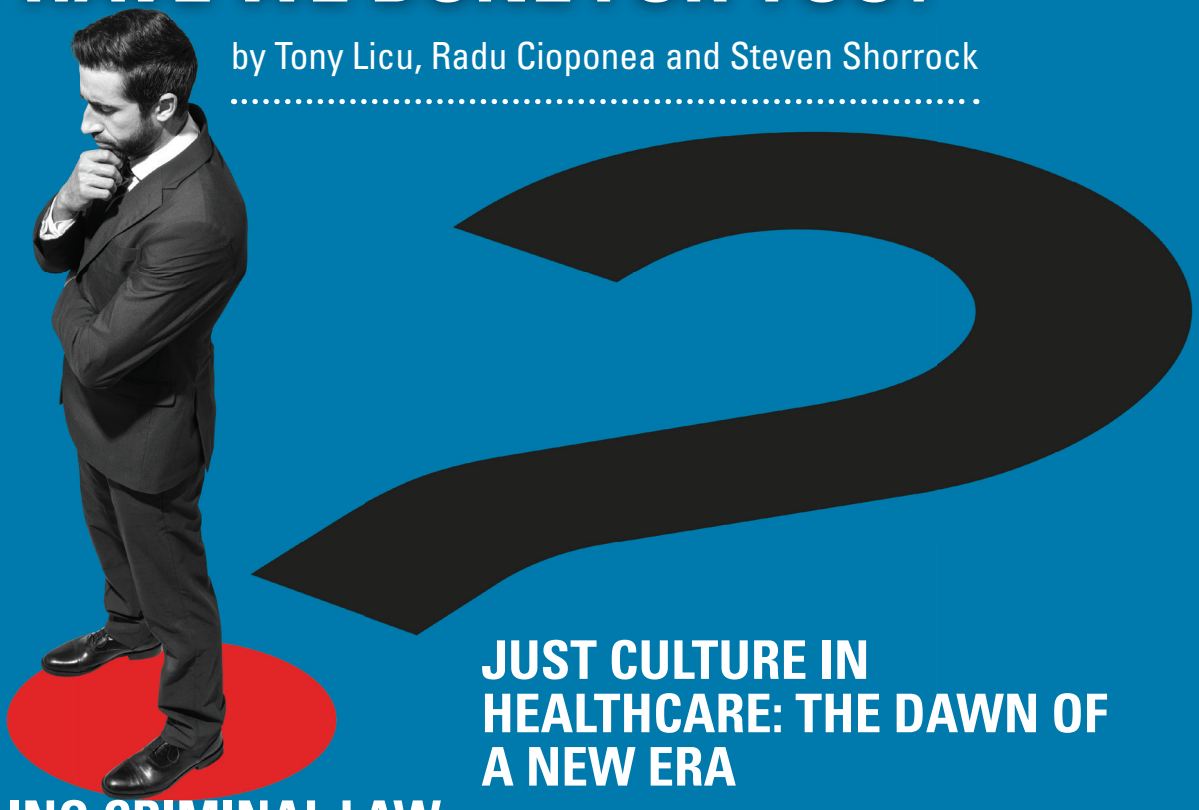
HindSight 35
Human and organisational factors in operations

EUROCONTROL

JUST CULTURE... REVISITED

PROGRESS IN JUST CULTURE: WHAT HAVE WE DONE FOR YOU?

by Tony Licu, Radu Cioponea and Steven Shorrock



RECONCILING CRIMINAL LAW ENFORCEMENT WITH JUST CULTURE

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WHY IS IT JUST SO DIFFICULT? BARRIERS TO 'JUST CULTURE' IN THE REAL WORLD

by Steven Shorrock

Plus much more on just culture for aviation, rail, shipping, healthcare, and beyond.

Summer 2023

WELCOME

Welcome to issue 35 of EUROCONTROL's *HindSight* magazine, the magazine on human and organisational factors in operations, in air traffic management and beyond.

This issue is on the theme of **Just Culture…Revisited**. Once again you will find a diverse set of articles from a diverse set of authors in the context of aviation, maritime, rail and healthcare. The articles reflect Just Culture at the corporate and judicial levels from the perspectives of personal experience, professional practice, theory, research, regulation, and law.

At the heart of *HindSight* magazine is the idea that we can and should learn from multiple perspectives. Especially for topics such as Just Culture, there can be tensions between these perspective, which are opportunities for learning and growth. There are differences between the perspectives of front-line staff, safety specialists, legal experts, managers, and social scientists, and senior managers, and of course citizens. What is 'just'? How should we conceptualise Just Culture? How should we design and implement regulations, policies and protocols relating to Just Culture? What gets in the way of Just Culture? More than most other topics, this is one that can arouse strong feelings and opinions.

In this issue, leading voices from the ground and air share perspectives on these questions. It is also recommended to review issue 18 of *HindSight on Justice & Safety*. The two issues together offer a rare and comprehensive set of insights.

Special thanks are extended to the authors and the operational reviewers, who help to ensure that *HindSight* magazine is relevant, interesting and useful. While the primary readers are operational staff, especially those involved in aviation, it is read much more widely, by different people in different sectors, especially those where safety and business continuity is critical.

We hope that the articles trigger conversations between you and others. Do your operational and non-operational colleagues know about *HindSight*? Please let them know. Search 'SKYbrary HindSight' for all issues, covering a wide variety of themes.

The next issue of HindSight will be on the theme of **PEOPLE IN CONTROL: STAYING IN THE LOOP** (see inside back cover). What's your story? Let us know, in a few words or more, for Issue 36 of *HindSight* magazine.

Steven Shorrock, Editor in Chief of HindSight

Tony Licu
Head of Safety Unit and Head of Digital Transformation Office, EUROCONTROL Network Manager Directorate

JUST CULTURE… REVISITED!

In this 35th Edition of *HindSight*, we are revisiting Just Culture. Just Culture is a subject close to our hearts and minds. I have not come across anyone in aviation who hasn't had strong thoughts and feelings about the topic of Just Culture.

Almost 10 years ago, we published *HindSight* 18 on the theme of 'Justice and Safety'. For the first time, we had judiciary and legal specialists writing alongside aviation practitioners in the same magazine. A year earlier, we had started the Prosecutor-Expert course, where we put judiciary and aviation professionals together for the first time. Thanks to our mentor Roderick van Dam, former Head of Legal Service at EUROCONTROL, we finally brought together the two for the tango.

Ten years on, and it's been an incredible journey. There have been ups and downs, but we brought Just Culture to the minds of everyone. It has been such great teamwork, with IFATCA, the European Cockpit Association, and a great group of professionals that believe in this concept. We are in great debt to some Italian judges – Massimo Scarabello and Andrea Montagni have been with us every year, and helped to promote and clarify what Just Culture really means. It is probably no coincidence that they come from Italy – the country of the Linate and Sette Fratelli accidents. Italy has come a long way along the journey of Just Culture. I also owe a debt of gratitude to Professor Pietro-Antonio Sirena – an inspiration every time I come in contact with him. And we are thankful to our colleagues at the Dutch Public Prosecution Service, including Bote ter Steege, Fred Bijsma, Katja van Bijsterveldt, and Aco Verhaegh. There are so many others. Without all these colleagues, we would not have accomplished so much. See the article "What have we done for you" in this issue of HindSight to read about what we collectively have done.

Just Culture Manifesto

EUROCONTROL

"Just Culture" is a culture in which front-line operators and others are not punished for actions, omissions or decisions taken by them which are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated."

Organisations are run by people. In tens of industries – transportation, healthcare, energy, internet, and more – thousands of occupations, and millions of organisations around the world, it is people who make sure that things normally go well. And they nearly always do.

But sometimes, things go wrong. Despite our best efforts, incidents, accidents and other unwanted events happen. Following such events, there is a need for support and fairness for those involved and affected, and learning for organisations, industry and society as whole. In the absence of intentional wrongdoing or gross negligence, these obligations should not be threatened by adverse responses either by organisations or States.

The goals of this Just Culture Manifesto are to:

- articulate a vision of just culture that connects with people from all industrial sectors, around the world;
- speak to people in all roles – front line, support, specialists, management, both in private industry, government organisations and departments, and the justice system;
- provide a framework for other people to advance this vision of just culture.

As referred to in the Just Culture definition, only a very small proportion of human actions is criminally relevant (criminal behaviour, such as substance abuse or misuse, grossly negligent behaviour, intention to do harm, sabotage, etc.). Mostly, people go to work to do a good job; nobody goes to work to be involved in an incident or accident.

Five Commitments

We have distilled **five commitments** that we believe are critical for Just Culture and the need to balance safety and the administration of justice.

1 **Ensure freedom to work, speak up and report without fear:** *People at work should feel free to work, speak up and report harmful situations, conditions, events, incidents or accidents without fear of unfair, unjust or unreasonable blame or punishment.* Unfair, unjust or unreasonable blame or punishment does not motivate people to do a good job, nor to avoid 'human error'. Instead, it reduces cooperation, trust and reporting, prevents innovation, and adversely affects healthy judgements about risks that are part of everyday work. Rather than making people afraid, we all need to contribute to an environment where people can work and provide essential safety-related information to improve how the organisation works. While we aim for free and open reporting, people who report must be confident that their identity, or the identity of any person implicated, will not be disclosed without their permission or unless required by law – at any stage of the reporting, investigating and learning process.

2 **Support people involved in incidents or accidents:** *The organisation must support people who are involved in or affected by accidents. This is the first priority after an unwanted event.* Accidents can be traumatic experiences for all involved. People may be distressed or injured, physically or psychologically. Support for people is therefore the first priority after an unwanted event. While adverse events such as accidents are uncomfortable and often distressing experience, the learning process should not be. Safety investigations and organisational learning activities concerning unwanted events should – as far as possible – be positive experiences for all involved, improving the design of the system, helping individuals, teams and the organisation to grow and become more resilient, and repairing – as far as possible –any damage done.

SUPPORTING EUROPEAN AVIATION

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NETWORK MANAGER

I attend various conferences in other industries, and they speak so highly about aviation and how we learn from mistakes. People write books about us. Matthew Sayed's *Black Box Thinking* is one of my favourites (thanks to Steve Shorrock for introducing it to me). This year I was back to school in the London Business School for a course on digital disruption. The professor talked about how important it is to treat your people fairly when organisations embark on digital transformation. He started to elaborate that you cannot be totally blame free and you need to nurture the right culture. "*Hang on a minute*," I said, "*this is exactly what we call Just Culture in aviation*!" He wrote on the white board 'Just Culture', and I think he must have been thinking – what the heck is this? Putting aside the various definitions and descriptions, regulations and books, Just Culture is about being fair with people and doing the right thing.

Sometimes we make it so complicated. We invent flow diagrams and substitution tests to answer the question of whether our staff are within acceptable behaviour limits. Sometimes we are distracted by similar concepts, like 'psychological safety'. When I look at our Just Culture Manifesto, I wonder how it is different. If psychological safety is a key successful trait of high-performing teams and organisations, so is Just Culture. Just Culture helps our industry, our organisations, and our teams perform because it allows people to speak up, learn from mistakes, and improve – do better. Whatever we call it, we need to create the right environment. Unfortunately, one bad decision can unbalance many years of good decisions.

I believe we have great people that come to work do a great job. They do not come to work to have an accident. So why discipline people who want to do a good job? In this edition of *HindSight* we have again very diverse contributions from aviation and other sectors. I would like to invite you to read it from cover to cover, and to join us in signing the Just Culture Manifesto (http://www.bit.ly/JCManifesto). It summarises Just Culture so well, and it applies to aviation and every other industry.

1. **Ensure freedom to work, speak up and report without fear:** People at work should feel free to work, speak up and report harmful situations, conditions, events, incidents or accidents without fear of unfair, unjust or unreasonable blame or punishment.

2. **Support people involved in incidents or accidents:** The organisation must support people who are involved in or affected by accidents. This is the first priority after an unwanted event.

3. **Don't accept unacceptable behaviour:** Gross negligence and wilful misconduct are very rare, but cannot be tolerated.

4. **Take a systems perspective:** Safety must be considered in the context of the overall system, not isolated individuals, parts, events or outcomes. The system is the main influence on performance.

5. **Design systems that make it easy to do the right things:** Improving safety means designing ways of working that make it easy to do the right thing and hard to do the wrong thing.

Enjoy HindSight 35!

Tony Licu is Head of Safety Unit and Head of Digital Transformation Office within the Network Manager Directorate of EUROCONTROL. He leads the deployment of safety management and human factors programmes of EUROCONTROL. He has extensive ATC operational and engineering background, and holds a Master degree in Avionics.

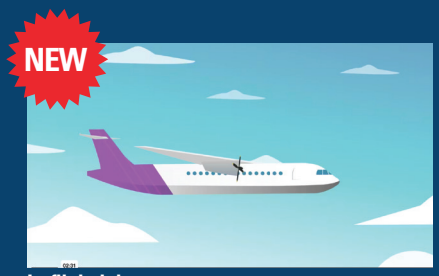
SKYclips

SKYclips are a growing collection of short animations of around two minutes duration which focus on a single safety topic in aviation. Created by the industry for the industry, they contain important messages to pilots and air traffic controllers with tools for safe operations.

There are SKYclips on the following topics

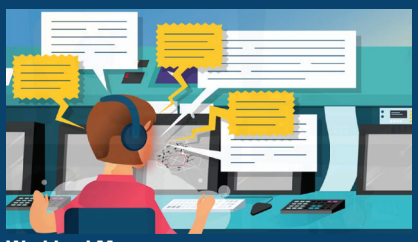
- Aimpoint selection
- Airside driving
- Airspace infringement
- Airspace infringement and aeronautical information
- Bird strike
- Callsign confusion
- Changing departure runway while taxiing
- Changing runways
- Conditional clearance
- Controller blind spot
- CPDLC
- Downburst
- Emergency frequency
- En-route wake turbulence
- Helicopter somatogravic illusions
- Immediate departure
- In-flight icing (new)
- In-flight fire
- Landing without ATC clearance
- Level busts
- Low level go around
- Low visibility takeoff
- Mountain waves
- Pilot fatigue
- Readback-hearback
- Reduced TORA
- Runway occupied medium term
- Sensory illusions
- Separation from unknown aircraft (new)
- Separation of arrival and departure during circling approach
- Shortcuts and unstable approaches
- Speed control for final approach
- Startle effect
- Stopbars
- Taxiway take-off (new)
- TCAS - Always follow the RA
- TCAS RA high vertical rate
- TCAS RA not followed
- Unexpected traffic in the sector
- Workload management

Each SKYclip is developed by aviation professionals from a variety of operational, technical, and safety backgrounds.

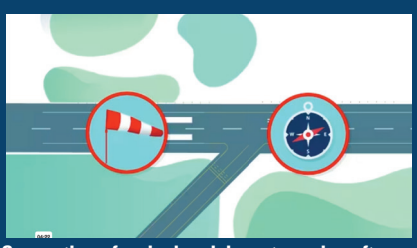


In-flight icing

Separation from unknown aircraft

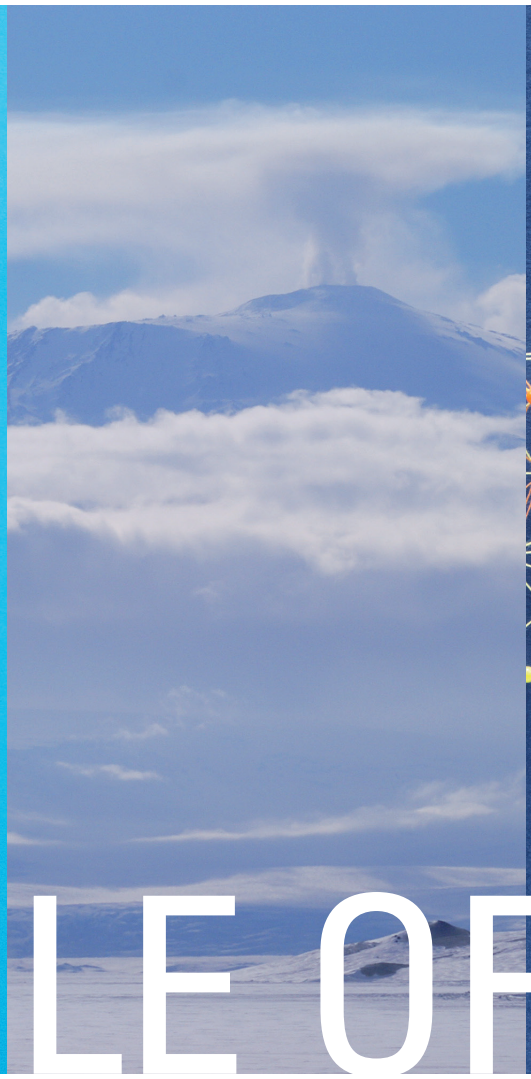

Workload Management

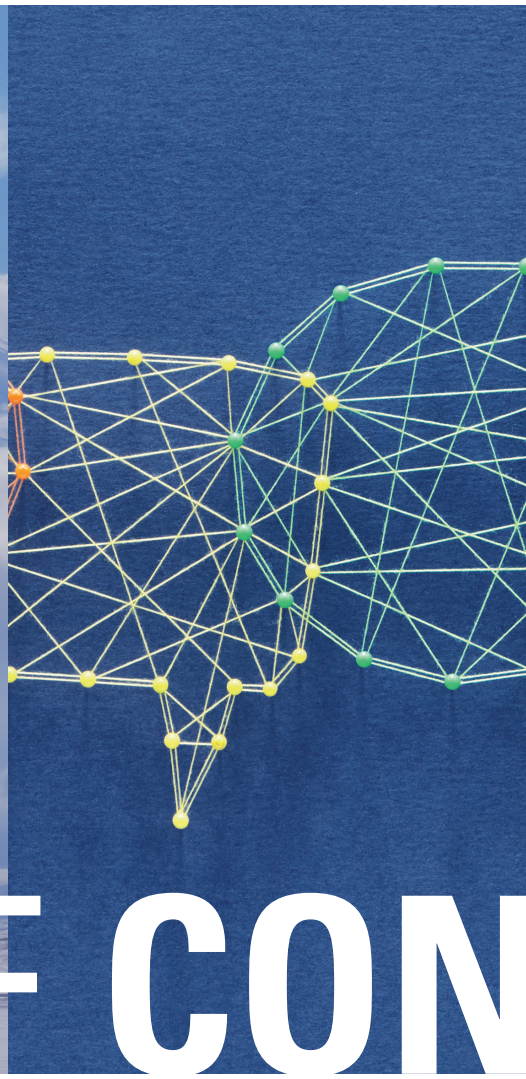
Taxiway take-off


Separation of arrival and departure aircraft during circling approach


Airspace Infringement

Find the SKYclips on SKYbrary at https://skybrary.aero/tutorials/skyclips





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HindSight is a magazine on human and organisational performance in air traffic management and related sectors. The success of this publication depends on you. Please tell us what you think, and spread the word to your colleagues. And please share your experiences with us. We would especially like to hear from front-line personnel (the main readership) with a talent for writing engaging articles.

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Adrian Cojoc
Director General ROMATSA

ROMATSA's mission is to provide air navigation services in compliance with the highest safety standards. Improving safety and organisational performance through a Just Culture approach is what drives our everyday work in order to keep Romania's sky safe.

We have experienced continuous growth of air traffic after the COVID-19 restrictions were lifted, as well as altered traffic flows and increased military operations in the region as a result of Russia's war of aggression in Ukraine. These factors have increased the workload of our employees and increased the complexity of operations within our airspace. Thus, it is ever more important that we promote and apply the Just Culture Policy, also endorsed by the social partners, in order to continuously improve our overall performance.

A 'Just Culture' is founded on two principles, which apply simultaneously to everyone in the organisation:

a) Human error is inevitable, and the organisation's policies, processes and interfaces must be constantly monitored and improved to accommodate those errors.
b) Individuals should be accountable for their actions if they knowingly violate safety procedures or policies.

Achieving both of these two principles is enormously challenging. The first principle requires a reporting system and culture that people can trust enough to make the necessary disclosures. Their trust develops out of the way the second principle is implemented – specifically from the way in which the organisation defines, investigates and attributes accountability for whatever its staff disclose.

We in ROMATSA have defined Just Culture starting from the principle that operational and technical personnel involved in the provision of air navigation services are not punished for actions, omissions or decisions taken by them that are in line with their experience, education and training. At the same time, Just Culture does not tolerate gross negligence, destructive acts and wilful violations of procedures, rules, norms.

In implementing Just Culture, regarding reporting and investigation of civil aviation occurrences, ROMATSA is committed to complying with applicable regulations that have as a goal accident and incident prevention. ROMATSA does not attribute culpability or accountability, responsibilities, blame or application of sanctions to persons involved.

In this respect ROMATSA's management and employees comply and adhere to the following principles:

1. The main goal of reporting is to contribute to risk control, and accident and incident prevention.

2. Reporting is free of any form of punishment or penalties even if safety problems can reveal errors or inadequate actions of the personnel.

3. Safety information collection, recording and dissemination shall appropriately safeguard the confidentiality of the reporter and of the persons mentioned in occurrence reports or other information that might reveal their identity.

4. Reporting by automated systems, as for example ASMT (automated safety monitoring tool) is treated in the same way as staff reporting.

5. ROMATSA will offer to its employees protection and support if judicial authorities institute proceedings against them after an aviation accident or incident.

6. The safety management system is only as effective as the people who deliver it. The rigour with which safety concerns are reported depends upon our safety culture and its good application.

7. All management and staff are encouraged to promote and apply this Just Culture policy, contributing in this way to the consolidation of ROMATSA's safety culture.

Bearing in mind the fact that ROMATSA has not experienced an accident in the last 15 years with either a direct or indirect contribution from air traffic services, the safety approach of our operations is a success story that we continue to write every day. The principles above will continue to be applied within the organisation.

Adrian Cojoc is an economic and financial specialist, working within ROMATSA for the past 20 years. He was appointed Director General of ROMATSA in February 2021, after steering the company's challenging financial situation in 2019 and 2020 as Economic Director.

He led ROMATSA's procurement department for 10 years, between 2009 and 2019, working towards implementation of EU standards in the company and a transparent methodology that guaranteed the selection of best technical and financial offers. He was previously an economic expert within ROMATSA for eight years and a financial specialist within a private company. Mr Cojoc is a BSc from the Faculty of Finances, Banks and Accounting and has graduated several advanced training programmes in procurement, aviation insurances and liabilities.

Steven Shorrock
Editor in Chief of *HindSight*

WHO ARE WE TO JUDGE?

FROM WORK-AS-DONE TO WORK-AS-JUDGED

We all have a habit that we are hardly even aware of; we judge others' work performance, every day, throughout the day. Whether it's the work of people in other organisations, in other parts of our organisation, in our own immediate work environment, when driving home, or at home, we evaluate, appraise and judge others' performance. We don't pay much attention to how we judge, but we ask ourselves all sorts of questions: "Did they do a good job?" "Did they work with due care and attention?" "Would I have done that?" I call this 'work-as-judged', and it has several characteristics that we should bear in mind.

1. We judge in a variety of ways

When it comes to unwanted events, judgement is expressed in various ways, whether formal and planned, or informal and spontaneous. For the most serious unwanted events, work is judged in inquiries, judicial proceedings, court judgements, and media reports. In less serious cases, it may be via investigation reports, audits, or management decisions. But judgements about work are also expressed in private opinions and conversations, now often displayed semi-permanently on social media posts.

2. We judge work on different criteria

Depending on our role and the situation, we emphasise different criteria when judging work. But there are two fundamental criteria, which Erik Hollnagel called the 'efficiency-thoroughness trade-off'. For a safety-related event, the focus is likely to be on thoroughness (e.g., "You were not careful enough") and then perhaps competency (e.g., "You are not skilled or knowledgeable enough"). But where productivity is in question, the focus turns to efficiency (e.g., "You didn't work quickly enough"). To paraphrase Hollnagel, the message is too often that "you should be efficient, unless something goes wrong, in which case you should have been thorough".

3. We judge work indirectly

Once work-as-done is done, it's gone. The activity cannot be recorded completely; much work is done in the head and so it's not even open to inspection. When making judgements, we therefore use 'proxies' or substitutes for work-as-done. These include work-as-disclosed (e.g., written incident reports, interviews), work-as-observed (e.g., competency checks, video recordings), work-as-measured (e.g., data logs), work-as-analysed (e.g., investigation reports, just culture algorithms), and – crucially – pre-existing or developing ideas about work: work-as-imagined.

"In practice, we form judgements about work from limited fragments of information about work."

We piece these proxies together to form a mental representation of the work in our minds. Essentially, we judge work based on our imagination of what happened, how, and why. But, of course, we need a standard of performance, usually from work-as-prescribed (e.g., procedures) or even normative work-as-imagined (how we think things ought to be done).

Again, these are not real work; they are proxies. But the fidelity of these proxies – how faithfully they really depict work-as-done – strongly affects work-as-judged. The more partial, biased or out-of-context the measures, recordings, or statements, the less just the judgement.

4. We judge work partially

In practice, we form judgements about work from limited fragments of information about work (in recordings, interview notes, etc.). These fragments are usually close in time and space to the outcomes that follow. We tend to see faults in 'sharp end' work as 'causal'. Work at the 'blunt end', and work that was done days, weeks, months or years ago, is not subject to much evaluation. This is partly because there is little that is recorded that can be evaluated, and partly because we can't see the relevance or the influence, let alone prove causation. And much of the crucial context of blunt end work is not recorded. For instance, there are flight deck recorders, but not office recorders, and even voice recorders only record part of the activity.

5. We judge work differently

Work-as-judged changes depending on the contexts of judgement. We judge work differently from one another. We even judge work differently over time. For instance, what we judge as acceptable work performance changes with the shifting personal, social, cultural, and societal contexts (e.g., values, attitudes, and norms) in which we make judgements. The informational and technological contexts also affect how work is judged. For instance, computer logs and other recordings provide information that will affect our imagination of what happened. And the time available affects judgement. Work-as-judged is just as susceptible to time pressure as work-as-done, and work may be judged differently at different points in time as consequences and evidence unfold.

6. We judge work via a range of heuristics and biases

Work-as-judged is affected by a range of heuristics and biases. Let's take just ten biases and heuristics relevant to justice, which seem to have a reasonable evidence base:

1. We tend to judge a decision based on the eventual outcome instead of the quality of the decision at the time it was made (outcome bias).
2. We tend to disregard probability when making a decision under uncertainty (neglect of probability).
3. We tend to judge harmful actions as worse, or less moral, than equally harmful omissions (omission bias).
4. We tend to be overconfident in the accuracy of our judgements (overconfidence effect).
5. We tend to believe things because many others do (bandwagon effect).
6. We tend to search for, interpret, focus on, and remember information in a way that confirms our preconceptions (confirmation bias).
7. We tend to believe that events were predictable at the time that they happened (hindsight bias).
8. We tend to believe previously learned misinformation even after it has been corrected (continued influence effect).
9. We tend to believe that a statement is true if it has been stated multiple times (illusory truth effect)
10. We tend to draw different conclusions from the same information, depending on how that information is presented or 'framed' (framing effect).

In short, we tend to think we are rather objective in our judgement (and certainly more objective than average), but we are not (naïve realism).

7. We judge work in a way that is influenced by language and tools

Related to the framing effect, language and tools have a strong influence on judgement. For instance, the safety literature is awash with negatively framed vocabulary and concepts, such as 'human error', 'unsafe act', 'risk-taking',

and 'violation'. Similarly, safety tools (including taxonomies) for judging work are mostly deficit-based – classifying what went wrong, and not just what went on. And so, our language and our tools guide us to look for the specific ways in which people mess up, while ignoring the overall nature, context and history of work performance.

"People of different professions attend to, perceive, understand, and judge the same work differently."

8. We judge work in a way that is influenced by our profession

Our professions also distort judgement via so-called 'déformation professionnelle' – a sort of job conditioning or occupational acclimatisation. People of different professions (such as safety specialist, competency examiner, prosecutor) attend to, perceive, understand, and judge the same work differently. They have different purposes, pay attention to different things, have different knowledge about work, and use different criteria for judgement.

9. We judge work because we have to

We have to judge work conduct for all sorts of reasons. In organisations, we do this for reasons associated with our own function (ops, engineering, HR, safety, quality, etc.), and in ways that are characteristic of our own function. Regulators, supervisory authorities, investigatory bodies, the media, and the courts judge work…and they must. Front-line staff also judge each other's work and, on a day-to-day basis, this is usually the judgement they fear the most.

But in judging performance, it is important to bear in mind some basic realities about the nature of human performance. ICAO's (2021) Human Performance Principles give us a good start in this respect.

- Principle 1: People's performance is shaped by their capabilities and limitations.
- Principle 2: People interpret situations differently and perform in ways that make sense to them.
- Principle 3: People adapt to meet the demands of a complex and dynamic work environment.
- Principle 4: People assess risks and make trade-offs.
- Principle 5: People's performance is influenced by working with other people, technology, and the environment.

And now for a crucial final point to bear in mind: each of these principles also applies to the judgement of work. Just as our work performance is variable, so is our judgement of work performance, and for the same sorts of reasons.

The truth is that we can never fully understand work-as-done in a complex situation. We can only construct an understanding. Since this is the basis for judgement, we must remain humble in the knowledge that judgement of work is subject to the same underlying principles of human performance as the work being judged. Mindful of this, we can strive for insight into how and why we judge, in the courtroom, board room, ops room, and living room.

"One of the key challenges in obtaining justice for the Erebus victims and their families has been the length of time it has taken to reach any kind of resolution because of two conflicting investigations."

UNRAVELLING THE COMPLEXITIES OF JUSTICE

LESSONS FROM THE EREBUS DISASTER

The Erebus accident in 1979 was one of New Zealand's worst aviation disasters. **Lea-Sophie Vink** highlights the complexities of justice, the influence of culture on the pursuit of justice, and the importance of Just Culture policies that consider cultural differences and focus on collective responsibility, transparency, and trust.

KEY POINTS

- **Conflicting investigations of the Erebus accident in 1979, one of New Zealand's worst aviation disasters, resulted in two different narratives about the accident, highlighting cultural and political influences on justice.**
- **Justice is influenced by cultural norms and values. Different cultures value and measure justice differently, making it challenging to implement universal policies.**
- **The pursuit of justice for the Erebus accident victims and their families took a long time due to legal challenges and changing political attitudes. Protracted legal battles are common in high-profile incidents worldwide, illustrating the complexities of justice.**
- **The pursuit of justice in the Erebus case was also shaped by cultural values unique to New Zealand. The country's sense of national identity, emphasis on openness and accountability, and the cultural traditions of the victims' families influenced the approach to justice, including restorative justice and healing.**

While on a recent research sabbatical in New Zealand, I listened to a great podcast series called 'White Silence'. It investigated the story of New Zealand's worst aviation disaster at Mt. Erebus (Antarctica) in November 1979. As a Kiwi now based in Vienna, I am often faced with subtle and nuanced distinctions in culture and language between English and German. For example, '*sicherheit*' can confuse even German speakers because it contains so many meanings ranging from just 'safety' through to 'security', and often combines both. As Austro Control has recently overhauled its Just Culture and human error analysis policies, this cultural difference in language – sometimes just one word – is often the cause of misunderstanding. This got me to thinking philosophically and legally about 'Just Culture'. Are our understandings and beliefs about 'justice,' 'trust,' 'blame' and 'openness' always universal? What lessons can we draw from the approaches of other cultures, even ones that seem so similar (like Austria and New Zealand)?

"Our need to seek closure and understanding usually ends up having a human face."

The 'Erebus' accident that occurred on November 28, 1979, is a tragedy that still haunts New Zealand. The crash of Air New Zealand Flight 901 on the slopes of Mount Erebus claimed the lives of all 257 people on board, making it one of the deadliest air accidents in history. The subsequent investigation and legal battles have

raised important questions about the concept of justice, and how it is understood and pursued in different cultures. Anyone who studies or implements Just Culture should know this story since it represents one of the most enduring case studies of poor Just Culture.

What is so fascinating, and worth understanding for those not familiar with the case, is that almost immediately, two separate stories emerged. On the one hand, the official investigation led by the Transportation Accident Investigation Commission ruled – extremely quickly – that the entire accident was caused by the 'human errors' and incompetence of the pilots. The pilots could not establish where they were geographically and broke minimum safe altitude rules, and as a result flew into the side of a volcano. Air New Zealand was then owned by the state, and the fact that both the minister of transport and the prime minister owned shares in the airline, was not lost on the population.

