HSE culture in the petroleum industry: Lost in translation?

Abstract:

Encouraging a sound Health, Safety and Environmental (HSE) culture is a regulatory requirement for petroleum companies operating on the Norwegian Continental Shelf. Although regulators in different industries have increasingly included safety culture in their regulatory repertory, it is still rare that regulators explicitly require sound cultures. In this paper we study how the requirement is 'translated' in two different petroleum companies, discuss why the translations differ and the extent to which they represent good organizational learning about HSE. Translation is seen as a form of organizational learning. The analysis is based on institutional theory, and a virus metaphor for adoption of organizational ideas.

The translations of § 15 in the two companies differ considerably. There are also signs of translatory ´mutation´ or drift from the original intentions behind the requirement. The different translations are explained by differences in histories, complexity and strategy between the companies.

The study illustrates the applicability of the translation concept for analysing organizational learning for safety and the usefulness of a virus metaphor for evaluating learning processes.

Keywords: HSE culture; Safety culture; Translation; Learning

1. Introduction

The Norwegian government has stated that the petroleum industry should be world leading on health, safety and environment (HSE) (White paper no. 7, 2001-2002). The Petroleum Safety Authority in Norway (PSA) has an important role in pursuing this ambition through inspections, guidance and development of regulations.

Inspired by the nuclear and the aviation industries, culture became an issue of interest for the PSA around the turn of the millennium (Kringen, 2008) and was included as a concept in the PSAs Framework Regulation for HSE in 2001. The prevailing § 15 in the regulation states that "A sound health, safety and environment culture that includes all phases and activity areas shall be encouraged through continuous work to reduce risk and improve health, safety and the environment." (PSA, 2011). In order to support the companies' efforts to fulfil the requirement, the PSA has released guidelines, a brochure, and generally communicated their expectations towards the industry in different meeting arenas. In spite of these efforts, the PSAs conceptualization of HSE culture is still open and equivocal. This may be partly be due to the fact that culture is an abstraction in itself but also because the PSA underscores that the requirement (§15) is functional, leaving it up to the companies to specify what constitutes 'a sound HSE culture' (PSA, 2003:6)

The equivocality of HSE culture opens up the concept for different *translations* and adaptions to the petroleum companies' internal values, structures and processes. It is evident that the industry has responded in different ways to the requirement, introducing different programmes that focus on behaviour or safety management in general (Le Coze & Wiig, 2013), but also more holistically

oriented approaches (e.g. Vikland et al., 2011). Translation used in this figurative sense refers to the more or less deliberate transformation of practices and ideas (HSE culture in our case) that takes place when different actors try to transfer and implement them (Røvik, 2011: 642).

The general contribution of this paper is the illustration of how the use of the translation concept gives additional insights into organizational learning as a process and how contextual conditions influence the learning process. Granerud and Rocha (2011) describe organizational learning as the sharing and application of ideas, techniques and experiences which can be generated within a company or brought from the outside. We see such learning as situated (Lave and Wenger, 2005), or dependent on the organizational context. This implies that the same idea can be translated in different ways in different organizations. Further, the theory of situated learning builds on the view that learning is relational, implying that the meaning of ideas is negotiated through collective reflection. Huzzard (2004: 352) expresses this by the following:

"When actors draw on new 'knowledge' they attribute new meaning to it, contextualise it locally and translate it into practice through everyday interaction. New understandings are then generated retrospectively through collective reflection."

Based on the above, and a qualitative interview study in two petroleum companies, we seek to explore the following research questions in this paper:

1. How can different translations of the HSE culture regulation (§15) be described and explained in two petroleum companies?
2. To what extent has the introduction of the HSE culture regulation supported good organizational learning about HSE in the companies?

