

Stretch to the limit

Tim Marsh discusses new thinking on safety culture, which practitioners can use to inform and convince senior management, and those holding the purse strings, that the recession is no time to cut back on, or abandon, good health and safety practices.

THOUGH IT'S TRUE THAT EVERY accident in history could have been prevented, and that no accident is ever unavoidable, it's equally true that making money in the modern world is perhaps impossible to do *entirely* risk-free. We also need to understand exactly what the risks are and make sure we are managing them effectively so they are controlled and minimised – and this is especially true in the current economic climate.

Helpful in this respect is Reason's hugely influential Cheese model¹ (figure 1), which suggests that many serious incidents are the result of weaknesses at several parts of an organisation lining up on a given day. An example would be: a false-economy management decision on a task that requires goggles to be worn, combined with poor supervision of PPE compliance and/or availability of the PPE, and an individual choosing not to wear goggles when undertaking that task. The holes line up and someone is blinded but the model makes clear the individual isn't wholly to blame – they are just the last actor in a chain of events. The false-economy decision and poor supervision are key, too.

However, some recent writing by Reason himself suggests that this model is, perhaps, a bit simplistic – or even naive. His own re-evaluation, combined with some new, user-friendly thinking about safety culture, suggests a sophisticated and business-friendly model that senior line managers can more readily relate to. This is vital as, in my experience, the better the person with the cheque book “gets it” the more likely they are to do something about it!

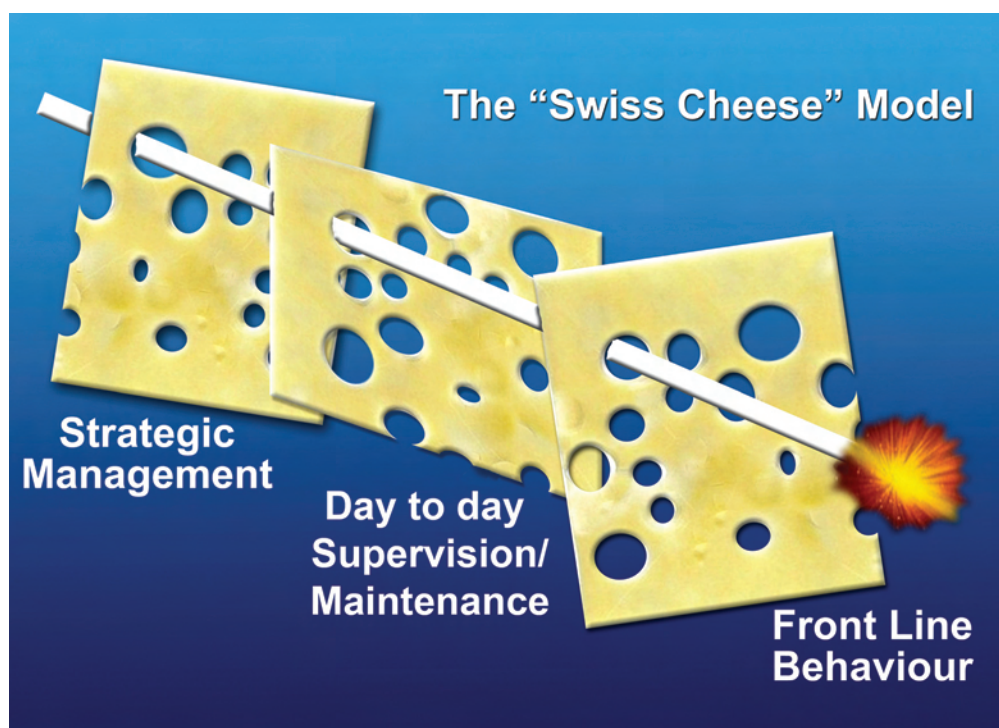


Figure 1

One of the most influential models of workplace motivation (Warr's 'Vitamin' model²) suggests that as well as money, personal integrity, and so on, the motivation to undertake a given task is, in part, determined by an individual's understanding of how that task is important to the business as a whole.

