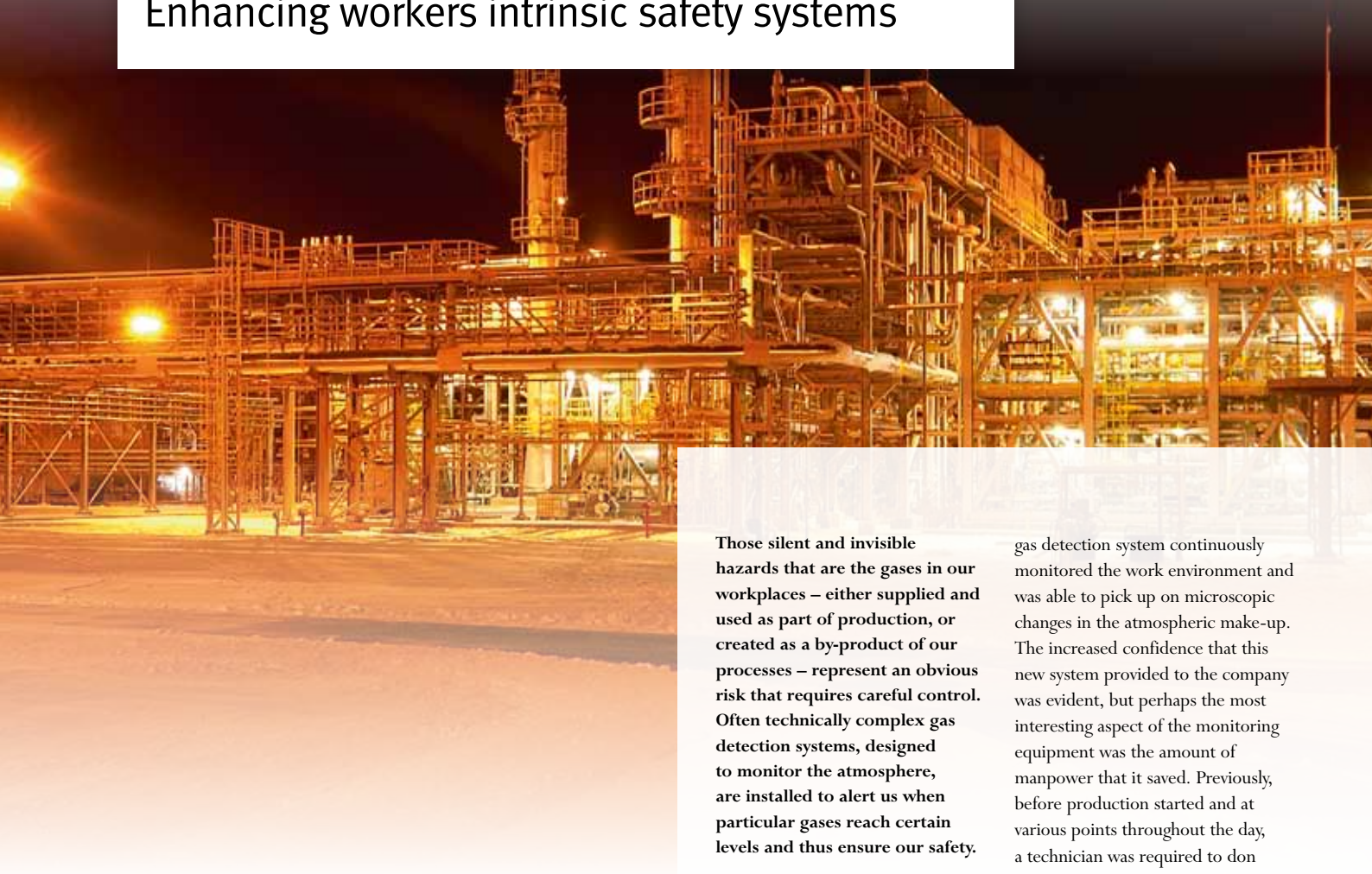


# Man versus Machine

Enhancing workers intrinsic safety systems



“perhaps the most interesting aspect of the monitoring equipment was the amount of manpower that it saved”

**Those silent and invisible hazards that are the gases in our workplaces – either supplied and used as part of production, or created as a by-product of our processes – represent an obvious risk that requires careful control. Often technically complex gas detection systems, designed to monitor the atmosphere, are installed to alert us when particular gases reach certain levels and thus ensure our safety.**

In this article, Andrew Sharman argues that humans operate in similar ways to this technology and offers practical thought for how we might build enhanced resilience and efficiency into our own ‘personal risk detection systems’.

