

Chapter 1

Introduction

On the 26 April 1986 Reactor Four at the Chernobyl nuclear power plant exploded, causing radioactive fallout over most of North-Western Europe. In many ways the Chernobyl accident changed the world by demonstrating the catastrophic risks involved in the most advanced technology humans have ever created. Although the disaster occurred in a high-tech system, its root causes were not all that high-tech. According to Reason (1987), the Chernobyl disaster appears in fact to have been mainly due to human action. In investigating the disaster, the International Atomic Energy Agency (IAEA) identified a 'poor safety culture' at the plant and in Soviet society at large as the root cause of the accident (IAEA 1986). According to the investigation, both the Chernobyl plant and its institutional context were characterized by a culture that had become blind towards the hazards inherent in nuclear technology. Several accident investigations post-Chernobyl have pointed to culture as a key causal factor in the creation of accidents, e.g. Piper Alpha, Ladbroke Grove, Kings Cross, *Challenger* and *Columbia*.

The proposed relationship between organizational culture and safety is the topic of this book. This relationship, epitomized by the concept of safety culture, has undoubtedly become one of the hottest topics of both safety research and practical efforts to improve safety. For instance, most oil companies today have programmes devoted to improving the company's safety culture. Lessons learned from these accidents have also started to influence the statutory frameworks that dictate the safety management systems of organizations.¹

Alongside a growing interest in the concept of safety culture, there is still considerable confusion as to what the concept actually means. Within the academic discourse on safety culture several attempts have been made to define and specify its nature and content. For instance, journals like *Work & Stress* and *Safety Science* have devoted special issues to the subject.² But between the various approaches to the study of safety culture there are still few common elements. Put bluntly, the only thing about which there seems to be some agreement is the need for further research (Hale 2000). James Reason underlines the same point when he states 'Few phrases occur more frequently in discussions about hazardous technologies than safety culture. Few things are so sought after and yet so little understood' (Reason 1997: 191). Rosness (2001) voices a similar criticism in a paper titled 'Safety culture: Just another buzzword to hide our confusion?'

1 For example, the Norwegian petroleum legislation.

2 *Work & Stress*, 12, 1998, and *Safety Science*, 34, 2000.

What these critics are pointing to is a lack of theoretical models and frameworks to explain the relationships between organizational culture and safety. The existing research on safety culture thus rests on an assumption that there is in fact a relationship between culture and safety but without this relationship having been subject to discussion and empirical investigation.

This forms the point of departure for this book. The aim of the book is to take a step back and shed light on some fundamental theoretical, methodological and empirical questions regarding the relationship between organizational culture and safety. It addresses the following general problem: *How can a cultural approach contribute to the assessment, description and improvement of safety conditions in organizations?* The term ‘cultural approach’ means looking at the way cultural processes and traits within organizations influence safety.

This general question encapsulates four subordinate questions:

1. What are the theoretical foundations of a cultural approach to safety? This relates to the specification of the concepts and analytical models involved in studying the relationship between organizational culture and safety and I shall discuss it in Chapters 2–4.
2. How can the relationship between organizational culture and safety be investigated empirically? This is a methodical question regarding the assessment of safety culture and will be treated in Chapter 5.
3. In actual organizations what links exist between organizational culture and safety? This is an empirical question regarding the way the culture of an organization influences safety within it and will be answered through the empirical analysis presented in Chapter 6.
4. How does a cultural approach contribute to improved safety? How can research on safety culture be translated into techniques and principles for improving safety? This issue will be discussed in Chapter 7.

Posing and answering these questions has three main objectives. First, the aim is to contribute to *theoretical development* regarding the relationship between organizational culture and safety. Each of the four questions targets what I perceive to be gaps in the existing research on safety culture. The analyses presented aim to increase our knowledge of how cultural traits and processes may influence safety in organizations. Second, the analyses have a *sociological ambition* in shedding further light on how informal aspects of work and organizing relate to the formal structures of organizations and how the match between formal and informal organization may influence safety. In this respect the book continues the tradition from industrial sociology exemplified by Crozier’s *The Bureaucratic Phenomenon* (1964) and Lysgaard’s *The Workers’ Collective* (2001). Third, the analyses all aim to be useful in the development of *practical measures* for the improvement of safety.

