People Are Safety

By Rudy Pont, Air Safety Committee Chairman

Ever since Taylor transformed 'reductionism', launched by Newton and Descartes, into 'scientific management', people have seen the human operator as slow, inefficient and fallible. Western world thinking is so primed with the idea of linear causality and 'human error' that whenever an incident or accident happens, 'the first story' always looks at who is to blame.

However, current ideas in safety science are causing a mind shift towards a more humanistic approach. This is because in high reliability organisations (HRO) we start to realise that the classic definition of safety (absence of unacceptable risks) is no longer adequate. If we continue to measure safety by things that go wrong, our learning opportunities become very limited. For example, in aviation the average accident rate is around two accidents per one million flights. When plotted on a circle diagram, the thin (red) line representing the two accident flights can hardly be seen on the big (green) circle of one million normal flights. Still, we focus solely on this red line to order to improve safety. This is also called the 'safety paradox': the safer we get, the less there is to learn from. That is why Erik Hollnagel suggests looking at the big green chunk of the pie. Let's start looking at things that go right and learn why they go right.

This new (safety-II) approach has a lot of potential for two reasons. Firstly, normal work has evolved from a simple naturalistic craft into tightly coupled intractable (read: indecomposable) complex systems. Technological advancement has rendered linear thinking obsolete, yet Reason's Swiss Cheese model is still in the standard curriculum of every safety course. This is why the value symmetry between effects and causes remains so pursuant. But in reality, big consequences are mostly not the result of big causes, they are simply one side of the coin of doing normal work. Secondly, safety-II recognises the potential of human adaptivity and therefore puts people back in the middle. This time not as a target to blame, but as a valuable resource. Humans have a unique talent for adapting their behaviour depending on the situation. This is what differentiates us from computers. In everyday life we constantly adapt to overcome the lack of resources we face in our normal work. We search for ways to optimise our efficiency while maintaining our thoroughness and make trade-offs in the process.

Often these Efficiency-Thoroughness Trade-Offs (ETTOs) lead to "elephant paths" enabling people to cope with the ever-increasing work pressure and diminishing resources. Without these work-arounds, work soon becomes unmanageable. Add to that the lack of recognition and reward and it won't take long before a burn-out comes closer than we admit.

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Unfortunately, trade-offs are not only advantageous. Continued development and known or (purposefully) unknown disregard for these alternative procedures may lead to operational drift. Just like a little child that is told to stay out of the kitchen approaches the cooker one step at a time, we move closer to the unsafe boundary often pushed by management pressure and our own quest for least effort. In hindsight, this drift is often seen as negligence. "They didn't follow the rules because they were lazy."

There is however an easy solution to avoid drift (and burn-out): understand how work is done. Understand the messy reality of everyday work. System's thinking assumes that 'nobody comes to work to do a bad job'. People value their work and will perform to the best of their abilities and should therefore "not be punished for actions, decisions and omissions commensurate with their training and expertise." Especially not when they openly and voluntarily report incidents that would otherwise remain hidden. The current credo of SMS is safety risk management. Yes, this business-like approach to safety is built on the foundations of safety-I, but that doesn't mean it should ignore the benefits of a safety-II approach. On the contrary, more than ever it is needed to talk to front-line operators, include them in the design of new soft- and hardware and provide a trustful environment with an emphasis

on learning, rather than blaming. To achieve this, we need to tear down the walls between management and workers, between companies and professional associations, between 'them and us' when it comes to safety.

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Don't be fooled, safety is not the number one priority for a company; making money is. Safety-II can help a company to navigate the safety space and strike the right balance between protection and production (although this may be seen as simplistic linear thinking). How? By providing new insights on why things go right, by truly engaging with employees, by making their voices heard through actual change, and most of all: by gaining resilience.

During the development of Intercontinental Ballistic Missiles (ICBMs) in the mid 50s, it became clear that failure was not an option. Due to the devastating consequences of a mistake, the need for so-called resilience engineering became clear. Academics call a process resilient "if it can function as required under expected and unexpected conditions alike." So regardless of the gravity and type of the disruption, operation within established parameters is guaranteed. Since humans are always part of the process, resilience focuses on how to support the human operator in doing the right thing by improving ergonomics, adapting the system, updating procedures. So instead of following the old dogma that the "inherent safe system" should be protected from "human error", the system is changed to support human adaptivity and flexibility.

By returning authority to the human operator, instead of replacing him with more automation and more technology, we recognise that we cannot solve complexity by adding more complexity. Of course, we should be aware of our limitations. Forty years of human factors have taught us a great deal about varying human performance under stress, (the myth of) multitasking, risk homeostasis, mental capacity, slow and fast thinking brains, etc. Our human adaptivity is at the same time both our strongest and our weakest feature, but when well understood, trained and used, it results in resilient life-saving behaviour. That's why people are safety.