and respond*. Consultative leadership styles tend to fail in this domain as there is no time for input. Charismatic and direct leadership is required.

The danger that emerges from Chaotic contexts is how a particular way of acting becomes a recipe-based leadership model for crisis management. These models fail to deal with the shifting context of crises. Chaotic problems often spurn on the development of the most innovative responses. People are more open to novelty and directive leadership in these situations than they would be in other contexts.

Bounded Diversity

There is a need to recognise that all problems aren't similar in nature. Although business schools often advocate normative approaches i.e. that there is a direct cause between cause and effect, that an ideal outcome can be defined, and that there is one or more best-practice route to reach the stated ideal. In reality, not all problems are the same; often we encounter problems that seem to defy any intervention, similar to trying to get hold of a slippery bar of soap in the bath.

Our view is not that best practices and other normative approaches are incorrect we believe that all of these approaches have value when applied appropriately i.e. best practice is best applied to ordered problems, where problems are very well defined and always occur in a repeatable and predictable manner. And so, the Cynefin Sense-Making Framework is built on a foundation of bounded diversity: that all solutions are relevant and applicable within boundaries. In essence, the Sense-Making Framework validates approaches as long as they are applied within the relevant context. It is when a solution is applied out of contexts that problems persist.

Findings of Our Research into Safety in Mining

The Cynefin framework's ability to allow us to see a problem through multiple lenses, each with its own set of appropriate actions, is what makes it appropriate in the area of safety.

Our research focused on developing new insights into the issue of safety, and not in documenting many of the proven areas of best practice

A key problem that was identified is the apparent mis-match between the nature of most unaddressed issues in the current safety landscape and the nature of the majority of intervention methods that are being used.

Most Unsolved Safety Issues are Complex in their Nature

In our interviews we asked about the issues impacting on safety that remain difficult to solve. These are mapped to the framework on the next page (see Figure 1). When one looks at the distribution of the identified issues over the Framework, there is a definite bias toward the Complex domain. This means that most of the issues mentioned by participants fall squarely within the domain of complexity, i.e. there are so many factors influencing the issue that they are inherently unpredictable, and resist intervention.

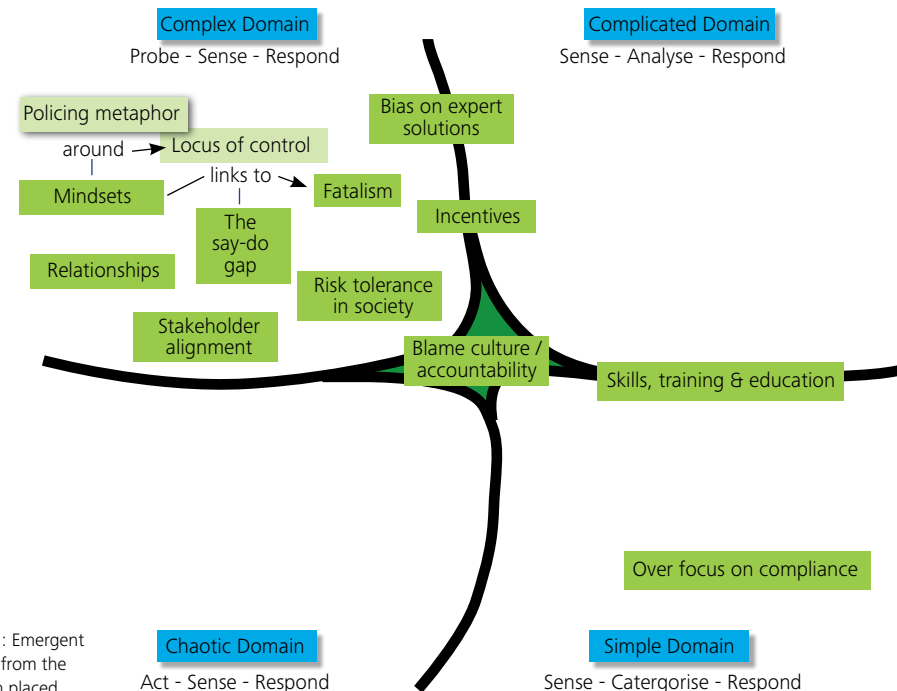


Figure 1: Emergent themes from the research placed within the framework according to the nature of the context

