Justice & safety: the art of making mistakes

People sell washing machines – robots fly aeroplanes?

by Heli Koivu

In my country, there' a saying from which people get comfort at the moment of personal failure – "don't worry, even cruise liners sink!"
I've never liked the phrase. If used, then how can you ever comfort the captain of the sunken liner?

Every morning us sleepy mortals hop into our cars, try not to forget our home keys, try to avoid hitting other motorists and struggle to navigate in traffic. We go on to work selling fridges, to teach or work in power plants, perform brain surgery, drive bullet trains, chemical tankers or pilot commercial aircraft in challenging weather conditions. Still, are we able and likely to make mistakes when at work?

There are many jobs in which making a mistake is not critical – nobody is hurt or killed or there are no great economic or environmental losses. However, there are many occupations carrying a high risk potential and in which mistakes made by employees can have catastrophic results: loss of life, environmental damage or negative financial effects. To err is human. It is unfortunate that contrary to this saying some people still live under the misconception that the opposite is true.

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Just culture & honest mistakes – valuable data source?

I offer a couple of definitions for the term "Just Culture":

"Atmosphere of trust in which people are encouraged (even rewarded) for providing essential safety-related information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour" (James Reason 1997).

"A culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, willful violations and destructive acts are not tolerated. This is important in aviation, because we know we can learn a lot from the so-called 'honest mistakes'." (Just Culture Guidance Material for Interfacing with the Judicial System, EUROCONTROL 2008).

Companies working according to just culture draw a distinct line between proper and improper behaviour. Employees working in commercial transport must pass strict tests to ensure that they have certain characteristics, for example the ability to work under pressure, to suit the job. Only after sufficient and proper training are the chosen individuals ready to perform in their jobs. Even these trained and highly skilled professionals make mistakes in their work and at home. This is where the capability of an organisation to manage risks involving human factors comes in.

Does the organisation have the elements of a safety management system (SMS) not only documented but also in place and implemented in actual operations? Is the atmosphere such that mistakes are not hidden but openly and systematically reported, analysed and used as an information source for learning, mitigating measures and safety improvements? Easy-to-use occurrence reporting systems together with effective data recording systems (such as aircraft FDM-data when required) enable the effective safety analysis, risk assessment which facilitate continuous improvement of safe operation. Continuous improvement and SMS need also enough resources to succeed.

Employee competence consists of training, experience and attitude. The competence of an individual employee can sometimes be crucial barrier between an incident and an accident especially in the organisations with an underdeveloped safety culture and a

poorly implemented SMS. Safety culture is after all an important safety net ensuring safe operation in any complex and changing operational environment. Nowadays cost and time pressures are increasing. There is multiple redundancy in aircraft and ATC technical systems. Is there enough back up in human operation and are the organisations supporting it?

The Media – a friend or a foe?

I once gave an interview in which I highlighted the need of confidentiality in occurrence reporting and the importance of these reports as the base of maintaining and improving flight safety. The article was well written up by the reporter apart from the unfortunate title which stated in huge bold letters "The hidden serious incidents in aviation".

Too often, the emotive response of the media and the general public to dramatic accidents with losses of life concentrates on a single employee and his or her actions instead of trying to build the big picture of real causal and contributing factors and the question why an accident occurred. One also sees articles about accidents where all the emphasis is placed on finding the guilty party in the case. The false logic in many occurrences is that punishing the employee that has made a mistake improves safety. It is also – incorrectly – thought, that by punishing someone for a honest mistake, future mishaps can be prevented and that it acts as a deterrent to other employees. It seems to be a soothing thought to assume that there is a concrete reason for the accident and thus one can control safety in an absolute manner.

Unfortunately one can not simplify the concept of guilt. In some cases it might be applicable when the cause of the accident has been the gross negligence or intentional or unlawful conduct of an individual. Intentional violations are difficult to anticipate, although a well-functioning safety culture reveals undesirable attitudes or behaviour before the situation becomes more severe. In a just culture – based working environment, the employees have the courage to defend their point of view on safety issues in a conflict and also disagree with their superiors. Professionals in transport system normally intend to do their job well. In other words; who would want to be part in an accident?