In the remainder of this chapter I will briefly introduce the key concepts of culture and safety. In Chapters 2 and 3 I turn to the theoretical framework of

safety culture. The presentation of theory and previous research is divided into three constituent parts. In Chapter 2 I will give an overview of how issues of organizational safety have been dealt with historically and a review of some existing research on safety culture. This includes a discussion of some of the weaknesses in the existing research on safety culture. In Chapter 3 I will review some key theoretical perspectives on organizational culture. This is important in order to clarify some theoretical foundations related to the concept of safety culture. Chapter 4 gives an account of the relationship between safety culture and the issue of power. Chapter 5 discusses the challenges inherent in the assessment of safety culture, in particular the limits to survey methods in safety culture assessment. Chapter 6 presents a case study of the relationship between culture and safety in a high risk environment. In Chapter 7 I turn to the way a cultural approach can be useful in improving safety, while Chapter 8 extracts some of the conclusions of the book.

What is (Organizational) Culture?

What is culture? This is probably among the most complex and most debated questions of the social sciences. As Kringen (forthcoming) has noted, addressing the concept of culture is like opening a Pandora's box unleashing most social science concepts and, as a consequence, a host of analytical and definitional issues. A comprehensive discussion of the conceptual labyrinths of culture lies outside the scope of this book as it would undoubtedly require at least a book of its own. In this section I will only give a brief and admittedly rather superficial account of the concept of culture. A more detailed account of the theoretical considerations regarding the concepts of culture and organizational culture is presented in Chapters 2 and 3.

The word 'culture' stems from the Latin *colere*, which means to grow or to process (Eriksen 1998). The study of culture has to do with those aspects of human life that are not aspects of biology or unprocessed physical environment. This is culture in its broadest definition; everything that is not nature is to be seen as culture. Within this broad concept anthropologists and sociologists have tried to specify more analytical definitions of culture. This has resulted in a plethora of different definitions; a study by the American anthropologists Kroeber and Kluckhohn (1963) found more than 160 different definitions of the word. Although this figure refers to the number of formal definitions and not necessarily differences in the understanding of what constitutes cultural phenomena,³ their study illustrates that culture is a term used in a wide variety of meanings and contexts.

3 Formal definitions of culture usually do little to clarify how researchers conceive of culture (LeVine 1984). The way one conceives of culture is more visible through the phenomena that are studied, the methods used and the inferences made, rather than the words used to define the subject matter.

Within sociology, the concept usually refers to the values that the members of a group share, the norms they follow and the material objects they create (Giddens 1994). Social anthropologists tend to prefer somewhat wider definitions, ranging from culture as ‘the complex whole’ of knowledge, beliefs, ethics and customs (Tylor 1968, in Eriksen 1998) to the ‘webs of significance’ that humans both create and find themselves suspended in (Geertz 1973). The notion of culture deployed here lies somewhere between the sociological and social anthropological conceptions. I see culture as the frames of reference through which information, symbols and behaviour are interpreted and the conventions for behaviour, interaction and communication are generated. On the one hand culture is individual, as it provides the necessary frames through which action becomes meaningful. On the other, culture is public, as it consists of patterns of meaning that are shared by the members of a cultural unit but which nevertheless exist independently of any individual actor. This means that I view culture as both a cognitive and a relational symbolic phenomenon.⁴ Aspects like language, symbols, explicit and tacit knowledge, skills, identity, values, assumptions, and the ‘dos’ and ‘don’ts’ of social life are all regarded as central to the study of culture. The aim of a cultural study is, as I see it, to seek an understanding of why different information, symbols, actions and forms of behaviour and interaction stand out as meaningful to the members of a community.

Organizations constitute the cultural contexts studied in this book. The relationship between the concept of organizational culture and the more general concept of culture needs some clarification. The anthropological definitions of culture are developed to cover cultural phenomena like nations or tribes. Culture in this sense is associated with communities where the primary socialization of its members takes place within the borders of the cultural unit. This is not the case with organizations. This means that organizational culture is not as deeply rooted in the members of the cultural unit as are the frames of reference and behaviour conventions of a nation or a tribe. In other words, the concept of organizational culture refers to cultural phenomena of a different order (Schieffloe 2003). Although aspects of organizational culture may be taken for granted by the members of an organization, the members will be likely to have a greater degree of reflexivity towards the organization’s cultural frames than is the case with tribal or national cultures.

