

Human Factors Contributions to Just Culture in Aviation and Beyond

Steven Shorrock, Tony Licu, Radu Cioponea & Barry Kirwan

EUROCONTROL, Brussels 1130, Belgium

SUMMARY

For over 20 years, EUROCONTROL and its partners have pioneered efforts to promote Just Culture at the corporate and judicial levels in aviation and beyond. Human Factors has been integrated into this effort in a variety of ways. This paper outlines three areas in which Human Factors concepts, theories and methods have been integrated: 1. Just Culture at the judicial level; 2. Just Culture at the organisational level in aviation; and 3. Just Culture in the wider world.

KEYWORDS

Just Culture, Safety, Justice, Accidents, Incidents, Human Factors

Introduction

The notion of ‘just culture’ has developed since the 1980s to describe a collective agreement to describe a necessary balance between safety and justice. In the academic literature, James Reason’s 1997 book, *Managing the Risks of Organizational Accidents* provided an early theoretical account on Just Culture, with Sidney Dekker adding considerable depth to the theory in subsequent work (e.g., see 2017).

In short, there is common agreement that there is a need to learn from ‘honest mistakes’ and other well-intentioned and non-intended departures from expected performance, as understanding is necessary for learning at all levels, from individual to industry. Such learning may involve all aspects of work-as-done and the associated multiple interacting contexts of work, from the personal context to the regulatory context. The notion of just culture is that people should be able openly to report and discuss unwanted events and safety concerns (e.g., safety-related occurrences) that reflect normal human limitations combined with suboptimal work contexts. Following learning processes, changes can be made to processes, procedures, policies, technology, information, the built environment, training, and so on, to try to improve system performance.

On the other hand, conduct and practice is sometimes deemed unacceptable. The nature of unacceptable conduct is a matter of social consensus and varies in different professions, organisations, and societies. In more serious cases, unacceptable conduct is a matter of law. For some activities, specific laws exist to identify unacceptable behaviour (e.g., in English and Welsh law, ‘Dangerous driving’ for drivers and ‘Misconduct in public office’ for public officers). For other activities and jobs, ‘negligence’ and ‘gross negligence’ are legal concepts and offences covering professional misconduct.

Getting the right balance between safety and justice is an ethical imperative. This is especially true in safety-critical industries where learning and professional conduct is necessary for safe and resilient operations. In such contexts, highly permissive and highly punitive approaches to

managing behaviour and outcomes are likely to degrade system performance and human wellbeing, as well as organisational credibility, over time due to drifts in norms and standards.

The concept of 'Just Culture' is therefore widely seen as important for the improvement of safety in a range of industries, and important for the administration of justice. While there are several definitions of Just Culture in the literature, there is now a definition in European aviation regulation (EC 376/2014), as follows: "*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."

EUROCONTROL, a pan-European civil-military organisation dedicated to supporting European aviation, has played a leading role in the development of Just Culture principles and practices. This has been achieved by carrying out a range of collaborative activities to enhance the implementation of associated policies, processes and practices. Working with operational and judicial partner organisations and professionals, EUROCONTROL cover many aspects of Just Culture, at the corporate and judicial levels in aviation and beyond. Human Factors has been integrated into this effort extensively as part of an interdisciplinary approach (including legal, safety management, and operational professionals) to help promote safety enhancement and accountability within a fair and trusting social system. This article examines these contributions at three levels.

1. Just Culture at the judicial level

A critical area when it comes to Just Culture concerns the dialogue between domain experts and judicial authorities. Human Factors practice is integrated into this effort in three ways. One is via participation in the **Just Culture Task Force (JCTF)**, established over a decade ago under the guidance of the Director General of EUROCONTROL (<https://skybrary.aero/articles/eurocontrols-just-culture-task-force-and-list-prosecution-experts>). 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 legal and safety experts representing Member States, as well as air traffic management (ATM), air transport associations, and other industries. The JCTF focuses on the development of policies and practical guidance materials for Just Culture promotion, contributing to shaping the regulatory landscape surrounding aviation safety and legal aspects.

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. Human Factors is a constant presence in the triannual JCTF meetings and has contributed to discussions and debates with HF and systems theory from a range of industries and using a variety of case studies.

The second is 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. 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.