On the other hand, the pilots involved were known to be some of the safest and most experienced pilots in the fleet. The families of the victims struggled to understand how 'pilot error' could account for this. This was the determination of the chief inspector of air accidents. A second and independent investigation led by a Justice Peter Mahon's Royal Commission of Inquiry placed the blame on Air New Zealand. In what is now an infamous quote in NZ, he said that the airline's witnesses "*conducted an orchestrated litany of lies*", covering up evidence and painting a story that shifted blame onto the individuals who were no longer alive to stand up for themselves. Eventually, the matter came before the Privy Council in London, where Justice Mahon's conclusion that the aircrew were misdirected as to their flight path (and not pilot error) was upheld, but no evidence of a conspiracy to perjure or cover up evidence by the airline was found.

One of the key challenges in obtaining justice for the Erebus victims and their families has been the length of time it has taken to reach any kind of resolution because of two conflicting investigations. Although the initial investigation into the crash was first published in 1981, it wasn't until 2019, almost 40 years after the crash, that the New Zealand government formally apologised for its role in the tragedy. This delay was due to a combination of factors, including legal challenges and changing political attitudes towards the case.

This kind of protracted legal battle is not unique to the Erebus case. It is a common feature of many high-profile incidents and disasters around the world. From the aftermath of the 9/11 attacks in the United States to the Hillsborough disaster in the UK, the pursuit of justice can often take decades, and involve multiple investigations, court cases, and appeals. This can be frustrating and disheartening for those seeking closure, but it also highlights the complexities of justice and the different ways it is pursued in different societies.

"Justice is not just a matter of legal frameworks or individual rights, but also of cultural values and social norms."

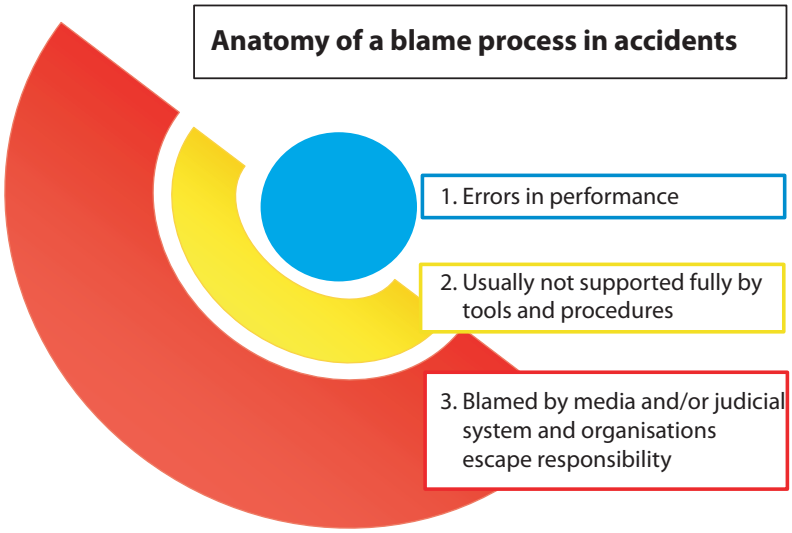
To understand these complexities, it is useful to remind ourselves of the philosophical and historical basis of 'justice'. For example, consider the work of two leading thinkers in the fields of psychology and history: Steven Pinker and Yuval Noah Harari. Pinker has written extensively about the human capacity for empathy and justice, arguing that these traits are innate and have evolved over time as part of our social and moral instincts. But Pinker also points out the instinctive nature of blame as an inherently human trait. Our need to seek closure and understanding usually ends up having a human face. Harari, expanding on the individual elements, on the other hand, has explored the role of culture in shaping our understanding of justice, arguing that different societies have different norms and values that influence how they pursue justice and punish wrongdoing. So, if each culture values and measures justice differently, how can we implement policies at state and international levels that find that balance between the legal system and protecting our people?

Applying these insights to the Erebus case, we can see that the pursuit of justice has been shaped by a complex interplay of factors, including legal frameworks, political pressures, and cultural values. For example, the Royal Commission of Inquiry that investigated the crash was established within the legal framework of New Zealand, which has a tradition of independent judicial inquiries into major incidents. This approach was influenced by the British legal system, which also focuses on due process. However, the pursuit of justice in the Erebus case has also been shaped by cultural values that are unique to New Zealand. The country has a strong sense of national identity and a history of valuing openness, honesty, and accountability in its institutions. This has led to a strong public demand for transparency and justice in the aftermath of the crash, and a willingness to hold powerful institutions, such as the government and Air New Zealand, to account for their role in the tragedy.

At the same time, the pursuit of justice in the Erebus case has also been influenced by the cultural norms and values of the victims' families. Many of these families have Maori or Pacific Island heritage, and their cultural traditions place a strong emphasis on collective responsibility and reconciliation. This has led to a focus on restorative justice and healing, rather than just punishment or retribution. Justice is not just a matter of legal frameworks or individual rights, but also of cultural values and social norms. Considering these complexities, it is important to recognise that the 'implementation' of Just Culture will never be a simple or straightforward process. Justice is not the same thing to everyone, and different cultures and interests may have different ideas about what justice entails.

"The Erebus disaster in New Zealand is a tragic reminder of the ongoing challenges and complexities of justice and the factors that will pull on a Just Culture policy if tragedy occurs."

So, how can we as practitioners and managers try to find a common thread that allows us to speak the same language? First, we need to understand the mechanisms of Just Culture.



When overhauling the Austro Control Just Culture policy, I conducted a meta-analysis of hundreds of examples and cases of poorly implemented Just Culture following major accidents, and my results were consistent with most research in errors and accidents (e.g., Turner and Reason): specifically, there is a consistent pattern that almost always follows this order:

1. At the heart of all accidents where blame is laid – especially on individuals – is often a set of central errors. These errors are often made *without knowledge* of the errors and certainly *without intention of an outcome*.
2. Almost always, the individuals are let down by processes and tools whether directly on board in cockpits or control rooms and towers, or systematically across organisations and cultures.
3. Those individuals are subsequently blamed by the media or a legal system, or both, and usually the organisations escape responsibility.

When designing and implementing Just Culture policies, our goal must be to stop this from happening. This is the measure of a successful policy. Organisations must not escape responsibility and must try to protect their individual operators. Statistically, the operators never intend for outcomes of errors to result in catastrophe (since rare cases of sabotage are intentional, not accidental).

The Erebus case follows these three steps almost to the letter. As stated earlier, Air New Zealand and the government managed to escape responsibility for almost 40 years. It was just the last Prime Minister, Jacinda Ardern, who formally apologised for the part the government played in the accident. New Zealand is considered one of the most transparent countries on earth. Think about the three steps above in cases like the Chernobyl disaster or the Deepwater Horizon accident where the institutions and organisations have still not reckoned with their part in the systematic failures that led to the individuals being placed in positions where mistakes could happen.

The Erebus disaster in New Zealand is a tragic reminder of the ongoing challenges and complexities of justice and the factors that will pull on a Just Culture policy if tragedy occurs. But we can remain steadfast through all these cultural differences by remaining true to the goal: that we must do our best to be unbiased when investigating, forgive the mistakes that will have occurred, and share responsibility. Crucially, we can build trust with our staff by outlining these key principles behind Just Culture. This is the recipe for bringing everyone onboard.

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Lea Sophie Vink is Human Performance Lead at Austro Control and Chairwoman of the CANSO Human Performance work group. Having spent ten years in military operations, Lea is now a chartered Work and Organisational Psychologist in Austria, and an Accredited Aviation Psychologist (European Association for Aviation Psychology). She is an active researcher in cognitive psychology, focusing on computational human performance and fatigue management.

MOVING BEYOND THE GOOD, THE BAD AND THE UGLY:

JUST, BLAME, AND NO-BLAME CULTURES REVISITED

Navigating the complexities of organisational culture requires a nuanced understanding of just and blame cultures. These cultures often coexist within organisations, with different areas and functions exhibiting different tendencies, as **Martina Ivaldi**, **Fabrizio Bracco** and **Marcello Scala** explain.

KEY POINTS

- **Just culture is not synonymous with a no-blame culture. While Just Culture emphasises learning and improvement, it also recognises the importance of accountability and responsibility.**
- **Just and blame cultures can coexist within an organisation. Different areas or functions may exhibit different tendencies toward just or blame culture, and it's important to consider these nuances rather than applying oversimplified labels to the entire organisation.**
- **The five commitments of the EUROCONTROL Just Culture Manifesto provide a framework for understanding Just Culture: ensuring freedom to work, speak up, and report without fear; supporting people involved in incidents or accidents; not accepting unacceptable behaviour; taking a systems perspective; and designing systems that facilitate doing the right things.**
- **Different organisational areas demonstrate different facets of just and blame cultures. This includes near-miss reporting systems, organisational responses after accidents, sanctioning systems, accident investigations, and improvement actions. Each area may prioritise different aspects of just or blame culture.**
- **While policies and procedures may be oriented toward Just Culture, practices within an organisation can still exhibit elements of blame culture. Understanding the cultural nuances within a company is crucial for promoting a culture that encourages accountability, trust, and improvement.**

Just ≠ No-Blame

When things go wrong, questions of justice and blame often quickly come to the surface. Indeed, 'Just Culture' has sometimes been equated with 'no-blame'. This is a mistake, for several reasons. One is that Just Culture is not simply about removing blame. It concerns learning and improvement. Another is that Just Culture remains strongly linked to the concept of responsibility. Incident and accident investigations require that professionals are open about their mistakes and can talk about problems without fear. A final reason is that Just Culture is based on the organisation's ability to draw a clear line between acceptable and unacceptable behaviour.

"Just Culture and blame culture are not necessarily mutually exclusive. Rather, they tend to coexist."

Just and blame cultures have different characteristics. However, they are often described by taking into consideration only some of these characteristics. Here are some typical examples:

- Just culture is key to increasing trust in reporting. Blame culture makes people unwilling to report mistakes.
- Just culture is about the fair management of accountabilities. Blame culture is a punitive approach to errors.
- Just culture involves a systems approach to unwanted events. Blame culture is a search for culprits.

When we think of an organisation, what aspects of the two cultures are we considering? Since the organisational reality is complex, Just Culture and blame culture are not necessarily mutually exclusive. Rather, they tend to coexist. Within the same company, some organisational areas may be oriented toward Just Culture, and others toward blame culture. Even within the same part of an organisation, there may be facets of just and blame cultures. It is therefore probably better to consider different functions, such as reporting systems, responses after accidents, sanctioning systems, investigations, and improvement actions. How do ideas about justice and blame feature in each of these?

Just Culture (and Blame Culture) Facets

From the five commitments of the EUROCONTROL Just Culture Manifesto, we can consider at least five organisational areas in which Just Culture (and blame culture) manifest.


Just Culture Manifesto

EUROCONTROL

"Just Culture" is a culture in which front-line operators and others are not punished for actions, omissions or decisions taken by them which are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated."

Five Commitments

SUPPORTING EUROPEAN AVIATION

SESAR

NETWORK MANAGER

Near miss reporting systems

Reporting systems can be conceived differently in the two cultures. Just culture pays attention to workers' concerns in reporting, and for this reason confidentiality, feedback, and information on the function of the reporting system, rights, and responsibilities are provided. In a blame culture, managers are less attentive to these aspects. They focus on finding and punishing the person who is responsible for the reported event for not complying with the rules.

Organisational responses after accidents

After accidents, the two orientations can diverge in the degree of care for the needs of those affected by accidents because of their professional role (sometimes called 'second victims'). For some, support programmes may be provided, while for others, there may be scapegoating through the distancing of the operator from the organisation (Dekker, 2017).

"It would be naïve to think that practices are always guided by the same organisational culture."

Sanctioning systems

In a Just Culture, accountability is defined by considering the physical, social, and organisational context in which errors and violations took place. In a blame culture, any behaviour that violates rules is sanctioned with little or no account of context.

Accident investigations

Just and blame cultures can influence the goals and conduct of accident analyses. Investigations may consider behaviour either as the product of organisational defects or as the result of the free will, aiming to find system contributions or culprits. In a Just Culture, it is important to consult operators to understand the reasons behind their behaviour. In a blame culture, the operator's point of view is overlooked (Reason, 2000).

Improvement actions

In a Just Culture, interventions are evaluated for their impacts at the systemic level, especially on their unwanted effects on workers. In a blame culture, the solutions focus on operators to improve safety, as if they were the only faulty element of the system, for example through training (Hollnagel, 2021).

To avoid applying oversimplified labels of Just Culture and blame culture to the entire organisation, it is important to reflect on how the two cultures can appear side by side; this enables managers and practitioners to be more aware of the nuances of justice and blame.

Can Just and Blame Culture Coexist?

The answer is yes, and as an illustration of this, we present two scenarios from the field of aviation.

Scenario 1: Just and blame cultures in different organisational areas

It would be naïve to think that practices are always guided by the same organisational culture. For example, aviation relies on feedback and lessons learned from accidents and incidents. Translating lessons into practice may require costly and demanding reorganisational processes. Thus, it may be easier for the company to target training at operators rather than intervening on systemic factors. This may not protect from the occurrence of similar incidents (unless competency really is the problem). In this case, investigations may be based on a systems approach (see EUROCONTROL, 2014), but improvement actions, are oriented toward individuals. Thus,

going back to the EUROCONTROL Just Culture Manifesto, we can observe the coexistence of a blame (and retrain) approach in one organisational area (improvement actions) with a just approach in another (accident investigations).

Scenario 2: Just and blame cultures in the same organisational area

Just and blame cultures can coexist even within the same organisational area, such as in reporting systems. Reporting, analysis, and dissemination of conclusions regarding safety-related occurrences aims to prevent accidents. Occurrences are reported using a mandatory or voluntary reporting system. Mandatory reporting concerns events which may represent a significant risk to aviation safety, while voluntary reporting concerns other safety-related information. From a Just Culture perspective, instead of attributing accountability to individuals, managers should focus on the five principles of the EUROCONTROL Just Culture Manifesto. Despite this, operators may be reluctant to report due to the teasing or judgemental attitudes and behaviours of peers. This is not aligned with Just Culture, and the reason is not to be found in either the design of the reporting system or in the manager's approach. In this situation, some aspects of blame culture are present in the staff, despite the company investing in building just reporting systems.

> "Procedures and policies may be oriented toward Just Culture, while practices may be oriented toward blame culture."

A Nuanced Perspective

Aviation is a complex sector, in which practices, policies, and procedures are not always oriented in the same direction. Since work-as-imagined does not reliably coincide with work-as-done (because the organisational reality is much more complex than that which can be planned), policies and procedures on safety culture do not always succeed in creating coherent safety practices. For this reason, procedures and policies may be oriented toward Just Culture, while practices may be oriented toward blame culture. It is even possible to observe facets of just and blame culture within policies and procedures (e.g., from different organisational departments). This is true especially when an organisation is shifting away from a punitive approach.

While it is desirable to have as many policies, procedures and practices oriented toward Just Culture as possible, we cannot apply the label 'Just Culture' only because managers have invested in some of its facets, and neglected others. Instead, we must be aware of the cultural nuances present in a company.

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The EUROCONTROL Just Culture Manifesto can be found on SKYbrary at https://skybrary.aero/enhancing-safety/just-culture/about-just-culture/just-culture-manifesto

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Fabrizio Bracco is Associate Professor in Psychology of Work and Organisations at the University of Genoa. As an expert in cognitive ergonomics, he has carried out numerous interventions for risk management and for the promotion of non-technical skills. On the organisational side, he conducts research and consultancy in the field of safety culture and organisational resilience, event analysis methods and no-blame culture.

Marcello Scala has been in service as an air traffic controller at Milan ACC for ENAV since 2005. He was previously an officer in the Italian air force for fifteen years, where he performed the functions of ATCO with ADI-APS-ACS ratings, OJTI Licence endorsements and supervisor of operations room. In 2002, he graduated in Law, with his thesis on air navigation law.

EPISTEMIC INJUSTICE: THE DOG HAS NOW BEEN REMOVED FROM THE TAIL

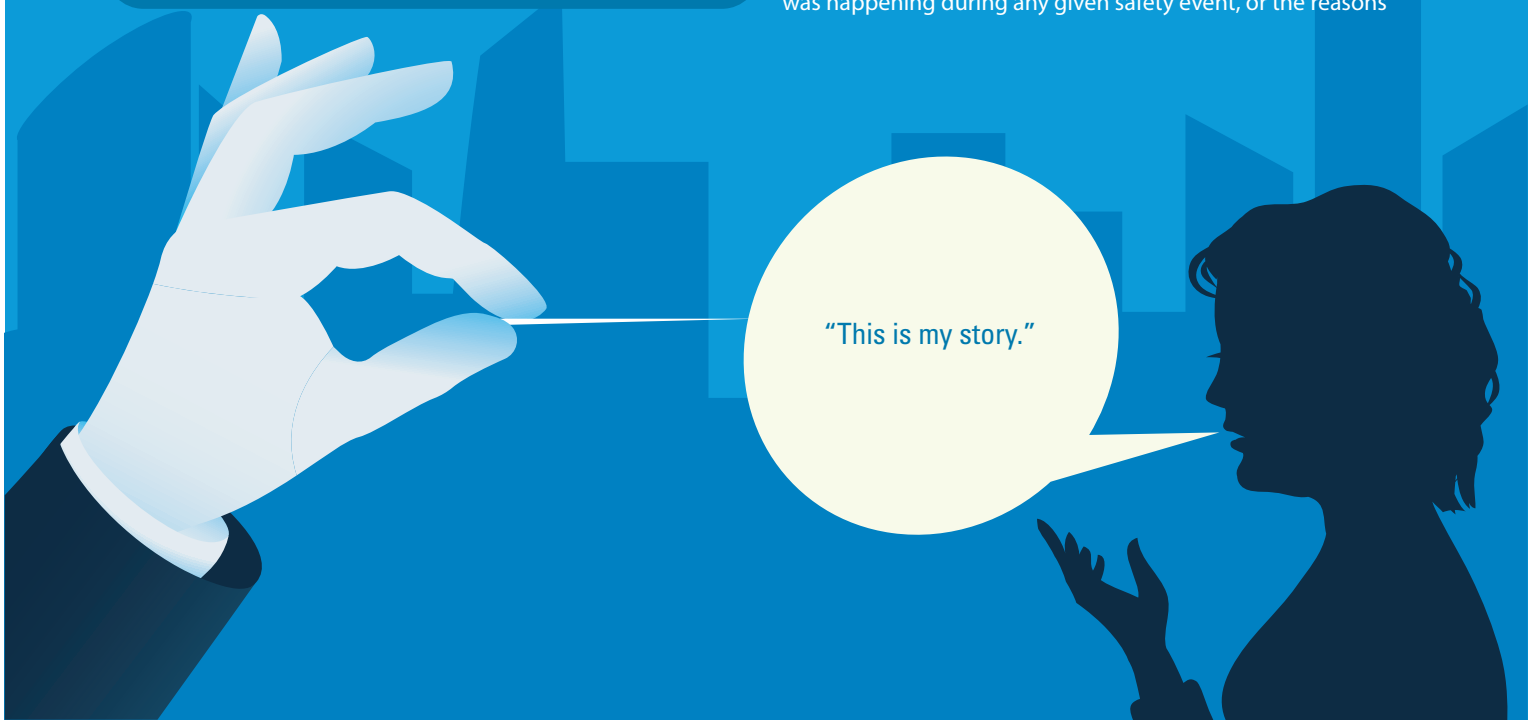
What is a Just Culture approach to safety learning? **Joji Waites** and **Captain James Burnell** add some thoughts on learning within a just culture framework from the frontline perspective of UK airline pilot operations.

KEY POINTS

- **Enacting epistemic justice will help any airline trying to improve its learning.**
- **The dangers of epistemic injustice are ever-present with systematised approaches to data curation.**
- **Ethical approaches to management always allow people to be the arbiters of their own truth.**
- **When workers make a safety report, they want to send a message to the rest of the organisation. Epistemic justice means respecting that it's the reporter's report.**

As Sidney Dekker puts it, Just Culture policies are built in response to the question, "*How do we get workers to report their safety concerns so we can learn from them?*" It is likely that certain airlines will have among the best designed and implemented just culture approaches in the aviation business today. This is certainly borne out by our first-hand experience; we see some airlines going to great lengths to uphold the principles laid out in this concept.

However, we see a potential problem with some airlines where such a view prevails. Despite such efforts and other industry-leading structures, including advanced safety management systems (SMS), we find that there is often little learning beyond the safety taxonomies of the airlines' databases. In part, the problem is how the data are collected and analysed without full appreciation of the underlying context of what was happening during any given safety event, or the reasons



why a safety concern was reported. Safety statistics without context can seem detached from reality.

One result of this approach to learning is not just that 'the tail is now wagging the dog', but that the 'dog has now been removed from the tail'. This siloed approach to learning makes it ineffective and disenfranchises the people we need to learn from.

A Note From the Frontline

The excerpt below is from an email received from a fifteen-year captain following a large company's recent response to a filed air safety report (ASR) and is indicative of the problem we hope to highlight here.

"WHAT A WASTE OF TIME PUTTING IN AN ASR."

This was the last of several ASRs filed by different pilots to highlight similar failings in a new ground operational procedure that was putting significant operational pressure on pilots during turnarounds. The captain felt ongoing pressure during turnarounds due to the perceived removal of a key role, but the investigator reframed the reporter's original truth as a simple one-off error in the process, and muted the bigger issue of the pressure on pilots that could compromise safety. This stripped the reporter of their power to control and influence their future and identify a systemic issue.

"Safety professionals and managers in organisations often interpret events to fit the constraints of the reporting system."

The whole group gave up reporting the problem because of the responses received. Due to the length of time the company was ignoring the issue, the community of pilots created workarounds and the issue was normalised into daily operations. While the pilots wanted to identify and remedy an operational issue, this was seen by the company as pilots getting used to a new procedure. It is a familiar pattern in procedural change management.

What is Epistemic Justice?

The word 'epistemic' means 'relating to knowledge'. Epistemic justice is a term used to describe how power is used in defining the truth. In all situations, the power belongs to the arbiter of the truth and the term epistemic justice is used to indicate how ethically that power is being used.

Epistemic justice means that the narrative and the interpreter of the truth must be the originator; otherwise, some ethical damage is being done.

Defining the Problem

Even in the top-performing airlines, there can be a barrier to reporting, which is far stronger than the fear of retribution. The problem in these cases, perhaps, is that safety reporters are not deterred by the lack of psychological safety created by a fear of retribution, nor by the process of the investigations, but by the fact that their truth has the potential to be reinterpreted.

Rather than allowing people to define their own position and help create sustainable paths to a better future, safety professionals and managers in organisations often interpret events to fit the constraints of the reporting system (including the database), then determine what the future should look like based on this limited interpretation of the situation. This kind of epistemic injustice strips the reporter of their power to command their own narrative and potential future, and they end up feeling disenfranchised and oppressed. Consequently, reporting is curtailed to situations where reporting is seen as unavoidable.

Why Might This be Happening?

It is likely that there are a few reasons for this approach by safety professionals, beyond a lack of understanding of ethics and commercial pressures.

The first factor is the conceptualisation of airline operations through an engineering lens, where outcomes are deterministic and either right or wrong. This means that there is only one correct narrative – one objective truth that can be used to fix the system or, easier still, the worker. This leaves the investigator with only one choice of outcome, which is the right one. As the safety professional is the expert, the right choice must be theirs. And so, safety becomes disconnected from the reality of operations.

As many now understand, any system containing humans is by its nature a complex system, and subject to uncertainty and emergence, where small effects can create big differences in outcomes. This understanding allows us to recognise the possibility of multiple, potentially contradictory truths, which may each have value and are worthy of consideration.

By forcing learning only through mandated safety management structures, learning through nuanced narrative and social processes is made difficult to impossible. However, learning through narratives can happily sit alongside the SMS, and allows significant insight to be gained beyond the simplified information needed to feed computer-based learning systems. An example of an approach beyond the SMS would be the learning review as pioneered by Ivan Pupulidy and implemented in an airline context as the Operational Learning Review by Cathay Pacific Airlines.

Conclusion

So, *"How do we get workers to report their safety concerns so we can learn from them?"* The conclusion we hope those reading this article draw is that until epistemic justice is enacted, the reporting rate and the value of the insight derived from reports will not reach their true potential. Content will continue to be driven by the current systemic drivers of reporting such as what is mandated or expected to be reported, rather than by a motivation to openly share experiences from which everyone can genuinely learn.

"Learning through narratives can happily sit alongside the SMS, and allows significant insight to be gained beyond the simplified information needed to feed computer-based learning systems."

Our experience, particularly in the most forward thinking of airlines, is that the primary driver of a reluctance to report is not fear of retribution but epistemic injustice.

Safety is an emergent property of the system, influenced by the people doing the work and needs to be driven by them because they are best placed to maximise an empowering structure to achieve good outcomes. We feel it is time to start to learn in a way that allows the dog to again wag its own tail.

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Joji Waites is Head of Flight Safety at the British Airline Pilots' Association with over 25 years of experience in this field and is a passionate advocate for progressive safety concepts that place the frontline worker at their heart. **JojiWaites@balpa.org**

Captain James Burnell is a pilot and safety rep based in Edinburgh with the UK airline easyJet. He supports the British Airline Pilots' Association in creating and promoting safety theory. James has a strong interest in generalist learning, cutting across many scientific fields with the aim of improving the safe management of humanistic systems.

JUST CULTURE…REVISITED EUROCONTROL ALC COURSES

The EUROCONTROL Aviation Learning Centre, located in Luxembourg, develops and delivers air traffic management training, services and tools for air navigation service providers, airlines, training organisations and civil and military State authorities worldwide.
Building on over 50 years of expertise, the centre provides a wide range of training courses, services and tools - from general introduction courses on ATM concepts through to advanced operational training.
Here are some courses that may be of interest to readers on the topic of just culture…revisited.

Human Factors Practitioner Programme [HUM-PRG-PP]

IANS has recognised the existing lack of Human Factors (HF) expertise in ATM. As more operational, technical or management personnel are willing to develop their expertise in the area of HF, we support them to be recognised as practitioner in their respective organisation for potential contributions in the domain of HF. This training programme has been developed specifically to fulfil this requirement.

The programme consists of:

- 2 mandatory introductory classroom courses – HUM-HFA and HUM-DESIGN;
- 2 mandatory e-learning courses HUM-FAT-ATC and HUM-STRESS;
- a minimum of 2 out of the following specialised classroom courses - HUM-SFM, HUM-SYS, HUM-HF-CASE and HUM-TRM-A.

Candidates can choose more than 2 optional courses to follow. An optional additional e-learning course is proposed.

By making their selection of 2 optional courses to follow, candidates are encouraged to choose their "specialised knowledge". Where the participant will be involved in the assessment or development of concepts, HUM-HF-CASE and HUM-SYS are the two courses that fit this profile the best. Where the participant will be involved in the delivery of the HF elements of the ATCO refresher training, the suggested courses to follow are HUM-TRM-A and HUM-SFM.

In addition to the above, the HF Practitioner Diploma requires that the applicant:

1. holds a university degree in relevant studies (Aviation Psychology and/or Applied Human Factors), or
2. submits evidence of active involvement in the OPS application of HF Case, or
3. submits evidence of active involvement in the OPS application of DESIGN (e.g., colour scheme definition for the CWP, layout of the CWP), or
4. is an active TRM/HF facilitator (at least 3 sessions in 3 years), or
5. has completed a personal HF assignment (details to be agreed with the HUM-PRG-PP team).

Details of this personal assignment are communicated to participants upon registration to the program.

Objectives

After completing this training programme, participants will be able to:

- explain the essential HF concepts for ATM and elements of relevant applied psychology,
- provide support in projects related to HF and better integration of HF in operations.

Participants will also be aware of on-going regulatory developments concerning the role and the responsibilities of an HF Practitioner.

Audience

Operational, technical and organisational ATM personnel with tasks that include integrating Human Factors in their respective organisations.

Other courses relevant to Just Culture:

- Human Factors for ATM Safety Actors [HUM-HFA]
- Systems Thinking for Safety [HUM-SYS]
- ATM Occurrence Investigation and Analysis [SAF-INV]
- EUROCONTROL Reflections on the practice of Human Factors (Webinar)

Search **https://learningzone.eurocontrol.int**

WHY IS IT JUST SO DIFFICULT?

BARRIERS TO 'JUST CULTURE' IN THE REAL WORLD

Drawing on his research and practice, **Steven Shorrock** explores the various barriers that we face when trying to make sense of Just Culture, inviting readers to reflect on the intricate nature of justice and safety in our complex world.

At the heart of Just Culture lies a simple acknowledgment: we all make mistakes. Sometimes we forget things, we don't see or hear things, we misperceive and misinterpret things, we misjudge things, we make decisions that do not fit the evolving situation, we do or say things that we didn't mean to do or say. We all do this, in the living room, in the ops room, in the board room, even in the court room. None of us is immune. These unwanted moments are a great leveller.

So how can we judge people for making mistakes – for being human? No mistake should be sufficient to instigate a disaster. Systems that require perfect performance by human controllers are bad systems, because they deny nature. Complex, safety-critical systems should be highly defended from normal variability in the workings of the head and hands.

But sometimes, it is easy for things to go disastrously wrong. And so this quandary remains difficult to reconcile. My interest in this issue stems back to the late 1990s as a young psychology student. I eventually completed my doctorate on the topic twenty years ago. I consulted hundreds of academic papers, analysed hundreds of incident reports, and spent hundreds of hours in control rooms and simulators, observing and interviewing controllers. What do these brain blips have in common?

At that time, with my psychologist's perspective on 'cognitive errors', what they had in common was a deviation from one's own intentions and expectations. But for other stakeholders, what they had in common was deviation from *others' expectations and requirements*, including those of other

professionals, organisations, the criminal justice system, the media, and citizens. I increasingly became uncomfortable. "Human error" was used by many to infer cause and culpability. This made everything more complicated. And especially when it comes to decision-making and habits, we then enter the realm of conduct and practice. But right and wrong are not black and white.

In the last decade or so, my colleagues and I have spent over 30 weeks with controllers, engineers, managers, safety specialists, and others in air navigation service providers in over 30 countries, talking about Just Culture and safety culture in workshops. Together with colleagues, I have also worked with prosecutors and judges along with pilots and controllers. In a patient safety context, I have collaborated on approaches to Just Culture within healthcare, given and heard evidence to a committee meeting in the UK Houses of Parliament, and given evidence at a hearing for a review on Gross Negligence Manslaughter.

The perspectives I gained during this time are so numerous, diverse, and intermingled that it is not possible to do justice to them. But what emerged are many barriers to Just Culture. These are what makes it so difficult. So, that is the focus of this article. For each kind of barrier, a whole book could be written, but I hope that the sketch below gives an impression of some of the barriers that we need to talk about if we are to make progress.

Conceptual Barriers

Just Culture is defined in Regulation (EU) No 376/2014 as "*A culture where staff are not punished for actions, omissions, suggestions, or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts will not be tolerated*." But 'Just Culture' is not really a culture per se, or even a subculture. It is a trope – a figure of speech or recurring theme. It puts a focus on a particular value – justice – within a culture. Just Culture is a reason to have a conversation. An organisation may have supporting policies and processes, and there may be overarching regulation, but a conversation is needed to uncover how we think and act. Different groups (with different subcultures) have different ideas and ideals.

We may try to achieve a common culture across the organisation, but you can't 'design', 'engineer' or 'implement' a culture of any kind. Unfortunately (or fortunately, depending on your perspective) culture is largely read-only/write-protected. There is change, but adaptive change is mostly bottom up, and slow. True cultural change means changing shared values, beliefs, assumptions, and practice. That's hard enough for one person trying his or her best! For a thousand people…? Good luck. So, culture change is not usually centrally directed or top down. Culture change is evolutionary

"Our ideas about justice and the acceptability of occupational conduct are deeply ingrained in our own professional background."

– more glacial than galloping – as groups learn and pass on lessons for their survival. But safety and justice are important values, and the notion of 'Just Culture' helps to trigger conversations about them.

Personal and Social Barriers

Whatever our culture, we are all different. We have different values, beliefs, attitudes, and habits. When it comes to justice and fairness, we also see the world very differently. Some people accept the 'just world hypothesis', and assume that a person's actions inherently bring morally fair consequences to that person. And people have different attitudes to mistakes. Some are unforgiving, and see even rare mistakes as a sign of incompetence. Punishment is often seen as a useful corrective measure. Most of us have this attitude in some circumstances. If it is your relative who is harmed by a distracted driver or a overconfident surgeon, your perception of justice will tend to differ compared to when an unknown person is harmed. Our judgement of performance is affected by the severity of the outcome, hindsight, and who is affected.

