RESEARCH CONFERENCE ON
SAFETY CULTURE

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PROCEEDINGS

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INTRODUCTION

In the last few years there has been an increasing focus on occupational accidents and injuries in Denmark. It is estimated that there are around 100,000 – 150,000 lost time injury accidents every year in Denmark, 70-80 of those are fatal accidents.

Historically speaking accidents have been explained by technical failures, human errors, man-machine interaction, environment, organisation and so on. But accidents rarely happen due to one single factor – often a combination of factors, such as norms, learning, attitudes, procedures, regulations, behaviour and so on, constitute the complex process that may result in an accident. From this point of view, cultural approaches to safety and accidents seem very relevant to use.

This was the point of departure for the research conference on safety culture arranged by the Centre for Occupational Health on March 21st 2001.

In realisation of accidents as complex events, we had invited speakers with different approaches to culture and safety culture to present their work and ideas. The speakers had backgrounds in sociology, anthropology, psychology, philosophy and communication.

About the proceedings
The proceedings are a collection of various contributions put forward in relation to the conference on safety culture.

Chapter 1 is a paper commenting on cultural topics in regard to the use of the concept of culture in research on workplace accidents. A-
other version of the paper was published in a Danish newspaper in advance of the conference.

Chapter 2 contains abstracts of the presentations from the invited speakers followed by the speakers' biographical details in chapter 3. Chapter 4 consist of the papers presented by Niels Olsen, Helge Hvid and Mats Alvesson on the concept of culture and analytical approaches to culture and organisations respectively.

Chapter 5 consists of the papers presented on safety culture by respectively Kathryn Mearns, Marlene Dyrløv Madsen and Henning B. Andersen.

During the conference the participants took part in two plenary discussions with the speakers. Minutes from the two plenary discussions on culture and safety culture are presented in chapter 6.

In chapter 7, The Centre for Occupational Accident Research present their research programme.

Perspectives
Only recently, has occupational accident research in Denmark received as much political, scientific and public attention as today. The conference on safety culture was the first conference on the topic in Denmark. The contributions at the conference and the comments and questions from the participants reflect great engagement and interest in cultural topics when speaking of accidents. Still, it may be concluded that there are great discrepancies when it comes to working with culture and safety culture in practice as well as in research. However, the point is not to agree upon how to use cultural approaches in accident prevention and analysis. Rather, it is a matter of gaining new knowledge from fruitful discussions based on theory as well as experience. The ground for continuing in this track has now been established.

Charlotte Baarts
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CHAPTER 1

SAFETY IN WORK – COMMENT ON CULTURAL TOPICS

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Approximately 50,000 workplace accidents are reported to the Danish Working Environment Authority every year. Approximately 5,000 of these accidents lead to absence from work. Less than half of the Danish workplace accidents are reported. The actual number is estimated to be somewhere between 100,000 and 150,000 per year. On March 21st 2001, the Centre for Occupational Accident Research holds a conference on safety culture and prevention of workplace accidents. The conference is held at the National Institute of Occupational Health in Copenhagen.

Recently, an article in the Danish magazine Arbejdsmiljø (Work Environment) vol. 12;2000 described how a construction worker died from the injuries inflicted during the mounting of a concrete panel to a three-storied building block. Concrete panels consist of armoured concrete, and often they have special lifting eyes where the crane can catch hold of the panel. However, the panel was produced in Germany where concrete panels are poured in another way. The construction worker handled the panel according to Danish safety rules,

1 Another version of this paper was published in the Danish newspaper ”Information” on March 20th 2001.
but they turned out to be insufficient. As the construction worker pulled the safety chain under the panel in order to secure it, the seven-tonnes panel broke, fell to the earth and killed the construction worker. Who and what can be held responsible for such an accident?

A Clean Working Environment by 2005
The Government has a plan of action “A Clean Working Environment 2005” - the number of workplace accidents is unacceptable and must be reduced. Danish accident statistics has stagnated but is not decreasing as in other European countries. During the construction of the Øresund link, there were 32.2 workplace accidents per one million working hours on the Danish side of the Sound whereas the Swedish side had 8.1 work accidents per 1 million working hours. That is four times as many workplace accidents among the Danes on the Øresund link! In the shared part of the Øresund project where Danes and Swedes worked side by side and performed the same tasks under the same condition, the Danes had three times as many accidents as the Swedes. It is more dangerous to be a Danish construction worker than a Swedish construction worker!

From technique to culture
The combating of workplace accidents has throughout been based on various explanatory models. In the 1920s, workplace accidents were attributed to the poorly developed and insufficient technical systems. Later, psychological factors in the individual behaviour became a topic, and the causes of workplace accidents were ascribed to the so-called human factor. The human factor covers man’s incorrect behaviour in relation to existing safety rules.

In the 1960s, explanations of accidents shifted towards awareness of the interaction between man and machine. Realizing that man does not work in a social vacuum but always in an organisational and environmental context, accident researchers in the 1970s began to study the interaction between man, machine, environment and organisation - an approach based on systems theory. Today, focus has shifted towards the meaning of culture in explaining workplace accidents.
The risk society

Our high-technological and socially complex society is often referred to as “the risk society”. In the risk society people experience threats from increasing dangers constantly. We fear nuclear war, terrorism, increasing violence, and unhealthy, damaging food. It seems that our health and safety are threatened by conditions beyond our control. But we are no longer willing to put up with destiny, when we know that knowledge on how to control it exists. The question is, however, if we can assess the complexity of the risk society? In order to prevent dangers we must be able to look into the future and assess the consequences of several complex events, which may lead to the occurrence of an accident. Even though we possess immense knowledge, it does not mean that the more we know the more we are able to control. It is more likely that more knowledge makes the world more complex and thereby more difficult to control.

The urge for control and minimization of all risks have increased the need for placing responsibility for the mistakes that may lead to the break down of systems whereby human beings are exposed to danger. Today, in research as well as in preventive work, it is emphasised that analysis of accidents should not be concerned about blaming someone for the accident. Instead accidents are regarded as very complex processes, which makes it difficult to place a responsibility. This aspect makes heavy demands on how employees, managers and the political system understand risk, and it presupposes assessments of whether the parties involved have known or could have foreseen the risk they exposed themselves or other people to.

Individuals have different approaches to which risks they worry about, and their concerns are seldom in proportion to the probability that they actually will have an accident. Therefore, it is not a matter of assessing what dangers are most alarming - in stead it is a matter of which explanatory model that will work most effectively in different societies, at various workplaces or among various workers.

Accidents are a coincidence of several circumstances, which make the event take place at one specific time affecting precisely the people and the environment it affects. But what does in fact characterise an
accident? In order to understand that, we will briefly look at an accident that many people remember, namely the Chernobyl accident.

**The Chernobyl accident**
What everybody feared happened in 1986: a nuclear leakage in one of the reactors at the Soviet nuclear power station in Chernobyl. The news spread the world over. The area was evacuated, the media showed pictures of dead plants and trees, people near the nuclear power station were all dressed in white protective clothes. Information on the wind direction was given via the Danish radio so the Danish population was able to follow the risk of fall-out. Before the accident occurred, the safety systems were regarded as being well developed, and everybody believed in them. However, the accident made people wiser. The question was then; why did the systems not work according to plan? The explanation was ascribed to the safety culture of the nuclear power station. In order to understand the term “safety culture”, we will return to the question of what characterises an accident.

**An accident – what is that?**
The term “accident” can be described as an unexpected and sudden event that results in somebody or something being injured or damaged, e.g. a workplace accident or traffic accident. At this time, it may be appropriate to distinguish between how the experts (e.g. the statisticians from the Ministry of Traffic and epidemiologists working with occupational medicine) on the one hand interpret the term accident and on the other hand how the layman as the one being exposed to the accident understands the term. In a risk society like ours, experts, e.g. epidemiologists and statisticians will interpret all accidents as unwanted and they will conduct investigations and calculations of what went wrong in order to avoid similar accidents in the future.

Most of the non-experts probably perceive accidents as characterised by a strong, unpredictable element, which is beyond the control of the individual. Despite the fact that everybody knows that accidents happen, most people do not imagine themselves to be among the unlucky ones who will be involved in an accident. In Danish there is no such division between the term accident and the term misfortune.
In Danish, the English terms “misfortune”, “bad luck” and “accident” all refer to the one and same Danish term, namely “accident”. This implies that “accident” in Danish indicates both aspects of being unlucky as well as moral judgements. If a person works at a construction site and one day stumbles over some wire and strains his ankle, then he might call it an accident in the sense of an unforeseen contingency – meaning that it is what happens and no one can be blamed for it.

One of the most famous examples of anthropological studies of accidents is from the book *Witchcraft, Oracles and Magic* (1937) by the English anthropologist Evans-Pritchard. He writes about the collapsing of granaries in Sudan. The Azande people do not find it strange that grain stores collapse - everybody knows that termites undermine the posts on which the storerooms are built, and everybody knows that this causes granaries to collapse from time to time. When it happens, it is indeed a misfortune for those involved. However, fighting against termites is fruitless and the Azande do not seek explanations in a naturalistic causal relation. On the contrary, the Azande are interested in explaining why certain individuals are struck by misfortune at a given time and place. They deal with the fateful and moral aspects of the accident, and look for the explanations in witchcraft in order to answer the questions: why me?, why now? and why here?

As culture analysts, it is our claim that such moral questions are universal in the individual’s relation to both major and minor accidents. When we hear a news reporter, reporting from an accident, say: “This as accident that can only be explained by the fact that he was in the wrong place at the wrong time”, then we are like the Azande in their search for the cause of the accident.

Accidents can hardly be separated from issues of blame and responsibility. Witchcraft as an explanatory model can be seen as a result of a legal process that determines responsibility and cause. Mixing responsibility and cause is obviously problematic. However, it indicates that there is always a human factor in the analysis of accidents, and if a person is not blamed for an accident, the moral responsibility can and will be placed elsewhere, e.g. with procedures or organisa-
tional structures. The fact that the moral responsibility must be placed is indicated in the suggestion from the Danish Ministry of Labour. The Ministry suggests that companies with a poor work environment exposing employees to danger have to pay fines.

The above examples show that there are several relevant cultural aspects of accidents. First, they illustrate that the question of placing responsibility is universal, and it is related to explanations of cause. Secondly, there is a moral and a judicial level, which can and must be studied further if we are to prevent accidents and find the cause of the accidents. Thirdly, there is also a naturalistic level irrespective of whether the accident is caused by metal fatigue or termites' undermining of a production. Finally, an economic level sets the frame for handling accidents in a society.

The role of culture

In Denmark, we will probably dissociate ourselves from witchcraft as an explanation of accidents. However, we have a societal obligation to engage in questions concerning exposure to health damaging and fatal events. In a complex society, it is not possible to point out specific factors, e.g. foolhardiness or technological errors as the causes of accidents. The efforts against workplace accidents require insight in the organisation of work, economic strategies, work environment acts, material handling etc. It is in that sense we must understand the role of culture as being relevant in understanding workplace accidents better.

Up through the 80s and 90s, it became modern to use culture as an explanation of practically everything. The use of the term has often blurred the explanations of social phenomena instead of clarifying the explanations in a sense that it was possible to take action. Culture is difficult to understand and define. If a culture has been defined once then it is very probable that the culture and its members are stuck in specific categories. Cultural analysis is not about describing the characteristics of a specific workplace culture, cultural analysis is about understanding the complex processes and social interaction that determine the occurrence of workplace accidents. This under-
standing can be obtained by using sociological and anthropological knowledge.

Culture is difficult, almost impossible, to change through controlled efforts based solely on occupational criteria such as an anthropologist, a medical doctor, a psychologist or an engineer. It might be easier to make individuals change behaviour in the short run. However, culture is more than changing the individual’s behaviour. What is the good of trying to motivate a production unit to clean up the production area if their work is organised according to specific financial and management grounds, which make it impossible to obtain a behaviour that will favour a clean and safe working environment.

We have to take responsibility for a concept of culture, which can be used to study and analyse the interaction between technique, organisational and financial structures as well as ideological (including legal) conditions, which all in all constitute the cultural impact that makes us both secure and vulnerable in various working situations. We are helpless if we isolate culture to be what happens in various situations and as a basic ‘thing’ that controls the individual’s behaviour. We should not look down on the Azande’s sincere search for witchcraft as an explanation of accidents. On the other hand we should not end up presenting a concept of culture, which is as obscure in its way of perceiving workplace accidents as the witchcraft explanation, which mixes blame and cause in a circular explanatory model – placing the responsibility implies establishing the cause.

The Azande’s search for the accident cause is however sincere even though it is not scientific. Their reaction to the accident is based on a need for action. They want to find out what lies behind the observed and the apparent naturalistic cause – the termite undermining behaviour – and they want to place a responsibility for the accident and thereby its cause in the social relations. In that sense, we may be inspired by the Azande who are not satisfied with only observing and analysing the measurable consequences (the granary collapsed when the termites had eaten a certain amount of the posts). We should, like the Azande, also look behind the immediate and apparent for explanations in the social processes and relations, which together consti-
tute the imbalance which is a condition for the occurrence and prevention of accidents.
"Culture - The Silent Meaning of Things" - The Consequence of Culture in Everyday Working Life

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Culture is generally being recognised as important in the understanding of why certain safety practices develop in organisations. The concept of culture has been used reflectively as a way of making organisations become aware of internal strengths and weaknesses when it comes to safety management. Studies, though, have mostly been concerned with culture as a measurable element that can be dealt with in an objective scientific language. In this interpretation culture is a formalised human behaviour which can be controlled and therefore changed. Although such bias opens for valuable research, it doesn’t necessarily grasp neither the everyday consequence of culture, nor the impact that culture has on the development of local safety practices. From an anthropological point of view, culture has wider implications than being a strategy you can choose, organise, or direct: Culture is understanding the unspeakable, the tacit knowledge, the silent meaning of situations and things that surround us in our everyday lives. Culture is the trickster who teases and asks uncomfortable questions. Culture is embarrassment and the sabotage of common
sense. Culture is an analytical implication. Although it is an ambitious and difficult task to make a certain workplace verbalise its own hidden life, it is also a necessity if you want to grasp the invisible text beneath the official versions of reality. One way of doing this is to analyse the tools we use, when we work: How do we conceptualise them, and how can we use them as keys to an understanding of the silent aspect of safety culture? Dealing with tools will be presented as an illustrating example of the distinct anthropological way of working with culture. The presentation also discusses anthropological concepts of culture in general, and gives a tentative guideline to wider research.
Safety culture – Building on rules or participation or participative rules?

