

HOW DO INSPECTORS ASSESS ANOTHER ORGANIZATION'S SAFETY CULTURE?

A QUALITATIVE AND EXPLORATIVE STUDY AT A
EUROPEAN CIVIL AVIATION AUTHORITY

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ABSTRACT

The relationship between organizational culture and safety – particularly that of safety culture – has been the subject for many discussions within the realm of safety research for decades. Despite all that has been written, parallel and almost identical to the diverse perceptions of what safety culture means, there is lacking empirical data showing the role and practical application of how an aviation inspector may assess safety culture.

This report presents the results of a qualitative and explorative study at a European Civil Aviation Authority. The study set out with the intent to examine how inspectors assess another organization's safety culture. Furthermore, the study also intended to learn about the inspectors' beliefs and perceptions of safety culture. By comparing current theoretical models on organizational- and safety culture, the study sought to bridge this gap which currently exists between theory and practice. 13 inspectors were interviewed. The analysis of the data collected followed a phenomenological approach to research.

The study revealed that the inspectors did not use a single standardized approach to assessing safety culture as an isolated stand-alone item within the inspection protocol. Rather, safety culture – the theories, beliefs and definitions – were used as a cultural approach in exploring wider and deeper organizational phenomena, such as the informal and social processes that may influence safety. This approach was primarily based on a belief that safety culture was considered important and vital for safe operations, particularly in terms of understanding the match between formal and informal aspects of work and organizing.

The study suggests that there exists a need to further explore and develop the concept of safety culture assessments within aviation. The study also concludes that the theories and practices offered by research connected with HROs (High Reliability Organizations), resilience engineering and organizational culture may stimulate further knowledge and aspirations when seeking to enhance the complex tasks involved in assessing another organization's safety culture.

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THESIS DEVELOPMENT

Introduction

The literature review

My review article – Just Culture: How Does an Inspector Know Whether an Organization's Culture is Just? – explored the literature on just culture from an inspector's point of view with the aim to identify possible ways to improve the inspector's assessment of an organization's just culture. Recognizing that just culture is considered a sub-component of a safety culture, which in turn has its origins from organizational culture, I also introduced the reader to the two in order to develop a basic understanding prior to moving on to remaining concepts, such as just culture, organizational justice, trust and reporting.

In my review, I found that the literature and the many suggestions for understanding and assessing culture, whether it was on focusing on organizational safety culture or on just culture, offered many different and challenging approaches for current as well as future work. The tools ranged from pre-manufactured checklists to the notion that we will never really know. Indeed, a checklist used by its very nature and intention – checking predetermined items to obtain a result with true interpretations – versus the position advocated by other researchers (Dekker, 2008; Schein, 2004; Weick & Sutcliffe, 2007) that the complexity involved in understanding culture, has great impacts on how we approach the delicate and complex questions of assessing an organization's just culture.

The different literature I examined, indicated that there exist differences on what safety culture and just culture mean, particularly on the subject of how to assess them. The tools available for assessing just culture appeared to take a rather essentialist position, in that in these tools, an organization's just culture is assumed to be out there, ready to be measured, wrapped up and subjected to a “one-size fits all” evaluation. Checklists and other rather simplistic means of decision making tools on culpability are examples of such tools (see Reason, 1997). The

application of such tools may disregard the notion that complex socio-technical systems are socially constructed and dynamic cultures, hence also safety cultures.

The researchers that took an entirely different position (Dekker, 2008; Schein, 2004; Weick & Sutcliffe, 2007), argued that culture – whether that would be organizational safety or just culture – is a complex and dynamic phenomenon, not something static and easily accessible to for instance an assessor. This would particularly apply to external assessors such as inspectors. A general approach and focus of that part of the literature, took the position that the current models of e.g., safety management are largely based on either a rational or a non-contextual image of an organization while complex socio-technical systems are socially constructed and inherently dynamic. Some of the various types of perspectives on complexity (Dekker, 2008; Hollnagel, 2006; Cillier, 2004; Goh, Brown, & Spickett, 2010), were developed around the principles that socio-technical systems are uniquely dynamic and constantly changing and adapting, which resulted in concepts striving to avoid a purely cognitivistic or error focused approach in assessing, such as to judge about an operator's individual action without taking into account the complex work settings from which this action might have emerged. The focus was not on the specific tasks, but on the boundaries and requirements of the activity within the socio-technical system.

Within the literature review, the link between safety culture and just culture also became evident. Several researchers argued that a just culture is considered to reside within an organization's overall safety culture and is a reflection of the shared understanding of how behaviour is determined acceptable and how accountability/culpability is evaluated. James Reason's notion of a Just Culture seems to have become the commonly most accepted explanation. Just culture through the eyes of Reason is considered as one of four sub-components of a safety culture; a just, learning, flexible and reporting safety culture, which interact and create an informed safety culture (Reason, 1997).

The literature review also revealed a connection between SMS (Safety Management System) and safety culture – particularly the necessity for having one if the SMS is to have a chance to be successful. Regulatory agencies, such as the CAA (Civil Aviation Authority) and researchers advocate the link between the two, arguing that a strong safety culture is generally considered a vital condition to a well functioning SMS. The role, challenges or approaches used by the inspector were not given any broad attention in the literature. Indeed, in most of the literature they were not mentioned at all. SMS lays a foundation and starting point for the assessment of systems, as well as broader social issues such as safety culture (ICAO, 2009). However, the complexity surrounding an organization's safety culture and just culture pertaining to an inspector's approach to assessment, remain never the less unanswered within the scope of a SMS.

The literature offers a great deal of material and useful guidance on what just culture and safety culture are, what they entail, and in some cases ways of assessing them. The concept of a just culture was generally proposed as a recognized part of a safety culture. Indeed, it was considered by many scholars as maybe the most important part of an organization's safety culture. Despite all this material and acquired knowledge, an inspector – or any outside observer for that matter with the intent to assess – was in a sense not included in previous or current work on just culture or safety culture. Much of the material and discussions – perhaps even the majority of them – focus on the organization and how *it* can learn and make progress on issues such as reporting, learning, building trust, management commitment, etc – leaving the inspector however empty handed with no guidance on “best practices” or on how to go about this. All this while the inspector is severely challenged by stakeholders to assess and promote the topic, what and where can I find it? How do I prevent myself from taking an essentialist's position, assuming that my tool will suffice? What qualifications do I need? And what should I be looking for, etc? Questions like these are not unusual when attempting to understand complex systems with complex questions.

The lack of studies or scientific research showing how inspectors actually go about assessing or “knowing” whether an organisation is just made it impossible to compare and show how such assessments are actually made. Furthermore, even though my review focused on just culture, it became evident that this scientific gap is also applicable and valid for safety culture. We may therefore conclude that we know too little about actual assessments and ways of “knowing” the answers on complex cultural questions, including assessments/measurements. Because of this scientific gap – the absence of empirical data, or knowledge – this research will focus on gathering data which may allow for a more in-depth study and analysis of how inspectors perform such assessments.

Research question

In order to contribute in reducing the existing scientific gap pertaining to an inspector's role and approach to such assessment, I chose to conduct and focus on the following question:

“How do inspectors assess another organization's safety culture?”

In order to develop a deeper understanding of the complexity involved in such an assessment, I used the following sub-questions, which stood as lead-in questions which the interview questions were partly based upon. The sub-questions offered a way of breaking down the “phenomena” (assessment and safety culture) into subtopics for further examination.

Sub-questions (areas which the interview questions explored):

- What are the inspectors' beliefs and knowledge of safety culture?
- What criteria do they evaluate, e.g., what are they looking for?

- What means do they use prior to- and during the assessment? (e.g. checklists, protocols, observations, preparations, etc)
- What does the “end-product” of an assessment look like?
- What do they use the assessment/result for?
- When do they assess safety culture? (Must an adverse event occur, or do they perform assessments on a reoccurring basis?)
- Do inspectors assess differently?

With these sub-questions, I hoped to not only gather relevant empirical data subject to analysis, but also to learn about the inspectors' views, knowledge and experiences with the concept of safety culture. Existing scientific literature has not agreed upon what safety culture really means. This fragmented picture may create difficulties for an inspector, in particular when performing assessments.

Hoped for conclusions and potential benefits

My main objective and goal was to gain some understanding of how inspectors assess safety culture within the organizations subject to oversight and audits. By comparing current theoretical models on safety culture with an actual study of how inspectors go about this complex task, I attempted to bridge this gap which currently exists between theory and practice.

Should major differences emerge between what theory suggests, and what practical application currently entails, the study may generate a necessity for further research in seeking greater understanding of work-as-imagined (theoretical models) and work-as-done (practical application).

Methodology

Choosing and designing the study

The qualitative study presented here was both exploratory and descriptive. The study was exploratory in the sense that available models for assessing safety culture came from other contexts, and not from contexts relevant for my thesis question, i.e., they focused primarily on an organization's self-assessment of their internal safety culture. As has been demonstrated in the paragraphs above, the role and the practical application of an assessment made by an external party – the inspector – was lacking in current empirical research, both within governmental and scientific research. General theories on what to look for are available, and have been used as a support in the analysis of the empirical data I have collected. However, none of these explored the role of an inspector.

The descriptive part was based on the data collected from the interviews. I considered it appropriate to use a Phenomenological research¹ approach when preparing, planning, conducting and finally analysing the data. Based on Creswell's (2007) description, a Phenomenological approach fits the study because:

The type of problem best suited for this form of research is one in which it is important to understand several individual's common or shared experiences of a phenomenon. It would be important to understand these common experiences in order to develop practices or policies, or to develop a deeper understanding about the features of the phenomena. (p. 60)

¹ Phenomenological research describes the meaning for several individuals of their lived experiences of a concept or a phenomenon. According to Creswell (2007), phenomenologists focus on describing what all participants have in common as they experience a phenomenon. The basic purpose is to reduce individual experiences with a phenomenon to a description of the essence.

The interviews

13 active inspectors from a European Civil Aviation Authority were interviewed. Approval and acceptance from applicable departmental supervisors prior to initiating the selection process was assured. The inspectors were then asked if they would consider participating. A short description how the interview will be conducted was given, which consisted of information on recording, confidentiality and time frame. During the first part of the interview, 6 short questions were asked in order to gather background data of the inspectors.

The interview itself took a semi-structured perspective. That is, based on broad and general questions, I let the inspectors speak for themselves and describe which concepts, processes, and approaches they implicitly used during their assessments of a safety culture. The interview therefore consisted of open-ended questions, designed to encourage a full and meaningful answer using the inspectors own knowledge and/or feelings. The interview questions were mainly based on the sub-questions I constructed in order to obtain more specific information, hence empirical data. This approach allowed me to link thematic descriptions to research. The first three questions were included in order to develop a feel for the inspectors' beliefs and thoughts regarding safety culture. The remaining questions focused more directly on how the assessments were conducted. The interviews were recorded, transcribed, and translated by me for later analysis.

Interviewee selection criteria

In order to gather a group of inspectors active within the different areas which the authority conducts oversight, and to allow for a great span of knowledge and experience, inspectors from the five areas below were asked to participate in the interviews. These areas and number of inspectors included:

- ANS (Air Navigation Services) – 2 inspectors

- OPS (Flight operations; commercial air carriers, flight schools and TRTO²) – 4 inspectors
- AGA (Aerodromes) – 3 inspectors
- SEC (Security) – 2 inspectors
- Airworthiness – 2 inspectors.

The group selected consisted of four female and 9 male inspectors. All inspectors within the CAA have very different backgrounds. In order to gather data representative of such non-homogenous group, consideration was given to include inspectors having only a few years of experience (1-2 years) to having been there for long periods (5-10) years). The majority of the inspectors had operational background within their domain of expertise, e.g. the ANS-inspectors had previous experience from being a controller or assistant controller, the OPS-inspectors had extensive operational experience as commercial pilots, an airworthiness inspector had worked for several years as a technician, etc.

Although it is probably impossible to assemble a group – particularly given the generally diverse background and experience of an inspectors' core – which represents every inspector's approach to assessing safety culture, the population of selected inspectors was considered by supervisors within the CAA to be representative of the overall larger core of inspectors.

Considering the existence of many different CAAs, worldwide as well as on a European level, each with its unique approach to assessing safety culture, it can not be argued that the core selected for this study necessarily represents wider regulatory inspectors' approach to assessing safety culture on an international level.

² TRTO: Type Rating Training Organizations

Organizing and analysing the data

The analysis of the data collected followed Moustakas' (1994) phenomenological approach described in Creswell (2007). Building on the data from the interview questions, I organized, analysed and translated the interview transcripts. The analysis process consisted of the following general steps:

1. First, I developed a list of significant statements from the interviews about how the inspectors were experiencing the topic (the assessment), listed these significant statements, sentences, or quotes in order to get a feel for the inspectors' experiences.
2. The significant statements formed a basis from where I developed clusters of meaning.
3. I then wrote a description of what the inspectors experienced performing the assessments. This included verbatim examples.
4. Next I created a description of how the experience occurred/evolved, e.g. of how the inspectors perform the assessments (textual description). This part of the analysis also considered contextual factors, e.g. factors which may affect how the assessments were made (structural description).
5. I wrote from the textual and structural descriptions a composite description that sought to present the essence of how they go about the assessment (essential structure). This particular passage will focus on commonality, if any, and the experiences of the inspectors. According to Creswell (2007), this part should leave the reader with a sense of understanding how the inspectors perform the assessment, e.g. an answer to my thesis question presented in a "story" format.

Due to the scarcity of scientific studies and research on the role of the inspector, particularly how assessments of organizational safety culture are conducted, I was limited in terms of comparing

how similar assessments by other inspectors are made. In sync with the view of Creswell (2007), that of the dilemma of an absence of a theoretical framework:

The researcher arrives at the doorstep of a qualitative research with a topic or substantive area of investigation, and perhaps has reviewed the literature about the topic and knows that a problem or issue exist that needs to be studied. This problem may be one in the “real world” or it may be a deficiency in the literature or past investigations on the topic.
(p. 42)

Therefore, I compared the findings from the interviews to recognized components of what a safety culture is considered to consist of, and common features that have found to be indicative of what may reflect and promote good safety cultures, hence what the inspectors may be looking for during the assessments. This comparison was considered to be an indicator whether common beliefs of what a safety culture may consist of are used as guidelines by the inspectors on what to base the assessments on. I also used literature on organizational culture and HROs (High Reliability Organizations) with a focus on assessment with actual studies and examples, particularly Edgar H. Schein (2004), Karl E. Weick and Kathleen M. Sutcliffe (2007).

According to some research (Antonsen, 2009; Reason, 1997) and a regulator (Eurocontrol, 2008), there are four components of a safety culture;

1. Reporting
2. Just
3. Flexible
4. Learning

According to Reason (1997), these four components interact and create an informed safety culture.

Based on the many existing definitions of safety culture, scientific research has identified some common features in terms of what may create a good safety culture. According to Wiegman et al. (2002) and Pidgeon and O'Leary (2000) they are:

1. Organizational commitment
2. Senior management commitment to safety;
3. shared care and concern for hazards and a solicitude over their impacts upon people;
4. realistic and flexible norms and rules about hazards;
5. continual reflection upon practice through monitoring, analysis and feedback systems;
and;
6. employee empowerment.

I used these components and common features in order to compare and establish whether similarities of what to look for existed. These theoretical frameworks were also used to establish whether inspectors' beliefs and knowledge are similar, different or perhaps identical to what scientific research has found.

Validity and reliability

According to Hammersly (1990) validity refers to “the extent to which an account accurately represents the social phenomena to which it refers” and reliability to “the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions” (as cited in Silverman, 2010, p. 275).

In order to assure validity and reliability as far as possible, the following considerations and steps were taken:

- During the construction of the interview questions, I exposed them to three colleagues, all with doctoral dissertations and supervisory experience of student's thesis work. Next, I conducted a "test interview" with another colleague with experience and knowledge of the theoretical framework and regulatory work of the research topic.
- One recognized and accepted qualitative approach to inquiry – phenomenological theory – was studied and adhered to when organizing and analysing the data.

In addition to the steps described above, I carefully considered questions that Creswell (2007) considered important for the researcher to ask him/herself prior to and during the thesis work, questions which are commonly used to assess the quality of phenomenology (p. 215):

- Does the author convey an understanding of the philosophical tenets of phenomenology?
- Does the author have a clear "phenomenon" to study that is articulated in a concise way?
- Does the author use procedures of data analysis in phenomenology, such as the procedures recommended by Moustakas (1994)?
- Does the author convey the overall essence of the experience of the participants? Does this essence include a description of the experience and the context in which it occurred?
- Is the author reflexive throughout the study?

These questions and considerations were used as "guiding tools" in order to assure – as far as possible – an acceptable level of validity and reliability throughout my thesis.

THEORETICAL FRAMEWORK

General considerations and different perspectives

Organizational culture

In order to understand safety culture's origin, it is necessary to explain what is meant by organizational culture (Eurocontrol, 2008). According to Schein's (1992) theory, organizational culture is defined as:

A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid, and, therefore, to be taught to new members as a correct way to perceive, think and feel in relation to those problems. (p. 12)

Schein (1992; 2004) puts in his definition emphasis on shared learning experiences and argues that these experiences lead to shared, taken for granted basic assumptions which may be held either by the organization or the group. Schein argues further that these set of shared assumptions may determine a group's behaviour, and in order to understand and define culture, "one must go below the behavioural level, because behavioural regularities can be caused by forces other than culture" (2004, p. 22).

In his book *Organizational Culture and Leadership*, Schein (2004) talks about the essence of culture, that a culture consists of many layers, he concludes that "in between these layers are various espoused beliefs, values, norms, and rules of behaviour that members of the culture use as a way of depicting the culture to themselves and others" (p. 25). Schein explains these levels as follows (p. 26):

- Artifacts: At the surface is the level of artifacts, which includes all the phenomena that one sees, hears, and feels. Artifacts include the visible products of the group, e.g. its technology, language, artistic creations, manners of address, etc. This level is considered both easy to observe and very difficult to decipher. Schein explains that a question that elicits artifacts is “what is going on here?” (p. 343).
- Espoused beliefs and values: The next level reflects the beliefs and values that get a group moving in dealing with internal and external problems, or; “why are you doing what you are doing?” (p. 343).
- Basic underlying assumptions: Schein (2004) defines this last level of culture as that concept which is accepted by the group and guides the behaviour of the group. Schein argues that “what was once a hypothesis, supported only by a hunch or a value, gradually comes to be treated as a reality” (p. 30).

Eurocontrol (2008) argues that organizational culture involves employee awareness, understanding and motivation, and that similarly “soft” phenomena such as their attitudes, perceptions and beliefs are all wrapped-up within this concept. According to Guldenmund (2000), despite the key role played by organizational culture – particularly when determining an organization’s success or failure – there does not appear to be a shared consensus on how to either explain or describe the culture of an organization.

Weick and Sutcliffe (2007) also talk about culture in terms of an organization’s assumptions (the preservation of lessons learned), values (how the organization acts), practices (the way of doing business), and artifacts (give substance to the values). When looking at the content of an organization’s culture, they elaborate on Reason’s components of a safety culture (1997) and illustrate the notion of an informed culture as being a mindful culture. Indeed, they argue that “an informed culture is also a cornerstone of so-called safety cultures” (p. 125). Such a sub-

culture is according to them an important part of organizational culture and the analytical framework used in order to understand it.

ICAO (2009) takes a very similar position, highlighting the necessity to understand organizational culture and its bearings on safety, and argues that “in terms of the management of safety, understanding culture is as important as understanding context, since culture is an important determinant of human performance” (p. 23).

According to Weick (2007), one of the earliest discussions of organizational culture was the work of Barry Turner's *Man-Made Disasters*. In his book, Turner describes the importance of culture and how it affects how organizations organize and share common views on expectations and values, and how they influence and encourage the organization to come together and bring various assumptions to tasks such as e.g., decision making. Within the discussions and theoretical frameworks of safety, Turner's work was also considered to have contributed to a greater understanding of the relationship between organizational safety and cultural processes (Antonsen, 2009).

With these descriptions of organizational culture, we will move on to the concept of safety culture.

Safety culture

Despite all that has been written about safety culture, parallel and almost identical to the fragmented position on organizational culture, there is no agreement about just what this concept means. Different journals and articles address this matter (Hale, 2000; Cooper, 2000; Hopkins 2006; Cox & Flin, 1998). In aviation various domains concur on this dilemma. According to Eurocontrol (2008), the term safety culture has been in use over the past several years in ATM³, but it is not always clear what is meant by the term, nor how it relates to the ATM industry, or

³ ATM: Air Traffic Management

how it is measured and improved. Indeed, as Reason (1997) concluded; “few things are so sought after and yet so little understood” (p. 191). I will however include some of the literature's definitions which are subject to further analysis, particularly pertaining to the concept of safety culture and the aid given by the particular literature to an outsider, e.g., an inspector when assessing an organization's safety culture.

According to Reason (1997), a safety culture includes mainly four characteristics; it must be just, but also reporting, learning and flexible. Indeed, Reason argues that “it is made up of a number of interacting elements, or ways of doing things” (p. 192). He explains that “until the 1980s, culture was a term applied more to nationalities than to organizations” (p. 192). It was not until the Chernobyl accident in 1986 that the term safety culture was introduced in the language of investigations and organisational accidents. The International Atomic Energy Agency (IAEA)⁴ further elaborated on the concept in detail, defining safety culture as that assembly of characteristics and attitudes in organisations and individuals which establishes that, as an overriding priority, nuclear plant issues receive the attention warranted by their significance (IAEA, 1991).

