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Just Culture in La La Land: Beyond “Human Error”

Steven Shorrock

Safety Unit

EUROCONTROL Network Manager



Applied Ergonomics 33 (2002) 319–336

APPLIED
ERGONOMICS

www.elsevier.com/locate/apergo

Development and application of a human error identification tool for air traffic control

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TECHNIQUES
TECHNIQUES

ASSESSING HUMAN ERROR IN AIR TRAFFIC MANAGEMENT SYSTEMS DESIGN: METHODOLOGICAL ISSUES

by S. T. SHORROCK*, B. KIRWAN**,
H. MACKENDRICK*** and R. KENNEDY****

Ergonomics

Vol. 49, Nos. 12–13, 10–22 October 2006, 1326–1344



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A framework for managing system disturbances and insights from air traffic management

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Errors of memory in air traffic control

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Department of Aviation, The University of New South Wales, Sydney, NSW 2052, Australia

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Errors of perception in air traffic control

Steven T. Shorrock *

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Routledge
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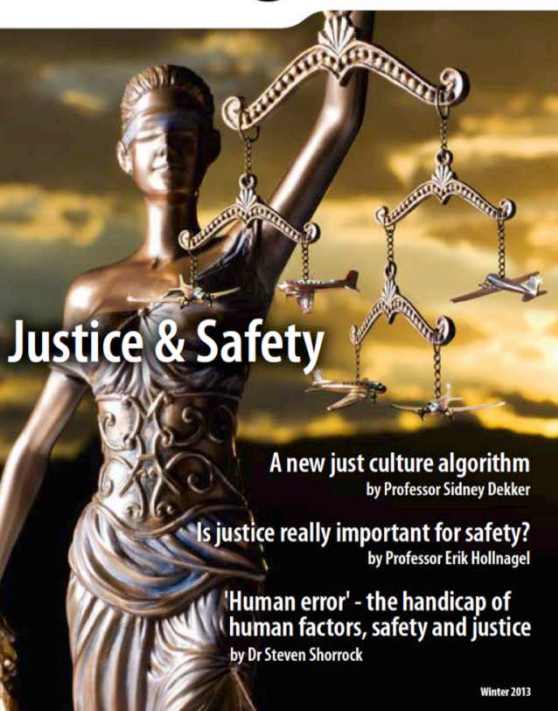
Mental Imagery in Air Traffic Control

Steven T. Shorrock¹ and Anne Isaac²

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Sydney, Australia

²NATS, Whiteley, Hampshire, UK

HindSight18



Justice & Safety

A new just culture algorithm
by Professor Sidney Dekker

Is justice really important for safety?
by Professor Erik Hollnagel

'Human error' - the handicap of
human factors, safety and justice
by Dr Steven Shorrock

Winter 2013



'HUMAN ERROR' The handicap of human factors,

by Dr Steven Shorrock

"Oh my God. I told those guys at safety that it was dangerous and one day we would lose concentration and pay for it. I already told those guys at safety that it was very dangerous! We are human and this can happen to us. This curve is inhuman!"

We are human

These are the distressed words of the injured train driver moments after the train derailed in Santiago de Compostela, northern Spain on 25 July 2013. The driver can be heard pleading in sorrow, hoping for the safety of the passengers, 'I have turned over. My God, my God, the poor passengers. I hope no-one is dead. I hope. I hope.' Seventy-nine people died.

In the aftermath of the accident, initial investigations ruled out mechanical or technical failure, sabotage and terrorism. That appeared to leave only two possible explanations: 'human error' or 'recklessness'; or both. When society demands someone to blame, the difference - whatever it might be - can seem trivial. What followed was a display of our instinct to find a simple

explanation and someone to blame. Soon, the explanation and the blame pointed to the driver. The Galician regional government president Alberto Núñez Feijóo stated that "The driver has acknowledged his mistake". Meanwhile, Jorge Fernández Díaz, Spain's Interior Minister, said that there "were reasonable grounds to think he may have a potential liability" and confirmed he could face multiple charges for reckless manslaughter. While safety investigations are ongoing, the driver faces preliminary charges of 79 counts of homicide by professional recklessness and numerous counts of bodily harm.

Several claims appeared about the driver in the media, often without relevant context. It was reported that the driver "admitted speeding". The speed limit on the curve was 80kph and the train's black box showed that the train was travelling at 192kph moments before the crash. The implication was that the speeding was reckless. The media pointed out an old Facebook post by the driver. One post, reported by Spanish media and attributed to the driver, stated: "It would be amazing to go alongside police and overtake them and trigger off the speed camera", accompanied by a photo of a train's speedometer at 200 kph (124 mph). This may be an unwise social media post, but such speeds are normal and fully permitted on the high-speed line sections. However, there appears to be no evidence that the 'speeding' involved conscious disregard for, or indifference to, the dangers of the situation or for the consequences of his actions. This would have been an extreme act. Rather, it seems that the driver was unaware of the context. This hypothesis involved 'human error' explanations, though carelessness was implied. It was reported that the driver himself told the judge that he was distracted and suffered a "lapse of concentration" as he approached the curve. Just minutes before the derailment, the driver received a call on his work phone. The ticket inspector told El País that he had called the driver to instruct him to enter an upcoming station at a platform close to the station building to facilitate the exit of a family with children. The call lasted nearly two minutes; a long time when you are travelling at 192 km/h. Rente employees are not allowed to use phones except in case of emergency, but ticket inspectors have



Dr Steven Shorrock

is a human factors specialist and safety psychologist with a background in research and practice in several safety-critical industries and Government in Europe and Australia. He is currently a Safety Development Project Leader at EUROCONTROL and an Adjunct Senior Lecturer at the School of Aviation, University of New South Wales.

1. Spain train crash driver admits 'speeding' in emergency call recording, *Telegraph*, 26/07/13
2. Spanish train crash driver told 'stop the train' before crash, *Telegraph*, 26/07/13
3. Spanish train wreck driver got warnings before crash, *Reuters*, 26/07/13
4. Spanish Train Crash Driver Told By Police, *Day News*, 26/07/13

32

safety and justice

no access to the train cab. The driver told the court he lost a sense of where the train was during the call, and believed he was on a different section of the track. It was also reported that the "driver got warnings before crash", having received three warning signals. By the time he had engaged the train's brakes, it was too late.