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Who is the owner of safety? That is a critical question. Is safety owned by the security system, by the safety engineer and formalised information systems, or is safety owned by the employees, because they are creating and maintaining safety in a daily practise they control themselves? That is a crucial question.

It is a plausible assumption, that safety systems with detailed regulation of work tasks can create irresponsibility, indifference and ignorance to safety, like a strict bureaucracy can create low commitment, low flexibility and no learning.

On the other hand it is a plausible assumption, that common understanding of safety risks, open dialogues and informal safety norms created collectively will create responsibility, commitment to common safety and learning on safety prevention.

However in many cases safety and technical bureaucracy is closely linked. It seems irresponsible to give up bureaucracy in the prevention of risks in complex and dangerous production systems. It is too late to start a dialogue on fire protection when ‘the fat’s in the fire’. Then it is quite practical to have clear, bureaucratic and technical safety procedures.

Does that mean that safety in complex technical systems, must be owned by strangers, seen from the employees point of view? Or is it possible that employees also could own bureaucracies? Perhaps it is
not only the informal norms, the dialogue and the culture, the employees can own. Perhaps employees also could own formal system-procedures, and rules.

The relation between technical instrumentalism and normative commitment will be discussed in relation to a case, where the organisation is permeated with strict technical rationality and at the same time openness, dialogue and responsibility to safety in work. It is a case, where a very strict formal system is owned by the employees.
Understanding organisational culture

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The concept of culture, implying a focus on shared ideas and meanings shaping collective cognitive and affective orientations, is reviewed. It is seen as a key dimension of management and organization. The talk emphasizes some key themes in thinking culturally.

- The need to go beyond the level of the surface – behaviours and other ‘external’ aspects – and look at how groups of people relate to seemingly objective, accessible and ‘practical’ matters. The cultural subtext of business and organizational life is highlighted.

- Culture as a mixed blessing – on the one hand its usefulness for making complex interaction and coordination possible and on the other hand its constraining and repressive side. When providing guidelines and a sense of meaning and direction culture also freezes our world, prevents our imagination and reduces autonomy.

The ordering and stabilizing ingredients of culture being in tension with the dynamic and messy aspects of culture. Culture is anchored in tradition and frequently changes slowly, but there are many cultural manifestations and people in turbulent and multi-group situations move between them. Belongingness to a multiplicity of groups – organization, profession, age cohort, gender, ethnic community – forms a basis for movements between different sets of meanings in organizations.
Measuring safety culture in offshore environments?

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The concept of ‘safety culture’ has become ubiquitous in the study of risk and safety management in modern-day high hazard, high reliability industries. Definitions of the concept abound and a plethora of psychometric scales have been developed to measure ‘safety culture’ or ‘safety climate’ across a range of industries in different countries. Unfortunately, despite this flurry of research activity, a number of fundamental questions remain about the nature and utility of the safety culture/ safety climate constructs. These include the models, which could be used to characterise them; their relationship to other aspects of safety management and safety behaviour and their relationship to safety performance indicators such as accident and incident rates.

This paper presents the results of a recent study conducted in the UK offshore oil and gas industry, which attempted to measure human and organisational factors in offshore safety. The framework applied stemmed from the International Atomic Energy Advisory Committee’s definition of safety culture (1991) and Kopelman, Guzzo & Brief’s (1990) model of culture/ climate in productivity. Questionnaires were developed to measure the ‘safety climate’ (‘interpretive’ approach) and the ‘health and safety management system’ (‘functionalist’ approach) on 13 offshore installations operating on the UK Continental Shelf. For nine of these installations data was collected in both 1998 and 1999, facilitating the study of changes in the safety climate and safety management system over time. The relationships between the results of the questionnaire surveys and two ‘outcome’ measures, i.e. the official accident/ incident rates and the safety cli-
mate respondents’ self-reported accidents on the installation were also investigated.

The results are discussed in the context of what health and safety management practices appeared to have the most impact on accident and incident rates, what features of safety climate appeared to distinguish between ‘high accident rate’ and ‘low accident rate’ installations, what specific H&S management practices were evident on the ‘low accident rate’ installations and finally, what these results tell us about the nature of safety culture in the UK offshore industry, if anything?
Safety culture requires a reporting culture – barriers and opportunities

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In safety critical domains such as aviation, air traffic control, shipping, and medicine the organisations and companies involved typically require of their employees that they report near-misses and incidents that might have led to serious accidents. Indeed, some companies and organisations seek to encourage employees in reporting their own errors while, at the same time, they are known to punish errors that lead to breach of "safety limits". So while employees may well appreciate that their organisation and their colleagues might be able to draw valuable lessons from incidents, they are reluctant to voluntarily expose themselves to disciplinary sanctions.

It is therefore a major theme in relation to organisational learning in safety critical domains to develop what is sometimes referred to as a "blame-free" climate. That is, a safety culture and climate which succeeds in motivating employees to report critical situations that may be caused by human error errors and even negligent behaviours.

In our presentation we describe, on the one hand, the rationale behind the development of confidential incident reporting systems and, on the other, the ethical and organisational dilemmas that arise when seeking to introduce incident reporting in an organisation. Based on Reason's ideas of the components of a safety culture, we suggest that the development of a professional ethics is a feasible way of attaining a proper balance between safety and justice.
CHAPTER 3
BIOGRAPHICAL DETAILS

NIELS OLSEN

- Major in anthropology from The University of Copenhagen, 1998.
  Thesis: The cultural conflicts between developers and users of computer artefacts
- Qualitative researcher, The National Board of Health (1998-99)
- Qualitative market researcher, Tranberg Marketing Recommendation 1999-2000
- Project Manager, The Danish Academy of Technical Sciences (2001 - )
- Columnist, Information (1999-)

HELGE HVID

Associated professor at Roskilde University, Department of Environment, Technology and Social Studies.

Helge Hvid is a sociologist with special interest in the relations between technological and organizational development, working conditions and industrial relations. He has undertaken research in occupational health and safety and the regulation in this area. In the last ten years his research interests have mainly been related to the concept of 'the developmental work'. In Denmark and other Scandinavian countries 'the developmental work' has been the headline for comprehensive efforts among labour unions, state agencies and other organizations to create a positive relation between new production concepts emphasizing flexibility and quality on the one hand and improving
working conditions on the other. He has contributed to the scientifically foundation of the concept of ‘the developmental work’.

MATS ALVESSON

Mats Alvesson, Lund University, Sweden, has worked with cultural research on organizations for a long time. He has published several books on the topic, including Corporate Culture and Organizational Symbolism, with PO Berg (de Gruyter 1992) and Cultural Perspectives on Organizations (Cambridge University Press 1993). His research interests include organizational culture, critical theory, qualitative methodology and professional service/knowledge-intensive work and organizations. Recent publications include Reflexive Methodology (with Kaj Sköldberg) and Doing Critical Management Research (with Stan Deetz), both published by Sage 2000 and Understanding Organizational Culture, Sage (in press).

KATHRYN MEARNS

After graduating with an MA Honours in Psychology in 1979, Kathryn Mearns spent eight years in Norway where she completed her PhD in Biology at the University of Oslo (and learned to speak Norwegian!). On returning to her native Aberdeen in 1990, Kathryn worked as a Research Fellow at Robert Gordon University Business School before returning to her alma mater in April 1997. For two years she was employed as a Research Fellow at the Department of Psychology, as part of the Industrial Psychology Group, before being appointed as Lecturer in Industrial/Organisational Psychology in June 1999. Her main area of research has been risk perception and safety attitudes in the offshore oil industry, which has been jointly funded by the industry and the UK Health and Safety Executive. The research team has already completed three studies in this area ‘Risk Perception and safety in the offshore oil and gas industry’ and ‘Human and Organisational Factors in Offshore Safety’ and ‘Factoring the human into safety: Translating research into practice’. Her research interests encompass many aspects of applied psychology in-
including human factors in industrial safety, safety culture, risk perception and psychological aspects of health and fitness. Kathryn is a member of the International Association of Applied Psychology (IAAP), the American Psychological Association (APA) and the Society for Risk Analysis (SRA).

MARLENE DYRLØV MADSEN

- Graduate student (Philosophy, Communication) Roskilde University.
- Research interests: Studying ethical and organisational dilemmas in High Reliability Organisations; dealing with moral aspects of responsibility, accountability, blame, guilt, punishment, justice and the problem of 'moral luck'.
- Planned Ph.D. thesis project on theories of High Reliability Organisations and themes derived from the literature on Safety Culture.

HENNING B. ANDERSEN

MA (mag.art., philosophy). Senior scientist, Risø National Laboratory

Education:
Butler Univ. (Indiana, USA) 67-68; mag.art (philos.) Copenhagen Univ. ,1976; Research Scholarship Univ. Copenhagen (Oxford Univ., Corpus Christi College) 1997-79.

Employment:
Assistant teacher, Univ. Roskilde, Univ. Copenh. (philos. / methodology of science) 1980-83. Risø National Laboratory: Research assis-

Research areas:

- Human Factors aspects of safety critical domains (aviation, maritime operations, air traffic control) focused on analysis and evaluation of operator performance and factors that affect performance and outcome. Recent projects include:
  - Questionnaire bases surveys of operator (seafarers, railway operators) perceptions of safety factors (safety climate/culture);
  - Development of measures of Team Situation Awareness;
  - Taxonomies of human errors;
  - Validation of human error taxonomies;
  - Analysis of pilot's visual attention during normal and abnormal take-offs
  - Transfer of training of re-configurable part task pilot trainers
  - Requirements to incident reporting systems and operator perceptions.

About 50 publications in the area of Human Factors.
CHAPTER 4
PAPERS ON CULTURE

Culture – the silent meaning of things

Niels Olsen
Academy of Technical Sciences

The development of the concept of culture
Culture is a word which has been incorporated into the everyday language. It is not some sacred treasure that belongs to anthropologists or sociologists alone. Today we talk about traffic culture, reading culture, office culture, coffee culture, eating culture, etc. - and of course: Safety culture. All different kinds of human practice, or human behaviour, or groups of people who accidentally share interests, all are being categorised as the same - as culture.

In the old days culture was something you found on a remote island in the Pacific Ocean. We are talking the 1920's and 30's. Anthropologists described these exotic and remote cultures in rigorous and functionalistic models. Models, where all institutional components nicely fitted together - from kinship structures to economy and religious cosmologies. All connected in one encompassing system.
This old-fashioned concept of culture has lost importance with the emergence of discourse analysis, and symbolic analysis, and the whole scientific reorientation towards the West. Culture has changed from being an empirical fact to being an analytical implication. Culture is an analytical tool, as well as it can be understood as a perspective which can help us deepen our understanding of human interaction and conceptions of reality. Culture is not a landscape with black spots that can be filled out by the cultural researcher. Culture is not countable. Instead, we work with the interpretation of culture, the impact of culture, or the consequence of culture. Culture is what happens to you, while you are busy making other plans.

A case study
When working on big industrial settings, it often happens that electricians are hit by electricity. According to official Danish regulations, an electrician who is hit by electricity while working, must be brought to the nearest hospital. Here he is to rest for 24 hours in order to be checked for any kinds of health related problems (especially concerning the heart). Each electrician is obliged to inform to his superior, whenever this kind of accident happens.

These kinds of regulations are made to secure the health of the employee, as well as it is a question of insurance and responsibility on part of the employer. The regulations are there to increase safety in the specific work setting. Reports are being regarded as part of a system of registration which intends to improve working conditions and working rights. All these regulations sound very rational. They represent good intentions. They are part of an established learning process that aims at maximising safety within the organisation.

The only problem is, that no electrician with just a bit of professional, and masculine, self esteem would ever dream of reporting such a thing to a higher organisational level:
• Who wants to stay 24 hours in a hospital for what is a part of the job, a necessary risk, a banality that happens almost every day?
• Who wants to worry about one's own health conditions, if you can avoid it?
• Who wants to admit having made a professional failure?
• Who wants to take part in another bureaucratic procedure?
• Who wants to waste time, when you are already working under a heavy time pressure?

These are examples of the underlying rationality of the non-reporting of accidents. The consequence is silence, maybe even gnashing of teeth, but silence, and that's it. And that is culture.

The example tells us that:

• There is a fundamental clash between rules and practice.
• There's a difference between agendas and interests of the people involved.
• Different forms of rationality exist simultaneously.
• There is a competition going on for legitimacy, values, and common sense.
• Safety and safety culture is being defined according to the position that you speak from.

All this might sound rather trivial, a banality. However, it has a major impact on the way safety practices develop for the electricians. In this case culture is out of reach and out of control. What we see is culture as a trickster who plays around with regulations and superiors and the overall rationality, which is ingrained in this 24 hour-hospital-rule. It defines culture as that "thing" which happens to you while you are busy making other plans. We have to take this cultural silence seriously. Take it for granted, because it defines practice. It motivates behaviour. It rules the invisible levels within organisations.
Some basic concepts of culture
Culture has been defined an endless number of times - so often that it has lost its own power of explanation. If we take some of the most common definitions of culture, you can define culture as:

- Those ideas, habits, values, rules, and norms that people inherit from one generation and pass on to the next
- Customs or a people's 'way of life'
- A system of meaning transcending individual members of the society
- The frame of meaning in which social life is being reproduced

The overall problem with all these different definitions is that they have their own aesthetic, encompassing form as their most valuable contribution to the understanding of what culture is all about. Therefore, I would like to take a somewhat deeper look at three specific concepts which I find particularly interesting and much more useful, when we analyse and try to understand safety culture and safety practice:

- Tools (German philosopher, Martin Heidegger)
- Tacit knowledge (American anthropologist, James P. Spradley)
- Habitus (French sociologist, Pierre Bourdieu)

These three concepts are ways of gaining other perspectives when working with safety culture. They all relate to the example with the silent electricians:

Tools
One way of understanding safety culture is by looking at the equipment that we use. Tools are "equipment for working". These kinds of working equipment could for instance be the computer-artefacts that surround us today. It could be the smith's hammer. But it could also refer to the methods we use in order to solve a problem. Equipment is also a way of thinking.
Heidegger talks about technology as a mode of revealing. Tools are "ready-to-hand" when they are being used as already internalised practices.