EASA ECAST⁵ (2009) Working Group provides guidance on safety culture and various assessment-tools. Their paper is aimed at all organizations bearing a responsibility for safety in aviation. In defining what a safety culture is, they consider two different levels; a slogan and a formal definition. This results in two levels of a definition. The top-level is considered useful when describing what safety culture is in a way easy to understand, while a full definition is considered to support the level of rigour needed to unequivocally answer the more difficult questions around safety culture, such as e.g. justness.

The top-level definition is: “Safety Culture is the set of enduring values and attitudes regarding safety, shared by every member of every level of an organization” (p. 5).

⁴ IAEA: International Atomic Energy Agency

⁵ EASA & ECAST: European Aviation Safety Agency & European Commercial Aviation Safety Team

Their full definition is:

Safety Culture is the set of enduring values and attitudes regarding safety issues, shared by every member of every level of an organization. Safety Culture refers to the extent to which every individual and every group of the organisation is aware of the extent to which every individual and every group of the organization is aware of the risks and unknown hazards induced by its activities; is continuously behaving so as to preserve and enhance safety; is willing and able to adapt itself when facing safety issues; is willing to communicate safety issues; and consistently evaluates safety related behaviour. (p. 5)

Eurocontrol (2008) produced a comprehensive paper on safety culture with primarily four objectives; to understand the concept, how it can be measured, how to improve it and knowledge of the ATM safety culture goals. Additionally, the paper had the objective of informing ANSPs⁶ and any other organisations by unpacking the concept, answering frequently asked questions and showing what their approach looks like in practice. They look upon safety culture as a sub-dimension of organizational culture, and describe it simply as “the way safety is done around here” (p. 11). They also argue that definitions can be enriched by pointing out that an organization's safety culture is not only made up of the individuals attitudes, but involves so much more; “safety culture reflects individual, group and organizational attitudes, norms and behaviours and it consists of the value of, priority of, and commitment to, air navigation safety” (p. 11). They consider that a safety culture encompasses many characteristics, but emphasize the importance of cultural traits such as justness, flexibility, reporting and learning.

⁶ ANSP: Air Navigation Safety Provider

JPDO⁷ (2004), a group working with the Next Generation Air Transportation System (NextGen) has as one of its missions to “establish and track a safety improvement culture where safety and its continuous improvement are seen as the primary goal⁸” (p. 1). Recognizing the need for a strong safety culture, which the group hopes will enable the full implementation of a SMS, the proposed SMS requires organizations to promote the growth of a positive safety culture, and defines safety culture as:

The product of individual and group values, attitudes, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of the, organization's management of safety. Organisations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficiency of preventive measures. (p. 2)

Just culture

According to Dekker (2007), a just culture is about balancing safety and accountability. That a “just culture means getting to an account of failure that can do two things; satisfy demands for accountability and contribute to learning and improvement” (p. 24). In order to do so, people must feel they work in an environment where they can speak up freely, without fear of being held criminally responsible and subjected to disproportional punishment.

Reason describes the characteristics in a different but yet similar way; “a just culture supports learning from unsafe acts in order to improve the level of safety awareness through the improved recognition of safety situations” (as cited in GAIN, 2004, p 5). Furthermore, he

⁷ JPDO: The Joint Planning and Development Office was created in 2004 and tasked with producing an integrated plan for safety implementing the Next Generation Air Transportation System (NextGen).

⁸ JPDO describes in their mission plan various steps to accomplish such task of establishing a safety improvement culture with focus on a proactive safety work. Some examples are; the development of safety management principles with the aim to forecast and manage safety risks more effectively; promote safety through training; sharing of safety data and dissemination of lessons learned from investigations; establish a non-punitive reporting system, etc (2004).

describes a just culture as “an 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” (Reason, 1997, p. 195).

From the viewpoint of ECAST, justness reflects the extent to which safe behaviour and reporting of safety issues are encouraged or even rewarded and unsafe behaviour is discouraged. The concept of just culture is considered an element of the framework they work with when assessing safety culture. Justness is considered an indispensable component of a safety culture. Indeed, their position regarding the importance of justness is conveyed as “one might say that in the same way an effective SMS is not feasible without an adequate safety culture, an adequate safety culture is not feasible without an appropriate level of justness” (ECAST, 2009, p. 7).

GAIN Working Group⁹ (2004) takes the position that a just culture refers to a way of safety thinking that “promotes a questioning attitude, and is resistant to complacency, is committed to excellence, and fosters both personal accountability and corporate self regulation in safety matters” (p. 4). They base their position primarily on Reason’s work, which can be seen in their work on topics such as determining culpability, unsafe acts, human error etc.

IFATCA¹⁰ (2003) invited and urged ICAO to develop guidelines promoting the concept of a just culture. In doing so, they defined a just culture as:

A culture in which front line operators are not punished for actions or decisions that are commensurate with their experience and training, but also a culture in which violations and wilful destructive acts by front line operators or others are not tolerated. (p. 2)

⁹ GAIN: Global Aviation Information Network

¹⁰ IFATCA: International Federation of Air Traffic Controllers Associations

INSAG¹¹ (2002), a working group within IAEA, have in their report no clear definition of a just culture, nevertheless, it addresses the importance of a just reporting culture and the need for management to support operators when what they call conservative decisions are made. In a later publication by the IAEA on how to assess safety culture – SCART¹² Guidelines – they have in their assessment tool a range of questions dealing with, e.g., accountability, roles and responsibilities etc.

In the healthcare sector, discussions regarding just culture have partly their origins from the IOM report¹³ (2000), which addresses medical error and patient safety (see also Sharpe, 2004). In its quest to create and sustain cultures of safety, the IOM called for developments and standardized processes to better distinguish acts such as wilful negligence from human error. Other definitions within healthcare share very similar traits with e.g. aviation, where “a just culture serves as the primary guiding principle for risk identification and ultimately patient safety” (Thaden & Hoppes, 2005, p. 1), and a just culture is seen by some experts as an integral aspect of a broader culture of safety (Institute of Medicine, 2000).

Reporting culture

A reporting culture is considered an essential part of learning, and its very purpose and goal has long been acknowledged as that of a contributory and effective means of enhancing and stimulating organizational learning. Indeed, as Dekker (2007) expressed it in simple and clear terms; “the point of reporting is to contribute to organizational learning” (p. 39).

According to Weick (2007), a reporting culture is about the protection of the people that report and the trust the people have in the system. Protection of the reporters is considered vital for an effective and well functioning reporting system. Furthermore, reporting is thought of as an essential part of a safety culture, therefore the function of reporting ought not to be isolated

¹¹ INSAG: International Nuclear Safety Group

¹² SCART: Safety Culture Assessment Review Team

¹³ IOM: Institute of Medicine report – *To Err Is Human: Building a Safer Health System* (2000)

from the remaining components of an organization's safety culture. In order to disclose mistakes and other critical safety related information, people must feel confident in not only the system, but also what happens to the report, and probably what is most important; what will happen to me or my colleagues in the aftermath of disclosure?

The necessity and importance of safety related information must not be underestimated, and its role in enhancing safety culture is of great importance. Indeed, as Weick (2007) argues "since safety cultures are dependent on the knowledge gained from rare incidents, mistakes, near misses, and other "free lessons", they need to be structured so that people feel willing to discuss their own errors" (p. 129). Reason (1997) also recognizes the importance of reporting, particularly in regards to safety related information which may be inherently critical for success. He argues that:

Any safety information system depends crucially on the willing participation of the workforce, the people in direct contact with the hazards. To achieve this, it is necessary to engineer a *reporting culture* – an organizational climate in which people are prepared to report their errors and near misses. (p. 195)

Making people feel comfortable and willing to report is a complex and delicate issue of trust. And trust is not something you simply insert into the organization and into the minds of the people working there, it must be earned. As Dekker (2007) concluded; "getting people to report is about building trust: trust that the information provided in good faith will not be used against those who reported it. Such trust must be built" (p. 43). Indeed, as Weick and Sutcliffe (2007) argued in their analysis of the four subcultures at the Bristol Royal Infirmary tragedies "an organization is defined by how it handles blame and punishment, and that, in turn, can affect what gets reported in the first place" (p. 131).

Beugre (1998) argues that "trust is essential for stable social relationship" (p. 80). There are numerous definitions of trust. One commonly used definition suggests that "trust is a belief in

and willingness to act on the basis of, the words, actions and decisions of another” (in Greenberg, 2005, p. 256). Dekker (2007) includes in his work on just culture that calls for accountability themselves are, in essence, about trust; “it is about people, regulators, the public, employees, trusting that you will take problems inside your organization seriously” (p. 23). Dekker (2008) argues further that in order for an organization to learn, we must move beyond the blame cycle when accidents and incidents occur. This is where the concept of a reporting- and just culture comes in. According to Dekker (2008), “a just culture, then, is particularly concerned with the sustainability of learning from failure through the reporting of errors, adverse events and incidents” (p. 2). However, in order to do so, obstacles such as trust and believing that submitting a report will not result in unfair treatment must be discussed.

Reason (1997) argues that “there are some powerful disincentives to participating in a reporting scheme: extra work, scepticism, perhaps a natural desire to forget that the incident ever happened, and – above all – lack of trust and, with it, the fear of reprisal” (p. 196).

Reason (1997) studied two successful reporting programmes and found three factors important in creating a climate of trust (p. 197):

1. Indemnity against disciplinary proceedings – as far as it is practicable;
2. Confidentiality or de-identification;
3. The separation of the agency or department collecting and analysing the reports from those bodies with the authority to institute disciplinary proceedings and impose actions.

The necessity of trust has been acknowledged by many, scholars as well as organizations. The representatives from the two reporting systems (O’Leary & Chappell) which Reason looked at explained that for any incident reporting programme to be effective in uncovering the failures which contribute to an incident, it is paramount to earn the trust of the reporters.

Eurocontrol (2006) believes that establishing acceptable versus unacceptable behaviour enhances the trust that they consider being at the core of a just culture. In one report (2006), they argue for the necessity of drawing a line in order to address the two behaviours, while in another (2008) – interfacing with the judicial system – they argue for the importance of who draws the line. Nevertheless, trust is considered vital for a successful reporting system.

FAA¹⁴ (2006) considers trust and communication essential for a reporting culture. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficiency of preventive measures.

JPDO's paper (2008) addresses the necessity and criticality of trust in organizations, particularly pertaining to justness and reporting. Indeed, "emphasis is placed on fostering an atmosphere of trust, and improving communications among employees, and between employees and management" (preface). Furthermore, they concluded, as it relates to reporting, that effective data sharing is not possible without a just culture that emphasizes trust. They give the ECAST group as an example of what a learning culture can accomplish and how it can lead to increased participation in cross functional teams.

Wiegmann and Thaden (2004) discuss the questions pertaining to trust which may arise when a regulator is about to assess an organisation; who will be performing it, and what will it be used for? These are considered important questions to answer prior to entering the organization for assessment purposes. There are no direct or clear differences of opinions in the literature regarding the necessity of establishing trust between the reporter (e.g. pilot) and the receiver (e.g. organisation, authorities). Indeed, the whole body of researchers, organisations and other institutions such as authorities advocate its importance; "a good reporting culture will be regarded by staff as just and will be built on an atmosphere of trust" (INSAG, 2004, p. 8); "to be

¹⁴ FAA: Federal Aviation Administration (USA)

effective, a just culture must promote learning from mistakes, rather than focus on blame (Thaden & Hoppes, 2005, p. 2).

ICAO (2009) takes a very similar position and argues that in order to manage safety, organizations must establish an atmosphere where operational staff feels that they can trust management when submitting a report. ICAO (2009) identifies five basic traits associated with effective reporting (p. 28):

- Willingness
- Information
- Flexibility
- Learning
- Accountability

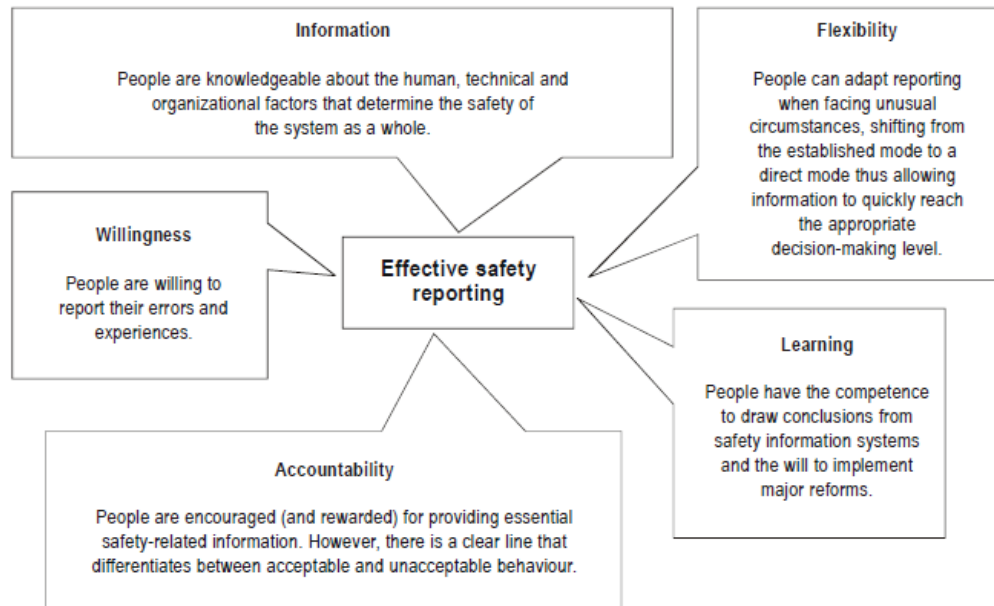


Figure 1: Effective safety reporting – Five basic traits (ICAO, 2009)

In addition to emphasize the importance of reporting one's errors and mistakes, ICAO (2009) argues for a strong necessity of organizations to establish reporting systems which also include

hazard identification as a fundamental activity underlying the management of safety. ICAO (2009) considers the people working with- and within the operational environment as key-figures, bringing hazards to the attention of management. Indeed, they argue that “nobody is in a better position to report the existence of hazards, and what works the way it is supposed to and what does not, than operational personnel” (p. 27, Ch 2).

Learning culture

The importance of organizational learning is a well recognized and researched area, particularly within high-risk, safety critical domains, such as aviation. Indeed, its importance has been asserted by researchers for quite some time (Dekker, 2005b; Rochlin, 1999; Weick & Sutcliffe, 2007; Pidgeon, 1997). Furthermore, since the advent of the theories of safety culture, a connection between culture and that of learning has emerged, and hence advocated by researchers. The impact it may have on people's norms and attitudes has transpired. Weick (2007) argues that “culture affects how departures from expectations are detected, interpreted, managed, and used as pretexts for learning” (p. 115). The majority of researchers also consider it vital for safety. In his discussion on safety – safety considered as being a social construct – Rochlin (1999) explicitly links the importance of organizational learning to safety, and states that “in order to maintain safety in a dynamic and changing organizational setting and environment, system operators and managers must continue to learn” (p. 1552). Further, he acknowledges the inherent complexity involved in understanding learning, and that there are many actors involved, which results in both individual as well as collective learning. He concludes that “learning is inherently reflexive, since the ability to identify such situations is in it self part of the constructed ambience of safe operations” (p. 1553).

The complexity involved in understanding the connection between culture and learning has been furthered by Dekker (2005a), who looks at the complexity from a phenomenon called drift

into failure¹⁵. He questions the assumption we make that a learning culture assumes to learn about, and detect the right negative signals which may allow the organization to learn. He raises the question; “we think of safety cultures as learning cultures: cultures that are oriented toward learning from events and incidents. But learning cultures are neither unique because every open system in a dynamic environment necessarily learns and adapts” (p. 26). Connecting the theory of drift into failure and the difficulties a learning culture may face, he explains it as follows:

The nature of this dynamic, this fine tuning, this adaptation, is incremental. The organizational decisions that are seen as “bad decisions” after the accident (even though they seemed like perfectly good ideas at the time) are seldom big, risky, order-of-magnitude steps. Rather, there is a succession of increasingly bad decisions, a long and steady progression of small, incremental steps that unwittingly take an organization toward disaster. Each step away from the original norm that meets with empirical success (and no obvious sacrifice of safety) is used as the next basis from which to depart just that little bit more again. (p. 27)

Dekker (2005a) argues that these small steps of deciding on something today which differed very little from previous decisions are extremely hard to detect. He concludes that “incrementalism is about continued normalization: It allows normalization and rationalizes it” (p. 27).

This normalization within the context of learning has also been addressed by Weick (2001; 2007). He connects organizational culture to that of institutionalizing mindfulness, and links that in his

¹⁵ Drift into failure is explained by Dekker (2005a) as “a slow incremental movement of systems operations towards the edge of their safety envelope. This movement is driven by pressures of scarcity and competition that subtly influence the many decisions and trade-offs made daily by operators and management hierarchies” (p. 2).

discussion of an organization striving to learn about its potentials of becoming mindful after having been audited for the capabilities for resilient performance¹⁶:

The brief period after you have finished the mindfulness audits is a lot like the period right after the chaos of battle on a battlefield. There are truths lying around everywhere that may be picked up for the asking. This is the moment of learning. But it won't be long before candour gives way to moments or normalizing that protects reputations, decisions, and styles of managing. As soon as official stories get "straightened out" and repeated, learning stops. (p. 109)

The assumption that is sometimes made – the connection between safety culture and learning – has been discussed by other researchers (Antonsen, 2009; Hollnagel, 2008). According to Antonsen (2009) "one of the reasons for the growing interest in the concept of safety culture is probably that some cultural traits are presumed to favour organizational learning" (p. 150). He advocates the importance of including and involving the employees in the learning- and improvement process. Furthermore, he argues that "reducing the distance between managers and the operational workforce is vital for learning with regard to both facilitating the upward flow of information and the adaptation of general safety measures to local work contexts" (p. 150).

¹⁶ Resilient performance has been described by various researchers such as Weick and Sutcliffe (2001, 2007) and Hollnagel (2008). Weick and Sutcliffe describe it as three abilities; (1) the ability to absorb strain and preserve functioning despite the presence of adversity. Adversity is divided into internal and external aspects (internal adversity is described as e.g. rapid changes, production pressures etc. External adversity such as changes in competition and other demands from e.g. stakeholders); (2) the ability to bounce back or recover from unfortunate – untoward – events; (3) an ability to learn and grow from previous episodes of resilient action (2007, p. 71). Hollnagel (2008) describes resilient performance in a similar way and with similar abilities a system or organization has; (1) the ability to respond to various disturbances and to regular and irregular threats; (2) the ability to flexibly monitor what is going on, including the system's own performance; (3) the ability to anticipate disruptions, pressures, and their consequences, and; (4) the ability to learn from experience. Within this learning process lies a careful consideration of which data to learn from, when to learn, and how the learning should show itself in the organization – as changes to procedures, changes to roles and functions, or changes to the organization itself (preface, xiii).

Research on safety culture has resulted in identifying components of safety culture (Reason, 1997). One of the components – a learning culture – is considered to be a part of an organization and its preconditions for learning. Reason defines a learning culture as “an organization must possess the willingness and the competence to draw the right conclusions from its safety information system and the will to implement major reforms” (p. 196).

Weick and Sutcliffe (2007) define a learning culture from the perspective of “how adequately people can convert the lessons that they have learned into reconfigurations of assumptions, frameworks, and action” (p. 126). Weick (2001) has approached the complexity involved in learning and introduced the theory of requisite variety. The theory holds that if you want to succeed in coping with many variables – or inputs – you should not simplify by reducing the amount of variables, but rather embrace the broad spectrum and use all the different variables in the learning process.

Based on what a learning culture may look like, Schein (2004) describes the possible characteristics by considering what he calls dimensions. He suggests the following ten characteristics:

1. A Proactivity Assumption: In order to deal with complexity and ever so changing demands in a future hard to predict, he argues that “a learning culture would have to assume that the appropriate way for humans to behave in relationship to their environment is to be proactive problem solvers and learners” (p. 394).
2. Commitment to Learning to Learn: This dimension advocates the importance of realizing the challenge involved when trying to learn and that it takes practice to become a learning culture. In order to accomplish this, “the learning culture must have in its DNA a learning gene” (p. 395).

3. **Positive Assumptions about Human Nature:** In order to learn, leaders (management) must have a genuine belief and faith in that human nature is basically good. When provided with proper educations and “tools,” people will do their best in order to learn.
4. **The Assumption That the Environment Can Be Dominated:** Accepting that the world is ever so changing and dynamic, but yet manageable, is another characteristic indicative of a learning culture. Schein illustrates this importance as “an organization that assumes that it must symbiotically accept its niche will have more difficulty in learning as the environment becomes more turbulent” (p. 397).
5. **Commitment to Truth Through Pragmatism and Inquiry:** In order to learn, a culture must have a belief in that there is no one truth out there, but rather through a flexibility characterized by pragmatism and seeking several interpretations rather than taking the assumption that “wisdom and truth reside in any one source or method” (p. 398).
6. **Orientation Toward the Future:** Being able to track and catch the right time frames, one which allows for the assessment of what consequences different actions and solutions might generate, and one which remains enough close in time in order to assess the solutions and if they worked. According to Schein, “the optimal time orientation for learning appears to be somewhere between the far future and the near future” (p. 399).
7. **Commitment to Full and Open Task Relevant Communication:** Realizing the criticality of communication is of great importance. What Schein argues for here is that anyone in the organization must be able to communicate with anyone else. Furthermore, when doing so, being honest and telling things the way they are must be a shared assumption of everyone in the organization. Within this honesty lies an awareness of what is relevant for learning, and should not consist of “letting it all hang out” as Schein explains; “it means, rather that one must become sensitive to task-relevant information and be as open as possible in sharing that” (p. 400).