As is common in accidents and incidents, front-line staff immediately blame themselves, which does not mean they are to blame. Spanish press stated that immediately after the derailment, the driver allegedly said to officials at the railway station 3km from the crash "I ***** up, I want to die. So many people dead, so many people dead".

In this case, the justice system will now need to determine if the driver's actions crossed the line into recklessness. It is another issue as to whether or how justice will be served. But one only needs to look into the context of this accident to see that 'human error' or synonyms such as 'lapse of concentration' or even 'carelessness' do not seem reasonable to explain this terrible event. And if that is all it takes for such an outcome, then it could surely happen again. The 'human error' explanation does not seem to serve safety, to what does it serve? Perhaps it partly serves society's need for simple explanations and someone to blame, while absolving society itself for its demands.

Human error or an inhuman system?

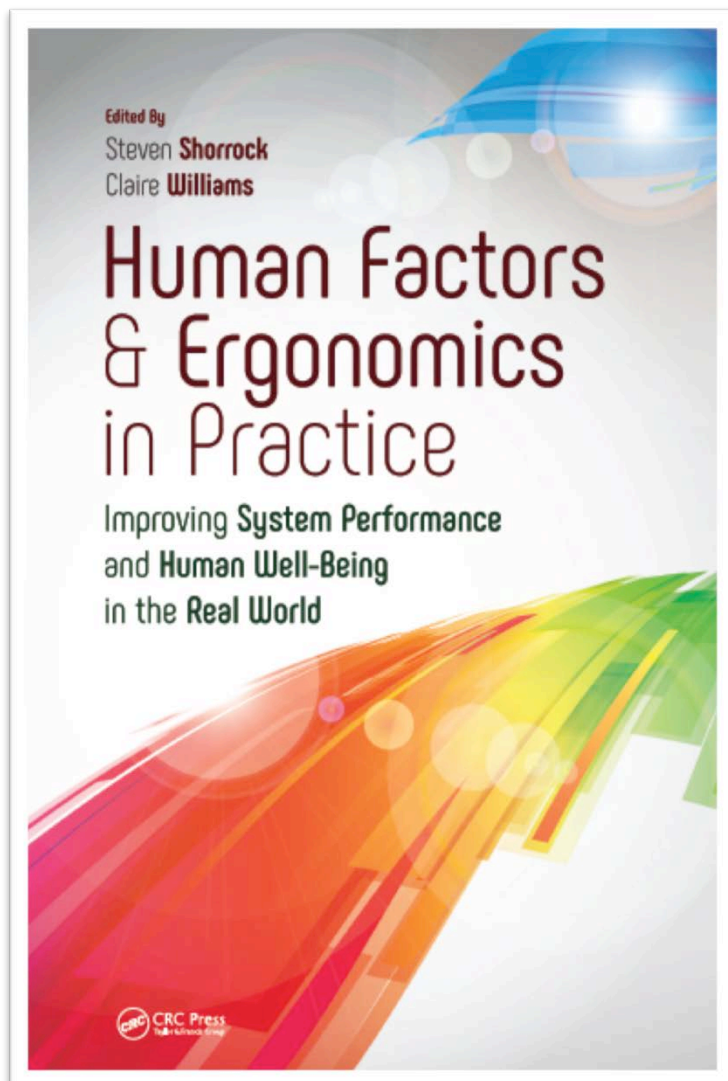
Shortly before the train crashed, according to reports, the Spanish train had passed from a computer-controlled area of the track to a zone that requires the driver to take control of braking and deceleration. Furthermore, there was no automatic braking system on the curve in question, the European Rail Traffic Management System automatic braking program stopped 3 miles



south of where the crash occurred. This placed responsibility on the driver significantly to reduce speed at a crucial time. The sharp bend was known to be "dangerous" and has previously been subject to debates and warnings. According to Spanish journalist Miguel Ángel Murado, "There were arguments for having that section of the route renamed completely, but Galicia's particular land tenure regime makes appropriations an administrative nightmare. So the bend was left as it was, and speed was limited there to 80km/h." The driver's recorded phone call indicated that he had foreseen such an accident in a warning to the company's safety specialists:

HindSight 18 Winter 2013

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6 Human Factors and Ergonomics in the Media

Ron Gantt and Steven Shorrock

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PRACTITIONER SUMMARY

Human factors and ergonomics (HF/E) as a discipline and profession addresses issues of profound interest to society. But the discipline and its subject matter tend to be represented in a small number of narrow contexts in the news and entertainment media. "Human factors" tends to be associated with failure and "human error," particularly involving frontline personnel. Narrative strands are woven into powerful stories that present the human as either hero or villain. Some features of a story (usually the "human factor") are made prominent while others—such as system and context influences—are routinely glossed over or ignored. "Ergonomics," meanwhile, tends to be associated with physical injury and office work. The entertainment media often reflect HF/E themes in tales of a fundamental distrust of technological advances. Meanwhile, the actual work of HF/E practitioners in improving system performance and human wellbeing is hardly ever represented. In this chapter, we consider these issues and offer some implications for HF/E practitioners to help minimize the negative consequences of media effects on the perceptions of clients and stakeholders, and take advantage of opportunities.

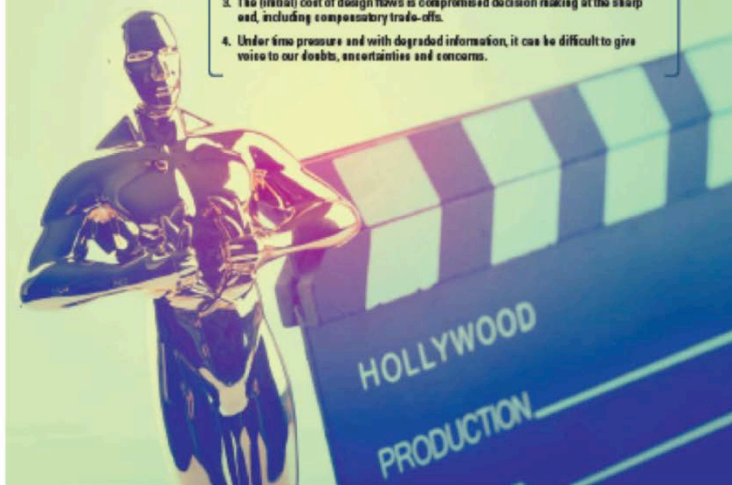
AND NOW FOR SOMETHING COMPLETELY DIFFERENT...