The Problematic Metaphor

For example there is the problem regarding the mindset around safety. This is a multi-dimensional problem with various links and interdependencies, but at the core of it lies the question - 'How do we change the way a person sees the world'? Not just by forcing compliance and therefore stimulating superficial camouflage behaviour, but effecting a real and lasting change through processes such as descriptive self-awareness. A prevailing paradigm

seems to be that putting new rules in place, educating someone or simply communicating a need for change will lead the person to adopting the desired behaviour. This is simply not the case. Anyone dealing with children or teenagers knows this. Humans are inherently unpredictable and complex beings: we view the world very differently; a single event or word would have very different meanings to different people according to their worldview.

An example of a problematic mindset is the fatalistic view that “mining is and always has been a dangerous industry, so we must just accept that accidents will happen - it’s simply unavoidable. When this mindset is prevalent, it is unlikely that safety interventions will succeed. This thinking can manifest in several different guises: for example workers fall back on spiritual beliefs and superstitions, believing that their ancestral spirits were causing accidents and needed to be appeased through cleansing ceremonies. However this mindset is formed, it is counter-productive and needs to be challenged.

An interesting mindset that is extremely pervasive, and that we feel deserves further attention, is the metaphor respondents used when describing safety and anything related to it. There seems to be a pervasive negativity around safety and safety initiatives. It is seen as disruptive to business and as something that seeks to penalise and assign blame.

One usually only encounters safety officers when there’s been an incident, or when they are conducting participative



observation as part of a behavioural safety campaign. In other words, either we are being watched so that we can be caught out and punished, or we are already in trouble.

When we look at the language used to describe safety stakeholders and actions, the metaphor becomes clear: *Safety Officer, Conducting Investigations, Laying a Charge, Assigning of guilt, Penalising, and Safety Inspections*. All of these are policing or law enforcement terms, invoking images of punishment. Whereas compliance is an important aspect of safety, this metaphor is counter-productive as it creates a negative perception of safety. Instead of something that is protecting lives, it is seen as a ‘stick’ that is used to discipline. We feel that it is essential to change this view of safety, but how to go about it is a complex task, as the mindset has been established over many years. Simply running a communication campaign with posters and the like will not change this mindset. It would need to be thoroughly probed to better understand the underlying dynamics and determine appropriate areas of intervention.



Societal Impacts

Another complex problem is the impact of the unique society within which the mine safety problem exists. South Africa is known as a nation that is not very compliant. Safety compliance cannot be separated from issues such as compliance to traffic laws, tax rules etc. Most South Africans are also constantly aware of the inherent risks in society; high crime rates and the like put most citizens in a state of constant threat awareness. This is not sustainable though, and after a while it is as if we have ‘become used to it’. As one participant said, “Constant exposure to high levels of risk has made us calloused in areas where we should remain sensitive”. So the question becomes: how do we motivate a person to adopt a safety mindset when he’s at work when just outside the gate he lives in a society where crime and murder is common place where he may be forced to use an un-roadworthy taxi to get to work and where even the risk of HIV is not enough to discourage risky sexual behaviour? As another participant stated, “It is unnatural to expect someone to change belief systems when walking through the door at work; who I am at home and who I am at work should fundamentally be similar”. Tolerating unsafe behaviour

outside of work, but enforcing safe behaviour inside the workplace creates a cognitive dissonance. Sooner or later the tendency toward unsafe behaviour (which requires less effort) will win the tug of war in the individual’s mind.

Over-focus on Compliance

This issue, though in the Simple domain, has the potential to cause extreme chaos in the safety space. It is one of the major contributing factors to other issues, such as the avoidance of reporting incidents or sharing failures so that others might learn from it. It also perpetuates the problematic enforcement metaphor, as compliance is driven by the enforcement of rules. This over-focus on compliance has many unintended consequences: people can be ‘chasing’ compliance for the sake of it, and there is no genuine commitment to safety. It is reduced to simply another box to be checked on a compliance form. When a system is over-constrained i.e. over-simplified, it runs the risk of ‘falling’ into chaos. The boundary between the Simple and Chaotic domains is a chasm, not a valley. This is something that needs urgent attention to prevent potential crises, especially with strict and controversial new legislation on the horizon.