8. Commitment to Diversity: Encouraging diversity in terms of different groups of people within the culture, so called sub-cultures, as well as on individual levels which Schein considers vital when facing turbulent environments. In order for this diversity to work, collective learning from each other and respect are essentials. Preconditions for a successful diversity, is according to Schein in need of a leadership which ensures “good cross-cultural communication and understanding throughout the organization” (p. 401).
9. Commitment to Systemic Thinking: In order to meet the challenges which lie within complexity and the many variables and causes which are dependent of each other, a learning culture must develop an understanding which results in setting simple, non-linear solutions aside in favour of what Schein calls complex mental models. He concludes that “the learning leader must believe that the world is intrinsically complex, non-linear, interconnected, and over-determined in the sense that most things are multiply caused” (p. 402).
10. Commitment to Cultural Analysis for Understanding and Improving the World: Within this final dimension, Schein advocates the importance of the learning culture – and the leader – to actively and willingly work with culture in order to develop a feel and understanding of the culture itself.

Flexible culture and HROs (High Reliability Organizations)

There has been a growing interest in organizations that are engaged in complex and safety critical operations and do so reliably in terms of low accident rates and other adverse events which may disrupt services. Organizations able to cope with complexity are considered to have an organizational flexibility that is made possible by possessing a flexible culture (Reason, 1997). Compared to organizations that may encounter difficulties hard to identify and monitor, resulting in disasters, as Weick (2007) describes as; “small failures went unnoticed, simple diagnoses were

accepted, frontline operations were taken for granted, recovery was treated as routine, and experts deferred to authorities” (p. 1). He argues further that “these troubled organizations might have acted differently had they modeled themselves after a family of organizations that operate continuously under trying conditions and have fewer than their fair share of major accidents” (p. 1). Organizations considered to belong to such a family are labeled HROs – High Reliability Organizations.

Research undertaken on HROs was associated with organizations such as air traffic control and aircraft carrier operations in the USA (see Rochlin et al., 1987). The last – aircraft carrier operations – considered being the most complex, are explained by one of the researchers (Rochlin et al., 1987) as “flight operations at sea is the closest to the edge of the envelope – operating under the most extreme conditions in the least stable environment, and with the greatest tension between preserving safety and reliability and attaining maximum operational efficiency” (p. 76). The importance of a high level of reliability in such an organization was further described by La Porte (1991) as; “some organizations must not make serious errors because their work is too important and the effects of their failures too disastrous” (p. 19). The importance and challenge for such organizations of avoiding serious operational failures was made further clear by La Porte and Consilini (1991):

The operating challenges are twofold; (1) to manage complex, demanding technologies, making sure to avoid major failures that could cripple, perhaps destroy, the organization; at the same time, (2) to maintain the capacity for meeting periods of very high, peak demand and production whenever these occur. (p. 21)

The studies, which originated from a group of researchers¹⁷ at the University of California Berkley, resulted in a theory which emphasizes that the safety level of organizations characterized as HROs are strongly influenced by the level of organizational redundancy¹⁸ which is considered vital and necessary. Indeed, Rochlin et al (1987) argued that “it is necessary for high-reliability organizations to manage activities that are sufficiently dangerous to cause serious consequences in the event of operational failures” (p. 84).

According to Weick and Sutcliffe (2007), an organization characterized by the traits of a HRO, has created what they call a mindful infrastructure that does the following on a continuous basis (p. 2):

- Tracks small failures: HROs which are mindful treat any small failures as a symptom that something may be wrong with the system. They are what Weick calls *preoccupied with failure*. In order to address these small failures, HROs both encourage reporting of errors and they “make a continuing effort to articulate mistakes they do not want to make” (p. 9).
- Resists oversimplification: Another way HROs foster mindfulness is by being *reluctant to accept simplifications*. In order to do so, HROs recognize that the world and the systems they operate with and within are complex, unstable and unpredictable. When facing a failure or event they are familiar with, instead of feeling a sense of comfort, they raise concern and question whether they have the “big picture.”
- Remains sensitive to operations: When HROs are *sensitive to operations*, they listen to, and are very attentive to the people working up-front, the pilots, the air traffic controllers, etc. In developing their knowledge of the “big picture”, they are actively encouraging people to

¹⁷ The researchers most commonly associated with research and theories connected with HROs are Karlene Roberts, Todd R. La Porte, G. I. Rochlin (University of California, Berkley), and Karl Weick (University of Michigan).

¹⁸ Organizational redundancy – is according to Rochlin et al (1987) “the ability to provide for the execution of a task if the primary unit fails or falters” (p. 84). Rosness et al. (as cited in the SINTEF REPORT, 2004), defined organizational redundancy as “the cooperation patterns that allow the organization as a whole to perform more reliably than each individual operator” (p. 30).

participate. According to Weick, “people in HROs know that you can’t develop a big picture of operations if the symptoms of those operations are withheld” (p. 13).

- Maintains capabilities for resilience¹⁹: As a baseline, HROs recognize that there are no such things as perfect systems. In order to deal better with different events, such as failures and errors, HROs strive to remain vigilante and sensitive to their operations with a *commitment to resilience*. Weick exemplifies resilience as “a combination of keeping errors small and of improvising workarounds that allow the system to keep functioning” (p. 14).
- Takes advantage of shifting locations of expertise: According to Weick (2008), this final and fifth feature of HROs involves their *deference to expertise*. He argues that HROs “cultivate diversity, not just because it helps them notice more in complex environments, but also because it helps them do more with the complexities they do spot” (p. 16). HROs acknowledge that the frontline people not only hold the expertise, but must also be given the authority to make decisions.

Assessing safety culture

Assessing one's safety culture is considered an important step in enhancing and improving the organization's safety. Researchers argue that safety culture is fundamental to an organization's ability to manage safety-related aspects of its operations. Reason (1997) addresses the importance in terms of safety culture being a natural by product; “it is made up of a number of interacting elements, or ways of doing things, thinking and managing that have enhanced safety health as their natural by product” (p. 192). Additionally, interest in the assessment of safety culture has arisen most strongly in connection with safety related evaluations of organizations by

¹⁹ Resilience: According to Hollnagel et al (2006), resilience – also expressed as resilience engineering – in comparison to traditional safety management approaches, where risks and failures are considered the result of a degradation of normal performance, resilience engineering sees failures and successes as two sides of the same coin – as different outcomes of how people and organizations cope with complex, underspecified and therefore partly unpredictable environment (2008).

external agents such as regulatory agencies. However, there exist difficulties for an external party to assess an internal safety culture. Grote and Kunzler (2000) concluded that there exist two difficulties with an external assessment; “(1) significant time and other resource constraints on the evaluation; and (2) a relationship between evaluated organization and evaluators based more on control than on equality and trust” (p. 134). Their research offers a tool to diagnose safety culture based on the socio-technical systems approach. It asserts the importance of developing an understanding of safety culture as deeply rooted assumptions about the interplay of people, technology, and organization. They concluded that analyzing what they refer to as “response patterns of different occupational, hierarchical, and organizational groups within a company in combination with formal audits as well as the members of the company to gain a deeper understanding of safety management and safety culture in a company” (Grote & Kunzler, 2000, p. 131). They complement the common use of a questionnaire by gathering data through interviews and work place observations during audits.

In order to address the issue of assessment, ECAST (2009) take the position that safety culture is a multi-dimensional construct, and in order to perform effective assessments, they have provided the assessor with six dimensions: commitment; behaviour; awareness; adaptability; information; and justness. Furthermore, they address the issue that various domains in aviation and even within a single organisation may become too large to allow the use of common terminology. They expand this theory further by stating that when “assessing safety culture (through e.g. surveys, interviews or workshops), question-sets should be used that are not common across the industry, but that are specific for a particular domain” (p. 9). They provide a safety culture maturity tool, a checklist addressing the six dimensions with specific questions for each, claiming that after such an examination a specific maturity level of safety culture can be attained and areas identified where improvement efforts might be focused. Given the complexity and dynamic construct of an organization's safety culture, hence also just culture, they conclude that “many other considerations apply which go beyond the scope of this working paper” (p. 9).

Their conclusion not only confirms the complexity involved when assessing an organization's safety culture, but also leaves little room for evaluating the tools they provide, whether their criteria is indeed measurable or not.

Eurocontrol (2008) takes a different stand on the safety culture maturity tool. According to them, it may be very appealing to use, but they also conclude that its scientific basis is not fully endorsed. When attempting to measure safety culture, they recommend following a systematic, closed loop process, consisting of six steps, beginning with defining a safety culture model, and finishing with a process of enhancement. After what they consider a "reasonable period" of at least two years, safety culture can be assessed again to determine if the situation has improved. They use various tools, such as questionnaires, surveys and interviews. In regards to what can be limiting the process of adequate assessments, Eurocontrol emphasizes the importance of understanding the more social and behavioural aspects of a safety culture, considering questionnaires only as an indicator of an initial overall "health check". By using a triangulation process, consisting of other sources of data, such as observations, interviews and workshops, they strive to learn more about the characteristics of safety culture.

Sackmann (1991) argues that many of the methods used by culture analysts seem to assume that if we ask the "right" questions, we can decipher the culture. She argues for the necessity of not looking for a single, all encompassing definition and assessment, but rather allow ourselves to be guided by our interest in a given study; hence we should focus less on the definitions. She concludes that given the complexity of culture, an understanding of culture in a given organizational setting requires an "understanding of the ideational aspects of culture – the underlying process of sense making, the cognitive constructions, or the cultural knowledge that exist in a particular organization" (p. 298). Indeed, this complexity in measuring various dimensions is further advocated by Schein (1990):

If we are to take culture seriously, we must first adopt a more clinical approach and ethnographic approach to identify clearly the kinds of dimensions and variables that can usefully lend themselves to more precise empirical measurement and hypothesis testing. (p. 109)

ICAO (2002) has published guidance material on human factors and safety audits. The target audience of human factors manuals and digests includes managers of civil aviation administrations and the airline industries, regulatory bodies, safety and investigation agencies, etc. A specific manual – Document 9806 (ICAO, 2002) – provides the ICAO Universal Safety Oversight Audit Programme²⁰ and Contracting States with standard procedures for the conduct of safety oversight audits, with respect to those factors dealing with human factors performance, organizational and management factors, cultural factors in aviation, etc. Furthermore, the material consists of introductory descriptions of human factors to practical guidance regarding means of compliance with ICAO's Human Factors-related SARPS²¹. Within the document (ICAO, 2002) pertaining to human factors, ICAO also describes organizational and managerial factors. ICAO argues that the importance of looking at such factors may prevent future incidents and accidents. They conclude that “understanding organizational and management factors is important for ICAO safety oversight auditors” (p. 1, ch. 3). Within the guidance material, ICAO also describes safety culture. Areas which according to them may have an effect on safety such as safe and unsafe cultures, structure of organizations, allocation of resources, etc are discussed. They argue that “safety oversight auditors should be looking for balance in the

²⁰ The primary objectives of the audit programme are; 1) to determine the degree of conformance of the State in implementing ICAO standards; 2) to observe and assess the State's adherence to ICAO Recommended Practices (see below), associated procedures, guidance material and safety-related practices; 3) to determine the effectiveness of the State's implementation of a safety oversight system through the establishment of legislation, regulation, safety authority and inspection, and auditing capability; and 4) to provide Contracting States with advice (recommendations) to improve their safety oversight capability, as applicable (ICAO, 2002).

²¹ SARPS: Standards and Recommended Practices. SARPs for each area of ICAO responsibility are contained in 18 Annexes. Each Annex deals with a particular subject area, e.g., Personnel Licensing (Annex 1) and Rules of the Air (Annex 2). The ICAO standards do not preclude the development of national standards which may be more stringent than those contained in an Annex.

organizations that make up the aviation system” (p. 13, ch. 3). This balance is by ICAO considered delicate and may involve the following interactions (2002, p. 13, ch. 3):

- Individual accountability versus corporate accountability;
- Economics versus safety;
- Safety versus justice; and
- Regulatory authority versus corporate authority.

When assessing this balance, they describe what they refer to as “traits of a safe organization that safety auditors might expect” (p. 13, ch. 3). Some of these traits of safe organizations are; 1) safety is regarded as a major contributor in achieving production goals; 2) the establishment of a culture in which the active promotion of safety is pervasive; 3) have developed risk management structures that allow for an appropriate balance between production management and risk management.

Responding to these traits as an assessor, ICAO (2002, p 14, ch. 3) has suggested indicators of safety cultures that safety auditors might expect to find. Some of these are; 1) management places strong emphasis on safety; 2) those in authority foster a climate in which there is a positive attitude towards criticism, comments and feedback from lower levels of the organization; 3) there is a promotion of appropriate, realistic and workable rules relating to hazards, to safety and to potential sources of damage.

Although the Document 9806 is primarily targeted for audits of Contracting States, it is also designed to assist the Contracting States when auditing human factor- and organizational aspects of the service providers²².

²² Service providers in this context refers to any organization providing aviation services. The term includes e.g., aircraft operators, approved maintenance organizations, manufacturing organizations, air traffic service providers and certified aerodromes.

SMS and safety culture

ICAO²³ has mandated that its 190 member states develop and implement SMS²⁴ with the intent to achieve an acceptable level of safety in aviation operations (ICAO, 2009). ICAO's definition of an SMS is "an organized approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures" (ICAO, 2007, p. 1-2). Furthermore, it has been recognized that one of the most challenging conditions of a SMS is the creation and nurturing of a safety culture. Indeed, ICAO (2007) argues for transparency and sharing of information as cornerstones of aviation safety. In doing so, ICAO (2007) has proposed actions to support the implementation of an adequate "Just Culture Concept" in order to address the need for protection of safety reporting and sharing of information while respecting the principles of administration of justice and freedom of information (see also ISSG²⁵, 2005). SMSs are in other words increasingly being introduced in aviation, among others because of the provisions relating to SMS in ICAO Annexes 6, 11 and 14, and EASA NPA²⁶s (ECAST²⁷, 2009), but also because it is considered to "provide organizations with a powerful framework of safety philosophy, tools and methodologies that improve their ability to understand, construct and manage proactive safety systems" (Stolzer, Halford & Goglia, 2008, p. 13). Indeed, ECAST (2009) conclude that "a strong safety culture is generally considered as a vital condition to a well functioning SMS" (p. 4). Furthermore, it is sometimes said that it is well possible to have a good safety culture without a formal SMS, but it is not possible to have an effective SMS without a good safety culture. Traditional approaches to safety management were primarily based on assuring compliance with rules and regulations (ICAO, 2009), particularly in the aftermath of incidents and accidents. According to ICAO (2009), the traditional need for safety management

²³ ICAO: International Civil Aviation Organization

²⁴ SMS: Safety Management System

²⁵ ISSG: Industry Strategy Safety Group

²⁶ EASA NPA: European Aviation Safety Agency Notices of Proposed Amendments

²⁷ ECAST: European Commercial Aviation Safety Team

has been justified based on a predicted industry growth and the potential for an increase in accidents as a consequence of such a growth.

The evolvement of safety SMS has been described by ICAO (2009) through different eras of an evolution of safety thinking (see figure 2). In the first era, which spanned from the early 1900s until approximately the late 1960s, the majority of breakdowns were technical hence most of the safety concerns were related to technical factors. The improvement of technical reliability – such as the introduction of the jet engine – and other supportive tools such as improved navigation, communication capabilities, autopilots etc, introduced the era of human factors. Within this era, the focus shifted to human performance. Safety improvements produced endeavours such as CRM (Crew Resource Management) and human-centered automation, etc. The individual was at the centre for improvements, seeking to eliminate human error.

Recognizing the limits with primarily focusing on the individual, the era which followed during the late 1900s to present, gave greater attention to the workers' operational context. During this last era – the organizational – safety began to be viewed from a systemic perspective. According to ICAO (2009) this era, “encompassed organizational, human and technical factors” (p. 4, ch. 2).

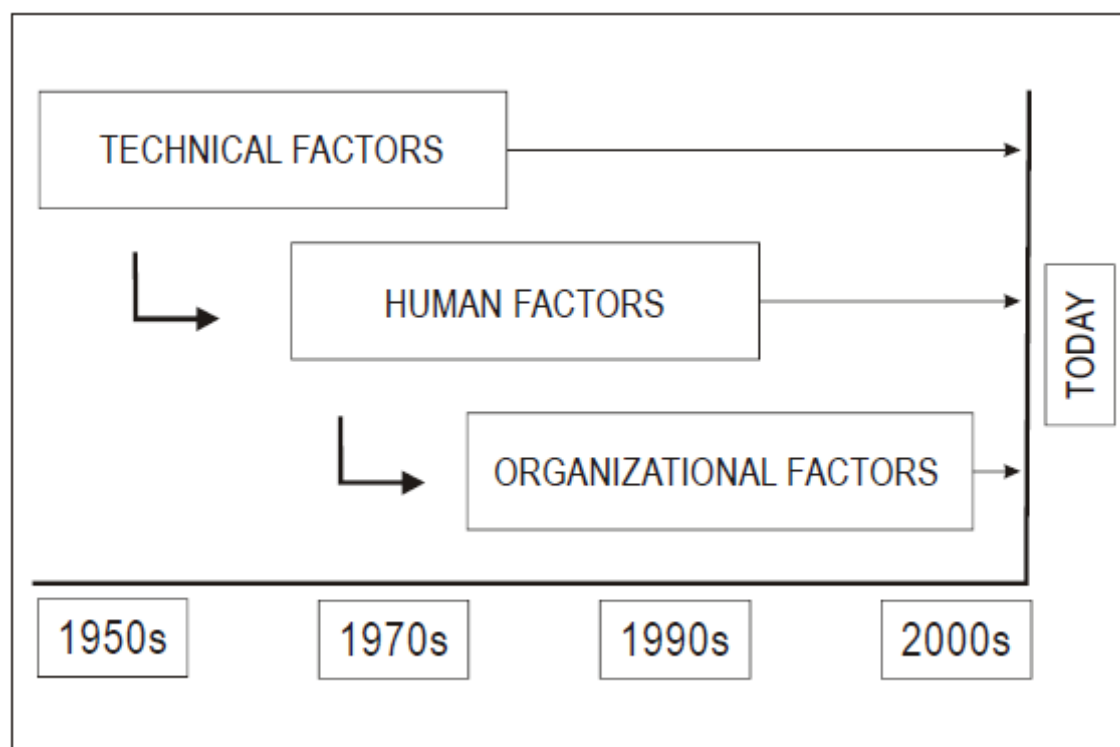


Figure 2: The evolution of safety thinking (ICAO, 2009)

Looking at safety from an organizational and cultural perspective, ICAO (2009) advocates in their SMM (Safety Management Manual) the need to look at organizational factors and not to focus on the individual. The SMM promotes an organizational culture that fosters safe practices and encourages the process of active and effective safety reporting (ICAO, 2008). Indeed, ICAO (2009) argues in the latest edition of the SMM that “in terms of the management of safety, understanding culture is as important as understanding context, since culture is an important determinant of human performance” (p. 23, ch. 2).

Current models of SMS are generally based on two basic safety processes; hazard identification and safety risk management. In order to do so effectively, safety management builds upon three basic assumptions (ICAO, 2009, p. 13, ch. 3):

1. The aviation system does not perform most of the time as per design specifications (i.e. operational performance leads to e.g. practical drift²⁸);
2. Rather than relying on regulatory compliance exclusively, real-time performance of the system is constantly monitored (performance-based²⁹); and
3. Minor, inconsequential deviations during routine operations are constantly tracked and analyzed (process-oriented³⁰).

In its position paper to address the compliance of ICAO SMS requirements, EASA³¹ (2007) identified the objective of a SMS as a way to allow the organization to do the following; a) identify safety hazards; b) ensures that remedial action necessary to maintain an acceptable level of safety is implemented; c) provides for continuous monitoring and regular assessment of the safety level achieved; and d) aims to make continuous improvement to the overall level of safety.

In order to successfully achieve these requirements, a SMS is considered to require certain components. The main elements of a SMS as identified by Eurocontrol (2000) are depicted below (figure 3).

²⁸ ICAO (2009) describes practical drift from the perspective of system design. Within a design process, assumptions are tested, baseline performance validated, and eventually the system becomes operational. Once operationally deployed, the system performs as designed, following baseline performance most of the time. Sometimes, operational performance is different from baseline performance. In other words, once systems become operational, a gradual drift from the baseline performance expected according to the system's design assumptions and the system's operational performance gradually but inexorably develops, as a consequence of real-life operations (p. 8, ch. 3). According to ICAO, since the drift is a consequence of daily practice, it is referred to as a practical drift (2009, p. 8, ch. 3).

²⁹ According to ICAO (2009), the notion of safety performance is an essential ingredient if the effective operation of a SMS. ICAO argues that it assists in monitoring actual performance of the SMS, and in avoiding just simply "ticking the appropriate boxes" (p. 9, ch. 3). In terms of regulatory aspects, a performance-based regulatory approach will assess the actual performance of activities critical to safety against existing organizational controls (p. 10, ch. 6).

³⁰ ICAO (2009) describes within their strategies for safety management three approaches to what they refer to the safety data capture process: 1) Reactive; requires a very serious triggering event. 2) Proactive; requires a less serious triggering event, probably with little or no damaging consequences. 3) Predictive; does not require a triggering event to take place in order to launch the safety data capture process (p. 11, ch. 3). This approach may fall within the "process-oriented" category, due to the consideration according to ICAO (2009) that "routine operational data are continually captured, in real time. Predictive aids are based upon the notion that safety management is best accomplished by trying to find trouble, not just waiting for it to show up" (p. 10, ch. 3).

