Regulation or criminalisation: What determines legal standards of safety culture in commercial aviation?

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ABSTRACT

This paper highlights that further development of safety culture as a quantifiable standard presents a considerable dilemma to policy makers. The imposition of legal standards in any area of human endeavour is generally predicated on the assumption that the affected parties are aware of their causal role and therefore legal responsibilities. An intuitive response to this expectation would be to provide a well-defined, measurable and manageable structure of safety culture. However, we will consider whether that by presenting an effective safety culture as an achievable final goal, safety performance could be compromised in the long-term. Identified in numerous case studies (presented in two tables), the contrary approach of leaving safety culture as a loosely defined and adaptable concept, allows the criminal justice systems the opportunity to criminalise those safety cultures perceived as being inadequate, in the aftermath of a fatal accident. This approach encourages hindsight bias and potentially inhibits the development of reporting cultures within organisations. Should fear of exposure to retrospective analysis by the criminal justice system inhibit the free flow of information, organisational learning would be inhibited. Restrictions to the rate and quality of safety reporting remains one of the greatest challenges to the effectiveness of SMS across commercial aviation at operator, national and international level.

1. Introduction

Society protects itself through its legal policies and like all policies, those governing safety and risk management must demonstrate effectiveness to be credible. These standards reflect levels of societal tolerance, traditionally of individual behaviour but increasingly of organisational or corporate behaviour. Contemporary theories in safety science increasingly focus on a systems approach to explaining accidents, not only in the recognition of the organisational accident but by taking a system thinking approach to safety management. Whilst an aircraft accident is formally defined within international convention, (ICAO, 2010), the concept of an organisational accident originates within a system thinking approach; the approach recognises the influence of organisational culture on risk perception and therefore individual behaviours, (Cooper, 1997; Reason, 1997; HSE, 2007; Woods et al., 2010; Leveson et al., 2009, Leveson, 2011a). Similarly, legal theories of corporate crime and organisational failure identify a shift away from the traditional view of the corporation, described by Jensen and Meckling (1976) as a 'nexus of contracts', towards a more holistic or organic concept of corporate functionality, (Johnson, 2008; Kirk, 2012; Forlin and Smail, 2014). This emerging perspective of the corporation as an entity, allows, or even encourages the imposition of broader social responsibilities. The recognition of these social responsibilities can result in corporate criminal liability in the aftermath of a fatal accident, (Wells, 1996, 2001; Donaldson and Watters, 2008; Almond, 2013; Forlin and Smail, 2014; Hopkins, 2015).

1.1. A legal standard

A legal standard might broadly be defined as a standard of conduct which (in the context of corporate liability) is the norm for its industrial sector. A breach of this standard might include reducing costs by compromising regulatory compliance (Zhang et al., 2008). It may also include organisations which achieve regulatory minimum, but in the aftermath of a fatal accident are found to fall below the standards of reasonable expectation of society or the criminal justice system because of a tendency to manage a spread, rather than manage a reduction of risk (Wells, 1996; Gobert and Punch, 2003; Hopkins, 2005; Pinto and Evans, 2008; Almond, 2013). In the face of global corporatisation, and a hardening of social attitudes towards corporate malfeasance, legal systems have adapted concepts of corporate fault to meet public expectation, (Slapper, 2010; Almond, 2013; Forlin and Smail, 2014; Hopkins, 2015). Set against the background of these changes in the international socio-legal landscape, this paper focuses on the

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Table 1
Possible strategies of regulating safety culture.