Current Safety Initiatives

Through the interviews we asked about the current types of safety initiatives taking place within the industry. If one takes a look at the interventions and solutions currently being employed within the safety environment, a bias emerges within the ordered domains (see Figure 2).

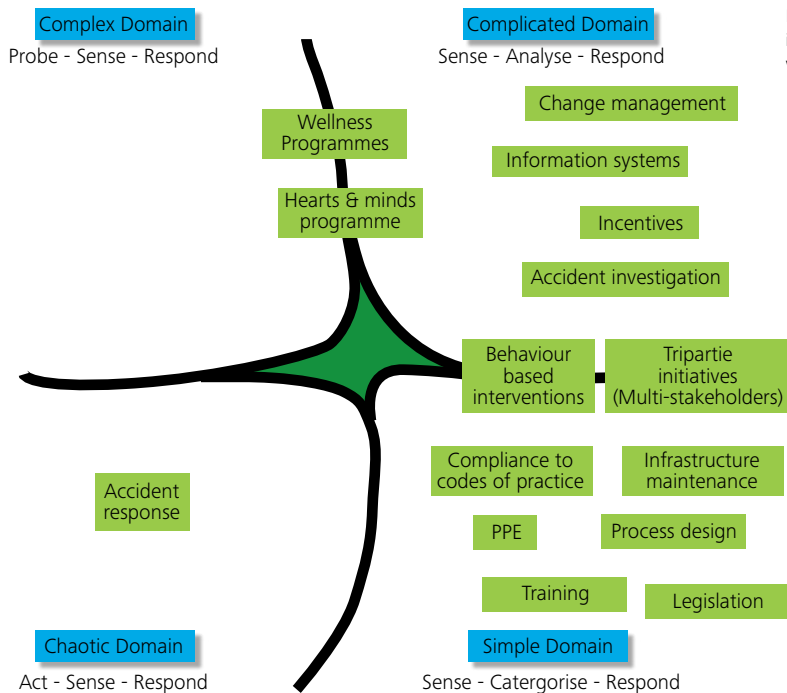


Figure 2: Safety interventions placed within the framework

Codes of Practice

In contrast to the complexity of the problems listed above, is the predominantly ordered nature of the current interventions on offer. When accidents do occur, often the first instinct is to create a new rule to prevent it from happening again, i.e. a compliance approach.

An example of this can be found in the report of a recent incident at a gold mine in South Africa. The incident involved six men who attempted to lift a door that was too heavy for them to manage. It slipped from their grasp and fell on one of the men, killing him. The solution recommended by the inspection was that the removal of doors and frames be stopped until a procedure outlining how this should be done in future was developed.

The problem should be clear: There are so many potential permutations in the way that accidents happen that if we had to create a procedure for each one, the rule book would become too thick to carry, never mind read. The assumption is that if you know what the right thing is to do, and you know the consequences of not doing it, you will change your behaviour and comply. Once again, this is simply not the case, and in fact, all we end up with are very thick rulebooks that no one reads.

Incentive Schemes

Another intervention, which is useful when applied appropriately, but has had many unintended consequences, is the use of incentives. Production incentives can shift the focus away from safety. If a large percentage of a worker's compensation is linked to output, and his family is dependent on his income, survival will usually come before safety. Incentivising outputs but requiring safe behaviour has inherent tensions. Even incentivising safety can have unintended consequences, for example awarding sites with accolades like 'millionaire status'. While it may have positive results at a specific site, it leads to a lack of willingness to share knowledge, as the success recipe becomes their 'claim to fame'.

It must be stressed that our position is not that incentives and enforcing policies and procedures are wrong. We are saying however that they are inappropriate for solving complex behaviour based problems. In fact, they make the problem worse by leading to inappropriate behaviours such as scape-goating and under reporting.