³¹ EASA: European Aviation Safety Agency

ATM service provider ESARR 3 compliant SMS			
Step	No	Element	Element description
Policy	1	Policy	Policy sets the direction and aspirations for the ATM system's safety performance
Planning	2	Planning	Ensuring the arrangement are in place in terms of resources and infrastructure to manage the ATM system's safety risks
	3	Organisational structure/ change	Processes that are in place to manage the safety risks attributed to changes
Achievement	4	Regulations/standards	Legal framework and guidance to ensure safe ATM services
	5	Safety assessment & risk mitigation	The analysis of safety risks to the ATM system
	6	Operations control	Management actions, procedures and automated systems to control operational risks
	7	Competency	Staff are adequately trained, motivated and competent for the job they are required to do, in addition to being properly licensed if so required
	8	Infrastructure	Resources (assets, services, systems and equipment) and related arrangements to ensure satisfactory safety performance
	9	Documentation	Knowledge management system to ensure the safety attributes of the system
	10	Safety occurrences	Recording, investigation and analysis of ATM safety occurrences. Identification and monitoring of trends. Lessons learnt dissemination.
Assurance	11	Safety monitoring	Continuous monitoring and measurement of safety performance against a set of indicators.
	12	Safety survey & review	Proactive management of the system based on safety trend information.
Promotion	13	Communication & culture	All personnel are well informed and recognise their contribution to safety performance. Other stakeholders and the public are included in the communication process. Key safety messages are shared.

Figure 3: ATM service provider ESARR 3 compliant SMS (Eurocontrol, 2000)

According to Eurocontrol (2010), simply implementing the system does not guarantee organizational success in terms of safety. An effective SMS takes into account the interaction between the people and the components. The importance of context and organizational aspects are advocated by them, and they argue that successful implementation and operation of an SMS is highly dependent on organizational aspects, such as individual and group attitudes, values, competencies and patterns of behaviour which are frequently referred to as elements of the organization's safety culture.

Even though the entire SMS is considered being built and founded on what is often expressed as “a positive safety culture”, there is one component addressing more explicitly the

role of organizational culture and safety culture, which is promotion, particularly the “elements” of communication and culture (see figure 3 above, bottom area marked red).

According to Eurocontrol (2010), safety promotion is that part which may stimulate both individual and organizational behaviour and reduces the distance and gaps between the organization's procedures and policies, providing a sense of purpose to the safety efforts. Indeed, they consider that through such promotion, an organization adopts a culture that goes beyond merely avoiding accidents or reducing the number of accidents (2010). Furthermore, Eurocontrol (2001) define safety promotion as a “means to communicate safety issues and foster a safety improvement culture” (p. 13). The importance of establishing a well functioning safety promotion within the organization is also advocated by ICAO (2009). They argue that:

Once operations start, control of safety risks and monitoring of mitigations are accomplished through the continuous process of safety assurance, supported by safety promotion. Safety risk management, safety assurance and safety promotion thus provide the means for an organization to maintain the balance between production and protection. (p. 16, ch. 6)

The relationship between the many components within a SMS and particularly how they relate to safety culture is depicted in figure 4 below. The area particularly addressing safety culture and safety promotion is highlighted in red. In order to accomplish a successful safety promotion, Eurocontrol (2001) considers it important to involve everyone within the organization. They argue that “all staff should be actively involved in improving safety, developing an internal safety culture improvement” (p. 13).

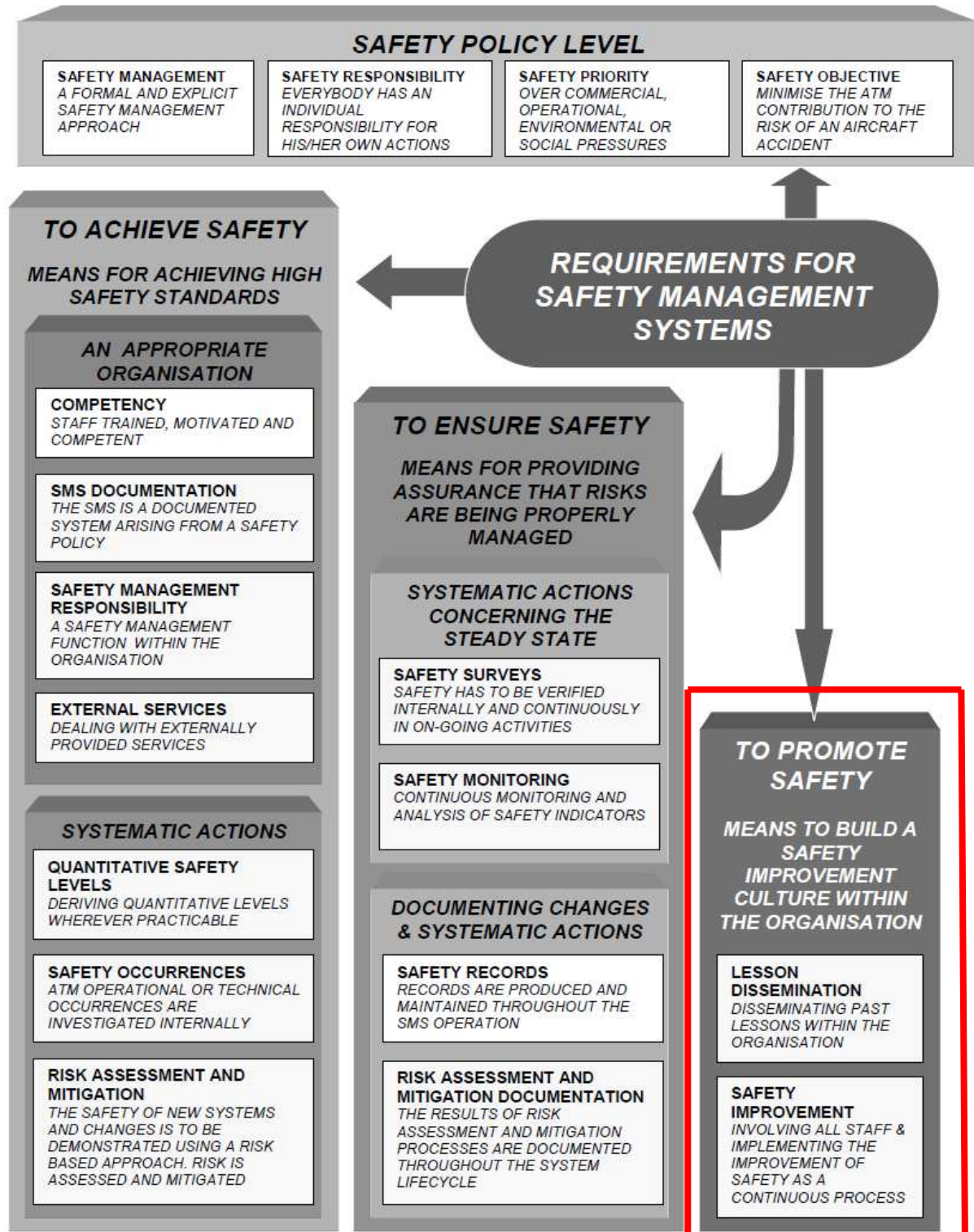


Figure 4: The process and role of safety promotion within a SMS (Eurocontrol, 2001)

RESULTS

The inspectors beliefs and experiences of safety culture

Until now, theoretical frameworks and different scientific perspectives on safety culture and organizational culture have been explored. The remainder will focus on the inspectors and from there apply to the phenomenological research (Moustakas, 1994) conducted for the purpose of this study. Organization of the data began with a detailed analysis of the transcribed interviews. The material below emerged through the methods and procedures of phenomenological analysis. The procedures I used included horizontalizing³² the data, paying close attention to every statement relevant to the topic and question as having equal value. From 13 transcripts, 226 significant statements were extracted. In order to show how this work was done, I have included in Table 1 and 2 below, examples of significant statements with their formulated meanings and examples of two theme clusters which were based on their associated formulated meanings. Table 3 summarizes the identified general areas with their associated themes.

This was followed by an arrangement of the formulated meanings into clusters which resulted in 4 general areas, each with themes – overlapping and repetitive statements having been removed – explaining in detail what the areas consisted of. The themes and meanings were used to develop textural descriptions of the experience as well as inspectors' beliefs and perceptions of safety culture. The general areas with associated themes were identified as follows:

1. Definitions and descriptions of safety culture
2. Perceived differences between “good” and “bad” safety cultures
3. The importance of understanding safety culture

³² Moustakas (1994) describes the process of horizontalizing as initially treating every statement as having equal value. This is followed by deleting statements that are irrelevant to the topic, that are repetitive or overlapping, leaving the resulting *horizons*. Moustakas (1994) has further explained this process in a near philosophical expression; “throughout, there is an interweaving of person, conscious experience, and phenomena. In the process of explicating the phenomena, qualities are recognized and described; every perception is granted equal value, nonrepetitive constituents of the experience are linked thematically, and a full description is derived” (p. 96).

4. Assessing safety culture: Methods, processes and considerations.

Table 1 Selected Examples of Significant Statements of Inspectors' Beliefs and Perceptions of Safety Culture	
<i>Significant Statements</i>	<i>Formulated Meaning</i>
Safety culture is also about learning, as a complex, safety critical organization, the organization must understand that their operation is inherently dangerous, that there are risks involved.	The importance to learn about safety critical risks in a complex environment.
Everyone in the organization are aware of the risks involved, and work together to minimize their impact, everyone is feeling a sense of personal commitment and responsibility to do his or her best to make that happen.	A collective risk awareness coupled with individual responsibility.
A learning culture is of great importance for a safety culture. An organization that understands and acknowledges the ever so changing and dynamic aspects of aviation, and strives to learn and evolve.	Takes into account complexity and the dynamic environment it operates within in order to learn.
Safety culture is something you connect with an organization that works towards understanding their contribution to safety. It becomes such a "normal" vocabulary within the organization that one can call it culture, a safety culture.	A mindful organization that has safety as a returning agenda and is a part of their vocabulary.
Safety culture is something you can sense in the organization when you visit them. "It" (safety culture) may not be documented or written down, but you can still sense the way people act and think in terms of safety.	Safety awareness is something an organization breathes and lives by.

Table 1: Selected Examples of Significant Statements of Inspectors' beliefs and Perceptions of Safety Culture

Table 2 Example of Two Theme Clusters With Their Associated Formulated Meanings
Organizational mindfulness of risks and safety What we do at work may be inherently dangerous

<p>Rules alone are not sufficient, people must be given space to act</p> <p>A constant awareness of "weak" risks which may have a great impact</p> <p>Understanding one's effect on the contribution to safety</p> <p>A safety vocabulary which reaches beyond rules and regulations</p> <p>Acting in a complex and ever so changing environment</p> <p>The importance of just and fair treatment</p> <p>People are treated with respect, dignity and professionalism</p> <p>Not seeking culprits</p> <p>Does not punish people for disclosing mistakes or weaknesses</p> <p>Focuses on learning rather than punishing</p> <p>Safety does not benefit from not learning, punishing people means no learning</p> <p>People do not purposefully make mistakes</p>
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Table 2: Example of Two Theme Clusters with Their Associated Formulated Meanings

Table 3 Summary of Identified General Areas with Associated Themes
<p>Definitions and descriptions of safety culture</p> <p>Theme 1: Organizational mindfulness of risks and safety</p> <p>Theme 2: Organizational and individual attitudes and behaviours</p> <p>Theme 3: The importance of quality</p> <p>Perceived differences between "good" and "bad" safety cultures</p> <p>Theme 1: The importance of just and fair treatment</p> <p>Theme 2: Not taking past success as a guarantee for future safety</p> <p>Theme 3: Transforming the "paper-products" into organizational mindfulness of safety</p>

Theme 4: What the components may look like in a good safety culture
Theme 5: Management commitment
The importance of understanding safety culture
Theme 1: Helps the inspectors to understand the organization
Theme 2: Critical for sustaining and developing safety
Assessing safety culture: Methods, processes and considerations
Theme 1: The difference between regulating and assessing safety culture
Theme 2: Balancing subjective observations with objective findings
Theme 3: The dialog between organization and inspector
Theme 4: Looking for safety
Theme 5: Time – Making the most of a limited resource

Table 3: Summary of Identified General Areas with Associated Themes

Definitions and descriptions of safety culture

Within this general area that was identified from the data, the inspectors described and defined safety culture and what they believed it consisted of. Derived from the inspectors' descriptions and statements, it became clear during the interviews that aspects – or attributes – of what makes a safety culture “good” or “bad” were frequently intertwined between defining safety culture, and describing what makes a safety culture “good” or “bad.”

During the interview – in addition to delivering clear definitions and personal accounts of what constitutes safety culture – expressions such as “complex”, “hard to describe” and sometimes “difficult to understand” emerged. When defining safety culture, the inspectors often recalled real-life experiences and cases in order to explain what safety culture meant to them.

The importance of these contextual narratives became evident when experiencing and describing safety culture. They also gave more sense to statements from several inspectors who considered safety culture as “very complex” and “not something straight forward”, as reading and interpreting, e.g. rules and regulations. The themes below were identified.

Theme 1: Organizational mindfulness of risks and safety

Within this theme, the inspectors described safety culture as a state of mindfulness. By mindfulness not only sensitivity for applicable rules and regulations and their meanings but also the importance of understanding the underlying reasons why there are rules and how they may affect safety in a positive sense. Understanding that what we – the organizations – do at work may be inherently dangerous and that rules alone may not be sufficient if people do not understand why and how rules have a positive effect on safety emerged. This was considered equally important for the individuals (front-line staff, e.g. pilots and technicians) as well as for the leaders (management) to be aware of.

One inspector described safety culture as:

With a short description, I would say that safety culture is about an organization's attitudes and behaviours towards rules and regulations, and primarily the risks the organization is experiencing. (P1)

To this inspector, safety culture is about an organization's attitudes and behaviours towards rules and regulations (and presumably about a constant exploration of the limits and possibilities of those rules and regulations vis-à-vis the risks the organization is exposed to). Such preoccupation with one's own attitudes and behaviours suggests critical reflection of one's own organizational practice—which has become known as mindfulness in the literature. Weick and Sutcliffe (2007)

after all define mindfulness as the ability of an organization to “organize themselves in such a way that they are better able to notice the unexpected in the making and halt its development” (p. 18). Furthermore, they argue that “mindfulness preserves the capability to see the significance of weak signals and to respond vigorously” (p. 18). Mindfulness has a collective component too, which was subscribed by the interview results. By this inspector as well, safety culture was considered a phenomenon which exists when an organization as a whole works together – management and front-line staff – in achieving a high level of safety. The part dealing with attitudes and behaviours was considered to consist of how this mindfulness was achieved and what type of behaviour resulted in a proactive, conscious and structured way to become aware of inherent risks, and to minimize any adverse events or failures the risks generated. Also, the importance of management commitment was made very clear, both as a vital part of a safety culture, but also as a means of achieving organizational mindfulness. Indeed, as two inspectors described it; “safety culture is something you connect with an organization that is mindful of their effect on the contribution to safety,” (P11) and that “has a management that is aware of the impact their commitment and risk awareness has on the overall level of safety” (P6). The importance of management commitment to safety has been extensively advocated by researchers. For example, Zohar (1980) concluded in his study of companies that an organization's safety level was influenced by the attitudes and behaviours of management towards safety and how it was prioritized.

Another inspector's definition of safety culture included this mindfulness more explicitly:

Safety culture is something you connect with an organization that has a mindfulness of their contribution to safety. It becomes such a “normal” vocabulary within the organization that it transforms into a culture, a safety culture. (P11)

Another inspector described it as follows:

Everyone in the organization are aware of the risks involved, and work together to minimize their impact, everyone is feeling a sense of personal commitment and responsibility to do his or her best to make that happen. That's safety culture to me. (P2)

When defining and describing safety culture, many of the inspectors considered safety culture to be an “ever so changing and complex subject, not very easy to define and pinpoint” (P12). The complexity experienced and described by the inspectors, was also considered by a majority a challenge when seeking to understand and assess safety culture. This complexity experienced by the inspectors coincides with literature on cultural and organizational complexity (Dekker, 2005a; Reason, 1997; Weick & Sutcliffe, 2007).

One inspector described complexity almost as being a part of the definition itself:

Safety culture is a very broad and complex concept. At times hard to grasp and define. But to me it is about risk and safety awareness. Those two expressions combined create a safety culture. (P3)

Risk awareness was also described by some inspectors from a historical perspective. Aviation has undergone a considerable transformation from being a transportation mode with many fatal accidents to that of being the safest mode in the world (P1/P3/P8). As expressed by some inspectors, safety culture was considered a “natural”³³ and well accepted ingredient of a proactive system involving regulators, operators, manufacturers, air traffic control, etc. Working together

³³ The meaning and the use of the word “natural” in this context meant past history and what it has to show in terms of a continuous and relentless safety inspired work to make things safer, better and more reliable. And that Aviation would simply not have accepted anything less but the very best, best in terms of a high level of safety, acquired over history through proactive and safety-minded people.

for many years, making what used to be “inherently dangerous and life threatening” (P1) a well accepted, safe and effective means of transportation. Not taking past success as a guarantee for future success (safety), or as one inspector expressed it; “some indications of some success should not leave the organization believing that future success is guaranteed” (P7) was considered a critical component of risk awareness. This issue has also been addressed by Dekker (2006), where he describes it from a perspective of how organizations can more effectively deal with safety. Dekker explains that the ability to look beyond the past success criteria, allows organizations to handle risks better. He argues that “in complex dynamic systems, past success is no guarantee of continued safety” (p. 192).

History – in terms of aviation safety – particularly the high level of safety which has been achieved over the decades, was for some inspectors considered an indicator of a “universal safety culture philosophy.” This however, was not relied upon as a marker or reason for accepting that the aviation community has no means of preserving the already high level of safety, neither achieving a higher level of safety. As expressed by one of the inspectors:

The history of aviation is in a sense a good description of safety culture. It is sometimes said that flying is dangerous, that's why it is so safe. This attitude has resulted in a behaviour which has stimulated organizations to learn and excel, to report and learn from the mistakes. (P1)

With that statement, the inspector highlighted that the notions often expressed in definitions of safety culture – attitudes and behaviours – are also applicable to organizations, not exclusively the individuals within, but also collective attitudes and behaviours. These attitudes and behaviours were by the inspectors considered being under great influence of how management act and commit to safety. A consensus on the importance of looking at behavioural aspects through collective lenses, rather than isolating the individual from the organization, was stated by another

inspector; “safety culture is about how the flight crews go about their work and what type of tools and support they receive from management” (P9). But what were considered equally important were the attitudes and behaviours of management. The inspector furthered his previous argument by describing another aspect, which was considered even more important; “does the chief pilot relay safety critical information to these pilots?” (P7). Another inspector expressed it as “in order to say that safety culture is about attitudes and behaviours, the front-line people must be given appropriate tools, such as safety critical information, relevant training, and support when things go wrong” (P9), and “that organizations cannot limit this to the front-line staff only” (P9). It was not only important to deliver adequate information to the pilots, but also include them in the process of improving for example training which may inspire individual as well as collective learning. Such an approach is also supported by research on organizational learning. According to Schein (2004), when attempting to generate new solutions in complex environments, management's dependence on others may become critical in order to solve situations better, he argues that “we have overwhelming evidence that new solutions are more likely to be adopted if the members of the organization have been involved in the learning process” (p. 395).

During the interviews, the inspectors also explained safety culture from two different levels/perspectives; a micro- and a macro-perspective. The micro-perspective involved the components of a safety culture, such as a just, reporting, learning and flexible culture. All these components were considered to contribute to a risk- and safety awareness, also called an informed culture. The macro-perspective included wider and broader organizational issues such as management making people aware of their importance and contribution to the overall organizational level of safety. One inspector gave the following explanation likened that of a macro-perspective:

It was when I read a story about a man who met two other men sitting on the side of the road chopping and molding squared rocks, when I began to think about safety culture. The man asked what they were doing. The first man replied; I am chopping and molding squared rocks. The other man responded; well, I am participating in the construction of a cathedral. These two men were performing the very same task, yet they had two entirely different views on how and what they contributed to. (P4)

The connection to safety culture was that an organization cannot expect this understanding – or enlightenment – regarding one's contribution to come by its self. It was considered the responsibility of management – the leaders – to not only uphold such a grand vision (building a cathedral), but also to relay that very same message to the rest of the organization. The benefits of such management commitment was further elaborated on in terms of culture- and organizational maturity; “once the people see themselves as contributors in building a cathedral, the individual commitment, risk- and safety awareness (mindfulness) come naturally” (P4). When people are asked to contribute and participate in an organization with a safety culture (emphasis added on a good safety culture), people grow and feel empowered and proud of their work. The underlying assumption that mindfulness would come naturally – if given the proper guidance from management – was based on a belief that “people do not come to work to do harm or perform below standards on purpose” (P2/P13) and that “given proper tools, people will do their best.” (P2). The importance of receiving guidance and support has been described by Reason (2008). He connects this to collective and individual mindfulness and argues that people must have a strong support from managers to allow front-line staff to use their judgment and skills. He concludes that “support for individual mindfulness must be embedded in the organization; without such an infrastructure the program would simply fade away, getting lost in the press of everyday events” (p. 252).