The analysis is based on institutional theory. Here, one central argument is that the design and structure of organizations are not purely based on rational efficiency considerations, but also on organizations' need for legitimacy (Meyer and Rowan, 1977; Dimaggio and Powell, 1983). Organizations are influenced by socially created and accepted conventions in their surroundings, constituting their institutional environment. Organizational ideas refer to specific forms of conventions or 'recipes' which are considered proper and legitimate ways of organizing an enterprise and which also presumably can improve aspects of its activities, e.g. quality, efficiency, and safety.

In the next section, we will present some examples of how culture has been applied as a basis for changing recipes, followed by an elaboration of institutional theory and translation. The method for the study is explained in section 3, followed by a presentation of the empirical findings in section 4. A discussion related to the research questions is given in section 5, and finally we conclude in section 6.

2.   Cultural recipes and translations

2.1 Culture and improvement

The idea that culture is a key for improvements in organizations has a somewhat long history in the organizational field, and the early and influential books by Peters and Waterman (1982) and Deal and Kennedy (1982) are important starting points. The themes in these books covered cultural characteristics of successful enterprises and how managers could arrange for such characteristics to flourish. Developing 'soft' aspects of organizations were acknowledged as prerequisites for excellence and for creating competitive advantage.

The cultural turn in general organizational theory was eventually also picked up in the safety community, first in investigations after major catastrophes (e.g. Chernobyl, Piper Alpha), and later by safety researchers. Recipes for engineering safety cultures became accepted and legitimate means to improve the safety in organizations. Reasons (1997) well-known 'building blocks' in this respect included a reporting, just, flexible and learning culture, which in concert should result in an organization that was informed about the different factors which influenced the safety state of the system. Another example of a safety cultural recipe was coined by Hudson (2007), who normatively separated between different cultural types (pathological, reactive, calculative, proactive and generative cultures), and depicted these types as a cultural ladder onto which organizations could 'climb'. A recipe for how this journey could be accomplished was presented, including different 'micro-tools' and a marketing-inspired strategy. Reasons and Hudsons prescriptions on how to work with culture have been applied in a wide range of industries and countries.

Also, regulators in different industries have increasingly included safety culture in their regulatory repertory (Grote and Weichbrodt, 2013), inspired by the interest in the concept by researchers and practitioners. For example, the International Maritime Organization (IMO) made the International Safety Management code statutory in 1998, which requires ship-owners to develop their own safety management systems. IMO's primary goal with the ISM code was to gradually create a new safety culture in the maritime industry after several major catastrophes (Anderson, 2003). Still, it is rare that regulators explicitly require sound cultures, as in the PSAs Framework Regulations (Le Coze & Wiig, 2013). This makes it interesting to study how this abstract idea has manifested itself in different companies. Translation is a key concept that is used in this paper to illustrate this encounter (Røvik, 1998, 2007; Czarniawska & Joerges, 1996).

2.2 Translation in institutional theory

2.2.1 Institutional theory

Institutional theory builds on open systems theory and contingency theory. It focuses on the process whereby behavioural patterns become stable and socially accepted within organizations. Institutions can more formally be defined as "the emergence of orderly, stable, socially integrating patterns out of unstable loosely organized or narrowly technical activities." (Selznick 1996: 271). The organization's history, the organizational members and adaptions to the surrounding environment constitute important elements in an institutional process (Selznick, 1957).

Some of the research within more recent institutional theory has focused on the diffusion of organizational ideas, for example related to management, strategy or human resource management. This is especially linked to two classical articles by Meyer and Rowan (1977) and Dimaggio and Powell (1983). In both articles, it is argued that organizations are becoming increasingly more alike structurally. This homogenization of organizations is partly driven by a need to be considered *legitimate* enterprises by external actors (customers, competitors, authorities etc.), expressed by Meyer and Rowan (1977: 345) like this:

"After all, the building blocks for organizations come to be littered around the societal landscape; it takes only little entrepreneurial energy to assemble them into a structure. And because these building blocks are considered proper, adequate, rational, and necessary, organizations must incorporate them to avoid illegitimacy."