But the knowledge of how to use tools is difficult to translate or communicate to outsiders. An experienced craftsman probably won't be able to explain why he uses his tools the way he does - he just uses them. His tools are revealed to him on an everyday basis. He just can't verbalise how it happens. Practical mastery of the tools is ingrained in his body, they are "ready to hand" - not in his mind, and not in speech. Working with tools is an excellent example of how culture becomes the silent meaning of things, because it is what happens when we try to reveal and understand safety culture: It is wanting to speak the unspeakable. It's assuming that all kinds of knowledge is subject to verbalisation and rational transmission. It is the expectation of getting straight answers when you ask straight questions.

Looking at tools as a philosophical concept gives us valuable input as to why there is silence in the industrial setting, when an electrician has been hit by electricity. Because practice is not something you speak of. Practice is something you do. And practice is also something that can be revealed to you, if you manage to ask the right questions and the good questions.

**Tacit knowledge**

The American anthropologist James P. Spradley has a more down to earth description of the tool perspective. In his opinion, culture refers to acquired knowledge that people use to interpret, experience and generate social behaviour. Spradley expands this definition by saying that a large part of culture consists of tacit knowledge. There are certain things you can talk about, and others you cannot. We have explicit knowledge and we have tacit knowledge.

What Spradley refers to has to do with the methodological implications of gaining cultural insights. Culture is transmitted
through language. Culture is experienced in casual comments, in the everyday life, when you hang around, observe, and do the small talk. You have to become familiar with this, if you want to reveal for instance the electricians' rule of silence - the reasons behind his reluctance to report everyday accidents.

For a scientist brought up in the natural sciences this might not sound like a very sensible way of working. He would probably be dissatisfied by the unsystematic approach, or by the fact that you don't operate with a definite hypothesis which can be verified. But how can we make informants illustrate cultural reality and not just an official representation of that reality?

The methodological problem is that when people integrate a certain cultural practice in their working lives, reflections on that practice decreases, becomes harder to express. You can't communicate cultural practice in a questionnaire, because in questionnaires the answers are always - more or less - limited by the questions asked.

It is important here not just to interview key informants who will only give you their version. Therefore you must: Talk to the man on the floor! Use everything from chat to gossip and freudian slips of the tongue to complete or contest the picture you have drawn in your statistical curves and schemes! Make open questions! Make people talk about issues important to them! Experience culture from "the native's" point of view!

The ethnographic approach with participant-observation, with its fluidity, improvisations and chaotic contextualism, offers the necessary mix of personal empathy and objective distance to get a closer look at the true spirit of culture. We need to hear those low voices not corresponding with official cultural strategies. Culture exposes itself, and is revealed, in small incidents that pass on so fast, we hardly recognise them.
Habitus
Pierre Bourdieu's thoughts about the habitus bring Spradley's concept of the tacit knowledge a bit further. The habitus is another, more radical, version of the tool perspective and tacit knowledge. The habitus is best described as a social and cultural competence constantly being produced and reproduced through practice in everyday social interaction. Habitus is the habits which we have integrated in the stomach - not the head.

Bourdieu talks about systems, schemes and principles for action. He talks about acquired dispositions that generate and organise the way we act and think. At the end of the day, he talks about the reasons why we have a thing called cultural practice. Habitus is body-knowledge - not rational knowledge-in-the-head. Habitus is learned through the body. And what is learned through the body is not something we have, but something we are. Bourdieu interprets the habitus as learned ignorance - a mode of practical knowledge not comprising knowledge of its own principles. The overall problem with the habitus is that people don't know enough about why they act the way they do. Their actions contain much more meaning than they are aware of. Habitus is the cleverness that does not recognize itself as such.

The habitus is important in our current discussion of safety culture, because it gives us a clue as to why different cultural practices or agendas exist simultaneously, and why it is hard for cultural agents to communicate habitus to outsiders. If we want to take our knowledge of local safety culture further, we need to work more intensely with the habitus of the people we study.

Anthropology used on safety culture
What is it that anthropology can contribute to in the ongoing debate about safety culture?

I find five dimensions important:
1. We have to sabotage consensus and common sense - what we imagine we agree upon when it comes to safety and the definitions of what is safe, and what is not safe.

2. We have to find the different cultural agendas that compete for legitimacy, when it comes to defining what safety and safety culture is all about.

3. We have to orchestrate these different cultural agendas in order to construct viable safety practices that actually make a difference for the people involved.

4. We have to make informants reveal body knowledge, in order to gain inside information of values, rules and taboos.

5. We have to find cultural fragments by participating in everyday working life. Later on we must put these fragments together into puzzles that realistically mirror the cultural aspects involved in safety management.

Working with culture is an obligation to keep on asking open questions about the things we take for granted. Understanding cultural silence is perhaps the key problem to all kinds of organisational analysis because it is a time consuming activity. When we do research, we want quick results, fast products, and the kind of data that can be counted in numbers or curves. We want to prove. We want strict hypotheses and the opportunity to test and verify reality.

Qualitative research, on the other hand, is building hypotheses as you go along. It is testing in-the-making. It is of a highly experimental nature, where the process has the same importance as the end result. Quantitative research produces important texts and is valuable, as it gives you basic knowledge which the qualitative investigations do not. It covers other fields, gives you different kinds of data. But we have to be more ambitious than that. We have to experience everyday working life with the eyes of our informants: Through participant observation, and by building up confidence with the people whose worlds of knowledge and practice we want to enter.
We have to be aware of the fact that culture is not always the result of a rational choice. You cannot always choose to have a specific kind of culture. You cannot draw a parallel between culture and the creation of rational safety logic, or safety politics, from top to bottom in organisations. The example of the silent electrician illustrates that point: What will be the destiny of such formalised intentions of safety, if the electricians choose something else?

We have to recognise the simple fact that culture cannot be discovered like you discover biological cells or DNA structures. Culture discovers itself if you manage to deal with it as an analytical implication - not an empirical fact.
Safety culture – building on rules or participation or participative rules

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In this paper, the concept of safety is approached in terms of participation more than culture. Participation and culture are closely related, but are, nevertheless, two different concepts. The concept of culture focuses on the stable elements of the organisation, which are related to meaning, values and symbols. The concept of participation, on the other hand, tends to focus on changes, and the role of different agents in the process of change. Culture creates possibilities or obstacles for increased participation, and a high degree of participation will have a profound influence on culture. With participation as the point of departure this paper will give an outside point of view on the concept of safety culture.

Fighting safety paradigms
‘Safety culture’ is a concept of our time. In the 1980s and the first half of 1990s the focus of interest was safety systems, and not safety culture. Now safety culture has a great deal of appeal. The concept ‘safety systems’ is part of what has been called the post modern turn – leaving the road of rationality, technical instrumentality and planning, and turning to the track of local social relations, local practises, meanings, norms and values. The interest in safety culture is part of a bigger contest between two ‘paradigms’ and is not only related to safety management and environmental management. The concept of ‘safety culture’ supports the paradigm of social and cultural relations at work.
Two paradigms of safety

<table>
<thead>
<tr>
<th>Technical paradigm</th>
<th>Social/cultural paradigm</th>
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<tbody>
<tr>
<td><strong>Characteristics</strong></td>
<td><strong>Characteristics</strong></td>
</tr>
<tr>
<td>• Causal relations</td>
<td>• Safety is based on common values and common understandings</td>
</tr>
<tr>
<td>• Expert orientation</td>
<td>• Safety is developed through collective learning</td>
</tr>
<tr>
<td>• Building formal procedures</td>
<td>• Safety is achieved when the individuals, on their own initiative, are doing the right things when the unforeseen is happening</td>
</tr>
<tr>
<td>• Striving towards predictability</td>
<td></td>
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<tr>
<td><strong>Weaknesses</strong></td>
<td><strong>Weaknesses</strong></td>
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<tr>
<td>• Destroying commitment</td>
<td>• The necessary communication is overwhelming</td>
</tr>
<tr>
<td>• Not capable to handle unforeseen situations</td>
<td>• The safety system is invisible =&gt; difficult to evaluate and improve</td>
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<tr>
<td>• An informal safety system will rise</td>
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The two paradigms are in competition. The technical paradigm suggests that formal safety rules and safety procedures govern the reliable organisation. Upholders of the social/cultural paradigm believe that the reliable organisation is governed by common values giving room to the expression of concern and anxiety, and providing opportunities for collective learning on safety. Furthermore a third dimension, or paradigm, could be referred to: the paradigm of politics. According to that paradigm, safety depends on political priority. Does management pay attention to safety? Are resources allocated to safety? Do the employees’ representatives pay attention to safety, or is the wage the only issue, which is given priority?
However, all three paradigms have their weaknesses, and it is more fruitful to see them as complementary instead of exclusive. A reliable organisation is not characterised by either instrumental rules, or values receptive to uncertainties, or the prioritising of safety by the management. A reliable organisation combines the three paradigms and their different rationalities: instrumental oriented rules and procedures, high political priority of safety that gives power behind safety, and values open for uncertainties, doubt and reflections.

Combining different rationalities is analytically difficult, but in practice it is what is going on every day in every productive organisation. In recent years we have tried to overcome this analytical problem by developing an approach to studying firms which emphasises the importance of the relation between three different subsystems, distinguished by different rationalities (Hvid and Møller, 2001).

**Figure 1**

As illustrated by the figure, the firm has three subsystems: the production system, the political system and the value system. In the production system, material and immaterial production is carried out. This system is and must be characterised by instrumentality. In the value system, both good and acceptable behaviour and what is bad and unacceptable behaviour are defined. Who are friends and who are enemies etc. The value system is the arena of normativity. In the political system, the goals of the firm are decided (and the political priority of safety determined), and resources are distributed (money and man power). Her power dominates rationality.
One way to improve safety and reliability in the organisation is to improve participation in all three sub-systems. However, participation has quite a different character in the three subsystems and they do not necessarily work together. But to illustrate the possibilities of participation, I will refer to an extreme case where a high degree of participation united an extremely rule oriented safety system with a high degree of commitment and openness to safety and a strong power position for the safety stakeholders.

**Partisafe Medical – the good case**
Partisafe is a pseudonym for a medical firm. It is quite small, employing approximately 150 workers, half of which are employed in production and the remainder in the laboratory or in the office. A big multinational medical company owns the firm. The firm has its own plant, its own management, its own finance, but the firm is also highly integrated into the mother company.

Partisafe functions under special conditions. It is starting a new line of production, of which the mother company has great expectations. Consequently, there is no shortage of money in the firm, but there is an extreme shortage of time. For instance, if a team in the firm feels it would be more convenient with a little more manpower in the team, they just ask for it, and they will get it. If someone asks for more computer power or other equipment he or she will have it. At the same time many employees are working over time and some are feeling stressed by the heavy workload.

An other specific requirement on the firm is the heavy burden of safety procedures and very high demands concerning documentation. There must be written procedures for every productive activity, and all activities must be documented. If something unforeseen is happening, it must also be documented. The medical authorities require this highly formalised production system. A high degree of formalisation is unavoidable and it is a very time-consuming requirement that the firm has to fulfil.

The safety system is integrated in the, generally, highly formalised and documented production system. The safety system is in extreme
characterised by the technical safety paradigm. However, in one respect it is different from the technical paradigm as it was described above. Here the safety system is not expert oriented, but extremely participative. All production workers are organised in teams, and it is these teams that develop and maintain all rules and procedures. They put the rules and procedures in the general information system, they get first hand experience of the procedures, they discuss the appropriateness of the rules, and they discuss which improvements of the rules and procedures that would be appropriate. For instance, all have an obligation to inform the safety representative if there has been an incidence which could have led to an accident of any kind. Then it is discussed collectively how to prevent this incident happening again. If it is appropriate the rules and procedures are changed.

| Safety in the production system: very exact and technical sophisticated rules and procedures, but all made by and “owned by” the employees. |

There is quite a lot of power behind safety in the firm. The only manager in the company is the general manager. There is no supervisor or other kind of manager between the general manager and the employee at floor level. The only persons with special positions are the shop steward and the safety representative – both elected by the employees. The safety representative works almost full time with safety, and he has a very central position in the firm’s power system. The safety representative and the manager have decided that no risks which are already known in the mother company will be accepted at Partisafe. This strategy has been successful until now, while the firm is seen as a showcase for international corporation to prove that it is possible to avoid all known risks in a chemical plant like this. That position gives even more political power to the safety representative.

| Safety has a strong position in the power system, and it is easy for employees to influence the decisions which influence safety. |

To support the informal dialogues there are several rooms and places for more or less official dialogues. There is a cantina, which is also used for formal and informal meetings. In the production area there
are several places with a coffee machine, some newspapers, chairs and tables. Here the employees can take their pauses when they want. Nobody controls how long he or she is sitting. Once a week, the whole personal have a one hour meeting without the manager where they can discuss good and bad things and what could be done. After one hour, the manager joins the meeting. He will provide information, and he will hear what complaints and what suggestions there are. This has created a culture of open dialogue, where all opinions can be discussed. Safety is one issue often discussed in the informal value system.

Safety plays a significant role in the value system, characterised by open dialogue, care and mutual respect.