The course is designed to equip independent operational experts, nominated by their respective associations, with the knowledge and skills necessary to 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. 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 (<https://www.eurocontrol.int/news/eurocontrol-supports-national-judiciaries-need-aviation-expertise-first-list-aviation>). 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.

Human Factors expertise is integrated into the EUROCONTROL Prosecutor-Expert Course. This has involved assistance in the derivation of learning outcomes for the course, and delivery of tasks associated with learning outcomes concerning human and system performance, framed around the concepts of ‘work-as-done’ and ‘work-as-judged’ (see Shorrock, 2023). This includes a discussion of:

- complexity and complex systems (including the nature of complexity, intrinsic hazards in sociotechnical systems, and system degradation)
- human performance (human strengths and limitations)
- work-as-done (including goal conflicts, trade-offs, uncertainty, compromises, adjustments, local rationality, contextual influence)
- proxies for work-as-imagined (work-as-imagined, work-as-prescribed, work-as-disclosed, work-as-analysed, work-as-observed, work-as-simulated, work-as-instructed, work-as-measured, work-as-judged, see Shorrock, 2020)
- biases that affect work-as-judged (see Shorrock, 2023).

The third way that Human Factors practice is integrated into Just Culture at the judicial level is by helping to foster wider cooperation and collaboration between aviation stakeholders and the European judiciary. This includes involvement in **Just Culture Conferences**, normally hosted biennially. 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 was co-hosted by EUROCONTROL and Austro Control in Vienna on the 14th and 15th of September 2023. This brought together experts and stakeholders to deliberate on the principles of just culture across various sectors. Professionals from aviation, rail, healthcare, shipping, nuclear, as well as the judiciary, contributed their insights on Just Culture to nearly 200 participants. This included insights into Human Factors from multiple perspectives (see <https://skybrary.aero/articles/just-culture-conference-2023> for agenda and presentation slides). For instance, Neil Spenceley, a paediatric intensive care doctor with an applied interest in Human Factors and system safety, delivered comprehensive and entertaining insights on ‘root causes’, ‘human error’, the second victim, patient safety, normal accident theory, complexity, muddling through, Safety-I and Safety-II (https://skybrary.aero/sites/default/files/bookshelf/The_real_price_of_Swiss_Cheese.pdf). This would not be remarkable were it not for the fact that this unique conference brought together industry and judiciary to discuss Just Culture. A previous meeting included a presentation on the psychology of judgement for the judiciary (<https://skybrary.aero/sites/default/files/bookshelf/5858.pdf>).

The above is just some of the activity involving the European judiciary where Human Factors theory and practice have a significant contribution. To our knowledge, the nature and extent of this collaborative work is unique in the world.

2. Just Culture at the organisational level in aviation

For over a decade, Just Culture has been integral to EUROCONTROL's **Safety Culture Programme**, applied in over 30 countries by EUROCONTROL. The EUROCONTROL safety culture questionnaire is scientifically validated and to our knowledge, one of the most extensively used in the world in the context of transportation (see EUROCONTROL, 2021; Kirwan and Shorrock, 2014; Noort et al, 2016, Reader et al, 2015; Shorrock et al, 2011). The programme was conducted for many years in collaboration with academics at the University of Aberdeen and The London School of Economics, and NATS Human Factors practitioners. The EUROCONTROL safety culture questionnaire includes various items (and an associated Likert scale) related to the concept of Just Culture, such as:

- “Voicing concerns about safety is encouraged”
- “People who report safety-related occurrences are treated in a just and fair manner”
- “If I see unsafe behaviour by any of my colleagues I would talk to them about it”
- “I would speak to my manager if I had safety concerns about the way that we work”
- “Incidents or occurrences that could affect safety are properly investigated”
- “I am satisfied with the level of confidentiality of the reporting and investigation process”
- “A staff member who was being prosecuted for an incident involving a genuine error or mistake would be supported by the management of this organisation”
- “Incident or occurrence reporting leads to real safety improvements in this organisation”
- “A staff member who regularly took unacceptable risks would be disciplined or corrected in this organisation”

These issues are always a topic of conversation in the subsequent workshops and interviews, 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 staff, and others learned from other ANSPs, plus good practice derived from research on safety culture. These have included the development of policy and improvement of practice on Just Culture in ANSPs.