A PLOT TWIST AT THE OSCARS

Even when we imagine that something extraordinary is actually possible, reality can have other ideas. This was the case with finale of The Oscars 2017, when design flaws and operational pressures collided. The ensuing plot twist reveals some truths about design and operation, as Steven Sherrock explains.

KEY POINTS

1. What we casually label as 'gaffes' and 'blunders' are usually deeply rooted in the design of artefacts and in the context of design and operation.
2. Gaps between work-as-imagined and work-as-done, and between designers' and users' mental models, can have unintended and unimagined consequences.
3. The (initial) cost of design flaws is compromised decision making at the sharp end, including compensatory trade-offs.
4. Under time pressure and with degraded information, it can be difficult to give voice to our doubts, uncertainties and concerns.



Headlight 35 | SUMMER 2017 67



The blame game

Remember how Warren Beatty read out the wrong winner at the Oscars? **STEVEN SHORROCK** says the incident and the response to it provide valuable lessons in building a just culture.

64 SAFEGUARD MAY / JUNE 2017

LA

LA

LAND

Courtesy A.M.P.A.S.





Faye Dunaway



Warren Beatty



Brian Cullinan



Martha Ruiz

Human Error: 'First Story'

Appears quickly after event | High personalisation | Low context
Low complexity | High newsworthiness

YOU HAD ONE JOB! Is Brian Cullinan the man who caused most epic blunder in Oscars history by handing wrong envelope to Warren Beatty?

The man in charge of keeping the Oscar results top secret was seen panicking alongside Martha Ruiz as the pair realise their fatal error

By TILLY PEARCE

27th February 2017, 1:02 pm | Updated: 27th February 2017, 4:46 pm

The bean-counter who blundered: Cornell-educated accountant and 'Matt Damon lookalike' father-of-three who loves selfies with celebrities is revealed as man who caused the biggest mistake in Oscar history

By CHRIS SPARGO FOR DAILYMIL.COM

PUBLISHED: 20:20, 27 February 2017 | UPDATED: 01:47, 28 February 2017

Oscars: How an Accountant's Tweet Turned Into the Biggest Mistake in Academy History

6:40 AM PST 2/28/2017 by Rebecca Ford , Pamela McClintock



How Leonardo DiCaprio may be to blame for Oscars wrong winner carnage

THE Best Picture cock-up at the 89th Academy Awards could be the most excruciating moment in live TV history.



By Emma Kelly / Published 27th February 2017

Human Error: 'First Story'

Appears quickly after event | High personalisation | Low context
Low complexity | High newsworthiness

Spain train crash: Driver told judge he was 'distracted'

The driver of the train that sped off the rails outside the northern city of Santiago de Compostela, killing 79 passengers, admitted to a judge that he had been "distracted" while at the controls.

Spain train crash driver admits speeding in emergency call recording

A recording of a phone call made by the driver of a train that derailed in northern Spain, killing 79 people, in the immediate aftermath of the accident has emerged.

#WORLD NEWS

AUGUST 2, 2013 / 10:25 PM / 4 YEARS AGO

Spanish train wreck driver got warnings before crash

Reuters Staff

2 MIN READ



MADRID (Reuters) - The driver of the Spanish train that derailed last week, killing dozens of passengers, had received three warning signals after taking a phone call minutes before the fatal accident, an examination of the black box showed on Friday.

Train crashes

Spanish train crash driver wrote on Facebook about high speed - reports

Man named by local media is said to have written previously of driving locomotive so fast he was on the brink of getting fined

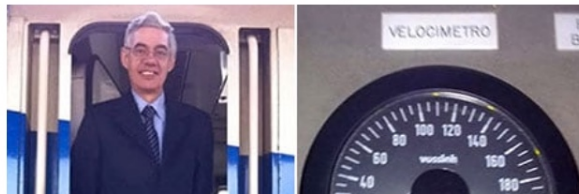


This article is 4 years old

< 40

Staff and agencies

Friday 26 July 2013 05:05 BST



Human error blamed in Spain train crash

By The Associated Press

Published: Tuesday, July 30, 2013, 8:12 p.m.

MADRID — The driver was on the phone with a colleague and apparently looking at a document as his train barreled ahead at 95 mph — almost twice the speed limit. Suddenly, a notorious curve was upon him.

He hit the brakes too late.

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The trouble with the first story explanation



- It points to individual actions while masking context and complexity
- It often refers to decisions that made sense at the time
- It places the whole burden on the individual at the sharp end
- 'Human error' often cited as the cause



But how you see 'human error' depends on your perspective

Déformation professionnelle

- The ***Psychologist***: Intentions, expectations
- The ***Ergonomist***: Artifacts, interactions
- The ***Designer or Engineer***: Design norms, instructions
- The ***Safety Specialist***: Procedures, standards
- The ***Judiciary***: Laws, 'best practices', procedures, 'Reasonable Person', ...?

Human Error: 'Second Story'

Emerges slowly after long delay | High context | High complexity
Low newsworthiness

The typography fix that could have stopped the Oscars Best Picture blunder

Updated by benjamin bannister | Mar 1, 2017, 12:00pm EST

🏠 > Film

Forget PwC - were the redesigned Oscars envelopes responsible for the La La Land-Moonlight cock-up?

ALICE VINCENT



Warren Beatty just doesn't understand why everyone was so bothered about Oscars blunder: 'It was over-dramatised'



Caroline Westbrook for Metro.co.uk Wednesday 19 Apr 2017 10:44 am

HOME > FILM > NEWS

FEBRUARY 27, 2017 12:55PM PT

Sammy Davis Jr. Was Given the Wrong Envelope at the 1964 Oscars (Watch)

By Sarah Ahern | [@sahernvariety](#)



Human Error: 'Second Story'

Emerges slowly after long delay | High context | High complexity
Low newsworthiness

Santiago de Compostela train crash
 Opinion

Spain train crash: human error over decades, not just seconds
Miguel-Anxo Murado

This terrible accident has its roots in a period when all of Spain bought into oversized dreams of fast money and fast trains