During a site tour of one of our clients processing sites recently, I was impressed with the immediate response of my hosts when a rather loud alarm sounded in the production area we were visiting. Once safely evacuated from the area the corporate safety manager began to explain how their new

gas detection system continuously monitored the work environment and was able to pick up on microscopic changes in the atmospheric make-up. The increased confidence that this new system provided to the company was evident, but perhaps the most interesting aspect of the monitoring equipment was the amount of manpower that it saved. Previously, before production started and at various points throughout the day, a technician was required to don personal protective equipment and enter certain areas with a metering device to check the levels of gases in the air. Now, with this relatively inexpensive new detection system, the process was automatic, always on, and effectively shortcutting the manual labour from the equation.

Over the last few decades many industry sectors have seen progressive incorporation of the latest technology into the workplace. Indeed, at the site mentioned above the total headcount has been reduced from over 2,000 employees to just a few hundred. There could be no doubt ▶

that machine had triumphed over man in the battle for efficiency. But in the challenge to ensure safety at work can we say the same? Further discussion with the site management team provoked some interesting thoughts around a balanced approach to industrial risk detection – where a mix of technological and humanistic detection systems are utilised to great effect.

When it comes to matters of safety the human can be viewed as both the cause and the receptor of negative events. Thoughts such as “*If only he hadn’t touched that*” and “*Why did she put her hand in there?*” frequently pop up during accident investigations and serve to rationalise our conclusions that more warning signage and additional safety training is required in order to prevent a recurrence of similar accidents.

While this may seem appropriate at first glance, this narrow perspective of concentrating on trying to ‘fix’ workers’ faults fails to take into account one of the most important aspects of modern life: humans are complex. Our brains have a capacity for complexity that is unrivalled; our bodies a flexibility and adaptability that is unmatched by any machine. Combined we are formidable. When it comes to safety performance improvement I can’t help but think

that if we considered the broader, deeper capacities of workers a little more, we might just find a better way of working safely.

## Bigger better faster stronger

As human beings it’s not just that we are brighter and better than the machines around us; we also hold significant similarities with the complex systems in our workplaces, especially those that serve to protect us from harmful gas emissions. First, we have a knack for maintaining a steady observation of the world around us. Second, we continuously identify and process a vast array of complex information picked up by the sensors in our body and brains. In this sense we are - like the gas detection system suspended above us or mounted on the wall – permanently switched on and in a state of constant alert.

## Taking shortcuts

In 1974, social psychologists Daniel Kahneman and Amos Tversky were looking at how the human brain processed information and they were infatuated with its ability to make decisions quickly. Kahneman and Tversky made a groundbreaking

“availability heuristics help us to estimate the probability and likelihood of something happening based on information we can recall”

discovery: the brain wasn’t just quick, it was seemingly able to absorb volumes of information and arrive at a decision in just fractions of a second. But just how did it do that? Their research revealed that the brain actually wasn’t processing the information it received, but instead it was taking mental shortcuts to solve problems or issues that it was presented with. These heuristics, to give them their proper name, are simple procedures that help us to find adequate, though often imperfect, answers to difficult questions or situations. When we think about it, the process is not dissimilar to the way our gas detection systems arrive at their decision to either sound the warning or remain silent.

Heuristics are the little ‘rules of thumb’ that allow us to quickly process and conclude an efficient decision without having to pore over information or deliberate what our course of action should be. It’s interesting to note that the word heuristic is derived from the same root as the word eureka. Perhaps this

reflects exactly why, when our minds make these little shortcuts for us, we feel so pleased with ourselves for being so quick thinking.

Kahneman and Tversky suggested that there are three main types of heuristics, and as their theory remains solid to this day let’s take a look at each of them now.