3. Just Culture in the wider world


Just Culture is also the topic of several of the EUROCONTROL **Safety Culture Discussion Cards** (Shorrock, 2012; EUROCONTROL, 2020). These are a practical resource to aid discussion about safety culture by any person or team in any industry sector, developed with HF expertise using a participative design approach. The cards use the same concepts as the EUROCONTROL questionnaire to ensure that the cards retain acceptable validity in terms of the theory of safety culture, though everyday language is used to make the cards accessible.

The Safety Culture Discussion Cards are now available for downloading and printing in Edition 2, in several languages. The physical cards are printed in colour on A6 cards. The first few cards in the pack explain briefly what safety culture is, show the organisation of the cards (around the EUROCONTROL safety culture elements), and explain some possibilities for using the cards. Then, the discussion cards are sorted into eight elements:

1. Management Commitment
2. Procedure & Training

3. Staffing & Equipment
4. Just Culture, Reporting & Investigation
5. Communication & Learning
6. Risk Handling
7. Collaboration & Involvement
8. Colleague Commitment

4f Cultures of Safety



Investigate to improve

How well are safety occurrences investigated?

A good safety investigation should describe and explain the occurrence and the factors that contributed to it, and present workable recommendations to improve safety, involving those who were involved and affected.

How can safety investigation be improved?

Just culture, Reporting & Investigation




Photo by clement127

Especially relevant to Just Culture are sections 4 and 1 above.

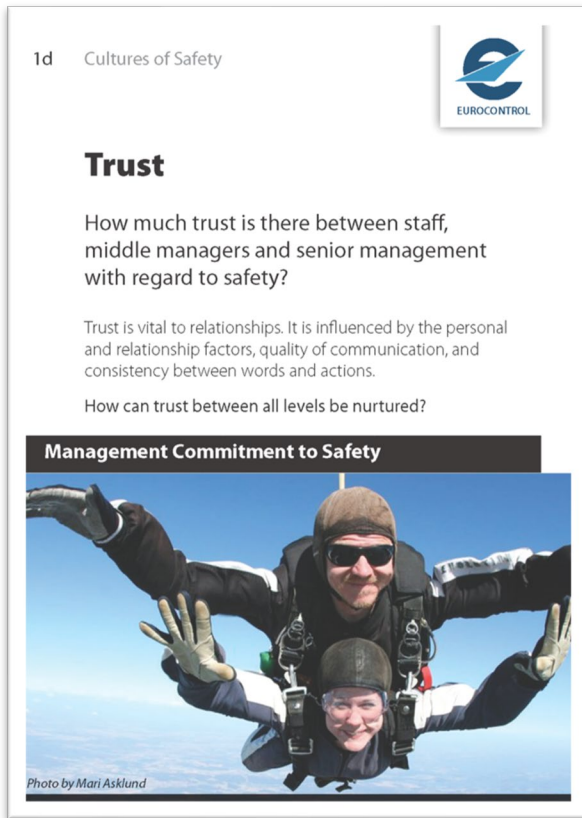


Figure 1: Examples of Safety Culture Discussion Cards

The cards have been adapted (with permission) by the European Commission, and by the National Health Service in Scotland for use by healthcare workers (see <https://learn.nes.nhs.scot/61107>).

EUROCONTROL also developed the **Just Culture Manifesto** with HF expertise, with the aim 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
- provides a framework for other people to advance this vision of just culture.

The Just Culture Manifesto (<http://www.bit.ly/JCManifesto>) distils 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.
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.

