

# Maintaining Positive Imbalance

(Capture, Codify & Control innovative violations)

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Being innovative; looking for smarter ways to do things; having a can-do attitude is how many of us see ourselves. These are indeed worthy attributes for improving business processes and task outcomes. But in highly regulated, high consequence endeavours uncontrolled innovation can induce unintended outcomes and increase exposure to risk. Regardless of the innovative intent, action without approval is a violation—in some instances, significantly so. The challenge is to identify where innovations are occurring, then capture, codify and control them.

My Doctoral research explored drivers of innovative decision making and the willingness of aviation maintenance personnel to walk the very fine line between innovation and violation. That fine line is routinely breached, either inadvertently or, in some instances, intentionally.

Evident from the research is that individuals continue to innovate maintenance processes and practices, many of which are unapproved; some undertaken to improve maintenance outcomes, to make the process better, more effective, improve efficiencies, or indeed to make the process safer. Such actions are what I've termed *Innovative Violations*. They are the product of positive deviance behaviours where the overriding aim is to benefit task or organisational performance, as opposed to individual gain.

Figure 1 identifies the key drivers of innovative decision making.

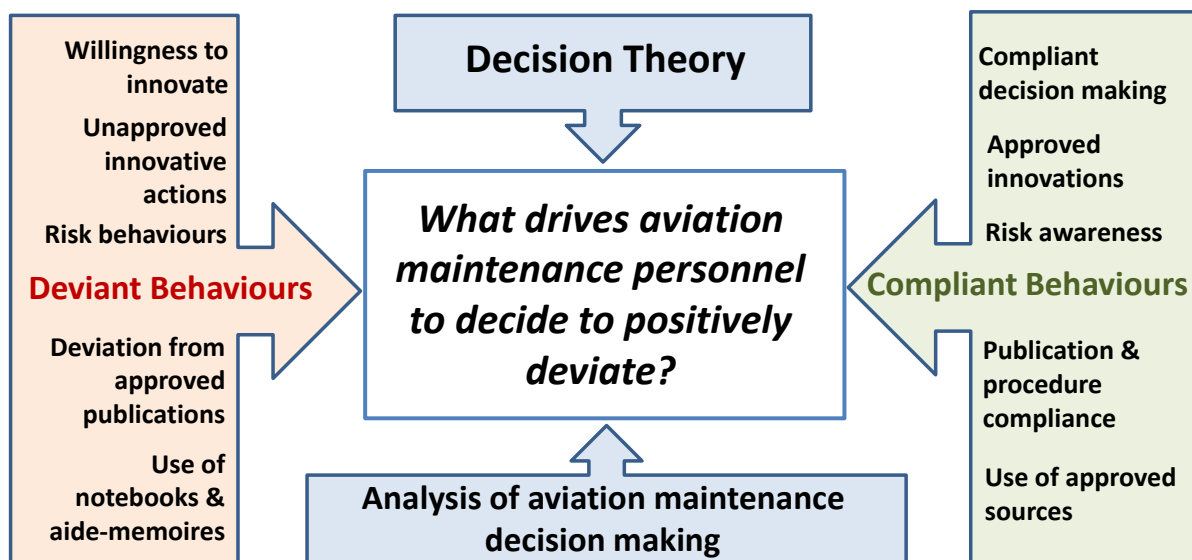


Figure 1: Drivers of Innovative Decision Making

## Positive deviance behaviour

Evidence of positive deviance behaviours has been recorded in aviation maintenance research dating back 30 years. Research presented by the Australian Transport Safety Bureau (Aircraft Maintenance Safety Survey, 1997) revealed that 69% of respondents felt the need to bend the rules to get the job done. In the section pertaining to unsafe acts in aircraft

maintenance; not referring to the approved procedure for performance of a familiar task was listed as one of two most reported behaviours.