June 05, 2014



< 26 400

Thursday 25 July 2013 16:16 BST



Driver error "only cause" of Santiago accident, says report

Written by Fernando Puente

Concerns raised over Santiago de Compostela crash investigation

08 Jul 2016

'Inadequate' safety checks contributed to Spanish rail accident which killed 80

By Jay Emery Tuesday, 14 November 2017 19:13 0

font size Print Email

Spain ex-rail boss charged over Santiago train crash that killed 80

AFP
 news@thelocal.es
 @thelocalspain

14 March 2017
 09:12 CET+01:00



Retributive Just Culture

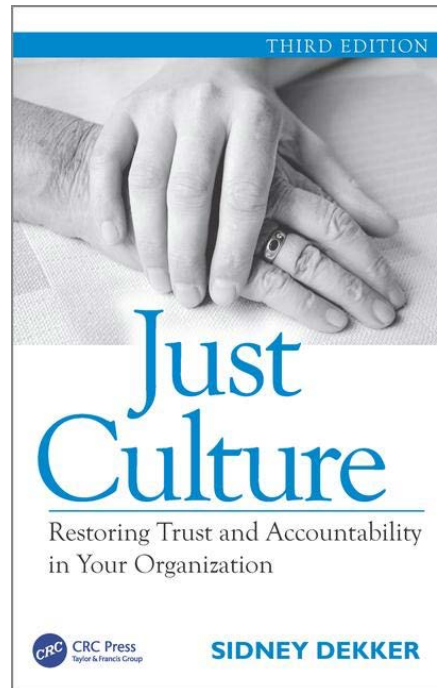
Which rule is broken?

Who did it?

How bad was the breach?

What should the consequences be?

Who gets to decide this?



Restorative Just Culture

Who is hurt?

What do they need?

Whose obligation is it to meet that need?

How do you involve the community in this conversation?

THE BLOG 05/04/2011 12:09 pm ET | Updated Jul 03, 2011

Retributive Justice and Restorative Justice



By Rabbi Geoffrey A. Mitelman

Restorative versus Retributive Justice

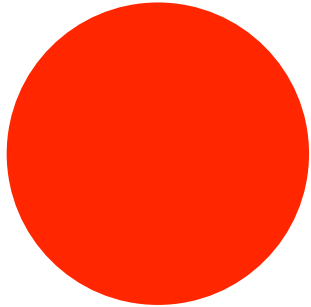
Kathleen Daly reviews the discourse that has framed restorative justice as the antidote to punishment.

Three Charges

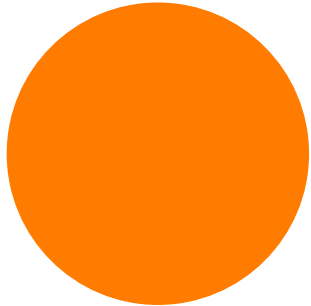
against Brian Cullinan, PricewaterhouseCoopers

1. Cullinan gave the wrong envelope
2. Cullinan posted a photo of Emma Stone to his twitter account just before the mistake
3. Cullinan did not immediately correct the mistake

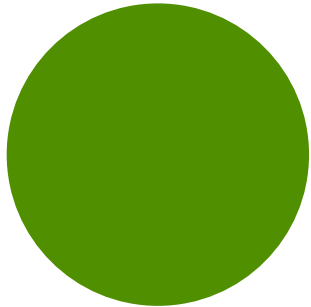
Retributive Justice & Just Culture [Theory]



Negligence



Risk-taking



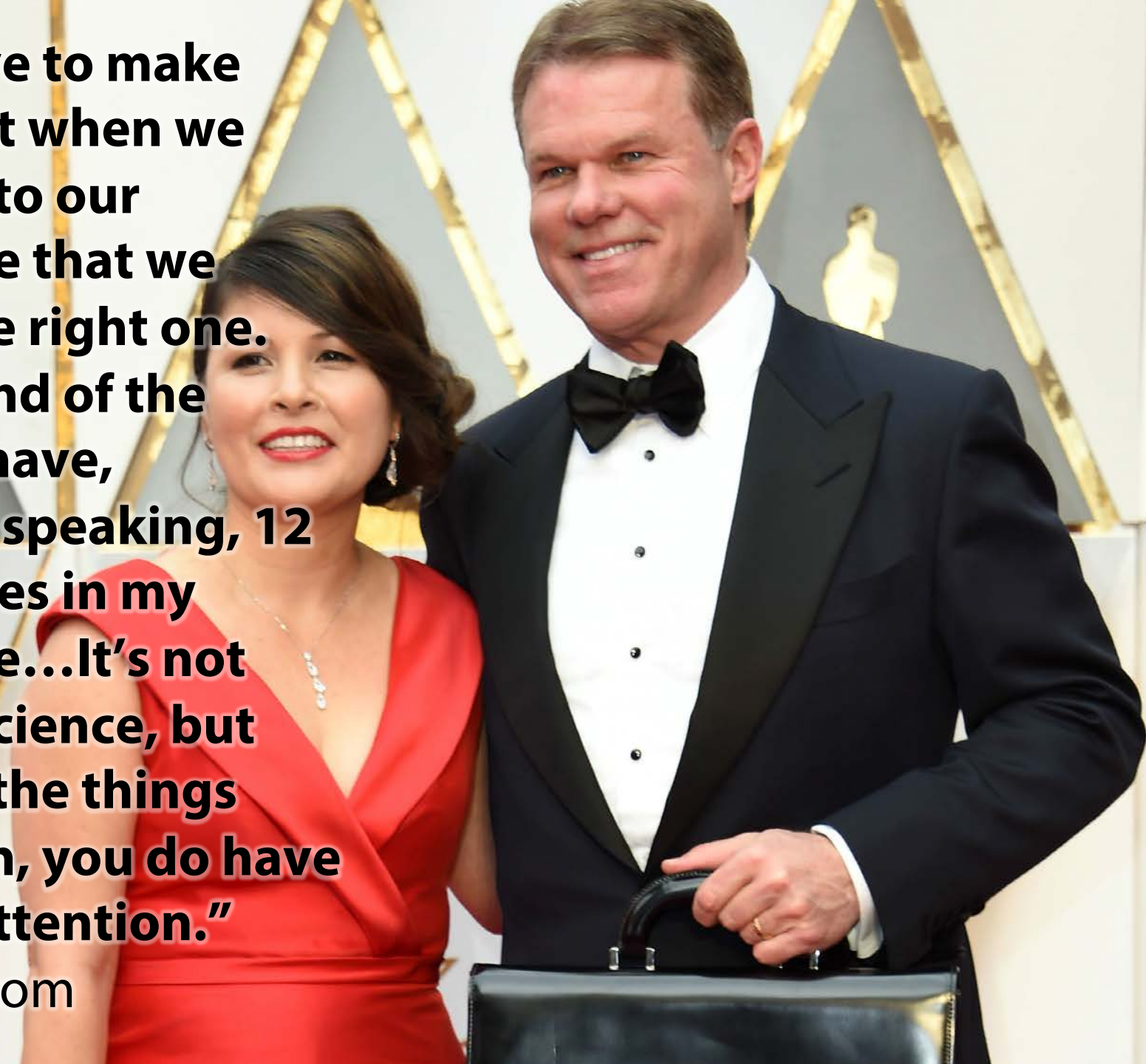
Honest mistake

Ask yourself

- Did design, management & context make it:
 - **easy** to do the right thing?
 - **hard** to do the wrong thing?
 - **very hard** to do a disastrous thing?

