"I WOULDN'T HAVE DONE WHAT THEY DID"

When looking from afar at others' performance when things go wrong, it is easy to imagine that we, in the same situation, would have performed better. In this moving article, **Martin Bromiley** – an airline Captain and founder of the Clinical Human Factors Group – recounts the tragedy that befell his late wife and family when Elaine Bromiley died in a routine operation. The lessons are relevant to all front-line professionals.

KEY POINTS

1. **When we think about 'work-as-imagined', we tend to think of others at the blunt end.**
2. **As front-line professionals, we do not simply represent the reality 'work-as-done'. We also imagine what others do and what we would do – and even what we really do now.**
3. **We need challenge our own assumptions about how we would perform in a challenging situation, and take steps to ensure that we are prepared – as best we can be – for a future that might be hard to imagine now.**

I've been lucky to get to know many accident investigators, fortunately not in direct connection with my job! Of all the conversations that I've had with them, one stands out above all others: a UK Air Accident Investigation Branch Investigator who said to me that when something goes wrong, good investigators ask themselves, "Why did it make sense at the time?".

As I survey other safety critical industries I often wonder if the difference between work-as-imagined and work-as-done defines how well those industries perform. Over the history of aviation, there has been a continuous realignment of work-as-imagined and work-as-done, in response to accidents, near misses, and routine work. As well as independent accident investigations and mandatory and voluntary reporting schemes, as explained by Matthew Syed, author of *Black Box Thinking*, many airlines have *"real time monitoring of tens of thousands of parameters, such as altitude deviation and excessive banking, allowing continuous comparison of performance to diagnose patterns of concern… Aviation, then, takes failure seriously. Any data that might demonstrate that procedures are defective, or that the design of the cockpit is inadequate, or that the pilots haven't been trained properly, is carefully extracted. These are used to lock the industry onto a safer path"*. There are always gaps and always will be, but we have measures to reduce the gap and we all need to play our part in doing that. In many ways, this is what aviation safety is all about.

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Sadly, I was to discover that not all safety critical work in other domains has benefitted from the same attention to safety and human factors. In 2005, my wife was admitted to hospital for a routine elective procedure. Elaine was very healthy but she had some problems breathing through her nose when she got a cold or flu, and it had caused a serious infection. So it was recommended that she should have routine surgery on her sinuses to sort the problem out. She was admitted to a clinic on 29 March 2005. After just over 20 minutes, Elaine was brain dead. It would be another 13 days before she really was dead.

Elaine was being cared for by an experienced anaesthetist and his experienced senior assistant. They did a thorough pre-operation assessment and there were no particular causes for concern. Elaine was anaesthetised at 0835 that morning. The plan was to use what is called a laryngeal mask. She was anaesthetised and they went to fit the mask but it wouldn't fit. Her jaw was too tense, which isn't unusual under anaesthesia. She was given some more drugs and different sizes of masks were tried.

But things were going wrong. She had started to turn blue, a sign that she wasn't getting enough oxygen and the indications of her blood oxygen levels were starting to fall.

Four minutes in, her oxygen levels had fallen to 40%. Anything below 90% is considered to be critical. She was technically now hypoxic.

Six minutes in, the anaesthetist and his assistant called for help. They started to attempt to intubate – to put a tube down her airway, which is standard practice in this sort of situation. After a call for help went out, over the next couple of minutes a number of people arrived: the surgeon waiting to perform the operation, another anaesthetist, another assistant, and two recovery nurses. The senior assistant asked her colleague to fetch the tracheostomy set to allow the team to gain surgical access to Elaine's airway if needed. Her colleague came in and announced that it was available, but the doctors seemed to have completely ignored her. They were gathered around Elaine, attempting to intubate using a variety of different techniques and tools. Probably under the stress, they didn't even realise she was there. Another of the nurses came in and saw Elaine's colour, saw her vital signs and knew instinctively that it was very serious.