DiMaggio and Powell (1983: 149) coined the term isomorphism ('same form'), describing this as a process "...that forces one unit in a population to resemble other units that face the same set of environmental conditions". They described different forms of institutional isomorphism. *Coercive*

isomorphism is related to formal and informal pressure from external actors. National laws and regulations (e.g. § 15 in the PSAs Framework Regulations) will for example influence how enterprises operate and how they are structured. *Mimetic isomorphism* refers to the propensity to copy structural aspects from other, seemingly successful, enterprises that may arise in situations characterized by uncertainty regarding e.g. technology acquisitions, goals etc. *Normative isomorphism* is especially related to professions and to their seeking of legitimacy. The tendency for managers to recruit people from a small range of educational backgrounds, often with similar backgrounds as themselves, contributes to a standardization of problem definitions, solutions and recipes for change.

Other researchers have been focusing on what happens to organizational ideas when they cross the borders of organizations, in some respects called the Scandinavian branch of new institutionalism (Røvik, 1998). Czarniawska and Joerges (1996) use the term *translation* as a metaphor for the process that takes place when ideas meet organizations. Based on Latour (1986), they emphasize that ideas are spread by people who can translate objects or artefacts in various ways (Czarniawska & Joerges (1996: 18).

"Ideas are turned into things, then things into ideas again, transferred from their time and place of origin and materialized again elsewhere."

In our case, we could say that the idea of culture influencing safety is turned into a 'thing' or an object – a regulatory paragraph. This paragraph is then interpreted by the different petroleum companies and materialized in different internal programmes and activities.

2.2.2   The virus metaphor

Røvik (2007) describes two different phases in translatory processes. De-contextualization refers to how practices in one context are translated into more general ideas, suitable for application in other contexts. Contextualization on the other hand, focuses on the 'receiver' of an idea and on the translation of an idea into new practice in a different context. Related to our case, de-contexualization can be related to the conception of the regulation (§ 15 in the Framework Regulation), while contextualization refers to the different practises it has led to in the different petroleum companies. In this paper, we will focus on the latter phase, i.e. on contextualization.

How contextualization can take place in organizations is depicted by Røvik (2011) by means of a virus metaphor. Røvik argues that such a metaphor gives additional insights into what actually happens when ideas encounter organizations, and provides an alternative to the fashion analogy (Abrahamson, 1991) that has been widely used in institutional theory. Six different aspects of viruses are applied as analogies to how organizations handle ideas: 1) infectiousness, 2) immunity, 3) replication, 4) incubation, 5) mutation and 6) dormancy. We will present these aspects and analogies in the following, and relate them to organizational learning.

Infectiousness
Virus infections are dependent on hosts, who actively absorb viruses. Thus, there is an extensive interaction between a virus and a host cell. The organizational analogy is the formal decision that is made to adopt an idea, and the strategic considerations and negotiations that are conducted by the actors before the decision is made.

If learning based on an idea should take place, infectiousness is a necessary characteristic. Still, infectiousness is not sufficient. Even if a *decision* is made for adoption, the extent of actual translation and application of an idea may differ, both for an organization as a whole and for its subunits. Thus, what is learned, may vary considerably.

Immunity

Defence mechanisms can be triggered when viruses invade organisms, possibly creating immunity. In organizations, the management level can serve as an 'outer defence' when they avoid certain ideas that have proved to be of little use. The adoption process can also be halted if management does not pay enough attention towards the implementation process, possibly leading to isolation or expiry of ideas. Further, the end-users (practitioners) can also resist new ideas on grounds of incompatibility regarding values or their current practices, effectively leading to rejection of ideas.

Immunity used figuratively implies that no organizational learning will take place, as managers or practitioners prevent the sharing or application of the idea in question. Still, immunity signals that some form of previous learning has taken place. Based on past experiences, the organizational members have learned that the idea (or a similar idea) has not led to the expected improvements or is not suitable in the given context.

