Safety Science 67 (2014) 25–36

Contents lists available at ScienceDirect

Safety Science

journal homepage: www.elsevier.com/locate/ssci

When safety science meets the practitioners: Does safety science contribute to marginalization of practical knowledge?

Petter G. Almklov [a,*], Ragnar Rosness [b], Kristine Størkersen [a]

[a] NTNU Social Research, Norway
[b] SINTEF Technology and Society, Norway

ARTICLE INFO

Keywords:
Regulation
Standards
Practitioners
Discourse
Power

ABSTRACT

In this paper we explore the proposal that knowledge generated by safety scientists may displace or marginalize existing local or system-specific safety knowledge embedded in operational practices. The proposition is based on theory about relationships between knowledge and power, complemented by organizational theory on standardization and accountability. We suggest that the increased reliance on self-regulation and international standards in safety management may be drivers for a shift in the distribution of power regarding safety, changing the conception of what is valid and useful knowledge. Case studies from two Norwegian transport sectors, the railway and the maritime sectors, are used to illustrate the proposition. In both sectors we observe discourses based on generic approaches to safety management and an accompanying disempowerment of the practitioners and their perspectives.

We discuss some contributing elements to this development: for example, the roles of external and internal HSE-specialists and the increased importance of international standards. We propose that the search for broad generalizations and the widespread adoption of cybernetic thinking in safety science may resonate with societal trends towards standardization and bureaucratic control.

We conclude that safety scientists, safety professionals, and organizations that hire safety professionals need to be sensitive to the possibility that their well-intentioned efforts to promote safety may lead to a marginalization of local and system-specific safety knowledge.

1. Introduction

The aims and scope of the journal *Safety Science* include the following statement: "*Safety Science* will enable academic researchers, engineers and decision makers in companies, government agencies and international bodies, to augment their information level on the latest trends in the field, from policy makers and management scientists to transport engineers" (Safety Science, no date). This statement corresponds to the common-sense notion that the applied sciences produce information that can be disseminated to practitioners. The practitioners will increase their knowledge base and, as a consequence, increase their capacity or power to handle safety challenges. Knowledge is seen as additive and empowering.

The purpose of this paper is to explore an alternative view on knowledge and power. We propose that the introduction of management regimes based on generic safety management principles and international standards may displace or marginalize existing local and system-specific safety knowledge. According to this proposition, the knowledge produced by safety scientists and propagated by safety professionals is not just added to the existing knowledge of the practitioners at the receiving end, and it is not necessarily empowering when it reaches the practitioners (see also Daniellou et al., 2011). Generic safety knowledge may be embedded in a discourse (Foucault, 1972; Jørgensen and Phillips, 1999) in which the local and system-specific knowledge of the practitioners is marginal, irrelevant, or even meaningless. Safety professionals may gain a model monopoly (Bråten, 1983; 2000) in their interaction with practitioners. This will not only put the practitioner in an inferior position with regard to power; it can also obstruct mutual learning in the relationship between safety professional and practitioner. When organizations adopt management regimes based on generic safety management principles, this also influences reporting lines and regulation. We specifically discuss how international standards and regimes of accountability built around these principles act as drivers of professionalization and compartmentalization of safety. In this discussion, standards for how work is performed and safety is managed are our primary concern, and less so technical standards. The intricacies of how technical and process standards are connected make up an interesting topic in itself that should be explored elsewhere. Almklov and Antonsen (2010) note, for example, how standardization of

* Corresponding author. Address: NTNU Social Research, Samfunnshuset, 7491 Trondheim, Norway. Tel.: +47 73596883.
E-mail address: petter.almklov@samfunn.ntnu.no (P.G. Almklov).

0925-7535/$ - see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.ssci.2013.08.025

components and parts of electricity grids is important for management to control work on it through standardization and accountability based methods.

In our discussion, we contrast generalized theoretical knowledge with knowledge that is more specific to local contexts. Where work is performed, people gain experience of the peculiarities of the technological systems and their surroundings and how to work in the specific context. Some of this knowledge is personal (Polanyi, 1958), as the know-how and perceptive skills of expert practitioners often involves non-verbal skills (see Dreyfus and Dreyfus, 1986). The knowledge may be shared by a limited community of practitioners (Lave and Wenger, 1991), or documented in rules and procedures that are specific to limited contexts[1]. The focus on the tacit dimension of experience based local knowledge does not mean that it is unrelated to more abstract and generic procedures. Often, experience-based knowledge is essential in order to make more formalized systems work smoothly. Still, throughout this paper we will refer to the local and system-specific, experience-based technical and practical knowledge forms that are specific to singular contexts, in contrast to generic formalized management principles that have been designed to be movable across sectors and systems.