“We have to make sure that when we reach into our briefcase that we hand the right one. At the end of the show, I have, roughly speaking, 12 envelopes in my briefcase...It’s not rocket science, but with all the things going on, you do have to pay attention.”

latimes.com



“In earlier years, cream-colored envelopes had the category written on the back in black, so presenters could see it quite clearly as they prepared to open in.”
latimes.com



Envelope from 2004 Oscars (Anacleto Rapping / Los Angeles Times)

“Friedland’s envelopes were gold, affixed with large ecru labels stating the categories in a proprietary typeface that provided contrast and legibility.”
latimes.com



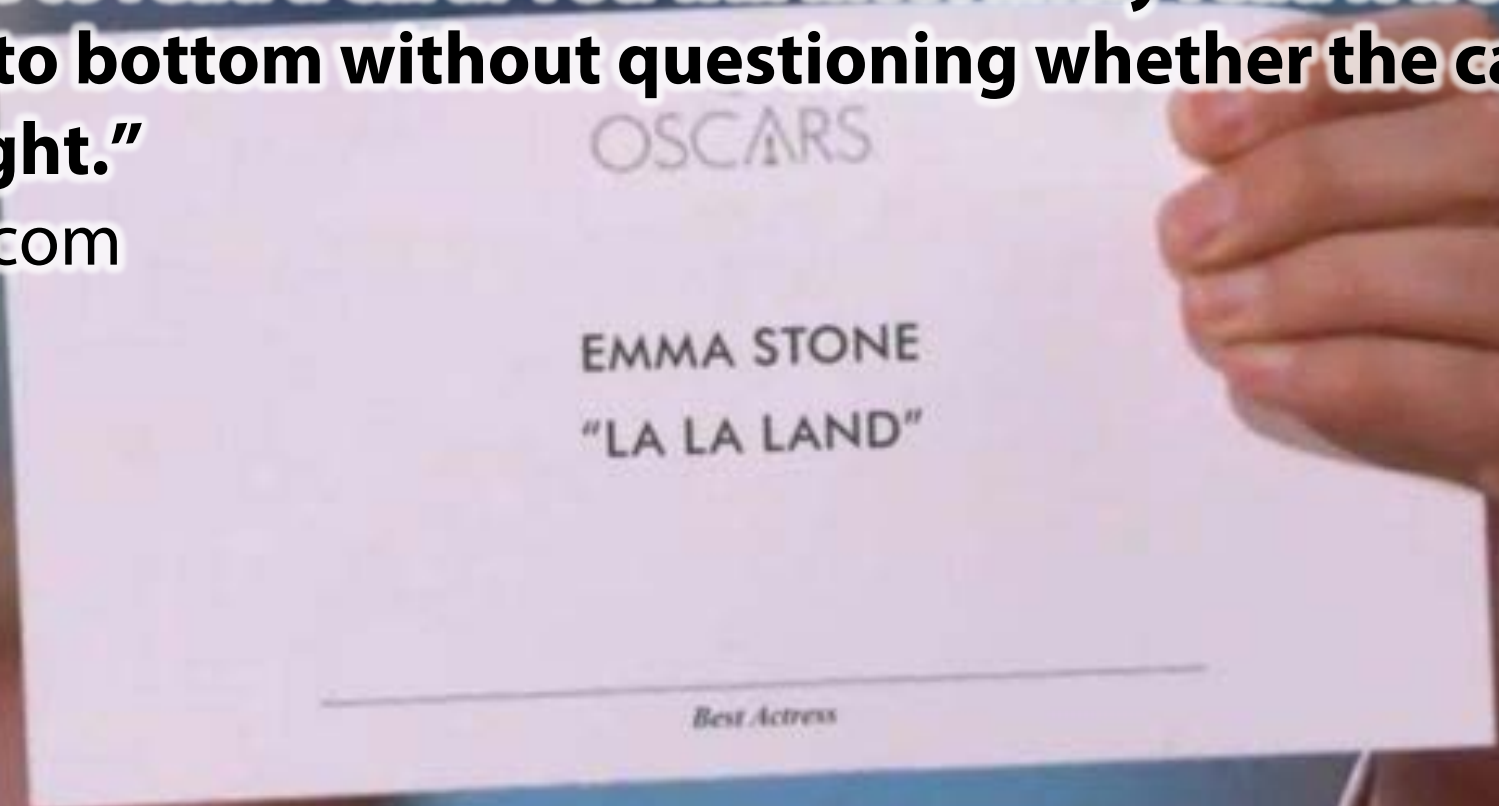
“A more minimalist red affair, with the all-important category labels in lower contrast gold printing, was brought in instead, which could have been difficult to read in the low lighting.”

telegraph.co.uk



"You are on television with millions of people around the world watching. You are a little nervous, and you have to read a card. You will most likely read it from top to bottom without questioning whether the card is right."