Results from my most recent research demonstrates that little has changed since 1997, despite substantial changes in aviation governance, compliance, and regulatory requirements, not the least of which was the introduction of CASR Part 145 for Approved Maintenance Organisations in 2011. Hence, a dichotomy exists between perceived and actual behaviour.

The perceived behaviour is that of compliance with rules and regulations; however, interviews discovered the actual behaviour revolves around intent to do a better job, to look for innovative maintenance solutions, and the desire to demonstrate technical acumen.

### **Innovation influencing factors**

Participants defined *innovation* as doing a task a better, more effective, more efficient, or safer way, or just 'tweaking it slightly'. *Violations* were mostly defined as 'doing it however you want', or as 'breaking the rules' and being 'contrary to the publication'. So, we are left asking:

- Is doing it *a better way* the same as doing it *however you want*?
- Is being *contrary to the publication* the same as *tweaking it slightly*?
- Is being *more effective, more efficient* the same as *breaking the rules*?

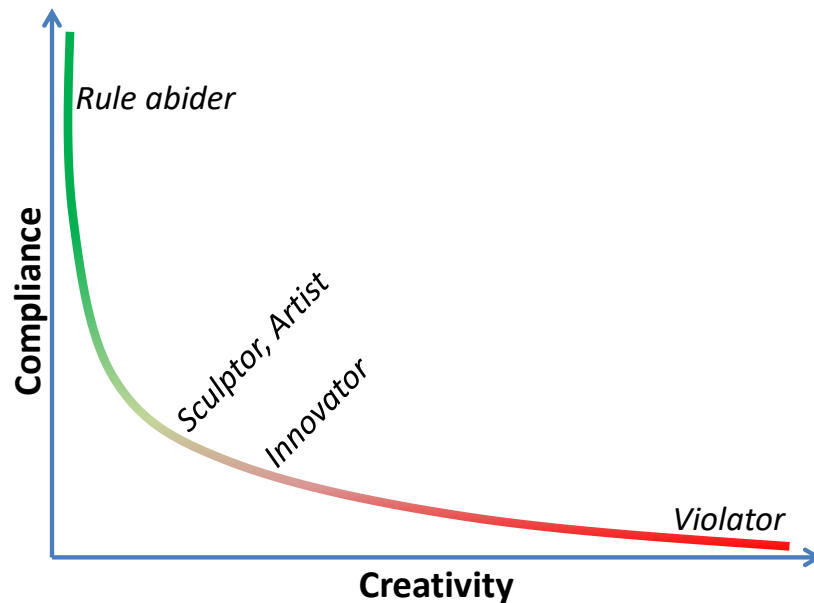
The analysis revealed that age and aviation experience were dominant factors for innovative behaviour and willingness to deviate. Younger, less experienced participants indicated greater support for doing a task a better way, for relying on past experiences when performing current maintenance activity and having to take maintenance shortcuts when dealing with facility repairs and upgrades.

Furthermore, whilst younger participants indicated a willingness to accept risks, they also appeared unclear of where they sat on the regulatory continuum. They were more willing to support innovative actions and scored higher for items that measured innovation, innovative approaches to maintenance and imaginative thinking. They exhibited a higher acceptance for violating behaviours, indicated a willingness to work outside of published procedures, and were accepting of shortcuts and workarounds. However, they scored lower for critical thinking.

The rationale for such behaviour appears to be driven by a desire and intent to exercise technical acumen, of which, paradoxically, they don't have a great deal, due to their *lack* of experience. This can result in a miscalculation of their self-assessed level of technical competency and therefore lead to poorer decisions.

Figure 2 depicts the Creativity Compliance Curve. This conceptualised model provides a prediction of where an innovator would be positioned within a rule-abider / violator continuum. This concept of thinking as a creative endeavour was previously espoused by Sir Frederic Bartlett (Bartlett, 1958) in his chapter on the artist's thinking. He describes the artist as not always conforming to the norms, but rather adapting and manipulating the conventions and rules to fit the ideas and actions towards an outcome that best serves.