I reserve the term organizational culture to apply to the informal aspects of organizations. This means that I define the organization’s structural arrangements as being outside the concept of organizational culture, although strictly speaking, they too are products of social construction. The reason for this is that the analytical separation between culture and organizational structures allows for analyses of the relationship between the informal and formal aspects of work and organizing. As I will discuss further in Chapter 6, this relationship is sometimes problematic. Moreover, the match between informal and formal aspects of work and organizing

4 See Shore (1996) for a comprehensive discussion of this dualism.

is one of the instances where culture may have an influence on safety, hence the need for an analytical distinction between the two.

One important clarification needs to be made about the way the term 'organizational culture' is used in this book. Labelling a culture 'organizational' does *not* imply that it is necessarily attributable to an organization as a whole. On the contrary, organizations, depending on size and complexity, usually consist of multiple cultures associated with different departments, hierarchical layers, occupations and so on. For instance, the community of seamen studied in Chapter 6 does not correspond to the boundaries of a formal organization. Nevertheless, the seamen share some models of how a seaman should relate to his work, his colleagues and superiors and to those outside the community, which may be labelled as an occupational culture (Van Maanen and Barley 1984). Strictly speaking, then, one should perhaps speak of 'cultures in organizations' rather than 'organizational cultures'. Mainly for reasons of simplicity, however, I choose to stick with the established concept of organizational culture. As I will discuss further in Chapter 3, the theoretical explications involved in the use (or misuse) of the concept of organizational culture are more important than the concept itself. In any case, the various labels one could put on cultural phenomena in organizations are all related to *work*, which usually takes place in organizations. This is something that justifies the use of the term 'organizational culture' as an umbrella concept for the various guises of culture in organizations, including occupational or professional culture.

This sketch of the concept of culture, while hardly doing justice to the width of theory and research on the topic, gives a provisional account of the way culture is conceived in the analyses to be presented. The second key concept that needs some clarification is the concept of safety. The next sections present an outline of the concept of safety and the way safety relates to the concept of risk.

What is Safety?

From Risk to Safety

Safety must be understood in relation to the presence of some hazard or risk. As a simplification, it is common to define risk as a function of the likelihood of an event occurring and the degree of seriousness of the consequences of that event. When the level of risk is low the level of safety is considered to be high and vice versa. However, the concepts of risk and safety are somewhat more complicated than this and a more thorough examination is needed in order to clarify the contents of the concepts and the boundaries between them.

Traditionally, the idea of risk was closely related to the forces of nature, like earthquakes, storms, volcanic eruptions and the like (Lupton 1999). In this sense, the concept of risk refers to events that are 'acts of God' in the sense that they are beyond human control. Over the last few decades, however, the concept of risk

seems to have changed and its contents widened (ibid.). Today, the concept refers both to hazards created by humans and those created by nature.

Within sociology, Ulrich Beck's *Risk Society* (1992) has been influential in putting the concept of risk on the agenda. In it, Beck shows how the modern industrial production of welfare has had unintended consequences. In addition to creating welfare in Western societies we have also produced new sources of risk. Beck concludes that the concept of risk has become a root metaphor for late-modern societies. While risk was previously related to a *lack* of knowledge, the creation of new risks in late-modern societies is seen as a result of the *high* degree of knowledge that humans possess and utilize to change their environmental surroundings. The consequences of climate change, which have started to make their presence felt in the last few decades, are a typical example of such man-made risks.

In parallel with the increased public awareness of risk in Western societies, quantitative risk analysis (QRA) has emerged as a specialized field of research. The main focus of risk analysis is to support decision making by assessing and quantifying the risks associated with the operation and design of technical systems (Aven and Kristensen 2005). A risk analysis basically consists of a description of what may go wrong, how likely it is that something will in fact go wrong, and the consequences involved if these things go wrong. In the traditional approach to risk analysis risk is seen as something that exists objectively and the risk analysis as reflecting a true state of affairs with regard to risk. This objectivist stance has been criticized by proponents of a more Bayesian thinking. In a Bayesian perspective, risk is seen as a matter of subjective judgment on behalf of the risk analyst, not as a measurement of objective facts (Aven and Kristensen 2005). Although the resulting risk matrix is vital input to decisions on how to deal with the risks identified, the main emphasis of quantitative risk analysis is to identify and describe risks. This concept of risk views accidents as statistical events in the sense that their occurrence is assumed to be stochastic and random (Hopkins 2005). There is less focus on finding the root causes of accidents.