Importantly, the Just Culture ideal is built on trust, and trust is fragile. In an organisation, it takes a long time to develop confidence that one will not be punished for mistakes that constitute normal human variability, and this trust is rapidly eroded. A change of manager to one who is unsympathetic to the reality of work-as-done can undo a lot of work on Just Culture. This fragility highlights once again that Just Culture isn't a 'culture', as such; it's an agreement.

Linguistic Barriers

Philosopher Ludwig Wittgenstein wrote that "*the limits of my language mean the limits of my world. All I know is what I have words for.*" The form of something, even the very existence of it, depends to a large degree on the words we have to describe it. In this sense, *words shape worlds* (Shorrock, 2013). Our safety lexicon is not neutral, and certainly not positive. This shapes a deficit-based way of thinking, which further reinforces deficit-based language. If you think about the words associated with safety management, for instance as might be found in the glossary of a safety report, you'll find a negative tone: accident, cause, danger, error, failure, harm, hazard, incident, loss, mistake, near miss, negligence, risk, severity, violation. You'll find relatively few words to describe how safety is created, and those that one finds are rarely 'human' (e.g., barriers, redundancy). The same goes for taxonomies used for incident analysis. Again, the terms are routinely negative (e.g., poor teamwork, inadequate supervision), reinforcing a human-as-hazard perspective. (They could just as easily be neutral, e.g., teamwork, supervision.) To make matters worse, slogans such as 'zero accidents' and 'never events' send messages that undermine safety and justice (Shorrock, 2014). For doctors, 'First, do no harm' is a commonly cited principle. It is often misunderstood as 'zero harm', when it originally meant 'abstaining' from intentional wrongdoing, mischief and injustice. It did not refer to mistakes. We might see it as an early line in the sand.

"When someone is blamed for an 'honest mistake', it is like a social oil spill. The pollution sticks around for a long time."

"Technology can make it easy for things to go catastrophically wrong."

Professional and Organisational Barriers

Different professions have different ideas about justice and associated issues such as mistakes, competency, and negligence. There can be striking differences between operational and engineering staff, for instance. For engineers, there tend to be fewer shades of grey in both procedure and practice. But professionals – with insider knowledge and high expectations – can be the harshest critics of their peers. We tend to fear the judgement of our peers the most, but we coalesce to repel the judgement of external parties, such as managers or prosecutors. This is valid in a sense, because external parties don't understand the work. (Whether we want them to understand the work or not, depends on how we imagine the outcome of their judgement.)

Each profession – operational, HR, legal, safety, regulation – also takes comfort from its own form of *déformation professionnelle*, and experiences 'trained incapacity' (see Shorrock, 2013). Our professional experience deforms the way we see the world, at least to other people outside of our occupational clique, and even incapacitates us. It creates differences in how the same decisions and conduct are viewed in retrospect. Our ideas about justice and the acceptability of occupational conduct are deeply ingrained in our own professional background. Some acts are deemed unacceptable *a priori*. Organisations sometimes give examples. These usually involve illegal use of alcohol and drugs, as well as forgery or falsification. But in the middle lies a grey area of conduct. Some organisations adopt engineering-style flowcharts to help navigate this, which may be a good starting point, but may also reflect our stage of maturity when it comes to conversations about practice.

Historical Barriers

Organisations have a history, which includes unwanted events and how people are treated following such events. People in organisations have a memory of these events, which influences their beliefs about the future. How will I be treated if I make a mistake and things turn out badly? It makes sense to consider how others were treated in similar circumstances. If someone was previously treated unfairly, this influences how I think, feel, and act. Interestingly, memory of previous episodes is somewhat independent of whether a person was even in the organisation at the time. It is encoded in organisational folklore, passed on from member to member, and so influences behaviour even for those who were not part of the history. When someone is blamed for an 'honest mistake', it is like a social oil spill. The pollution sticks around for a long time. It remains even after the judging person has left the organisation. Ironically, mistakes in handling others' mistakes are among the least readily forgiven by groups of professionals who find themselves under the spotlight. The clean-up operation can take a generation unless apologies and amends come quickly, and they rarely do.

Regulatory Barriers

Regulations are infused with messages – explicit and implicit – about 'safety', 'justice', and 'acceptability', even if the words aren't used. The provisions and articles are not always consistent or compatible. This is partly because of the huge effort required to do so thoroughly. Constraints on regulatory resources mean that an efficient solution is chosen instead – leave people to interpret the regulation and resolve vagaries and inconsistencies. In the now-famous definition of Just Culture in EU 376/2014, we are let to define for ourselves what is meant by "*gross negligence*" and "*wilful violations*". We need to interpret what is meant by "*actions, omissions or decisions taken by them [frontline operators or others] that are commensurate with their experience and training*". And who are the "*frontline operators*" and "*others*"? The confusion at least reinforces the point that 'just culture' is an idea and a reason for a conversation, not a thing that exists out there in the world.

Technological Barriers

Technology can make it easy for things to go catastrophically wrong. We somehow accept this for some technologies (e.g., trucks, buses, cars), partly because they offer convenience that we value more than the risk of harm. We do not accept it for other technologies, but still it happens. Spain's worst train crash in over 40 years is testament to this. The derailment happened 10 years ago on 24 July 2013, when a high-speed train travelling from Madrid to Ferrol, in the north-west of Spain, derailed on a curve four kilometres from the railway station at Santiago de Compostela. Eighty people died. The train was travelling at over twice the posted speed limit of 80 kilometres per hour when it entered a curve on the track. The technological system allowed this to happen. Neither the passengers nor the driver was protected, but "human error" by the driver was blamed in the aftermath (see Shorrock, 2013). Ten years later and the trial remains ongoing. There are other examples of how 'simple mistakes' – of the kind that anyone can make – precede disaster. The real mistake is the failure to mitigate inevitabilities.

Legal and Judicial Barriers

Whatever the attitudes to safety and justice inside an organisation, organisations operate in a legal context. Naïve ideas about not punishing innocent mistakes may collide at speed into reality once a prosecution commences. In many civil law jurisdictions, prosecutors lack the discretion as to whether to file charges and how to present a case. So unintended 'honest mistakes' may well be criminally relevant acts of negligence that must be prosecuted according to the penal code. (In this context, incidentally, the famous question, "who draws the line?" is easily answered: a judge or jury.) In a common law context in England, Wales and Northern Ireland, 'Gross Negligence Manslaughter' applies to deaths in a workplace of any nature. What is interesting is that the degree of negligence needs to be *"very high", and conduct must "fall so far below the standard to be expected of a reasonably competent and careful [person in the defendant's position] that it was something truly, exceptionally bad."*

But we also have to grapple with our confused and inconsistent standards when it comes to legal action. An ordinary driver who displays essentially the same behaviour as a train driver, professional pilot, or air traffic controller, will be judged quite differently, also depending on the outcome. We commonly agree that faults in driving ought to be punished. We even have specific laws for driving conduct. Again, in England, Wales, and Northern Ireland, driving offences mainly fall under two categories: dangerous driving, and careless or inconsiderate driving. Dangerous driving includes obvious things such as racing and ignoring traffic lights, but also using a hand-held phone or other equipment, looking at a map, talking to and looking at a passenger, or selecting music. Careless driving, or driving without due care and attention, is committed when driving falls below the minimum standard expected of a competent and careful driver, such as unnecessarily slow driving or braking, dazzling other drivers with un-dipped headlights, or turning into the path of another vehicle. What is an 'honest mistake' depends on the context and the outcome.

> "'Just Culture' is entangled in a struggle with the pervasive fear that that we have created systems that can fail catastrophically, albeit very rarely, seemingly as a result of ordinary and inevitable human variability."

Societal Barriers

'Just Culture' is entangled in a struggle with the pervasive fear that that we have created systems that can fail catastrophically, albeit very rarely, seemingly as a result of ordinary and inevitable human variability. Complex systems have a terrifying habit of operating efficiently close to a tipping point into failure. Professionals whose contributions are closest to that tipping point become the target for the dual fear response of anger and blame. In psychology, this is known as 'displacement'. Despite being set up to fail, there is simply no one else who is convenient to blame in the heat of the moment. Headlines of "human error causes accident" mirror our appetite for simple, low context, low complexity explanations that come with a scapegoat upon which to offload our anxiety about what we've created.

Evolutionary Barriers

Our sense of justice is not unique to modern humans. We have inherited it from our primitive ancestors. This can be seen in our closest relatives: chimpanzees discipline greedy peers who cheat or are otherwise uncooperative. Other mammals administer justice in groups for breaches of social norms. Some group norms are essential for group survival and so deviations will not be tolerated. But our evolution has hamstrung our thinking about justice. We make simple-to-complex reasoning errors; our thinking and internal reactions about simple situations are transferred to unwanted events in complex situations. But for complex, high-hazard socio-technical systems that need to be defended heavily from the effects of simple mistakes, this thinking and feeling is misplaced.

"Systems should be designed – so far as is reasonably practicable – to prevent catastrophic outcomes."

So, What Can We Do?

It seems that we are in a phase of confusion. We are trying to work things out. Acknowledging this is a good first step. Perhaps we can accept, though, that people make genuine mistakes, all the time. And sometimes – but quite rarely – conduct really is unacceptable. Using the words of retired English judge Sir Brian Henry Leveson, who served as the President of the Queen's Bench Division and Head of Criminal Justice, we must sometimes identify *"the line that separates even serious or very serious mistakes or lapses, from conduct which was truly exceptionally bad"*. This was directed at gross negligence manslaughter, but removing that fatal outcome, it seems reasonable to apply this more generally when it comes to corrective justice. And remember that the term 'serious mistakes' does not necessarily refer to outcome: systems should be designed – so far as is reasonably practicable – to prevent catastrophic outcomes. Complex, high-hazard systems such as transportation, healthcare, and power generation must be defended from the effects of such mistakes. If it is easy for things to go disastrously wrong, that is a more fundamental mistake of design and management.

And many are harmed in some way when things go wrong. So, we should seek to identify who is impacted, understand their needs, and help to meet those needs. This is the essence of restorative just culture, which has additional complications (for instance, those who are impacted may express a need for retributive justice).

By reflecting on our own reactions to failure, and how we contribute to creating, maintaining and overcoming each of the barriers to Just Culture, we can genuinely do our part for justice at work, at home, and in society more generally. This way, even though unwanted events will always be hard to handle, there may be fewer barriers to learning and healing from them.

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JUST CULTURE:
WHAT HAVE WE DONE FOR YOU?

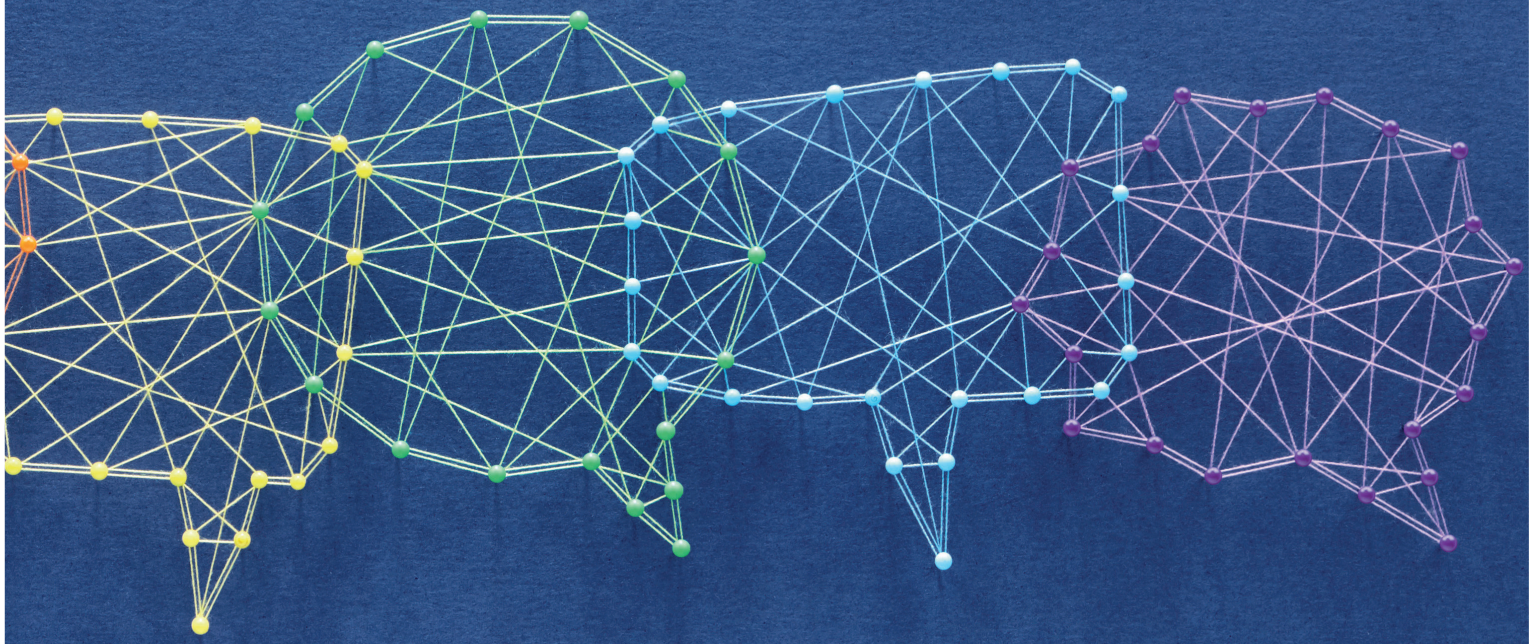
For over 20 years, EUROCONTROL and its partners have pioneered efforts to promote Just Culture at the corporate and judicial levels. Readers of *HindSight* may not be familiar with the various aspects of activity. So, what have we done for you? **Tony Licu**, **Radu Cioponea**, and **Steven Shorrock** explain.

At EUROCONTROL, we are proud of the progress that has been made over the last 20 years in shaping and enhancing the landscape of Just Culture, in aviation and other sectors. Working with our operational and judicial partner organisations and professionals, we cover many aspects of Just Culture, at the corporate and judicial levels. So, what have we collectively done for you? Here are seven areas of focus. They reflect our dedication to fostering Just Culture, promoting safety enhancement and accountability within a fair and trusting ecosystem.

> "The Just Culture Task Force contributes to shaping the regulatory landscape surrounding aviation safety and legal aspects."

1. We facilitate and strengthen the dialogue between safety experts and judicial authorities

A critical activity when it comes to Just Culture is to facilitate and strengthen the dialogue between safety experts and judicial authorities. This is one of the key objectives of the Just Culture Task Force (JCTF), established over a decade ago under the guidance of the Director General of EUROCONTROL. This task force is a platform to address the intersection of safety and legal aspects in the



aviation industry, and other sectors, which have included rail, maritime and healthcare. Chaired jointly by a EUROCONTROL representative and a European Judge, the JCTF brings together a diverse panel of legal and safety experts representing Member States, as well as air traffic management (ATM), air transport associations, and other industries, including railways and healthcare.

This collaboration is essential to strike the right balance between ensuring accountability for safety-related incidents and fostering an environment that encourages reporting and learning from adverse events. To achieve this, the JCTF focuses on the development of policies and practical guidance materials for Just Culture promotion. By formulating proposals for consideration by regulatory bodies as well as ministries of justice across European countries, the Just Culture Task Force contributes to shaping the regulatory landscape surrounding aviation safety and legal aspects.

2. We bring prosecutors and operational experts together to improve mutual understanding

"The Prosecutor-Expert Course bridges the gap between operational expertise and legal proceedings, ultimately contributing to a safer and more just aviation ecosystem."

Prosecutions for aviation-related incidents and accidents are rare. But when they do happen, it is important to maximise mutual understanding when it comes to safety and justice. That is the *raison d'etre* of the *EUROCONTROL Prosecutor-Expert Course*. The course, launched in 2012 and sponsored by EUROCONTROL, is a collaborative initiative with IFATCA (International Federation of Air Traffic Controllers' Associations), and with support from ECA (European Cockpit Association).

The course offers specialised training to professionals engaged in the prosecution of aviation-related incidents. It is designed to equip independent operational experts, nominated by their respective associations, with the knowledge and skills necessary to effectively assist prosecutors when dealing with

aviation incidents. With this assistance, prosecutors can make an informed decision about whether a judicial investigation or criminal prosecution is necessary or not.

The course is held twice a year. To date, controllers and pilots from 36 countries have participated, along with judicial professionals from 23 countries. This includes public prosecutors, legal advisors, judges, and a high court president.

An expert list has now been produced, including pilots and controllers confirmed as prosecution experts based on criteria established by the Just Culture Task Force, IFATCA and ECA.

Additionally, the course strives to create a network of prosecutors and judges who are advocates of Just Culture principles. In doing so, the course helps to ensure that legal actions are well informed and grounded in operational realities. The Prosecutor-Expert Course bridges the gap between operational expertise and legal proceedings, ultimately contributing to a safer and more just aviation ecosystem.

3. We foster wider cooperation and collaboration between aviation stakeholders and the European judiciary

For the continuous improvement of safety and justice, cooperation and collaboration between aviation stakeholders and the judiciary is necessary, facilitating the exchange of perspectives. The *National and Regional Just Culture Roadshows* orchestrated by EUROCONTROL have successfully traversed over a dozen countries, with some nations hosting these events more than once. The core objective of these roadshows is to initiate and stimulate discussions between the aviation and transportation sectors and the judiciary, fostering collaboration and shared insights.

Additionally, the roadshows aim to highlight and promote the *Model for a Transport Prosecution Policy* (see next section), positioning this policy within each country's specific legal framework, particularly in countries where such a policy is not yet in place. The success stories of these roadshows are notable, with instances like Slovenia and Croatia showcasing agreements between the aviation industry and the judiciary.

To augment the impact of these initiatives, we organise *Just Culture Conferences*. These conferences attract large and open participation, drawing crowds of over 150 attendees. The convergence of diverse industry perspectives nurtures a rich environment for knowledge exchange, idea sharing, and collaborative problem-solving.

The Just Culture Conference of 2023 in Vienna marks a revival after a five-year hiatus due to COVID, bringing together experts and stakeholders to deliberate on the principles of just culture across various industries. Co-hosted by EUROCONTROL and Austro Control, this conference took place on the 14th and 15th of September 2023 in Vienna, at the premises of Austro Control. Distinguished speakers from an array of sectors, including aviation, rail, healthcare, and nuclear, as well as the judiciary, contributed their insights to the discourse among over 150 participants.

Further information

Just Culture Guidance Material for Interfacing with the Judicial System: **https://skybrary.aero/sites/default/files/bookshelf/4594.pdf**

4. We develop policy for collaboration between safety investigators and judicial authorities

After an accident or incident within civil aviation or the railways, it is normal for a safety investigation authority to launch a safety investigation. The purpose of this investigation is the improvement of safety with a view to preventing recurrence. A safety investigation does not apportion blame or liability.

The objective of the *Model for a Transport Prosecution Policy* is to provide directions regarding the criminal investigation and prosecution of potential criminal offences resulting from aviation and railway incidents or accidents that come to the attention of prosecutors. This helps to ensure that both the safety investigation and judicial process can progress in parallel without either party acting in a manner prejudicial to the interests of the other.

> "The Model for a Transport Prosecution Policy acknowledges that criminal charges should only be pursued in cases where there is a blatant disregard for safety standards or intentional misconduct."

The model outlines a structured framework for the collaboration between safety investigators and judicial authorities. The model emphasises the importance of safeguarding the confidentiality of accident and incident findings. The objective is to maintain a clear separation between safety investigations and legal proceedings, thereby promoting a balanced approach to addressing transport-related incidents.

Key principles within this model include the limitation of criminal prosecution to instances of "gross negligence" and "wilful misconduct." The Model for a Transport Prosecution Policy acknowledges that criminal charges should only be pursued in cases where there is a blatant disregard for safety standards or intentional misconduct. Where possible under national criminal law, the policy foresees that no prosecution be brought against individuals for actions, omissions or decisions which reflect the conduct of a reasonable person under the same circumstances, even when those actions,

omissions or decisions may have led to an unpremeditated or inadvertent infringement of the law.

The model underscores the principle of maintaining the independence of the National Prosecutor. This recognition ensures that legal decisions are made without undue influence and align with the fair application of justice. By establishing a coherent and balanced framework, the model strives to harmonise the realms of safety investigation and criminal prosecution, cultivating an environment where accountability and learning coexist without compromising the integrity of either process.

"For over a decade, Just Culture has been integral to EUROCONTROL's Safety Culture Programme, applied in over 30 countries."

The directions in this Model Policy largely build on the legal obligations in EU Regulation 996/2010, 376/2014 (aviation), EU Directive 2016/798 (railways) and the International Convention on International Civil Aviation, Chicago 1944 (ICAO Annex 13 and Annex 19).

The EUROCONTROL *Model for a Policy Regarding Criminal Investigation and Prosecution of Aviation and Railway Incidents and Accidents* was unanimously endorsed by the Provisional Council in 2018.

Further information

Model for a policy regarding criminal investigation and prosecution of aviation and railway incidents and accidents: **https://www.eurocontrol.int/sites/default/files/2020-11/eurocontrol-aviation-rail-just-culture-policy.pdf**

5. We undertake surveys to understand perceptions of Just Culture

How do front line and other aviation personnel feel about Just Culture in their organisation? The *Just Culture Survey*, facilitated by EUROCONTROL, offers a comprehensive method for collecting insights within the aviation industry. Accessible online, this survey operates under a confidential framework. It aims to respect participants' privacy while encouraging open and honest responses.

The survey methodology involves gathering input from air traffic controllers (ATCOs), both through online submissions and live interviews. The data are analysed, and the results are presented in a disidentified, aggregated manner.

The outcomes of the survey carry substantial weight, as they directly inform the efforts of the Just Culture Task Force. Through both the survey and interview insights, legal perspectives are incorporated alongside the operational viewpoints. The Just Culture Survey has helped to foster open discourse and enhance understanding, with the goal of further improving the industry's safety standards.

For over a decade, Just Culture has been integral to EUROCONTROL's *Safety Culture Programme*, applied in over 30 countries. Our safety culture questionnaire is scientifically validated and one of the most extensively used in the world. There are several questions on Just Culture, and it is always a topic of conversation in the subsequent workshops, which have resulted in over a thousand hours of discussion. The approach has produced many improvements in air navigation service providers (ANSPs), some suggested internally by ANSP staff, and others learned from other ANSPs, plus good practice derived from research.

Just Culture is also the topic of several of the EUROCONTROL *Safety Culture Discussion Cards*. These are a practical resource to aid real discussion about safety culture by any person or team in any industry sector. The cards use the same concepts as the survey methodology, though everyday language is used to make the cards completely accessible. The Safety Culture Discussion Cards are now available for downloading and printing in Edition 2, in several languages.

Further information

The Future of Safety Culture in European Air Traffic Management - A White Paper: **https://skybrary.aero/bookshelf/future-safety-culture-european-air-traffic-management-white-paper**

Safety Culture Discussion Cards: **https://skybrary.aero/articles/safety-culture-discussion-cards**

6. We provide guidance for dealing with the media

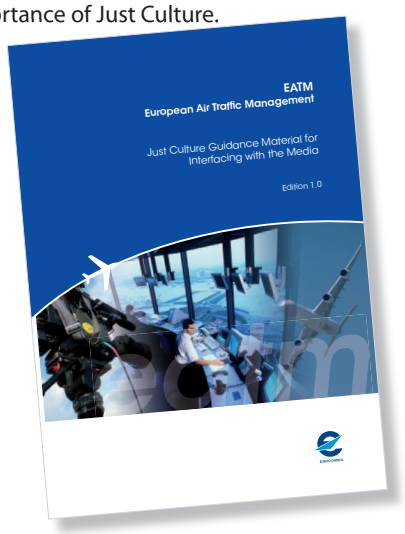
How should professionals in ANSPs and other aviation organisations communicate with the press after aviation incidents and accidents? This was the topic of EUROCONTROL's *Just Culture Guidance Material for Interfacing with the Media*, issued in 2008. The document helps to foster better communication between the aviation industry (particularly ANSPs) and the media.

The need for an effective interface between ANSPs and the media is emphasised, particularly during times of crisis. The guidance emphasises the importance of corporate communication and media relations functions within ANSPs to foster openness, transparency, and trust. It acknowledges the challenges in reporting and explores how to provide accurate, balanced, and credible information to the media. The document highlights the significance of the media's understanding of the fundamental principles of ATM and ANSP operations.

The document underscores the need for the press to grasp the underlying purpose of a Just Culture in encouraging incident reporting and enhancing ATM safety. By explaining the difference between honest mistakes and unacceptable behaviour, and by illustrating good practice, ANSPs can help the media to produce accurate reporting and better public awareness of the importance of Just Culture.

Further information

Just Culture Guidance Material for Interfacing with the Media: **https://skybrary.aero/bookshelf/books/4784.pdf**



7. We publicise and promote Just Culture principles for all

On an everyday basis, Just Culture is most relevant in organisations at the corporate level. Within EUROCONTROL we produced and published our own Just Culture Policy. This was signed by the Director General in 2014, and our internal *Just Culture Committee* overseas the application of the policy.

For a much wider audience, EUROCONTROL developed the *Just Culture Manifesto*. The goals of the manifesto are to:

- articulate a vision of just culture that connects with people from all industrial sectors, around the world;
- speak to people in all roles – front line, support, specialists, management, both in private industry, government organisations and departments, and the justice system; and
- provide a framework for other people to advance this vision of just culture.

"The Just Culture Manifesto distils five commitments that we believe are critical for Just Culture and the need to balance safety and the administration of justice."

The Just Culture Manifesto distils five commitments that we believe are critical for Just Culture and the need to balance safety and the administration of justice.

Then there is Just Culture on SKYbrary. SKYbrary is an electronic repository of safety knowledge related to flight operations, air traffic management (ATM) and aviation safety in general. A wealth of information has been collected over the years, including reports, guidance material, presentations, and webpages.

And finally, Just Culture is, of course, promoted in this issue of HindSight magazine on Just Culture…Revisited, which reaches tens of thousands of operational, safety, management, and even judicial professionals around the globe. Justice and Safety was also the theme of Issue 18. HindSight allows diverse perspectives to be put forward, from the theoretical to the practical. We hope that this issue of HindSight has helped you in your understanding of Just Culture, and to understand some of many initiatives that are ongoing.

Further information

HindSight 18 Justice and Safety: **https://skybrary.aero/articles/hindsight-18**

HindSight 35 Justice Culture Revisited: **https://skybrary.aero/articles/hindsight-35**

Just Culture Manifesto: **https://skybrary.aero/enhancing-safety/just-culture/about-just-culture/just-culture-manifesto** or **https://skybrary.aero/sites/default/files/bookshelf/5880.pdf** (printable PDF version)

EUROCONTROL Just Culture Policy: **https://skybrary.aero/sites/default/files/bookshelf/4775.pdf**

Just Culture SKYbrary page: **https://skybrary.aero/articles/just-culture**

Conclusion

Through these initiatives, the principles and practices of Just Culture have taken shape, in control centres, flight decks, courtrooms, and beyond. We have tried to connect the worlds of safety and justice to encourage a better understanding of the interplay between the two. By facilitating dialogue between different sectors and professions, these efforts show what is possible via collaboration and commitment to improvement. We hope that this influence resonates in the hearts and minds of professionals who work to enhance safety, especially you – the readers of *HindSight*.

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IMPLEMENTING JUST CULTURE IN PRACTICE
THE 'JC 11' METHODOLOGY

Implementing Just Culture is a complex undertaking, requiring safety-critical organisations to go beyond principles. In this article, **Maria Kovacova** shares her experiences as a safety manager in an air navigation service provider, introducing the 'JC 11' methodology: a practical approach to evaluating and implementing Just Culture.

For any aviation organisation, the idea of Just Culture is one thing, but implementation is another. In my former organisation (an air navigation service provider) in the mid-2000s, our internal procedures already incorporated some Just Culture (JC) principles. These were primarily based on ICAO standards, which mainly focused on the investigation process itself. However, we recognised the need to delve deeper into the core principles of Just Culture and how gathering more information could enhance our managerial systems, training programmes, procedure development, and other systems that contribute to the safe and efficient provision of air navigation services.

Organisational Changes and Challenges

Like any ANSP, our organisation experienced changes in both legislation and management. A common challenge in the aviation industry is when new management members lack awareness of safety topics. It is not uncommon to find a new CEO requesting a thirty-minute briefing on Just Culture, which seems like a joke until you realise that it's not. These situations underscore the importance of effective communication and the educational role of the safety managers. They also highlight the importance of leadership and education about topics that are critical to safety.

In parallel with legislative discussions on Just Culture, and the issue of protecting those reporting incidents, the emergence of social media brought a new dimension to aviation occurrence reporting. Even less serious incidents started drawing interest from the judiciary system. Consequently, establishing effective communication channels between the aviation and judiciary worlds became necessary. But this presented us with additional challenges.

"By actively working to modify or influence practices, rules, and relationships within the organisation, stakeholders can contribute to the emergence of a Just Culture."

The JC 11 Methodology: A Comprehensive Approach

As a safety manager, I focused on the internal implementation of Just Culture within our organisation. I found that numerous books addressed the concept and principles of Just Culture. There was even some practical guidance on what kind of language to use, how to protect the reporter, and which information should be available to representatives of justice. But there was a lack of practical guidance to evaluate our existing approach.

To bridge this gap, a questionnaire on Just Culture maturity was developed in collaboration with EUROCONTROL. This questionnaire provided a framework for understanding the key principles of Just Culture, its role in safety culture, and its integration into the safety management system. These insights eventually led to the development of the 11-step JC implementation process.

Step 1. ***Establishment of the Just Culture working group (JCWG):*** Top management creates a dedicated team of experts responsible for implementing, maintaining and improving Just Culture principles within the organisation. This group has to have a positive and proactive approach to JC, occurrence reporting and safety culture.

Step 2. ***Training for the Just Culture working group:*** This involves providing the JCWG with adequate education and training to ensure their credibility within the organisation.

Step 3. ***Presentation of Just Culture within the organisation:*** Presentations or workshops are conducted to introduce the JC concept, its core principles, and its implications for the organisation.

Step 4. ***Preparation of Just Culture policy:*** A Just Culture Policy is drafted collaboratively, involving the JCWG, employee representatives, union representatives, and management representatives. This shows to all employees the commitment of the management to establish a positive JC environment, and gives employees the opportunity to participate and build mutual trust.

Step 5. ***Endorsement of Just Culture policy:*** The Just Culture Policy is approved by the CEO, with endorsement by employees and members of management. The policy is disseminated throughout the organisation.

Step 6. ***First Just Culture survey/assessment:*** An internal survey or assessment is conducted to evaluate the current state of Just Culture within the organisation (including the current reporting system, and protection of safety data).

Step 7. ***Recommendations for implementation and improvement:*** A report is prepared on the organisation's current JC status, defining actions, responsible personnel, and expected deadlines for JC implementation or improvement. The action plan is presented and discussed with unions and employee representatives.

Step 8. ***Regular update of the internal reporting system:*** Regular updates and modifications are made to the occurrence reporting system, along with ongoing analysis and periodic (e.g., annual) engagement with national aviation investigation boards, civil aviation authorities, and prosecutor offices.

Step 9. ***Establishment/definition of the internal procedure for individual behaviour assessment:*** A procedure is defined to help assess individual behaviour, distinguishing between acceptable and unacceptable actions in the case of occurrences.

Step 10. ***Organisation of internal Just Culture workshops – Just Culture elements and procedures:*** Workshops are conducted on Just Culture elements and procedures, helping employees to understand that honest mistakes will not be met with sanctions, while negligence remains intolerable.

Step 11. ***Continuous measurement and improvement:*** Another JC assessment is performed one year after formal implementation, defining findings, and presenting the annual action plan during management safety board meetings to secure resources for important JC activities.

Conclusion

Changing an organisation's culture is a challenging task that takes time. However, by actively working to modify or influence practices, rules, and relationships within the organisation, stakeholders can contribute to the emergence of a Just Culture. The 'JC 11' methodology provides a practical approach to implementing the necessary resources and procedures, and can be used by other organisations to foster a positive Just Culture environment and a commitment to safety in all aspects of operations.

Dr Maria Kovacova is an aviation safety enthusiast contributing to safety areas such as Just Culture, safety management gap analysis and proposals for safety improvements. After her graduation in aviation engineering, she continued her mission to improve safety processes in air navigation services, supporting Just Culture within the Slovak Republic. She has a doctorate in Just Culture from the University of Košice.

WHETHER REPORT?