**Availability heuristics** help us to estimate the probability and likelihood of something happening based on information we can recall. Studies suggest that those events we can bring to mind quickly and easily are those that have occurred most recently. For example, if the news reports several road accidents on a certain stretch of highway, then we may believe that it is more likely to suffer a crash on that particular road and avoid that route in the near future. Or if we sustain a number of forklift truck incidents in the workplace, we may believe that generally there is a high probability of another forklift incident occurring and focus all of our attention there. ▶





**Anchoring heuristics** are based on the idea that we often take decisions related to specific reference points within our memory. These reference points act as anchors to connect historical information to the present. As an example, if a manager in your organisation was involved with a serious fire situation earlier in her career, future discussion on this topic will often trigger her thought process to pull against this anchor in her mind. This may result in either a raised level of awareness and knowledge, or conversely, perhaps a degree of over-sensitivity and a reluctance to engage.

Heuristics can be useful, but we should note that they can also lead to errors. Have you ever 'gone with your gut' only to find you made the wrong choice? This is because heuristics are imprecise ways of judging probability. As Kahneman admits, they are a "consequence of the mental shotgun, the imprecise control we have over targeting our responses" to the questions or issues we face.

**Representativeness heuristics** help us to predict the probability of something happening based on the proportion of relevant items in play. For example, if I take a jar of coloured candies, some red, some blue and ask you to tell me which colour of candy will be drawn next from the jar, you would no doubt want to know how many of each colour I had placed in the container. When I tell you that 75% of the candies were red, you would likely guess that red would be the colour of the next one to be drawn. This proportion is known as the base rate.

The representativeness heuristic is significant in our world of safety. Where a base rate appears to be in our favour we can be lulled into a false sense of security; for example, when we experience a period of time without an accident at work. Our confidence begins to grow and it becomes easy to believe that we have the ability to predict random events from the base rate data to hand.

I noticed a busker on a street play with the representativeness heuristic recently. With a crowd gathered around him, he tossed a coin into

the air. Six times in a row the coin landed 'heads-up'. He paused and asked a member of the audience to bet one dollar on the next toss. The audience clamoured to participate, and one man handed over his dollar, adamant that the coin would have to land showing 'tails' because it had landed showing 'heads' too many times already. The coin was tossed and landed. 'Heads' again! The crowd went wild and a sharp-looking lady moved forward from the edge of the group. Handing over a five dollar bill she exclaimed that she would bet 'heads'. The showman took the bet and flipped the coin. 'Tails' this time. Despite both participants having inspected the coin before each toss, and presumably noting that it indeed did have two sides and therefore a 50/50 chance of landing on either, they both appeared resolute that the odds were in their favour. Representativeness heuristics had taken away their capacity to think – and with it their money.

In Kahneman's recent brilliant book titled *Thinking, Fast and Slow* he introduces a new heuristic, proposed by psychologist Paul Slovic, where individuals allow their personal preferences and biases to influence their decisions. When the Affect Heuristic kicks in, our brains respond to our most basic emotional likes and dislikes. As an example, if you observe a man with tattoos on his arms you may make assumptions on his character and social status and conclude that he is 'not your cup of tea'. The affect heuristic does not shut down your mind completely, however, it leaves the door open just a crack for you to change your decision. So when you learn that the man is in fact an eminent doctor who is known for saving the lives of many sick children it becomes easy for you to modify your conclusion.

Slovic and his peers have conducted several studies looking at affect, all of which confirm the bias most humans have for the physical appearance of others. In one recent study several participants were sent individually to make a sales pitch to a group of strangers. In each case where the participants were considered to be 'highly attractive' ▶



and ‘well-groomed’, the pitch was successful and the deal closed. Those participants who appeared to have taken less care with their choice of clothes and personal grooming rarely got the sale.

By their very nature, heuristics are used without our conscious thinking. Our ‘mental shotgun’ makes it easy for us to come up with fast answers to difficult situations because it avoids the need for long, deep thought. But like the coin used by the street performer, heuristics have a flipside. They may lie behind the unconscious errors that we create as we go about our daily business and lead us into making decisions and taking actions rather naively. That’s where our gas detection systems and other mechanical protection devices serve as our wingman.