The model, derived from analysed results from the present study and in reference to the previous work of Bartlett (1958), depicts the delineation between compliance and creativity and through positioning of the innovator identifies the need for effective barriers to prevent decisions to positively deviate (potentially resulting in creative or innovative behaviours) from becoming violations.



**Figure 2: The Creativity Compliance Curve**

The impact of this new awareness should provide no comfort for regulatory and governance authorities. The dilemma that confronts them—indeed any person responsible for aviation safety compliance—is where to position innovation barriers to support innovative behaviours, but restrict innovations from becoming violations. Alarming, as is evident from the current research, willingness to pursue innovative approaches to maintenance is a penchant of the inexperienced.

So, the challenge we face is where to install an innovative barrier. Would you play it safe and place the barrier above Sculptor, or take a more risk acceptance approach and place it below Innovator?

There's no correct answer. The decision of where to place it is entirely dependent on your circumstances and what is an acceptable level of risk for you and the organisation. What is important, however, is that a barrier is created somewhere along the continuum and that that barrier actively prevents innovations from becoming violations.

### **Innovative Intent**

In the domain of aviation maintenance, unapproved innovations are potential, if not actual, violations. Performing an unapproved innovation, in essence, is a violation of the procedure. Despite this assertion there is clear evidence of maintenance personnel being willing to pursue acts of innovative maintenance.

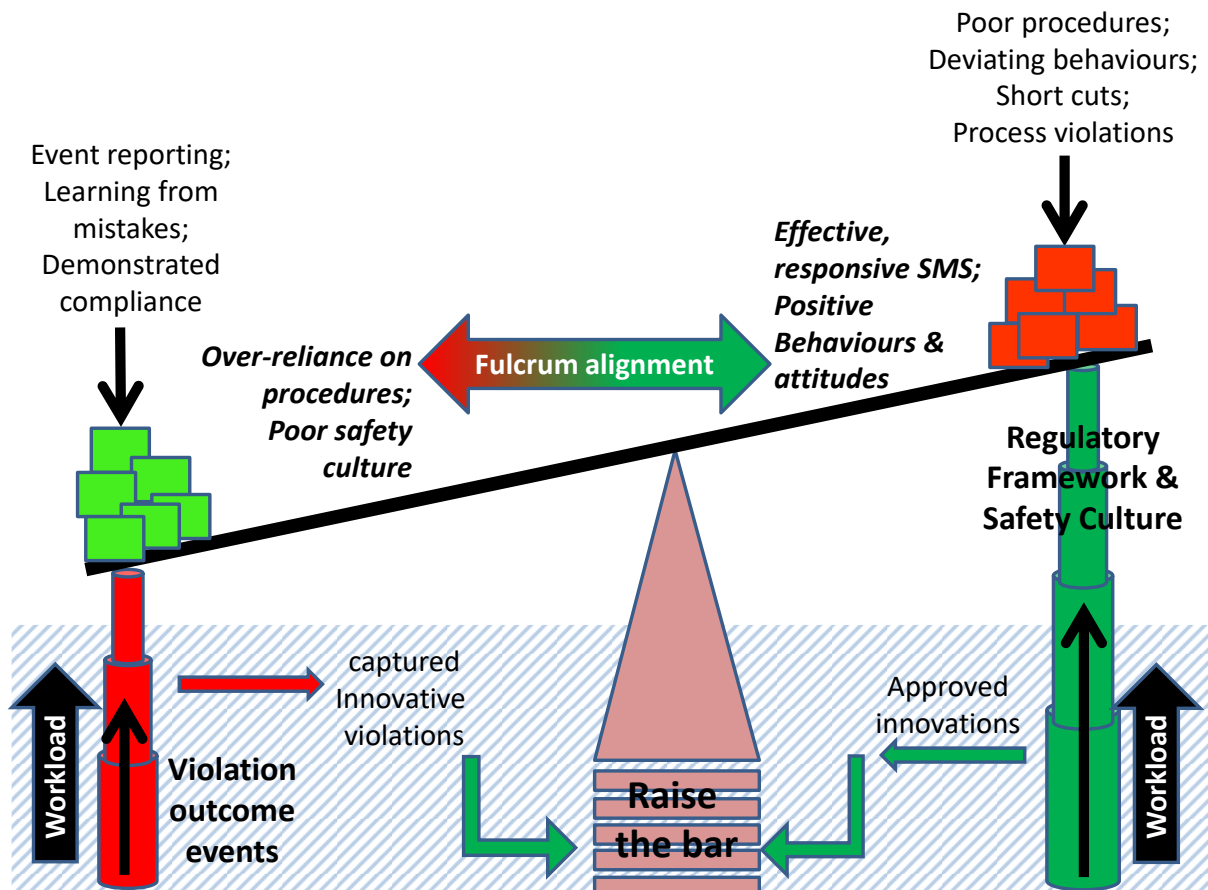
So, what's the answer? Should we insist, rigidly, on strict conformance to the approved processes? 'We have always done it this way', so it must be the best way, right? Surely no one still thinks like that. How do we encourage innovative thought, discover new, better, safer methods and products without compromising the safety of the public, the equipment and the environment?