Case Study - Implementing a Safety Programme Through Empowered Employees

So how do we deal with complex problems? Some organisations are starting to look at these issues differently and experiment with very different and sometimes counter-intuitive solutions. Though they haven't compromised the integrity of the safety basics that have to be in place such as compliance to codes of practice, protection equipment and regular maintenance of equipment, they have augmented these programmes by safe-fail experimental projects to attempt to address these inherently complex issues. Here is a case study as an example:

As a response to safety issues, a gold mine started the Masiphephe (Let's Be Safe) programme. The programme has similar themes found in many safety initiatives, including a focus on training, visible leadership and risk awareness. In support of the initiative they appointed a spiritual leader, who works with 50 'church leaders'. The church leaders are full-time miners, with a passion for working with people. The programme started through a communications drive to launch the initiative across the mine. The Masiphephe initiative was supported by the church leaders through the following actions.



Interpersonal Conflict

Tensions between miners would, at times, result in direct conflict. We were told the story how a fight would start when people were pushed around in the cage at the beginning of a shift. This tension would continue to build in the workplace and could result in distractions and sometimes a lack of 'looking out for one another'.

The church leaders would intervene and seek to help resolve the conflicts taking place. By taking notice of the situation and having legitimacy with their fellow workers they would seek to reconcile the differences. Although not able to resolve every conflict, overall there has been a reduction in the tension within the workforce. It has resulted in a greater unity amongst the miners and more looking out for one other during the shift.





EVERYONE HAS THE RIGHT TO HOLD MANAGEMENT ACCOUNTABLE

Personal Issues

Another example related to the distraction of personal issues. As migrant miners leave their homes, they leave their families behind. At times they receive news about problems at home that require their attention. This is not always possible, resulting in being at work, but being distracted. This lack of mindfulness was also seen as one of the underlying causes of accidents.

The church leaders are a direct source of counselling, support and encouragement. They would take the time to discuss the problems at home

and council the person as necessary. They would also get involved with the writing of letters or finding other resources to assist with the problem. This support has assisted in dealing with the personal problems and it also helps to create a culture of caring on the mine.

Saying No to Unsafe Working Conditions

There is an expectation that miners should refuse to work in unsafe working areas, however there are many examples where this is not done. There are many underlying reasons including the focus on production, production incentives and the fear of consequences from management or fellow miners. The church leaders have taken the role of being a spokesperson, who would take up the issue of unsafe conditions. This role was enabled through management communication of the 'Masiphephe Way', but more importantly was actioned as a result of the underlying belief in the value of people.



The Results

The Masiphephe initiative has shown measurable improvement of safety on the mines as have many other initiatives. What is of interest is the role of church leaders in supporting the initiative. Their role is not codified into best practice and there is no rule book which guides them in their actions. Their care of people is driven by their belief in the importance of people and it appears this has created a 'tipping point' that helped to change the culture on the mine. This is not an approach that was designed by experts, but allowed to emerge through experimentation by management.

Recommendations Based on our Findings

Based on our research we have identified that many safety initiatives are focused on the Simple and Complicated domains and many of the unsolved problems are found in the Complex domain.

The following consideration should be taken by a leader when addressing safety initiatives:

Best Practice has its Place – To Solve problems in the Simple Domain

The industry has established mechanisms for the sharing of best practice, and these have their place within the total toolset to be used. The basics focus on risk assessment, training, leadership and a safe workplace. The best results come from in-workplace training focused at the team level where risk identification and action take place.

Much emphasis has been on the adoption of best practices within the industry. At one mine there was an initiative by management to provide soup to their workers at the end of the shift. This simple initiative demonstrated recognition of their long shifts and a caring by management. When being adopted at another

mine, no one would take any soup. It appears that the miners did not trust management and as a result did not trust the soup. This highlights the importance of being cognisant of context, and that successful initiatives often cannot be replicated as-is to different environments.

True to our approach of bounded diversity, we assert that best practice is appropriate when it is applied appropriately, i.e. in the Simple domain. Applications include areas such as risk assessment, codes of practice etc. However, organisations have to realise that not all the problems they face are simple, and that they need to accurately define the nature of the problem they're dealing with and then find appropriate interventions. For example, problems in the Complex domain are emergent and is the product of a *Probe, Sense and Respond* approach, not the best practice categorisation approach.

Use Appropriate Solutions for Complex Issues

Many of the unsolved issues identified in the research are Complex in their nature - cause-and-effect can be identified in hindsight, but there are so many variations that they cannot be addressed in advance. The following approaches would be useful in addressing complex issues:

• *Set barriers*

Simple rules can establish the boundaries for seeking solutions. They are required to delineate inappropriate behaviour, i.e. know what not to do, not a long procedure on the appropriate things to do. They are also more practical than thick rulebooks, and it treats people as adults who have common sense. There are many examples e.g. Our 10 Safety rules help set the limits.