## Making observations

In previous articles in this journal I’ve argued that organisational culture is all about behaviour, but

before we can go about influencing behaviour we really should begin with something more mechanistic – building an understanding of what current behavioural patterns are in place. There are many proprietary tools available on the market now to help you build a process and format for conducting behavioural observations, several of which come complete with nice little pre-printed notecards with prompts for what should be observed. These may be useful to you in your own journey to improve safety, but they’re not essential. You can build your own template or, for those feeling brave, why not ditch the idea of a proforma and instead think about the behaviour and the communication best practices you would want your observer to display.

Given that current research indicates that around 85% of what we learn comes from observation of our peers and as little as 5% from the formal training we receive it’s worth making sure we are comprehensive in our approach. We may not reach

the near-perfect standard achieved by those machines measuring gases, mounted on our walls, but there are five steps we can take to enhance our efficiency: bravery, planning, strength, focus and feedback.

### 1. Be brave

One of easiest way to make an impact during a safety observation is to pussyfoot around. I recently noticed a manager gingerly hanging around the edge of a work area. After a full minute checking that the coast was clear, she locked her sights on a poor unsuspecting employee and hesitantly approached. During her approach she appeared to abort her mission twice. Third time lucky and the connection was made with the worker, who by this time was thoroughly confused about this leader’s intention. Plenty of impact; all negative. Nothing arouses suspicion and fosters a lack of trust more in the workplace than a manager who looks incompetent. Yes, it’s easier for managers to sit tight in their offices, behind the urgent spreadsheets and workplans, but getting out of the comfort zone

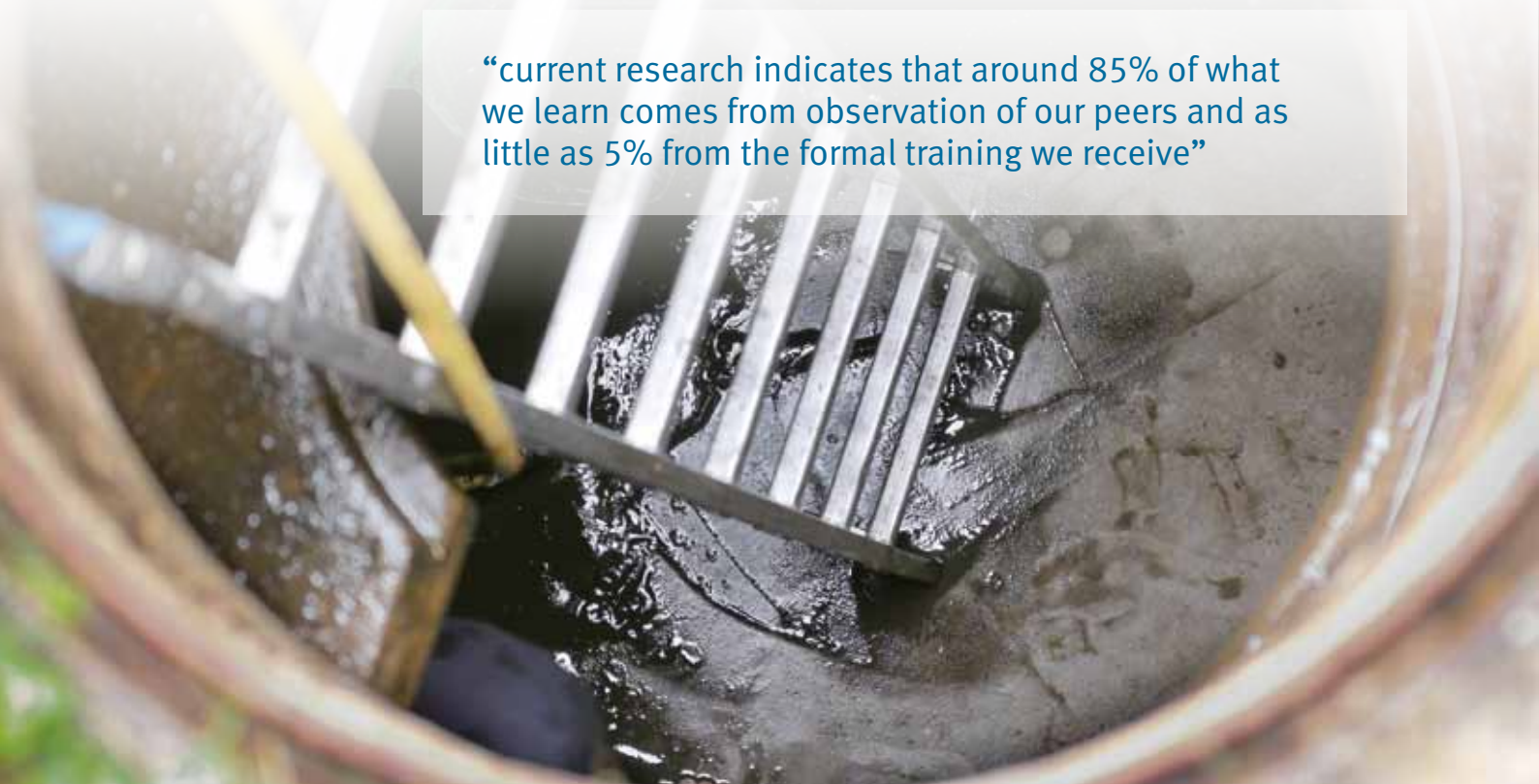
and onto the shopfloor is critical to success. It’s likely that you will have to talk with people you may not know well. You may hear information that is difficult to take because it may generate more work for you. Be brave.