Theme 2: Organizational and individual attitudes and behaviours

In addition to the significant statements regarding mindfulness – risk awareness – and their connection to attitudes and behaviours, on several occasions expressions indicating that mindfulness, attitudes and behaviours were of importance when defining and explaining safety culture emerged. Mindfulness was primarily linked with actively seeking and identifying risks and recognizing their potential impact on safety, while attitudes and behaviours were more associated with how the organization approached and complied with the explicit requirements of their operation, such as rules and regulations, and how procedures and routines are formulated. The more implicit aspects of attitudes and behaviours towards rules and regulations were found in the understanding, knowledge and philosophy of their very existence. One inspector described it as:

It is not primarily about rules and regulations, or whether the organization has established procedures or routines, it's about the attitudes and behaviours of the organization, its people and how they operate. (P1)

Attitudes were included in the discussion regarding safety culture and explained from an individual as well as an organizational perspective. In terms of the individual's relation to the organization, it was expressed that "safety culture is about people's attitudes, beliefs and perception of involvement in relation to the organization" (P6). Furthermore, attitudes of the individual – when only focusing on the individual and not the whole of the organization – were often expressed as a part of safety culture when looking at how the organization affects the attitudes and behaviours of the people. It was considered important for the individual (operator) to receive clear and relevant information in order to appreciate the nature of their work, since this was considered having an impact on how people behave. One inspector explained this part of safety culture as "to me, safety culture is about people's understanding of their work task and

what the goal with that task is" (P4). The part that behavioural aspects played when defining safety culture was made further clear by another inspector:

Safety culture is not only about organizational behaviour, but also individual behaviour.

Are they sufficiently trained, do adequate and clear instructions exist? These are important aspects of a safety culture. (P8)

Theme 3: The importance of quality

Another aspect considered important when defining safety culture was that of quality. Quality in this context was not limited to the "end-product", such as reducing numbers of adverse events, improving training, etc, or whether that meant revising a manual or document, but rather how well was the concept of quality described and envisioned by management and how that vision was forwarded to the rest of the organization, to the people at the frontline, e.g. pilots, technicians, air-traffic controllers, etc. As one inspector explained:

Safety culture is associated with the organization's quality system, their "quality think."

You do the right thing from the very beginning, and the organization is conscious with what they want to achieve. (P5)

The importance of quality was furthermore expressed as how the organization learns and is willing and able to accept changes brought about due to both internal- and external demands³⁴.

Quality was considered a trait of an organization that realized the dynamic and ever so changing environment they operate within, such as aviation, and that in order to deliver a high level of

³⁴ Demands as described were considered internal when there existed requirements to update or revise the organization's training programs, offer safety seminars, renew standard operating procedures (SOPs), etc. External demands were considered factors which were more beyond the organization's control, such as world financial crisis, weather, new regulations, etc.

safety, quality must be a natural and reoccurring theme within the organization. The ability to cope with situations which an organization has not faced yet has been advocated by researchers of HRT (High Reliability Theory). Weick and Sutcliffe (2007) believe that organizations can prepare better for changing situations, and argues that “the best HROs know that they have not experienced all of the ways that their system can fail” (p. 3).

In terms of learning, a well functioning reporting system was considered vital and that “it must offer the organization a good potential for change” (P7). Quality linked to safety culture was also expressed as follows:

To me, safety culture is a headline consisting of a number of different processes, procedures and elements which an, e.g. airline or training organization must have implemented in order to obtain a certain type of communication, standard and quality. An example of such a process is a reporting system. (P7)

Perceived differences between “good” and “bad” safety cultures

The majority of the inspectors held the opinion that safety culture is something complex, something that is not easy to neither define nor understand. This was made further clear when discussing what makes one safety culture better than another. One inspector explained this complexity as “a good safety culture, well it can be very hard to get a feel for. It is always relative to something” (P1). The subjectivity involved in deciding between the differences was also considered complex; “judging or deciding whether an organization has a bad or a good safety culture is very hard. It is a subjective judgment from our part. It is a very complex question” (P10). Even though faced with this complexity, a commonality in perceptions of what may symbolize such differences was identified.

During the interviews, it was noted that in terms of defining safety culture, reflections of what a “good” versus “bad” safety culture could consist of emerged. This was made particularly explicit in terms of describing safety culture from what was referred to as components of a safety culture, such as just, reporting, learning and flexible. Furthermore, it was considered important to define safety culture from experiences and context, it could not be done adequately from looking at findings or deviations from the last oversight visit. Indeed, one inspector explained that “one possible indicator is whether the organization really lives up to the “published” quality system, is it a paper product only, or do they understand the reason for it, why it is there and how to use it” (P1).

As previously mentioned, safety culture was considered a complex and at times hard to understand phenomenon, a phenomenon set aside from manuals or written specifications. Indeed, this very tendency – to move towards context and complexity (a sense or perception of safety culture) in favour of less context driven explanations, such as “universally” accepted definitions, or normative interpretations of safety culture – was used extensively by the inspectors to define safety culture. Facing these complex issues, the inspectors connected definitions with context. By doing so, a deeper description was offered, less isolated from contextual factors, including assumptions and “gut-feeling” perceptions of what may distinguish a “good” safety culture from a “bad.” As a result, the following themes emerged:

Theme 1: The importance of just and fair treatment

Within this theme's clusters of meaning, the inspectors described a “good” safety culture from a perspective of just and fair treatment and that in order for any organizations to claim having a “good” safety culture – or to establish or foster such a safety culture – people must feel that they are treated with respect, dignity and professionalism. These traits in this sense were coupled both with how people are approached and treated by management and other colleagues, but primarily how situations were handled from what was expressed as a “punishment perspective”, meaning;

does the organization seek culprits or do they consider looking at the system when things go wrong? Expressions such as “safety culture is about realizing systemic failures, not individual failures,” (P2) to “that the organization has established an attitude, a corporate behaviour so to speak, that does not punish the person(s) reporting” (P7) emerged. An organization that does not punish people was considered to have a good safety culture. One inspector explained; “a good safety culture is to me when everyone in the organization can speak up and say what they think, there must be a just, constructive and professional atmosphere” (P2). The importance of moving away from blame in order to facilitate organizational learning has been described by Dekker (2007) as something which benefits everyone involved. It allows the regulator to monitor the safety of the operator, it allows the organization to learn about the capabilities of their people and to effectively deal with future problems, and it allows the people working within the organization to focus on quality in their job instead of fear of blame.

In order to avoid focusing on the “human error”³⁵ aspects of causes to failure and hence punishment, but rather look beyond the individual towards the system instead, several of the inspectors held the opinion that failures are usually system-induced. To the inspectors, this meant that failures are not generally caused by the individual, but rather due to the inherently dynamic and complex system. In scientific research, causes behind complex systems have been given much attention. According to Leveson (2004), accidents which occur in complex systems, are resulting from the interaction among functioning components, and not necessarily the individual. Connecting Leveson's argument to that of safety culture, she argues that in order to increase safety, “we should be talking about enhancing safety culture, not the reliability culture” (p. 12).

³⁵ Human error was described as something negative, negative in a sense of how the organization reacts to mistakes, failures, etc. A “human error” focused organization automatically looked for a culprit, an individual- and did not consider the system and the possible shortcomings within it. ICAO (2009) also favors considering human errors as an emerging property of human/technology systems. In their approach to human error, ICAO view errors as a natural by-product of human-technology interactions during e.g. operational activities. ICAO concludes that; “operational errors are accepted as a normal component of any system where humans and technology interact, and operational safety strategies are put into practice to control operational errors (Ch 2, p. 16).

Returning to the inspectors' view on human error – how we look upon blame and punishment – one inspector explained it as; “it becomes critically important for an organization to understand that systems are not always safe” (P5). A sense of fair and just treatment were also linked to affect willingness to report:

Reporting is a vital component of a safety culture. In order to get people to report, organizations must stop punishing people for their mistakes. And by the way, what's a mistake? In the business of aviation, organizations must realize that people do not come to work to do harm. That's why a safety culture reports; to learn from systemic failures, not individual failures. (P2)

The assumption held by this inspector – that people come to work to do a good job – has been addressed in the literature on safety as well as human error. Dekker (2006) makes a clear distinction on the impact the assumption of human error may cause by explaining that “if you want to understand human error, you have to assume that people were doing reasonable things given the complexities, dilemmas, trade-offs and uncertainty that surrounded them” (p. 13).

The importance of a just and fair treatment was also expressed by the inspectors as a prerequisite for the existence of a good safety culture; “safety culture must involve a sense of justness” (P5) and that “the organization does not seek to identify a culprit, instead they attempt to find out why rather than who” (P12). The importance of moving beyond such philosophy of blame has also been advocated by both researchers (Dekker, 2007; Reason, 1997) and authorities (Eurocontrol, 2008; ICAO, 2009). Although not identical in terms of how to go about it, a general consensus is that in order to stimulate organizational learning, punishing the individual for errors without recognizing system-induced accidents must cease.

Theme 2: Not taking past success as a guarantee for future safety

Within this theme, the inspectors explained the dangers of becoming too comfortable with a past history which indicates very few or no accidents/incidents within the organization. Organizations – as one inspector explained – that “begins to cut corners and assume that since everything has gone so well for a long time, there is no need for improvements” (P1) may drift slowly towards a dangerous lack of mindfulness which is based on a notion that “nothing bad can happen to us” (P12). This was considered an indicator of a bad safety culture. The dangers of institutionalizing such a lack of mindfulness – intentionally or unintentionally – may lead to situations where serious events pass unnoticed by the organization. One inspector expressed this concern as follows:

On the surface they have well published products, such as manuals and quality systems, but what really is happening is that this sense of lack of vulnerability results in small steps away from what may be well thought-out routines, and leaves the organization with a lack of mindfulness of the risks involved. (P1)

The dangers of drift similar to the description by this inspector have been addressed extensively by researchers as Snook (2000) in his account of the accidental shoot-down of two U.S. Black Hawks over Northern Iraq, Dekker (2005a) in his description of the Alaska Airlines 261 accident and Vaughan (1996) in her extensive analysis of the Challenger Space Shuttle accident.

When looking at how organizations with a good safety culture strive to maintain a mindfulness regarding the dangers associated with drift, inspectors considered an organization that works actively and proactively in identifying possible risks indicative of a good safety culture. This process – working proactively – was explained as “a good safety culture is one where an absence of accidents or incidents does not generate a passive or change-resistant organization”

(P7) and “remains alert to the possibility of future adverse events, despite a positive record, e.g. no accidents or incidents for a long time” (P7).

In order to attain and maintain this part of what was considered an indicator of a good safety culture – not taking past success as a guarantee for future safety – learning and reporting was what the inspectors considered important. Without learning, organizations were not believed being able to maintain a high level of safety. Indeed, a good safety culture made this possible; “safety culture is about learning” (P11) and that “people must not only be allowed to learn new things, but also encouraged to do so” (P6). Schein (2004) acknowledges a similar position on the importance of learning, in which he argues that “a learning culture must value reflection and experimentation, and must give its members the time and resources to do it” (p. 396).

One way to stimulate learning as described by the inspectors, was by establishing and fostering a reporting culture. Inspectors also held the opinion that people should feel free to report what they consider important – in addition to what the regulations call for – and use their knowledge and experience when analyzing and judging whether something is report-worthy. The criticality of stimulating an openness to report what one considers important was further illustrated by an inspector who had participated in an investigation of a high-profile accident in Europe, and how people involved were not feeling comfortable – for what ever reasons – to submit reports or tell about what they considered important. The inspector explained:

When an organization forbids people to speak up and hold their opinions, and instead send the message “do as your told,” you will not attain a reporting culture. The legal system can also at times punish people too much. I noticed this when I participated in an investigation. It turned out that it was not necessarily what people said that was important, but what they did not say that became critical. That was where the problems were. People were being punished, so people closed up instead. There was more focus on punishment than on learning. (P4)

Reporting and a genuine will to learn was considered important for an organization striving to resist the dangers associated with drift. One inspector advocated the following; “a good safety culture is to me when everyone in the organization can speak up and say what they think” (P2). The previous statement regarding the importance of giving people room to decide what is considered “report-worthy” has been addressed by Dekker (2007). Dekker argues that:

Which event is worthy of reporting and investigating is, at its heart, a judgment. First, it is a judgment by those who perform safety-critical work at the sharp end. Their judgment about whether to report something is shaped foremost by experience – the ability to deploy years of practice into gauging the reasons and seriousness behind a mistake or adverse event. (p. 40)

Theme 3: Transforming the “paper-products” into organizational mindfulness of safety

From the clusters which formed this theme, an important indicator of whether a safety culture was “good” or “bad,” which consistently arose, was that of how the written policies were in fact mediated and envisioned by management. The inspectors used examples such as; were manuals – which described for example the organization’s quality system and safety policies – within e.g. a SMS transformed into visible and traceable “safety behaviours” of the authors (management) or was it simply a “paper-product” which rests on the bookshelf without actually being incorporated in the daily safety chores of the organization. Some inspectors expressed this as “one possible indicator is whether the organization really lives up to the published quality system, is it a paper product only, or do they understand the reason for it, why it is there and how to use it?” (P1). One inspector noted that such a lack of transforming products into safety philosophy, or awareness could also become visible in how prioritize are made, if time and resources are scarce, what does the organization decide to focus on, keeping the manuals up-to date or actively and

visibly work with safety? (P6 & P10). The limits of overconfidence in written procedures and focusing too much on them alone have also been highlighted in research. Weick and Sutcliffe (2007) describe them in relation to validation of expectancies and that “organizations often presume that because they have routines to deal with problems, this proves that they understand those problems” (p. 26). Connecting their argument to organizations seeking to function as HROs, the ability to deal better with expectations were founded on a mindfulness of the limits of their own knowledge, and as such “they understand that their expectations are incomplete and that can come closer to getting it right if they doubt those expectations that seem to be confirmed most often” (p. 27).

Other impacts of prioritize were described as when an organization appoints people for various positions – which may be in some cases a regulatory requirement³⁶ – does the appointment stay at the level of a name in the manual, or does the person get sufficient time and resources to work actively with his/her duties? One inspector described it as follows:

An organization that does not understand the idea and necessity of a good safety culture does the following: They appoint a Company Safety Officer (CSO), submit his name and give a title in the manual, but no time to actually work with safety related questions. An organization that understands what a good safety culture is, gives the CSO both time and resources. (P7)

Another aspect of the transformation was also explained as important from a perspective of the organization's mindfulness regarding safety and how the “big picture” was both relayed and delivered to the organization by management, but also how they go about closing what was called the “safety loop.” The inspector expressed it as “a good safety culture is whether the

³⁶ Within a SMS, there are certain key positions which must be appointed, such as AM (Accountable Manager), SM (Safety Manager), QM (Quality Manager), etc.

organization continuously and proactively work with safety, does it close the loop by not only identifying the risks, but also minimize their impacts, communicates this back to the rest of the organization, that's what I would call a good safety culture; one that completes and closes the safety loop" (P3).

Another inspector linked this indicator of a good safety culture directly to the requirement of having a system within a larger system, e.g. a reporting system within a SMS. Within this explanation, it was noted that it was not only the product – the reporting system – that was important, what was even more important was whether that system works, i.e. do people use it and does it generate useful safety related information, and if not, what is being done about it?

One inspector expressed the necessity for organizations to reach beyond a comfort zone which may lure some organizations into thinking that as long as you have a good system, you have a good safety culture. One inspector described this false sense of security and lack of commitment as:

The organizations have many systems, and sometimes the handling, the result of for example a computer program is an indicator for management that that is what safety culture is all about. It very often delivers numerical data, it mixes many fancy symbols such as colors, it rings and makes all sorts of funny sounds, but what does it lead to, what is the actual product, and how does it affect for example the quality of training, the information given to the crews, how does it affect strategic planning in terms of resources? Very few persons within the organization can answer that. (P9)

Overall, the inspectors considered this transformation of becoming mindful of safety as very important for any claim which seeks to identify indicators of what a "good" safety culture may look like. Such transformation was considered to consist of products, systems, etc into "safety

inspired” language, symbols, attitudes and behaviours. If an organization works towards such mindfulness, it may also transform into a “good” safety culture.

In his research on the social construction of safety, Rochlin (1999) found clear indicators that safety is something which is more dependent on similar traits as the inspector described and referred to as “safety inspired” symbols, language and rituals than to procedures and guidelines. Indeed, Rochlin concluded that “throughout this research, it was observed again and again, in different contexts and different manifestations, that maintenance of a high degree of operational safety depends on more than a set of observable rules or procedures” (p. 1557).

Theme 4: What the components may look like in a good safety culture

Within this theme, the inspectors’ descriptions and beliefs of what constitutes a good safety culture were compared to the various definitions of safety culture, the components described by Reason (1997) and the literature research has identified of what may be indicative of a good safety culture (as described in the Methodology section). In relation to the component just culture, the following emerged:

A just culture was considered by the inspectors to have and to do the following:

- A management that does not punish people for mistakes
- An atmosphere where people feel comfortable in bringing “bad news” to management’s attention
- Understands that people come to work to do a good job
- Stimulates organizational learning
- A corporate philosophy which holds that people are an important part of the organization, and not the bearers of errors and mistakes
- An organization that does not seek to identify a culprit, but instead attempts to find out “why” rather than “who”.

From the perspectives of the inspectors of what may be indicative of a good safety culture in relation to a reporting culture, the following emerged:

A reporting culture was considered to have and to do the following:

- Encourages people to report by looking at the system, not the individual
- Makes appropriate changes and gives feedback to the reporter and the organization
- Sees reporting and learning as an on-going process
- The organization has a well understood, implemented and maintained reporting system: It must be accessible and user-friendly.

Reporting and learning was considered directly linked. Without a good reporting system and lack of willingness to use it, organizational learning may come to a halt.

From the perspective of the inspectors what may be indicative of a good safety culture in relation to a learning culture, the following emerged:

A learning culture was considered to have and to do the following:

- An atmosphere which stimulates to individual as well as collective aspiration to learn
- Is open for internal and external indications such as reports, analysis and changes when necessary (e.g. procedures and routines)
- Does not wait for learning opportunities, but rather seeks them out
- Couples risk awareness (mindfulness) with proactive learning e.g., it does not take past success as a guarantee for future safety.

From the perspective of the inspectors what may be indicative of a good safety culture in relation to a flexible culture, the following emerged:

A *flexible culture* was considered to have and to do the following:

- An organizational climate which does not resist change
- Embraces good and bad news and makes changes when necessary
- Recognizes that there are “dark” and “bright” sides³⁷ of flexibility
- The ability to look at situations and events from different angles and perspectives.

From the perspective of the inspectors what may be indicative of a good safety culture in relation to an informed culture, the following emerged:

An *informed culture* was considered to have and to do the following:

- Relevant and adequate training programs
- Keeps everyone in the loop of what is going on within the organization
- Is a good system for effective communication
- Assures that relevant and important information will reach the person(s) who need(s) it.

Theme 5: Management commitment

Within this theme, concentrations of management's impact and vital role in an organization's daily work emerged. Management – who was also referred to as “key-personnel” – was considered playing several roles when inspiring and contributing to an organization's safety

³⁷ “Dark” flexibility was considered to exist when an organization makes changes without realizing or considering the effects, such as borrowing too much from safety in order to save finances. The organization makes short term changes which have, or could have great impacts on the operation, without following them up or even considering these impacts. “Bright” flexibility was explained as an openness to change in terms of safety related precautions or learning experiences, such as reports, analysis, in order to meet new demands. In summary, the message was that the challenges of meeting new demands – whether they be linked to financial or safety related aspects – must be carefully considered and monitored in order to not escalate into “dark” flexibility.

culture. As stated by one inspector; “they simply set the tone” (P7). The importance of setting an appropriate tone – management commitment – and what impact it may have on safety has been recognized by many researchers (Pidgeon, 1997; Reason, 1997; Schein, 2004) and agencies (Eurocontrol, 2008; ICAO, 2009). Schein (2004) describes it from a leader's perspective, and argues that “the learning leader must portray confidence that active problem solving leads to learning, thereby setting an appropriate example for other members of the organization” (p. 395).

Management's potential to either influence the overall safety culture positively or negatively was consistently discussed and advocated. Furthermore, within the clusters for this theme, expressions of images pertaining to the commitment was expressed as management being “aware of their responsibilities in relation to safety” (P6) and they “must be active and foster risk awareness,” (P8) and in order to do so successfully – foster risk awareness – they must “listen to, and allow people to speak up and bring safety related matters to their attention without fear of punishment” (P9).

Inspectors had a common belief in that without a commitment from management, the organization's safety culture may suffer gravely. One inspector expressed it as follows:

I have heard the expression that you will never get a better safety culture on the “factory floor” than what you have at the “top.” Meaning that management's commitment is always extremely important, the signals they send regarding their own attitudes and behaviour towards rules and regulations will be critical for how things will be done further down (factory floor) in the organization. (P1)

As much as the advocated criticality and importance of commitment as a prerequisite for success with the organization's safety culture, the inspectors also expressed images of an importance of what it is that management commit to, and why? For example, it was considered important for management to understand the negative effects involved in actively seeking culprits in response

to incidents and accidents, and that “management must be aware of the signals they send and what impact it may have for the organization as a whole” (P13). An important part that management should be active in was that of learning – as previously discussed – but if learning is considered to take place when and after a culprit has been found, the organization may be limited in terms of what to learn, since it may be a systemic fault and not necessarily the individual.

Given the highly regulated and controlled environment aviation is, inspectors also considered it very important for management to not only exhibit a sound respect for the rules and regulations the organization is bound by, but also to understand them very well. This understanding was expressed as not only being able to publish manuals, but to relay their importance to the rest of the organization, to understand when additional requirements may apply for different types of operations, what and when are deviations allowed, etc. Within this cluster of expressions, the criticality of not only stating the importance of the rules, but also to follow them and recognize their importance, not only from the rule itself – the paragraph – but also what the rule delivers in terms of knowledge and deeper understanding in some cases. One inspector gave an example:

One operator had decided that the whole of the organization – including management – were to receive training in Human Factors and Crew Resource Management. After the course management left with the opinion and attitude that this was a waste of time, what's the point of this? To me, this management set a bad tone, a bad attitude within the organization. (P7)

Management commitment was also considered directly linked to affecting safety improvement and how their behaviour may either “spread down the safety thinking through the organization with a positive effect” (P5) or “result in a lax attitude towards safety in general” (P6). In order to spread, and make such positive effects visible, it was considered vital for management to “walk

the talk,” i.e., you do what you say and not the opposite or disregard the whole thing. This was considered important during both daily reoccurring activities, but also crucial when facing pressures such as financial scarcity and shortage of staff, etc. What was advocated here was an awareness of when and where to act as you have told, and not strive for a lack of flexibility, which was in terms of a flexible culture (see flexible culture in *Theme 4: What the components may look like in a good safety culture*).