Replication

Viruses can replicate in large numbers after taking control of host cells. The organizational analogy is *entrenchment*, meaning full scale adoption of ideas and the company-wide reproduction of appurtenant practices. Regulators can be a driving force in this respect, if they pursue specific ideas and make use of their prescriptive powers and sanctions to ensure implementation. It also demands a persistent management, who follows up on an implementation process and provides the necessary resources, e. g. for education and training.

Entrenchment involves sharing and applications of ideas, and thus resembles organizational learning as defined by Granerud and Rocha (2011). Hudson (2007) provides an empirical example of how an entrenchment and learning process can be facilitated, by his story of the implementation of a HSE culture programme in a multi-national petroleum company. By using a marketing approach and branding techniques and by providing the same visual artefacts and tools company-wide the research team wished to lay the foundation for what was called a generative HSE culture. Also, after the introduction of § 15 in the Norwegian petroleum regulations, several companies responded by introducing safety management programmes by using a similar programmatic approach (Le Coze & Wiig, 2013).

Incubation

The period from viruses entering a host to symptoms appearing can vary considerably and is referred to as the incubation period. Similarly, ideas that enter organizations can linger for a considerable time period before they 'bloom' and manifest themselves in new practices. Røvik (2011) describes this as maturation of ideas, which can be hampered or supported by management behaviours and the strength (available resources, training provided) and duration of promotion efforts.

Incubation signals a prolonged or delayed learning process. Even if a decision is made to implement an idea on a managerial level, it may not gain sufficient momentum or attention in other parts of an organization. In our case, encouraging a sound HSE culture became a regulatory requirement, without any detailed prescriptions on how this may be accomplished. It is reasonable to assume that the petroleum companies needed time to figure out how to meet this requirement.

Mutation

Mutation is another virus capacity, which entails genetic alterations that could make viruses more viable and adapted to their environment. The organizational analogy involves viewing ideas as transformable, where an active 'host' *"…may copy some aspects of a management idea, while neglecting, omitting, reinforcing or altering others."* (Røvik, 2011: 642). This may also entail making

general ideas more concrete, which is of relevance in our case where a regulatory functional requirement ("a sound HSE culture") is translated in different oil companies.

Mutation as an analogy relates to our basic view on organizational learning as *situated*. What is learned on the basis of a regulatory requirement such as §15 may depend on the characteristics of the enterprise (products, processes, employees, traditions etc.) and how the enterprise has adapted to its environment (marked conditions, competitors, sub-contractors etc.). In other words, §15 was introduced in different institutional environments, possibly giving impetus to different learning processes. In addition, the 'openness' of the paragraph may also have contributed to learning differences. Mutation also involves a time aspect, which implies that translation of an idea may be an ongoing process. The HSE culture paragraph is a fixed entity, but how the different companies respond to it may change over time.

Dormancy

Lastly, dormancy refers to viruses' capacity to deactivate and 'shut down' so that detection by the immune system is avoided, possibly followed by reactivation, e.g. when the immune system is weakened. Organizational ideas can have similar patterns of deactivation and reactivation, possibly resembling cyclic changes in organizations' surroundings, such as trade cycles, catastrophic events etc. For example, the Macondo blow-out in 2011 seems to have boosted a new interest in safety culture among researchers and practitioners.

Dormancy also signals that something is learned in the organization. Some ideas, techniques and experiences are present in the organizational repertoire but may not be actively used. Other ideas may have gained more attention in the organization, at the expense of the one that is dormant. External events such as accidents may trigger a reactivation of the idea.

3. Method

The empirical material in this paper stems mostly from the ongoing project "Translating HSE culture" (TRACULT) financed by the Research Council of Norway. TRACULT's main data are a comprehensive qualitative interview study, investigating how HSE culture is understood and operationalized in different companies operating on the Norwegian Continental Shelf. It includes a broad selection of operators and contractors. 57 interviews were performed, both in groups and individually with the following actors: PSA, two unions, two contractor companies and four operating petroleum companies. The intention with the interviews was to examine in what way requirements from authorities influence HSE strategies and organizational choices in different companies and subcontractors. In support of the interview study, TRACULT also includes an introductory literature study and a document analysis including coding of the different conceptions of HSE culture.

