

# DECISION-MAKING AT WORK: QF32 AND YOU

**Steven Shorrock** reflects on a conversation with **Captain Richard Champion de Crespigny**. What else might pilots, air traffic controllers, and others who work complex technology learn?

During a normal flight, many goals need to be balanced. Minutes into the QF32 flight, commercial goals were no longer part of the equation. Safety and passenger wellbeing fully occupied the minds of the cockpit and cabin crew. Still, trade-offs had to be made. The crew had to make trade-offs between shorter-term and longer-term goals, between thoroughness and efficiency, between monitoring and acting, between compliance and creativity, between diagnosing components and understanding whole systems, between a focus on what wasn't working and what was working, and between different kinds of risks. These trade-offs are relevant to normal operations, but become more critical in a crisis.

In his book *FLY!*, Richard discusses eight 'elements of resilience' that are relevant to trade-offs: knowledge, training, experience, teamwork, leadership, crisis management, decision-making, and risk. These are all relevant to trade-offs. On knowledge and training, Richard remarked that *"Pilots are not just key turners. They should understand the engines behind that key, down to the compressors, turbines and fuel system"* and *"It behoves pilots to understand the vast array of electronics and logic in our fly-by-wire aircraft so we retain confidence when things go wrong, to get our aircraft safely onto the ground."*

## Active learning

Richard calls for active learning, and not just a reliance on experience. On this topic, he pulled no punches. *"Lots of highly experienced people make terrible mistakes because they become overconfident, lazy and normalise*

*deviance. They have allowed their knowledge and skills acquired over many years to degrade or become legacy."* Sometimes, he said, experience can be a curse.

Referring to *HindSight* magazine and other publications, he said that experience is only good when combined with a personal commitment to a lifetime of learning. *"You need to read books and you need to read magazines like HindSight. Everyone must commit to a lifetime of learning to understand what's happened in the past, what is possible in the future."*

## Making better decisions

Richard referred to different ways of interpreting situations and making decisions. He talked about the importance of understanding neuroscience and brain anatomy for understanding human resilience and making better decisions. He discussed the role of instincts, habits, intuitions and more deliberate decision-making processes, and gave examples of each on QF32.

It was clear that some decisions were fast, while others were slow. A question emerged about when to follow your gut feelings, and when to engage in more deliberate decision making. His first interaction with the Check Captain, and first response to the noise (pressing the altitude hold and pulling the heading select knob) were examples of fast, habitual decisions. Richard's advice, based on his understanding of neuroscience and decision-making, is this: *"Gut feelings come from our old, fast and subconscious brain that exists*

*below the level of language. So if you're operating in your area of expertise and you've got a gut feeling, then it's probably intuition that should be believed. However, if you've got a gut feeling that's not in your area of expertise, then it may be based upon biases and illusions from our fast mind that could be wrong."*

A more deliberate decision-making process is the 'ramp technique'. This involves first asking the most junior person what they think, so that they won't be intimidated by the more senior team members. Working from the bottom up, you ask each person for their view, and only contribute your thoughts when everyone has spoken. *"Many of our decisions were ramp decisions. You'll find the decision will come out naturally by itself. A few times in QF32 I didn't need to say a thing. The ramp technique stops groupthink, stops intimidation, and gets the maximum number of ideas. It's super fast and can take just a few seconds."*

For other decisions, a slower decision-making process was evident, taking minutes or even up to two hours. This could be seen in the disembarkation decision. *"That needs everyone inputting, everyone discussing critically and interactively before the Captain ultimately makes the final decision. The decision should not be a surprise to anyone because it should have surfaced as the most logical solution."*

In fact, much of the decision-making was slow, helped by the fact that the crew had worked out how much time they had available. There were questions about why the crew stayed airborne for so long. Richard has no regrets. *"I think staying airborne for one*



hour and 50 minutes was exactly the right decision on that occasion. In cases where people come into land too quickly after they've got a crisis in a fly-by-wire aircraft, they sometimes get surprised. For a different situation, particularly when there's a fire, you would probably come to a different decision."