UNDERSTANDING JUST CULTURE THROUGH SAFETY REPORTING

Improving our understanding from safety reporting is part of the *raison d'etre* of Just Culture, and voluntary reporting has a critical role. Comparing the attitudes and behaviours of pilots, dispatchers, air traffic controllers, and maintenance personnel, **James Norman** finds important differences between the groups, shedding light on the challenges and opportunities ahead.

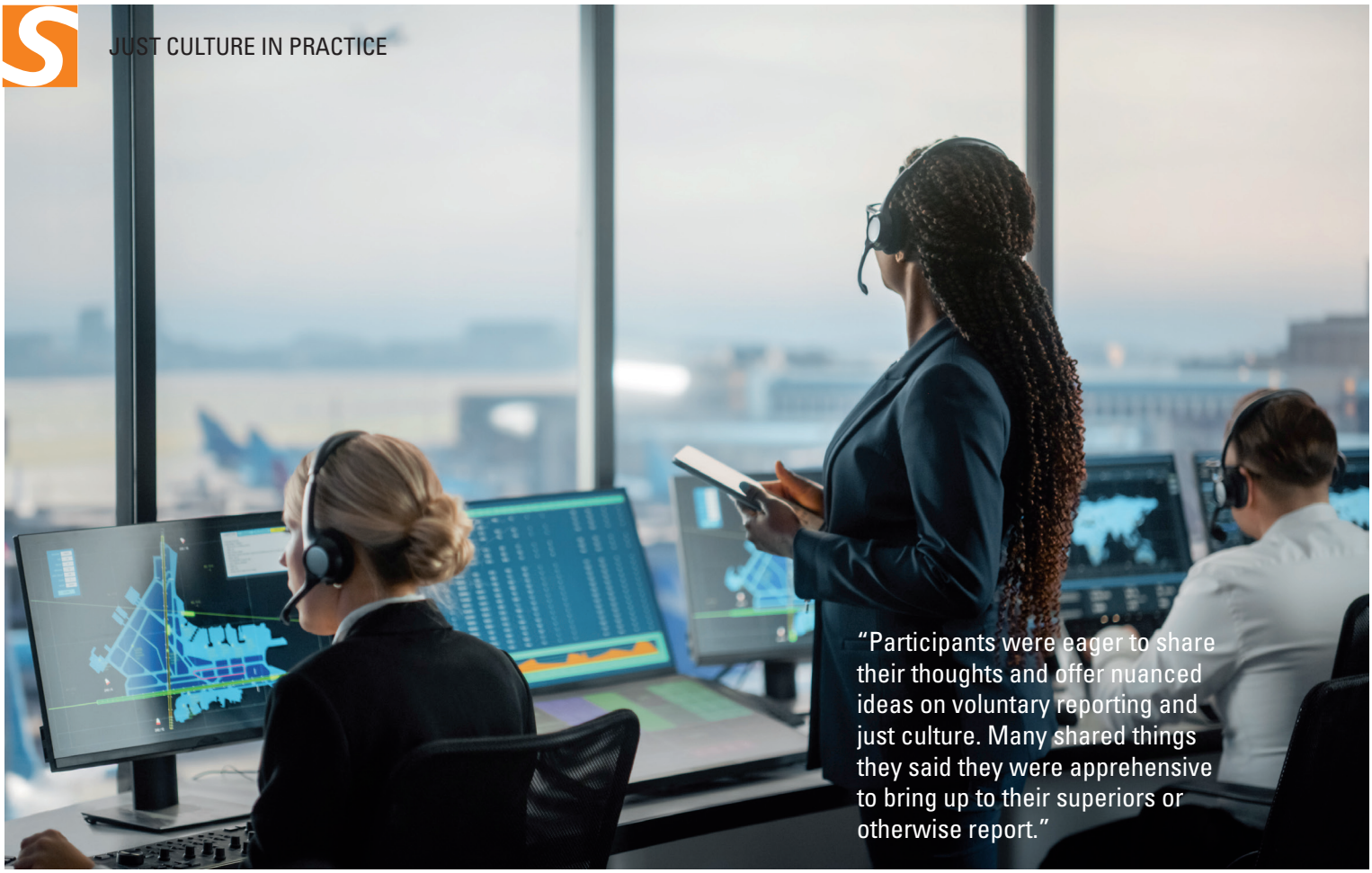
KEY POINTS

- **Voluntary reporting is critical to understand safety hazards and the health of a safety management system.**
- **This study found that principles of Just Culture in the US have not permeated significantly beyond pilots and dispatchers. Maintenance and ATC personnel reported a lack of resources and opportunities for remediation, with reporting programmes often being punitive or perceived as such.**
- **All employee groups expressed frustration over a lack of feedback after reporting, discouraging further reporting. A positive Just Culture mitigates this frustration.**
- **Workarounds, such as conducting independent reviews or accessing additional data, are adopted by employees due to a lack of trust in event review committees and the reporting process.**
- **Maintenance was identified as having a blame culture, attributed to factors such as the "many hands, one signature" credo, economic pressures, time constraints, and outsourcing.**

The *bocche di leone* (lion's mouths) may be the earliest form of voluntary reporting. The repositories were placed around Renaissance-era Venice as a way for citizens to lodge complaints towards local government. As per safety reporting today, they were confidential, not anonymous. This promoted accountability and corrective actions…hopefully not involving the Bridge of Sighs.

We've all experienced it. Something disconcerting happened during your day. Perhaps a bad procedure led to a breakdown in safety margins. Or perhaps you identified a hazard that did not affect you but could affect others. Your organisation has a mandatory reporting program, and its requirements are well understood. But when it comes to voluntary reporting, what encourages you to report, or discourages you from doing so?

I recently finished two years of research towards a dissertation that focused on this topic. Plenty of literature has examined pilots and reporting (the ultimate sharp end). However, research did not look upstream at other employee groups such as dispatchers, air traffic controllers, and maintenance. These groups exercise robust operational control in commercial aviation, but their voices and attitudes are barely studied. In the case of dispatchers, no studies existed prior to mine, which is remarkable given the fact that the Federal



"Participants were eager to share their thoughts and offer nuanced ideas on voluntary reporting and just culture. Many shared things they said they were apprehensive to bring up to their superiors or otherwise report."

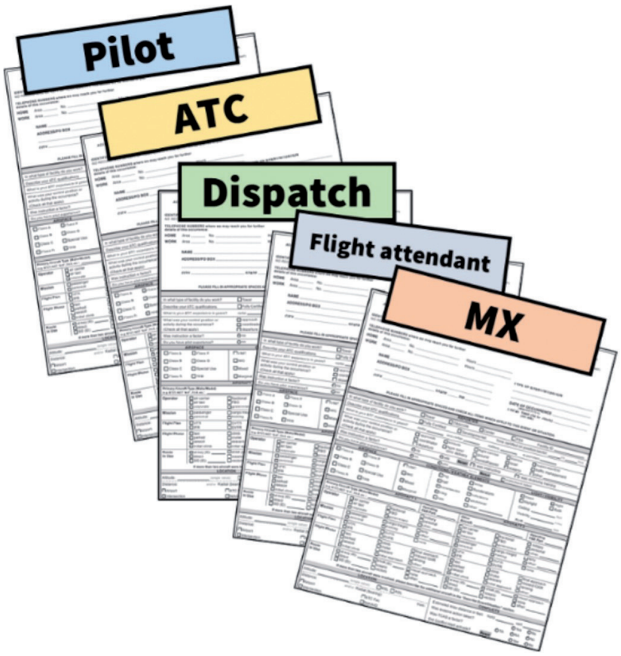
Aviation Administration (FAA) grants dispatchers 50% of operational control of a flight. Regarding maintenance, we understand that a blame culture exists, but its aetiology is unknown.

My study set out to compare four groups (pilots, dispatchers, ATC, maintenance) and explore their attitudes and behaviours towards voluntary reporting, using just culture as a framework.

The Relevance of Reporting

Why voluntary reporting? Why not just rely on mandatory reporting for obtaining safety information? I would argue these points:

- Voluntary reporting rates are a vital metric for the health of your safety management system (SMS) (ICAO, 2018; Stolzer et al., 2023).
- A strong reporting culture likely indicates a strong overall just culture (Kirwan et al., 2018).
- In the ultra-safe industry of commercial aviation, hazard identification and mitigation offers a more robust systemic approach than incident and accident investigation. The best way to identify hazards is through voluntary reporting.
- Single pilot and no-pilot operations, if realised, will abate opportunities for hazard identification by pilots. It is thus even more critical to elevate the importance of frontline reporting, showing the continued need for humans-in-the-loop.
- A robust SMS requires a 360° view of the operation. We currently have safety blind spots due to substantial underreporting beyond pilots. When an event happens, we should receive reports from all relevant parties.
- The inclusivity zeitgeist of today calls for all employee groups to have an equal voice; this may not be the case in aviation safety reporting today.



To illustrate the last point, let's look at last year's submissions to the Aviation Safety and Reporting System (ASRS) (Figure 1). This is the US-based programme that takes in voluntary reports from various employee groups. (Because the FAA treats individual airlines' reporting metrics as protected data, ASRS is the only metric available to gauge the state of voluntary reporting.)

Figure 1: 2022 ASRS Monthly Reporting Average.

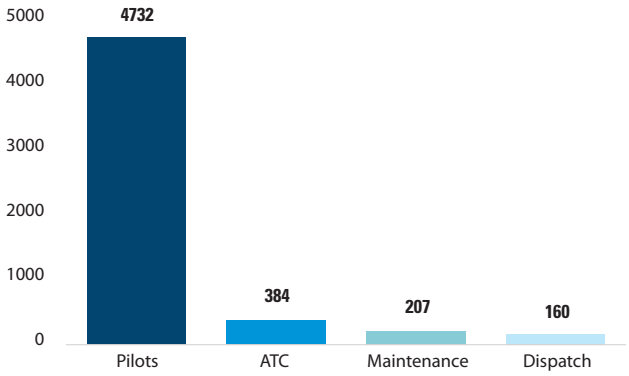


Figure 1 shows that pilots comprise the majority of voluntary safety reporting. These numbers are a count, not a rate. Taking this into account and norming for employee group size, we find underreporting rates to be roughly:

- ATC: ~50% underreporting
- Maintenance: ~96% underreporting
- Dispatch: ~32% underreporting

To try to understand the attitudes and behaviours of the four groups I identified, I designed a mixed methods study. I started with a survey that was open to all US-based employees in commercial aviation. I used statements like *"Our safety reporting system is convenient and easy to use"* and *"I report near-miss events or hazards that could lead to an incident, even when no harm was done."* In total, 32 questions captured five constructs relating to organisational safety values, reporting friction, previous experience, reporting culture, and overall just culture. I received about 400 responses.

The survey was followed up by a series of one-on-one, confidential interviews. Each lasted about an hour. I transcribed the text and used a combination of manual coding and the artificial intelligence of natural language processing (NLP) to validate survey findings, and discover new themes as they emerged from the interviewees. Participants were eager to share their thoughts and offer nuanced ideas on voluntary reporting and just culture. Many shared things they said they were apprehensive to bring up to their superiors or otherwise report.

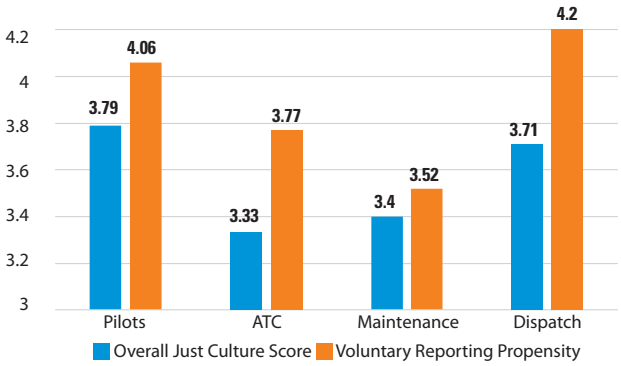
The Findings

While I can't detail all the research findings here, I will bring forth some of the highlights.

First, principles of just culture have largely not permeated beyond pilots and dispatchers. When a safety report is generated by a pilot, for example, a wide range of corrective actions is available, ranging from human factors debriefs to simulator time. Often corrective actions are directed towards the organisation or regulator. However, maintenance and air traffic controllers were near unanimous that their reporting programmes offer scant resources or opportunities for remediation. When it does happen, it's often punitive in nature – or perceived to be.

This finding is especially relevant, as the US ASAP Advisory Circular was updated three years ago to implement just culture principles, including auto-inclusion of reports and deletion of time limits to report (FAA, 2020). It appears that the FAA has some work to do if its vision for just culture for all is to come to fruition. Figure 2 shows just culture perceptions among groups and their propensity to report. Interestingly, ATC shows an increased level of reporting compared to their low scores for just culture.

Figure 2: Just Culture and Reporting Propensity Results.



Second, all employee groups in the study were strongly discouraged by a lack of feedback after they report. The 'black hole effect' creates a sense of dread when reporting. After reporting, interviewees said they had memorised the bot-generated email response they would receive. But Just Culture has a positive mediating effect on this. In other words, if the organisation has a positive Just Culture, the frustration felt by a lack of feedback is largely ameliorated.

> "Principles of just culture have largely not permeated beyond pilots and dispatchers."

Third, employees use workarounds during the reporting process. A fascinating example was an air traffic controller who told me that before submitting a report, he 'pulls the tapes' and reviews the event on his own, because he does not trust the event review committee (ERC) to forward its findings to him afterwards. This practice is also spreading to pilots and dispatchers, who have immediate access to ADS-B data after an event and can ascertain separation or groundspeed. Workarounds are an unfortunate outcome to lack of feedback as well.

Fourth, age is associated with the perception of just culture. Both younger and older employees have less favourable perceptions of just culture than do mid-career aviation employees. This supports previous similar findings. It is possible that younger employees do not understand just culture principles, and perhaps older employees are more jaded.

A final finding to highlight is the continuance of a blame culture in maintenance. This has been well established in the

literature (e.g., Twyman, 2015; Walala, 2016). One maintenance technician told me, *"We are the curmudgeons – the grumpy and grizzled old guys."* My research found that there could be a few contributory factors to this. Maintenance is unique with regard to the "many hands, one signature" credo. Upwards of 30 technicians can work on an aircraft during heavy maintenance, yet one person ultimately attests their name to the airworthiness release. Maintenance workers also experience increased economic pressures and time constraints. It is estimated over 50% of maintenance is outsourced in the US (Quinlan et al., 2013). This may lead to the thought that if the work is not done correctly, it will be taken away. The same cannot be easily said for pilots, controllers, or dispatchers.

Closing Thoughts

During the two years of research, I heard the arguments *"Why should we voluntarily report when our mandatory systems aren't even working correctly?"* Or *"My airline/ANSP gets thousands of reports and can't deal with the volume, so what difference does it make?"* I would offer the following perspective.

The rapid advances in AI and large language modelling (LLM) (e.g., ChatGPT) are likely to assist textual safety reporting analysis in your organisation. I believe that the problems we face in making sense of safety reporting as a labour-intensive act will be lessened as AI supplements the processes. Some airlines in the US have hired data scientists in an earnest effort to infuse their SMS with data science principles. Yet, we will probably always need human sensemaking in safety reporting programmes.

I view too much information as a good problem to have. A sculptor starts with a slab of marble and whittles it away to reveal something meaningful, if not profound, for the audience. The same is true for safety reporting. Our challenge in safety management is to remove the noise to reveal the signal. Like Michelangelo, this is an art, not a science.

To summarise, I found differences in the attitudes and behaviours of pilots, dispatchers, air traffic controllers, and maintenance personnel towards reporting and Just Culture in the US. While pilots and dispatchers benefit from a more supportive reporting environment, maintenance and ATC personnel often face punitive or limited resources for remediation. The findings emphasise the need for a comprehensive and inclusive reporting culture that extends beyond pilots and dispatchers. Additionally, the study highlights the significance of providing timely feedback to reporters and addressing the 'black hole effect' and encourage continued reporting. The research underscores the need to embrace Just Culture principles, improve communication, and foster a sense of trust and accountabilty across all employee groups. While the findings may not be generalisable to your organisation due to cultural or regulatory differences, safety reporting is a crucial data stream for any organisation. Voluntary reporting is essential for the safety of passengers and staff, providing a more comprehensive view of hazards compared to mandatory reporting alone.

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ARTIFICIAL INTELLIGENCE AND THE JUST CULTURE PRINCIPLE

The European Commission has proposed a legal framework on AI. In light of some of the risks and opportunities, **Federico Franchina** highlights the importance of reconciling the use of AI with Just Culture, ensuring clarity on decision-making, standards, training, and liability.

KEY POINTS:

- **The European Commission has proposed harmonised rules on artificial intelligence (AI) to address its potential benefits and competitive advantages.**
- **The proposal highlights the need for transparency, resilience, and human oversight in the design and development of high-risk AI systems, particularly in safety-critical environments.**
- **The use of AI in aviation raises questions about liability and decision-making, requiring a paradigm shift to share responsibility between humans and machines, avoiding placing undue burden solely on human operators.**
- **The introduction of AI challenges traditional tests of intent and causation, and a sliding scale system for liability is suggested to adapt to the unique characteristics of AI and maintain a fair approach.**
- **To uphold the Just Culture principle, it is necessary to consider human behaviour, training, and standards in the context of human-machine relations, ensuring a balanced approach between human oversight and AI capabilities.**

In April 2021, the European Commission laid out a proposal for harmonised rules on artificial intelligence (AI). The draft, yet to be voted on by the European Parliament, aims to address this new technology, which, according to the proposal itself, can *"support socially and environmentally beneficial outcomes and provide key competitive advantages to companies and the European economy."*

AI will be able to achieve these goals by improving prediction, optimising operations and resource allocation, and personalising services.

According to the proposal, AI is defined as software that generates outputs for a given set of human-defined objectives. These outputs can include content, predictions, recommendations, or decisions that have the ability to influence the environments with which they interact.

A Risk-Based Approach

The proposal establishes rules for AI based on a risk-based approach, with specific attention given to systems that serve as safety components of products. The aim is to integrate these rules into the existing sectoral safety legislation to ensure consistency.

Aviation is partially seen as a high-risk environment that is indirectly affected by this EU proposal when AI systems are used or are a part of a "safety component" that fulfils a safety function for a product. The failure or malfunctioning of such systems can endanger the health and safety of individuals or property.

Based on these assumptions, any introduction of AI in the field of aviation should follow some principles laid down by the same proposal. Some of these are of paramount importance for safety.

First, the proposal states that high-risk AI systems shall be designed and developed in such a way to ensure that their operation is sufficiently transparent to enable users to interpret the system's output and use it appropriately.

It also states that high-risk AI systems shall be resilient regarding errors, faults or inconsistencies that may occur within the system or the environment in which the system operates, in particular due to their interaction with natural persons or other systems.

Moreover, it is stated in the proposal that the design and development of AI shall also be made through the lens of human-machine interface tools, as well as the oversight by "natural persons" during its use. Within this provision, human oversight is tasked with the specific goal preventing or minimising the risks to health, safety or fundamental rights that may emerge when a high-risk AI system is used in accordance with its intended purpose or under conditions of reasonably foreseeable misuse.

The Human Role

Along with this, it is required by human oversight to fully understand the capacities and limitations of the AI system and be able to duly monitor its operation in order to detect and address any signs of anomalies and dysfunctions.

For the purposes of the regulatory draft, to paraphrase, measures should "enable the individuals to whom human oversight is assigned to do the following, as appropriate to the circumstances:

(a) be aware of and sufficiently understand the relevant capacities and limitations of the high-risk AI system and be able to duly monitor its operation, so that signs of anomalies, dysfunctions and unexpected performance can be detected and addressed as soon as possible;

(b) remain aware of the possible tendency of automatically relying or over-relying on the output produced by a high-risk AI system ('automation bias'), in particular for high-risk AI systems used to provide information or recommendations for decisions to be taken by natural persons;

(c) be able to correctly interpret the high-risk AI system's output, taking into account in particular the characteristics of the system and the interpretation tools and methods available;

(d) be able to decide, in any particular situation, not to use the high-risk AI system or otherwise disregard, override or reverse the output of the high-risk AI system;

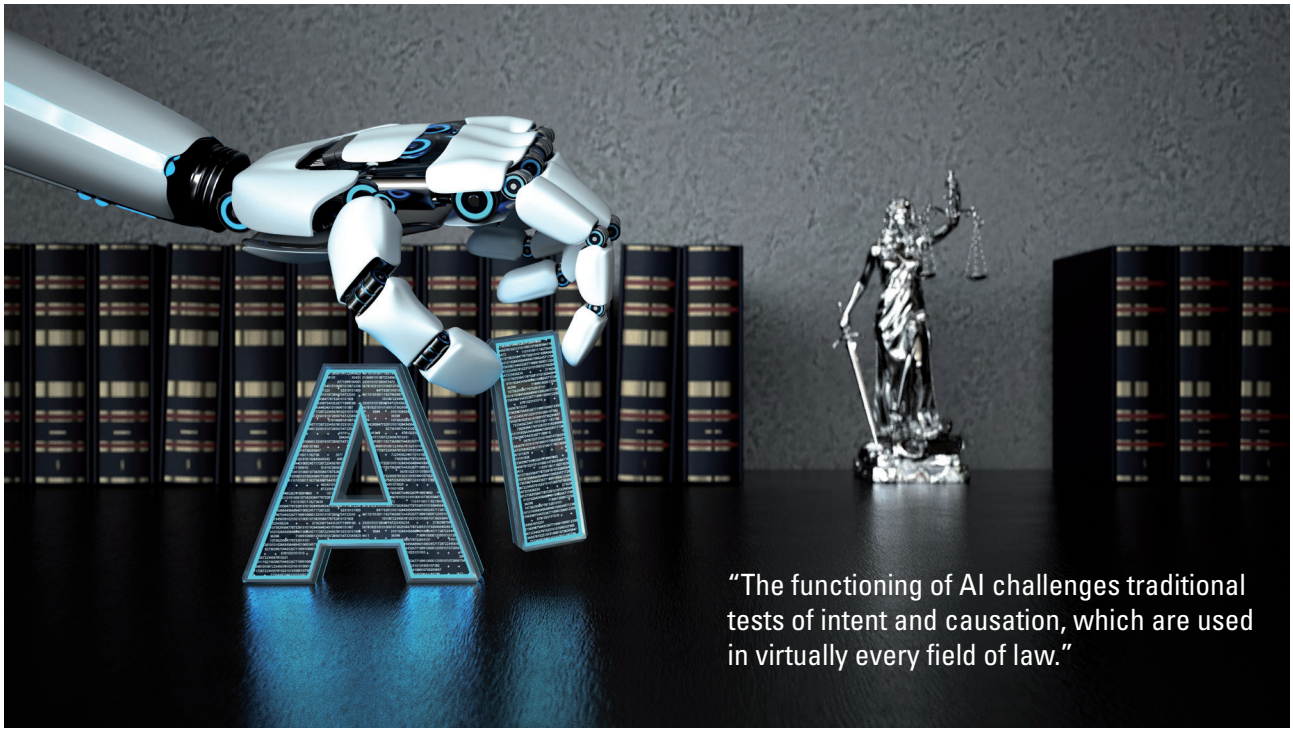
(e) be able to intervene on the operation of the high-risk AI system or interrupt, the system through a "stop" button or a similar procedure that allows the system to come to a halt in a safe state, except if the human interference increases the risks or would negatively impact the performance in consideration of generally acknowledged state-of-the-art."

(On 14 June 2023 the European Parliament approved its position (a) and (e) above, which were originally phrased differently.)

"Rules have been designed with the understanding that operations and activities are performed by humans. However, the proposal on AI regulation seems to shift from a human-centred approach to a human oversight approach."

Human Oversight and Human Liability

Institutional documents and papers on the topic of aviation AI share a common element: a 'human-centred approach'. These include the ICAO (2019) working paper on artificial intelligence and digitalisation in aviation, the European Aviation/ATM AI High Level Group FLY AI report (EUROCONTROL, 2020), the EASA Artificial Intelligence Roadmap (2020), and the SESAR European ATM Masterplan (SESAR Joint Undertaking, 2020). Rules have been designed with the understanding that operations and activities are performed by humans.



"The functioning of AI challenges traditional tests of intent and causation, which are used in virtually every field of law."

However, the proposal on AI regulation seems to shift from a human-centred approach to a human oversight approach. This raises different questions.

The introduction of AI in the aviation environment could involve several actors, including physical persons, air carriers, air navigation service providers (ANSPs), states, and manufacturers. Existing regulations, such as ICAO Annex 11 (also Doc 9426 and Doc 4444) and the EU SES package (Reg. 1139/2018), and certification and personnel licensing regulations, already consider the perspective of air traffic controllers (ATCOs).

From the perspective of liability, the use of AI in aviation (as well as in other sectors) involves various types of liabilities, including criminal, civil (contractual and extra-contractual), state/administrative, product, organisational, and vicarious liabilities.

The 'Black Box Problem'

The proposed framework and definition of AI, as well as the responsibilities placed on humans (in terms of oversight and 'duty of care'), should be understood in the context of AI's functioning through neural networks that break problems down into millions or even billions of pieces and solve them step by step in a linear fashion. We do not know exactly what the algorithm is doing or what methods it is using. This has been referred to as the 'black box problem' because AI can seem like a black box with no visibility into its inner workings.

"AI can seem like a black box with no visibility into its inner workings."

The human decides on the inputs and objectives, and allows the AI to work (in a 'black box' manner), but must oversee its functioning and interrupt the process if necessary. However, ethical questions arise in retrospect: on what basis did the human decide to interrupt the process? Does AI establish a standard or benchmark for evaluating human actions? Two situations can occur:

1. AI suggests a correct action, but the ATCO does not follow the suggestion, leading to an occurrence:

- Is the ATCO liable for breaching the duty of professional negligence?
- On what basis does AI suggest a 'correct action'? Does it follow a different standard or benchmark than the one followed by the ATCO?
- Does the ATCO have a duty to follow AI's suggestions?
- Can AI suggestions be used as evidence?

2. AI suggests a wrong action, and the ATCO follows the suggestion, leading to an occurrence:

- Is the ATCO liable for breaching the duty of professional negligence?
- Does the ATCO have an appropriate mental model about how AI will function?

Human-Machine Interaction

To reconcile this framework and address these questions while upholding the Just Culture principle, it is important to look at human behaviour and training in the context of human-machine relations. We need to clarify who will make decisions,

when and why they will be made, and based on which standards and training.

This is especially important in situations where there is a hybrid mode with significant interactions between humans and machines. The aim should be to reduce overconfidence in the machine and other unintended consequences.

"With the introduction of AI, we may have to deal with machines that can make mistakes. It would be unfair, wrong, and even unethical to place all the responsibility solely on humans and their oversight duty."

As automation is introduced and tasks and responsibilities are increasingly delegated to technology, liability for damages is expected to shift from human operators to the organisations responsible for designing, developing, deploying, integrating, and maintaining the technology. However, the functioning of AI challenges traditional tests of intent and causation, which are used in virtually every field of law. These kinds of tests, which assess what is foreseeable and the basis for decisions, could be ineffective when applied to black-box AI.

The solution to this problem should not be strict liability or a regulatory framework with specific transparency standards for AI. Instead, a flexible system could lead to a more suitable approach as it adapts the current regime of causation and intent tests. In this sense, it impacts the requirements for liability for those situations when AI operates autonomously or lacks transparency. On the other hand, it maintains traditional intent and causation tests when humans supervise AI or when AI is transparent.

Just Culture and AI

So far, our approach to machines has been guided by a simple principle: we know the inputs, we understand how they work, and we know the expected outputs. This has led to a focus on human considerations regarding mistakes, negligence, and faults.

With the introduction of AI, we may have to deal with machines that can make mistakes. It would be unfair, wrong, and even unethical to place all the responsibility solely on humans and their oversight duty.

This paradigm shift is important not only in retrospect, ex post, when allocating liability or conducting safety evaluations, but also in advance, ex ante, when prevention and precautionary measures need to be applied. This approach contributes to reinforcing the 'Just Culture' principle, which should not be amended but should consider the involvement of AI as a player in the playbook.

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JUST CULTURE AND ARTIFICIAL INTELLIGENCE

DO WE NEED TO EXPAND THE JUST CULTURE PLAYBOOK?

Embracing the digital era in air traffic management brings forth the integration of artificial intelligence and machine learning. As these technologies spread throughout the industry, questions arise regarding compatibility with the principles of Just Culture. **Marc Baumgartner** and **Stathis Malakis** explore the need to revise the Just Culture playbook.

KEY POINTS:

- **Digital transformation and adaptability are crucial for organisations, including air navigation service providers, to thrive in the digital economy.**
- **Artificial intelligence and machine learning (AI/ML) technologies have the advantages of rapid pattern identification, real-time decision support, and finding the best combination of settings or values for multiple variables to solve a problem or achieve a desired outcome.**
- **The integration of AI/ML poses challenges for Just Culture, as decision-making processes are often seen as a 'black box'.**
- **Concerns regarding Just Culture in the AI/ML era include considering redefining the line between negligence and honest mistakes and the need to provide formal training on AI/ML to air traffic controllers to raise their awareness.**

As the air traffic management (ATM) system rapidly transitions towards the vision of a Digital European Sky, the integration of artificial intelligence and machine learning (AI/ML) has become a key enabler. This integration raises the question of whether we need to expand the Just Culture playbook. In this article, we will explore two layers of concerns that prompt the expanding of the Just Culture playbook.

Black Boxes

Not long ago, computers were perceived as infallible machines that processed numerical inputs into accurate outputs. Today, digital machines, ranging from smartphones and tablets to personal computers and data warehouses, are handling humanlike tasks that go beyond basic number crunching. These tasks involve higher cognitive processes such as information analysis, pattern recognition, predictive insights, and decision-making using AI/ML.

The main advantages of AI/ML are:

a) rapid identification of patterns in complex real-world data that humans and conventional computer assisted analyses struggle to identify,
b) real-time support in decision-making, and
c) finding the best combination of settings or values for multiple variables to solve a problem or achieve a desired outcome.

To cope with events such as pandemics, political unrest, military conflicts and climate change, the future depends on adaptation. To survive and thrive, organisations must embrace changes to generate new strategic possibilities. This means creating an adaptable organisation that can thrive in the digital economy. An adaptive organisation in the 21st century is typically digitally powered, leading many organisations to pursue so-called digital transformation. This also applies to air navigation service providers (ANSPs).

Current ATM infrastructure is already data intensive and, in the years to come this is expected to increase. AI and ML are seen as crucial enablers for overcoming current limitations and meeting the changing and uncertain demands of normal operations, disruptions, and crises. It is envisioned that ATM practitioners will be able to design and eventually operate a system that is smarter and safer, by constantly analysing, gaining insights, and learning from all aspects of the ATM ecosystem by utilising AI/ML, deep learning algorithms and big data analytics. As the volume, velocity and variety of data intensify, AI and ML have the potential to offload work once tasked to humans onto computers, lessening the cognitive load for controllers.

"Consider an air traffic controller in the operations room who receives a peculiar suggestion from an AI/ML digital assistant that employs neural networks. If something goes wrong, who is to blame?"

New and emerging AI/ML capabilities are recommended for the future ATM and U-space environment to provide the necessary levels of performance beyond current limits. Full-scale implementation of ATM virtualisation will allow the complete decoupling of ATM service provision from the physical location of the personnel and equipment. Full-scale virtualisation also entails negative aspects, for instance loss of human contact. This heavily relies on digitalisation and state-of-the-art AI/ML algorithms.

Just Culture

Safety science and safety management will need to evolve to cope with the safety challenges posed by the introduction of AI/ML. ATM safety is based on relevant safety information flowing through the 'information veins' of the aviation system. Just Culture encourages front-line operators to share safety information by reporting incidents and other safety-related issues, with a commitment from the organisation to act upon the shared information to improve safety.

Formally, Just Culture is defined in EU regulation as follows: *"'just culture' means a culture in which front-line operators or other persons are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but in which gross negligence, wilful violations and destructive acts are not tolerated."* Before proceeding, it is stressed that *"gross negligence", "wilful violations"* and *"destructive acts"* are regulatory terms, not human factors terms.