In this paper, empirical material collected in two operating petroleum companies are presented, involving a total of 14 qualitative interviews. The authors of this paper have worked with these two companies in several projects over the past 10 years. The empirical material was supplemented by experience gained through these projects.

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The qualitative interviews we conducted were semi-structured, i.e. we used an interview guide with open ended questions that could reveal unexpected perspectives. Most of the interviews were conducted at the respondents' work places, and lasted for approximately one hour. A few interviews were done over the phone for practical reasons. There were two researchers present in all interviews. The interviews were recorded, and then transcribed verbatim.

4.   Translations of 'a sound HSE culture' in two different petroleum companies

In this section the different translations of the HSE culture regulation in two petroleum companies (company A and company B), operating on the Norwegian Continental Shelf (NCS), are presented.

4.1 Company A

Company A is a major international petroleum company that has a long history on the Norwegian Continental Shelf. The company has over the years completed many different safety programmes. The content and perspectives of two of the main programmes will be described here. Both of them can be traced to the HSE culture regulation.

The first programme started in 2002, not long after the Petroleum Safety Authorities' (PSAs) Framework Regulation/§15 was introduced. After working with safety for many years without seeing improvement and after many reported unwanted incidents and some serious accidents, the company wanted to change course in their safety work.

> "We had many serious incidents, and that was not ok. We gathered together the whole HSE department to a seminar, and asked: What is it that prevents us from being excellent?"

In parallel, the company had regular meetings with the PSA. In one such meeting, involving the CEO, company A was criticized by the PSA for "not having a good enough HSE culture". This remark spurred considerable activity internally in company A. HSE culture was not a familiar term at that time and the CEO went back to one of those responsible for HSE in the company and told her to come up with some ideas of how this could be addressed.

> "It was then we started to work on this [safety culture] and tried to find out what this actually meant and what we should do about it."

A project group was established, that made a plan for a major safety programme, later to be approved by the top management group. Related to the virus metaphor, the infectiousness of the HSE culture concept was clearly related to § 15 and the signals from the PSA that there was a need to improve the culture. In addition, the negative safety results made it evident that there was a need for a new approach. Thus, by applying cultural change as a heading for their planned initiatives, two

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purposes were served: (1) They could demonstrate compliance with the new regulation (§ 15) and (2) they had a starting point for carving out a new approach to meet a safety challenge.

The project group then started working on the content of the new safety programme. As the starting point was culture, they saw the need to include the whole organization, and also to make it a 'high impact' programme. One of the company's managers at that time explains it in this way:

> "We were not going to create a traditional training course with PowerPoint presentations and so on. There were 10 000's of people, so we had to make something that was different and spectacular, and that no one had seen before."

The top management was continuously informed of the plans and gave the programme high priority and also provided the necessary resources without much resistance or debate. The result was an extensive awareness campaign for the whole company, including onshore as well as offshore personnel, contractors as well as operator. The barrier concept was used extensively, illustrating different organizational factors in a ´swiss cheese´ manner in order to control risk. Even though these barriers reflected cultural values which the individuals should internalize, cultural change was not officially stated as a goal for the programme.

> "One thing we were clear about was that we would not use the word culture in the programme. […]. There is no doubt in my mind that it is easier to communicate right behaviour than the right culture. We would not trouble people with the academic, vague culture concept. Sure, it was a cultural change programme, but we would not say it."

Mutation in the virus metaphor refers to alterations of an idea to make it more adapted to its environment, e.g. by copying some aspects of it and by omitting others (Røvik, 2011). The decision to avoid the use of culture for pedagogical reasons, and instead focus on behaviour signals a conscious mutation, in an effort to make the idea more fitted to the company.