### Training for expertise

This brings us to the question of how to build expertise and respond effectively in different situations. Richard is an advocate of 'armchair flying' or mental practice, popular among elite athletes. "Armchair flying absolutely works. The interesting thing is that when you are doing armchair flying, the brain responds in real time as though it were the real thing. It's crucial that that we do armchair flying. It builds up habits and confidence, so improves resilience."

But, he noted, there is also need for creativity. "Most of the time pilots are procedural. We just follow the SOPs. You don't have to be creative. And that's fine until something goes wrong. When faced with a black swan event, we must solve problems we haven't been trained for."

Pilots, air traffic controllers and other front-line staff can be prepared, he said, by keeping calm, prioritising and creating time before making complex decisions. "We have to build a shared mental model, think outside the box, and maybe reverse the logic. We have to be creative to find novel solutions to problems that we never expected. This is a totally different skill set to being a procedural pilot."

For this, he proposes more challenging simulation, where survival is questioned, and the only successful decision is one that gets you down alive. "The military know that to create a resilient pilot, you must expose them to the environments and risks they will experience in war. And for that you need deliberate practice."

Psychologist K. Anders Ericsson argued that expertise requires a life-long deliberate effort to improve performance in a specific domain. It is not so much the quantity of practice, but rather how one practises. Experts, according to Ericsson, break down the required skills and focus on improving those chunks of skills during practice or day-to-day activities, at more challenging levels. This, combined with aptitude, an intention to master a skill,

feedback, and a support system is what produces expert performance.

*"We haven't got there yet in training, but we need to go beyond deliberate practice, to train people so they can repeat difficult sequences stress-free, giving them the confidence that they have the skills and knowledge to handle the known events and the risk and decision-making skills to create novel solutions. That's what we must build in pilots and air traffic controllers."*

But things won't always work out in the way that we would like. Training should provide a safe context for learning from mistakes. "We must be humble and accept we will make mistakes", said Richard. "We must fail fast and well. We must accept failures in the little things so we get the big things right."

But sometimes, big things do go wrong, and when they do, post-traumatic stress is a risk. In *FLY!*, Richard includes a chapter about post-traumatic stress, relating his own experience and that of others, with explanations from neuroscience as well as practical advice. "Every person will experience post-traumatic stress at some time in their life", he said, "so they must know how to manage it, recover, and grow from it". We will return to this and other aspects of wellbeing in the next issue of *HindSight* in early 2020. **S**



### RICHARD CHAMPION DE CRESPIGNY AM

Richard Champion de Crespigny is an Airbus A380 Captain with Qantas Airlines with over 20,000 flying hours. He was born and educated in Melbourne, Australia. He decided on a flying career at 14-years old when his father organised a tour of the Royal Australian Air Force (RAAF) Academy at Point Cook in Victoria. Three years later, he joined the RAAF Academy in 1975 and began flying a year later. By 1979, he had successfully completed a BSc in Physics and Maths, and a Graduate Diploma in Military Aviation. He continued in the RAAF until 1986, when he joined Qantas, where he converted to Boeing 747s. In 2004, he converted to Airbus A330 and in 2008 converted to Airbus A380 as one of Qantas' most senior captains.

Following QF32 in 2011, Captain Richard Champion de Crespigny was appointed as 'Member in the General Division of the Order of Australia' (AM) "for significant service to the aviation industry both nationally and internationally, particularly for flight safety, and to the community". He has won a number of awards including Flight Safety Foundation Professionalism Award in Flight Safety and the Guild of Air Pilots and Air Navigators Hugh Gordon-Burge Memorial Award for Outstanding Contribution to Air Safety (both in 2011). In 2014, he was awarded Doctor of the University (honoris causa) at Charles Sturt University. He has written two books: the best-selling *QF32* and recently-published *FLY! Life Lessons from the Cockpit of QF32*.