Root cause versus 'background'

In his re-evaluation of the upper end of the Cheese model – where strategic decisions are taken – Reason now suggests that, in some cases, what we've learned to think of as *causes* in

the past might be better thought of as *background* (or 'givens', if you like). Indeed, thinking of them in this way helps frame what we need to do on a practical basis to manage the situation day to day.

I used to tell a story at conferences about some American shipbuilder clients. After training in the Cheese model and other root-cause analysis tools they had a concerned-looking discussion, before announcing: "We've been thinking about what you've been saying and, frankly, we're building this ship all wrong. We should *never* have agreed to build it this way!"

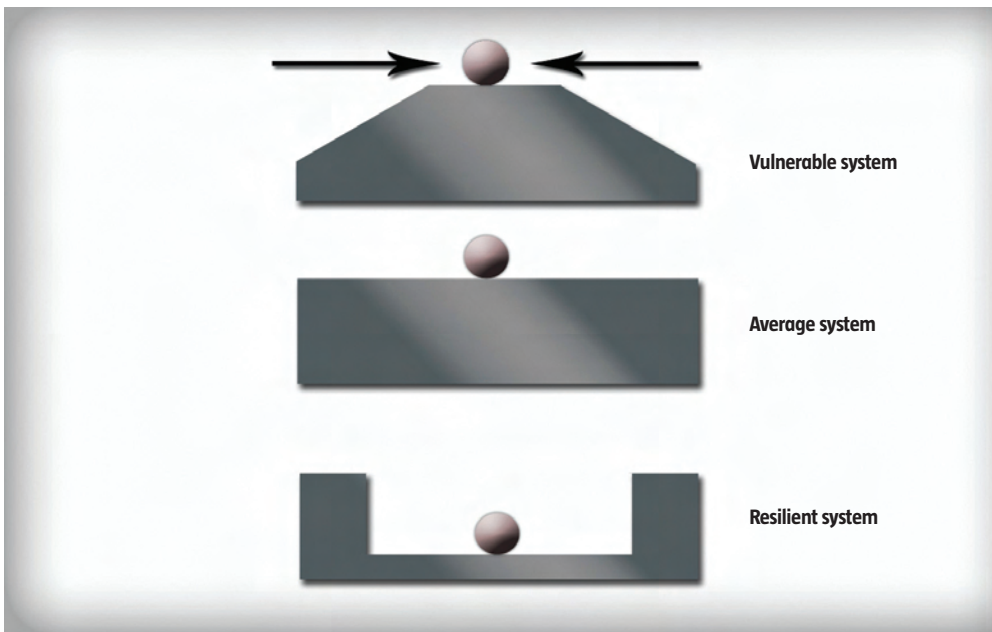


Figure 2: Reason's "ball and block" vulnerability model

A better response might have been: "Well yes, that's true, but *someone* was going to agree to build the ship this way and, given this, we need to ensure we avoid any fatalistic thinking and our efforts are best spent preparing for, monitoring and managing the issues that inevitably flow from this situation."

This might be summarised as: "In an ideal world we wouldn't be doing it this way, but it isn't, and we are. So, we need to be mindful of all the risks and agree the steps we need to take to ensure we don't get caught out."

It's important to stress that though this addresses the age-old "risk/reward" principle it doesn't mean that, on occasion, the organisation should be very clear where the boundaries are and say "thanks, but no thanks". Even then, this can be a hard-headed decision and, as one CEO explained it to me: "It wasn't just a safety decision, to be honest. When you can see that managing it safely is going to be a real headache you can be pretty certain that managing it *at all* within budget is likely to be a nightmare!"

So, as ever, we are simply searching for user-friendly models and tools to help management do their job

effectively. In Reason's own words: "Safety is perhaps best thought of as an ongoing guerrilla war..." We all know that with everything – from time management and sports psychology through to guerrilla warfare – things just go better if you have a clear grasp of where you are, what you need to do, and why.