How one can and should determine risks has always been a controversial issue. The traditional quantitative risk analysis is based on the assumption that there is some objective and true level of risk 'out there' and that one can come close to estimating this through the use of standardized techniques. Cultural theorists like Mary Douglas and Douglas Wildavsky (1982) have voiced strong objections to this concept of risk. Their argument is that risk will always be, at least to some extent, socially constructed. Risk will always be rooted in a social context and will be influenced by social processes and cultural patterns (Hovden and Larsson 1987). What is regarded as dangerous will therefore vary across cultural contexts. Consequently, there can be no objective, universally true, measure of risk. For instance, research has shown that people are usually more afraid of events that in all likelihood they will never experience, such as nuclear radiation and plane crashes, than the events that are quite likely to cause them serious harm such as driving a car or painting their house (cf. Tversky and Kahneman 1974; Slovic et

al. 1980; Hviid Nielsen 1994). Douglas and Wildavsky's point is, of course, not to deny the existence of dangers. Douglas herself stresses that the 'dangers are only too real' (Douglas 1992: 29) but that our *evaluation* of them, that is the risk that we attribute to dangers, is contingent upon social and cultural context.⁵ Decisions regarding what constitute acceptable risks and the definition of risk acceptance criteria thus have a heavy cultural component (cf. Fischhoff et al. 1981).

If the concept of risk is related to identifying dangers and estimating the likelihood of their occurrence, although this will never be an objective measure, the concept of safety refers to our ability to handle or control these dangers. Consequently, safety has to do with minimizing risks. This underlines the complementarity of the concepts. It also points to the fact that the concept of safety refers to the measures taken to minimize risks, either by reducing the probability of a hazardous event occurring or by reducing the consequences of the event if it does.

Based on the above delineation of the concepts of risk and safety, a definition of safety will consist of three elements:

1. The concept of safety refers to a *state* or *situation* where the statistical risk is deemed to be acceptable or as low as reasonably practicable, the so-called ALARP principle, (cf. Reason 1997).
2. Safety refers to a *feeling* of security and control. This feeling may or may not resonate with statistical descriptions of risk. Someone's feeling of being safe and secure is much related to the degree of trust in safety systems and public institutions (Drottz-Sjøberg 2003).
3. Safety constitutes a form of *practice* in the sense that it refers to our ability to reduce or eliminate the likelihood of hazardous events occurring. Practice here refers both to aspects of work performance and to the barriers (physical, organizational or technological) which serve to reduce the likelihood of accidents occurring and/or to limit the consequences of accidents that do occur.

This latter part of the definition underlines that risk and safety are not synonymous concepts as safety is related to improvement rather than description. Within the safety discourse accidents do not simply 'occur', they are always seen as *caused* by something (Hopkins 2005). This means that safety research aims at analyzing *why* accidents happen not only *how often* they may occur. Thus, while they are certainly inextricably connected, risk research and safety research have a somewhat different starting point.

There seems to have been a shift in research focus regarding risk and safety. The interest in technological, human and organizational factors that might increase

5 In an attempt to bridge the gap between 'positivist' and 'subjectivist' views on risk assessment, Shrader-Frechette (1991) has introduced the concept of scientific proceduralism to denote a middle position.

our ability to deal with risk is increasing (Gherardi and Nicolini 1998; Pidgeon and O’Leary 2000). This does not mean that the research on safety is an entirely new field of research or that risk researchers are a dying breed. Rather, I see it as an indication of a change in the balance between the descriptive risk research and the more applied safety research, with the latter becoming increasingly important.

Safety Against What and for Whom?

The concept of safety always includes a notion of hazard. Whether one is talking about safety as a state/situation, a feeling or a practice, we are always talking about being safe against or from something. Thus, when talking and writing about safety there will always be a need to specify the types of incidents involved.

This book focuses on safety related to work organizations. This means that risks related to natural disasters are not included in the analysis. The same goes for risks related to malevolent acts such as sabotage or terrorism. When the term ‘safety’ is used it pertains to safety against unintended accidental events that occur in work organizations. This type of event can be further specified into major accidents, involving a catastrophic potential with regard to human, environmental and/or financial losses, occupational accidents, involving few persons and less severe financial losses and third-person injuries, to passengers, road-users etc. In the cases studied, the risks involved are related to major accidents or occupational accidents involving personnel working on offshore service vessels, supply bases and offshore installations. The activities of the oil and gas industry also involve the risks of severe environmental damage. Third-person injuries are not part of the risk picture of the organizations studied here and are consequently not part of the concept of safety employed in the analysis.