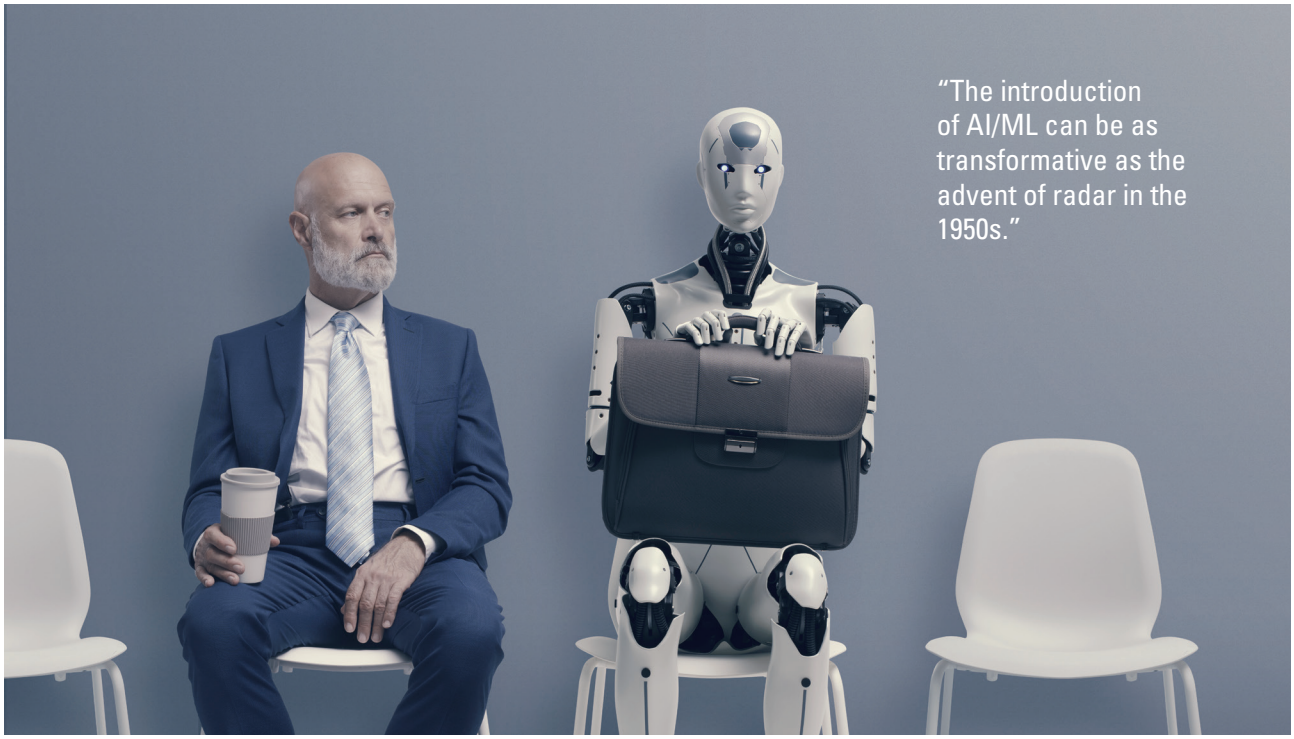
The concept of Just Culture addresses the mutual recognition of two key functions: aviation safety and the administration of justice. It represents the understanding that both domains benefit from a carefully established equilibrium, moving away from fears of criminalisation and balancing the interests of these two unique and very different domains.

Black Boxes and Just Cultures

Maintaining the equilibrium of Just Culture is based upon a) the notions of acceptable and unacceptable behaviours and b) the concept of the "honest mistake". State-of-the-art AI/ML systems, such as neural networks, are essentially "black boxes" in terms of explainability. Although they provide accurate predictions based on historical data, the reasoning behind their outputs remains incomprehensible. So, consider an air traffic controller in the operations room who receives a peculiar suggestion from an AI/ML digital assistant that employs neural networks. If something goes wrong, who is to blame?

Automation refers to the use of technology to perform tasks that were previously done by humans. This can include simple, repetitive tasks like data entry, as well as more complex processes. Automation typically involves the use of pre-programmed rules or algorithms to guide the technology's behaviour. AI/ML, on the other hand, involves the use of algorithms and statistical models to enable machines to learn from data and make predictions or decisions based on that learning. This can include tasks like image recognition, natural language processing, and predictive analytics. Unlike traditional automation, AI/ML systems are designed to learn and adapt over time, allowing them to make more accurate and nuanced decisions as they gain more experience. Therefore, the key differentiating characteristic between automation and AI/ML is learning. AI/ML algorithms learn and change behaviour with time and context given new data while automation is more static.

This represents the first level of concerns we face regarding Just Culture in the AI/ML era. The second level of concerns relates to the training of air traffic controllers. The definition of Just Culture emphasises that actions, omissions, or decisions taken by air traffic controllers should be commensurate with their experience and training. However, air traffic controllers do not currently receive formal training on AI/ML and its state-of-the-art algorithms, such as Neural Networks, and their limitations. Should we provide training to controllers on AI/ML, and to what extent? Should they understand terms such as bias-variance trade-offs, explainability issues, data validation, feature engineering, hyper-parameter selection,



overfitting, limitations of data-driven models, and other aspects of AI/ML before being provided with digital assistants in the operations room? The chances are that most of us would need ample training and education to understand these terms. The burden of responsibility gravitates towards the organisation to provide sufficient and appropriate training to air traffic controllers. If they are not well trained it will be hard to blame them for actions, omissions or decisions arising from AI/ML situations (because then you can argue that those are perfectly commensurate with their experience and training).

"Air traffic controllers do not currently receive formal training on AI/ML and its state-of-the-art algorithms."

These concerns present difficult questions for which we do not have definitive answers in the current Just Culture playbook. The introduction of AI/ML can be as transformative as the advent of radar in the 1950s. While we may not know the full extent of this transformation yet, we must guide it in the right direction. Organisations will have to be assured that no negligence causes a serious incident or accident. And it is not only the pilots and ATCOs, but also the engineers, testers, safety and quality professionals, air traffic safety electronics personnel (ATSEPs), etc. It seems that the 'black box' is an organisational responsibility. Is it necessary to change our understanding of Just Culture in response to these changes? We tend to believe that the answer is yes. We will need to consider redefining just culture and expand its playbook in the era of digitalisation.

Just culture was designed as a tool to acknowledge and account for the fallibilities in human decision-making and judgement in light of adverse events. AI/ML, by design, take none of these elements into account. If we are to implement AI/ML into air traffic control, significant efforts will need to be made to bridge the gap between the inevitable capabilities and performance of people and computers.

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RECONCILING CRIMINAL LAW ENFORCEMENT WITH JUST CULTURE

The Netherlands is often held up as a beacon of good practice when it comes to Just Culture in the judiciary. **Katja van Bijsterveldt** and **Aco Verhaegh** describe how Just Culture features in Dutch prosecution aviation cases.

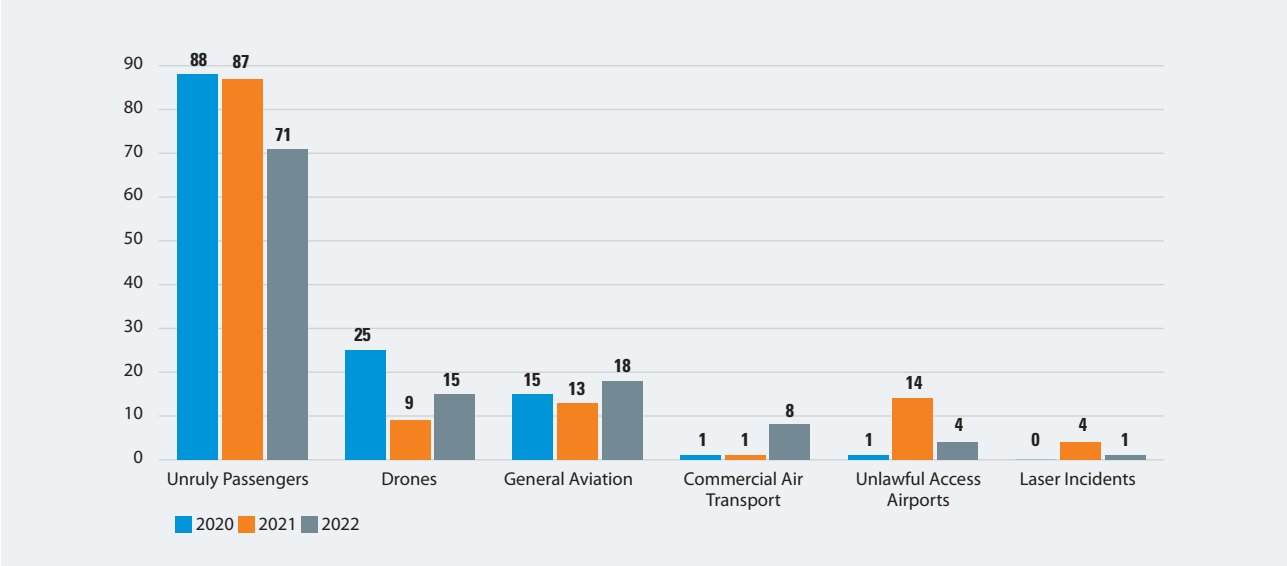
"Being a suspect is not compatible with Just Culture!" This remark came from a member of the audience following the presentation by the Dutch aviation police at a safety meeting at the airport in Breda in March 2023. This was not the first time we observed that the remit and actions of the police and the Public Prosecution Service (PPS) are unclear. We understand the confusion and aim to clarify. It was for this reason that we previously launched a roadshow at the 'Aviation safety network day', organised by the Ministry of Infrastructure and Water Management in September 2022.

During the meeting in Breda, our presentation elaborated on a presentation by the aviation police. In the process, the tension between criminal investigation and Just Culture was discussed extensively. After this, understanding seemed to improve. In this article, we hope to explain further how Just Culture features in Dutch prosecution aviation cases.

Criminal Investigation and Prosecution in The Netherlands

The PPS covers all Dutch criminal investigations relating to civil aviation with one national coordinating aviation public prosecutor. As well as investigations concerning manned aviation, which we address in this article, these include investigations into drone violations, laser incidents, unlawful access to airports, and unruly passengers (see Figure 1). The aviation prosecutor is involved from the outset and may order the aviation police to start a criminal investigation. These experienced police officers know about aviation legislation and regulations, have personal experience flying aircraft, and are trained to investigate aviation accidents. They follow the same training programme as that of the Dutch Safety Board investigators.

Figure 1: General overview of civil aviation cases registered by the PPS



The reasons for a criminal investigation are not always well understood. First, a prosecutor has a legal obligation to start a criminal investigation on becoming aware of a criminal offence (whether it is a misdemeanour or felony). Second, a concerned party may provide the impetus by filing a report or an alert to the police or the PPS, which raises a reasonable suspicion of culpability that a criminal offence had been committed (the threshold for a criminal investigation). Furthermore, such a suspicion can also arise from findings during a routine inspection of the aviation police. In exceptional cases, an occurrence report, filed pursuant to Regulation 376/2014, may instigate an investigation. This follows from the advanced administrative arrangements between the Civil Aviation Authority (CAA) and the PPS (see more about that in the text box below).

"The reasons for a criminal investigation are not always well understood."

The PPS does not have access to these occurrence reports. The Analysis Bureau of Aviation Occurrences (ABL) of the Dutch CAA – the reporting centre in The Netherlands – is designated as the gatekeeper. Whenever the ABL sees cause to suspect intent or gross negligence in a report, the ABL communicates this to the aviation prosecutor, so that the cause of suspicion can be investigated. This agreement has been made with a view to striking a fair balance between the need for proper administration of justice, on the one hand, and the necessary permanent availability of safety information on the other. Regular consultations are held between the ABL and the PPS for coordinating the application of the selection criteria. This happens together with representatives from the sector to enhance mutual understanding and trust. See 3.1 of the Instruction with regard to criminal investigation and prosecution of civil aviation occurrences (hereafter also referred to as the Instruction) in SKYbrary: https://www.skybrary.aero/sites/default/files/bookshelf/5855.pdf.

The aviation prosecutor sets the priorities and leads the investigation. This investigation is aimed at ascertaining the truth about a suspicion of criminal offence(s), which can be committed by persons or legal entities. This focus is not present in a safety investigation of an accident or serious incident by the Dutch Safety Board, which can take place in parallel with the criminal investigation. This safety investigation is also aimed at truth finding, but not in the context of possible blame or liability. There can be misunderstanding that a criminal investigation is limited because of its context. A criminal investigation goes as far as necessary to obtain a clear impression of the event, in the interest of taking a sound decision. Especially when it comes to the attribution of consequences, an in-depth investigation can take place. It is generally viewed as a burden, but also serves the interest of a suspect. The investigation may place the event in a different light from that which may initially have existed. If nothing or very little may be blamed on the suspect, this needs to be explained to possible victims and surviving relatives. They also have a strong interest in the most extensive but expeditious investigation possible into what happened, especially to come to terms with a severe incident.

"The Public Prosecution Service has adopted a very reticent prosecution policy concerning the behaviour of so-called major parties in commercial air transport, such as airlines and air traffic control, and their employees."

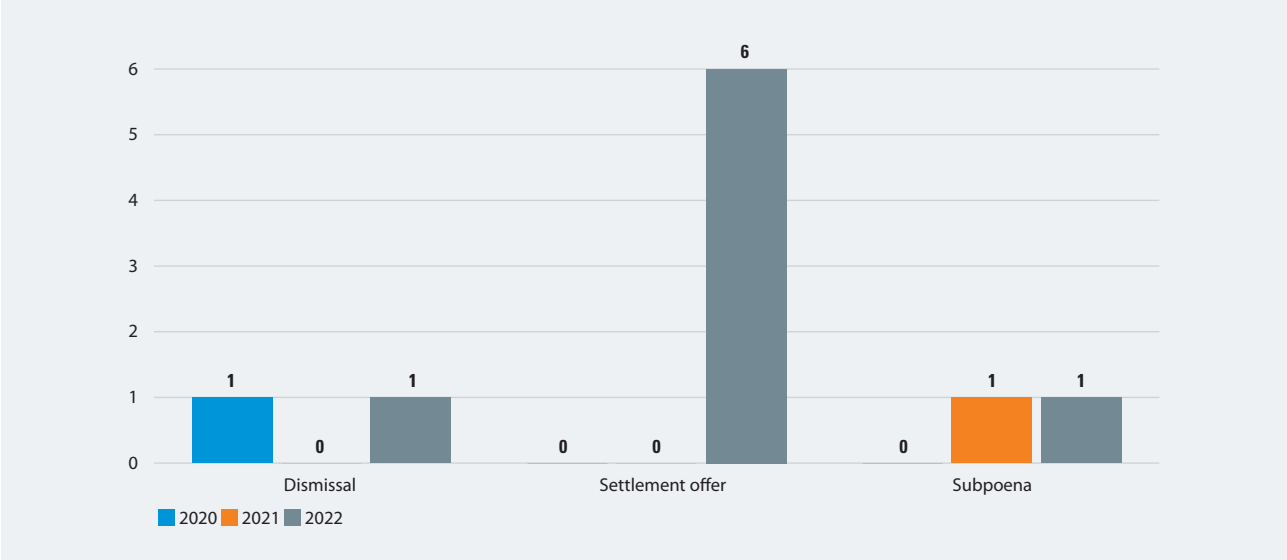
Like any other public prosecutor in the Netherlands, the aviation prosecutor has discretionary powers. This means that the prosecutor determines whether or not prosecution is appropriate after the criminal investigation has been concluded. In doing so, public prosecutors consider the general interest. This is a term for factors such as the seriousness of the offence, the interest of (flight) safety, personal circumstances of the suspect, and the resources of the judicial system. Based on those factors, an assessment is made as to whether prosecution may serve society as a whole. During presentations, we therefore stress that a criminal investigation does not have to lead to prosecution. All facts and circumstances, and the context of the occurrence, are considered in the ultimate decision. Although a suspect always has the right to remain silent, this person's account has proven especially important in decisions in aviation cases.

Criminal Cases in Commercial Air Transport

The PPS has adopted a very reticent prosecution policy concerning the behaviour of so-called major parties in commercial air transport, such as airlines and air traffic control, and their employees. Prosecution takes place only in the event of an accident, serious incident or endangerment, or persistent violations, caused by intent or gross negligence (see 4.1 of the Instruction). This policy derives from general trust of the PPS in the professionalism of persons and organisations in major commercial air transport. Organisations have a comprehensive safety management system to curtail risks as much as possible. In addition, the air traffic control organisation in the Netherlands (LVNL) notifies the PPS in the case of accidents and serious incidents. If LVNL is involved, the conclusions and recommendations resulting from their internal investigation are also shared with the PPS.

This policy is reflected in the practice of criminal law. Consumption of alcohol by pilots and crew are the main factor in criminal cases in major commercial air transport. Such conduct is punished (see Figure 2). When a worrisome trend is observed, we will also take other action. For example, the PPS and the aviation police have called a meeting with a foreign airline because its crew was relatively often found to be under the influence of alcohol during alcohol inspections. In several cases, the inspection was prompted by remarks from co-workers about excessive drinking. Such

Figure 2: Major Commercial Air Transport case outcomes



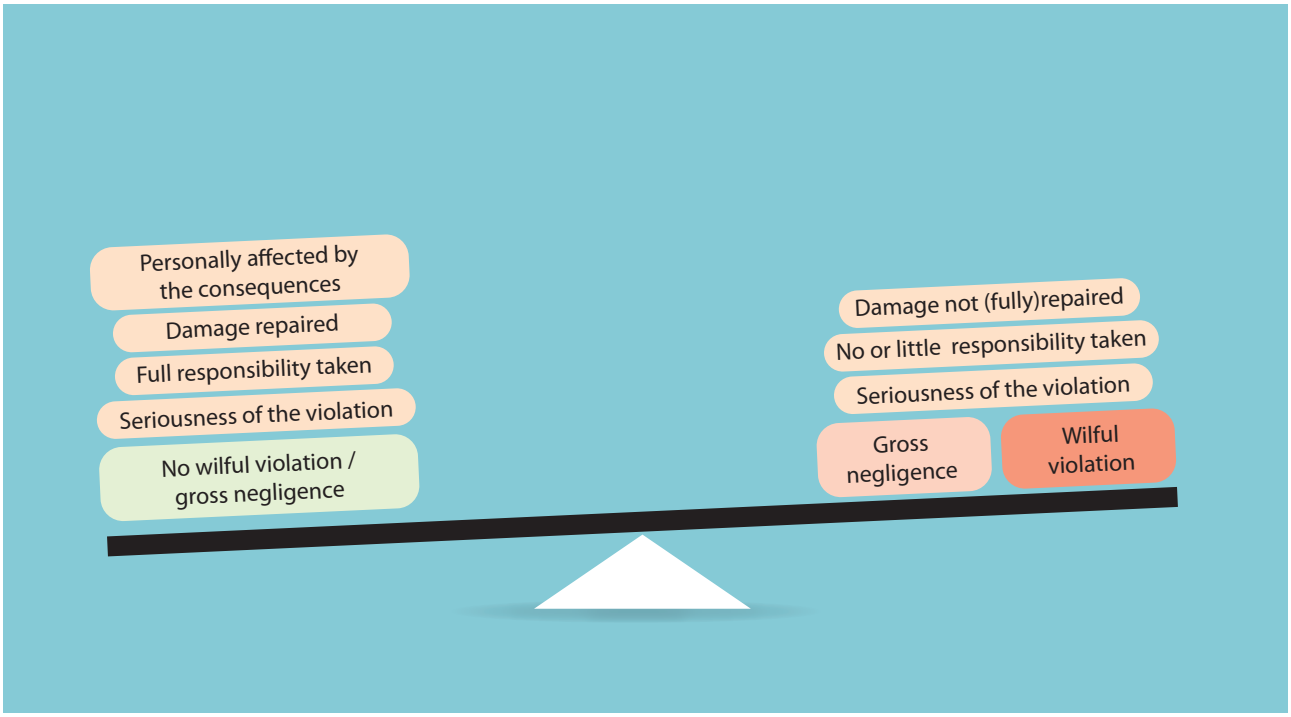
a notification of the aviation police reveals that safety is paramount: *"No aircraft takes off if crew members are under the influence of alcohol."* We wanted to work with the airline to see how we could influence conduct. This does not alter the fact that alcohol infractions will be punished, but we do strive to prevent those infractions.

Criminal Cases in General Aviation

In general aviation, a different perspective applies. In this combination of persons and organisations, safety management is less comprehensive than in major commercial air transport. These operations range from small commercial organisations to private pilots, and from motorised aircraft to glider planes and paramotors. Here too, Just Culture needs to be promoted, but through a different approach. The policy of the PPS stresses protection of the occurrence report (see 4.2 of the Instruction). During the investigation, aspects of Just Culture are also considered so that they can be taken into account (see Figure 3).

The case of a near mid-air collision reveals how circumstances may change the assessment. The way the (accused) captain performed a flyby qualified as grossly negligent. Sentencing was therefore indicated, especially because the pilot had shown no concern for the victim. We found that remarkable,

Figure 3: Illustration balancing factors in civil aviation cases



because the pilot was aware of his culpability. We therefore urged the two to engage in a conversation, and this defused escalation of the event. This example offers important lessons for many people: report the occurrence yourself, learn from it, and show concern for others who are involved. This gave rise to the idea of a safety meeting as a path toward settlement: share your lessons learned at the aero club. This pilot remedied the insecurity and negative sentiment of the victim. For him, the issue was settled 'among pilots'. Taking responsibility meant that sentencing was unnecessary.

A criminal investigation may be significant in other ways. In the Summer of 2022, we received two reports from the ABL about a disconcerting flight conduct by a 77-year-old pilot. The first report concerned a near miss over a year earlier: the pilot had taken off from the taxiway with two passengers and barely made it over an aircraft with 11 persons on board. The second report mentioned a recent dangerous landing. In the first report, the ABL saw no cause to suspect gross negligence, and PPS was therefore not notified, although the report showed an urgent need for action and the CAA saw no opportunities to intervene. Only after the second report did the ABL see cause for suspicion. Our investigation revealed convincing evidence of a violation regarding the near miss, not regarding the dangerous landing. At first, the pilot did not understand the concerns about his flight conduct. As we did not expect a fine to be effective, we explored ways to alleviate the concerns. We considered the option of voluntarily being examined by an examiner to be designated by the CAA. However, after conferring with his lawyer, the pilot reached a different conclusion: he decided that the time had come to stop flying. We presented him with the option of being examined, but when he reported that he had turned in his pilot's licence, the case was dismissed.

In a case involving a collision between two paramotors we convinced a pilot to pay for the damage he caused. He told us during the hearing that he wanted a decision by an independent authority before agreeing to pay for the damage. In a letter, we described the outcome of the investigation and informed him that he should consider the victim, despite the impact of the incident on him personally. The relationship with the victim needed to be restored, starting with compensation for the damage (nearly three thousand euros). We expressed the intention to waive prosecution if he paid the damages, which he did.

In some cases, the PPS considers sentencing to be the appropriate course of action. The clearest example concerns a pilot who refused to be held accountable for his flight path on approach. He responded that the airport operations manager should contact the aviation police, if the manager thought there was a problem (which he promptly did). His demeanour ultimately led the PPS, in addition to imposing a 1,000-euro fine, to issue a suspended disqualification from flying. This emphasised the Just Culture standard, which allows for honest mistakes, but draws a line at gross negligence and according to the PPS implies that the person involved takes responsibility himself by entering into a conversation about the occurrence and trying to learn from it. The court upheld that standard as well, but did so differently, by issuing 2,000-euro fine, of which 1,000 euros was suspended.

Figure 4: General Aviation case outcomes

Sentencing may also be indicated to confirm a rule of the air, if somebody was unaware of it or did not acknowledge it. The same holds true, when, after a previous warning, somebody repeats such conduct.

Concluding Remarks

In the Netherlands, Just Culture is taken into account in criminal justice. The PPS does not sentence every mistake. The narrative of the person concerned and the context are important, and may receive consideration if brought to light by the investigation. We cannot stress that enough. By interacting with other aviation authorities and stakeholders, mutual understanding is enhanced, and that is of great value in assessing future cases.

Further Reading

In his article 'Justice and Safety' in *HindSight* 18, Fred Bijlsma, the aviation public prosecutor at the time, described prosecution as part of the Just Culture equation in Dutch aviation cases. See https://skybrary.aero/sites/default/files/bookshelf/2576.pdf

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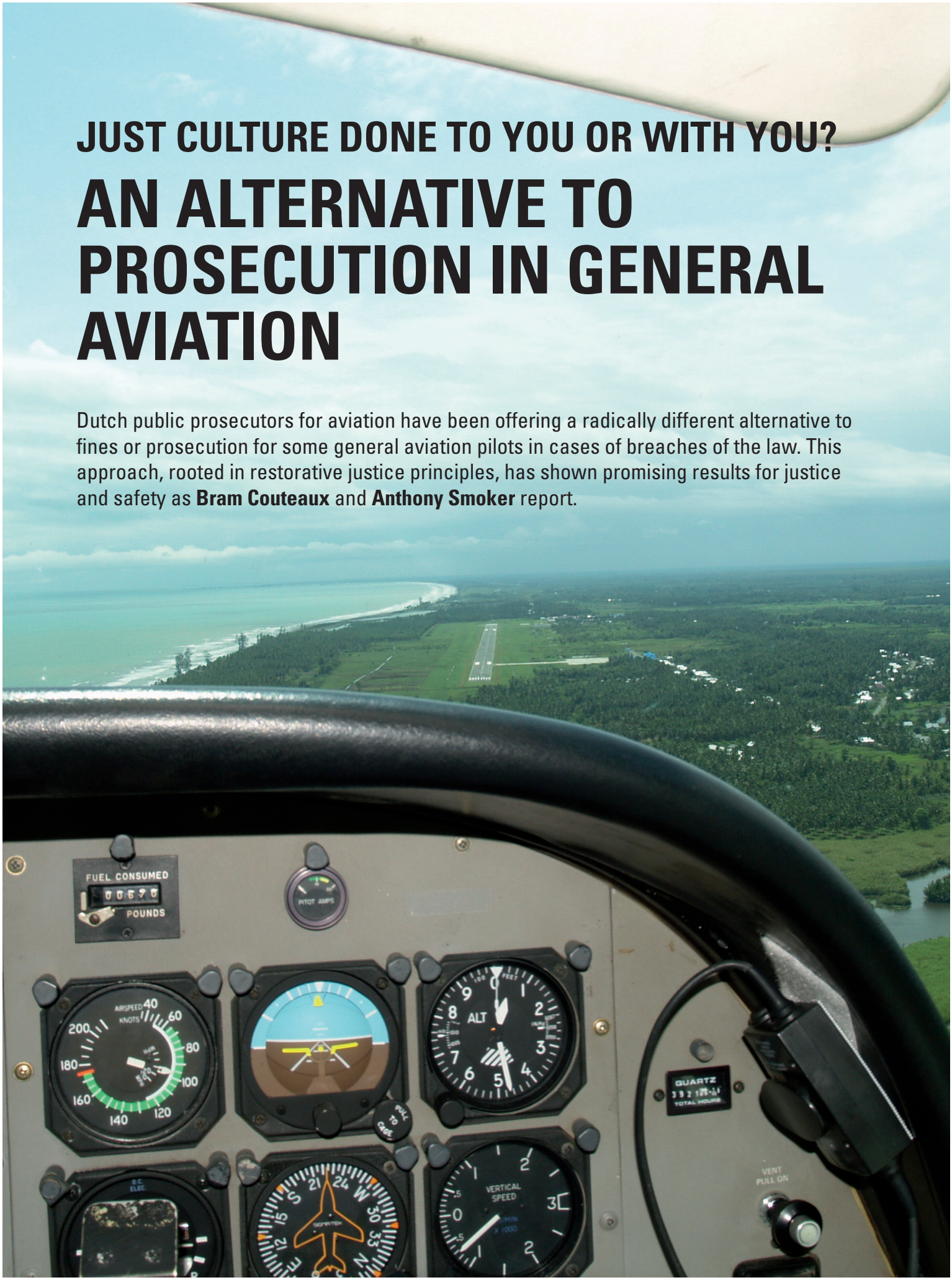
JUST CULTURE DONE TO YOU OR WITH YOU?

AN ALTERNATIVE TO PROSECUTION IN GENERAL AVIATION

Dutch public prosecutors for aviation have been offering a radically different alternative to fines or prosecution for some general aviation pilots in cases of breaches of the law. This approach, rooted in restorative justice principles, has shown promising results for justice and safety as **Bram Couteaux** and **Anthony Smoker** report.



KEY POINTS

- **In recent years, the Dutch public prosecutor for aviation began to offer some general aviation pilots suspected of having committed an offence an alternative to a fine or prosecution. The alternative took the form of the pilot involved giving a presentation about their experience, followed by an open discussion with the pilot audience in a plenary session.**
- **The experiences of the pilots and prosecutors involved indicate that such an approach can be experienced as more 'just' and yield more opportunities for safety improvement, compared to orthodox approaches.**
- **Studying this approach revealed that when the public prosecutor incentivises a pilot to take responsibility for their actions, as opposed to handing out traditional punishment, it can invoke repentance, possibly leading to forgiveness. This facilitates healing the hurt caused by an occurrence to both victims and those held accountable.**
- **The pilots' experiences reveal how being treated respectfully by the public prosecutor, with understanding and compassion, was paramount to the success of these judicial proceedings, which ended with the cases being dismissed.**

A Narrowly Avoided Collision in the Circuit

In the summer of 2019, an aircraft made a straight-in approach to perform a low pass over the runway at an uncontrolled airfield in the Netherlands while a student with their instructor was on base leg. A collision was narrowly avoided and eventually reported to the aviation police. After the criminal investigation, the public prosecutor initially considered this a clear case of gross negligence, requiring a judicial response. However, the public prosecutor urged the pilot who flew the straight-in approach to first reach out to the other pilot. The pilots had a conversation where the pilot who had made the straight-in approach expressed sincere regret and, in a gesture of compensation, organised an instruction flight for the other pilot whose self-confidence had suffered. The prosecutor therefore offered an alternative: share your lessons learned at your aeroclub in a presentation, and the case would be dismissed. Is this an example of restorative justice in a Just Culture?

What Does Just Culture Facilitate in This Type Of Occurrence?

Just Culture is an approach that strives to elicit knowledge about occurrences and episodes that can inform our understanding of safety. EU376/2014 refers to the identification of potential safety hazards from "all relevant safety information". Achieving the ideals of "all relevant safety information" requires that aviation actors disclose their involvement in occurrences.

The implications of this can be profound, and the essence of Just Culture is to balance these consequences of disclosure in the interest of unlocking knowledge that could enhance safety. Consequences of disclosure can take the form of internal organisational processes that invoke sanctions or, in some cases, criminal charges leading to prosecution. This is an approach to justice based primarily on punishment (i.e., retribution) to signal to the offender and the community that the judged behaviour is unacceptable and will not be tolerated.

There are wider consequences to pursuing retributive justice when dealing with aviation occurrences and safety-related episodes. One is the reluctance or dissuasion of practitioners to disclose the episodes and occurrences that may provide new insight into safety. Why would anyone voluntarily subject themselves to retribution for altruistic reasons?

The Experience of Being a 'Suspect'

The rest of this article describes a study into the lived experiences of three general aviation pilots who accepted the prosecutor's offer to give a presentation about their lessons learned to their peers. Being criminally investigated as a general aviation pilot was an experience they lived through very consciously, dealing with the uncertainty of the outcome in a lengthy process. It can be described as entering a different realm: suddenly, one goes from being an ordinary pilot to being a suspect in a criminal investigation where one's professionalism as a general aviation pilot is questioned.

"Why would anyone voluntarily subject themselves to retribution for altruistic reasons?"

Especially in the beginning, the pilots felt criminalised for an outcome that was neither chosen nor desired. But later in the process, during informal hearings with the public prosecutor (and occasionally when questioned by the aviation police), the pilots experienced empathy and respect. There was relief in explaining their story to someone who understood them and did not second-guess them. One pilot expressed that the aviation community should "cherish" the public prosecutor because the concept of Just Culture "lives with them".

Just Culture: Two Perspectives on Achieving Justice

From its conception, Just Culture was enacted to balance learning and accountability: were one to cross a 'line of gross negligence' determined post hoc, certain consequences could be appropriate, including punishment. However, some safety scholars argue for a more restorative-oriented form of Just Culture, focused solely on preventing recurrence and healing the hurt suffered by those involved. This applies to victims (if any) and also practitioners involved and affected by the

events. Pilots' actions may lead to an outcome they did not intend nor desire, in which they may have had limited agency, and the possible consequences of which may have been difficult to foresee because of the complexity of the (general) aviation system.

"Suddenly, one goes from being an ordinary pilot to being a suspect in a criminal investigation where one's professionalism as a general aviation pilot is questioned."

The difference between a restorative and a retributive Just Culture concerns the theoretical concept of prospective and retrospective accountability introduced by Sharpe (2003). The distinction between these two forms of accountability is what one aims to achieve and how one attempts to do so. Retrospective accountability is explained as holding someone accountable by praising or blaming their past actions. In contrast, prospective accountability is explained as holding people accountable for their future actions by contributing to preventing recurrence and seeing to the needs of those who suffered.