CRM in the aeroplane cockpit – the way they work as a team – is an everyday example of the importance of the spirit of trust. Within good safety culture, the crew works as a team, not as two or more individuals. A Captain and a Co-Pilot support each other and take responsibility for ensuring that flight management is achieved by real teamwork so that if one pilot is not at his/her usual peak performance, safe operation is not endangered. In a spirit of trust, positive feedback and advice or interventions to avoid mistakes are given and taken. On the contrary, the opposite atmosphere and/or too stiff a hierarchy in the cockpit, on the bridge of the cruise liner, in the ATC tower or in another safety critical working environment has too often been a causal or contributory factor to an accident or serious incident. Unwillingness to lose face or unwillingness to confront the more senior colleague can be surprisingly common especially in the surprise of a real situation. At its worst the consequences have been fatal.

Luckily, I also have lots of positive experiences with media. Media has an important role in influencing both good and bad attitudes. Conscientious

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journalists have often written good and educational articles about general aviation, road traffic or boating accidents. In those articles they have highlighted safety issues as seat belts, life vests or dangers of drinking and driving.

Hospitals have turned to aviation in order to seek ways to reduce their unacceptably high rate of mis-treatment cases. Reporting mistakes, openness and learning from mistakes rather than allocating blame, as well as protective mechanisms like check lists have been tried with good results. This has also been recognised in the media. Even though the importance of just culture and open occurrence reporting have been understood in aviation, old habits and thought processes die hard in some organisations, cultures and public opinion. In addition seafaring is going through a great cultural change towards a more open way of learning from mistakes at the moment and needs occurrence data which right now is really scarce. The railways also have a lot of improvement to make in this area despite the fact that reporting on occurrences is mandated in railway regulations. The media could help bring about better operating cultures by highlighting these important themes.

Supporting reporting culture within the organisations

Safety costs, but accidents cost exponentially more. There is no real price tag for human suffering. In addition expensive investment is destroyed in accidents. Many companies wouldn't be able to cope with all the consequences of a major accident without bankruptcy. Even though companies have sometimes continued in business after an accident, the loss of image has been enormous.

But accidents can also happen to a so-called 'good' airline, shipping or railway company. Sometimes it all goes wrong even though the operator is fully compliant and has implemented SMS effectively. Still, there is no doubt that weakness in an SMS and poor safety culture often go hand in hand with a reduction in 'safety performance'.

I can not help wondering at the extent of denial in some companies; they would rather risk their fleets worth millions, almost like they'd be tossing a coin – to exaggerate just a little bit. Having evolved no safety culture or open communication, the management will surely not know what is actually going on and how their expensive equipment is being used. Sub-contracting or even chain-sub-contracting, contract workers and short term employment bring their own challenges to the culture of reporting. Companies must make an extra effort to get short term or contractor employees report on lack of safety or even mistakes they have made themselves. In those companies where occurrence reporting has become an integral part of the work culture employees willingly and actively document their mishaps after a duty period when mishap occurred.

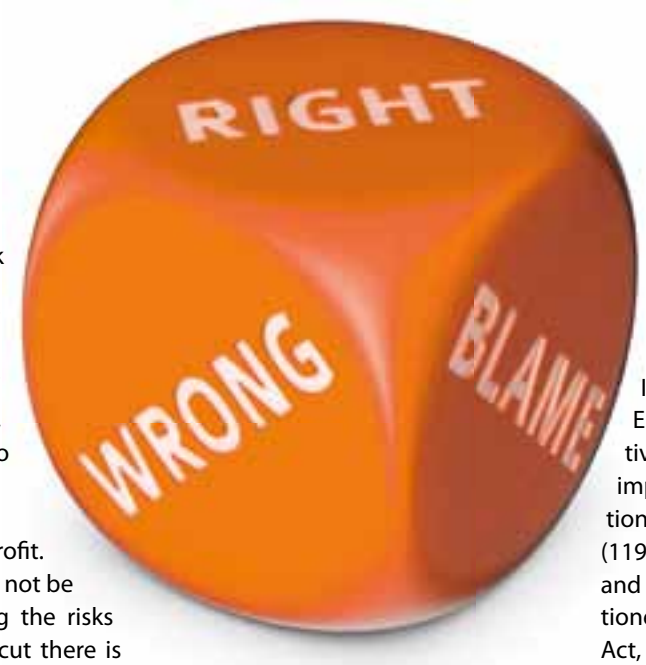
Who is responsible for an accident?

How far does the responsibility extend when an accident takes place; where are the limits as to who is not responsible – do we need to lay blame? Ultimately an error made – sometimes when fatigued – by a pilot, air traffic controller, ship´s captain or train driver may lead to an accident. Fatigue is one of the most difficult issues in occurrence reporting. For example, according to regulations, it is forbidden to fly when fatigued. However, every pilot knows how high the threshold of declining a flight mission due to fatigue is. Sleeping problems, children being ill and other temporary reasons for insufficient sleep can cause fatigue. Everyone must decide for themselves on a case to case basis, if they are fit to fly. On the other hand, organisations should put effort on ways to control especially cumulative fatigue.