Ten minutes in, this became a situation – with hindsight – called 'can't intubate can't ventilate', which is a recognised emergency in anaesthesia for which guidelines exist. The guidelines suggest two options, one of which was, at this stage, the only solution available - surgical access. At this point, everything the doctors had tried had failed. Her oxygenation was 40% or lower and had been for over six minutes. She was blue. But the operating theatre was equipped to the best standard. There was nothing missing that would have made a difference. The anaesthetist had over 16 years' experience and was regarded as diligent and careful by his colleagues. The surgeon had over 30 years' experience; he set up the department. The other anaesthetist had additional skills pertaining to difficult airways. And the other three staff were all experienced in theatre. If this emergency had to occur, then this would have been the best team and the best place for this to happen.

But from ten minutes and for a further fifteen minutes the doctors fixated on intubation. The protocols and procedures were apparently ignored or forgotten.

Twenty-five minutes in, the point at which Elaine had been without air for over 20 minutes, they eventually stabilised her for a short time. Her oxygenation then fell for a further 10 minutes.

Thirty-five minutes in, they made the decision that they were going to abandon the operation for the day and let her wake up naturally. She was handed over to the recovery team. They left to continue with their operating lists.

But Elaine did not wake up. She showed signs of brain damage. Eventually under the care of a third anaesthetist she was transferred to the intensive care unit, but it was too late.

In his own words, the lead anaesthetist "lost control". There was a dispute among the team about who they felt was in charge. Their decision making had become fixated. Probably under the stress, they just couldn't think of other options.

The situational awareness of what was happening, what it meant and what needed to happen was different among the doctors. Communication dried up.

The story for the assistants and nursing staff was very different. They were generally aware of what was happening and what needed to happen, but to quote from the Inquest "didn't know how to broach the subject".

I was shocked, not just be the tragedy that had befallen me and my children, but as an independent report and inquest revealed, the system that had inadvertently killed my wife seemed to be so far behind in its practices. When it came to safety and human factors, it was as if it was stuck in the 1930's.

When we think about the term 'work-as-imagined', we front-line practitioners tend to think further upstream to directors, CEOs, senior policy makers, even politicians, as well as procedure writers, designers, engineers and others who are between the sharp and blunt ends of organisations. Indeed, we do need to help those who are not at the sharp end to understand the complex operational reality of work-as-done, in terms that people can understand. 'Work-as-imagined' and 'work-as-done' is one simple way of looking at work that anyone can understand. Importantly, it reminds us of what kind of work people are looking at: work-as-imagined or work-as-done?

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But it's not just about 'them'. As clinicians the world over have reviewed my late wife's case, in a quiet break room perhaps, they have all, with very few exceptions stated clearly: "I wouldn't have done what they did". Yet place those same people in a simulated scenario with the same real world disorder, most actually do. This gap illustrates the difference between work-as-imagined and work-as-done, but this imagination is that of those who do the work. And of course, the clinicians involved in Elaine's operation did not imagine that what happened would happen. As Erik Hollnagel (2016) stated, especially when something goes wrong, "work-as-done differs from what we imagine we would do in the same situation, but thinking about it from afar and assuming more or less complete knowledge".

Additionally, on the day, there were different 'imaginations' of what was happening and what needed to happen at that time, but these somehow could not be brought out into the open.

How many times have you watched an incident replayed, and thought, "I wouldn't have done what they did"?

Of course this gap exists in aviation as well. How many times have you watched an incident replayed, and thought, "I wouldn't have done what they did"? And experience suggests that we may be the harshest critics of work-as-done by fellow professionals.

As front-line professionals, we need to understand that we do not simply represent the reality 'work-as-done'. We also imagine what others do and what we would do – even what we really do now. Whether we are thinking of the past, present, or future, we can all fall into the trap of imagining something better or different to reality.

Reference

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Martin Bromiley OBE is an Airline Captain and Founder of the Clinical Human Factors Group (CHFG), UK.

See Martin Bromiley talk in the video 'Just a Routine Operation' at https://vimeo.com/86978963.

The author wishes to acknowledge the contribution of Steven Shorrock in the development of this article.