Many references were made by interviewees to doing something in a better way, with most participants able to enunciate a perceived difference between an innovation and a violation. Common amongst the definitions of innovation and violation is the delineating factor of intent. Being innovative and creative received positive affirmations by many interviewees and it could likely be expected that some innovative intent was directed towards positive deviance behaviour.

Maintainer attitudes towards innovative maintenance was reported as being routine; indeed, one interviewee conceded innovations were a daily occurrence. Noting that most participants

felt they were innovative maintainers, then statements like 'daily occurrence' are perhaps unsurprising. This is despite substantial agreement in survey and interview responses attesting to rule abidance and always complying with the approved procedures.

The Safety Management Fulcrum, as depicted in Figure 3, identifies the interplay between compliance and violating behaviours. Correct positioning of the fulcrum is vital in overcoming the impact of deviant behaviour. Maintaining a positive imbalance towards regulatory framework and safety culture ensures a mechanical advantage continues to exist over the potential impost of poor procedures and process violations. The positive imbalance also ensures that good behaviours, such as event reporting, learning from our mistakes, and compliance are given more leverage to overcome violation outcome events.



**Figure 3: The Safety Management Fulcrum**

Capturing, codifying, and controlling positive deviance behaviours facilitates the raising of the bar and provides opportunities to deal with and effectively manage increasing workloads. In so doing it ensures continuing regulatory compliance and reduces the organisation's exposure to the risk of latent defects.

### Conclusion

Whilst aviation was the subject of my research, the findings are relevant and applicable to other highly regulated or high consequence domains and industries. The finding that younger participants, those with the least aviation industry experience and least on-type experience, were more likely to pursue innovative maintenance outcomes is significant given this same cohort of participants scored lower for critical thinking and understanding risk.

In dealing with this research outcome, it is important to not simply generate more procedures or apply tighter restrictions. Such actions, would in all likelihood, be nugatory. The exhibited willingness of some aviation maintenance personnel to push current boundaries, by-pass

defences, and to ignore warning and caution signs suggests the need for a different approach.

As an organisational approach – we need to create an environment where innovative behaviours do not go unrecorded, unchallenged, and unassessed. Rather, these behaviours and actions need to be accurately captured so that any good ideas are shared and that benefits gained are maximised.

Direct engagement, where organisational participants are encouraged to be innovative, where trusted decision makers are authorised for innovation, and where action is taken to capture, codify and control innovative behaviours can generate required levels of self-regulation towards compliance. This arrangement ensures that innovations are shared, risks are understood and any weakness in critical thinking is mitigated through effective peer or supervisor review of positively deviant decision intentions.

### **References:**

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