• *Moving from fail-safe to safe-fail*

Time and resources can be saved by embracing a safe-fail experimental approach i.e. trying multiple small interventions in low-risk areas, monitor for success or failure - amplify success: disrupt or dampen failure. This is a much cheaper and less risky approach, than implementing big, expensive products or processes across your entire operation. If this solution fails, all is lost.

• *Encourage honest communication and sharing of failures*

Human beings are programmed to learn more effectively from stories of failure, than from success stories. The reason for this is probably an intuitive recognition of the fact that it is very difficult to imitate someone else's success in a complex world (e.g. the soup example). It is much more effective to learn from failure, i.e. to know what to avoid doing. Linked to the metaphor that needs to be changed, it is imperative that the 'stick' is removed so that people will feel freer to share their stories of near misses and other failures so that it can be used for learning.

• *Use narrative to challenge the problematic metaphor*

Narrative techniques can be utilised to understand how deeply entrenched and problematic the law-enforcement metaphor is in a company or at a specific operation. As the contexts are widely different between various operations, a blanket, one-size-fits-all approach probably will not work to address this problem. Context-specific, safe-fail experiments will need to be utilised to start changing this mindset.

- **Create habits of safe behaviour**

We all know that habits are hard to break. Through narrative and complexity-based techniques, novel ways can be found to experientially create habits of safe behaviour. A specific application would be to create habits around mindfulness, i.e. being aware of what is going on around you.

- **Open up the discussion**

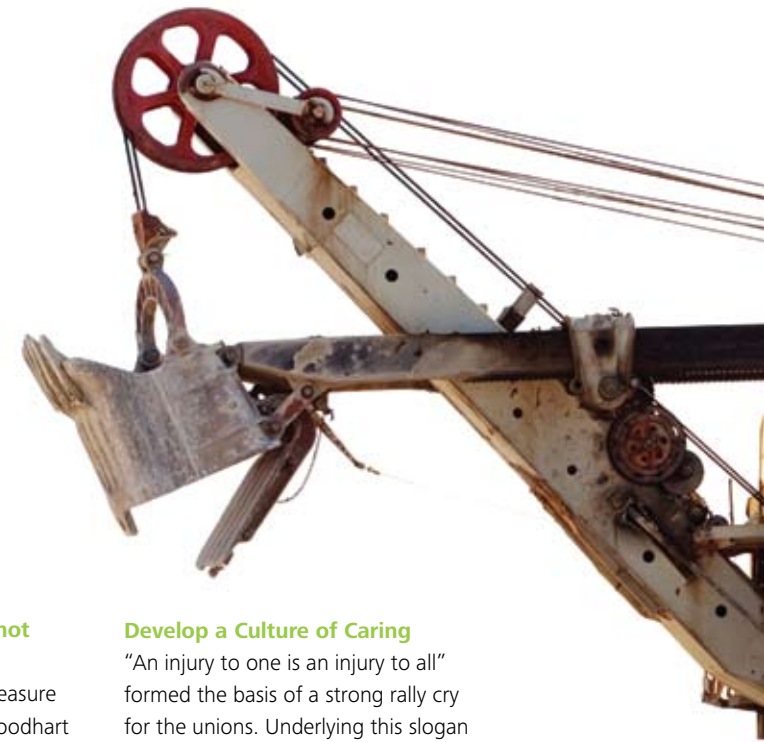
Large group methods are useful to enlist the participation and understanding of complex problems. Safety initiatives are often top-down driven, i.e. they are implemented from the top or by external consultants. Using a bottom-up method, leveraging the wisdom already present in the system, will lead to a greater sense of ownership from the participants, and therefore a greater chance for success.

- **Encourage dissent and diversity**

Rigorous discussion and open debate are valuable in the development of new ideas and insights into the safety dilemma. These discussions can even be encouraged by establishing formal debates around the topic, involving stakeholders from other industries or even academics to gain a fresh perspective. One thing that leaders should avoid doing is to surround themselves with people who think like them: they need to ensure that they have people around them who will not be afraid to challenge their ideas if necessary.

