

It may have been inevitable that after 3 days at a Safety II workshop with a mixture of brilliant safety scientists as well as practitioners applying these principles that I find myself at this point. It could have been the grey, torrential blanket that engulfed Edinburgh as the news of her majesty passing broke heightened reflection. Irrespective, after hours of learning from the cutting edge of research in the field and practitioners across the world I left wondering what the future holds for the Safety II/Resilience Engineering community.

It did not take long for the limitations that exist for applying Safety II stem from the terminology. The distinction is not simply the shift from a view point of an absence of something to the presence of something. Safety II is not an iteration, neither does it render Safety I obsolete. The confusion to the contrary is entirely understandable.

A majority of the conversations were framed about understanding work rather than safety. This may have been partly due to the talks from Steve Shorrock and his brilliant Varieties of Human Work [1]. It may be simply that this is where the academic debate has shifted; to a broader perspective of how risk can be managed within work. Appropriately, cause and effect are not identifiable.

Conflict created by such labels is not unique to Safety II. Terms also associated with more contemporary approaches to risk management, such as Just Culture and Human Factors also struggle to reconcile using language that people use, or are familiar with, and actually describing the content that they currently embody. It is a similar challenge I experienced when considering a title for my book. It is difficult to introduce something that is new or progressive without using language that may alienate, or alternatively carry some baggage or friction for those you wish to engage with.

Are we going to approach a point in the near future where the Safety II/RE community continue on their journey with a label that ceases to be fit for purpose? Is this simply the natural consequence of the Brownian movements and dynamic boundary shifts outlined by Rasmussen? [2] Or do we tinker with the language to explain the perspective more accurately?

Prior to attending the workshop I re-read the contentious paper “The emperor has no clothes: A critique of Safety II” by Dominic Cooper [3] Published in Safety Science, it was briefly withdrawn before being made available once again. A brief reference to the paper was made during one of the discussions. It concludes that the inescapable conclusion is that ‘the emperor has no clothes’, stating that ideology had triumphed over science. Part of this extensive critique is the lack of empirical evidence of the benefits of Resilience Engineering. Whilst I may take issue with several of the points raised within the paper, it is not unreasonable to suggest that there is a measurement problem. Hours of debate within the workshop advanced this issue marginally.

It may seem odd, that an approach that considers safety by the presence of something rather than its absence to then struggle to measure what is present. It is easy to measure absence. It may well be true that as accidents become ever more scarce that there is some diminishing marginal utility in measuring them. The outputs of a Safety II/RE approach are not clear in the literature. The inference remains that the outcome is the reduction in accidents. Does the emperor require a new tailor to provide clothes that are more vivid, or have we really been spun a line? The traditional paradigm for measuring our ability to manage risk is incapable of accounting for a Safety II. It is a challenge that awaits scientific redress.

There is another argument. Another line to take for the Safety II/Resilience Engineering community. That is to simply continue. To maintain the course and to soldier on. Issues about language, meaning and measurement aside, the purpose is true and work being done (certainly it is imagined so). Without wishing to sound like a Premier League manager under pressure, the results will come, patience is required and time will truly tell. It could well be a sensible and scientific position to take. In due course, clarity of purpose will be easily evident as well as suitable evidence of effect.

It is possible, however, that a more comprehensive review of the journey to this point is required. We need to reflect on how these conflicts have been created. Why are we at this point? Genealogy is important. It offers an insight into how we got here. It may also help perspectives and prejudices to be viewed. Safety II/RE has come from the world of traditional safety, or Safety I. This is the view point that was lived before it was critiqued. Philosophical antecedents are present, often unnoticed, and possibly problematic.

One figure that was consistently used during the workshop (Figure 1) shows the stochastic resonance within a Complex Adaptive System [4]. These fluctuations straddle a line depicting the nature of the outcome, whether it is positive or negative. At the bottom end of this variation is a line of unacceptable performance. The gap between this line and neutrality is what Vincent and Amalberti call the “illegal normal”. [5] Below this line are a couple of astronomical data points, hanging menacingly like a pair of stalactites. These are the adverse events, near misses and incidents.