The programme consisted of a kick-off conference with a standardized programme, one for each installation and onshore unit, involving both own staff and associated contractors. After the conference, there were several follow-up meetings at the work place. The project group provided modules and material to use in these meetings.

The organization completed the programme over a fire-year period. Thus, in light of the virus metaphor, the idea was widely replicated, supported by the resources made available by the top management, and the efforts made by the project group and line management.

In the later stage of the programme period, company A merged with another petroleum company. The merger demanded a great deal of resources and attention on the new company, and the momentum of the safety programme eventually slowed down. The programme gradually *expired,* an idea-handling process that can be related to virus immunity (Røvik, 2011: 646). Still, a new programme was established, building on some elements of the previous one, and involving both parties in the merger.

> "We were now to parties and two cultures. A new concept was created, and that was reasonable I think."

This new programme was also initiated after several serious incidents. One of the initiators explains the background of the programme this way.

> "We saw that our measures were not sufficient to prevent major accidents or incidents with great potential. The investigations, both from the petroleum safety authorities, the police and even our own investigations, showed that we were weak on leadership, risk comprehension and compliance. The top management therefore challenged us to come up with new measures."

The new programme focused thematically on compliance and leadership. It was decided to run the programme throughout the whole organization and with all contractors, recognizing that the causal mechanisms behind accidents were often complex and involved actors at both the 'sharp' and 'blunt' end. Even if it was categorized as a compliance programme, the initiators stated that one of the main goals was to develop a culture in the company that would have a positive impact on safety. The first programme had the hallmarks of a campaign, which included one kick-off gathering and several follow up meetings. The new programme was based upon a generic model with the intention to operationalize how to control risks in daily work.

> "In this model you agree to follow each step in the work process in a given order. If you follow these steps you should be able to identify the risk at an early stage. This means that anyone can come and ask or check if you have done your work the way it should be done."

Even if the second programme differed from the first in several ways, the emphasis on barriers continued: in the first programme through modules with group work/discussions that focused on different barriers, in the second programme through recognizing barriers in each step of the work process.

Unlike the first programme, which took the shape of a major awareness campaign, the second programme was shaped more as a toolbox to be used actively in the daily work. Even if the costs and the size of the 'kick-off'-gatherings were much less extensive in the second programme, the initiators experienced challenges in enrolling the programme. These challenges were explained as stemming from culture.

> "It's a pretty demanding task to go out in a huge organization trying to teach everyone a way of working, especially in our culture. We belong to a Scandinavian culture where we are very independent. We want to do things our way and think we already know what's right."

Even if the startup process was demanding, the initiators considered the programme a success, mainly due to two factors: 1) the anchoring of the programme in top management in the company and 2) that the programme, even if it was inspired from earlier experiences and from other actors in the industry, was developed internally in the company.

Related to the virus metaphor, we can say that the first programme had undergone a comprehensive mutation into the new programme. This mutation was meant to make it more adapted to the new organization after the merger, allowing two parties to create some common ground, and also address some new challenges related to leadership and compliance, revealed in investigations.

4.2 Company B
The second empirical example is a Norwegian affiliate of a multinational petroleum company. The affiliate established its first office in Norway in 2001. The affiliate has grown considerably during the last six years, and now has an operating responsibility on the Norwegian Continental Shelf.

In 2008 the Health, safety, environment and quality (HSEQ) manager initiated a HSE culture project. One reason for this was to meet the authorities' demands for a "sound HSE culture" (§15). Thus,

using the virus metaphor, company B was *infected* by the regulators' § 15, just as company A. In addition to meeting the regulatory requirement, the management saw a HSE culture project as an opportunity to build common foundation and identity. At the end of 2008 they were in a phase of building the organization to get their first operatorship on the Norwegian Continental Shelf in 2010. This meant that people were hired more or less continuously, work processes and procedures were established and their first oil and gas installations were under construction. One of the employees had this reflection about what it meant to be an organization establishing itself and growing:

> "We are a pioneer organization - a new organization, and we have to help one another to find out how to do things. "