- **Manage the starting conditions and monitor for emergence**

The answer to the Complex problems will probably not come from other operations; this is where best practice fails to deliver. These will need to emerge from within the operations and a leader should be looking for these and support their emergence.



Focus on Quality Mining - not Safety

An attempt to regulate and measure can have the wrong results. Goodhart commented “As soon as the government attempts to regulate any particular set of financial assets, these become unreliable as indicators of economic trends”. This *law* was eventually restated as “When a measure becomes a target, it ceases to be a good measure”.

The objective is quality mining and when the wrong focus is given to safety measures there are negative implications. There can be a tendency to under-report on actual incidents. Furthermore, there is a tendency not to talk about near misses in the desire to create the impression of a fully compliant operation. Under-reporting or incorrect root-cause analysis will hinder the efforts in addressing safety.

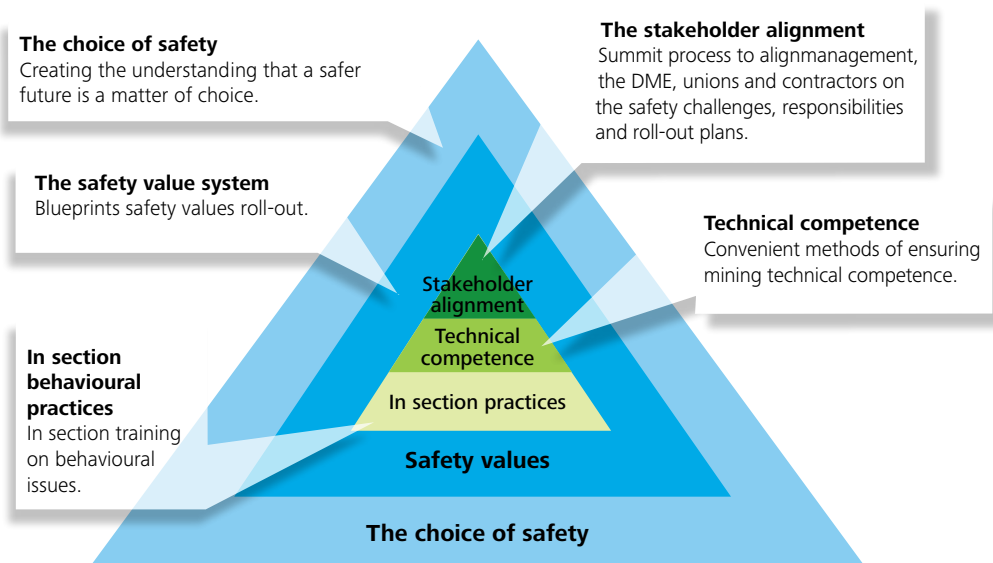
Develop a Culture of Caring

“An injury to one is an injury to all” formed the basis of a strong rally cry for the unions. Underlying this slogan is the basis premise confirming the value of people and our relationship to others. This is easily spoken about, but often actions that speak louder than words communicate that there are other priorities. Mining is a people business and the more management actions reflect the importance of people, the easier it would be to address the other issues around safety.

Managers should focus on fostering stronger relationships with their staff, but also between their staff members. Stronger team relationships lead to members looking out for each other. Almost like a soldier providing cover-fire for a comrade during a war effort, people need to know that their ‘buddy’ will always ‘have their back’.

About Deloitte Mining Safety

Our Mining Safety offering has been developing within the various disciplines within Deloitte. Understanding the complex nature of safety, our offerings have been placed within our Safety Framework that allows for specific safety solutions to address problems within the right context.



The core pyramid is built on the behavioural aspects, which uses our Look - Assess - React training to teach a basic approach to working safe. Supporting this process are the various technical competencies required, which include information and technical systems, record-keeping, safety procedures and safety incentives. The behavioural and technical aspects are aligned through our safety summit process which involves all the key role-players in supporting a safe working environment.

The core is encompassed by two layers, the inner layer being a value-driven organisation and the outer layer comprises of "Safety as a Choice" that addresses the strategic choices impacting on safety.

Through an initial analysis we are able to develop a safety programme taking into account the context of the client's organisation.

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