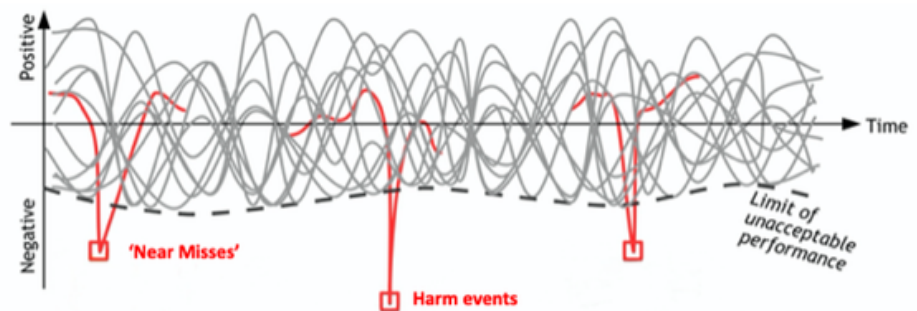


Figure 1: Stochastic resonance in Complex Adaptive Systems

Surely this representation is incomplete? Some in RE circles may consider Quality Improvement approaches to be a little dated, yet Deming would have automatically recognised that the scale of variation has the potential to be extreme in both directions⁶. It is not clear why Hollnagel omitted this possibility. Emergence does not have a negativity bias. Complex systems do not have a gravity. We may have a more mature way of considering failure, but this is not the same as considering success. Much like Jazz, sometimes it is the notes not played that matter most. In this instance I consider it to be revealing.

This crucial difference is further demonstrated in Hollnagel's Risk Matrix (Figure 2). [7] The bottom half essentially is a reformat of Heinrich's Safety Triangle [8] which removes the allusion of a causative relationship between the different nature of outcomes. This is welcome. The top half addresses positive outcomes. This is problematic. It describes that most positive outcomes occur because of normal work. The remainder occurs because of fortune.

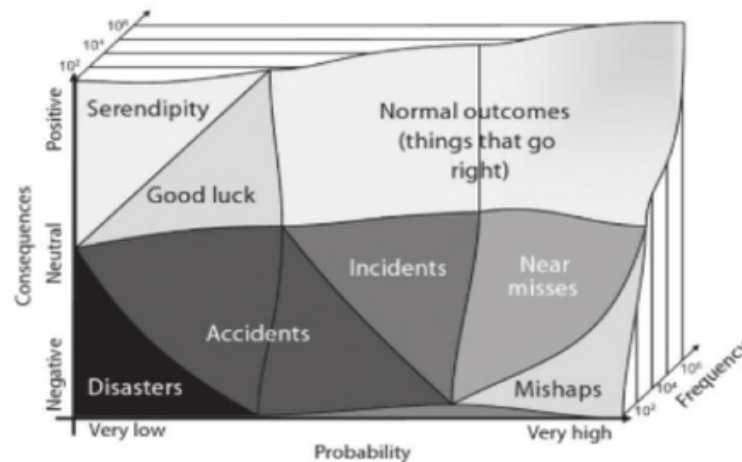


Figure 2: Hollnagel's frequency of different outcomes

It is difficult to find outside of safety science such an understanding of performance. It is odd that an approach that considers humans to be a source of success, a positive component of work, also provides this simplistic, perfunctory explanation of positive outcomes. How does progress, excellence and improvement occur or is this allocated purely to an external locus of control. Is the best argument available that safety often occurs thanks to human adaptation, but improvement occurs because we are lucky? Would Google or Manchester City FC recognise this understanding of work and excellence?

This significant limitation is understandable. The idea is still the child of the traditional Safety I frame. Even people challenging the status quo, instinctively think about failure avoidance, not creating excellence. It is the world view that is known and taught. It is easier to define outcomes when they go wrong, but when things go to plan work becomes nebulous. The burden of our outcome fixation can become crippling. A revision of this matrix is provided (Figure 3) that applies systems thinking principles and shifts away from the anchor imposed by our fixation on outcomes. A different thinking is required above the line.