If an employee reports having been flying or working while tired when it is not allowed in the first place, there is an obvious problem. Authorities sometimes get occurrence reports where the reporter suggests that fatigue has been a partial reason for the incident. The regulators and the regulated need to keep to ensure that duty time limitations allow safe operation and sufficient rest periods.

When reporting fatigue, as well as other of kinds reports that may criticise the workings of their organisation, there is a danger that the organisation may consider the issue as contractual rather than safety. Here, careful attention must be given to finding out as objectively as possible whether a real safety issue exists. If, for instance, cumulative fatigue of poor training methods are considered to be a partial factor in an occurrence, but regulations have in principle been followed, then who is responsible? How far does the liability reach in the companies?

Another interesting question from the point of view of a regulator is FDM data. The benefits for improving flight safety in operators are indisputable but pilots in some airlines are still suspicious about its use. Regulations define the principles of the use of the data, but this does not guarantee results and, whilst it takes time to build the confidence of people about such



programmes and their link to occurrence reporting, it takes only one case of abuse to lose it. This applies also to the results of accident investigations, where the only goal is to improve safety.

Businesses exist to turn a profit. However, the profit should not be made without considering the risks involved. When costs are cut there is the danger that an increase in risk will prejudice safety. Businesses should aid the recognition of their risks with open internal dialogue to avoid the limits of safety limits being found via an accident. We also have to tolerate a degree of variation in personalities. It should also be accepted that an employee who criticises a company is not normally looking for trouble, rather he or she might have something important to offer about company practices and safety.

Gathering evidence for the functioning SMS or for prosecution?

EU Regulation (996/2010) on the investigation and prevention of accidents and incidents in civil aviation defines accident investigation data protection principles at the European Union level. In Finland`s Safety Investigation Act (525/2011) Section 39 (Dissemination of confidential information) and section 40 define the protection both information and the persons involved with safety investigations.

At the moment there is important ongoing work on proposal for a Regulation of the European Parliament and of the Council on occurrence reporting in civil aviation. When ready, the new regulation will amend Regulation (EU) No 996/2010 and repeal Directive No 2003/42/EC on occurrence reporting in civil aviation, Commission Regulation (EC) No 1321/2007 (implementing rules for the integration into a central repository of information on civil aviation occurrences exchanged) and Commission Regulation (EC) No 1330/2007 (implementing rules for the occurrence data dissemination to interested parties). This work, when completed, will strengthen just culture principles and protection of the reporter and harmonise practices across all EASA – countries. In order to get good results, open dialogue about the proper use of data and just culture principles is essential. Also, adoption of just culture should be the same in different countries and in future in different transport sectors. In addition to protection of the individual reporter, there must be adequate protection of report databases in companies. Companies which have a well-functioning SMS and good reporting culture continuous gather a lot of safety data. Sometimes, after an accident has happened, the causal factors might have already been visible in the data. They might just be un-noticed or the intended mitigation hasn't delivered. Who is able to judge whether company should have seen the accident coming through a SMS? More and more national civil aviation authorities are beginning to conduct their oversight using a risk-based approach. They are the ones who are continuous estimating companies' willingness and capability to manage their safety risks.

In Finland the principles of the European Regulations and Directives and of ICAO Annex 13 are implemented in Safety Investigation Act (525/2011) and Aviation Act (1194/2009). Just culture – principles and protection of reporters are mentioned, for example, in the Aviation Act, Section 134, Use of occurrence information:

"The authority must not take legal action based on an unplanned or involuntary infringement, of which the authority becomes aware only because a report is submitted in order to comply with the provisions of section 131, unless the matter involves non-compliance with obligations which can be considered as gross negligence, or involves acts punishable under the Penal Code. Operators shall not discriminate against employees who make reports concerning incidents of which they may be aware."

Similar text is currently being proposed for an amendment to the Finnish Railway Act.

The aviation authorities in Finland are taking just culture principles and the protection of safety information very seriously. This is not proving easy – too often the truth lies in a grey area and sometimes international co-operation is also necessary. But even if it is sometimes difficult the work must be done in Finland, in Europe and also globally. Only with open safety culture including just culture-based occurrence reporting and effective accident investigation has the aviation industry achieved such good results and made aviation the safest way to travel. So we can at least say that the whole aviation community is guilty of that.