The lesson from the case
The case shows that it is possible, under the right conditions, to unite a highly formalised safety system with reflective and learning oriented social relations and a political system where there is room for different interests. A high degree of participation is the factor that unites formalisation, reflection and political priority. The relation is illustrated in figure 2.

Figure 2

![Diagram of the relationship between production system, value system, and political system.](attachment:figure2.png)

It is obvious that Partisafe is an extreme case. Only very few firms are confronted with the same demands, and have the same opportunities. However, it is not only the requirements that have determined
the participative approach to safety. Other firms under the same conditions in the medical industry do not choose participation as the general principal of managing the organisation. Both in the medical industry and in other sectors, participation is a much undervalued instrument for improving safety.

However, participation is often an instrument with functional difficulties. There can be strong limitations due to the organisation of the production. There can be strong power resistance against safety, and the culture can be an obstacle to safety. It is necessary to work with all these obstacles and hindrances to create a participative, reliable and safe work place.
Understanding organisational culture

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This paper is based on excerpts from chapter 1 and 8 of Mats Alvesson’s forthcoming book Understanding organisational culture (Sage 2001)

The concept of organizational culture

(...) 

The meaning(s) of culture

A glance at just a few works that use the term 'organizational culture' will reveal enormous variation in the definitions of this term and even more in the use of the term 'culture'. 'Culture' has no fixed or broadly agreed meaning even in anthropology (Borowsky, 1994; Ortner, 1984), but variation in its use is especially noticeable in the literature on organizational culture. This is partly related to strong differences in the purpose and depth of books and articles. But also the broad variation of scientific disciplines and research orientations involved in organizational culture studies makes the field very heterogenous. The concept of culture seems to lend itself to very different uses, for example, as collectively shared forms of cognition, values, meanings, beliefs, understandings, ideologies, rules, norms, symbols, emotions, ex-

2 Perhaps the most important aspect of this variation is the philosophical and meta-theoretical assumptions that guide approaches to organizational culture studies. The most important distinction is between an objectivist-functionalist view of social reality and an interpretive approach (Burrell & Morgan, 1979; Smircich, 1983a). There are widely differing views on whether ‘culture’ refers to real, objective phenomena ‘out there’ or if it is a framework for thinking about certain aspects social world. These result in very different understandings of culture that are only to a limited extent reflected in differences in its formal definition.
pressiveness, the unconscious, behaviour patterns, structures, practices, etc. all of which may be made targets to study. Of course, culture is not unique in this way. Actually, most if not all significant concepts in organization studies and social science tend to be accompanied with a variety of different meanings and definitions (Palmer & Hardy, 2000).

Culture is, however, a tricky concept as it is easily used to cover everything and consequently nothing. That certain researchers are interested in 'culture' - or at least use the term - does not mean that they have very much in common. Frequently 'culture' seems to refer to little more than a social pattern, e.g. it refers to surface phenomena rather than explores the meanings and ideas behind them. It could therefore be advocated that in many cases the term should be abandoned in favour of something like 'informal behaviour patterns', 'norm system', or simply 'social pattern'. Many people referring to culture seem to do so in a very vague way and it is important to use the concept without loosing focus, direction and interpretive depth.

I use the term 'organizational culture' as an umbrella concept for a way of thinking which takes a serious interest in cultural and symbolic phenomena. This term directs the spotlight in a particular direction rather than mirroring a concrete reality for possible study. I agree with Frost et al.'s (1985: 17) 'definition' of organizational culture: 'Talking about organizational culture seems to mean talking about the importance for people of symbolism - of rituals, myths, stories and legends - and about the interpretation of events, ideas, and experiences that are influenced and shaped by the groups within which they live.' I will also, however, take organizational culture to include values and assumptions about social reality, but for me values are less central and less useful than meanings and symbolism in cultural analysis. This position is in line with the view broadly shared by many modern anthropologists (especially Geertz, 1973). Culture is then understood to be a system of common symbols and meanings. It provides 'the shared rules governing cognitive and affective aspects of membership in an organization, and the means whereby
they are shaped and expressed' (Kunda, 1992:8). Culture is not primarily 'inside' people's heads, but somewhere 'between' the heads of a group of people where symbols and meanings are publicly expressed, e.g. in work group interactions, in board meetings but also in material objects.

Culture then is central in governing the understanding of behavior, social events, institutions and processes. Culture is the setting in which these phenomena become comprehensible and meaningful.

Meaning refers to how an object or a utterance is interpreted. Meaning has a subjective referent in the sense that it appeals to an expectation, a way of relating to things. Meaning makes an object relevant and meaningful. In a cultural context, it is socially shared and not personally idiosyncratic meanings, that are of interest. I will give an example. A formal rule in a company says that factory management can only decide on investments up to 25 000 £, larger investments must be sanctioned by a higher authority. This can be seen as a simple, objective structural arrangement. The exact meaning of the rule, however, calls for interpretation and here culture enters. Various meanings are possible: a) it is under all circumstances intolerable and leads to automatic dismissal that a factory manager makes larger purchases or investments; b) 'investment' can be interpreted or divided up in different ways and 25 000 £ is a rough guideline rather than a precise figure; c) as a general principle one should consult top management before significantly or without strong reasons exceeding this level, etc. Another option is that this rule is read and applied/responded to with much variation, it may be seen as a strict guideline for younger factory managers and for managers of units seen as performing below or around average, while experienced managers heading high-performing units are not expected to obey the rule at all. A rule differs in how strictly and uniformly it is interpreted and taken seriously due to the cultural context given the rule its exact meaning. We can imagine different organizational cultures in which the same rule is given
very different meanings and thus leads to different behaviours and consequences of the rule.

In a cultural context it is always socially shared meanings that are of interest, not so much highly personal meanings. Individuals may be more or less authoritarian-bound and obey with rules or they may dislike and rebel against bureaucracy – they may as individuals see rules as indicators of order and rationality or as a straitjacket and an obstacle to the exercise of judgement and responsibility. Individual meanings are certainly important and they may vary considerably. But a cultural understanding concentrates not on individual idiosyncrasies: it is the shared orientations within an organization or another group that is of interest.

A symbol can be defined as an object – a word or statement, a kind of action or a material phenomenon – that stands ambiguously for something else and/or something more than the object itself (Cohen, 1974). A symbol is rich in meaning – it condensates a more complex set of meanings in a particular object and thus communicates meaning in an economic way. Occasionally, the complexity of a symbol and the meaning it expresses calls for considerable interpretation and deciphering. People have private symbols, but in an organizational context it is collective symbolism that is of most interest. ³

When thinking about culture it is important to bear in mind what culture is not, i.e. what a cultural perspective does not focus on. Making a distinction between culture and social structure is helpful here. Culture is regarded as a more or less cohesive

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³ Sperber (cited by Gusfield & Michalowicz, 1984: 421) interprets as symbolic 'all activity where the means put into play seem to be clearly disproportionate to the explicit or implicit end . . . that is, all activity whose rationale escapes me'. As Gusfield and Michalowicz note, what is symbolic for one person may be non-symbolic for another. Still, I think it is wise to use 'symbol' as a conceptual tool for making sense of the hidden or latent meanings of an object.
system of meanings and symbols, in terms of which social interaction takes place, while the social structure is regarded as the behavioural patterns which the social interaction itself gives rise to. In the case of culture, then, we have a frame of reference of beliefs, expressive symbols and values, by means of which individuals define their environment, express their feelings and make judgements. In the latter case, that is to say at the social level, we have a continuous process of interaction. As Geertz (1973:145) states, culture is the creation of meaning through which human beings interpret their experiences and guide their actions, while social structure is the form which action takes or the network of social relationships which actually exists.

Cultural analysis then does not subordinate social conditions to culture, nor does it regard culture as a reflection of an overall social structure, instead it makes a clear analytical distinction between the social and the cultural system. The latter may be analysed in relation to the former, but clearly the culture researcher’s primary task is to interpret culture, i.e. symbols and meanings.

This means that culture and social structure represent different abstractions of the same phenomenon. Culture describes social action as depending on the meaning it has for those involved, while social structure describes social action from the point of view of its consequences on the functioning of the social system. This understanding permits treatment of the tension arising between culture and social structure. A reasonable assumption is that culture and social structure are not necessarily in a well-integrated and harmonic relationship with each other, i.e. not best defined or analysed in terms of integration and coherence. Discontinuity between social and cultural structures can occur, for example, when there is a change in formal rules or routines which is not matched by a change in cultural patterns (Fombrun, 1986). Studying the cultural therefore is not the same as studying social structure. A significant problem in much writing under the rubric of culture is that it lacks sufficient focus and depth in the exploration of meaning and symbolism, instead it drifts to a
more ‘superficial’ study of social patterns: structures, behaviours and relations.

Despite the emphasis on culture set forth by Geertz and others as an ideational phenomenon, cultural analysis is, of course, not limited to studying the shared meanings and ideas of people or forms of communication with a strong symbolic element, such as ‘exotic’ rituals. Cultural analysis may be applied to all kinds of social phenomena. The point is that culture research deals with abstractions of a certain type, which involve meanings anchored and transmitted in a symbolic form. Cultural meanings guide thinking, feeling and acting. It is thus difficult to argue that culture is not important. It may be argued that culture denotes something too vague and broad to be very useful, but cultural analysis is more delimited and precise as it is directed at specific phenomena: how people think strategically, how they interpret and respond to the acts of a superior, how they understand the customer and give meaning to a label such as ‘market orientation’.

An illustrative example on the significance of cultural meaning is provided by Olie (1994) who studied mergers between Dutch and German companies. Different orientations and understandings of the decision process were profound. The German managers saw meetings as instruments for decision-making, while the Dutch managers tended to perceive them as platforms for exchanging ideas and information as a preparation for further action. In the eyes of the German managers, Dutch meetings were time-consuming and ineffective. The Germans found it even more frustrating that once a common agreement was finally reached, the Dutch tended to treat it in their own way and behave accordingly if they felt that flexibility was called for. For the German managers, a decision was seen as something one should strictly stick to. All this overlapped with an authoritarian leadership style in the German company and a preference for participative management in the Dutch camp. Here we can see how the entire decision-making process from preparation to implementation to a large extent reflects cultural beliefs and mean-
nings about what is rational, natural and effective. This example contrasts two different sets of meanings around decision-making, but also in a ‘one-culture-company’ decision-making never takes place in a purely rational manner. The example thus illustrates not only problems with mergers and cross-national interaction, but also the cultural nature of decision-making.

(...)

Cultural Change and Conclusions

Reminder of the ambitions of this book

(...)

Throughout the book I have emphasized some key themes in thinking culturally. Perhaps the basic one concerns the need to go beyond the level of the surface - behaviours and other ‘external’ aspects - and look at how people relate to seemingly objective, accessible and ‘practical’ matters. The crucial aspect of leadership is not to do things in any objectively ‘correct’ sense - what matters is how people interpret and relate to the actions. A second basic theme is the dual nature of culture - on the one hand its usefulness for making complex interaction and coordination possible and on the other hand its constraining and repressive side. When providing guidelines and a sense of meaning and direction culture also freezes our world, prevents our imagination and reduces autonomy. A third vital theme concerns the dynamic and messy aspects of culture. Culture is anchored in tradition and frequently changes slowly, but there are many cultural manifestations and people in turbulent and multi-group situations move between them. Belongingness to a multiplicity of groups - organization, profession, age cohort, gender, ethnic community - forms a basis for movements between different sets of meanings in organizations. A fourth theme concerns the mul-

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4 I am here talking about leadership, i.e. action aiming at influencing people. The situation is different in ‘less social’ and more technical areas, e.g. doing financial investments or obeying legislation.
tiple levels of culture. Cultural meanings emerge, are shaped, maintained and change in specific interactions between people at the micro-level. But also larger forces - societal cultural traditions, changes of Zeitgeist, mass media impact - strongly affect cultural manifestations at the organizational level. Thinking culturally on a multitude of levels is thus called for, also when one is interested in workplace culture it is useful to bear in mind that this is not a cultural island.

(...) Cases of cultural change in very large organizations often includes other problems. To illuminate top management efforts to manage or change an organization of several thousand people, belonging to a large number of different groups, calls for a rather broad-brush approach. It is very difficult to say something of what actually happens and how meanings are transformed as this take place in a variety of different specific contexts. Instead organizations are treated more or less as unitary wholes and almost exclusively from a top management perspective. The relationship between managerial initiatives and the reactions of subordinates are mainly external and mechanical. It is as if nothing active takes place in the minds of, and communication between, employees in interpreting managerial interventions. A simple stimuli-response thinking is common: management makes an intervention, the organization responds. It is acknowledged that there are sometimes inertia and resistance that account for some variation, but an overall standard response is typically emphasized. Brown (1995) for example, reports a mini-case of ‘culture change at Nissan’. Nissan, one of the world largest manufactories of cars, ran into problems in the beginning of the 80.ies, mainly due to economic causes, but to some extent also from deteriorating labour-management relations. A new CEO put forward the motto that ‘management and the labour union should both discharge their duties properly’. He encouraged a downplaying of hierarchical relations and a stronger focus on the marketplace. He made attempts to improve communication and encouraged all employees to address each other as ‘mister’, regardless of rank, which was a break with an earlier practice to use titles in communication. He also removed pattern-maintaining sym-
bols such as the wearing of uniforms by female employees and introduced flexible working hours.

From the brief account, nothing is said about how people reacted - how they interpreted the changes - and if these lead to anything else than behavioural compliance. A cultural change is not that management tries to impose new behaviours, but a change of the ideas, values and meanings of large groups of people. Whether addressing other people as 'mister' lead to a softening up of rank-related interactions and understandings or not, is impossible to say without carefully listening to various people encouraged - or forced to - adopt this new habit. Part of the problem is that trying to grasp cultural change in a heterogenous company with 100 000 employees is difficult. The sheer size and heterogeneity of the object of study makes it difficult to avoid trivializing organizational culture.