The theoretical basis for our discussion will be reviewed in Section 2 of this paper. Our study's methods are described in Section 3. In Sections 4 and 5, our propositions are illustrated by case studies from two Norwegian transport sectors, the railroad and maritime sectors. In Section 6, we summarize the results across the sectors and discuss the role and responsibilities of safety science and safety scientists with regard to marginalization of local and system-specific knowledge and disempowerment of practitioners.

2. Theory

In the exploration of the foundations of knowledge and power in safety science, we use theories of how power and knowledge are connected. In the empirical section, we observe a change in the distribution of power between practitioners and specialists, and how this change is influenced by specific regulatory practices and organizational discourses. In the following, we present some of the key inspirations for this discussion.

2.1. Power and discourse

A central premise for this paper is that social phenomena are socially constructed, and they are always in the making. The ways in which we speak and write about things do not neutrally reflect the world. Discursive practices play an active role in creating and changing identities and social relations (Foucault, 1972; Jørgensen and Phillips, 1999). A particular discourse (for instance, a particular way to speak and write about hazards and safety) may gain hegemony. It then becomes taken for granted or naturalized. As a consequence, alternative ways to speak and write about things may become irrelevant or meaningless. In this way, discourses may become carriers of both knowledge and power, and specific discourses may reflect the interests of particular groups.

In the present study, we want to explore whether knowledge produced by safety science meets the practitioners in the form of new discourses – or hegemonies – about safety. To the extent that this is the case, we want to explore whether the existing safety knowledge of the practitioners is marginalized in these new discourses. As a first step, we will suggest that there exists a safety discourse that emphasizes accountability and standardization.

[1] See Hale and Borys (2013 a,b) for a discussion of rules in safety management.

2.2. Accountability, standards and knowledge mobility

There are some overall societal and scientific developments related to the discourse of safety discussed here. First, the current regulation of safety should be seen in context of the "Audit Society" (Power, 1997; see also Power, 2007). In recent decades, societies, institutions, and companies have developed an intense interest in formalized methods for checking and follow-up activities. There are "deep-seated institutional pressures to make risk management practice auditable" (Power, 2007: 153). Both in the public and private sector, there is an increasing tendency to regulate and follow up on safety through audits and accountability regimes (see, for example, Hohnen and Hasle, 2011).These methods are means of providing transparency and control by

> *... spelling out institutional procedures and decision rules that would otherwise be implicit, and establishing paper audit trails or their electronic equivalents. Those developments allow auditors and inspectors of various kinds – the exploding world of 'waste-watchers, quality police and sleaze-busters'* (Hood et al. 1999) *– to verify that the written rules, procedures and protocols have been followed* (Hood, 2007: 196).

Safety management has become subsumed by the more generalized accountability-based mechanisms of governance that dominate today. An example is the trend towards increased reliance on internal control and self-regulation, where companies are expected to have transparent standardized systems for control. For external auditors and authorities, it is primarily the *systems* that are subject to control and regulation (Power, 2007). In contrast to the command-and-control structures of the last century, in which leaders had more holistic responsibilities and authority, the regimes of accountability are narrowly concerned with the specified items by which individuals at different levels are held accountable.

Standardization is a method of making accounting objective and excluding personal judgment (Porter, 1995: 90–98). When tasks and targets are standardized and measurable, performance can be compared across sites. Moreover, it can be done with the "mechanical objectivity" (Porter, 1995: 4) of measurement and accounting-based methods. As such, standardization is an intrinsic element of the audit society. These developments are also crucial elements in the rise of management as a profession, and "managerialism" as a way of governing companies and institutions (see Power, 2007; 152ff; Pollitt, 1990)

International safety standards should be seen not only as attempts to ensure safety and interoperability but also as a means of making safety work transparent across contexts. If workers perform tasks as the standards prescribe, they are compliant, at least from an accountability perspective, and this compliance is transparent to regulators and others without having to further investigate details of the local setting. Standards are a means of making information mobile across contexts (Bowker and Star, 1999; Latour, 1987; Almklov, 2008).

When safety science is introduced into organizational practice as safety management systems or regulations, it is, as we will demonstrate, formulated within the dominating discursive modes of accountability and standardization. These, we will propose, tend to favor systematic disciplinary knowledge over local unique personal expertise, in terms of what is regarded as valid knowledge.[2] One of Antonsen's (2009: 1123) informants, in a study of culture and safety on offshore supply vessels, illustrates this neatly:

> *You know, good seamanship, it is tragic, it is about to disappear completely. That expression, 'good seamanship', it doesn't exist*

[2] For a discussion of standards as "recipes for reality" and the related power dimension, see Busch (2011).