Yet another reason why they decided to start a HSE culture project with an organizational approach had to do with the CEO's previous experience with behavioural safety projects. A focus on individual behaviour and compliance to procedures and requirements had in his opinion not given the desired HSE results. This is how he formulated the idea of the project:

> "HSE culture is the foundation for everything that we do – for how and what. It is about building our common identity and culture. Culture is not a thing, such as designing a pump. We have to raise questions concerning what do we mean by culture? And what do we expect to build together? "

Thus, the affiliate did not initiate the HSE culture project due to problems with human error or unsafe behaviour. Furthermore, the HSE culture project was not initiated to change the culture or enhance safety behaviour, since the company was just recently established in Norway. Since the affiliate was relatively young, it had not been through many change projects or projects. Using the virus metaphor, no *immunity* had been established. Further, they were given considerable latitude from the parent company regarding strategy formulation for building the new organization, and were not instructed to use any existing change concepts.

The project's starting point was to create an imagined future including good HSE results, where everyone in the organization contributed in the process (Vikland et al., 2011). An underlying assumption of the project was a credo based on an organizational perspective. Understanding the relation between organizational culture and HSE, and making this understanding an integrated part of daily work practices, would lead to good HSE results and an overall good performance. The goal of the project was that everybody in the organization would understand and integrate the knowledge of this relation into their daily work. To fulfil its intentions the HSE culture project had different steps. Firstly, organizational qualities were examined and analysed, including structural, cultural and interactional qualities. This was done with mapping consisting of in-depth interviews with all employees, including consultants and contractors. In addition to the interviews, a questionnaire-based survey was sent out electronically to everyone in the organization. The intention of the examination was (i) to ascertain a picture of how people at every level in the organization interpreted and understood different issues and the cultural qualities of the company, (ii) to describe the culture and reflect on the relation between culture and HSE, (iii) to understand what related to HSE in their daily work practices, and (iv) to provide wishes and suggestions for activities in the HSE culture project. Secondly, the organizational qualities that came out of the examination and analysis in the mapping were used to design an organizational model. The purpose of designing the organizational model was to take advantage of the organizational qualities as an instrument to achieve overall good performance including HSE. This organizational model served as a reflection object, symbolizing how everybody was going to work together and communicate in order to achieve excellent performance including HSE. Thirdly, the organizational model was implemented in the organization. The goal in this step was to make sure that everyone in the organization understood how to operationalize the organizational model in their everyday work as a means to obtain good

HSE results and an overall good performance. Managers were the key component to putting the model into action: the responsibility for operationalizing or implementing the HSE culture project was a line responsibility and not a task for the HSEQ department. This meant that it was crucial that managers exercised leadership that supported the organizational model. All managers participated in a one-day course. The course was a combination of a thorough repetition of the organizational model followed by individual and group reflections upon what it meant to be a leader who both supported and strengthened the organizational model. Everyday working situations that managers faced were used as cases to practice on. They reflected upon cases based on dilemmas and the possible positive or negative effects of the actions they chose.

The project applied a systemic organizational approach to HSE. The general line of thinking was that several organizational dimensions were influencing HSE and performance, such as informal organization qualities, the formal organization, social networks, interactions with other people, the technology in use and procedures (Schiefloe & Vikland 2006; Bye & Lamvik 2006). By this approach one wished to generate people's intrinsic motivation by creating favourable conditions for knowledge development, learning processes and safe work practices. The questions asked included what are our organizational qualities and which ones do we wish to strengthen and develop.

An interesting result of running the HSE culture project was that the concept of the HSE culture project was used at every level of the organization. Related to the virus metaphor, we can say that the HSE culture project, through the way it was implemented, was entrenched throughout the whole organization. Employees and managers adopted the organizational model by using it in everyday language: for instance in different contexts, employees spontaneously used the model to describe an interaction process, to explain the result of a project or to exemplify and emphasize who they were. This supports that a strong entrenchment process had taken place. The project was also seen as helpful in the growth process of the affiliate:

> "The working environment is very good, and I must say the organization has handled this stressful period very well. I am certain that this has to do with the emphasis on job satisfaction and [the HSE culture project]."