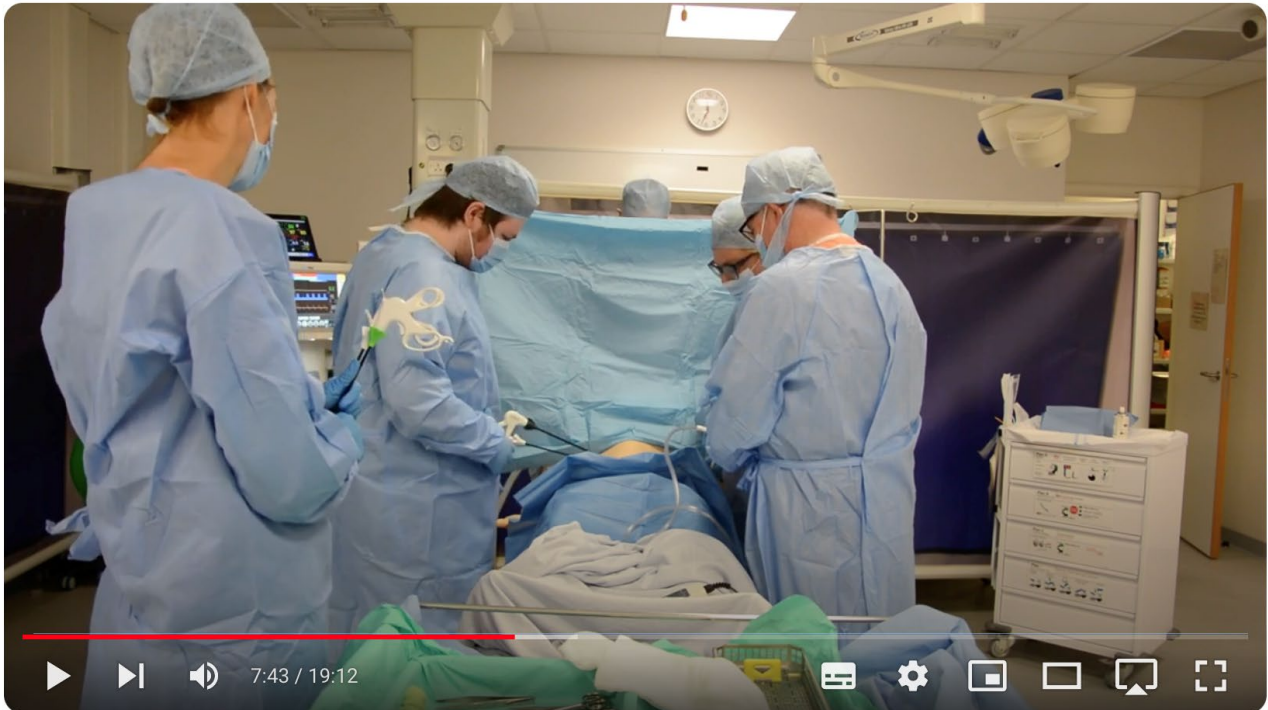
5. *Design systems that make it easy to do the right things:* Improving safety means designing ways of working that make it easy to do the right thing and hard to do the wrong thing.

At the time of writing, there are 540 signatories from a wide variety of organisations and professions in several industries, along with comments from signatories.



Figure 2: Just Culture Manifesto

A **short film** has also been produced. The 18-minute film entitled “*The Wrong Kidney: Why do Never Events Keep Happening*” was shot in the Scottish Centre for Simulation & Clinical Human Factors. It centres on a surgical ‘never event’ in healthcare, but can be used in any context to provoke discussion among operational, safety, management, HR, and legal specialists, for instance. This film was first shown and discussed at the EUROCONTROL Just Culture Conference 2023 with audience participation using additional ‘witness statements’. The film can be seen at <https://youtu.be/9jqnn8uJuMQ>.



The Wrong Kidney: Why do Never Events Keep Happening

Figure 3: Video still of The Wrong Kidney

Finally, Just Culture is promoted in EUROCONTROL's *HindSight* magazine, which reaches tens of thousands of readers. *HindSight* is a magazine on *human and organisational performance* produced by EUROCONTROL. The purpose of *HindSight* magazine is to help staff at all levels in ATM, aviation and beyond to improve performance at individual, group and organisational levels. This is done by blending perspectives from frontline staff, domain specialists (HF, safety, quality, etc.), management, regulators, academics, and others. *HindSight* allows diverse perspectives to be put forward, from the theoretical to the practical.

The magazine has a wide readership. The primary readership is front-line air traffic controllers and pilots, but the magazine is read by many in aviation, and beyond. The writers are a blend of front-line staff academics (including world-leading professors), safety and quality specialists, legal specialists, human and organisational performance specialists, psychologists, managers, and others concerned with human and organisational performance, as relevant to ATM. The writers have included Human Factors researchers and practitioners from the beginning. But since Issue 25, there have been 'views from elsewhere' articles and interviews from sectors beyond aviation, such as healthcare, rail, manufacturing, firefighting, nuclear power, shipping, and web operations and engineering.

Just Culture...Revisited and *Justice and Safety* were the themes of issues in 2023 and 2013 respectively. Each contains a variety of articles on Human Factors issues.

Conclusion

Through various EUROCONTROL 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. Human Factors has contributed significantly to these areas via the integration of theory and practice.

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