A useful approach must have more depth and precision than most 'managing culture' talk: this is vague, positively biased and full of jargong. It tells the reader more of managerial intentions and some highly visible acts than of the consequences on organizational culture. As top managers - in particular in their most spectacular acts and initiation of large-scale programmes - must address broad groups with highly different circumstances, the messages become very vague and general in order to be understandable and perceived as positive by all.

Rather than a formula for the good overall organizational culture and a set of rules for how to create it or modify it, it is more interesting and practically valuable for managers to use cultural ideas in everyday interactions. This call for local adaption and the case by case evaluation rather than blanket assessment of what is good and less good in shaping local ideas and meanings.

(...)
Traps in culture thinking
Drawing upon, but also further elaborating and in particular systematizing the argumentation throughout the book, I will point at some of the major fallacies in much culture thinking. These include strong tendencies to reify, essentialize, unify, idealize, consensualize, totalize and otherize. I will here very briefly comment upon these seven sins in (a)cultural thinking:

Reifying culture: To treat complex phenomena as things or thing-like is one way of controlling and economizing how we relate to and communicate around the phenomena. Culture becomes an ‘it’. Expressions such as the corporate culture led to high performances, the different cultures prevented an integration process between the two companies after the merger, the new CEO changed the culture, the subcultures clashed ... are common. To treat culture as thing-like, similar to (physical) tools or obstacles is misleading as meanings are not things. The apparent benefits in terms of the ease and straightforwardness of this kind of culture talk are deceptive as the phenomena are simply too poorly described and analysed. Sometimes reifying descriptions may be economical and can therefore be accepted, they are even to some extent unavoidable. The important thing is that the thinking should avoid or at least minimize reification (Johansson, 1990).

Essentializing culture: It is also common to describe culture in terms of a few essential traits. A culture may be said to be service-minded, adaptable, personnel-oriented, open, individualistic, performance-directed, etc. Such essentializing moves typically give a too strongly ordered and superficial view on culture. In particular in contemporary organizations, there is seldom a core of a few values and ideas putting their imprint on most significant areas of the organization. Defining culture through a few essential values and ideas easily also leads to people becoming caught in a few standard scripts for describing culture. To really say something about what is behind a label such as ‘a service-culture’ calls for some careful interpretation as well
as linguistic skills. Such an effort may well indicate that there are enormous variation in the precise meanings of ‘service-orientation’, within all the half or so of all companies in capitalist countries that present themselves with this label, and that the labels don’t say anything whatsoever.

Unifying culture: Cultural orientations are often defined through easily accessible ways of defining groups or collectives. This can be highly misleading. In particular, it is important to avoid equating cultural boundaries with formal or legal ones, as implied by terms such as corporate culture or national culture. Sociological fact-sheet based principles for ordering social groups – such as age, class, gender or occupation – may be more relevant, but cultural orientations may not follow established social differentiation criteria. As pointed out above, and addressed also in the final section, the multiplicity of cultural groups and orientations in complex organizations need to be carefully considered and this goes against the temptation to treat organizations or groups as homogenous.

Idealizing culture: To some extent the culture concept invites an idealizing understanding as it focus on the level of ideas, symbols and meanings. (Idealize here refers to a focus on meanings and ideas, not necessarily on ideals.) But a cultural understanding heavily emphasizing ideas in a social and material vacuum is not very helpful. From a top management perspective an emphasis on how leaders control culture through in-expensive means such as visions, rituals, symbolic acts and beliefs that the large masses will follow, is very satisfying. Ideas and meanings do not, however, just float around or become accepted outside a material context. People develop and (re-)shape cultural meanings in contexts in which material reality and labour processes are central, which motivates an interest not exclusively on ‘pure’ ideas and symbols but a focus also on how the material and behavioural levels are loaded with meaning and symbolism and affect cultural patterns and processes.

Consensualizing culture: It is common to assume that culture means unity and shared values within a company or another culture-bearing group. That cultural differentiation within an organization may be a
source or reinforcer of conflicts is now broadly recognized. Shared meanings do not necessarily imply consensus and harmony. A common understanding does not mean shared values and harmony. An organization may be characterized by shared ideas and beliefs about the significance of self-interest, fierce internal competition and a view of corporate life as fairly harsh and jungle-like. Also in groups in which ideas on competition/cooperation are less salient or pronounced people sharing the same cultural ideas and values may be competitors (cf Bourdieu, 1979).

Totalizing culture: Totalizing culture have two meanings, both referring to the use of culture in a too all-embracing way. One concerns the tendency to use a very wide culture view incorporating almost everything, from assumptions and symbols to behaviours and social structures, i.e. how things are done in an organization. The response is, as said, to concentrate on meanings and symbols, but use this in relationship to behaviours and matters. The other totalizing tendency is to restrict oneself to values, ideas and meanings, but to claim that this can be captured once and for whole, i.e. that the whole of how people think, feel and symbolise can be captured on an abstract level through for example a few variables. But using the culture concept does not mean that all the meanings that a group share are addressed at the same time or can be summarized in a way that lead to good coverage. Rather it is the shared meanings on a specific topic that is of interest to pay attention to. Within a company the ideas on core competence, the future of the industry, sex roles, education and various informal social activities in and around work are loosely coupled. The study of cultural manifestations rather than cultural systems is thus to be preferred.

Otherizing culture: When we try to capture culture – like other ambiguous phenomena - we often use contrasts. Frequently these contrasts have a strong value-bias. We put up the good against the bad. When we set up something else as a contrast to what we want to illuminate we work according to the idea of the Other, the one that is not oneself or what one is propagating or really interested in. The Other is different, frequently inferior, and has the function of offering a good point of comparison. The Other is invoked in order to make
an account or an understanding possible, it is uninteresting in itself, and its usefulness as a point of comparison makes a more nuanced description difficult. It is described in a way to produce a good effect in the description of the focal object of study. Otherizing culture means that differences are overemphasized, simplistic descriptions are favoured, there is a strong selectivity in what is paid attention to and there is frequently a negative bias against it. Otherizing does not necessarily imply a clear value bias: the major problem is that treating something as a point of reference or comparison prevents nuances.

Having warned against these seven sins, I should add that my message is not that we should at all costs avoid inclinations to reify, essentialize, unify, idealize, consensualize, totalize and otherize culture. This is not possible and sometimes pragmatic reasons call for simplifications and the expression of something accessible – which often leads to some of the ‘sins’ above. Shortcuts may facilitate the expression of good points. At times, also social reality may be in line with some of these ‘sins’, i.e. there ‘are’ organizations with a high level of consensus and harmony, which means that unifying and consensualizing are fully acceptable. My point is, however, that the traps and temptations should be handled with great care. Caution should be taken not to theorize culture in a way giving the seven sins privilege. Insightful cultural interpretation instead calls for a framework taking the complexity and fluid nature of meaning seriously. The next section will briefly summarize some ideas of relevance here.

**Some principles for the productive use of the culture concept**

In a sense, it is easier to point at the difficulties and pitfalls of culture thinking than give clear guidelines for its use. My conviction is that culture calls for an interpretive approach and there is no strong framework offering strict or detailed rules for that. Cultural thinking needs to be demonstrated. Then, of course, it is strongly facilitated by theoretical ideas on for example how metaphors work, the significance of meaning, social differentiation, symbolism, etc, as developed in this book. Here, I will only indicate some broad principles for how cultural analysis can be conducted as part of the summing up of the book. As in this text as a whole, these principles are relevant for re-
searchers as well as practitioners, even though the level of intellectual ambition differ strongly, in a practitioner context this is typically subordinated to time pressure and instrumental concerns.

In order to get insightful ideas on culture the following pieces of advice seem relevant:

The cultural aspect should be related to specific events, situations, actions and processes – we can ‘find’ culture through looking at the subtext of fairly representative or significant acts or arrangements. The careful investigating of something delimited – a carefully chosen and carved out piece of organizational reality then form a good entrance for the understanding of culture, making thick description possible.

Culture should be treated as a network of meaning guiding feeling, thinking and acting rather than an external force – meaning then is an input or an element in feeling, thinking and acting with no determinate or mechanical effects. The network idea suggests that meanings may be loosely coupled. All this contrast with the view of culture as an external mechanism working above the heads of people uniformly driving them in a particular way.

Meanings should be viewed as processual and situated and not as a fixed essence – the meaning of concepts such as gender, leader, hierarchy, etc are not static or takes the same appearance in different situations. The meaning of being ‘a woman’ in a particular organizational culture differs due to specific context – even if sexuality, service and subordination are frequently ascribed to ‘woman’ in a patriarchal organization, different females may be ‘caught’ in or liberated from these meanings to different degrees and different ways contingent upon age, experience, selfesteem, type of work activity, social relations, etc. Different situations invoke various combinations of these elements and thus trigger processes in which cultural manifestations of gender appear.

Cultural interpretation should also be sensitive to variation and contradiction, the action - and practice - related nature of cultural manifestations, and be reluctant to treat culture as an abstract system of
values, presumed to have a general impact. The significance of differ-
entiation and ambiguity means that organizations have many faces.
All organizations, like other groups and communities, involve quite a
lot of variation and contradictions. US society is frequently described
as extremely individualistic, and many studies confirm this also at
the organizational level (Hofstede, 1980; Tzeng, 2000), but there are
many (US) studies showing how people subordinate themselves to
authorities (Milgram etc), and there seem to be considerable conform-
ism and reluctance to take initiative in many US companies (Jackall,
1988; Carlzon, 1987). Individualism may be positively valued, but so
is also teamplaying, loyalty and managerial prerogative, strongly cir-
cumscribing ‘individualism’ at the workplace.
Any understanding of culture should also recognize how power
operates in dominant meanings and the asymmetries of social
relations work behind established cultural order. Cultural mean-
ings do not develop freely or spontaneously, but bear the imprints
of ideologies and actions of powerful agents. These agents also
draw selectively upon cultural resources in political action,
meaning that how social reality is shaped in specific situations is
partly an outcome of the values and meanings that are invoked
by actors reflecting sectional interests.

(...)

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CHAPTER 5
PAPERS ON SAFETY CULTURE

Measuring safety culture in offshore environments?

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Introduction
The concept of ‘safety culture’ has become ubiquitous in the study of risk and safety management in modern-day high hazard, high reliability industries. Definitions of the concept abound ranging from the Confederation of British Industry’s (1991) ‘The way we do things around here’ to the Advisory Committee for Safety on Nuclear Installations more detailed description:

‘The safety culture of an organisation is the product of individual and group values, attitudes, competencies and patterns of behaviour that determine commitment to, and the style and proficiency of, an organisation’s health and safety management’ (HSC, 1993, p. 23).

A more practical definition was also provided by the International Atomic Energy Advisory Committee (1991). In this instance safety culture was described as ‘The necessary framework within the organisation which is the responsibility of the management hierarchy’ and ‘The attitude of staff at all levels in responding to and benefiting from the frame-
work'. This definition provides a tentative framework for measurement, in terms of assessing the necessary framework, i.e. the health and safety management system of the organisation and in terms of measuring the attitudes of the staff in response to that framework.

Earlier studies of risk perception and attitudes to safety in both the UK and Norwegian offshore workforces (Hellesoy et al., 1985, Rundmo, 1992, 1994, Flin et al., 1996, Mearns et al., 1997) had addressed the ‘workforce attitudes & perceptions’ aspect of so-called ‘safety culture’. However, the scales developed were never intended to measure ‘safety culture’ as such. Instead, they focused on psychosocial or human and organisational aspects of safety in the offshore environments. Latterly, Mearns et al., (1998) have begun to label these scales as measurements of ‘safety climate’ in the offshore environment. In many ways the measurement of safety climate can be considered an ‘interpretive’ approach because it pertains to how individual respondents perceive the state of safety on their installation.

The current project required the design and development of the so-called ‘functionalist’ approach, which involved measurement of the installations’ safety management systems. The development of the Safety Management Questionnaire (SMQ) was done through reference to the relevant literature and in discussions with the project’s Steering Group Committee of health and safety managers (see below for further details).

This paper summarises some of the results from the Joint Industry/ HSE funded report OTO 2000 063, which has investigated the feasibility of benchmarking human and organisational factors in offshore safety. It should be noted that although we have developed questionnaires for measuring aspects of safety culture as defined by the nuclear industry, we do not consider that we have covered all aspects of ‘safety culture’ in our study. According to the model shown in Figure 1 (adapted from Kopelman, Guzzo & Brief, 1990) we still lack data on the underlying values, beliefs, assumptions and expectations that form the bedrock of societal and organisational culture.
Sample and Method
The sponsoring companies allowed access to 13 offshore installations for piloting the methodology. The benchmarking exercise was carried out on an installation basis and provided a vehicle both for internal benchmarking from 1998 to 1999 and external benchmarking against peers for each year.

Examination of the previous literature on benchmarking health and safety performance and extensive discussions with members of the Project Steering Group Committee led to the development of a set of safety performance indicators. These indicators were selected on the basis of being representative of the human and organisational factors that could impact on offshore safety.

The methodology for measuring the workforce’s perspective on safety had been developed in two previous projects (Flin et al., 1996; Mearns et al., 1997). These projects involved carrying out safety climate surveys of offshore installations in which respondents indicated their perception of risk, safety behaviour, attitudes to safety, satisfaction with safety measures, satisfaction with communication about health and safety and self-reported accidents in the year prior to the survey. These surveys were carried out using the Offshore Safety Questionnaire (OSQ). For the purposes of this study, the OSQ used in 1998 consisted of 65 items arranged in five sections; the OSQ used in 1999 consisted of 79 items arranged in seven sections. The current version of the OSQ measures communication; work pressure; workforce involvement; supervisor competence; management commitment; willingness to report accidents and incidents; attitude to rules and regulations; satisfaction with safety measures; general unsafe behaviour and unsafe behaviour under incentives.