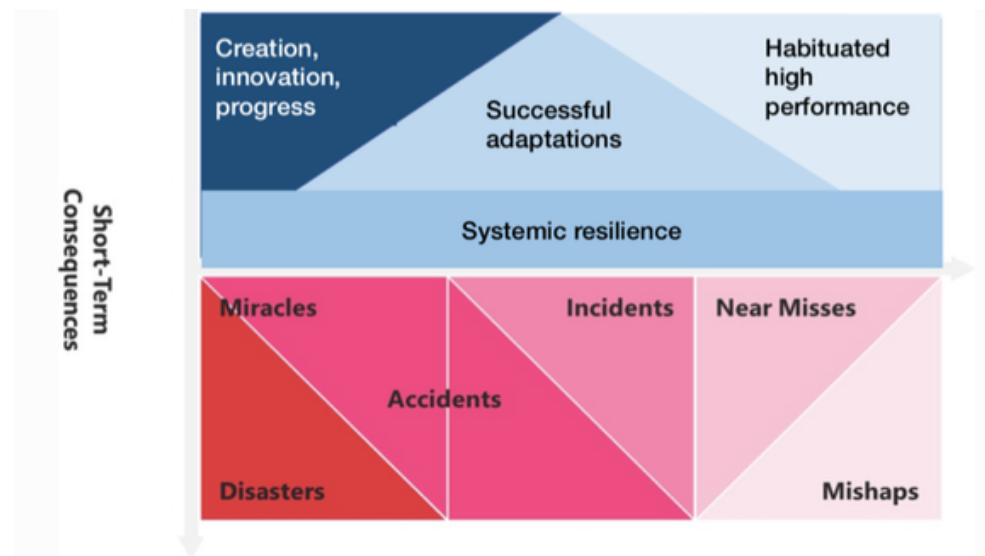


Figure 3: Stretton's frequency of different outcomes

The future of the Safety II/RE community will doubtless be filled with brilliant and passionate people, both within academia and those that seek to apply the concepts. Whether people choose to tinker with framing of language to provide greater clarity of purpose, add empirical meat to the conceptual bones, or simply persevere onwards without being burdened by such potential distractions will be interesting. The concern remains, however, that safety will remain trying to make sense of the shadows in the cave [9], unaware of how their history and existing views blinds them to a truly transformational view of the world of work.

This is why I argue that safety should be considered as an integrated aspect of high performance. It is a view that is aspirational, positivist and inclusive of all aspects of work. This resides within a culture that is centred on creating the conditions for both individuals and organisations to learn, grow, heal and excel. From this vantage point success can be measured in many more ways merely than the absence of harm and shuns the outcome fixation of our current safety dialogue. Sending people home “in the same condition in which they arrived” should not be a lauded organisational safety goal, rather a baseline expectation for working in the 21st century. Ultimately, people will become empowered to become scientists of their own work. Finally, systems should cease to be viewed as resilient or brittle, but whether they enable people to be and perform at their best. Whether Safety II/Resilience Engineering is the vehicle that can complete this journey, or a crucial part of the evolutionary process remains to be seen.

References

- 1) Hollnagel, E. (2017). Why is work-as-imagined different from work-as-done?. In Resilient health care, Volume 2 (pp. 279-294). CRC Press.
- 2) Rasmussen, J. (1997). Risk management in a dynamic society: a modelling problem. *Safety science*, 27(2-3), 183-213.
- 3) Cooper, M. D. (2022). The Emperor has no clothes: A critique of Safety-II. *Safety science*, 152, e105047-e105047.
- 4) Hollnagel, E., & Goteman, O. (2004). The functional resonance accident model. *Proceedings of cognitive system engineering in process plant*, 2004, 155-161.
- 5) Vincent, C., & Amalberti, R. (2016). *Safer healthcare: strategies for the real world* (p. 157). Springer Nature.
- 6) Gupta, M., & Kaplan, H. C. (2020). Measurement for quality improvement: using data to drive change. *Journal of Perinatology*, 40(6), 962-971.
- 7) Hollnagel, E. (Ed.). (2013). *Resilience engineering in practice: a guidebook*. Ashgate Publishing, Ltd.
- 8) Heinrich, H.W. (1931). *Industrial accident prevention: A scientific approach*. New York, NY: McGraw-Hill.
- 9) Reeve, C. D. (2004). *Plato: Republic*. Hackett, Indianapolis.