VOX.COM

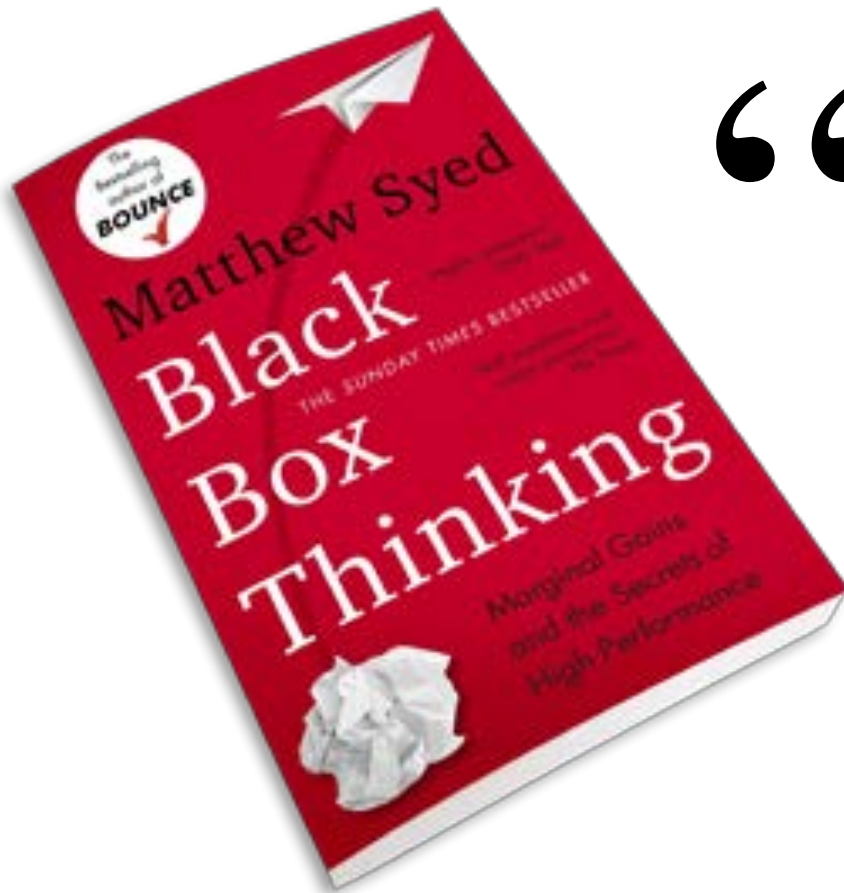


A photograph of the backstage area at the Oscars. In the center, a man in a tuxedo and bow tie is looking at a smartphone. To his left, a woman with curly hair is seated at a desk with a headset. In the background, other people in formal wear are visible, along with a red carpet and an 'EXIT' sign.

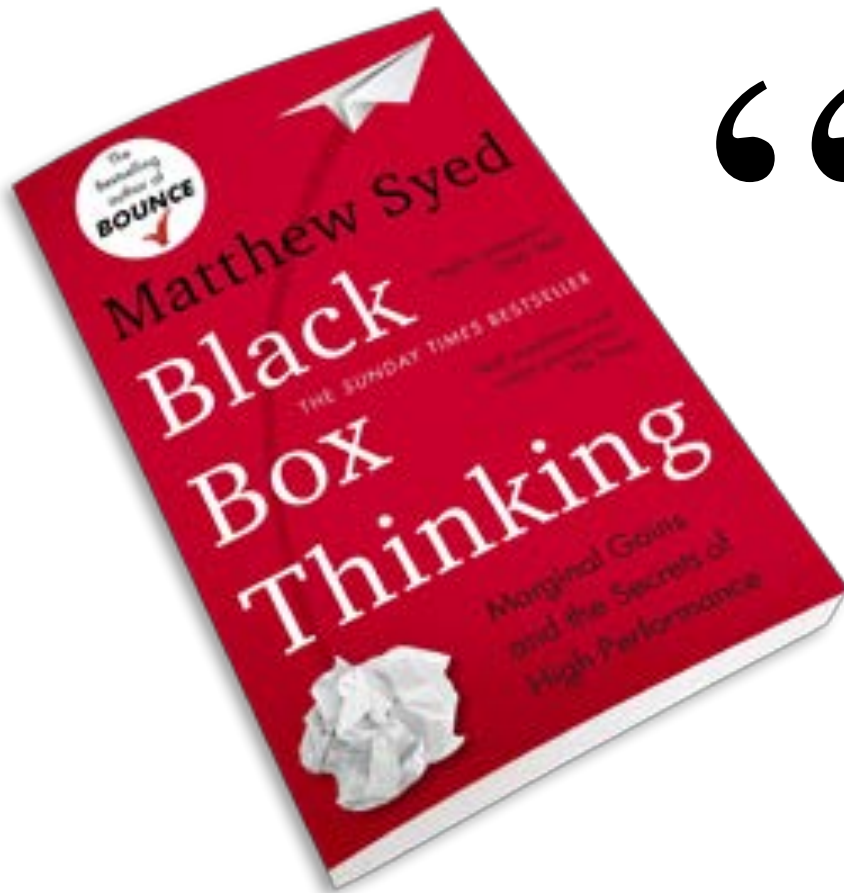
**"Our sources also say
Brian's use of social
media was approved
and actually
encouraged by the
Academy."
tmz.com**

BACKSTAGE AT THE OSCARS





“ Society, as a whole, has a deeply contradictory attitude to failure. Even as we find excuses for our own failings, we are quick to blame others who mess up. ”



“ Failure is rich in learning opportunities for a simple reason: in many of its guises, it represents a violation of expectation. It is showing us that the world is in some sense different from the way we imagined it to be. ”

Work-as-Done

**messy | improvised | degraded resources | time pressured
efficiency-first**

Work-as-Imagined

**orderly | well-planned | properly-resourced | time available
'safety-first'**

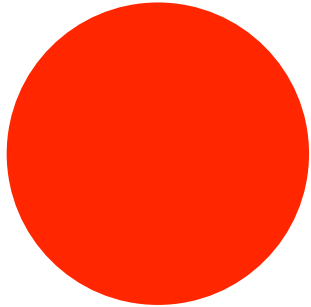
Error of **Work-as-Done?**

messy | improvised | degraded resources | time pressured
efficiency-first

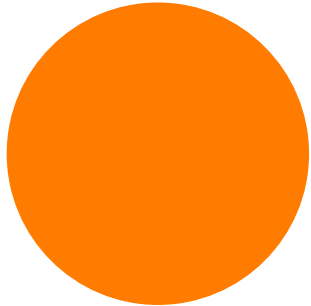
Error of **Work-as-Imagined?**

orderly | well-planned | properly-resourced | time available
'safety-first'

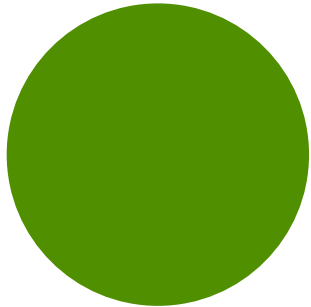
Retributive Justice & Just Culture [Theory]