HSG 65 (HSE 1997) was used as a model for development of a Safety Management Questionnaire (SMQ). Safety performance indicators used in other health and safety benchmarking programmes were incorporated to cover six main areas: i) Health and safety policy; ii) Organising for health and safety; iii) Management Commitment; iv) Workforce Involvement; v) Health surveillance and promotion; vi) Health and safety auditing.
The participating installations were also required to provide details of their management structure, including the position of safety professionals within the hierarchy, and their accident and incident statistics including RIDDOR data (HSE, 1996), near-misses, visits to the rig medic and number of cards/reports from behavioural modification programmes. Relevant documentation to support the questions asked in the Safety Management Questionnaire (SMQ) was also requested. All information related to the period June 31st 1997 to June 31st 1998 (for the 1998 benchmarking survey) and June 31st 1998 to June 31st 1999 (for the 1999 benchmarking survey).

Results
In 1998, 682 questionnaires from 13 installations were available for analysis and in 1999, 806 questionnaires from 13 installations were available. Analysis of the OSQ in both years indicated four factors that covered attitudes to safety: perceived management commitment to safety; propensity to report accidents and incidents; perceived supervisor competence; and rules and safety implementation. Two other factors emerged covering aspects of safety behaviour: general safety behaviour and safety behaviour under incentives/social pressure. Additional scales addressed involvement in health and safety; communication about health and safety; satisfaction with safety activities; and health and safety policy awareness. There were significant differences between installations on their scale scores in both 1998 and 1999, with general improvement from 1998 to 1999. Details of each installation’s individual performance and a comparison of its performance against the other installations were fed-back to the participating companies on the understanding that this information would be disseminated to the installation.

Nine installations provided data across both years and these installations (with a pooled sample size of 521 in 1998 and 624 in 1999) were used to gauge changes across the one-year period on a set of common items. The two samples were closely matched with regard to proportion of supervisors, accident rate and tenure. The scales on which items could be compared were satisfaction with safety activities; perceived management commitment to health and safety; perceived su-
pervisor competence; willingness to report accidents; general safety behaviour; and safety behaviour under incentives/social pressure. In general, performance on all these scales improved from 1998 to 1999 with certain installations showing statistically significant improvements across the period.

In terms of general installation safety climate, certain scales predicted self-reported accidents for respondents in all job roles, and for subset of workers engaged in more safety critical tasks. These scales were perceived management commitment to safety, willingness to report accidents and perceived supervisor competence.

In addition, individual respondents who had experienced an accident requiring medical treatment on that installation in the past year had less favourable opinions than non-accident respondents on the following scales: satisfaction with safety activities, perceived management commitment, willingness to report accidents and incidents, general unsafe behaviour, work pressure and workforce involvement.

Analysis of data from both the 1998 and 1999 SMQ took the form of rank correlations between four outcome measures (LTI>3 days, RID-DOR data, Near misses and Dangerous Occurrences) and the six sections of the SMQ. A pattern of negative correlations was predicted and found: favourable scores on the SMQ were associated with lower accident and incident rates. Almost all the significant negative correlations involving sub-scale scores were confined to two areas of management strategy, these being health promotion and surveillance and health and safety auditing. It is proposed that the benefits of health promotions and occupational health programmes may be realised through at least one of two processes:

1. Investment by the company in these areas fosters perceptions of company commitment and builds worker loyalty in areas such as safety behaviour
2. Health plans and health programmes improve worker health directly and ‘immunise’ against work-related injury
These findings lead to the following recommendations for safety management:
1. Ambitious H & S auditing goals and their achievement should be emphasised
2. Health surveillance and promotion of the workforce should also be emphasised, extending to worker well being outside the workplace
3. There is limited evidence to suggest that senior onshore personnel making regular offshore visits to discuss safety and communicate with the workforce may improve safety performance.
4. There is also some evidence that workforce involvement improves safety performance for individual installations

Conclusions
The benchmarking exercise largely achieved its goals. Benchmarking safety climate was especially successful in highlighting the areas that require intervention for particular installations. ‘Best in class’ installations showed higher levels of workforce involvement and communication, higher perceived management commitment and lower rates of unsafe behaviour.

Scores on OSQ scales perceived management commitment to safety, willingness to report accidents and perceived supervisor competence predicted self-reported accident involvement.

The process of benchmarking installations provided a wide variation of scores in each of the areas of safety management, and these scores predicted the proportion of respondents reporting an accident within installations. In particular high levels of health and safety auditing and health promotion and surveillance seem to be associated with low accident and incident rates

Recommendations
Collaboration between companies in similar sectors of industry for the purpose of benchmarking safety management strategy and safety climate should be encouraged in the drive toward securing safer work environments. The potential gains for each participating installation outweigh the losses of sharing information.
Well-defined strategies must be developed for improving safety climate. These strategies should be applied once the benchmarking exercise is completed. Benchmarking at regular (e.g. yearly) intervals could provide a means of assessing intervention strategies within and between installations.

Outcome measures of safety performance need to be developed further: self-report accidents are relatively rare. A composite measure should be used in future to validate safety climate surveys.

In subsequent research the assessment of safety management strategies should be complemented by on-site assessments and semi-structured interviews.

Case studies of organisations and their day-to-day approaches to managing safety could provide realistic examples from which to infer safety management philosophy and efficiency. Ultimately, it is at this level that safety management philosophy becomes manifest: the preaching and the practising converge.

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Safety culture requires a reporting culture: Barriers and opportunities

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In this paper I will address the question: What is safety culture, and how can safety culture contribute to the prevention of occupational accidents? I will be drawing mainly on studies and experiences from the area of aviation and I will partly apply the theoretical framework of James Reason, and partly the results of my MA thesis, written jointly with Thomas Ryan Jensen: "Philosophy for Air Traffic Controllers - Moral Aspects of Reporting and Dealing with Human Error in High Reliability Organisations."

In our thesis we aim to uncover differences in safety culture between Danish and Swedish Air Traffic Control (ATC) and to analyse the effects of culture on the willingness to report on critical incidents and, ultimately, on safety. In other words, we have looked at similarities and differences in safety culture, with a main focus on the reporting cultures. Where Swedish ATC (Malmø) has an effective reporting culture Danish ATC (Kastrup) does not have one. It appears that the Danes have to overcome several barriers before an effective reporting culture can come into existence. Being students of philosophy, we have especially dealt with issues of moral and ethical relevance to the problem of reporting and dealing with human error. This has proven to be of practical value to the field of study.

This paper seeks to extend experience and results from the domain of aviation to the area of occupational accident research, in terms of developing a safety culture. I will argue - skipping the full line of argument here - that a safety culture requires a reporting culture, the effectiveness of which relies on the existence of a ‘just culture’, and the success of which depends upon the support of ‘a professional ethics’.
What is safety culture?
To answer this, one must first be clear what is understood by the concept of culture. Knowing that the concept of ‘culture’ is complex - and as such a study in itself - and having no pretence of participating in the epistemological discussion of ‘culture’ - which I leave for others more competent - I chose to define culture in rather wide terms. Culture is the: ‘Shared values and beliefs that interact with an organisation’s structures and control systems to produce behavioural norms’. In other words ‘the way we do things around here’.

‘Safety culture’ is then, the sum of all safety-related assumptions and norms that are shared by the majority of an organisation’s members, and which find their expression in the way safety is actually dealt with in all areas of the organisation. As such a safety culture contains several elements, of which I will pay special attention to - reporting and justice.

Components of a safety culture?
In mentioning the components of a safety culture, I draw on James Reason’s concept of a safety culture. He mentions five ‘subcultures’, which are more or less interwoven cultures, and as such not separated or independent of each other. The cultures are:

- An informed culture
- A reporting culture
- A just culture
- A flexible culture
- A learning culture

I will not elaborate fully on these cultures but simply mention their main characteristics. The aim of an informed culture is - at all times and on all levels - to have full knowledge, in other words - transparency of factors that impact on safety. Such a culture is able to gather, analyse and disperse the right information needed to enhance safety. In relation to this, our overall understanding of an organisation is that it is constantly producing information. Where the level of interest is, how this information is actually used. A reporting culture seeks
to motivate its employees to report on all types of errors, including human error. In other words, the organisation needs to convince employees of the positive gain of reporting on self-induced errors. A just culture is capable of performing fair treatment - partly refraining from punishing minor errors and mistakes and partly punishing gross negligence and criminal acts. Within a flexible culture one is able, in times of conflict, to change from a bureaucratic and centralised organisational structure to a de-centralised practice - suspending formal rules. Finally, a learning culture observes, reflects, creates and acts by implementing new and better strategies - on all levels.

All five cultures are of course relevant for the maintenance of a safety culture, but the one - according to our field study - which is most urgently needed and which is philosophically most challenging is the reporting culture. Only through the knowledge of errors, incidents and near-misses is it possible to prevent reoccurrence and as such prevent potential accidents or catastrophes.

**Reporting culture - barriers?**

Introducing a reporting culture has its problems. According to an analysis of two successful aviation reporting programmes ASRS (NASA’s Aviation Safety Reporting System) and BASIS (British Airways Safety information System) there are at least five requirements needed before employees will report.

1. Indemnity against disciplinary action
2. Confidentiality or de-identification
3. Separation between data-gathering department and disciplinary department
4. Rapid, useful and accessible feedback
5. Ease of making the report

The first three requirements concern aspects of trust, and each of them is an actual barrier within Danish ATC. The last two requirements concern motivational factors. While number four is a problem in Danish ATC, number five is actually found to be of considerable trouble in Swedish ATC. However small a problem the “ease of making the report” may seem, it can, paradoxically, be the ‘little’ barrier
that holds back employees from reporting. Other aspects that we have found to be reasons for not reporting are personal feelings of guilt and shame - which are very difficult to ‘manage away’.

So, if the elements mentioned above are in fact the requirements for creating a reporting culture, why not just implement them? Because each of the elements has deep-rooted consequences, that one needs to consider.

**Moral aspects to consider**

We believe that many of the barriers connected to reporting are parallels of classical problems within moral philosophy. And we believe that there are several moral aspects that one must consider in order to obtain an effective reporting culture. The moral aspects are followed up by open-ended questions that we have found to have influence within ATC. These should give an impression of the complexity of seemingly solvable issues. The moral aspects will of course, in some respects, change character within other domains, (although they do in fact recur).

**Responsibility and accountability**

Who is actually responsible for the reporting system to work? In Denmark (Kastrup) the reporting system does not work, and in some respects it isn’t optimal in Sweden (Malmö) either. There is no doubt that the organisations and, in more general terms, the ministries and the politicians, have the overall responsibility for making the reporting system work. But isn’t the individual Air Traffic Controller also morally responsible for reporting on dangerous conditions? Even if he or she risks punishment, negative consequences or just disapproval from colleagues?

**Free will and negligence**

How should we react to the Air Traffic Controllers’ own perception that no one makes mistakes on purpose? That is, as an act of ‘free will’. What does it actually mean – in regard to Air Traffic Control – to do something on purpose? Is it possible that simple negligence is not an act of ‘free will’?
Guilt and shame
How should we react to the feeling of guilt that a controller has when he or she has made an error leading to a dangerous situation? The controller who made the error will almost always, regardless of nationality, feel a strong personal guilt and shame. Can or should the controller's feelings of personal guilt be used as an argument against punishment or disciplinary actions?

Punishment
Is it justified to punish simple negligence? In Denmark, acts of simple negligence made by controllers (and other public employees) causing dangerous situations are punishable, in Sweden they are not. Pragmatically it can be argued that it is futile to punish for simple negligence, since it has no deterrent effect at all. But is it also morally acceptable? If we can confirm the question, is it then still possible to condone the punishment for simple negligence in road traffic? Is there, in ethical terms a difference between road traffic violations and aviation violations?

‘Blame-free’
Is it morally acceptable to allow that negligent or ‘guilty’ controller be free of any sanctions just because we wish to maintain a reporting culture? The way incidents are dealt with in Sweden shows that controllers are not legally prosecuted although they have acted negligently (but not gross negligence) - in order to maintain employees' trust in a “blame-free” system. Is this practice acceptable or should we punish the ‘guilty’ or negligent controllers, even though the consequences can have devastating effects on reporting and as such on safety?

Violations
How are we supposed to react to the fact that controllers routinely violate rules? All controllers agree that they break the rules, but that they never do so in a way that it will jeopardise safety. Should we accept this practise as ordinary professional behaviour, or should we punish intentional violations of rules? To what extent is management responsible for a working culture that - because of pressure on production - induces its employees to violate rules?
**Protection against self incrimination**
What kind of rights should be enjoyed by a controller who has made a mistake causing an incident? Prosecutions can drag on for several years, affecting the controller's performance and welfare. Which legal rights should the controller have during an investigation?

**The public's right to know**
What should remain confidential and what should the public be given access to? The issue of confidentiality plays a central role for reporting systems in Denmark. Is it morally acceptable to suspend from the Danish law of 'open files' ("lov om offentlighed i forvaltning"), if it increases the willingness to report and as such enhances safety?

**Safety**
Many of the posed questions relate to the basic question: What can we morally accept in the name of safety? By which moral principles is it possible to evaluate safety considerations over other considerations?

**A ‘Just Culture’**
We propose that in creating a reporting culture to achieve a safety culture one needs a just culture, since it is possible within a ‘just culture’ to consider the moral aspects mentioned. (Who is actually responsible or accountable? When? And, for what?) It is important to notice that a ‘just culture’ is NOT a ‘blame-free’ culture. People can still be held accountable – not for minor mistakes or errors – but for grossly negligent behaviour and criminal acts. As David Woods, Past President, Human Factors and Ergonomic Society points out: “The slogan of "moving beyond a culture of blame" is a call to abandon poor systems of accountability, not an absence of accountability.” In fact employees, and this is true of both Danish and Swedish ATC, appreciate such a system - because it is just and is perceived as being so! Still, problems arise when an employee is met by an unjust response.
Aims of a ‘just culture’

It is very important that a just culture is able to:

- draw the line between acceptable and unacceptable behaviour
- hold people accountable for wrong - as well as right - behaviour
- distinguish between error and violation
  - seek the actual reasons for errors and violations (socio-technical approach)
  - distinguish between intent & non-intent, and between simple and gross negligence

The ‘only’ problem is that a just culture is not easy to develop and sustain, and the consequence may very well be that we are forced to choose between safety and justice.