New kids on the block

Reason has suggested two new models that really help frame this debate,³ and has presented them as visually simple diagrams. The first (figure 2) suggests that no safety culture is infallible; an unexpected great kick could dislodge the ball-bearing from the block. Recently, I watched on television someone from Cokermonth council explain how they'd recently upgraded their flood defences to protect against a "one-in-a-hundred-year deluge". The interviewer asked: "So what went wrong, then?" to which the council rep replied: "Well, it seems it was a one-in-a-thousand-year deluge!"

However, that said, some cultures are rather more fallible than others. The classic Parker and Hudson model⁴ suggests that cultures progress from 'pathological' (get away with what you

can) through 'reactive' (take safety seriously in response to an event), then 'compliant', 'pro-active', and finally 'generative' (a "healthy paranoia" about safety).

The block at the bottom of figure 2 might be described as showing a pro-active culture (or "interdependent" in Bradley terms⁵) and the upturned block at the top a reactive, or pathological culture.

The second model, the knot in the elastic band (figure 3), is a more dynamic and day-to-day interpretation. It suggests that in order to be flourishing and moving forward in today's world we need to get the balance right and be in the 'mesh zone' (i.e. the optimal operating area). This is rather like the fact that there is an optimal amount of stress that gets an individual performing to their full potential.

If we are in too comfortable a situation – position C, to the right of the zone – then although things might well be safe, we perhaps aren't dynamic enough to thrive, or maybe even survive in the modern world. However, we mustn't overdo it and find ourselves in position B – one of enhanced vulnerability, to the left of the zone – because here we are "an accident waiting to happen".

A simple overview of human-factors work suggests that through the use of such techniques as task analysis and ergonomics we must strive to ensure the job is designed and set up to ensure:

- mistakes are unlikely in the first place;
- (if they do occur) they are easy to spot; and
- (they are then) easy to recover from.

What does "vulnerable" look like?

Things that make you vulnerable or overstretched are easily described to line management as follows:

- The company is still "looking into" developing lead measures rather than using already good ones well (meaning the company is working with only historical data, which automatically pushes towards a reactive culture);