### 2. Plan

Safety observations are not about wandering round smiling and shaking hands. They are not PR exercises. They require careful thought, preparation and skill.

Prepare yourself for the observation by ensuring that you have the relevant PPE to enter the work area. Be mindful of the work activities taking place, if the environment contains lots of chemicals, dust or dirt you may not wish to wear your best suit!

As you enter the workspace look carefully in front, above, below, around and behind you to identify any potential hazards and familiarise yourself with the work area. Think about who you might meet, what their roles are, and about recent safety events that have occurred. ▶



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### 3. Be strong

It's crucial that observers have confidence in their task and this is demonstrated appropriately with respect for those around them and their opinions. It's about being assertive rather than aggressive. Remember the aim is to build relationships, foster agreement and drive improvement, so be direct about what you see. Talk about specific issues and use factual information.

How we say things often has a more powerful impact than the words we use, so be aware of your body language. Aim for a relaxed, at-ease posture, but don't slouch. Keep your hands free – don't fold your arms. Maintain eye contact when talking – look interested and avoid distractions.

### 4. Focus

Focus is everything. Use your plan to generate a clear picture of the outcome you intend for your observation. Pay attention to the way the discussion moves forward, and be sure to bring it back on track if it drifts off. Open questions can help bring out the real issues, but closed questions with 'yes' or 'no' answers can help keep things on track.

Don't jump right in. Begin with small(er) talk first, perhaps by

showing a genuine interest in the person, asking about how long they have worked in the organisation or department, the nature of the product that's being made on the line, how the job is done, etc. Then move on to discuss safety.

### 5. Feedback

Following up on observations is vital. If during a conversation you identify changes needed, gain agreement with the worker on specific actions that need to be taken, by them and by you. Be sure that the necessary time is taken to organise these and make a point of returning to the work location to share updates with those who have raised the issues with you. Think about how you can use the outcomes from your observations to share learnings more broadly across the organisation.

As a final thought, in his handy little book *The One Minute Manager*, Ken Blanchard encourages us to 'catch the person doing something right'. In conducting safety observations it's so easy to fall into the trap of doing the opposite though, and telling people what they've got wrong – a bit like when those gas detection alarms go off. With every observation, try to find a positive action to thank your colleague for. Not only will it break

the ice, it also provides a great place to build further discussion from and will help enhance everyone's 'personal risk detection systems'. ■

Author



Andrew Sharman is Chief Executive of RyderMarshSharman, a global consultancy specialising in organisational safety culture and leadership. With

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