Strategy	Description	Advantages/disadvantages
Inter-national regulatory standard of safety culture	Regulator defines an industry standard (or a standard set of attributes) of safety culture; one international standard.	This approach would provide clarity as to the nature of industry safety culture and the required standard of safety culture possibly benchmarked against other operators. It would provide a measurable international standard. Unless adapted (Noort et al., 2016) the approach could ignore leading indicators of safety behaviours associated with national culture, Hudson (2007). It could also inhibit continual improvement, as note by Grote (2007).
National standards of safety culture	National aviation authorities assess their own safety culture that adapts to the particular characteristics of the nation and its cultural and legal environment.	As the regulator can co-ordinate development within a singular jurisdiction then national cultural behaviours are adapted into the regulatory structure by providing a benchmark within national standards (Kim and Choi, 2016). However, the very nature of international commercial aviation means multi-cultural interaction is inevitable and needs to be considered, Reader et al. (2015). Experience in the nuclear and petro-chemical industries suggest strong tendencies for the regulator and the operator to have very different interpretations on what effective safety culture looks like, Kringen (2013).
Organisation defined safety culture (Broad purposive)	Basing a safety culture definition adapted to each organisation allows a more purposive and flexible approach tailored to each organisation.	As each organisation effectively develops its own cultural traits, trying to adapt to a generic model might be ineffective. This approach could produce models of safety cultures rather than one specific definition. This approach may lack a degree of objectivity and could be rather descriptive, Grote and Weichbrodt (2013). Organisational self-awareness may not develop as no benchmarking facility would develop, Dempsey (2010). The organisation may develop standards that fall below common industry or broader socially acceptable standards of safety and risk management, Hopkins (2006).
No specified regulatory standard or definition of safety culture	The regulator provides nothing more than guidance as to best practice. Operators are merely compelled to assess and record their safety culture as part of their SMS.	Differences in national and cultural norms are partially offset as the organisation determines its own acceptable standard of safety culture. Enforcement is not a regulatory strategy as the low level of fines and minimal impact of enforcement orders do not induce the long term process of safety culture development. The incentive to develop safety culture is derived from the significant financial and public relation impact of prosecution by the criminal justice system.

emergence of a legal standard of safety culture within commercial aviation.

1.2. Defining safety culture

The International Nuclear Safety Advisory Group defines safety culture as "that assembly of characteristics and attitudes in organisations [sic] and individuals, which establishes that, as an overriding priority, safety issues receive the attention warranted by their significance"[1]. The Confederation of British Industry (CBI, 1990) refers to safety culture as "…the way we do things around here". However, despite the various definitions, many accident investigation bodies such as the NTSB[2] are reticent about describing 'safety culture' as a 'probable cause' of accidents. "Investigators should be particularly cautious about attempting to assess safety culture after an organisation [sic] has experienced an accident or incident". Czech et al. (2014:5), assert that the inability of safety academics and practitioners to provide a useable definition of what safety culture is, lies at the foundation of this unease with safety culture as an accident cause.

1.3. The rising profile of safety culture

The established source of internationally recognised standards regarding safety management in commercial aviation is the ICAO[3] Safety

Management Manual (ICAO, 2013a). Now into its third edition, the document describes three eras of safety management based on contemporary knowledge; from the early 1900s to the late 1960s – the technical era; from the early 1970s to the mid 1990s – the human factors era; and latterly, from the mid 1990s to the present day – the organisational era. Improvements in aviation safety performance attributed to the first two eras, technical and human factors, have seen an associated development of regulatory regimes, which specify minimum standards of compliance. The influence of organisational culture and policies on the effectiveness of safety and risk controls is acknowledged and defined within the opening pages of ICAO's SMM, 'Culture is characterized [sic] by the beliefs, values, biases and their resultant behaviour that are shared among members of a society, group or organization [sic]', (ICAO, 2013a:21). Within the sphere of formal accident investigation, safety culture first achieved formal recognition during the IAEA, (International Atomic Energy Agency), investigation into the explosion at the Chernobyl nuclear power plant, in Ukraine in 1986, (see Table 2). From an academic perspective, safety culture is generally recognised as a derived component of organisational culture, relating to an organisations safety and risk management practices, (Schein, 1996; Cooper, 1997, 2000; Guldenmund, 2000). In recognising the significant influence that organisational culture has on risk related behaviours, number of contemporary safety science commentators have implored operators and regulators to develop and improve organisational safety culture, in order to improve safety performance, (Cooper, 1997, 2000; Guldenmund, 2000; Hopkins, 2002; Bell and Healey, 2006; Morley and Harris, 2006; von Thaden and Gibbons, 2008; Leveson, 2011b).

2. Regulating safety culture in aviation

Whilst its influence on organisational behaviours has been generally accepted, implementing a regulatory standard of safety culture presents

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[1] "Safety Culture" – A report by the International Nuclear Safety Advisory Group (Safety Series No.75-INSAG-4).

[2] The National Transportation Safety Board (NTSB) is an independent United States federal government agency charged with determining the probable cause of transportation accidents and promoting transportation safety, and assisting victims of transportation accidents and their families.

[3] The International Civil Aviation Organisation, a division of the United Nations sets and maintains common standards and best practice procedures for global commercial aviation.