A Restorative Just Culture in Practice?

The ideas that underpin restorative Just Culture influenced the Dutch public prosecutor for aviation's approach to these cases. The public prosecutor also intended to offer other pilots the possibility of negating the need for prosecution. However, since they denied responsibility for their occurrences, this was deemed neither appropriate nor fruitful.

Regardless, taking this option is not easy: sharing and disclosing one's experience of an event in the first person – giving an account to others in the GA pilot community – potentially exposes pilots to critique. However, this was not what these pilots experienced. There was a recognition of the complex nature of flying, which places pilots in challenging situations. Pilots received praise from their peers for sharing their lessons learned, and others shared how they had found themselves in similar situations.

The Dutch public prosecutor staff experienced the handling of these cases as positive and considerably more rewarding than handing out a fine or prosecuting a pilot in court.

Insights From These Experiences

Firstly, these cases showed the importance and undervalued role of repentance and forgiveness in Just Culture. The pilot whose self-confidence had suffered from the occurrence described in the introduction changed his opinion about the pilot who had neglected to fly the circuit, from "that pilot deserves a fine and a strong conversation" to "for me, this issue has been resolved among pilots". Hence, this resolution yielded more value to all parties involved than a fine ever could have – and the pilot later gave a presentation to his peers.

Next, the pilots' experiences show how being treated respectfully, with understanding and compassion, was paramount to incentivising them to participate in these restorative proceedings. The pilots felt treated as professionals who had made a serious but unintended mistake and were given the opportunity to remedy that mistake and contribute to preventing recurrence. As one of the pilots said:

"I felt this was a much better punishment, a much better approach, much more mature. 'Mature' sounds a bit strange, perhaps. But what counts in the end? It does not concern punishing; it concerns preventing that it happens again and that you learn."

Treating professionals involved in unwanted events with respect and compassion serves many purposes, as has been argued by researchers and practitioners in domains ranging from healthcare to construction (e.g., Dekker, Oates and Rafferty, 2022). Furthermore, growing research (e.g., Heraghty et al., 2020, 2021) indicates that doing the opposite leads to mistrust between employees and managers, degradation of safety and efficiency and increased employee turnover.

"The pilots' experiences show how being treated respectfully, with understanding and compassion, was paramount to incentivising them to participate in these 'restorative' proceedings."

Conclusion

This article reflects on a different way to pursue the ideas and values of Just Culture in practical terms. By adopting a path that draws from the ideals of prospective accountability, an alternative to prosecution was offered by the public prosecutor and was found to be feasible and viable. For some situations, this option provides a way to balance accountability with meaningful learning that contributes to safe operations in the future. It makes available the means for sharing the experience through different perspectives with fellow professionals. Finally, this expression of Just Culture goes some way to facilitating repentance and forgiveness.

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JUST CULTURE IN SWITZERLAND: AN EIGHT-YEAR ORDEAL

Controllers are rarely prosecuted following incidents, but when it does happen, proceedings can take years, and incur a significant personal toll. In this article, **Fabian Hummel** tells the story of his eight-year ordeal, and **Marc Baumgartner** outlines other Swiss cases.

An Operational Perspective

On the 15th of March 2011, two aircraft were taking off on crossing runways at Zurich airport. One of the two aircraft aborted its take-off when the pilot became aware that they were on a crossing path. The other aircraft continued its take-off.

This event attracted immediate and significant media focus, along with instantaneous social reports. The CEO got requests for interviews even before the operational incident report was filed.

The ATCO had a licence for Zurich tower and approach. After the incident and following the media pressure, the ATCO was able to continue only as an approach ATCO. After another incident in the approach, management together with the Union decided that the ATCO should undertake non-operational duties in the unit.

The Swiss Accident Investigation Body carried out an investigation and the report was published on 6 March 2012 (and approved shortly afterwards; Swiss Accident Investigation Board, 2012). In Switzerland these reports are publicly available. This report was used by the prosecutor to press charges on 25 July 2014. On 28 April 2016, the district court of Bülach (responsible for court cases concerning the airport) retained none of the charges against the ATCO at its second audience. The ATCO was acquitted. In the written judgement (GG.140060-C/U BG Bülach), the court recommended that the airport and the air navigation service provider take systemic measures to improve safety at the airport.

The prosecution appealed. At its second audience, on 12 December 2018, the cantonal court of Zurich charged the ATCO with negligence (see box text). The ATCO appealed this decision.

Felonies and Misdemeanours against Public Traffic

Disruption of public traffic
Art. 237

1. Any person who wilfully obstructs, disrupts or endangers public traffic, in particular traffic on the roads, on water or in the air and as a result knowingly causes danger to the life and limb of other people shall be liable to a custodial sentence not exceeding three years or to a monetary penalty.

   If the offender thus knowingly endangers the life and limb of a large number of people, a custodial sentence of from one to ten years may be imposed.

2. If the person concerned acts through negligence, the penalty is a custodial sentence not exceeding three years or a monetary penalty.

On 29 October 2019, the Federal Court of Justice (Judgement 6B_332/2019) accepted the appeal of the controller and instructed the cantonal court of Zurich to revise its earlier condemnation (Tribunal Federal, 2019a). The ATCO was acquitted of all charges, though it was an acquittal based primarily on the assessment of the endangerment. More than eight years of a professional odyssey finally came to a positive ending.

In July 2019, the ATCO requalified as an approach controller. Shortly after having been acquitted by the Federal Court, he started the tower requalification course and has been working since the end of 2021 as a fully qualified ATCO.

Following the incident, several changes were made at the airport and at the air navigation service provider (21 in total). Some of the noteworthy changes are as follows:

Introduction of Management of Serious Incidents	MOSI (Management of Serious Incidents) provides a platform process to enable concerned actors to exchange information and stay informed about a serious incident. The ATCO is temporarily removed from position until the first internal investigation results are known.
Freeze of crossing runway operations	Following an intervention by the Minister of Transport, CROPS (Crossing Runway Operations) was stopped. CROPS previously allowed operations on crossing runways. It was since reintroduced in 2022.
Calibration flights during night-time	Calibration flights for navigational equipment, which were active during the incident, were mostly banned during the daytime and scheduled during the night, where no regular air traffic takes place.
Additional ATCO for second aerodrome control	During high traffic periods, a second shift is planned in order to open a second sector position in the tower and share the workload.
Upgrades and introduction of new safety systems	The runway incursion and monitoring system, which was already operational during the incident, was upgraded to enhance conflict detection between two movements on crossing runways. Furthermore, a new alerting system (Advanced Runway Safety Improvement – ARSI), was developed and introduced to produce early warnings in case of conflicting clearances.
Arrival capacity	During times with dependent operations between arrivals and departures, the acceptance rate for arrivals was lowered to better reflect the operational circumstances.
Additional ATCO at Approach when calibration flights take place	In order to assist with the complexity of the calibration flights, an additional ATCO is rostered for the approach services.
Increased spacing for landing aircraft when configuration Landing RWY 14 and Departure RWY 10	This recommendation was introduced following an audit by the Swiss CAA.

A Personal Perspective

The controller in question is Fabian Hummel, one of the authors of this article. At the first European CISM (critical incident stress management) Network meeting in Lucerne in 2021, he agreed to outline his emotional reactions to the events during the long period from the incident to the Federal Court judgement. Fabian described how, over the months and years of the ordeal, his emotional state fluctuated. From a personal perspective, some of the key events are as follows.

1. April 2011 – Licence revoked. Two weeks after the incident, I was informed that I would no longer work in the tower, temporarily, but would continue to work on approach sectors. At the time, there were no procedures in place to handle a serious incident, especially after the involvement of the media. This was a low point. I personally could not understand the decision and could not think of a similar case. But my goal was to renew my licence and get back in the tower for work. Later, in 2012, I stopped working as an ATCO and took an office position, still working for TWR/APP Zurich in procedure design and in training.

2. December 2012 – Union information event. One and a half years after the incident, the union organised an information event for fellow ATCOs and colleagues. The path ahead was still unclear; the prosecutor was building a case, but it was not clear if charges would be pressed. After presentations from the union, my lawyer, the head of the Swiss transportation safety investigation board, a media expert, and myself, I felt the huge support of my co-workers and their wish to have me back in the tower and at the radar. This was very important to me. If I had felt that my colleagues doubted my ability to return and work as an ATCO, I would not have fought to renew my licence.

"I felt the huge support of my co-workers and their wish to have me back in the tower and at the radar. This was very important to me."

3. March 2014 – Public prosecutor pressed charges. Three years after the incident, the public prosecutor pressed charges. All hope that they would end the investigation was lost. In the months before that decision, arguments were made about why the investigation against me should be terminated. On the other hand, we did not want to reveal too much of our defence argument. Every time I received a letter in my mailbox with an official-looking emblem on it, my heart dropped. I immediately felt stress symptoms return. Also, media attention increased again. Every time an unknown number called, I was afraid it was the press.

"Three years after the incident, the public prosecutor pressed charges. All hope that they would end the investigation was lost."

4. January 2017 – Public prosecutor filed an appeal. After being acquitted by the district court, and already planning my licence renewal almost six years after the incident, the public prosecutor filed an appeal. We had twenty days to hand in a statement to this 40-page appeal, with years of future court proceedings still to come.

5. April 2021 – First OJT shift back in the tower. After being finally acquitted by the Federal Court of Switzerland, I started unit training to recover my tower licence, and had my first OJT shift in the tower. When I first received the email about my acquittal from my lawyer, I didn't really trust it. I couldn't believe it at first. I could finally relax after a call to my lawyer, who translated the acquittal written by the judge. This was more than ten years after the incident, and with a lot of support from my lawyer (who postponed retirement to work my case), people within the company at all levels of management, my fellow ATCO colleagues and co-workers, my wife (who is also an ATCO), my friends. Now I am happy to work as an ATCO in Tower and Approach Zurich.

"After being finally acquitted by the Federal Court of Switzerland, I started unit training to recover my tower licence, and had my first OJT shift in the tower."

During the 10 years of absence from the operational environment, I undertook various courses and took on several responsibilities. I became a team resource management (TRM) facilitator, unit class rating instructor, and deputy head of the tower. I undertook project manager training, basic management training, and worked on interesting projects. I was elected as a CISM peer by my work colleagues. In my private life, I became a commercial pilot, got married, bought a flat, and even built a plane.

A National Perspective

Two other cases – one in Zurich Tower in 2012 (SAIB, 2014, see skyguide, 2021), and one in ACC Zurich in 2013 (SAIB, 2014) – led to federal court cases. The ACC case followed a different legal procedure. The Federal Prosecutor issued a penal fine of 20,000 CHF against the ATCO. (The local prosecutor of Zurich airport was not involved due to an investigation against one of the involved airline crews, bringing an international dimension which falls into the legal competency of the Federal Prosecutor.)

The ATCO appealed the penal fine issued by the Federal Prosecutor and the court audience took place at the Federal Penal Court. The single judge of the federal penal court asked questions to the Head of the Aviation Branch of the STSB in order to understand some of the technicalities of the incident investigation report. The judge of the Federal Penal Court in Bellinzona sentenced the ATCO to a fine and probationary period of two years. The appeal to the Federal Court of Justice was not successful for the ATCO and confirmed the guilty verdict, sentencing the same probationary period and a lesser fine (Judgement 6B_1220/2018; Tribunal Federal, 2019b).

The court cases were highly publicised and followed by the air traffic controller community at national and international levels. Where public audiences were possible, many colleagues and press showed up in the court room. After the sentence of the en-route case, CANSO and IFATCA, together with the European Cockpit Association, addressed letters to the Ministers of Justice and Transport. These called for a Just Culture according to

"What is critical is that we work together as professionals to make Just Culture a reality not only in organisations, but at national and international levels in systems of justice."

international standards and recommendations, and called for EU law, in particular EU 996/2010 and 376/2014 to be implemented into Swiss law. Subsequently the stakeholders of the Swiss Aviation Sectors created the 'Just Culture Platform', an association of Swiss aviation organisations who are committed to anchoring Just Culture in organisations, in the Swiss legal system and in society (see https://en.justculture.ch/just-culture-plattform).

Two conferences brought together representatives from aviation, government, and judiciary for public debates. These were organised by Swiss Airline Pilots Association (see Kazekas, 2019) and the Centre for Aviation and Space Competence (2023). In parallel, IFATCA organised a training session for the Swiss federal and cantonal prosecutors, where the Dutch Aviation Prosecutor provided information about the Dutch system.

Lobbying of the Swiss Parliament by the Just Culture Platform led to an answer in the form of a report on "error culture" in Switzerland by the government (Der Bundesrat, 2022). While the request from Parliament to the Government was widening the scope of the possible introduction of Just Culture to other domains such as the medical, nuclear, and public transport in general, the report of the government highlighted the possibility to find a sector-specific solution. This suggested that aviation should look into legislative change.

The future for Just Culture in Switzerland is uncertain and there is far to go before the principles of Just Culture in hazardous industries are compatible with the penal code. But there are signs of progress. What is critical is that we work together as professionals to make Just Culture a reality not only in organisations, but at national and international levels in systems of justice. As written by The Federal Council of the Swiss Government, "Nuclear power plants, hospitals and airplanes become safer when operators learn from mistakes." And it is especially important to remember that 'operators' are organisations, not just individuals.

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Marc Baumgartner is an air traffic controller and supervisor in Geneva ACC. Marc was a member of the Performance Review Body/Performance Review Commission. For eight years until 2010, he was President and CEO of IFATCA and coordinates the activities of IFATCA in SESAR and EASA.

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JUST CULTURE IN HEALTHCARE: THE DAWN OF A NEW ERA

Healthcare is starting to embrace a shift towards Just Culture. In England, the new Patient Safety Incident Response Framework prioritises respect, compassion, and systemic improvements. The potential benefits of this, and other initiatives, are significant, as **Suzette Woodward** reports.

KEY POINTS

- **Healthcare has faced increased complexity and workload, along with limited resources, decreased morale, and an increase in incivility and bullying.**
- **The Patient Safety Incident Response Framework (PSIRF) has been introduced in the NHS in England, emphasising a shift towards compassionate engagement and system-based learning.**
- **The PSIRF is supported by a toolkit, training for all NHS staff, and guidance on involving patients, families, and staff following an incident. The guidance outlines principles aligned with a Just Culture, including meaningful apologies, respect, compassion, collaboration, and equity.**
- **Other healthcare initiatives are increasingly focusing on restorative Just Culture.**

"The easy, understandable and completely wrong answer to an incident is to blame those who made the mistake." This quote was written in the editorial of the British Medical Journal, published in March 2000 – 23 years ago. The editorial was written by two paediatricians (Lucian Leape and Don Berwick) who described the need for a 'movement' that raises awareness of the fact that staff need help to function under adverse conditions, including pressures of time, fatigue, or high anxiety.

Fast forward two decades later, and healthcare has experienced significantly increased complexity and workload, while struggling with low staffing levels and limited resources. Additionally, the pandemic has led to decreased morale and more staff leaving the service. To make things worse, there has been an increase in incivility and bullying.

In healthcare, like other complex sectors, safety is a consequence of adapting and adjusting to demand and frequent changes. Staff are constantly dealing with unexpected situations and trying to detect and correct when something is about to go wrong. We need to help staff cope with this complexity under pressure and help them achieve success despite the fallible, imperfect systems, unrealistic rules, and sometimes incompatible policies. Given this context, it is vital that we build a Just Culture so that when the inevitable happens, people are treated fairly, consistently, and proportionately.

The Patient Safety Incident Response Framework

To achieve this, a variety of interventions are being used across the NHS in England to influence behaviour and culture. Setting the tone is the new national framework to respond to incidents and accidents, the Patient Safety Incident Response Framework (PSIRF) (see https://www.england.nhs.uk/patient-safety/incident-response-framework/). This has been tested across some early adopter sites and now, in 2023, has been disseminated to all healthcare organisations in England.

The PSIRF supports integrates four key aims:

1. compassionate engagement and involvement of those affected by patient safety incidents
2. application of a range of system-based approached to learning from patient safety incidents
3. considered and proportionate responses to patient safety incidents, and
4. supportive oversight focused on strengthening response system functioning and improvement.

The PSIRF sets out the NHS's new approach to studying systems and processes in response to patient safety incidents for the purpose of learning and improving patient safety. It shifts away from the focus on individuals to the systems that individuals are working within. It replaces the serious incident

framework and even removes the classification 'serious incidents' from the nomenclature.

The PSIRF is a fundamental change in how the NHS responds to patient safety incidents and advocates a co-ordinated and data-driven approach. It promotes compassionate engagement with all those affected by patient safety incidents. It also suggests moving away from the use of so-called 'root cause analysis', preferring models such as after-action review (AAR) and the systems engineering initiative for patient safety (SEIPS). This approach prompts a significant cultural shift towards systematic patient safety management and a Just Culture.

All NHS staff will receive training over the coming year. The training must cover Just Culture, being open, apologising, effective communication, and involvement. In addition, organisations are asked to set up support systems and develop resources for staff and patients.

"It is vital that we build a Just Culture so that when the inevitable happens, people are treated fairly, consistently, and proportionately."

The PSIRF has been supported by a toolkit to support implementation and guidance on involving patients, families and staff following an incident. The guidance sets out nine principles that are clearly aligned to a Just Culture:

1. providing meaningful apologies to all involved
2. ensuring an individualised approach to patients and staff
3. being sensitive to what people need and when
4. treating those affected with respect and compassion
5. ensuring all guidance is clear
6. listening to all affected and providing the opportunity for people to share their experience
7. being collaborative and open
8. accepting that there will be subjectivity as everyone will experience the same incident in different ways, and
9. striving for equity.

How will we know all of this is working? Researchers from the University of Leeds are leading a project called the Response Study. The Response Study is a real-time independent evaluation of the implementation of PSIRF across the NHS in England. The project is funded by the National Institute for Health and Care Research. The study started in May 2022 and will conclude in 2025.

'Being Fair'

In healthcare safety, there are countless issues that deserve our attention. As well as safety, there are issues of sustainability, efficiency, effectiveness, equality, diversity and inclusivity, staff wellbeing, and psychological safety. The drive for a Just Culture could get lost in all this activity. So national and regional organisations are collaborating to support this change programme. For example, NHS Resolution (the body that is responsible for paying negligence claims in the NHS)

has published its second edition of 'Being Fair'. This sets out the links between culture, workforce and patient safety. NHS Resolution has a *Just and Learning Culture* Charter that NHS organisations are invited to adopt. Additionally, there is increasing alignment between those working in safety and those working in organisational development and human resources. Many healthcare organisations have updated their disciplinary policies to incorporate the principles of a Just Culture.

"Many healthcare organisations have updated their disciplinary policies to incorporate the principles of a Just Culture."

The Civility and Respect Toolkit

NHS Leadership has also developed a toolkit to promote cultures of civility and respect. One of the four themes of the toolkit is a 'just and restorative culture'. This focuses on 'compassionate leadership', and emphasises working with partners such as local union representatives, 'Freedom to Speak Up Guardians', and those who lead work on employee engagement, and health and wellbeing.

Towards a Restorative Approach to a Just Culture

The current healthcare culture not only tends to blame and shame, it is also often both adversarial and retributive. There is now a move towards a restorative approach to a Just Culture. Some healthcare organisations are testing how to achieve a restorative approach to help repair relationships. In the NHS in England, one community and mental health organisation is at the forefront of this work. Mersey Care NHS Trust is working in conjunction with Northumbria University to deliver a five-day course on the principles and practices of restorative Just Culture.

Conclusion

The Patient Safety Incident Response Framework is a renewed focus on moving away from a blame culture to one that is just and compassionate, recognising wider systemic problems. It provides NHS organisations with the freedom to target resources on investigations that will lead to organisational learning and improvements. However, implementation will be challenging in the current climate of an exhausted and reduced workforce with limited time for staff to attend training. But the potential advantages for patients, families, and staff are substantial. We might finally have the movement that Leape and Berwick talked about all those years ago.

"Some healthcare organisations are testing how to achieve a restorative approach to help repair relationships."

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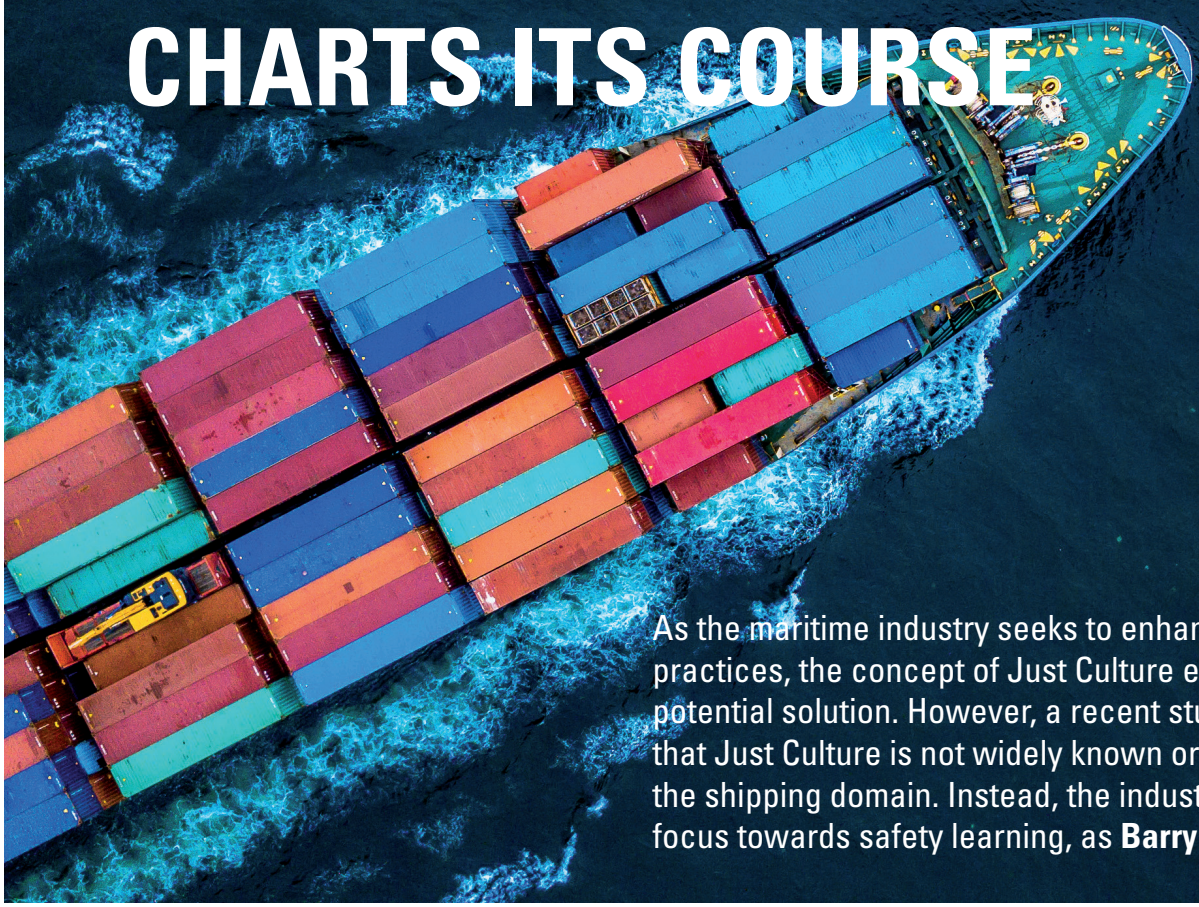
JUST CULTURE OR SAFETY LEARNING CULTURE? THE MARITIME INDUSTRY CHARTS ITS COURSE



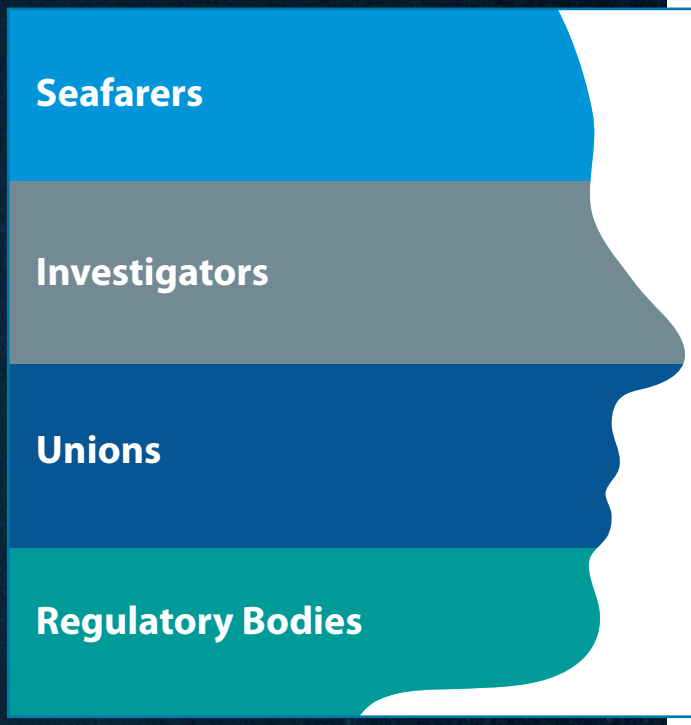
As the maritime industry seeks to enhance safety practices, the concept of Just Culture emerged as a potential solution. However, a recent study revealed that Just Culture is not widely known or embraced in the shipping domain. Instead, the industry is shifting its focus towards safety learning, as **Barry Kirwan** reports.

KEY POINTS:

- **Globally, Just Culture is not such a well-known concept in the shipping industry.**
- **A recent study canvassed sea captains and key organisations about the merits of Just Culture.**
- **The over-riding response was that maritime wasn't ready for Just Culture, although it already exists in some quarters.**
- **Instead, the maritime domain is focusing on safety learning, to reduce incidents and accidents.**
- **The International Maritime Organisation is launching a major initiative on safety learning in 2023.**

The maritime industry outdates all other transport domains by millennia, and in terms of the transport of goods, it still far outstrips rail, automotive and aviation by a significant degree, with ships transporting 90% of global trade. Yet most of this is unseen by the public, as vessels are far offshore, and major ports are largely away from the public eye. As with rail and aviation domains, major accidents involving passengers are relatively few, and cargo ships involved in collisions or groundings do not tend to gain press unless they lead to major loss of life, environmental damage, or substantial blockages of major shipping routes. Two recent examples from the shipping domain are the *Costa Concordia* cruise ship accident, and the *Ever Given* ultra-large container ship (ULCS) blocking the Suez Canal.

But most accidents are below the public radar. So, what about Just Culture? Is it in evidence in the shipping world? A European-funded project called SAFEMODE was tasked to find out, and to see if maritime could learn from aviation, given



Interview Approach

1. Investigation
2. Reporting
3. Near-Miss Reporting
4. Understanding the Human Element
5. What keeps ships safe?
6. Safety Management Systems (SMS)?
7. Just Culture
8. Safety Learning

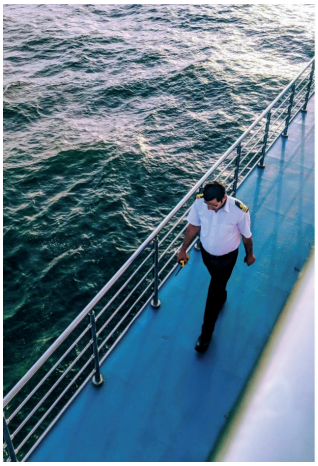
that the latter was seen as demonstrating best practice in Just Culture in the transport sector. EUROCONTROL was chosen to lead this task as it has led a European-wide safety culture programme for the past two decades, and aviation is seen as having a strong Just Culture and learning culture. The idea was simple – to have someone look at shipping from the outside.

The approach taken was equally straightforward. Twenty ship's masters and investigators were interviewed by video during the COVID pandemic. The seafarers came from several segments of the shipping industry, namely cargo/container, chemical tanker, and passenger/cruise ships. Investigators were mostly from their respective national authorities, but a couple worked for shipping companies. The interviewees came from the following countries: Denmark, France, Italy, India, Malta, Mexico, the Netherlands, Portugal, Romania, Spain, Sweden, the United Kingdom, and the United States of America.

The interview questions were generally open in nature, and the interview structure followed the same process with each participant, beginning with investigation and reporting, moving on to near-miss reporting, then to the consideration of the 'Human Element' (the Maritime equivalent of Human Factors) and safety at sea. Next followed a discussion of the role of the SMS at sea, the applicability of Just Culture in the shipping context, and finally how safety learning works in practice. At the end of each interview, the interviewee was asked about the best way forward and the so-called magic wand question, namely, if you could change one thing, what would you change?

Early on, two responses stood out. First, half the respondents had never heard of Just Culture (though they 'got it' as soon as it was explained). The second, more surprisingly, was that more than half of them judged that the time was not right for it in the shipping industry. What they were all interested in, however, was safety learning.

Following these interviews, four further sessions were held: one with union representatives; one with the European regulator, the European Maritime Safety Agency (EMSA); one with a maritime training organisation; and one with representatives from the International Maritime Organization (IMO, the Maritime equivalent of ICAO). Subsequently, the interim results from the interviews were presented at several forums, including MCA's Human Element Advisory Group (HEAG), OCIMF's Human Factors Committee (HFC) and IMarEst in the UK, as well as the Stability and Safety at Sea (STAB&S) conference in Scotland. These various forums generally concurred that Safety Learning Culture was a more pragmatic destination than Just Culture.



The reasons for not having Just Culture as the destination were diverse, but the overwhelming response from seafarers, and some investigators, is that the blame culture is too engrained in many parts of the shipping industry. *"It is always 'blame the ship!'"* and *"Stop criminalising seafarers"* were

"Seafarers felt that there was often finger-pointing in investigations."

common refrains, and seafarers felt that there was often finger-pointing in investigations (captains were often advised to have a lawyer present, and if involved in an accident abroad, to never get off the ship for fear of being immediately arrested by local authorities). A contributing organisational element was that many Human Resources departments in shipping companies were felt to have little or no maritime experience, so had no shared understanding of what life at sea was really like. Furthermore, some insurance systems meant that as soon as the captain took the blame, the insurance would pay up.

"Many Human Resources departments in shipping companies were felt to have little or no maritime experience, so had no shared understanding of what life at sea was really like."

The national investigators interviewed acknowledged such problems, and did what they could, but noted that even when they tried to use narratives, and non-prejudicial terms such as *contributory factors* rather than causes, the judiciary sometimes took their results out of context and used them to prosecute seafarers. Some also noted that by the time they arrived on the ship to interview those involved, the key parties might have been already sent home or fired, impeding investigation and negating any practical sense of Just Culture.

It wasn't all bad. Some companies have been working hard to integrate Just Culture into their systems and processes, and yes, their culture, too. Several organisations also had rapid feedback systems such that within a week of any incident, a *lessons learned* briefing was sent out not only to the ship concerned, but all other ships in their fleet.

The final report, already seen by the IMO, still highlights Just Culture, but has more focus on safety learning, with ten safety learning approaches documented in the second half of the report, several of which are already being employed by key shipping companies.

The report was formally presented at IMO in London in June 2023, with a call to action upon Member States who are obliged to detail proposals to enhance safety learning across the industry. It is not the first time there has been a call to improve safety culture in the maritime world. The last attempt was in 2010, but it did not gain traction. This time, however, it is hoped that the collective voices of seafarers, investigators, leading shipping organisations and key Member States will be heard, and that the maritime industry will begin to chart its course towards a safety learning culture. And if it does, for sure Just Culture will follow.

"There are significant shortcomings in the meaningful adoption of just culture across the industry."

It should be noted that there has been good work undertaken to support and promote just culture in the maritime industry (e.g., see Skybrary). Nevertheless, the results of this study revealed that there are significant shortcomings in the meaningful adoption of just culture across the industry. None of the findings were a surprise to the shipping companies we talked and presented to, nor to the regulatory bodies, including EMSA (the regulator, who is a signatory on the White Paper), and the IMO, who asked us to present the results to the Member States. We are hoping that the White Paper, and subsequent ongoing actions, will generate more traction this time around.

SAFEMODE is a recently completed a Horizon 2020 project that aimed to share Human Factors and Safety approaches between the aviation and maritime domains. See https://safemodeproject.eu/

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Dr Barry Kirwan worked in Human Factors in the nuclear, oil and gas, and maritime sectors, and lectured at Birmingham University for five years before becoming Head of Human Factors at NATS. Joining EUROCONTROL in 2000, he initiated and ran the European Safety Culture Programme for a decade before moving onto European research projects focusing on Human Factors, safety culture and artificial intelligence applications.