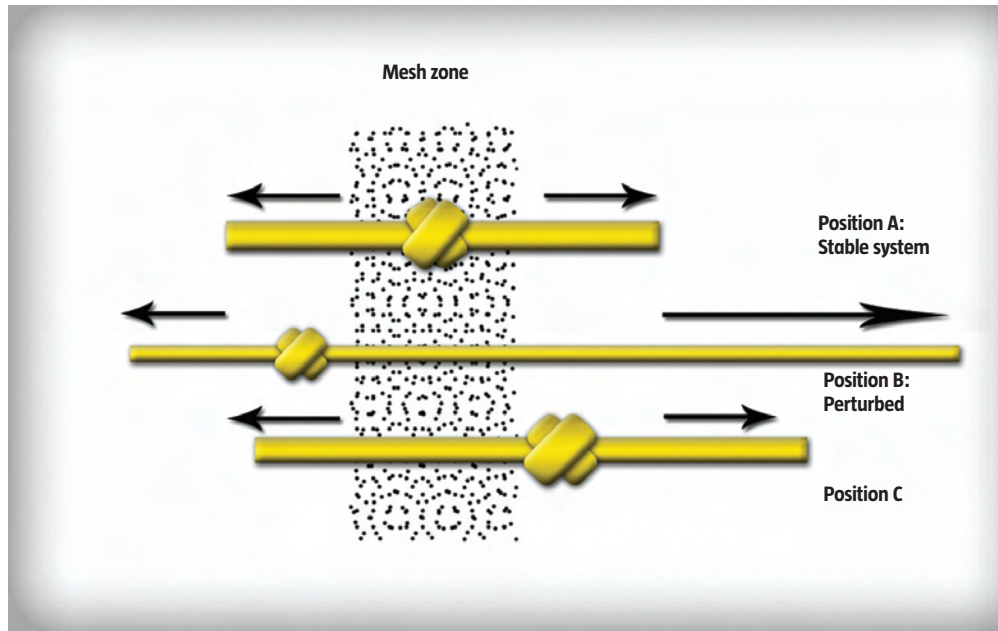


Figure 3: Reason's "knotted rubber band" model

- An alarm system that would add great assurance has been turned down on the grounds of cost, even though it's only a few hundred pounds (remember the *Herald of Free Enterprise* ferry tragedy?);
- An engineering recommendation for caution has been overturned by management because they are afraid to upset the client at a time when the contract is due for renegotiation (the *Challenger* space-shuttle disaster, anyone?);
- The ongoing auditing process is entry-level at best, and the close-out of items generated by it is notoriously tardy (resulting in little learning and even less action);
- Safety-critical operations have never been subject to any form of systematic human-factors task analysis (resulting in such problems as confused handovers between tired operators);
- Training is badly designed and/or badly delivered, and/or lead measures tell us only 80 per cent of those targeted for some form of essential safety training in the last year actually got it (meaning the training needs of a fifth of the workforce haven't been addressed);
- Changes to the workplace – especially those to do with reducing numbers, or other budget-cutting initiatives – do not trigger proper human-error risk analysis (resulting in the company learning where they "over-cooked" it reactively);
- Equipment is run to failure and maintenance is reactive rather than pro-active (with inevitable results);
- Alarms are frequently ignored, or assumed to be faulty, resulting in real alarms and warnings being missed (as happened at Bhopal);
- The company has spent a fortune on a behavioural observation programme and checks quotas are met – but everyone knows most of the cards are made up in the back of a van at the end of the month (resulting in certificates on the wall but little actual learning, or peer-to-peer influence);
- Front-line supervisors frequently walk past unsafe behaviours and may even perform them themselves (resulting in a fatal undermining of the safety message);
- Responsibilities are unclear (meaning the infamous expression "if two people are responsible, then no one is" applies);
- The permit-to-work system is something of a tick-box affair and gives little real control (resulting in disasters like Piper Alpha);
- Risk assessments are often simply photocopied...;
- The likes of toolbox talks are half-hearted, badly-written, and delivered as "tick here if you attended" affairs – sometimes to audiences whose English is poor (resulting in little learning of the risks the workers will face);
- Analysis of problems is simplistic and reactive – poor housekeeping triggers a black-bag day rather than a root-cause analysis of the housekeeping problem, which might highlight issues regarding the location and signage on skips, etc;
- Some excellent "worst-case scenario" analysis is simply filed away rather than acted upon because it's inconvenient. For example: "But what if the fire is caused by an explosion (of a product the plant has recently been modified to produce) that would destroy the original fire wall?" (resulting, again, in a situation like Piper Alpha).

And, no offence intended, but:

- The safety department is populated by individuals who carry little clout or respect rather than by dynamic and influential individuals still on their way up. (Not you, of course, or you'd be unlikely to be reading this!)

"As with everything – from time management and sports psychology through to guerrilla warfare – things just go better if you have a clear grasp of where you are, what you need to do, and why"

Many of these examples famously come from companies where senior management was comfortable with the current situation until things went catastrophically wrong, and it was readily apparent, in retrospect, that they were “an accident waiting to happen”. (An exercise I like to do with management teams is to ask them how many of the list above do they think are realistically more likely to occur when finances are stretched...)

The author of the impressive Haddon-Cave report into the Nimrod crash⁶ has suggested a very interesting model, which cleverly combines the Cheese model with the “Bow-Tie” concept to give us figure 4 (my simplified version of the Haddon-Cave original). I’m sure many practitioners will think it makes for an excellent framework for illustrating how lists like the above can link together, and it will be widely used.

In truth, it’s perhaps of most use at a strategic level and in mapping out some, rather than all, incidents after the event. However, I’d argue that the model is still user-friendly enough to fit into that 50-minute overview to the board on some occasions. Perhaps, for example, when explaining how and in what circumstances a certain cut-back will weaken the defences?