Examining the inspectors' above statements, a connection between organizing mindfully and that of culture can be seen. According to Weick and Sutcliffe (2007), culture is very important for management to consider when seeking mindfulness. They argue that a culture of mindfulness, held together by norms of appropriate behaviour, will not persist unless management does the following (p. 117):

- Top management conveys a clear preference for mindfulness in its beliefs, values, and actions
- Those top management actions and words are communicated credibly and consistently and remain salient for everyone
- Those communicated values are seen to be consistent rather than hypocritical and are felt strongly by the majority of the people.

The importance of understanding safety culture

From having explored the inspectors perceptions and beliefs of the “whats” – definitions and descriptions and what may constitute “good” and “bad” safety cultures – we will now move on to what Moustakas (1994) describes as “a return to experience in order to obtain comprehensive descriptions that provide the basis for a reflective structural analysis that portrays the essences of the experience” (p. 13). In order to do so, we will continue our exploration of what the

inspectors use as a source of knowledge regarding safety culture – their perceptions of what safety culture is – and look at why they consider the phenomenon important to understand. Within this general area, the interviews and discussions were exploring the opinions and beliefs of the inspectors regarding their perception whether it was important to understand safety culture, and if so, why and how do they operationalize this perceived need for such understanding. When performing oversight, the inspectors engage in both checking that the material preconditions for compliance exist, such as manuals and other required documentations, at times expressed by the inspectors as “checking that it’s there and whether it is up to date” (P8). But what was considered even more important was that of finding out why things are the way they are, and if not working, why? In order to do so, checking boxes whether items are updated or not came second. One inspector explained; “there can be many systems, such as SMS, but they become near useless if the will and understanding of them is not there. That is where discussions linked to the concept of safety culture come in” (P3). This inspector’s statement coincides well with that of the philosophy of SMS. The importance lies two-folded, both for the organization it self, since “one of the challenges for the organization implementing SMS is to assess and develop a positive safety culture” (Stolzer, Halford & Goglia, 2008, p. 260), and for the regulator recognizing that “an SMS is applied in a safety culture environment” (p. 24).

After having collected and analysed the clusters, the following themes below emerged and revealed the reasons why the inspectors considered understanding safety culture important.

Theme 1: Helps the inspectors to understand the organizations

In this theme, the inspectors conceptualized their representations of how and why this understanding was considered important. Safety culture – the theories, expressions, and definitions they previously described – was considered to assist them in exploring and looking into wider and deeper organizational issues. According to the inspectors, this was made possible by looking at both negative – “it may tell us why people do not report” (P6) – as well as positive

aspects – “it may help us to understand why and how some organizations succeed in getting their visions and goals across, while some do not” (P9) – of organizational issues. The importance of looking into organizational success has long been advocated by HRO researchers. Indeed, Rochlin (1999) argues that “the challenge is to gain a better understanding of the interactive dynamics of action and agency in these and similar organizations and the means by which they are created and maintained” (p. 1558). One inspector expressed a view similar to a potential with safety culture in terms of the possibility of developing a feel for, or understanding of both positive and negative aspects as:

Thinking and following a reasoning which is “safety culture oriented” may help the inspector to understand why some people are chopping square rocks, while some are participating in building the cathedral. (P3)

The assumption and description of a safety culture oriented way of reasoning had to do with how management conveys visions and goals and how this may affect the individuals' understanding of where and how their work contributes. This relationship between the workers and management was by the inspectors considered vital to understand in order to steer further analyses and investigative techniques – such as interviews and observations – in a right direction. The reason and logic of the importance of looking in the right direction were not solely based on an assumption that something must be wrong with the organization, but also deemed critical for being able to deliver a fair and factual observation. This was considered not only important for the sake of safety, but a standard of professionalism and philosophy of how to conduct oversight. One inspector described this relationship as:

We have the responsibility to conduct oversight at particular organizations, and if we do not understand what safety culture is about, we may have difficulties with seeing what is

really going on. I think you must have a good knowledge of safety culture in order to make a fair assessment of the organization. (P10)

Another necessity for understanding and including safety culture was expressed in terms of the complexity and difficulties the inspectors sometimes experience when looking into social and psychological aspects of e.g. attitudes, perceptions, rituals, organizational history etc. This complexity was expressed by one inspector as “knowing what is not visible but yet very present” (P4). Safety culture was considered to assist and help the inspectors with this task, since indeed it was considered a task:

An inspector must be able to sense what is not said within an organization. It is easier to understand what is being said versus that which is not being said, it is a question about helping the inspector to understand people, what they value and their attitudes. (P4)

The perceived benefits safety culture may bring to the inspectors in terms of developing a greater understanding of the organization has also been argued by researchers. Schein's (2004) description – though not directly linked to safety culture, but organizational culture – holds that studying culture is of great importance and benefit in order to understand why things are the way they are. Indeed, he describes it as:

When we see the essence of culture – the paradigm by which people operate – we are struck by how powerful our insight into that organization now is, and we can see instantly why certain things work the way they do, why certain proposals are never bought, why change is so difficult, why certain people leave, and so on (p. 222).

A general consensus among the inspectors was that organizations are complex entities with many actors and elements. In seeking to understand these underlying and at times hidden elements, the inspectors did look upon knowledge and understanding of safety culture as something positive. The use, or application, of safety culture when engaging in discussions with organizations was regarded as important and that “it is also important to understand because it helps *us* to understand how the organization has put for example the rules and regulations in practice” (P11). And even though definitions were considered to help in this process, the more context-driven descriptions of safety culture, and understanding of how it may benefit the organization was deemed more important. As described by one inspector:

Defining safety culture may not be the most important part, but rather understand the underlying theory, what it is and how it can help us and the organization to find these causes, why things go wrong, and not only that something has gone wrong, but why? (P1)

There was a shared agreement among the inspectors that a distinct correlation existed between the explicit organizational artifacts (rules and regulations, SMS, etc) and the more implicit beliefs and values (why people do what they do). It was considered possible to have a positive safety culture without a SMS, but not a well functioning SMS without a positive safety culture.

Theme 2: Critical for sustaining and developing safety

This theme emerged from the inspectors' views regarding the impact safety culture may have on safety. Expressions such as “it's a prerequisite for safety,” (P7) to a “necessity for safety” (P3) and a “vital part of the aviation safety community” (P3) indicated that it was considered vital.

How safety culture played this important role and hence contributed to safety was described as “it stimulates a safety think” (P5) and may “act as a facilitator for new knowledge, closing the communication loop” (P9). This last statement was illustrated by the description of an

organization that meets all the requirements such as SMS and proper maintenance etc, and also appears to take proper precautions and safety measures but fails to inform and distribute critical information such as the outcomes and the reasons for these measures to the rest of the organization. The importance of giving feedback has long been advocated by organizational researchers. According to Schein (2004), it plays an essential role in allowing the receiver to elaborate on what changes have been made and is directly linked to organizational learning and “the key to learning is to get feedback and to take the time to reflect, analyze, and assimilate the implications of what the feedback has communicated” (p. 395). The critical question raised by this inspector was connected with that of the end-product, meaning what does the outcome of the safety measures look like, a revision in the manual of the procedures only, or does the organization also communicate this to e.g. the pilots. When faced with such situations, safety culture was considered a facilitator (as previously expressed). A similar illustration was given coupled to oversight activities, particularly inspections of the organizations. One inspector described it as:

The way I see it, is that our inspections are based on a systems approach, and the objective of such approach is to not only identify non-compliance and make sure that it is corrected, but what is of greater importance is to find out why it occurred. That is where knowledge of safety culture comes in. (P1)

Safety culture was in this sense believed to make possible for a greater and deeper understanding of why and how safety is created. Safety was considered to be dependent upon people and without the commitment – from both management and the operators – safety would not prosper nor endure. It was also expressed as “it is a vital pillar which must exist in order to create safety, and safety is created through and by people. That’s why it – safety culture – is so important” (P3).

Another aspect which emerged was that safety culture was not only looked upon from the perspective of creating safety through people, but also believed to be about the people involved, including and addressing everyone within the organization. It was not applicable for a selected few, but the entire organization. In this sense, safety culture was also described as a necessity for safety when looking at the dialog and interaction between the CAA (Civil Aviation Authority) and the organizations. One inspector described this important relationship as:

What are we otherwise doing there? Safety culture is about people and safety. That is what our job as inspectors is all about, we are working together with the organizations, striving together to achieve high levels of safety. (P5)

Safety culture was considered to be about safety. Safety culture was also considered to be about quality. And quality – as expressed by one inspector – “stimulates to more than keeping the books up to date, it stimulates to a safety think” (P11). That was one of the many reasons why safety culture was considered critical for sustaining and developing safety.

Assessing safety culture: Methods, processes and considerations

This area will continue the exploration of how the inspectors experience safety culture, with particular focus on how the assessments were made. Building on the previous general area – the importance of understanding safety culture – with its associated themes, the themes below will describe how the inspectors experience what has been previously discussed.

Theme 1: The difference between regulating and assessing safety culture

Within this theme, clusters emerged and formed patterns which indicated that the inspectors held the opinion that safety culture may not be regulated, and that the authorities should not instruct organizations on how their safety culture should look like and what to do with it. This was

primarily based on the notion that safety culture is something complex, consisting of people, which in turn consist of different perceptions, attitudes, expectations, etc. These attributes shape through e.g. social interaction the organization's norms and values, and such attributes, or qualities – unique for each organization – were considered extremely hard to both regulate and to understand. It was considered a complex phenomenon, very important but hard to regulate. Expressions such as “very complex” (P10), and “there are patterns you simply cannot understand” (P3) emerged. These patterns were referred to as group dynamics, relations, expressions, interactions, etc.

Instead, safety culture was considered to assist the inspectors in developing an understanding of why things do not work, e.g. SMS, reporting systems, handling of incidents and accidents, internal communication, etc. Some of these aspects, as described by the inspectors have been recognized as qualifying areas for assessing safety culture. According to Westrum (2004) one of the most important issues for organizational safety is how information is handled and flows. Hopkins (2006) elaborates further and considers this importance as a possible area to assess in order to reveal safety culture. He compares this to an extensive, long and time consuming approach to assessment, and argues that “hence, researchers with limited time can restrict themselves to investigating the organization's reporting practices (who reports), what gets reported and what is done about these reports” (p. 887).

If faced with such indications – a condition that the inspector felt was not right – a dialog with bearings on the “softer” issues – safety culture – could be initiated. As expressed by one inspector; “the important part of safety culture may not be labelling it, but rather understand the theory behind it, and that risks and other organizational weaknesses may arise due to lack of mindfulness, attitudes, etc” (P1).

There was a clear distinction made between *regulating* safety culture and *assessing* safety culture. Assessing safety culture should be done, and was according to the majority of inspectors also being done. It was the expression of how and where that assessment fitted in relation to the

rules and regulations which stipulate the explicit requirements the organizations must meet. An assessment of an organization's safety culture was not a stand-alone item on a separate "safety culture checklist", e.g. seeking to grade the level of safety culture, since this was not a requirement within the rules and regulations. An organization is not required to show proof of having passed a safety culture inspection. As one inspector explained; "it does not state in the rules and regulations that an organization must have a level 6 out of 10 on a safety culture scale" (P2). Instead, the assessment of safety culture was looked upon from being a part of a systems perspective, e.g. the inspectors considered it very important to assess within context, and not isolated and separated from the overall inspection. Expressions such as "questions are asked to the organization unconsciously with respect to safety culture, we talk to them about different aspects, such as how the reporting system works, etc" (P6), and "we use safety culture as a theory linked to how and if a system (e.g. SMS) works or not" (P6). The connection to a SMS was based partly on expressions such as "safety culture is about the glue that makes the systems work" (P12) and "SMS is the requirement, while safety culture can be thought of as the necessity for the system in order to function well" (P1).

One inspector expressed it as follows:

Safety culture as a concept – a theory – and concepts are not defined in the rules and regulations (R&R), and we can only audit items which are included and based on the R&R. What we look at are the ways the organization has transformed these R&R in order to look at safety culture. How the organization for example takes care of its reporting system and whether people feel comfortable reporting. (P11)

In terms of using the expression safety culture when performing oversight, there were some differences noted between the inspectors. While some inspectors did not; "we do not explicitly

use the expression safety culture” (P6), some did; “I use the expression safety culture in my inspections” (P7). Some also approached the absence of clear definitions in the rules and regulations differently. Where some looked upon guidance for clear definitions in order to assist in knowing how and if to assess, some expressed the following:

We follow the stipulated rules and regulations (R&R). And the R&R are built on a concept of safety culture. The R&R were created to prevent risks. It is about following up and analyzing, which together gives a high level of quality, which is the foundation of safety culture. (P5)

Using the expression and discussing safety culture more explicitly when performing oversight was in this expression considered something one does. Working actively as an authority with improving and making the assessments more efficient and better was also shared by the majority of the inspectors. One inspector described these improvements as an ongoing process rather than becoming strained or neglected due to lack of regulatory guidance on what to assess and what not to. As stated by this inspector:

We are working actively with these questions (safety culture) and continuously ask ourselves how we can better address and engage in “softer questions”. You do not need a paragraph in the R&R in order to justify assessing safety culture, we do that anyway. (P9)

Theme 2: Balancing subjective observations with objective findings

From the previous theme, we can see that despite an absence of requirements to regulate safety culture, or missing general guidelines on assessments, the inspectors look at the aspects of safety culture when conducting oversight.

Within the following set of data, the clusters which emerged indicated that the inspectors sometimes were faced with connecting deviations from the regulations – also called findings – to that of more subjective observations. Examples of such observations were described as noting that an organization favours individual blame when adverse events occur instead of considering the system as a possible cause, or developing a sense whether the organization exercises an adequate level of risk awareness, etc. Observations which were all considered complex and may therefore be hard to understand. Within this part of the interview, the inspectors often referred to a subjective assessment, what they called the “gut-feeling.” Expressions emerged, such as “assessing safety culture is about a gut-feeling” (P10), and “in a sense, the assessment is based on a gut-feeling. Presently, I do not believe I have any other tools to use” (P1).

This perception of being left with this feeling was not expressed in negative terms, but at times even as something positive, positive in a sense that realizing that safety culture is something very complex and that stipulating how different cultures should or should not look like may inflict more harm than good. The inspectors' awareness of this complexity and respecting it in terms of an awareness of restricting themselves to assessment and not changes have been recognized from ethnographic, lengthy studies of culture. Schein (2004) describes it from the perspective of inappropriateness of the outsider – e.g. an inspector – to modify or even critique an organization's culture. Schein explains that “the outsider should never lecture insiders on their own culture because one cannot know where the sensitivities will lie and one cannot overcome one's own subtle biases” (p. 218).

As previously described, safety culture was considered; “not easy to grasp” (P10), “complex” (P3) and “hard to understand” (P11). In order to understand safety culture, inspectors used this gut-feeling as a means of seeking to understand complexity, a complexity which may not in and of itself be defined through the application of simple measures, such as questionnaires etc. One inspector described it as “by talking to people, you can develop a fairly good sense of feeling of how they address risk in their daily work, are they aware of them, if so,

then how? Do they openly discuss these risks?" (P3). Inquiring whether the organizations maintain an active awareness of possible risks is in many ways similar to what Weick and Sutcliffe (2007) connect to an organization being mindful. Indeed, attending to and being alert to the possibilities of risks is described as being preoccupied with failure and "you can, for instance, articulate the types of things that should not fail and how they possibly could fail" (p. 93). Developing a sense of feeling whether things are not the way they are supposed to be, was considered important and critical in order to deliver constructive and professional observations when dealing with complex issues, such as safety culture. One inspector described it as:

You develop a sense, a "gut-feeling" that some conditions are not right. How the staff is talking, do they avoid certain questions, etc? If you are used to and comfortable with performing interviews, you develop this sense of feeling that something is just not right.

(P2)

These observations were not considered something you immediately wanted to connect to findings and deviations, but rather initially engage in through a dialog with the organization; "we talk to the management and bring our observations to their attention" (P1), and "we, the organization and the inspector are working towards a common goal; safety, and in order to do so, we must engage in a dialog with each other" (P13). When engaging in discussions regarding observations and not only deviations/findings, the importance of having a good relationship with the organization, built on mutual trust was considered very important. One inspector expressed this relationship as "if we find something, a gut-feeling and no deviation, we initiate a dialog based on mutual trust and confidence, this is very important" (P9). Moreover, the organizations usually appreciated these discussions, realizing they benefit from them "they usually enjoy the discussions which relate to the "softer" issues" (P11) and "they look positively upon discussing these questions and appreciate our commitment" (P10). The possible benefit from establishing

trust and showing that they are there to help, may play according to Schein (2004) a critical aspect of assessing culture, as he describes as clinical inquiry, meaning that deeper cultural data will only reveal themselves if the assessor “establishes a helping relationship with the organization, such that the organization members feel they have something to gain by revealing what they really think and feel” (p. 221).

Even though the majority of the inspectors were of the opinion that they could approach the organization and discuss wider organizational issues connected to safety culture, which were also expressed as “observations”, the inspectors also described situations where serious indications of a poor organization in terms of safety emerged. If those indications could not be directly connected to any deviations from the rules and regulations, it was considered by some inspectors difficult to engage in discussions regarding safety culture. As one inspector expressed this concern; “we can always have opinions, but may not be able to express this in writing unless it is based on a deviation from the regulations. Deviations must be based on facts” (P11). The limitations imposed by such a situation can be daunting. However, based on their experience as inspectors, the majority of them did not consider this to be a re-occurring problem, since most of the time deviations and findings were considered to often be caused by organizational weaknesses such as safety culture. For example, if the organization did not report, it could be directly linked to the rules and regulations. What was considered most important though, was to find out why this deviation occurred, and that was when the theories, concepts and understanding of safety culture re-emerged.

Theme 3: The dialog between organization and inspector

Moving on with the exploration of assessing safety culture, this particular theme addresses how the assessments were performed and how the inspectors were experiencing them.

Within the clusters for this theme, the inspectors considered it important to talk to the organization, particularly when looking into – or assessing – e.g. social and organizational aspects.

Emerging expressions and patterns indicating this interaction as critically important were “you simply must talk to the people” (P4) to “the way I see it is through many interviews, with both management and the personnel” (P12), and that “we always invite to a dialog with both management and staff” (P13). This was considered important when not having any indications that something was not right, e.g. observations or deviations/findings, and in general, when visiting the organization the first time, or when returning for a routine inspection. One inspector explained it as follows:

If you really want to be able to assess safety culture, you must learn about the organization, talk to the people, to get a feel for what is going on within different departments. For example, is the organization's safety culture philosophy spread to these departments? Or do people have different perceptions of it? (P3)

The questions asked were not taken from a pre-manufactured list, neither were questionnaires used, but had logic to them in a sense that when talking to different people, different questions were asked. When talking to management, they asked questions pertaining to how information is distributed, how they promote an organizational environment which stimulates reporting, trust, etc, and “When talking to the operators, e.g. the pilots – the sharp-end – you ask questions dealing with manuals, procedures, management directives, etc” (P4). These questions were asked in order to “find out whether they function for the rest of the organization” (P4). The questions were also asked in order to find out whether the information provided by e.g. management to the inspector was consistent with that of the remaining organization. The inspectors' approach – not using questionnaires – but prioritizing talking to people, is a similar approach advocated by Schein (2004). He argues that culture can be assessed by interviews and accomplished in a time frame which lies within allocated time for inspectors, which is usually one to two days.

Questionnaires on the other hand, Schein takes a clear position against; “culture cannot be

assessed by means of surveys or questionnaires, because one does not know what to ask and cannot judge the reliability and validity of the responses” (p. 362). Furthermore, Schein also concludes that questionnaires or survey responses may reflect an organizations climate, reason being that they are considered cultural artifacts of the organization. However, if attempting to assess deeper values or shared assumptions, neither will suffice according to him.

Asking questions considering context was unanimously agreed upon as important by the inspectors. One inspector explained sometimes having to take on the role of an educator, taking time and explaining the relevance of the question and why it was being asked was also considered important. The inspector explained:

I always attempt to explain before asking. I may explain its purpose, some theory behind it. If I do not, and ask a direct question “do you have a punishing culture in your organization” they may not understand the question neither the reason for asking. (P1)

Asking direct questions when dealing with complex aspects or theories – such as safety culture – was not considered advisable. As advocated by one inspector; “I do not ask the question how is the safety culture in your organization” (P3). Connecting a question to actual events was also considered beneficial. Another inspector approached such questions as:

I use an example of an actual event as a starting point for the discussion when I try to learn about the safety culture. For example; information from management; do you receive it? How do you receive it? Are you being included or excluded when discussing safety issues? What happens in the event of.....etc? (P4)

Sometimes the questions asked were divided in different categories, based on the purpose and the criticality of the area being assessed. Some questions were always asked, while some were only asked when it was considered necessary to enquire further. The inspector explained:

We ask different types of questions based on different levels. How has management relayed information to the staff, how and what have they done about for example a report. We call these the “surface questions.” (P12)

This first level of questions was aimed at developing the previously discussed “gut-feeling.” The questions were considered to guide the inspector in terms of deciding whether to probe deeper or consider the answers sufficient in order to move on.