Negligence

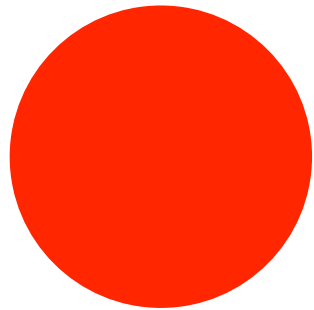


Risk-taking

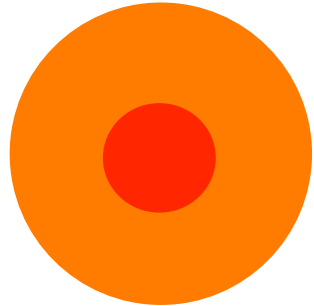


Honest mistake

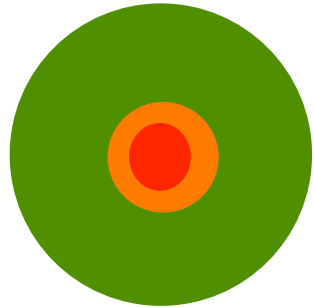
Retributive Justice & Just Culture [Practice]



Negligence



Risk-taking



Honest mistake

‘HUMAN ERROR’



Sabotage

Reckless violation

Negligent rule breaking

Negligent error

Routine rule breaking

System-induced violation

Organisation-induced violation

...‘Honest mistake’ (finish line)

Accountants responsible for Best Picture blunder will NEVER work at the Oscars again, film academy president says

The Academy issued a new apology to La La Land, Moonlight and everyone else affected by the embarrassing gaffe



By [Jessica Gibb](#) Senior Celebrity Reporter
20:42, 1 MAR 2017 | **UPDATED** 21:23, 1 MAR 2017

CELEBS

The accountants behind that Oscars blunder 'hire bodyguards after death threats'



The Trouble with 'Human Error'

What is 'human error' anyway?

“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.”

What is 'human error' anyway?

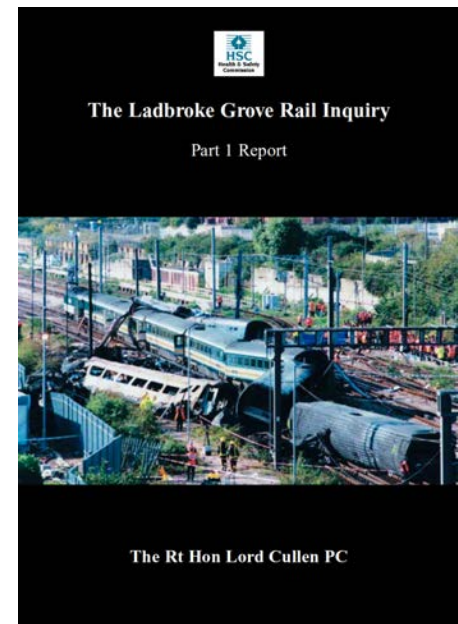
Or:

“Someone did something that they were not supposed to do according to someone”

Possible Questions for Lawyers

From *Recommendations* of The Ladbroke Grove Rail Inquiry: Part 1 The Rt Hon Lord Cullen PC

1. Has ergonomics/human factors been appropriately considered in design (of equipment, infrastructure, procedures...)? (p. 230, 237)
2. Have risk assessments been undertaken concerning tasks and changes to tasks and infrastructure to identify and assess errors? (p. 226, 228)
3. Is there a presumption of driver error as a sole or primary cause in investigation? (p. 231)
4. Can information be communicated without fear of recrimination? (p. 229)
5. Is human factors incorporated in (driver) training? (p. 229)
6. Are investigators trained in human factors? (p.231, 236)



Useful questions on human performance

Information	<p>What were you seeing at that time?</p> <p>What did you notice?</p> <p>What were you hearing?</p>
Expectations	<p>What did you expect to happen?</p> <p>What did you think would happen next?</p> <p>What did you expect the pilot/equipment/etc. to do?</p> <p>Was the pilot/equipment/etc. performing as you expected?</p>
Goals	<p>What were you trying to achieve?</p> <p>What other goals did you have?</p> <p>What did you have in mind to do next?</p> <p>Was there any unfinished business that you knew you had to come back to?</p>
Interpretation	<p>If you had to describe the situation to your colleague at that point, what would you have told him or her?</p>
Pressures	<p>What pressures were you experiencing at the time?</p> <p>How much time pressure was this at this point?</p> <p>What kinds of pressures were there from others at the time?</p>

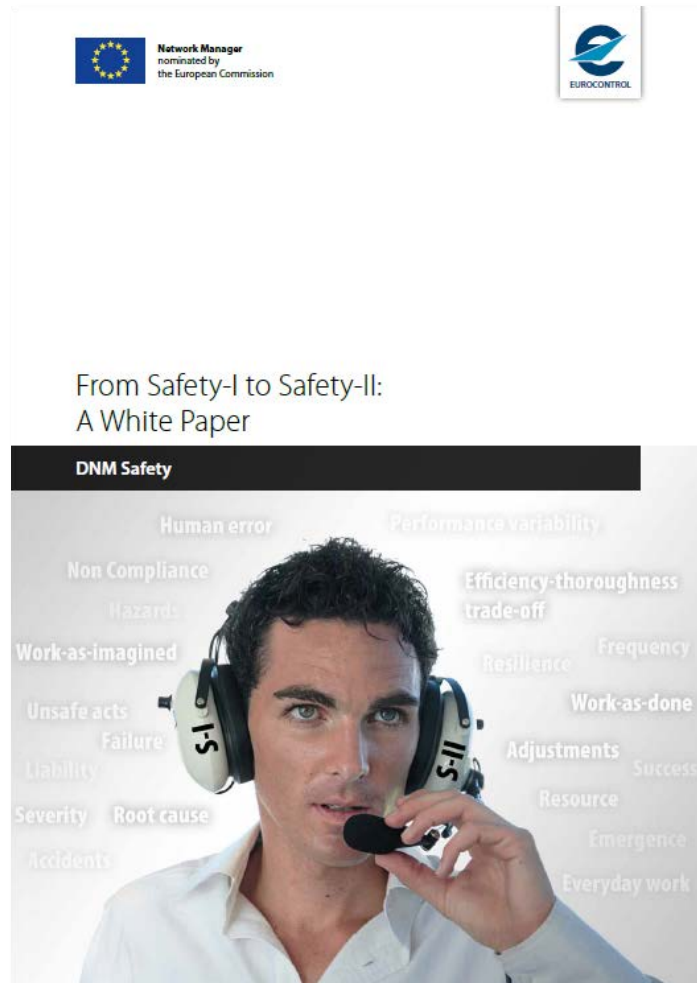
Useful questions on human performance

Knowledge	<p>How did your previous experience help or hinder you in this situation?</p> <p>Had you ever experienced anything like this before?</p> <p>Can you tell me about any training you've had to deal with this sort of situation?</p>
Procedures	<p>What procedures apply to this sort of situation? How well do they fit?</p> <p>How consistent are the procedures?</p>
Trade-offs	<p>What kinds of trade-offs or compromises did you have to make at this point?</p>
Taking action	<p>What options did you consider at this point?</p> <p>Did anything get in the way of what you wanted to do?</p>
Outcomes	<p>What outcome did you expect?</p> <p>How did you have to revise your actions in line with what was unfolding?</p>