EMBRACING A LEARNING CULTURE AT A UK RAIL OPERATOR

KeolisAmey Docklands (KAD), franchise operator of London's Docklands Light Railway (DLR), has embraced a profound shift toward a culture of learning and restoration. **Adam Johns** outlines the steps taken on this transformative journey, as well as the difficulties along the way and ultimate benefits.

KEY POINTS

- **KAD previously had a somewhat punitive culture of blaming frontline operators for safety incidents, hindering learning, and fostering a culture of limited improvement.**
- **The organisation conducted culture surveys with their new director of safety, implementing a programme to promote a just, learning culture. This included replacing the traditional investigations with learning reviews and adopting a restorative just culture approach.**
- **Changing the culture and processes proved challenging, with some resistance to change and difficulties in tailoring academic approaches to the organisation's context. It was important to ensure understanding regarding the new approach.**
- **The organisation experienced improved communication, increased confidence among staff to raise safety concerns, and a reduction in disciplinary investigations. Changing the language and fostering a positive, supportive approach played a key role in improving organisational performance.**

What was the problem to be solved?

KAD had a longstanding, mostly punitive culture surrounding the investigation of safety incidents. Typically, frontline operators could face disciplinary action for making mistakes or appearing to not follow procedures. This approach resulted in very limited learning and improvement, as well as concern about making mistakes and reporting them. Therefore, the identification of risks was hampered, as was the prevention of incident recurrence, due to a hyper-focus on the individuals involved and what they seemed to do 'wrong'.

What actions did we take?

A series of culture surveys had indicated a clear desire across the organisation to try a new safety approach. Safety performance, at least as measured by undesired events, had plateaued, and culturally the organisation had a cloud hanging over it relating to safety. KAD's new director of safety brought a new approach, largely based on 'New View' safety concepts and practices. A new safety team was recruited to help advance the organisation towards this, through a dedicated programme called Next Platform. The main thrust was to create a more just, learning culture across the organisation, so that not only safety performance could be improved, but also operational performance, staff engagement and wellbeing.

Practically, this focused on replacing the existing safety incident investigation protocol with a) the 'learning review' – first coined and developed by Ivan Pupulidy at the US Forest Service – and b) a 'restorative just culture', predominantly promoted in the safety field by Sidney Dekker. The organisation's learning reviews utilise systems thinking and a non-judgmental 'sensemaking' approach to understand why things happen, including the workplace influences upon people.

The aim of a learning review is to ensure that everyone learns from events. This type of learning cannot be achieved within an overarching culture – or perception – of blame; as Dekker and others say, "You can learn or blame, but you can't do both." Learning reviews are 'blameless' in their approach, but the learning review process takes place in the context of a restorative just culture.

"At the core of the organisation's evolution was a focus on changing language."

KAD's restorative just culture focuses on restoring trust, confidence and accountability after an undesired event, acknowledging that the conditions for the vast majority of such events are created by imperfect work systems, and the errors of operators are simply exposing these imperfections.

"KAD's restorative just culture focuses on restoring trust, confidence and accountability after an undesired event."

Rather than asking retributive questions such as 'What rule was broken?', 'How much was it broken by?', and then, 'What should the consequences [for the individual] be?', the restorative approach starts with three very different questions.

1. Who has been impacted (including the staff member most proximal to the event)?
2. What are their needs?
3. Who bears the responsibility of meeting those needs?

This approach doesn't guarantee that learning takes place, but it creates the conditions for learning, by addressing psychological, emotional and other impacts first after an event. By doing so, it maximises the chances of rich information being shared about what happened and how it happened, and allows an open dialogue to take place about learning. Accountability is distinct from blame, and is forward-looking. Everyone involved is accountable for learning and improving based on what is learned. When employees feel safe after an event, both psychologically and in terms of their job security, they are more likely to open up and share valuable insights to help us learn. This has certainly occurred within our organisation.

At the core of the organisation's evolution was a focus on changing language. Phase 1 of Next Platform focused on 'Changing the Conversation'. This meant a systematic and concerted effort, through formal and informal conversations, meetings, documentation and training, to evolve the language used to describe safety and operational work from one that was viewed as negative and blame-focused, to one that was neutral and learning-focused: investigation became learning review, interview

became conversation, non-compliance became variation, cause became influence. Behind this strategy was the idea that words create worlds: people attach meaning to words and phrases, and over time they can develop negative and unproductive meanings. In order to evolve our safety approach, we had to start with the words we used and how we talked about safety towards a more positive, supporting and caring approach.

What were the difficulties?

Seeking to change culture and processes is tough. It's a long, hard slog. There will always be resistance to change, and there was. But it's not the new approach that people are often resistant to, it's the process of change itself. It's important to ensure everyone understands the purpose, the picture, the plan, and their part. We found difficulty in tailoring academic approaches to our context, and also helping the organisation to understand that a just culture is not a consequence-free culture. It does allow for people to be disciplined, but only if their actions were seriously egregious – extremely and conspicuously bad – and there is benefit in doing so.

What were the benefits?

There has been a tangible improvement in management-to-frontline interactions concerning safety. Many frontline staff now feel more confident to raise safety concerns and know that when they are involved in an event, the company will first ensure their wellbeing, and then seek to understand the context in which it occurred. Relationships between managers and their staff are improving as safety-related conversations don't take place under a cloud of accusation or allegation. The number of disciplinary investigations relating to safety events has dropped by a very significant amount, and this is helping to reduce the culture of fear. Overall, the focus on changing language first, and explaining why this is important, has started us off on the right path.

> "There has been a tangible improvement in management-to-frontline interactions concerning safety."

Here are some comments from staff who have been involved in a Learning Review:

"… it has now given me more confidence in my role, and I have shared with my teammates that the company will listen from all sides and take a positive approach when issues arise. I see things from a different perspective and of how our company is a very forward-thinking progressive place to work."

"…I was able to tell my side of the events without fear of what disciplinary action will be taken against me…"

"… I believe the genuine aim was to learn from the situation… Before the conversation began, the procedure and purpose were thoroughly described to me. I am ecstatic that the word 'investigation' has been replaced with 'learning'. I enthusiastically endorse and welcome this culture shift, and I eagerly anticipate a more positive attitude to situations."

"I felt it went really well, feedback was good and constructive, having the ability to know what went well or what could have been improved. And having the conversation was really productive."

Summary

The benefits of the organisation's move to a restorative just culture are continuing to materialise as the approach matures. One tangible impact so far has been a vast reduction in the number of safety events resulting in disciplinary actions against staff. This impact was desired and expected, since the learning review and restorative just culture approach help us to better understand why a decision or action made sense to someone at the time, rather than applying a hindsight-based judgment to what they did and punishing them for it.

We are also starting to see green shoots of improvements to engagement as staff hear more about the approach. This is not yet quantifiable as it takes a longer time to materialise in a quantifiable way, as is normal for lagging indicators for safety. However, it is clear that improvements are spreading throughout the organisation, which can be seen in our organisational culture, continuous learning and safety performance.

Adam Johns is Head of Organisational Learning & Safety Innovation for KeolisAmey Docklands, franchise operator of the Docklands Light Railway in London. Adam's role is to cultivate a mindset and practice of continuous learning and improvement across operations and engineering activities, both reactively – such as through the study of adverse safety events – and proactively, by learning from the normal work of frontline staff.

APPLYING JUST CULTURE IN RAIL: DRAWING PARALLELS FROM AVIATION

The concept of Just Culture is gaining traction in the railway industry, influenced by a European directive and the European Union Agency for Rail's promotion of safety culture. **Michaela Schwarz** and **Nora Balfe** report on conversations with safety management professionals from European railways to discuss the current application, challenges, and advantages of a Just Culture approach.

KEY POINTS

- **The concept of Just Culture is gaining momentum in the railway industry, influenced by the inclusion of Just Culture ideas in the (EU) 2016/798 Railway Safety Directive and subsequent promotion by the European Union Agency for Rail, with EUROCONTROL collaboration.**
- **Implementing a Just Culture approach shifts the focus from individual blame to systemic improvements, fostering a safer environment, enhancing risk perception, and promoting a stronger organisational culture.**
- **Railways face challenges in applying Just Culture, including historical reliance on disciplinary actions, the division between railway undertakings (i.e., train operators) and railways infrastructure managers (i.e., track, station, building and asset management) and the complicated 'Rule Book'.**
- **Developing competency in human factors, systems thinking, and multidisciplinary approaches is crucial for the successful implementation of Just Culture.**
- **Benefits of a Just Culture such as increased risk perception, safer work, improved psychological safety and wellbeing, enhanced trust, and a stronger safety management system are now being perceived in the rail industry.**

The term 'Just Culture' is relatively recent in railways, but awareness and application has increased over the last decade. Along with transfer of best practice from aviation, one reason for this is the inclusion of Just Culture ideas in the 2016/798 Railway Safety Directive (EC, 2016). This provides mandatory safety requirements for all European railways. Since its publication, the European Union Agency for Rail (ERA) (approximately equivalent to EASA in aviation) has been promoting the concept of Just Culture, including through collaboration with EUROCONTROL to apply the learning and good practice from the aviation sector. The cooperation started with joint training of prosecutors and legal experts from aviation and rail on Just Culture principles and system thinking. In 2018, ERA launched the European Railway Safety Culture Declaration promoting safety culture generally, but also specifically Just Culture principles amongst management, employees, and relevant stakeholders, including authorities and contractors. More than 250 railway leaders and organisations have signed the declaration (ERA, 2023) and a fair and Just Culture is considered one important element in the ERA Safety Culture model (https://www.era.europa.eu/safety-culture-model).

"A Just Culture approach means understanding that there are many reasons why an individual may not follow a rule and a move towards even challenging the rule book if necessary, but this is a major cultural shift for the sector."

For this article, we spoke with 12 individuals engaged in safety management of European railways at different maturity levels to capture the current application, challenges, and perceived benefits of a Just Culture in the rail sector.

> *"The focus of the ERA Just Culture training lies on organisational Just Culture, not judiciary Just Culture. It is about the systematic understanding of the human being as one part of the value chain."*
>
> *(Kim Drews, ERA, 2023)*

Organisational Just Culture

Similar to aviation, Just Culture within railways is understood to be one key element of proactive safety culture and a broader element of organisational culture. The rail industry is older than aviation (the first railway line dates back to 1825 in the UK) and responses to 'human error' have evolved over time along with the sector.

Technologies to reduce the likelihood of catastrophic consequences as a result of simple errors exist in rail signalling (which has a similar function to air traffic control), train driving and shunting (which can be compared to flight deck operations), and train maintenance (like aircraft maintenance). However, these technologies (e.g., interlockings, automated train control system, digital automatic coupling, automated train inspection) can be expensive to install and maintain, and they are not always implemented effectively. Examples include the train collision in February 2023 in Tempi, Greece, where a signaller authorised a train to proceed towards an oncoming train. Early indications are that the signaller had little training and the equipment to support safe decision-making had never been implemented on the line.

The accident in Santiago de Compostela in northern Spain in July 2013 involved a train travelling too fast for the section of line it was travelling on. Again, the technology existed to supervise train speed, but was not implemented in that area. Like in aviation, the immediate response in the media has been to blame human error followed by a criminal investigation by the judiciary. Thanks to recent Just Culture promotion activities in rail, the organisational perspective is slowly moving away from this reaction, considering the human within the overall system.

Introduction of the Just Culture Concept to Rail

All the interviewees were familiar with the term 'Just Culture', but understanding and depth of application varied. Some people came across the term Just Culture in the context of aviation and cross-industrial training and discussions, and others in the context of psychology studies and academia. Some railway organisations started to work on the idea almost

10 years ago, but others only started to apply Just Culture thinking within the last few years.

We did not find any alignment between when the concept was introduced and how deeply it is applied. Some organisations who have started only in the last few years have firmly embedded Just Culture principles, while others who started earlier have not yet reached the same level of maturity.

> *"In a Just Culture you don't act directly on behaviour, but you work on underlying factors influencing the behaviour."*
>
> *(Grégory Rolina, ERA)*

Managing Behaviour in the Rail Industry

> *"We accept errors as inevitable. We accept people are human beings and are going to make mistakes or errors. What we focus on if somebody makes an error is whether the system is resilient against that error or if there is something we need to change."*
>
> *(Steve Lewis & Benjamin Stephens, Southeastern Railway)*

Some railway organisations fully embrace the idea of accepting human errors as inevitable and focus their efforts on learning and improving across the system after each event. Others seem to focus primarily on the individual and still rely on mitigations such as retraining after an event, with systemic influences being a secondary consideration.

Some organisations use standard taxonomies, algorithms, or so-called 'fairness guides' to classify human behaviour or understand whether a human error should be an acceptable one or not. But there was feedback that, although consistency is critical in a Just Culture, these tools can be too complicated and there is a risk that the Just Culture programme becomes caught up in applying the decision tree correctly, taking the focus away from learning and improvements.

Other organisations separate misconduct that is reportable or not reportable, applying consequences according to the severity of the error (minor versus serious). A few organisations place little focus on the classification of errors, but instead regard the essence of their Just Culture to be the learning that is available from events.

A Systems Approach

A well-established Just Culture should focus on the management of inevitable errors. This led us to explore how sociotechnical systems thinking is applied in rail. There is an awareness of systems thinking across all participants, but the degree to which it is currently understood and applied seems to vary. There are some structural issues in rail which make a systems approach more difficult. For example, European railways have historically been one national company but are now broken down into 'railway undertakings' (similar to airlines) and 'infrastructure managers' (similar to airports and air traffic control). As with aviation, operators may engage subcontractors for specific services (e.g., traction, maintenance) adding to the already complex railway management system. This has created a divide between frontline operational staff, and may hinder one company moving towards a Just Culture approach when other companies have not. There is still a sector-level expectation of blame and punishment.

"Taking a systems approach is difficult, because it requires a mindset change, but also because retraining an individual can be achieved in days or months while system-level solutions will likely take much longer and cost more."

Another difficulty in the application of Just Culture is the heavy reliance of the rail sector on the 'Rule Book'. Similar to airlines, each railway maintains a book of procedures that govern operations on their network. Compliance with these rules is mandatory. Whereas standard operating procedures (SOPs) in aviation are designed and improved based on operator input, in rail it is sometimes said that the Rule Book has been 'written in blood', reflecting the evolution of the rules in the aftermath of tragedies. Traditionally, rail workers were expected simply to comply with these rules and non-compliance was usually punished by disciplinary action or temporary allocation to (lesser) duties, such as cleaning trains or work confined to the depot. Rail is a relatively constrained environment, and in most circumstances there is an applicable rule which can be safely followed (at least in retrospect).

A Just Culture approach means understanding that there are many reasons why an individual may not follow a rule and a move towards even challenging the rule book if necessary, but this is a major cultural shift for the sector.

Developing Human Factors Competency

A challenge to Just Culture in rail involves developing competency in human factors, systems thinking, and multidisciplinary approaches. Not everybody may need to be 'trained' on Just Culture, but key individuals need to adopt and champion the approach until it is embedded and becomes part of the way of doing business. The ability to apply a Just Culture approach needs to be systematically developed. This includes identifying behaviours, analysing the influence on those behaviours, and making recommendations regarding those influences.

Taking a systems approach is difficult, because it requires a mindset change, but also because retraining an individual can be achieved in days or months while system-level solutions will likely take much longer and cost more.

"Managers need to become aware that a silent organisation is an unsafe organisation. If you want to improve safety, you need information. If you want to get information, you must protect employees for giving you the information."

(Miguel Figueres-Esteban, Renfe, 2023)

Key Success Factors

The interview participants indicated several key messages in developing a Just Culture. It must be led from the top and have the right people who buy into the idea driving it forward. Without the support of management, it will not succeed. It also needs to be fully integrated into the safety management system and not a separate stand-alone process. It must be consistent and fairly applied at all levels of the organisation. The competence in tackling hindsight bias and analysing the whole system must be developed. It may also help to use case studies of previous events to increase awareness and promote the approach, and to focus on what usually goes right and why as an example of well-designed systems.

"Beyond safety, the application of Just Culture has been found to create more trust and has a social impact resulting in a common understanding within the organisation and sector."

"Just Culture sharpens one's own awareness of the risks one weighs up on a daily basis. New operators make more mistakes because they have less experience in risk perception and risk management on the job."

(Manfred Kunz, ÖBB INFRA)

"I think Just Culture raises awareness of those affected to critically question their actions and develop 'what if' scenarios."

(Stuart Pfister, DB Regio)

Benefits of a Just Culture

The primary immediate benefits perceived are an increase in individual risk perception and safer behaviours. Wider benefits for safety and the wider organisational culture are emerging. In terms of safety, Just Culture creates more openness and encourages people to speak up, providing more information on events and hazards. Having more information puts the railway organisation in a better position to solve problems. Some of the organisations have already found that applying Just Culture to the investigation of safety events generates more learning points with less of a focus on the individual. This results in a stronger safety management system and a safer operation, and ultimately healthier staff due to a reduction in safety incidents and better psychological safety and wellbeing. But beyond safety, the application of Just Culture has been found to create more trust and has a social impact resulting in a common understanding within the organisation and sector.

The Future of Just Culture in Rail

In addition to the collaboration between ERA and EUROCONTROL, a range of support tools is emerging to develop and grow human factors and safety culture in the rail industry. One of these is the RailHOF platform (www.railhof.org) which combines an active LinkedIn group with a discussion forum hosted by the International Union of Railways (UIC) and a public website providing introductory materials to a range of topics, including Just Culture. A second is a forthcoming training course developed by ERA alongside a working group from the rail sector. We hope that these communities of practice will help drive the rail sector to excel in the application of Just Culture.

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HUMAN PERFORMANCE IN THE SPOTLIGHT: 'HUMAN ERROR' AND 'HONEST MISTAKES'

In this series, human performance issues are addressed by leading researchers and practitioners in the field. **Steven Shorrock** gives some insights on the concept of 'human error and the idea of 'honest mistakes'.

What is 'human error' anyway?

It's a good question, and one that is surprisingly difficult to answer. There is little agreement on what 'human error' means. Psychologists prefer to define errors according to deviations from intentions, expectations, cognitive processes and states, or personally preferred outcomes. Safety and design specialists may refer to deviations from norms, rules and standards, such as those prescribed in procedures or design documentation. For the judiciary, what is relevant is the law, which may be infringed unintentionally or knowingly. A key difference is the standard for 'non-error' against which we judge an act or omission. That standard may belong the subject person, another person or group, an organisation, or society. It may be applied in foresight or only in hindsight. Some 'errors' have no unwanted outcomes, or even outcomes that are better than we intended or expected. The outcome is relevant to whether we judge something to be erroneous…but that outcome may take many forms and be affected by many things.

> "The outcome is always relevant to whether we judge something to be erroneous…but that outcome may take many forms and be affected by many things."

So how can we define 'human error'?

To be comprehensive, we could say: "'Human error' is the commission or omission of a human action, or a psychological state or activity, which is inappropriate in light of personal expectations, and/or intended behaviours/states, and/or prescribed written or unwritten rules or norms, and/or potential or actual outcomes and/or others' evaluations." But that is quite complicated, so we could reduce it to: "Someone did (or did not do) something that they were not (or were) supposed to do, according to someone."

And what about an 'honest mistake'?

This isn't much easier because it sounds tautological; real mistakes are honest. But you could say that dishonest acts (such as forgery) may ultimately be a mistake for a person because things do not work out as they want. With the term 'honest mistake', people are emphasising that the intent is sincere, they are trying to achieve a good outcome, and that the conduct is reasonable. The latter is usually the main discussion point.

Why is 'human error' a controversial concept?

We all do and say things that we don't mean to do and say. Such 'slips' and 'lapses' concern action execution, attention, perception, and memory, in the wider context in which we act. We all also do things that we do mean to do, but with outcomes that we do not expect or want. These are typically decisions. Such 'mistakes' combine limitations in underlying

information gathering, planning, prediction, judgement and reasoning, with aspects of the context in which we make decisions. To some extent, we can design tasks, tools and the environment, and train people, to reduce such occurrences, and in some instances eliminate them, but they will always happen in some form.

There is controversy about how we can put all of these things together under one label. But the bigger controversy is associated primarily with causality. We often think of errors as 'causing' unwanted events such as accidents, even counterfactually (an omission caused an accident). But especially in high-hazard, safety-critical systems, this ignores all of the other relevant 'causes'. How could an action or omission in a volatile, uncertain, complex, and ambiguous operational situation 'cause' a disaster? What about prior actions and omissions, such as an organisational omission to protect operators and the public from such normal, inevitable and predictable variations in behaviour?

"When we assign 'error-as-cause' in a complex system, we focus on one decision or fragment of behaviour, usually in difficult circumstances, while ignoring thousands of others, earlier in time."

This brings to mind my favourite comic of all time: Gary Larson's absurdist Far Side illustration. Ted, seated on an aircraft by a window, is thumbing for the recline button. Just below the armrest is a set of buttons, including volume, channel, light, cabin crew call button, and in place of the recline button is red toggle switch labelled "WINGS STAY ON" and "WINGS FALL OFF". "Fumbling for his recline button, Ted unwittingly instigates a disaster", reads the caption.

In some situations, 'errors' would be the norm, because of the context (e.g., a badly designed interface). Are these errors? You could say, yes; no-one would want the wings to fall off. But how could it be possible? It's errors all the way back, unfortunately, but only one is in the spotlight. Of course, Ted's situation is absurd, except that some staff are not protected from situations where disaster is just around the corner. The point is that when we assign 'error-as-cause' in a complex system, we focus on one decision or fragment of behaviour, usually in difficult circumstances, while ignoring thousands of others, earlier in time.

How are errors considered in psychology and human factors?

There are many methods for the classification and analysis of errors. The most well known is probably James Reason's distinction between slips (unintended actions and speech), lapses (forgetting), mistakes (decisions with unwanted outcomes). But several methods make fine distinctions between errors, resulting in hundreds of error types that we recognise even in everyday life. But in an organisational setting, identified 'errors' can become detached from the inseparable context. And so, we're left with 'human error' as the focus, instead of the complex interplay of societal and organisational life – including the associated values, decisions, and non-decisions – that make it too easy for things to go disastrously wrong.

To make things more complicated, we learn from our mistakes (less so from our slips and lapses), or at least we hope that we do. In a sense, mistakes are necessary for learning, but ideally in a fail-safe context.

What other terms are used instead 'human error'?

It is helpful to use a variety of terms to be more specific. We might, for instance, talk about how someone was resolving a goal conflict. If someone didn't do something, it is likely they were doing something else that was or could have been important. We might talk about trade-offs. Often, we can be very efficient or very thorough, but not both. We might also talk about performance variability. Our performance varies constantly, in ways we want and do not want. Or we might talk about how we make decisions under uncertainty. Sometimes, it helps not to use a term at all – just state what you mean more precisely. This helps to avoid different interpretations of terms that we assume have a shared meaning (assumption being efficiency-thoroughness trade off, in itself).

Further Reading

Read, G. J. M., Shorrock, S., Salmon, P. M., & Walker, G. H. (2021). State of science: Evolving perspectives on 'human error'. *Ergonomics*, 64, 1091-1114. https://www.tandfonline.com/doi/abs/10.1080/00140139.2021.1953615

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DIVERSABILITY AND RESTORATIVE JUST CULTURE

Restorative Just Culture involves restoring relations, trust and confidence after an occurrence. This can require resolving emotional tensions via discussions on inclusion and diversity. In this article, **Milena Bowman** gives real-life examples and suggests practical approaches to restorative Just Culture.

When it comes to 'just culture' in air traffic management, we usually think of air traffic controllers and things that go wrong on the sector. But just culture also applies to the engineering side of the business, which is getting ever more complex.

Last year, at MUAC, we had a system upgrade that had to be reversed straight after implementation. This was a very unusual and disruptive event as we had to put in place a couple of workarounds during the day while we investigated what went wrong. We found that there was an error in a part of the configuration data in the software. A fix was prepared for validation by lunchtime.

However, while the operations were secured, there were intense discussions about when to implement the fix, because that meant either stopping the upgrade of a different system or coming up with an intricate solution. The discussions were laden with emotions and questions. *Why did the error occur? Why did the testing not catch it? Why can't we just replan the other baseline?* We had people from operations, planning, testing, safety, quality, and software development on two different products, and everyone had their point of view triggering their own reactions. Through a series of smaller discussions, we found a solution for deploying both baselines by calling in extra people during the night. This ensured that we could guarantee enough time to implement the fix and the new baseline.

But that was not the end of it. The emotions stayed with people long after the issue was resolved, and the system

changes implemented. Emotions remained unaddressed, and an information vacuum created an opportunity for everyone to make their own judgements and conclusions. These were sometimes shared without consideration of wider aspects.

A colleague initiated a restorative just culture intervention, which we called a retrospective session. During the 90-minute meeting, six different people shared their recollections on the content (*what happened*), and the emotions they experienced during and after the event resolution (*what they felt*). Ultimately all the participants, their teams and the whole MUAC organisation learnt from the event. Importantly, they also preserved or restored human connections, avoided lingering emotional damage, and moved from "*who is to blame?*" to restoring trust and repairing harm.

You may be asking yourself how this story is linked with diversity and inclusion. Restorative just culture is a mindset that provides the foundation to build, maintain and repair relationships. It turns out that the very same set of competences that help people work and thrive in a diverse environment also helps them to apply a restorative just culture. In my previous column in this magazine, I called this *diversability* – the ability to thrive in and benefit from a diverse environment.

Successful diversity and inclusion programs benefit disproportionately more from face-to-face encounters than from other types of training. Social psychology research suggests that when a person feels that they are in a safe environment, they are more likely to be vulnerable and share when their mental models about the world are challenged. When behaviours, decisions or assumptions are challenged, emotions often arise. Reflecting on and sharing our personal experiences of these feelings creates a powerful environment to recognise, explore and own mistakes. The diversity and inclusion workshops we held were helpful to the organisation because they provided the opportunity to meet, connect and experience vulnerability among people with whom you do not work every day. They were memorable because they touched the hearts of the people who attended.

Persistent practice in engaging in such discussions develops the 'diversability muscles' of people and their organisation. It is not the statistical numbers of diverse groups that bring the dividend from diversity, but the ability to understand someone else even when emotions run high in the group.

A recent paper by Leonie Boskeljon-Horst and colleagues in the context of Royal Netherlands Air Force illustrates the complexities of fostering a restorative just culture. The authors revealed the need for vulnerability through their interviews with participants in a restorative just culture intervention. Two different participants shared their stories with their colleagues. One focused more on the content of the event while the other told a personal story not only of the event, but also how he felt during the days and weeks after, when he had so many questions and remarks from colleagues. He explained how it could have happened to anyone. This participant shared that while it felt liberating, the experience felt very painful. I speculate that this pain could be diminished if the people sharing are already used to disclosing personal emotions and being vulnerable.

Speaking about diversity can often induce feeling of blame or anxiety in a team setting. Some people opt out to just listen, but not engage. Emotions trigger others to engage but not listen at all. Skilful moderation can bring the needed structure and psychological safety so people can speak, listen, and engage while recognising their own emotions, and the emotions of others. Courageous conversations, role modelling, and resolving the tension between learning and blaming become the fundament to a restorative just culture. In turn, this creates emotional healing, moral engagement, and organisational learning from an occurrence and makes restorative just culture much easier to apply.

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Note: The session was initiated by Maurice van Noppen, and designed and moderated by our internal coach Marinella Leone, both of whom will be happy to share their experience and the model used (maurice.van-noppen@eurocontrol.int and marinella.leone@eurocontrol.int).

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FROM COCKPITS TO COURTROOMS: LOOKING BACK ON A 50-YEAR JOURNEY

A CONVERSATION WITH TOM LINTNER

From early rides on the roads, in the sea and in the sky, to diverse roles at the sharp and blunt ends, **Tom Lintner** has had an extraordinary career spanning half a century in aviation. In this conversation, **Steven Shorrock** talked to Tom about how his experience has shaped his perspectives on Just Culture.

I've worked with Tom Lintner for several years in the context of EUROCONTROL's Just Culture training courses and other forums. Those who have met him could not forget him: he's a striking, extroverted, and humorous straight talker (a native New Yorker, and a proud Irishman). But what has come across to me more gradually over the years is an extraordinary breadth of aviation knowledge. He's as happy to talk about air traffic control, cockpit operations, and dispatch, as airline operations, accident investigation, and justice. But it's not only understanding that he brings; it's operational experience in a diverse range of roles. It all adds up to around half a century of time served in aviation. I spoke to Tom about his life in transportation, and his views on Just Culture, on 'both sides of the pond'. In his own characteristic style, he narrated a lifetime intertwined with multiple modes of transportation.

Early Days

It might be the psychologist in me, but in getting to know someone for an interview, and in general, I am usually curious about their early years. Indeed for Tom, the seeds of his passion for transportation were sewn early. *"My father took me for a plane ride with a friend of his out of Edwards Field, a grass strip on Long Island. I was in the back seat. I was 8 or 9, maybe 10. That was my first plane ride."* His father also taught him how to handle boats on Long Island, and on the beach roads he

learned to drive. His cousin worked for a moving and storage company, and taught Tom how to drive trucks. By 18, he was driving 40-ton (80,000 kg) tractor trailers in New York City. *"If it had gear shifts, I was fascinated,"* he recalled.

College Days

Next came college, and Tom asked me to guess his major at college. My guess was physics, and I was partly right, since that was his minor. I could not guess his major, which didn't even come to mind: accounting. *"Can you picture me as an accountant?"* he asked. *"I can until you start talking,"* I replied (though, of course, I know there are accountants in NYC). *"Why accounting?"*, I asked. *"Not a freaking clue,"* he replied, "*but it's a good foundation*." His vague idea was to go on to law school, major in tax accounting, and *"make a fortune"*.

By the second year of college, he had transferred to a university on Long Island, which was affiliated with a flight school. His trucking job paid his tuition fees, and allowed him to accumulate a collection of flying licenses. Nine months after his first airplane lesson in his first year of college, he had a private pilot licence. Twelve months later came an instrument rating and commercial pilot licence, followed by an instructor's certificate. Then he started to instruct. By the third year, he finished the university programme.

Trucks, Boats and Hospitals

After college, he went to a trailer leasing company. It was the mid-1970s. *"Vietnam was over. I realised that the airlines were flooded with post-military pilots. So, in the hiring curve of aviation, I was in the wrong time, wrong place."* It was a brief diversion into a company with a primary focus on profit margins. After two years, he realised, *"This is not for me."*

In his early-20s, Tom also obtained a US Coast Guard International Captain's licence for Oceanic operation. The licence required him to log 360 days on the ocean and a written exam. He recalled that it was *"probably the most difficult written exam I've ever taken."*

Meanwhile, he decided to train as a volunteer hospital paramedic, motivated by his experience of growing up, when his mother had four open-heart surgeries in the 1960s. *"I grew up in emergency rooms and hospitals,"* he said. As is now clear in his history, motivation and capability aligned with opportunity: *"I never turned down a chance to do something."* One of his flight students was a cardiologist and introduced Tom to a basic paramedic course. He signed up for it, and 365 hours of instruction in cardiac emergency medicine made him an advanced cardiac paramedic. He then started as a volunteer working in the emergency rooms and coronary care units.

I was starting to lose count of the number of licences and certificates. By his mid-20s, Tom had an airline transport pilot's licence, an instructor's licence, a multi-engine licence, a US Coast Guard captain's licence, and a cardiac paramedic licence. But it was becoming clear that this was not all part of a grand plan. *"There was absolutely no plan. I never even had a goal. I explored everything I could and was always fascinated. The whole life strings out the same way. 'Hey, that sounds interesting. Let's do that.' But if I could point my finger at one industry, what intrigued me, it's transportation – basically moving big things from point A to B."*

Indeed, it seemed that there was more of an aversion not to do certain things. It struck me that this is a man with a deep aversion to boredom. *"I can't do it,"* he confirmed. And so, after his time spent on the roads, he took to the skies.

First Job in Aviation

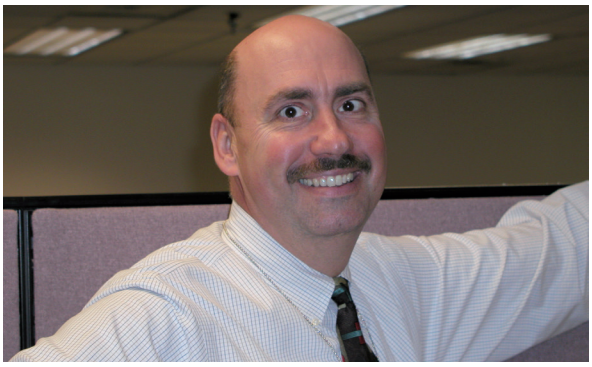
Tom's first job in aviation was as a flight instructor, teaching primary students, commercial instructing, and instrument training, out of airports on Long Island. On Saturdays, he would leave the trucking terminal at 16:30, driving out to Long Island. On arrival he would change clothes, tend the bar in a restaurant, then drive to the hangar. After sleeping there, he'd fly eight hours teaching on Sunday.