Dilemma - safety or justice?

Let us follow the line of argument: Safety culture requires a reporting culture, and engineering a reporting culture requires a ‘just culture’. But safety requires possibly unfair lenience, (to make sure that people will report). So we are compelled to compromise on justice.

Pragmatically, this is the only right thing to do, but morally it is a questionable solution. Therefore we suggest that the development of a professional ethics is a feasible way of attaining a proper balance between safety and justice.

Professional ethics – opportunity

A professional ethics is able to reclaim justice by preventing unacceptable behaviour, as well as:

- motivate inner responsibility
- develop moral consideration for one’s colleagues
- enhance standards and get rid of ‘bad practice’
- develop appreciation for errors and incidents
- avoid behaviour which calls for legal assistance
- show responsibility towards stakeholders
All in all, the process of developing a professional ethics is an opportunity to create ‘a reflexive morality’ within the organisation - among employees as well as on managerial level.

Professional ethics

♦ In organisational terms:
♦ Professional ethics as a type of micro-regulation - supporting macro-regulation.
♦ Supporting the idea of ‘delegation and control’

♦ In moral and political terms:
♦ A balance between ‘duty and right’
  o the duty to ‘do what one can’ for safety
  o the right to be treated justly
  o the right & the duty to react against pressures of production

What is a safety culture?
Our conclusion is that the requirement for establishing and maintaining a safety culture is to have - in addition to an informed, a flexible and a learning culture - an effective reporting culture, maintained through a just culture and supported by a professional ethics.

Safety culture - does it help?
So, can safety culture contribute to the prevention of occupational accidents? Studies on Danish and Swedish ATC show that it is hard to demonstrate by accident statistics that a high rate of reporting increases safety. Still, an effective reporting system is capable of learning from the past! If one considers if it is worth it, then please also consider the following statement made within the aviation investigation business: “If you think safety is expensive, try having an accident!”
Safety culture and the ability to learn from errors

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Introduction
Organisations operating in safety critical domains such as aviation, air traffic control, shipping, and medicine can maintain accepted levels of safety only if they are capable of learning from incidents and errors and thus be able to adjust factors that shape performance of frontline staff. At the same time, it is well known that the vast majority of accidents in safety critical applications are caused by human errors - rather than by strictly technical or environmental factors, (the proportion of accidents due to human error ranges from about two thirds to about 90 or 95 %, see e.g., Hollnagel, 1993; Sanders & McCormack, 1993).

However, there are considerable managerial, legal and moral problems in developing, within a specific company or organisation, procedures and practices that actually induce employees at all levels to report incidents and errors. At a superficial glance, the mechanisms and the motivating factors are quite simple: The greatest disincentive for staff with respect to reporting own errors is, of course, that employees are liable to receive negative reactions if they do so, ranging from outright disciplinary sanctions to social ostracism or “blame and shame”. In contrast, the positive inducement for staff to report on incidents will be often be fuelled by a sense of professional honour or pride and a moral sense of obligation, i.e., a feeling of obligation to help others from making the same mistakes as oneself or getting into the same kind of mishap as oneself has experienced (confer paper by Marlene Dyrløv Madsen, this volume)). At least, these seem to be the motivations that play a role, but little research has been made or published concerning these aspects of safety management (van Vuuren, 2000; Barach & Small, 2000; Helmreich & Merritt, 1997).
The case for reporting incidents

The case for reporting incidents is often argued along the "pyramid model". For each accident there are at least ten or so serious incidents and for each serious incident (involving immediate and grave risks) there is at least another order of magnitude of less serious incidents (involving more remote risks). The first step of this argument points out that accidents nearly always provide valuable lessons for improving defences and safeguards. From an analysis of accidents we may, in general, learn about local and possibly general factors that seem to "invite" or "bring forth" errors, including factors that fail to protect the system after the occurrence of an error. Such factors may include a very diverse range of potential causal aspects ranging from procedures, training and equipment and technical features to organisational factors that impact on performance and safety, e.g., such as manning, shifts, catering and so on.

The second step of the argument merely points out that there is no support for the idea that accidents are caused by a special kind of - or an especially grave type of - errors as compared to near-misses. It is in fact a bit naïve to suppose that "big" effects must have "big" causes: When we compare accidents and near-misses in work domains we shall find that they are chiefly distinguished - not by the fact that the errors involved in accidents were more serious or egregious than those involved in near-misses in the case of accidents, but - by the fact that operators in near misses were lucky whereas those involved in accidents were not (this is not quite accurate, since it is possible to plan and train successful error management and error capture). Therefore - and this is the conclusion of the comparison between accidents and incidents - to the extent that valuable lessons may be drawn from an analysis of accidents, equally instructive advice may typically be extracted from analysis of near-misses.

For similar reasons, safety critical organisations will normally require that their employees report (to some safety and quality unit or to local leaders and management) episodes when safety has been seriously compromised even though no injuries or damages actually occurred. The organisations require such reporting precisely because they have an obligation to prevent similar situations from arising,
situations where a serious incident may turn into a full-scale accident. (Conf. also review by Barach & Small, 2000)

The case against reporting
Still, it is widely recognised that employees are reluctant to report incidents unless they feel compelled to do so or unless incentives are established that encourage reporting. The most widely used incentive is probably (conditional) immunity against legal and disciplinary sanctions. This type of incentive has been used with noticeable success in the most comprehensive incident reporting system existing, the ASRS (Aviation Safety Reporting System) in the US (Orlady & Orlady, 2000). In the ASRS scheme the immunity clause will ensure the reporting pilot or air traffic controller indemnity against prosecution unless the reporter has engaged in a criminal act or has invoked the immunity clause within the last five years.

The reasons why employees appear to be less than willing to report incidents that involve their own or colleagues' mistakes (their erroneous actions and omissions, possibly intentional violations and acts of negligence) seem to vary somewhat between different companies and organisations, though relatively little empirical research has been made in this respect and it would be difficult or incautious to generalise. Anecdotal evidence seems to point to disciplinary and legal sanctions as the main obstacle for collecting data about factors involved in incidents. Similarly, based on interviews with pilots and air traffic controllers in Scandinavian countries which Risø has conducted (in parallel to supervised students’ thesis work, see Jensen & Madsen, forthcoming), it appears that the main obstacles to organisational learning from incidents are employees’ reluctance to run the risk of being dragged into possibly prolonged long legal examinations and the risk of ultimately loosing their job; at the same time, some employees indicate that they find it to some extent arbitrary or random who might get prosecuted.

Error reporting and safety culture
No matter how the concept of Safety Culture - as applied to individual organisations and companies - be defined (confer e.g. theme issue of the journal Safety Science, vol. 34, 2000 for several in depth
discussions and reviews; see also Helmreich & Merritt, 1997) it will certainly comprise the ability of an organisation or company to learn from its near-misses: viz., situations in which safety has been compromised and which may repeat themselves with a much smaller margin of luck.

**Reference**


Wagenaar WA (1997) Accident analysis: the goal, and how to get there. Safety Science, 26: (1-2) 25-33.
Figure 1: Model of groups of factors that impact on the likelihood of accidents and near-misses. "Safety Culture" is depicted as covering a cluster of organisational factors and aspects.
Plenary discussion on culture

Panel:
Niels Olsen, Danish Academy of Technical Sciences, Denmark
Helge Hvid, Roskilde University, Denmark
Mats Alvesson, Lund University, Sweden

Chairwoman:
Lise Hildebrandt-Eriksen, Department of Occupational Medicine Herning, Denmark

Discussion:
The discussion related to the three presentations: “Culture – the Silent Meaning of Things” (Niels Olsen), “Safety Culture – building on rules or participation or participative rules” (Helge Hvid) and “Understanding Organisational Culture” (Mats Alvesson).

Minutes by:
Charlotte Baarts, National Institute of Occupational Health Denmark

Question: How do you look at manifestations of culture? Does Schein, for instance, see the culture when entering the environment? Is it possible to quantify culture?
Mats Alvesson  
Lund University:  
Schein is sceptical to quantification, which I am too. You may get interesting information from questionnaires, but the formulation of questions must be based on a qualitative study. In that way you know, in advance, how people relate to certain issues. You have to be careful using questionnaires, because what the respondent answers may be an expression of cultural norms rather than cultural reality.

The researcher’s perspective should be: What do the natives regard as important, and not what is of importance for the researcher. That perspective calls for an insider approach, and therefore I would not recommend questionnaires as a basic method in understanding culture.

Niels Olsen  
Danish Academy of Technical Sciences:  
I agree. Whether to start with the one or the other method can always be discussed. Perhaps it may be useful to use them simultaneously. Quantification draws a picture, but it is necessary to enter the processes by using qualitative methods. What the cultural significance is for people will always be limited by using questionnaires. In formulating questions in a questionnaire you have already chosen the agenda.

Question: Would focus group discussions be a way of finding the hidden meaning?

Niels Olsen  
Danish Academy of Technical Sciences:  
I have worked with focus group discussions. It is a very effective way of working, and the method provides you with the opportunity to combine quantitative and qualitative approaches. When using focus group discussions there is an agenda but at the same time people can define what they find important to discuss. The social interaction between participants in focus group discussions also produces new texts.

Comment: Focus group discussions capture some of the shared meanings. Safety climate derives from focus group discussions, but we have moved away from the shared meaning to look at individuals. That also means that we have moved away from looking at culture.
Mats Alvesson  
Lund University:  
When using focus group discussions the object of study is group discussions. By using that method you can get closer to what goes on in the workplace, and it is also a relatively economic method to use.

Question: Is it possible to combine the cultural approaches in order to create a unified model? Is it possible to make a theoretical frame in the study of culture?

Helge Hvid  
Roskilde University:  
When using the concept of culture, you will have a lot of problems. It is important to understand that culture relates to everything. Participation is also closely related to culture. However, there is a threat that we forget power because we now talk about culture and dialogue.

Mats Alvesson  
Lund University:  
There are lots of cultural frameworks. It is not possible to avoid cultural fragmentation in the field – associations and meanings will vary. I guess that is how language works. For instance, it is possible to include power in cultural frameworks. When speaking of culture, there are especially two issues to be considered: 1) It is necessary to have a sharp perspective and good framework and 2) communication with people is important.

Question: What is it like to be an anthropologist and ask what culture is? What can you bring to safety?

Niels Olsen  
Danish Academy of Technical Sciences:  
The major question is: what is safe to whom? Management level has one way to express it in regulations, but the point is what goes on at the employee level, not the management level.

Comment: Actually, in safety culture studies, the management’s commitment to safety is regarded as important to work.
Niels Olsen
Danish Academy of Technical Sciences:
That is a good point! It is the value of the signal. Managers place safety high, so that they can show good influences.

Comment: But it does not necessarily meet with the actions. There might be a high commitment, but the workforce does not necessarily see that.

Mats Alvesson
Lund University:
Cultural studies can contribute to increase sensibility of what is really being expressed. In cultural studies awareness of symbolism is increased, the use of language and actions are interpreted. Culture is an anthropological invention.

Helge Hvid
Roskilde University:
Culture is impossible to manage and impossible to change. However, that perspective constitutes a conflict, because people working with safety are eager to change culture. My point is that you can change practice, but it is not culture. After a change there will be cultural consequences.

Question: Do you think it is possible to modify elements in studying culture - is it possible to identify elements in the culture?

Niels Olsen
Danish Academy of Technical Sciences:
Elements in culture - that is a very mechanistic way to see culture. A Polish-British anthropologist, Malinowski, said that culture is a never-ending dialogue. This can be used in relation to safety, meaning the following: Set safety on the agenda, discuss, and never stop doing that! Do not hide it, let it not be rooted somewhere else.

Mats Alvesson
Lund University:
I agree. There are key symbols – acts, events, stories that seem to summarise something. Sometimes it is possible to target for output, but one never knows about the outcome. That is the problem - it is difficult to predict the output.
Question: Statistics show that Swedes are four times better than Danes on the Øresund bridge despite the fact that they have the same rules, do the same work and so on. The only difference is culture. Is this what culture is going to do? How are we going to assess it proactively and how are we going to affect it? Do you accept that culture should explain the differences?

Helge Hvid
Roskilde University:
Are you sure it is culture? You can call it culture, but you might just as well call it procedure, rules or climate.

Comment: The same pattern was shown in a company where Danes and Swedes worked side by side.

Comment: The interesting discussion might be the fact that we regard many things to be culture, but we should be careful. It is not a dustbin. It would be interesting to see whether these cultures keep up in organisations. There must be something in the manifestations of culture.

Mats Alvesson
Lund University:
We did a small study of organisational culture on the Øresund bridge in order to see the organisational differences in organisational culture between Denmark and Sweden. In Denmark there was a more masculine, hierarchical organisation and they were more tough in their expression. There are gender dimensions in risk that should not be forgotten. Masculine dimension has an impact in certain risk situations. Whether it is perceived as stupidity or masculinity is important from a cultural point of view.

Question to Niels Olsen: From a psychological point of view we separate between tacit knowledge and explicit knowledge. From this perspective behaviour will change. Have you worked with that or is it possible to work with it to enforce tacit knowledge to become explicit knowledge?

Niels Olsen
Danish Academy of Technical Sciences:
I have not worked with safety, but my experience is that people always get so called “AHA-experiences”: “Is that so?”, “We never thought of that!”. With a
minimum of effort you can make what is tacit knowledge explicit. I have no
experience on safety issues as such, but a common thing is that it happens.

Question: Did you do a follow-up? Did the change persist?