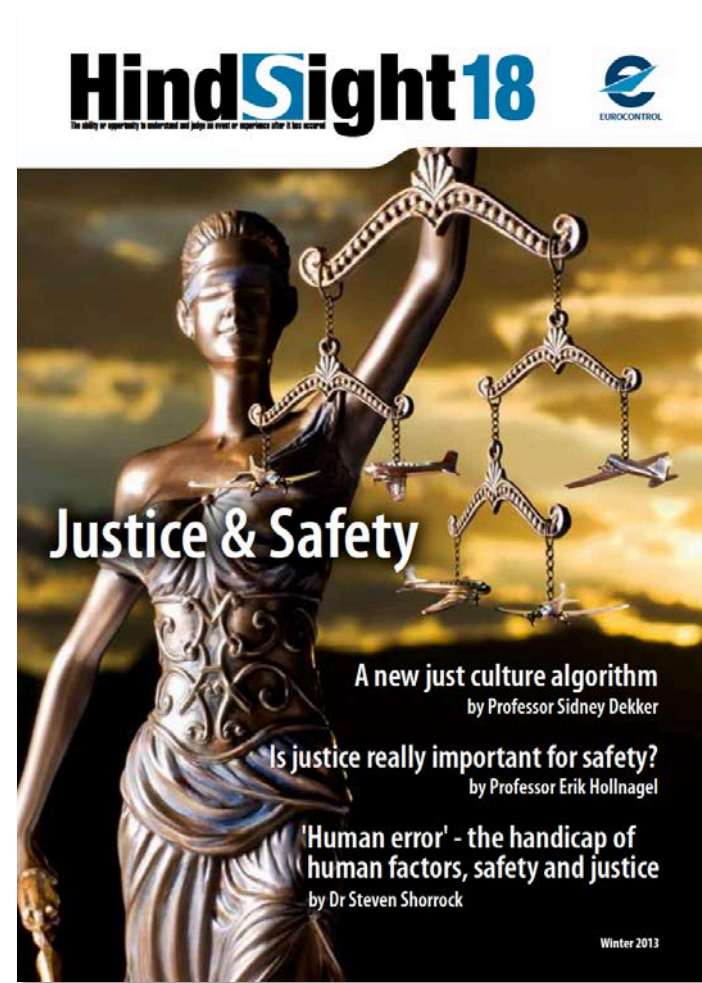
Summary of Implications for Just Culture from Research on 'Honest Mistakes'

1. They are **inevitable** and **predictable**
2. They are inextricably linked to **context**
3. They can reflect **basic human limitations** and **adaptive behaviour**
4. The **organisation** must consider the **risk of error** in design and operations, and mitigate appropriately
5. They are **not 'causes' of accidents**
6. They need to be understood from **point of view of the person at that time**
7. Our **mindsets, assumptions & language** affect our judgements after-the-fact

Further reading

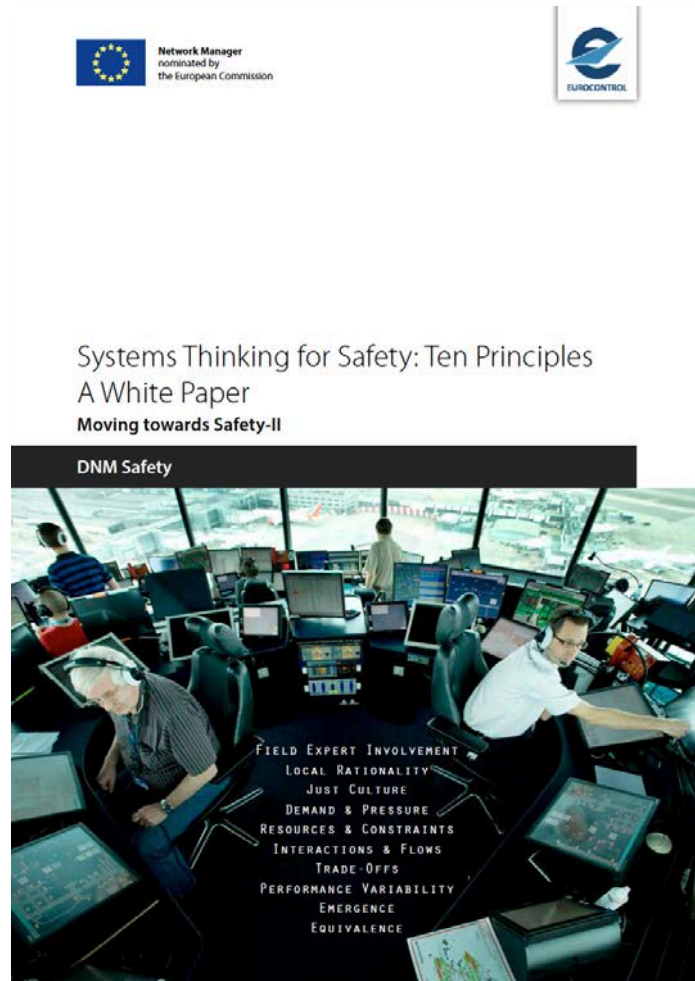


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Further reading



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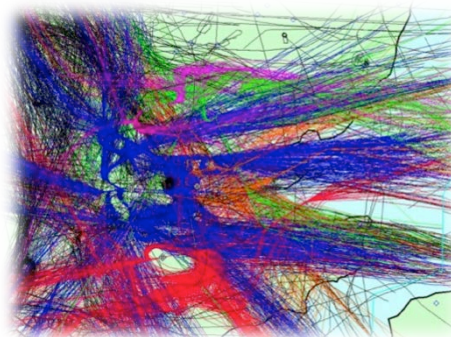
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