Conclusion

A respected safety professional of my acquaintance once said to me: “They do listen to me – well, they have to by law! – but, try as I might, I’m not sure they always *hear* me and really get it.” And, as the world’s richest man, Warren Buffett, says: “It’s only when the tide goes out that we know who’s been swimming naked.” Or, perhaps, who was an overstretched rubber band...

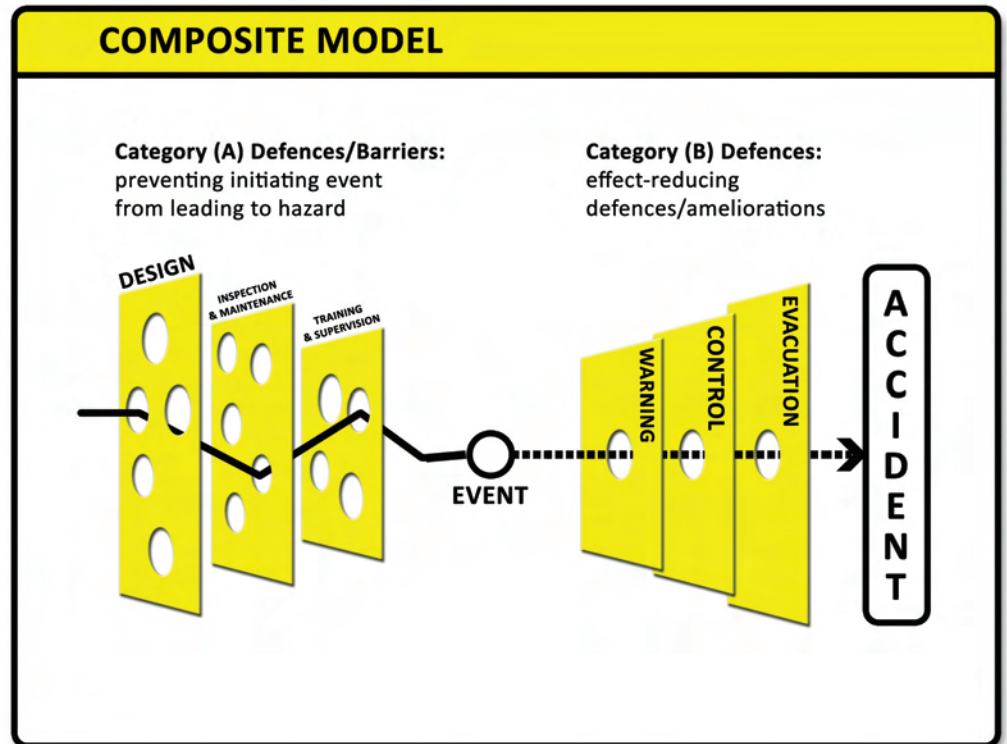


Figure 4

Being able to say simply to a board “if you hurt someone and the investigation concludes we were *here* rather than *here*, then you’re in trouble – and, as it happens, I think we *are here*” really helps get their attention. This is just the first step, of course, but it’s a necessary one. This is especially important when we all know that at the present time, many companies’ “rubber bands” are, quite frankly, being pulled all over the place. ■

References

- 1 Reason, J (1997): *Managing the risk of organisational accidents*, Ashgate
- 2 Warr, PB (1991): *Psychology at work*, Penguin

- 3 Reason, J (2009): *The human contribution*, Ashgate
- 4 Parker, D, Lawrie, M and Hudson, P (2005): ‘A framework for understanding the development of organisational safety culture’, in *Safety Science*, 44, pp551-562
- 5 Marsh, T and Bizzell, P (2009): ‘Bend it, shape it’, in *Safety & Health Practitioner*, Vol.27, No.6, pp34-36
- 6 Haddon-Cave, C (2009): ‘Independent Review of Nimrod Crash in Afghanistan in 2006’, HMSO, London

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“An interesting thing to do with management teams is ask them how many incidents like Piper Alpha, Bhopal, etc. do they think are realistically more likely to occur when finances are stretched”