Another reason for talking to the people and asking questions also emerged. The majority of the inspectors looked upon the authorities and themselves as ambassadors for good safety cultures; “we encourage working with safety proactively and strive to inspire a mindfulness regarding safety. We do this through questions and dialogs” (P12). It was also expressed as “it is of great importance for us to understand that we influence the organizations’ culture” (P1) and that “when we act as inspectors, we are spokesmen for the authority, what we say and do represent in turn our culture” (P1).

Oversight is about assuring that organizations meet the requirements for operating safely. When engaging in dialogs and discussions with the organization, the inspectors are seeking to develop a picture whether that particular organization meets those requirements, which may consist of not only producing and maintaining manuals and other similar specifications describing the organization’s operation, but also how that particular part – the manuals (paper product) – is transformed into a safe organization. Connecting with the organization – through dialogs and discussions – was considered important in order to better grasp this transformation.

One inspector described this process as; “when you are out there talking to people, that is when opportunities to compare the paper-product to reality emerge” (P4).

Theme 4: Looking for safety

Within this theme, expressions were made in reference to seek an understanding of how the organization puts safety into practice which their policies and manuals spell out. How to access and disclose that which was directly linked to the important dialog with the organization as previously explored.

To establish such an understanding – also expressed as insight – was approached from both looking at wider organizational issues, e.g. whether and how management gives opportunities for the personnel to participate and develop a sense of belonging, to following the handling of a submitted report. The latter was accomplished according to the inspectors by talking to everyone involved, seeking to understand what has been done about it, who takes care of the report, who receives feedback, is the reporter protected – if yes – how, etc? When looking at wider organizational issues, culture was considered important. One inspector described for example a situation involving the possible creation of sub-cultures as follows:

If for example two companies merge, we discuss with management the sensitivity which may be involved. From a safety culture perspective, it becomes very important to be active in this question. (P8)

What the inspector was referring to was the possible creation of sub-cultures within the new organization. This was not necessarily considered negative, but focus was rather on finding out how the organization itself planned to address and follow up such event, an event which may according to this inspector possibly have a tremendous impact on the personnel.

The inspectors often gave expressions which indicated that safety was something they wanted to see emerge within the organization, the “safety think.” It was expressed as “you look at the way the organization thinks about safety” (P10) and “look at their internal risks and findings, how they have gone about identifying them and compare that to our observations” (P5).

One inspector explained this search as:

What I am looking for is that safety think, whether the organization really wants to achieve safety, not because someone told them to, but because they realize the importance of it.
(P12)

Different roles and accountabilities were also considered important. This was usually connected to talking to management and studying how they perform and go about their duties. This part also reached beyond that of checking manuals and assuring correct names to various post-holders, such as the Accountable Manager (AM), but rather “we look at how the AM goes about his/her duties, what signals in terms of risk and safety awareness is being sent, and if not, why?” (P5) and “is the management investing in areas considered important for safety such as education etc?” (P9). One inspector described this process of inquiry as follows:

I usually look at things such as investments in training and education. Is the management interested in such matters, and if so, do they push these types of attitudes further down in the organization? (P3)

The importance of management commitment and the impact it has on the overall state of the organization was advocated by all inspectors. The perception that looking into such aspects was considered important was made explicitly clear by one inspector; “if there is nothing upstairs, there is usually nothing downstairs” (P3).

The result of the assessment – the end-product – was not a separate “safety culture analysis” document, but either a dialog with the organization or findings – deviations from the rules and regulations. The first – the dialog – was initiated when concerns and other aspects of safety culture related issues emerged in ways that did not indicate any deviations from rules or regulations. The dialog was – as described by the inspectors – based on mutual trust and aimed at developing an understanding why things do not work out.

The findings were usually considered as clear indications that the requirements of the rules and regulations had not been met. According to some inspectors, the reason for that could be caused by safety culture related aspects based on the descriptions given by the inspectors on what safety culture is and e.g. what they look for. A finding stating for example that their certificate had been revoked due to poor safety culture would not happen. Instead, what the inspector wanted to see was a thorough and well thought out analysis of for example the reasons why people do not report, and in their response when rectifying the problem, which steps had been taken and did they also make sense to the inspector, who may have based his or her assessment on safety culture related aspects.

One inspector described this process and product as findings based on facts – which in the case given could be, e.g. not meeting the minimum requirements of a SMS – which the organization had to present the measures taken within a set timeframe and why. This involved an analysis made by the organization. But the inspector made it very clear that the findings were based on facts, but the reasons for the findings were considered the most important and while the responsibility to perform the analysis laid upon the organization, the inspector had “an idea of why things do not work, and want to see that a well thought out and thorough analysis has been made” (P1). And that “we do not present in our report the analysis, but we can verbally bring our concern to them and highlight what they ought to consider when doing the analysis, for example various aspects related to safety culture” (P1). There was shared consensus among the

inspectors that performing the analysis was the responsibility of the organization, and not the authorities.

Theme 5: Time – Making the most of a limited resource

In terms of being able to deliver a structured and adequate assessment, taking the time and reflecting on the observations and outcomes during and after having talked to the people was considered important. The inspectors' perceptions and beliefs whether one was able to devote sufficient time for assessing the more subjective and complex areas – such as safety culture – differed some. One inspector described it as “time is a factor, and deeper issues become hard to assess due to time limitations” (P7), and “sometimes there is not enough time to perform that part of the assessment” (P13), while one inspector described time as “usually I have enough, you prioritize accordingly, other duties are set aside” (P7). Some of the inspectors' concern regarding time has been addressed by researchers. Grote and Kunzler (2000) describe this dilemma from an external agent's situation and explicitly include authorities in their argument. They believe that insufficient time and resources, coupled with the relationship between the evaluator and evaluated organization may hamper the current methodologies for long-term assessments.

Despite the existence of some difficulties, there was a general consensus among the inspectors that taking the necessary time was deemed critical. The question was how to prioritize and decide what to look closer at. Meaning that when assessing safe culture as described above – through interviews and observations – time was generally considered sufficient. But when faced with indications that something was wrong, e.g. the “gut-feeling”, time was by some considered scarce. That did not mean that the inspectors disregarded this feeling or the underlying reasons for it, but rather approached it with great care and sensitivity in order to prioritize as adequately as possible. One inspector described this delicate balance as follows:

When performing inspections, we use the “top-down” approach, meaning that first we cover the important questions such as SMS and safety culture related issues with management. If we find something we feel that we must look closer at, we devote time for that, rather than moving on to checking the manuals etc. (P1)

Another inspector described the experience of time constraints in relation to the general observations, e.g. not having identified anything which qualifies for further investigation and probing, but regular criteria for a safety culture, such as looking at and talking to management:

Assessing safety culture is not something easy. Take management commitment for example, it becomes difficult due to time limitations. We may only be there for a few hours, and we cannot look at everything. (P2)

Within the discussion on time constraints, it was also explained that the process of oversight includes different levels of inspections, meaning that one or more visits to the same operator may have different time limitations. One inspection may consist of a line inspection (e.g. visiting the cockpit) while another may last for one or two days (e.g. visiting the organization's headquarter).

Another aspect of time constraints also emerged, which was the need to train and inform the organizations on e.g. SMS; what it means, how it works, what does proactive safety work mean, etc? This was considered to take up some time, and even though the inspectors thought this to be important and appreciated when the organizations strive to learn, it was also considered to take up time which could be used elsewhere within the inspections.

DISCUSSION

Definitions and descriptions of safety culture

In defining and explaining safety culture, the inspectors frequently emphasized context, both in descriptive as well as within narratives about personal experiences linked to safety culture.

Underlying patterns for inspectors to consider context most probably lie in the recognition and understanding of the complexity the organizations work and strive within. This insight – supposedly acquired through experience and knowledge – made the inspectors prone to treat it as such; a complex context. The complexity of culture – expressed on several occasions by the inspectors – is in itself something long recognized in both the literature and research. Schein (2004) for instance describes this complexity in culture as “both a dynamic phenomenon that surrounds us at all times, being constantly enacted by our interactions with others and shaped by leadership behaviour, and a set of structures, routines, rules, and norms by leadership behaviour and constrain behaviour” (p. 1).

The underlying patterns for this complexity were experienced by the inspectors not only when describing safety culture, but also when they experienced it during their assessments and observations. Attention was given by the inspectors to attitudes and behaviours of the organization and the individual when faced with different work situations. Connecting such attributes – or traits – to culture can interestingly be seen in the different scientific approaches and perspectives on cultures. The organizational psychology perspective (Schein, 1991; 2004) for instance derives its understanding of culture from the values and beliefs of the members of the organization, considering however an approach which seeks to understand how culture may affect, or manipulate productivity and behaviours, which may in turn affect management commitment, individual and collective behaviours, motivation, etc. The other perspective on the other hand – the socio-anthropological – looks at aspects such as rituals, shared values and norms. Pidgeon (1998) elaborates on this anthropological perspective as a foundation for

defining safety culture. He argues that “an anthropological definition of safety culture as being the set of assumptions, and their associated practices, which permit beliefs about danger and safety to be constructed” (p. 205). Although the inspectors did not explicitly discuss or separate the two perspectives when they were elaborating on or tried to identify what a safety culture is, they did address attitudes and behaviours which were considered to have an impact on how risks, safety and regulations were looked upon. Whether the inspectors’ use of the term behaviour had an effect on their approach to assessing safety culture was not revealed in the study.

Favoring complexity rather than simplicity among the inspectors in defining safety culture also emerged. This was made visible through descriptions of the inspectors that one should not assume that culture is something static, out there easy to understand and measure, but rather diverse and far more organic and integral to the fabric of an organization, making e.g. assessments critically difficult. This type of reasoning is also considered important by researchers. Turner (1995) described it from a perspective of difficulty in controlling and understanding. He argues that:

It follows from this perspective that managers cannot simply “install” a culture....viewing safety culture as a continuing debate makes it clear that it is a process and not a thing; that it is dynamic and needs continuing support; and that it deals intimately with symbolic and rhetorical matters, crucial matters which are also subtle and difficult to control. (p. 322)

The inspectors considered both collective and individual mindfulness in identifying risks as critical for sustaining a high level of safety. The reason for this was described from a perspective that members of an organization must work together, and not in isolation from one another. The possibilities of detecting risks through the application of organizational mindfulness are today recognized as essential traits of HROs (as previously described). Weick and Sutcliffe (2007) argue that “mindfulness preserves the capability to see the significance of weak signals and

to respond vigorously” (p. 18). There was a clear consensus among the inspectors that in order to work mindfully – and thus be able to cope with the organizational risks – a collective participation from everyone within the organization was necessary. In order to stimulate and obtain such participation, management must actively engage in these activities as well. Safety culture was considered making this possible. The inspectors described this making from the perceived benefits which management commitment towards safety related issues may have on organizational mindfulness.

In order to continuously update ones mindfulness regarding inherent risks and other systemic weaknesses, not taking past success as a guarantee for future safety was considered critical. An organization being mindful of such traps stimulates collective and individual participation, from all levels of workers, e.g. management and the front-line staff. In order to maintain a state of mindfulness, the inspectors considered it important that organizations must be willing and able to accept changes and learn to adapt to various demands. This was considered a trait of quality. This notion can also be found in the literature on HROs (Rochlin et al., 1987) and resilient performance (Weick & Sutcliffe, 2007; Hollnagel et al., 2006).

The concept of safety and quality is not entirely unproblematic. Quality systems – also sometimes referred to as Quality Assurance Programs (ICAO, 2009) – define and establish an organization's policy and objectives. Its purpose is to ensure that the organization has in place those elements necessary to improve efficiency and reduce service related risks (ICAO, 2009). Whereas the system is implemented in order to assure that procedures are carried out consistently and in compliance with applicable requirements – such as rules and regulations and standard operating procedures – a SMS focuses instead on human performance, human factors and organizational factors. When performing this task, it “integrates into these, as appropriate, quality management techniques and processes to contribute to the achievement of safety satisfaction” (ICAO, 2009, p. 10, ch. 7). Achieving safety – a primary goal of SMS – in complex

high risk systems is the realm of dealing with unexpected and unusual events originating from dormant, latent factors within a socio-technical system.

According to some researchers (Dekker, 2006; Hollnagel, Woods & Leveson, 2006) problems however arise when we assume that quality means safety. The goal of quality assurance is to maintain performance under control, through e.g. rules and regulations. Quality is thus directed towards achieving compliance with rules and regulations as a main goal. Such compliance may disregard however the now recognized vital means of achieving safety; a necessity to adapt to incomplete and limited knowledge of dynamic and ever so changing systems. This approach may, as Dekker (2006) has pointed out as well, not function well in an already highly regulated domain such as aviation, since it does not take into account the dynamic organizational and environmental factors which may contribute to failures, such as incidents and accidents. According to Dekker, the approach of compliance and following the rules at all times is a classic quality model and that it may distort both our efforts as well as possibilities to achieve safety. What this classical quality model seems to focus on, is where the barriers (front-line staff, procedures and technology) fail. Dekker explains that in order to move away from the tendency of focusing on the individual rather than the system, we should not focus on such isolated elements but instead take a systems approach. Taking such an approach however may raise a fundamental question which position to take (and inspectors, particularly when performing oversight functions and assessing safety culture) upon human error. Taking a systems perspective, may mean taking a new view rather than an old view perspective³⁸ on human error. The reason for this is that the systems perspective – as described by the inspectors – engages

³⁸ The old view and new view perspectives on human error have been addressed by many researchers (see Dekker, 2002; 2006, Woods & Cook, 2002). In the old view of human error, Dekker (2006) has identified key features such as; (1) complex systems would be fine, were it not for the erratic behaviour of some unreliable people in it; (2) human errors cause accidents, humans are the dominant contributor to more than two thirds of them; (3) failures come as unpleasant surprises and they are unexpected and do not belong in the system. Failures are introduced to the system only through the inherent unreliability of people (p. 1). In contrast to the old view, referred to as the new view, human error is looked upon as; (1) not a cause of failure. Human error is the effect, or symptom of deeper trouble; (2) it is not random. It is systematically connected to features of people's tools, tasks and operating environment; and (3) is not the conclusion of an investigation. It is the starting point (p. 15).

them in questions of why rather than who. Asking why something fails may lead inspectors to look at organizational factors, such as work-pressure instead of focusing on the individual – the operator.

The quandary with quality and safety has been acknowledged by regulatory bodies as well. ICAO makes this explicitly clear in their SMS manual (2009) and states that “QA (Quality Assurance) cannot, by itself, as provided by quality dogma, assure safety” (p. 9, ch. 7) and that “quality management is less effective at identifying high-level/high consequence problems, such as the complex latent failure pathway, that can lead to disaster” (p. 10, ch. 7).

The inspectors looked upon quality from both the perspective of compliance with rules and regulations (classical quality model as previously discussed), but also from a HRO perspective. When connecting HROs with quality, they looked upon an organization's abilities to learn and adapt to internal and external pressures. Such approach has been advocated by the HRT researchers as indicative of a mindful and safety seeking organization. Such an approach may foster critical thinking of safety related aspects, such as the complexity of dynamic systems and not rely on indicators of a classical quality model of compliance and linear thinking.

Perceived differences between “good” and “bad” safety cultures

The dilemma faced when defining what constitutes a “good” versus a “bad” safety culture was subscribed to by the majority of the inspectors. This complexity and difficulty has been recognized by researchers with extensive experience and background in examining organizations' culture (Schein, 2004; Snook, 2000; Vaughan, 1996).

In order to deal with this dilemma, the inspectors sought theoretical recognized indicators of what each may consist of. They also relied heavily upon context and taking a humble approach to something which one holds limited knowledge of. The literature does not implicitly or explicitly discuss the level of knowledge of safety culture an assessor should have. It appears to be considered a rather tacit knowledge, which may have been acquired through operational

experience of the area which the assessor is assessing, e.g. air-traffic controllers may be considered knowledgeable of the ANS-environment, such as towers, hence also knowledgeable regarding cultural aspects of such an operation. By not establishing acceptable and perhaps required levels of knowledge of safety culture, its background, evolution, theories etc, may beg the question how quality and validity of the assessments are verified.

When discussing the theoretical components of safety culture – such as just, reporting, flexible and learning – the inspectors' perceptions took similar traits as described in the literature (Dekker, 2007; Reason, 1997; Weick & Sutcliffe, 2007). Furthermore, the reflections of the facets what may be a good safety culture as identified by Pidgeon and O'Leary (see Methodology section *Organizing and analysing the data*) was also found in the inspectors' descriptions. Similarities between HRO practices as described by the inspectors and “norms and rules that permit a flexible approach to dealing with both well-defined and ill-defined hazardous conditions” (p. 210) emerged. The necessity for a mindful organization also coincides with Pidgeon and O'Leary's (2000) analysis of a good safety culture in their argument “reflection on practice (or organizational learning) through such things as monitoring, incident analysis and feedback systems” (p. 210).

Similarities between scientific theories and the inspectors' views on human error and what may cause failure were also identified from their descriptions and stories. Taking a new view perspective on human error and recognizing thereby that incidents and accidents are usually system-induced lay the foundation for the perceived necessity of a just and fair treatment. Such an approach to human nature has been advocated by Hollnagel (2006) – recognizing that efforts to understand error begin with seeing how people try to create safety through their practice dealing with several goals in dynamic and complex settings – and was by the inspectors considered critical.

The inspectors held the opinion that management commitment was of great importance to safety and could either stimulate or disrupt an organization's mindfulness when dealing with

critical elements such as reporting, closing the “safety loop” and transforming what was expressed as “the paper-product” into an organizational state of being mindful of safety. A number of authors agree that management commitment is an essential aspect of safety culture (Schein, 2004; Weick & Sutcliffe, 2007; Zohar, 1980). ICAO (2007) has within its frameworks for SMS even included a requirement titled “management commitment and responsibility”.

Within this requirement, an organization must:

.....define the organization's safety policy which shall be in accordance with the international and national requirements, and which shall be signed by the accountable executive of the organization. The safety policy shall reflect organizational commitments regarding safety.... (p. A-4)

Connecting management commitment to the aspects of safety culture, the goal and philosophy of the safety policy of an SMS are explicitly formulated as:

Our commitment is to support the management of safety through the provision of all appropriate resources that will result in an organizational culture that fosters safe practices, encourages effective safety reporting and communication, and actively manages safety with the same attention to results as the attention to the results of the other management systems of the organization. (Ch 8, p. 5)

The inspectors held the opinion that a positive management commitment consists of sharing one's own experience and knowledge of safety (included here was also knowledge of the rules and regulations), actively fostering and stimulating risk awareness (also expressed as mindfulness) and listening to the people, allowing them to speak up freely. Getting a feel for these four managerial attributes was collectively considered difficult but very important.

The importance of understanding safety culture

The inspectors considered the theory, descriptions and knowledge of the concept of safety culture as a supporting, or assisting tool, or mediator when seeking to understand the organization's way of dealing with safety. The inspectors thought this possible by being able to engage in dialogs with an organization through the theories and expressions linked to the concept of safety culture. Safety in this sense was described both in explicit ways of maintaining safety (rules and regulations, training, safety meetings, etc) but also as difficult and complex aspects. These difficulties and complexities were expressed by the inspectors as shared values of what is believed to be safe behaviour vs. not safe behaviour, and other deeper organizational issues. By using the theory of safety culture and the associated expressions as described, safety culture allowed them to probe deeper into both negative as well as positive safety aspects. Negative aspects were in this context described as conditions which may jeopardize safety or explicit violations of rules and regulations. Positive aspects were described as learning more about why things work out so well in both situations of e.g. various work pressures such as the laying off of staff, and operational challenges such as emergencies with positive outcomes (no injuries or other material losses), etc. The approach taken by the inspector in terms of looking at positive aspects – why things work out – is one of the traits frequently connected to HROs (Rochlin, 1999) and organizations exercising mindfulness (Weick & Sutcliffe, 2007).

Another interesting aspect which can be connected to this type of reasoning – focusing on the positive aspects of safety critical work – is that of resilience engineering. Hollnagel (2008) describes this by looking at both failures and success as outcomes of normal performance. In doing so, he explains that since it is considered a normal phenomenon – the failure – safety cannot be achieved by limiting or eliminating the variability. Indeed, looking at safety from both perspectives, he argues that “instead, it is necessary to study both successes and failures, and to find ways to reinforce the variability that leads to successes as well as dampen the variability that leads to adverse outcomes” (preface, xii).

The inspectors appeared to operationalize this perceived understanding of the organization in two ways. First they envision and implement safety in and from the rules and regulations. Secondly, they seek to understand how the organization deals with safety in general. Processes that were proposed being successful in this regard ranged from checking that manuals were up to date to engaging in observations and discussions on how blame may have a negative effect on the reporting systems. The latter introduced a necessity for the inspectors to further their knowledge of organizational aspects such as management's views on human nature and the at times delicate discussion about human error (where a new view perspective as previously described was advocated).

When looking at safety culture from the perspective that it is critical for sustaining and developing safety – which the inspectors subscribed to – aspects such as communication and “story-telling” of safety that fosters collective and shared views on how to make the organization safer emerged. This is in many ways similar to Weick's (1987; 2007) argument that organizations can become more reliable – hence also supposedly safer – because stories not only express critical information about the organization itself, but also serve as a communicative “tool” showing the inspector how the organization looks and acts when faced with certain events. Antonsen (2009) also explores this notion and argues that “in this way, organizational culture may be a source of the creation of safety by being a medium for the communication of safety-critical knowledge” (p. 15).

The notion of looking at how management conveys – and presumably *if* they do so – safety inspiring visions and goals have also been addressed in previous research as having an influence on safety. Zohar's (1980) findings from his research on several manufacturing companies in Israel indicated that the safety levels of the organizations were affected by management's attitudes and behaviours towards safety.