**Niels Olsen**
Danish Academy of Technical Sciences:
No, I did not.

Comment: This is an answer to the last question. Behaviour programs do work, but I
have never seen a long-term study that tracks the changes over time. In recent studies
in psychology, people hold implicit and explicit attitudes. You may change behaviour
but not necessarily what is regarded as implicit. The implicit attitudes are there
automatically, and people would easily revert back to an old habit.

**Mats Alvesson**
Lund University:
The relation between attitudes and behaviour is very interesting. Attitudes
poorly predict behaviour. We do not have or hold attitudes – we take an atti-
tude. Would you make a comment on that?

Comment: It is my experience that people would take an attitude. People have meas-
ured the explicit attitude, for instance trust, but people do not say that they do not
trust managers. Attitudes are not stable constructs - they can change.

Question: Reminded of the differences at the Øresund bridge, my question is: Where
should we go to find the implicit differences? Should we go as far back as to the chil-
dren?

**Mats Alvesson**
Lund University:
We should increase consciousness of all aspects of social life and how they
are communicated. Ongoing talk, influences, learning, acting – we should in-
crease consciousness. Our own logic is not the same being read as being
communicated. Discard the concept of culture in terms of behaviour – culture
is part of the interpretational framework. The important thing is how people
are relating.

**Niels Olsen**
Danish Academy of Technical Sciences:
I agree. It is dangerous to look at culture as something you can find. Culture comes to you or is revealed to you if you are open towards it. Culture manifests itself in many ways and details. As a scientist you should pay attention to these details.
Plenary discussion on safety culture

Panel:
Kathryn Mearns, Industrial Psychology Group, Aberdeen University.
Marlene Dyrløv Madsen, Roskilde University.
Henning Boje Andersen, System Analysis Department, Risø National Laboratory.

Chairman:
David Glasscock, Department of Occupational Medicine Herning, Denmark

Discussion:
The discussions related to the two presentations: “Measuring safety culture in offshore environments?”, Kathryn Mearns, and “Safety requires a reporting culture – barriers and opportunities”, Marlene Dyrløv Madsen and Henning Boje Andersen.

Minutes by:
Anne Richter, Technical University of Denmark

Question to Kathryn Mearns: Was there any intervention in the project, and did you undertake a follow-up?

Kathryn Mearns
University of Aberdeen:
No specific intervention was carried out, but each installation received a report on the data concerning safety climate, which they could act upon. The changes on safety climate variables seen over time, cannot be related to specific knowledge on new initiatives in the organizations. Comparisons and follow-ups are further complicated by the fact, that the workforce and subcontractors on each installation are extremely mobile. Nevertheless the project-group has noticed a relation between economic factors and employment in the sector, which in the period has been recessive. In this situation less attention is paid to safety matters.
At one of the installations the project-group has now the possibility to carry out a prospective study over several years.

Henning Boje Andersen  
Risø National Laboratory:  
At NASA/Austin, Texas a 10 year long study concerning culture at work, involving 8000 pilots in 36 airline companies has been completed, - using “Flight man attitude questionnaire”.

The study shows a correlation between attitudes to safety and opinion on the company. On the other hand considerable variance between national and company-specific factors were found, which prohibit correlation to accident rates.

Question: Did you in the studies find any signs of culture differentiation?

Henning Boje Andersen, Risø National Laboratory proposes more contributions on theories of culture, which could give direction to empirical research and repeated intervention studies. Empirically we need to sharpen the tools to differentiate culture, and to take account of organizational factors.

Kathryn Mearns  
University of Aberdeen:  
Empirically we have found different subcultures in each installation, connected to workgroups and to professional groups as well as between top - and middle level management and shop floor. Corresponding to the fact that workers live in different worlds of risk. This shouldn’t be seen as negative. Different cultures can bring forth dialogue on different perspectives of risk and safety. On the other hand there is a need of socialization directed towards a more shared way of commitment to safety.

Comment: One could problematize, if culture variations are so strongly related to organizational structure!

Kathryn Mearns  
University of Aberdeen:  
Agree, but there is a need of more research in this area.
Henning Boje Andersen  
Risø National Laboratory:  
Airline companies attempt to implement a corporate culture, but this is not very effective. It seems that local cultures arise “spontaneously”, and these are stronger than corporate culture. Refers to a Japanese study in a corporation where the overall structures of work, procedures etc. were identical. Nevertheless considerable variations on culture was found among the 5 branches studied. This emphasizes the need to put focus on local groups.

Question: Does anyone know of studies on the effects of globalization and new trends in work organization, such as group organization on safety culture?

Kathryn Mearn  
University of Aberdeen:  
Recently a study on the effect of team organization on safety in the hospital sector – relations between nurses, doctors and so on - has started up by colleagues in Aberdeen.

Henning Boje Andersen  
Risø National Laboratory:  
One should expect that culture shapes team behaviour, but professional cultures as well as culture connected to “the mission” of the workplace/company plays a role.

Comment: Along with research on safety culture it could be relevant to study communities of practice, in order to focus not only on verbalizations of culture but also on the shared activities and practices at the workplace.

Marlene Dyrløv Madsen  
Roskilde University:  
The study on reporting culture of air traffic controllers involved 5 teams à 8 persons. Even though work tasks and professions were identical, the teams in praxis related differently to procedures, with implications on safety. At the moment education focusing on teambuilding is ongoing. This is striving to respect individual work strategies.
Comment: Studies relating to work as communities of practice implicates being present at the workplace, - or as Niels Olsen frased it this morning, “to mingle with the natives”.

**Marlene Dyrløv Madsen**
Roskilde University:
We have applied a qualitative as well as quantitative approach, but the challenge is to develop valid methods. Niels Olsen and Mats Alvesson were very critical on the reliability of questionnaire methods in relation to culture studies. As they put it, the quality of the data depends on how the respondents perceive the questions. But are ethnographic methods more valid? In the air traffic control study we conducted informal talks with the employees at the workplace, and noted that the presence of the researchers had an impact on a longer term.

Comment: It is a something of a task to discuss different scientific strategies in social sciences, but at least it may be relevant here to discuss the outcome of different approaches. What is the purpose of the specific research? In action research, conducted at the Technical University, we have empirically found, that risks at work are typically not verbalized in the daily practising of work. - Therefore we find it necessary to use methods such as participative observation in interventions aimed at accident prevention. In this way it becomes possible to elaborate on how and why people are doing as they do.

**Henning Boje Andersen**
Risø National Laboratory:
It seems fruitful to combine different methods, being aware of problems of validity and reliability.

**Kathryn Mearns**
University of Aberdeen:
We are increasingly applying a proactive approach, oriented towards developing “sharing good practices” at the workplace.

At this point a new theme was posed as a question to Kathryn Mearns: Have you in your study related the results to other types of changes at the offshore installations, for instance, concerning technology?

**Kathryn Mearns**
University of Aberdeen:
No, not hitherto, but as earlier mentioned we have noticed an impact related to drop in oil prices. This implies cost reductions and lack of job security, - and “no pride in the workplace, no future, more stress”. This correlation haven’t been proven, but it seems probable.

We have asked the companies about the costs of accidents, but this is not accounted for separately, and nothing could be concluded in general terms. At 3 installations it was, however, possible to deduct that they lost a lot of money because of accidents.

Question to Marlene Dyrløv Madsen: Why do you call it a “reporting culture”, is this a relevant culture description?

Marlene Dyrløv Madsen
Roskilde University:
If culture is, “the way we do things here” incorporated in a structure, the term can be seen as a specific way of perceiving culture. – All in all the question of reporting is very sensitive. We have observed difference between Sweden and Denmark. During the preceding 15 years reporting failures and mistakes has been free of punishment among Swedish air traffic controllers. This is contrary to the case in Denmark. For this reason more mistakes are reported in Sweden, where the culture is more open. Even though the frequency of actual punishments for violation of rules was the same in the two countries one specific year, stories about punishment persisted in Denmark. – That is to say, myths. – This, of course, cannot be captured by questionnaires.

Question: Have you any knowledge on how the construction of meaning is negotiated?

Marlene Dyrløv Madsen
Roskilde University:
The organizations, especially in Denmark are very closed. There is a lack of communication on, for example, how one relates to “breaking the rules”. A new agreement concerning lack of punishment when reporting, is on its way in Danish air traffic controlling. – But it takes a long time to change culture.

Henning Boje Andersen
Risø National Laboratory:
In reference to Helge Hvid’s recommendation on workers participation in safety matters, I think it is more important that the management takes the lead in changing procedures and eventually, culture.

Comment: Following up on this, and on the discussion on teams and focus on communities of practice, one must take into account, that organizations are full of conflicts.

Comment: Yes, OK. This is noted! The communities of practice among managers as well as workers must be studied. The important thing is to relate the study of safety culture more to work situations.
CHAPTER 7

CENTRE FOR OCCUPATIONAL ACCIDENT RESEARCH – PROVISIONAL RESEARCH PROGRAMME

Centre for Occupational Accident Research

Provisional research programme
November 2000

Centre for Occupational Accident Research
National Institute of Occupational Health, Denmark
Department of Occupational Medicine, Herning
Technical University of Denmark, Department for Building and Energy
Risø National Laboratory, Systems Analysis Department
Prevention secretariat, County of Vejle
Accident Analysis Group, County of Funen
Research programme

Background
Every year approximately 50,000 occupational accidents are reported to the national register for occupational injuries at the Danish Working Environment Authority. Approx. 5,000 of the 50,000 accidents are severe occupational accidents, and 75-85 are fatal accidents. However, more occupational accidents occur, than are reported. Data from the Danish Work Environment Cohort Study (The National Institute of Occupational Health, Denmark, abbrev. AMI) and from a module concerning occupational accidents (The Danish Bureau of Statistics), show that less than half of Danish occupational accidents are reported, and that the amount of occupational accidents which are not reported varies from trade to trade.

Data provided by Danish hospital emergency wards indicate that approx. 100,000 occupational accidental injuries are treated yearly.

The frequency of occupational accidents in relation to the number of employed people has not changed significantly during the last 15-20 years, in contrast to the development in other comparable North European countries. In fact, a number of other European countries have experienced a considerable reduction of severe occupational accidents. The number of fatal occupational accidents in Denmark however has been constant the last 20 years, in contrast to other Nordic countries, which have experienced a decrease.

Recent data from AMI show that Danish employees have three times as many occupational accidents as Swedish employees with the same type of work.

Prioritising occupational accidents
There is an obvious foundation for intensive prevention of occupational accidents in Denmark, including fatal accidents and severe accidents. However, this requires research-based efforts, based on tested methods and guidelines for prevention of accidents. In addition, the efforts must be aimed at companies.
The Danish government and labour market parties have prioritised prevention of occupational accidents by granting DKK 25mil. to company projects, research projects as well as general occupational accident prevention efforts. Companies have been showing more interest in accident prevention, and industrial health centres have increased their activities within this field.

The purpose of the Centre for Occupational Accident Research

The primary purpose of the Centre is to create research-based knowledge on factors and work conditions that are of importance to the occurrence of occupational accidents. The centre's purpose is also to refine and develop methods for analysing and preventing occupational accidents.

Through the last 10-15 years, research in occupational accidents in Denmark has been conducted by a few small units, which have cooperated on only a few projects. The Centre has primarily been established in order to coordinate Danish research in occupational accidents, and to strengthen the cooperation between various institutions.

Research subjects - a survey

A common research programme has been worked out as a foundation for the Centre's research. The research programme is based on the participating institutions' research profiles, taking into account future needs in accidents research. This includes the strategy and action plan concerning occupational accident prevention strategies, which has been set up by the Danish Work Environment Council. The research programme is also inspired by other international research programmes, e.g., the NORA programme, set up by NIOSH, USA.

The four main subjects that have top priority for the future work of the Centre are presented below:

1. Safety culture

The future perspective in occupational accident research is directed towards the importance of the broad concept of organisational culture, including safety culture and the individual’s attitude toward safety and risk. The main research tasks are:
- to develop a safety culture concept
- to study cultural and educational barriers in companies - barriers which relate
- to safety and risk
- to study the relationships between various types of organisations and safety cultures on one hand, and employees’ perception of risk on the other hand
- to study in which ways the safety culture of a company is affected, in order to increase safety for the employees, including tools for change
- to study the relationships between safety culture and the incidence of occupational accidents

2. The epidemiology of occupational accidents, intervention and evaluation

It is necessary to further develop methods and data within the area of occupational accident epidemiology. This includes registration of occupational accidents, risk analysis, methods and designs for interventions. The main research tasks are:

- to develop criteria and guidelines for evaluation of interventions which aim at preventing occupational accidents, including evaluation of the effect of selected tools and methods
- to gather international results from evaluations of occupational accident prevention programmes
- to develop designs for intervention studies, including intervention studies in industrial cohorts, and designs for risk factor determination, with a focus on small companies
- to develop theoretical models for occupational accidents, and to study factors that are of importance to the risk of occupational accidents, e.g. stress, personal factors, group standards, education, training, etc.
- to develop methods for “case-finding” by means of hospital data, with a view to local efforts and effect evaluation

3. Methods and tools for prevention of occupational accidents

One of the Centre's goals is that its research will lead to testing and implementation of several methods for analysis and prevention of occupational accidents. The main research tasks are:
to collect Danish and international methods for analysis and prevention of occupational accidents
to develop and adapt models and tools for concrete prevention of occupational accidents, including methods which involve employees and which deal with the development of an organisation
to test models and tools for prevention of occupational accidents in relation to intervention projects
to evaluate the effect of various prevention models and tools
to recommend accident prevention methods and tools in relation to specific trades and technologies

4. The work of the future – the occupational accident of the future
Society and work undergo a development that is dynamic and disruptive. Some types of work disappear and new types emerge. It is important to be able to identify factors that may influence the future risks of occupational accidents. The main research tasks are:

- changes in the organisation of work, e.g. freelance work, tenders etc., which may lead to changes of the patterns of occupational accidents and changes in prevention opportunities
- differences in the perception of occupational accidents in holding companies and among sub-contractors
- safety aspects included in training/education
- adapting methods from 'Technological Foresight' in order to analyse future occupational accidents