His next opportunity took him to ATC at 25 years old. He had taken the Federal Aviation Administration (FAA) ATC exam two years prior "on a whim". He scored 95% and waited. Two years later came *"this big government envelope"*. He was offered a position, at Islip flight service station. But it wasn't for him. *"So, I called and said, thanks, but I only wanna work in a tower…either LaGuardia or Kennedy."* He was advised not to be picky, but another manila envelope arrived, with a job offer for Rochester Tower. His response was the same. Then, the next day, an offer for LaGuardia arrived. In 1979, starting in a "level four facility" without going up through the ranks raised eyebrows, but his training began directly in La Guardia Airport Traffic Control Tower. One year later, he was a licensed controller. By 1981, he was checked out, certified and working on all the positions.

In August 1981, the union declared a strike. PATCO (Professional Air Traffic Controllers Organization) sought better working conditions, better pay, and a 32-hour workweek, along with exclusion from some civil service clauses. Tom assessed the strike as "a lose-lose". He resigned from the FAA within Reagan's 48-hour deadline and moved into airline dispatch. But three weeks later, he was reinstated as a controller at La Guardia. Having obtained an airline dispatcher's licence, he retained a second job for Pan Am World Services as an airline dispatcher instructor, teaching sections of the dispatch programme associated with flight operations, weight and balance, navigation, and meteorology.

New York TRACON

From La Guardia, Tom went to the New York TRACON (terminal radar approach control) on Long Island, which handled the New York metropolitan area – some of the busiest and most complex airspace in the world. He transitioned out of LaGuardia Tower into the LaGuardia sector, but the similarity ended there. The TRACON environment was horrible. *"Dark room, no windows, no sense of what time it was. There were*



spotlights in the ceiling and you had to walk along looking for a spotlight to read a flight strip."

The social environment was toxic, too. *"Picture a whole bunch of Type A personalities. Every person wanted to be in command. Nobody believes in consensus. Then put 'em into a small dark room. It was controlled quiet chaos, mixed with a feeling of 'what's going to be thrown at us next?'"*

"Nobody considered anything in air traffic as related to safety. It really wasn't our job. Safety was assumed."

I raise the issue of safety culture. "*There wasn't one. We never thought about that. Nobody considered anything in air traffic as related to safety. It really wasn't our job. Safety was assumed.*" The lack of safety focus was systemic. *"There wasn't a safety department per se in the air traffic control environment. There wasn't even a safety officer. It was assumed that if the book said you need three miles, that's all you needed to do."*

The term 'risk' was never used, either. *"That was just not part of the thought process. The thought process at the time was, 'Do you guys think this is gonna work? That's as close as you got to risk management."* Still, individual controllers would build in an extra half-mile buffer, principally to avoid blame. Reflecting on the thought process at the time, Tom explained: *"Now, with that buffer, if the first aircraft slows down unexpectedly, I can do something before I get in trouble for a close call."*

His headset years in LaGuardia and the New York TRACON amounted to around nine years.

But there were another 20 years in the FAA.

Safety Auditing and Investigation

Tom moved into 'Quality Assurance' at the Regional Office in the mid-1980s: *"Damned if I ever knew what that meant."* He went in as a staff specialist to the regional office at Kennedy Airport. He would go into a facility, plug in, and watch and critique how the controllers worked. *"We would have their own local manual and the headquarters manual. And we'd check, are they doing things in accordance with what the local manual says? While we didn't think of it at the time, we were operational safety auditors."*

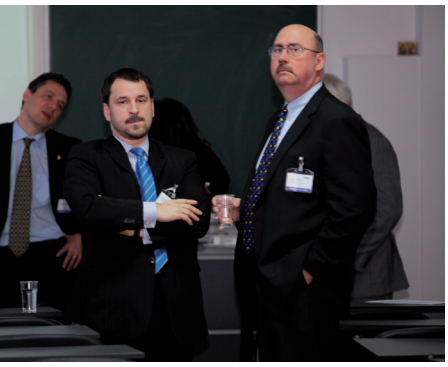
But he'd not quite finished with Ops. *"I had checked the box for the tower environment. I had checked the box for radar. I needed to check the box for supervisory experience."* He transferred to become an area manager in the radar room at Washington Dulles International Airport and remained there for 18 months.

Curiosity satisfied, he was drawn to Washington headquarters: *"the real Investigations organisation: the Office of System Effectiveness".* This involved incident investigations for the entire USA: from losses of separation to accidents, and every operational event in between.

It was a desk job, but not a regular desk job. "*I probably spent 40 to 50 per cent of the time on the road, all over the country: Chicago, Atlanta, San Francisco, Anchorage."* Part of the job was monitoring the system from the air, in the cockpit, which was "both boring and fascinating." How so, I asked? *"The different systems on the aircraft. The jump seat in the Concorde crossing the North Atlantic at 60,000 feet – you do see the curvature. The approach into Point Barrow, Alaska, at 800 feet, looking for a snow-covered runway…"*

There were so many incidents at the time that a new, dedicated unit was established. The Office of Air Traffic Investigation was a small office, with eight staff responsible for conducting investigations of the air traffic handling of events. Tom and his colleagues were teamed up with a similar organisation within FAA flight standards, and the National Transportation Safety Board (NTSB). This was an era of many accidents. *"Value jet into the Everglades. American Eagle into Illinois. US Air 427 into Pittsburgh. US Air into Charlotte. The Cessna 150 crash into the White House in 1994. We were just finishing Delta 191 into Dallas."* Those were just the big ones. *"We were losing two GA aircraft a week on average. Then TWA 800 blew up off coast to Long Island."* That was the last one for me, he said. *"I couldn't change anything. What are we doing here? We're not making a change. We're just burying people."*

The emotional impact was significant and remains a driving force. *"I still hear screams in my head."* I assumed he meant those of families, heard during the inquiries, but the voices were those of pilots. *"There were rarely any survivors. And nobody goes down quietly."* In those days, there was counselling support, but it would rarely be accessed. *"Only weak people did that"*, Tom quipped. *"You could see a psychologist, but not if you wanted to work again."* It was a different era, but sadly, these attitudes remain in aviation.



The lack of effectiveness and lack of support was joined by a lack of accountability. This brought us back to Just Culture. *"Investigations were the ultimate blame game."* In those days, every accident investigation was centred around protection from unwarranted blame. Competing organisations and professionals were coming after each other.

"Investigations were the ultimate blame game."

But there was a change in the nineties. The usual practice of assigning 'probable cause' to the pilot or controller changed. *"The NTSB added that 'the FAA failed to provide effective management oversight'. The foundations of the earth shook."* But what looked like a system approach remained a blame game. The targets just expanded.

All of these experiences influence how he thinks about just culture now. *"I saw all the ways that don't work. Pointing the finger doesn't work. Making accusations before facts are known does not work, and neither does denial."* His idea on how things should be is clear: *"The goal of any investigation is to provide the foundation for future changes – if warranted – so that similar events are prevented. To achieve that the investigation must be fair, balanced, and unbiased. To accomplish that objective, someone, or some organisation, must accept responsibility, and that does not automatically mean they have to be punished. Conversely, a 'blame-free' environment does not work, and nobody can be seen as above the law."*

"Gross negligence can only be determined by a professional trained in the law and – fortunately – it is an exceptionally rare event."

The Other Side of the Pond

Bringing a US perspective to the European context, Tom has observed several differences. *"We walked a different path earlier on and it was never called just culture."* It goes back to the NASA aviation safety reporting system (ASRS), founded in 1976. The FAA's regulatory role to encourage aviation activity conflicted with its enforcement responsibility. FAA and NASA therefore agreed to establish a programme, run by NASA, to collect safety data. Tom recounted that every pilot was told, *"carry this green sheet. If something happens, write the story down, it goes to NASA, and we can learn from it to make the system safer."* In order to get pilot cooperation, the FAA would take the filed NASA report into account, and not suspend or revoke the pilot's licence. They would instead issue a letter concerning what happened and what was learned. *"It was a tacit understanding that if you cooperated by telling your story, the FAA flight standards inspector would take that into consideration."*

Subsequent reporting programmes developed at major airlines would eventually evolve into the 'Aviation Safety Action Program' (ASAP). Airlines, the FAA, and professional organisations and associations created a way for employees to report safety data with certain protections. *"In retrospect, without ever calling it 'Just Culture,' it was the genesis of a future approach to reporting and handling reports from front line personnel. It's as close as you can get to what I would refer to as operational just culture. It's not immunity; it's still accepting responsibility."* This is where Tom believes that Europe needs to focus.

Currently, the European definition of Just Culture includes the legal term, "gross negligence" while ASAP-type programmes do not use the term. *"This is a huge advantage. Gross negligence can only be determined by a professional trained in the law and – fortunately – it is an exceptionally rare event. But unfortunately, that criterion has become a challenge to just culture implementation in some quarters."*

Obstacles on the Just Culture Journey

Tom referred to a number of issues that get in the way of Just Culture. The first is how professionals and organisations deal with gaps in human capabilities. *"The world is a bell curve with people with different abilities and different skills doing different jobs that have different parameters and requirements. And somewhere in that bell curve, you have to establish certain standards, and that is the responsibility of the organisation. So, what happens when there is a mismanagement and you have the wrong person in the wrong job, trying the best they can, but the job demands and system complexity exceed their capabilities. Then, at a point in time, they make mistakes? That's not an individual's 'honest mistake', in my opinion, that's a failure of a system, and that needs to be acknowledged."* According to Tom this issue will be a challenge. It's a taboo topic, but one that he says we collectively need to talk about.

A second obstacle is responsibility and accountability, either by the people or the organisation as a whole. *"The bottom line is somebody or something has been inconvenienced, hurt, or penalised because the wrong person was in the wrong job, trying their best, but they shouldn't have been there under the conditions at the time."* The bigger picture for Tom involves *"finding the balance"*, and accepting responsibility and accountability for the ultimate results of something that goes wrong. He's not necessarily talking about the typically traumatic context of restorative justice (or restorative just culture), but the more mundane, which might be as simple as lost luggage. Having experienced this recently, with no apology and no admission of anything by the airline and airports, I could see what he means. Sometimes, professionals and organisations are so intent on not admitting wrongdoing that the right thing isn't done. Especially when there are professional or organisational implications (e.g., liability), honesty, apology, and amends often don't happen.

A third obstacle that Tom warned about is focusing Just Culture programmes on specific employees only. *"You have developed a Just Culture programme, and, when you say, 'this is for the pilots' or, 'this is for the controllers,' you're also saying, 'This is for our highly trained, specialised, important people.' So, what about those who work under the wing? That airplane's not gonna move unless the folks under the plane do what they need to do."* There is a similar situation in air traffic, with support staff sometimes seemingly outside of the Just Culture programme. *"'Just culture for some' creates levels of unfairness within an organisation, and you have inadvertently segregated your workforce into 'them' and 'us'."*

"'Just culture for some' creates levels of unfairness within an organisation, and you have inadvertently segregated your workforce into 'them' and 'us'."

A fourth obstacle is denial of the legal reality. Reflecting on the early years of the EUROCONTROL Just Culture Prosecutor Course, Tom remarked that *"the understanding today is much better than it was when we started 11 years ago."* In the beginning, the legal environment was a shock to professional associations, in terms of the legal context and the type of questions that might need to be answered. The peculiarities of Napoleonic law when it comes to prosecution *"still blows my mind"*, said Tom. And it's not lost on him that Common Law has its own peculiarities, such as the practice of filing a complaint in a more liberal or conservative court depending on the history of that court and the local regulations on evidence. *"But the law is the law. If you don't like it, change the law."*

A fifth obstacle that became clear from our conversation was a focus on individual cases over the bigger picture. *"We are going in the right direction, albeit at a glacial pace. But we're hampering our own progress by not looking far enough down the road. We are so engrossed in specific cases, which we perceive to be miscarriages of justice, that we lose track of the potential gains we can have as a whole in society."*

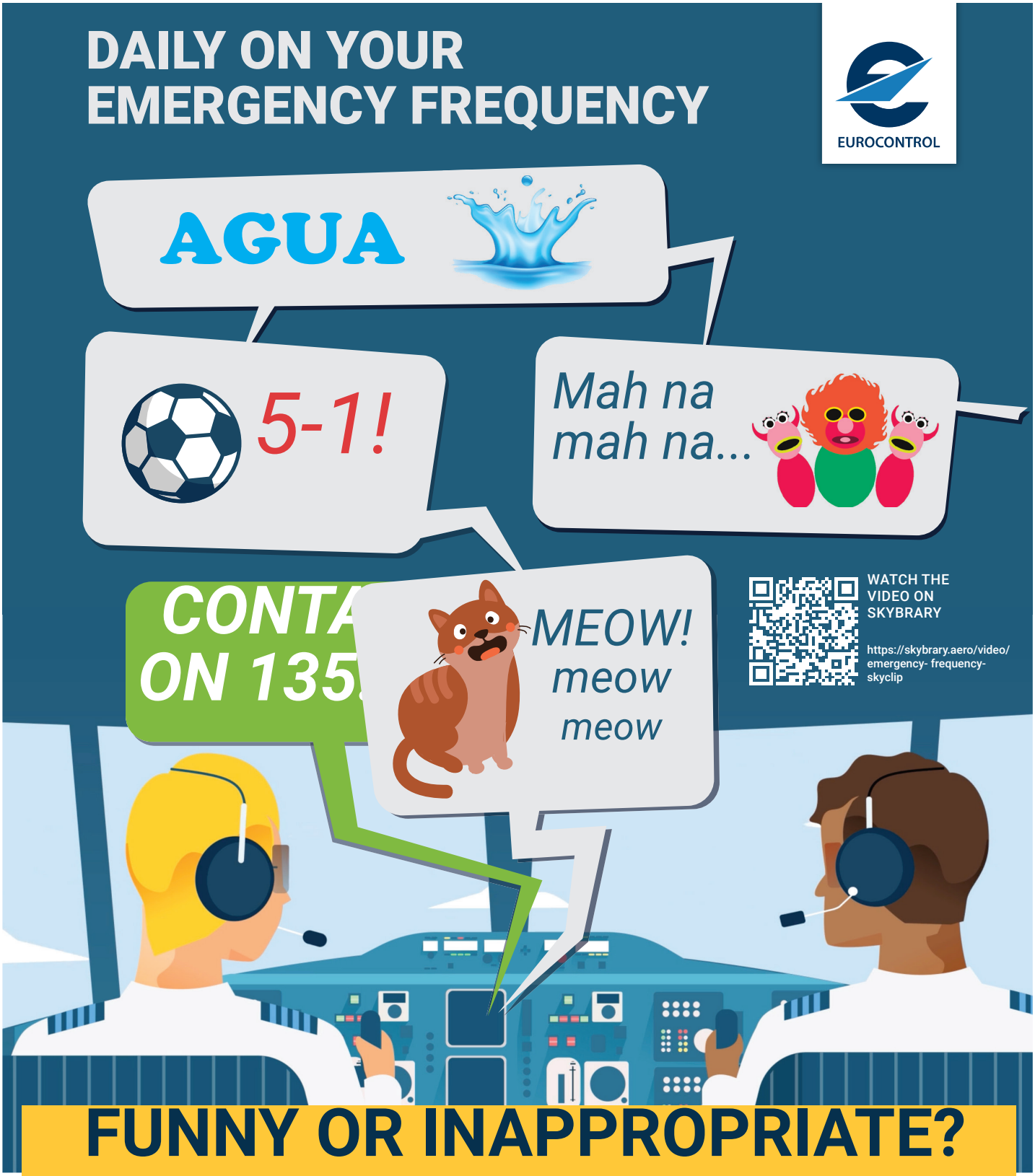
Looking Back and Looking Forward

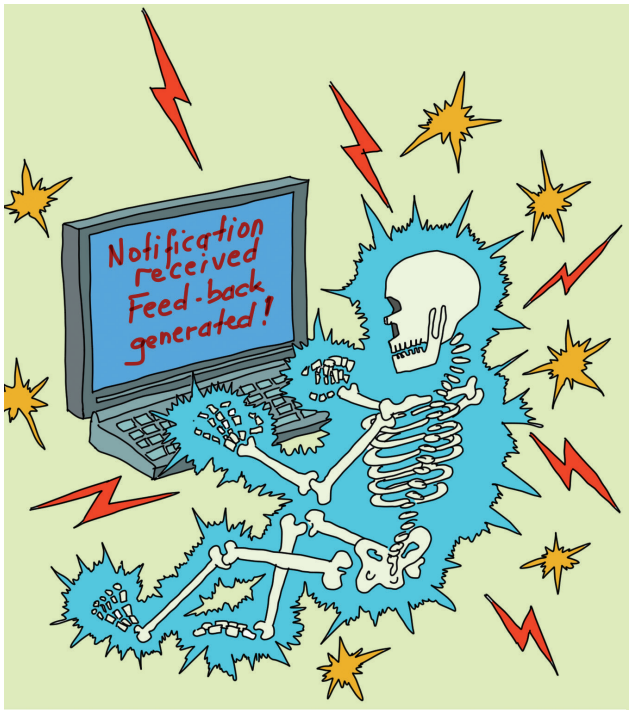
Going back to Tom's early days, I asked him at the start of the conversation what his mother or father would have said were his gifts. What was he naturally good at? One gift was obvious: *"Determination. Once I locked onto something – once I said 'let me take this airplane ride' – I wouldn't let go."* This was apparent in his collection of certificates and licences. Tom's second gift was less obvious, but it made sense even in the context of the conversation: *"Seeing the breadcrumbs going forward and backward."* I asked him what this meant for him now. *"I can see the breadcrumbs going backward from an event, but I find it easy to envision multiple alternative paths going forward. I don't allow myself to be stopped by a single obstacle – usually bureaucratic – I simply take a different path to the same objective."*

The conversation helped me to trace the breadcrumbs along his lifepath, from a childhood flight that sparked a passion in aviation, through to his operational and safety roles. From these roles – spanning 50 years in aviation – I could understand the roots of his perspectives on Just Culture and safety. Much of the professional and organisational history Tom described helped him to understand what doesn't work, and what can work. As he likes to say, *"Just Culture is both simple and complex,"* or rather, simple in theory, but complex in practice.

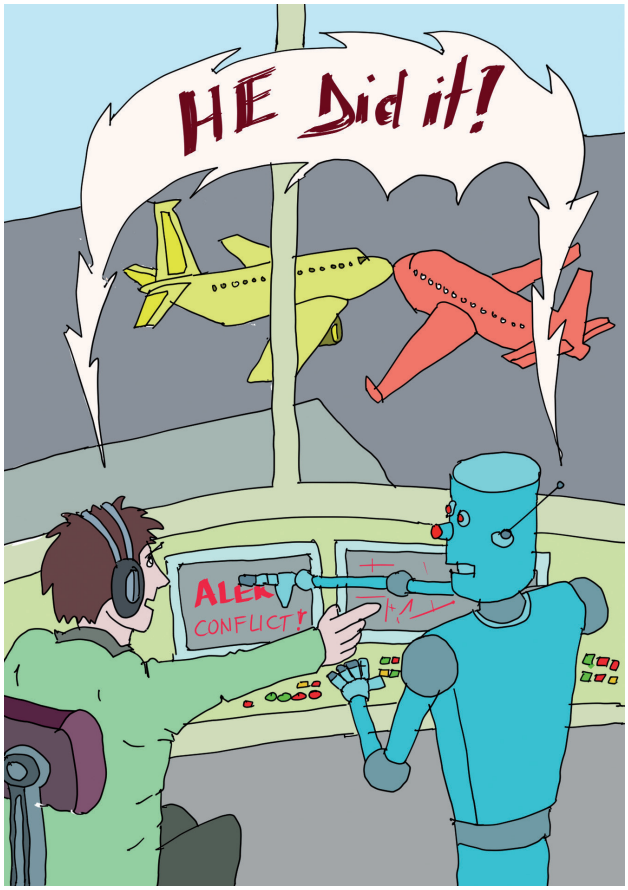
Tom Lintner is currently the President and CEO of The Aloft Group, LLC as well as Managing Director of Aloft Aviation Consulting, Ltd., in Dalkey, Ireland. Tom retired after 30 years of air traffic operations with the U.S. Federal Aviation Administration. His experience and familiarity with U.S. and European air traffic control and flight operations, ATC enroute and terminal procedures development, safety and quality assurance, and accident investigation, represents a unique range of aviation expertise. Tom is a citizen of Ireland and the United States and is a trained safety auditor with EUROCONTROL. He holds a U.S. Airline Transport Pilot license, is an active Certified Flight Instructor, holds both an Aircraft Dispatcher and Control Tower Operator license and has taught for Flight Safety International and PanAm World Services.

Tom is a facilitator on EUROCONTROL's Just Culture Prosecutor Expert Course.

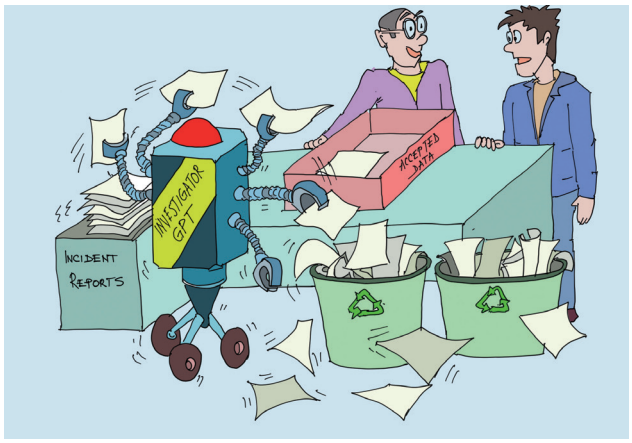

DAILY ON YOUR EMERGENCY FREQUENCY
EUROCONTROL
AGUA
5-1!
Mah na mah na...
CONTA
ON 135
MEOW!
meow
meow
WATCH THE VIDEO ON SKYBRARY
https://skybrary.aero/video/emergency- frequency-skyclip
FUNNY OR INAPPROPRIATE?
YOU DECIDE!
ECA Piloting Safety
European Cockpit Association
IFATCA
IATA
CANSO
SHAPING OUR FUTURE SKIES



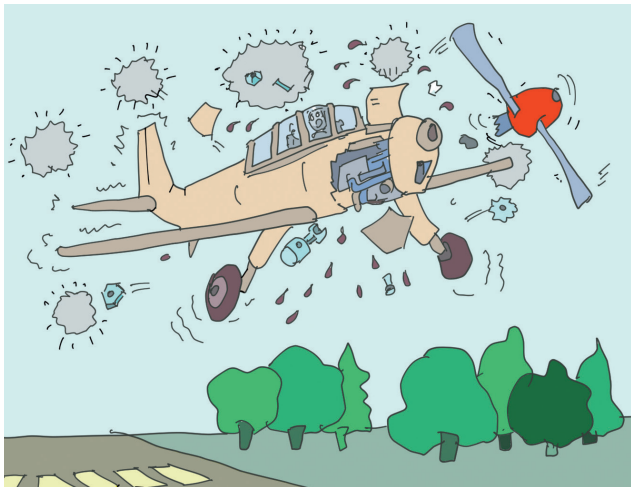
Now that AI directly analyses the incident reports, feedback is lightning fast



The retrospective session on the last outage didn't go as planned



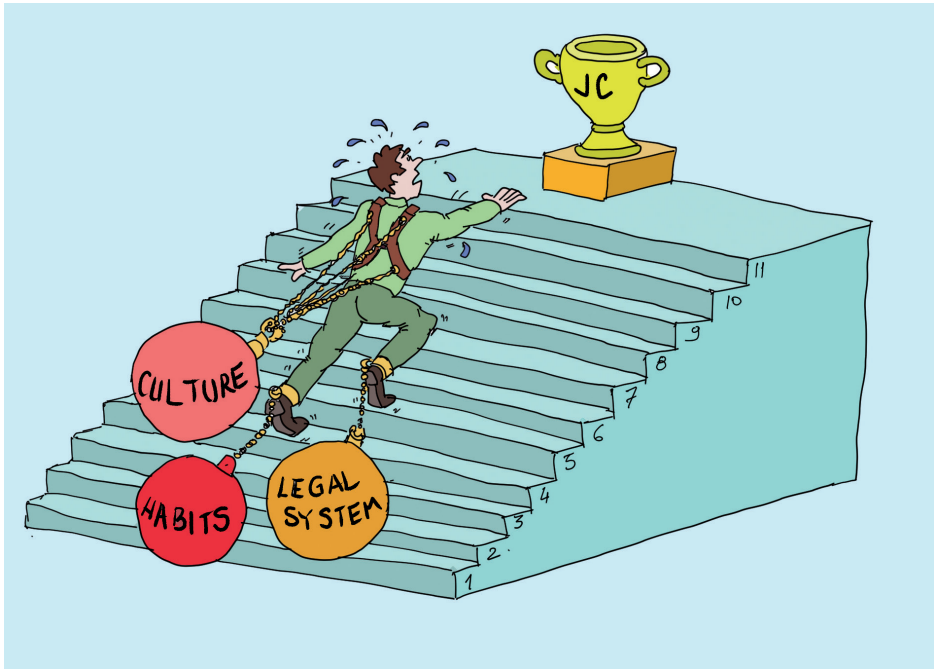
"Is natural language processing difficult?"
"Not at all! The AI keeps only the data that fit our model!"



"It looks like we have another case of pilot error on our hands"

"I can accept that hitting the reef was an honest mistake, but forgetting the can opener..."

"Still think this was the best way to understand what it's like at the 'sharp end'?"



EUROPEAN COCKPIT ASSOCIATION RELEASE POSITION PAPER ON POSITIVE ORGANISATIONAL CULTURE IN AVIATION

In April 2023, the European Cockpit Association released a position paper on Positive Organisational Culture in Aviation. The position paper underscores the aviation industry's challenges, exacerbated by the pandemic, and the need to address them through a more comprehensive approach to organisational culture, not solely focusing on safety culture, in addressing these challenges. It critiques a limited application of the "Just Culture" concept, arguing that it should extend beyond incident reporting and involve all employees. The position paper proposes a broader concept termed "Positive Organisational Culture in Aviation", emphasising an environment where safety-conscious behaviour stems from a psychologically safe workplace. This culture is believed to enhance resilience and performance, benefiting both safety and the organisation's economic aspects.

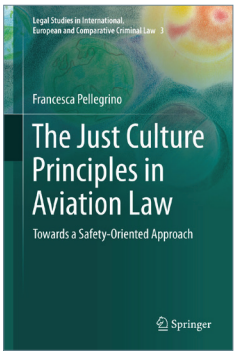
Attributes of a positive organisational culture are outlined, including:

- a psychologically safe environment,
- integration of Just Culture principles throughout the organisation,
- credible values,
- ethical leadership, and
- transparent employment relationships.

The paper emphasises the interdependence of safety culture and organisational culture, and wider importance of organisational culture beyond safety, and proposes collaboration between industry stakeholders.

See **https://www.eurocockpit.be/positions-publications/positive-organisational-culture-aviation**

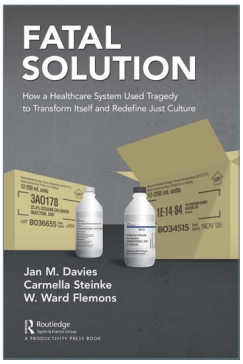
If you want to read more about some of the issues raised in HindSight, then these books might be of interest.



The Just Culture Principles in Aviation Law: Towards a Safety-Oriented Approach, by Francesca Pellegrino (2019)

From the publisher: "This book reviews and critically analyzes the current legal framework with regard to a more just culture for the aviation sector. This new culture is intended to protect front-line operators, in particular controllers and pilots, from legal action (except in the case of willful misconduct or gross negligence) by creating suitable laws, regulations and standards. In this regard, it is essential to have an environment in which all incidents are reported, moving away from fears of criminalization. The approach taken until now has been to seek out human errors and identify the individuals responsible. This punitive approach does not solve the problem because frequently the system itself is (also) at fault. Introducing the framework of a just culture could ensure balanced accountability for both individuals and complex organizations responsible for improving safety. Both aviation safety and justice administration would benefit from this carefully established equilibrium."

See also HindSight 18 on Justice & Safety at **https://skybrary.aero/articles/hindsight-eurocontrol**



Fatal Solution: How a Healthcare System Used Tragedy to Transform Itself and Redefine Just Culture, by Jan M. Davies, Carmella Steinke & W. Ward Flemons (2022)

From the publisher: "One box of chemicals mistaken for another. Ingredients intended to be life-sustaining are instead life-taking. Families in shock, healthcare providers reeling and fingers starting to point. A large healthcare system's reputation hangs in the balance while decisions need to be made, quickly. More questions than answers. People have to be held accountable – does this mean they get fired? Should the media and therefore the public be informed? What are family members and the providers involved feeling? When the dust settles, will remaining patients be more safe or less safe? In this provocative true story of tragedy, the authors recount the journey travelled and what was learned by, at the time, Canada's largest fully integrated health region. They weave this story together with the theory about why things fall apart and how to put them back together again. Building on the writings and wisdom of James Reason and other experts, the book explores new ways of thinking about Just Culture, and what this would mean for patients and family members, in addition to healthcare providers. With afterwords by two of the major players in this story, the authors make a compelling case that Just Culture is as much about fairness and healing as it is about supporting a safety culture."

> *"One of the best accident analysis books I have read. The authors' clinical expertise is effectively blended with an understanding of the psychological and organizational factors that create conditions for adverse events. Their first-hand experiences of the aftermath create a powerful account of the cultural shift that was achieved. Highly recommended reading for those striving to improve patient safety." (Rhona Flin PhD, FBPsS, FRSE, Professor of Industrial Psychology)*

Would you like to write for HindSight magazine?

HindSight is a magazine on human and organisational factors in operations, in air traffic management and beyond.

As such, we especially welcome articles from air traffic controllers and professional pilots, as well as others involved in supporting them.

Here are some tips on writing articles that readers appreciate.

1. Articles can be around 1500 words (maximum), around 1000 words, or around 500 words in length. You can also share your local good practice on what works well for you and your colleagues, on the theme of each Issue, in up to 200 words.

2. Practical articles that are widely applicable work well. Writing from experience often helps to create articles that others can relate to.

3. Readers appreciate simple and straightforward language, short sentences, and concepts that are familiar or can be explained easily.

4. Use a clear structure. This could be a story of something that you have experienced. It helps to write the 'key points' before writing the article.

5. Consider both positive and negative influences on operations, concerning day-to-day work and unusual circumstances, sharp-end and blunt-end.

If you have an idea for an article that might be of benefit to others,
we would like to hear from you.
Please write to **steven.shorrock@eurocontrol.int**

HindSight
Human and organisational factors in operations

The theme of HindSight 36 will be

PEOPLE IN CONTROL: STAYING IN THE LOOP

HindSight iis a magazine on human and organisational factors in operations. The magazine is aimed primarily at operational staff, but also at other practitioners, in air traffic management (ATM) and aviation, and beyond. The next issue of *HindSight* will look at the issue of how people remain in control of safety-critical systems in an increasingly technological work context…and stay in the loop..

We welcome articles and short contributions by **Friday 12 January 2024.**

We welcome articles from aviation and other safety-critical sectors where lessons may be transferrable (e.g., road transport, rail transport, shipping, power generation, healthcare). We especially welcome articles written by or with operational staff, bearing in mind that operational staff are the primary readers. Articles may concern, for example:

- Manual skills training (e.g., simulation, shadow ops)
- Mental practice
- Reversion to manual (e.g., processes and procedures, testing, case studies)
- Automation and human performance
- Artificial intelligence and human performance
- Joint cognitive systems design case studies
- Regulation for manual skills
- Local good practice and work design

Draft articles (1500 words maximum, but may be around 1000 or 500 words) and short examples of experiences or good practice (that may be helpful to other readers) (200 words maximum) should:

- be relevant to human and organisational performance in ATM and aviation more generally,
- be presented in 'light language' keeping in mind that most readers are operational staff, and
- be useful and practical.

Please contact **steven.shorrock@eurocontrol.int** if you intend to submit an article, to facilitate the process.

If you are interested in downloading back issues of the **HindSight collection**
http://www.skybrary.aero/articles/hindsight-eurocontrol

In the next issue of HindSight:

"PEOPLE IN CONTROL: STAYING IN THE LOOP"