The question whether safety culture influences safety has been a topic for discussions and different views for quite some time. Research on HROs and Turner's (1978) theory about man-

made disasters has contributed in many ways to a greater understanding of the cultural contribution of incidents and accidents. Culture – and safety culture – according to the inspectors – ought not to be assessed separated from the organizational context, including features such as people, procedures, regulations and various internal as well as external challenges. This view has been supported by existing research on organizational culture and safety culture. Connected to safety and the importance of such approach, considering context is seen as very important. Antonsen (2009) concludes that “safety is a composite phenomenon and it will be impossible to study the cultural effects in isolation from the structural and interactional effects” (p. 45). Applying this view on the dynamic and complex environment that the domain of aviation offers, the inspectors’ emphasis on organizational mindfulness appears highly relevant and critical for sustaining and understanding safety (from the perspective of an inspector performing oversight). Weick and Sutcliffe (2007) apply this state of mindfulness connected to high-risk organizations such as e.g. aircraft carriers and hospitals and explain that “safe reliable performance is a dynamic non-event – what produces the stable outcome is constant change rather than continuous repetition” (p. 40).

Having discussed and explored some of the literature which advocates the importance of safety culture – as well as organizational culture – and the positive effects they may have on safety, it serves well to contemplate on literature that takes a more critical position and questions some of the arguments above. Rollenhagen (2010) examines the impact a strong focus on safety culture may have on technology and the effects which may follow, perhaps leading to an increased risk of downplaying the criticality and importance of the design of technology. He raises the concern that this tendency to downplay in combination with holding on to a belief that current technology is safe enough may stimulate to inefficient approaches to safety, what he calls “unbalanced safety management strategies such as focusing on primarily attitude and behaviour changes without questioning the need for technological changes” (p. 269). He argues further that in order to address safety related issues, we must ask ourselves what safety means to us and not

knowing what type of safety we are talking about and the effects it may have on culture. If we are looking at accident causations from a linear model, coping strategies may focus on attitudes and behaviours rather than the system, e.g. technology and design. The assumption then is that when attributing incidents and accidents to cultural aspects, such as beliefs, values and moral, organizations may select safety management responses which may connect human error and perhaps also blame in order to rectify the failure(s). Rollenhagen (2010) further describes this response from an unbalanced safety management approach as follows:

If the concept of safety culture is understood and perceived as too non-contextual and oversimplified concept, there is a risk that safety management strategies become unbalanced. This could mean, for example, that programs and procedures become overly focused on changing behaviour and attitudes rather than changing structures such as technological design. Moreover, there is a risk that the concept of safety culture being used for representing collective human error with moralistic undertones. (p. 272)

Connecting Rollenhagen's concern with the inspectors' view on the impact that safety culture is perceived to have on safety – particularly behavioural aspects – looking at e.g. human error from a new view perspective (as described by Dekker, 2006) is of great importance.

The dilemma with connecting safety with various organizational aspects, or managerial strategies such as quality has been addressed by researchers (see Dekker, 2006) as well as in the previous discussion in this study on quality under *Definitions and descriptions of safety culture*. The approach selected when seeking to understand safety and what measures to take in order to sustain or improve current safety levels become critically important. For example, taking a new view perspective on human error in favour of an old view would most likely generate very different responses. As the old view may call for more regulations (since the system is safe, but not the individuals within it), a new view may consider it more fruitful to probe deeper in finding

out why the rules were not followed (the system is not safe, people make the most out of multiple and at times fragmented information). Considering these different approaches when working as an inspector may offer several explanations as to how organizations categorize and react to human error. As described and advocated by Dekker (2006); “the point of understanding human error is to reconstruct why actions and assessments that are now controversial, made sense to the people at the time” (p. 14).

Assessing safety culture: Methods, processes and considerations

From the interviews, the inspectors appeared to have a clear and unified opinion that safety culture should not be regulated. Nor should instructions dictate how their (the organization's) safety culture should look like. This position was advocated due to the inherent complexity of cultural aspects, such as social interactions and group dynamics. This approach appears to coincide with much of current research on culture. According to Schein (2004), observers or researchers of organizational culture should remain alert to the inherent limitations of being able to fully understand culture, both from the perspective of its complexity, but also due to personal biases of the researcher (the inspector in this case).

In contrast to regulating safety culture, the inspectors said they assessed safety culture. These assessments however – as previously described – were generally not conducted as a separate, stand-alone item, but rather absorbed in the overall dialog between inspector and organization. The inspectors' role in seeking such an understanding of the organizations' safety culture became visible in inspectors engaging in interviews and observations. The reasons for conducting such assessments were based on a philosophy and belief that safety culture had an impact on safety. Looking beyond rules and regulations, towards cultural aspects – as advocated by the inspectors – coincide well with scientific literature, as well as current research on culture. Antonsen (2010) argues that it may allow for descriptions of social aspects and that “such an approach can provide information regarding the frames of reference through which information

is interpreted and social reality is constructed, as well as the conventions for behaviour, interaction and communication” (p. 145).

The scarcity within literature and regulatory documents – such as the ICAO Safety Management Manual (2009) and the ICAO Document 9806 (2002) – in terms of guidance on assessments is evident. For example, the ICAO Document 9806 provides guidance on human factor related topics for inclusion in safety audits, but the document is merely conceptual in describing areas of focus that include safety culture elements that represent the components and provides limited guidance on how such elements should be assessed. Furthermore, the mandate ICAO or the local CAA provide to an inspector is not made explicit. Regulatory documentation such as SMS and Document 9806 by ICAO (2002; 2009) and ESARR 3 (guidance to ATM safety regulators) by Eurocontrol (2001), etc make it rather implicit what to assess and how to perform the assessments. In the SMM (ICAO, 2009) under “Guidance on the Development of a State’s Regulation on SMS” there are elements connected with the theories and concepts of safety culture, such as safety accountabilities, safety promotion, reporting, management commitment, etc. Neither is however described from a perspective of assessment and what to look for. For the inspector, this may leave less room and understanding of how to conduct deeper assessments of complex organizational aspects often described associated with an organization’s safety culture.

The challenges facing the inspectors when looking at cultural aspects are many. Cultural diversity and many different organizations – each with its unique culture – make subjective observations uniquely complex and hard to assess. Taking a systems-perspective – as described in the literature and by inspectors – allowed them (when considered appropriate by the inspectors) to not only focus less on details, (e.g. manuals), but instead on cultural aspects such as management commitment, how the organization transforms policies into actual safety measures, etc. Questions here however should not be directed on *what* an organization has in place, but rather on *how* the organization deals with these cultural issues. *That* an organization

communicates the importance of safety within the organization is nice to know. What one really wants to know however is *how* that is done. A decision to probe deeper was made when one considered that an indicator of a condition that something was not right emerged. This was not limited to a deviation from regulations, but may be based on subjective observations, such as how does management communicate the importance of safety within the organization, which triggered a desire to understand *why* in addition to what. Connecting such probing to the perception that safety culture has an effect on safety, and seeking deeper and context driven explanations which may be based on subjectivity, this approach also coincides well with current research on safety culture. Antonsen (2010) describes it as follows:

A cultural approach means probing into some very fundamental properties and processes of an organization. This information, in turn, is essential for understanding the factors that contribute to the creation and prevention of both organizational and occupational accidents. (p. 145)

Identifying deviations from rules and regulations may be less difficult compared to the challenge of identifying why things do not work as planned. "As planned" in this context may be why e.g. management's safety goal is not being understood by the rest of the organization, or why does the SMS not function as well in reality as on paper, etc. The difficulties in seeking deeper understanding of organizational aspects, particularly culture, have been given much attention from the research community as well. Hopkins (2007) describes such difficulty in terms of identifying risks which may be inherently dangerous. He argues that "under a prescriptive regime, the inspector might point to a regulatory violation as the reason for the notice, but in the absence of such a violation the inspector must fall back on subjective judgment of the level of risk" (p. 211). Schein (2004) argues that the difficulties may be several. Some being the relationship between observer (inspector) and the object/person being observed (organization,

pilot), other being time constraints and acceptance of the assessment are some examples.

Whatever the many obstacles one may face, Schein argues that “the important point is that the intervention goal must be shared by outsider and insider” (p. 211). This delicate balance may be further complicated if both parties – inspector and organization – do not agree on what the objective of the assessment is. If not, difficulties as pointed out by Schein may emerge; “to study culture and reveal that culture to the insiders, then, can be likened to an invasion of privacy, which under many conditions is not welcome” (p. 215). The inspectors, however, appear to on most occasions have overcome this potential conflict. The majority of the inspectors described the discussions of the “softer” issues as having been appreciated by the organizations.

Another important aspect which needs to be considered when looking at the inspectors' assessments is that of Schein's (2004) different levels of culture (see also *Organizational culture* under chapter “Theoretical Framework”). The question is whether the assessments as presently conducted by the inspectors manage to capture all three levels. The levels; artifacts, espoused beliefs and values, and basic underlying assumptions are made visible through different steps when assessing – or deciphering as expressed by Schein – organizational culture. Schein (2004) argues that in order to really understand culture, you must reach the level of shared basic underlying assumptions. He connects the various levels of culture to the process of assessment and explains that:

Culture can be described and assessed at the artifact, espoused values, or shared tacit assumption level; the importance of getting to the assumptions level derives from the insight that unless you understand the shared tacit assumptions, you cannot explain the discrepancies that almost always surface between the espoused values and the observed behavioural artifacts. (p. 362)

Schein (2004) is of the opinion that culture can be assessed by means of various types of interviews, both individual and group interviews. This coincides with the approaches most often selected by the inspectors. He further argues that an assessment ought to be connected to an organizational problem or issue. He explains his position as “when the organization has a purpose, a new strategy, a problem to be solved, a change agenda, then to determine how the culture impacts the issue is not only useful but in most cases necessary” (p. 362).

Schein (2004) describes the various steps an assessment may take, and explains that the various levels of culture may be assessed by applying different steps. Comparing these to the approaches selected by the inspectors, the capabilities of capturing each may be as follows:

- Artifacts can be directly observed (inspectors perform this task by physically visiting the organization)
- Espoused values are revealed through the questions asked to the people within the organization (inspectors perform this task through interviews and observations)
- Shared tacit assumptions – according to Schein – have to be inferred from a variety of observations and further inquiry around inconsistencies and puzzlements (this is the part of an assessment which the inspectors may not currently reach).

The question whether the last level is reached or not is of course extremely debatable. On one hand the inspectors manage to create many of the prerequisites as described by Schein; visits, interviews and observations, a helping relationship with the organization (may not be the case in all situations). While some may not be reached – in terms of establishing a close relationship, and gaining access to the organization and to learn what is really going on – as described by Schein (2004) this “requires real entry into and involvement with the organization beyond what questionnaires, surveys, or even individual interviews can provide” (p. 221). This complexity and limitation to the possibilities of the inspectors to reach such level of insight is further argued in

Schein's (2004) description of an assessment process; "since culture is a shared group phenomenon, the best way to gather systemic data is to bring representative groups of ten to fifteen people together and ask them to discuss artifacts and the values and assumptions that lie behind them" (p. 220). Within this and previous statements, we can envision some restrictions imposed to the way inspectors assess culture, such as e.g. large group interviews and establishing close relationships. We must also note that Schein describes this as "the best way", a way which may also be modified in terms of what one seeks to accomplish. What may be appropriate in terms of selection of assessment processes for a private consultant, hired by an organization to assess their culture, may be inappropriate for an inspector who is also charged with the task of overseeing compliance to rules and regulations. This may inflict delicate complications and even conflicts of interest. Indeed, as argued by Schein (2004) "there is no simple formula for gathering cultural data" (p. 220). However, connecting a philosophy and process behind a "ten-step" approach to assessment – as described by Schein – may leave room for possibilities to explore and connect part of his theory with the inspectors approach to assessment. It is not the intent of this study to explore Schein's ten-step approach in greater depth. However, in order to allow the reader to develop an idea of what it entails, I have elected to include a list of the steps in the appendices. Even though there are some steps in Schein's approach which may not be applicable or perhaps suitable for an inspector, there may also be the delicate question of time. The criticality of the scarce resource of time has been addressed by many researchers (Hopkins, 2006; Schein, 2004). Even though Schein's (2004) ten-step approach appears to be time-consuming, he concludes his description of the approach with a message that modifications may be possible in terms of allocation of time as follows:

It should be noted that the ten-step group process described is extremely fast. Within a few hours one can get a good approximation of what some of the major assumptions are. If it is important for the outsider/researcher to be able to describe the culture in more

detailed terms, the additional observations, participant observation, and more group assessments can be made until a complete picture emerges. (p. 363)

From an inspector's point of view, who has to perform oversight of many different organizations, a process of modification when assessing safety culture may be very appropriate, especially given the complexity and diversity of the organizations as described by the inspectors. From the inspectors' descriptions of safety culture, e.g. definitions and assessments, they seemed to consider it very important to have the ability and knowledge necessary to adapt and modify their style of assessment. Being able to use different approaches when conducting interviews and gaining understanding about the organization's contextual issues such as the uniqueness of the organization's operations and its possible challenges may therefore be very useful for an inspector. Modifying and adapting styles – or approaches to assessments – may also benefit from not only assessing safety culture (as described by the inspectors) but also inquiring about e.g. evidence whether- and how an organization itself has invested in safety culture.

CONCLUSIONS

The study revealed that the inspectors did not use a single standardized approach to assessing safety culture as an isolated stand-alone item within the inspection protocol. Rather, safety culture – the theories, beliefs and definitions – were used as a cultural approach in exploring wider and deeper organizational phenomena, such as the informal, formal and social processes that may influence safety.

In order to understand and develop a deeper insight into the organization's safety culture, the inspectors conducted observations and engaged in dialog with different people from different levels within the organizations, such as management and front-line staff.

Safety culture was considered important and vital for safe operations, particularly in terms of understanding the match between formal and informal aspects of work and organizing. Among several indicators of what may constitute a “good” safety culture, organizational mindfulness of the risks and dangers involved in complex organizations and management commitment to safety were considered critical.

The theories connected to HROs and the common traits associated with such organizations were visible in the way inspectors performed assessments. Looking beyond the scope of compliance with rules and regulations and seeking deeper and wider descriptions of what safety culture did and did not mean for the organization in terms of safety emerged. A socio-technical organization was considered to include many complex and dynamic aspects and phenomena, attributes which compliance alone with e.g. SMS and quality system requirements may not fulfill. Indeed, SMS was considered a critical and vital component for the organizations, but the real essence of establishing a functional system was considered to rely heavily on cultural aspects, aspects often associated with a “good” safety culture.

The result from the study suggests that the approaches used by the inspectors when assessing safety culture coincide with much of the literature as previously discussed. The theoretical frameworks and assumptions available within the literature also appear to show some commonality with that of the inspectors' descriptions. What the study also revealed is the lack of similar studies seeking to connect research on safety culture and its practical application when performing assessments within current and upcoming requirements on SMS. Having described the connection between SMS – and other similar systems, such as quality systems – safety culture does play a critical role as well as an important part of the systems. Indeed, safety culture was on many occasions described by regulatory bodies (ICAO, 2009; ECAST, 2009; Eurocontrol, 2008) and research (Stoltzer et al., 2009) as a requirement in order to make the system work. As argued by Hudson (2009) “the possession of a management system, no matter how thorough and systematic it may be, is not, however, sufficient to guarantee sustained performance. What is also

needed is an organizational culture that supports the management system and allows it to flourish” (p. 1).

The findings from the study further suggest that there exists a need to continue to explore and develop the concept of safety culture assessments within aviation. Training and updating of aspects such as theories and practical applications of assessments are examples of such measures. The connection between safety systems – such as SMS – and the supportive means and mandate of inspectors whether bound by the regulatory requirements to assess safety culture or not, also require further studies. Furthermore, exploring the theories and practices offered by research connected with HROs, resilience engineering and organizational culture may stimulate further knowledge and aspirations when seeking to enhance the complex tasks involved in assessing another organization's safety culture.

SOME REFLECTIONS ON THE RESEARCH ITSELF

Conducting research based on interviews, particularly when conducting these interviews on a one time face-to face moment has its limitations. However, despite limited availability of engaging in further discussions, interviews of this kind may capture people's descriptions and approaches in seeking knowledge and understanding. With this consideration in mind, I endeavoured to show in the analysis possible links between theoretical frameworks and the beliefs and practices deployed by a set of 13 inspectors.

Furthermore, inspired by the ever so stimulating journey of building on current knowledge, both personal and collective, I pressed myself to remain sensitive to the limitations such journey poses. I found the concluding remarks by Moustakas (1994) fitting, whose research method laid the foundation for my thesis:

Knowledge does not end with moments of connectedness, understanding, and meaning. Such journeys open vistas to new journeys for uncovering meaning, truth, and essence – journeys within journeys, within journeys. This is perhaps the most telling reality of all; that each stopping place is but a pause in arriving at knowledge. Satisfying as it is, it is but the inspiration for a new beginning. Knowledge of appearances and reasoned inquiry are not the end of knowing. No scientific discovery is ever complete. No experience is ever finished or exhausted. New and fresh meanings are forever in the world and in us. (p. 65)

APPENDIX 1 – INTERVIEW ADVERT

Information about the interview

Dear participant,

As described during our first conversation, I have since 2008 conducted studies at Lund University School of Aviation. I am pursuing a *Master of Science Degree in Human Factors and Safety Assessment*.

The purpose of the interview is to develop a deeper understanding and insight in the ways inspectors perceive and work with safety culture. The interview you have elected to participate in is an important part of my thesis work.

The interview will last for approximately one hour and consists of two parts. During the first part, I will ask you short questions about your background, experience and education. The second part will cover more open questions in relation to your duties as an inspector with a particular focus on safety culture and its connection to oversight.

All material will be treated with strict confidentiality in order to secure protection from disclosure of information from the people participating in the interview. No names of any persons will be included in the thesis.

Thank you very much for taking the time and participating in my thesis work.

Should you have any questions, please feel free to contact me.

Sincerely, Nicklas Svensson

APPENDIX 2 – INTERVIEW QUESTIONS: BACKGROUND DATA

Interview protocol (background data) – inspectors

Name: _____ Interviewee Reference # (PXX): _____

Background questions:

1. Please tell me a little about yourself

2. How long have you been working with the CAA?

3. How long have you been working as an inspector?

4. What are your primary duties?

5. What type of organizations do you perform inspections/audits towards?

6. Have you been trained in the concept or theories of safety culture?

APPENDIX 3 – INTERVIEW QUESTIONS

1. What does safety culture mean to you?

Reason for question: Develop a feel for the inspectors' knowledge, experience and beliefs, which most likely may have an effect on how the assessment is done, e.g. what questions they ask, etc. Are they familiar with the now generally accepted components of safety culture; just, reporting, learning, flexible which creates an informed safety culture, i.e., how do they define safety culture?

2. What in your opinion makes a safety culture “good” or “bad”?

Reason for question: What – if any – criteria do they use in order to establish whether a bad or good safety culture exists. Are perhaps all safety cultures considered good? If they believe that good/bad safety cultures exist, how do they know that? Criteria used? What is/are indicative of the two? How do you go about finding this out?

3. Why is understanding safety culture important for an inspector? Please explain why/why not.

Reason for question: Are cultural and organizational aspects and knowledge important for the inspectors? Is a “good” audit solely based on compliance with the regulations, or are wider issues, such as safety culture considered important? If yes, why? Is safety culture considered important for safety? In what way is safety culture linked to SMS? How do they affect one another?

4. How do you “learn” about an organization's safety culture?

Reason for question: If assessments are not performed, how does the inspector go about this “learning” process? Is the assessment part of a standard audit, or do you need a specific, stand alone reason for justifying looking into the organization's safety culture?

5. What would trigger an assessment of safety culture?

Reason for question: Must an adverse event occur, e.g., an incident or accident in order to assess safety culture?

6. When you are performing audits (oversight), in terms of safety culture, what do you look for?

Reason for question: To find out what indicators inspectors consider important to look for, in order to find out e.g. management commitment, what does the organization learn from, how does the organization learn? How do they deal with blame/accountability issues? Do they consider whether the organization takes an old view or new view position on human error, etc?

7. How do you know it is safety culture you are assessing?

Reason for question: To find out if the inspectors share common beliefs and knowledge of safety culture, if not, how do the assessments differ, what “proof” do they have that it is safety culture they are assessing?

8. When performing the assessment, what difficulties do you encounter?

Reason for question: Establish whether they consider it a straightforward or complex process. Do they feel well prepared and trained for the task? Also, during the assessment, how do the organizations react when they talk safety culture, positive or negative responses? Are the assessments supported by the organizations, or do they perhaps consider them as irrelevant and too “vague” and hard to comprehend. Do they see any benefits from the assessments, if yes, how?

9. Should we assess an organization's safety culture?

Reason for question: To establish whether the inspectors' views on whether it is important or should they only deal with regulatory compliance questions/ audits? Is it considered important, why? Do they see any benefits and good use of the assessments?

APPENDIX 4 – SCHEIN'S TEN-STEP CULTURE ASSESSMENT PROCESS

- Step One: Obtaining Leadership Commitment
- Step Two: Selecting Groups for Interviews
- Step Three: Selecting an Appropriate Setting for the Group Interviews
- Step Four: Explaining the Purpose of the Group Meeting
- Step Five: A Short Lecture on How to Think About Culture
- Step Six: Eliciting Descriptions of the Artifacts
- Step Seven: Identifying Espoused Values
- Step Eight: Identifying Shared Tacit Assumptions
- Step Nine: Identifying Cultural Aids and Hindrances
- Step Ten: Reporting Assumptions and Joint Analysis

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