The HSE culture project in company B had a relatively short initial implementation period of six months. One of the reasons may have been that this was a relatively small and new affiliate. Another reason was the strong focus on the project throughout all levels and departments. To maintain the momentum, the project was extended to three years, with a three year follow-up of the outcome of the project. The project was also linked to some positive aspects of the operations. The platform this company operates has high regularity and good safety results compared to other platforms on the Norwegian Continental Shelf. The first Managing Directors statement when starting up the HSE Culture project is thus supported:

> "I strongly believe that company culture makes a difference. A solid culture is a prerequisite for delivering high-quality results within an organization. HSE is always at the top of the agenda and is the most demanding task to deliver on. I believe that if we succeed within HSE, we will also succeed with the rest of our business."

The project has been relatively stable, but some changes have still taken place. Even if key persons in the project from the beginning had an outspoken distrust in quantitative measuring of "soft aspects", individual employees are now graded annually according to company values within the framework of the HSE culture project. Thus, there has been a drift from a collective and holistic approach to culture, towards an individual appraisal of cultural values. Thus, some signs of a mutation can be observed.

"We do not have any compliance programmes, but we are measured by our leader on how good we are at putting our company values alive. This is put on our scorecard."

Also, some of the employees with longer length of service expressed that the project has not the same intense focus as it used to have (cf. *expiry*). Still, newly hired employees sense a significant impact of the HSE project.

The culture here is simply quite unique. I'm thinking - how have they managed to establish this environment? Since it is a relatively new company, they must have done something right to begin with, I think. Here I feel that the employees have confidence in each other. There are no sharp elbows; rather they try to make each other good.

5.   Discussion

5.1 The different translations

The first research question involved exploring how different translations of the HSE culture regulation (§15) could be described and explained in the two petroleum companies. As the two empirical examples show, the regulation has been met in different ways. In other words, §15 has been contextualized differently in the two companies. Some characteristics of how the two companies have embraced the concept are summarized in Table 1.

Table 1: Characteristics of two companies' handling of the regulation requiring "…a sound HSE culture" related to a virus metaphor

Aspects of viruses	Organizational analogies regarding handling of ideas	Company A	Company B
Infectiousness	Adoption	Programme 1 initiated by CEO after meeting with the PSA Top-down design, approved by top management	Bottom-up design Initiated by CEO Holistic approach
Immunity	Non-adoption Isolation Expiry Rejection	*Programme 1:* Expiry/burn-out	Stable/included at the moment
Replication	Entrenchment	*Programme 1:* − Campaign-inspired − Conferences including own employees and contractors − Barrier focus *Programme 2:* − Tool-box development − Compliance focus *Both programmes:* − Centralized production of material − Powerful operator enrolling contractors − Local responsibility for follow-up	− Reflections in each department to develop measures bottom-up. − Reflection arenas including managers on all levels − Training of line managers − Development of common visual artefact to use in different settings
Incubation	Maturation	Longer implementation periods; large organization with many contractors	Shorter implementation period due to size and novelty of the company
Mutation	Transformation	Programme 1 'mutated' into programme 2	Project relatively stable, but signs of drift from collective to individual focus
Dormancy	Inactivation	Programme 1 presently inactivated Programme 2 still active	N/A, integrated part of company policy and identity

As mentioned, important general elements that influence on how institutional processes unfold in organizations are the organizations' history, the organizational members and adaptions to the surrounding environment (Selznick, 1957). Based on these, and our acquired knowledge of the two companies, we will discuss the differences in the table above according to three dimensions: (1) The different histories of the two companies (2) Differences in size and complexity (3) Different strategic views.

5.1.1 Different histories

Company A has a long history over several decades with continuous growth in activities and number of employees. It has completed several company-wide organizational and structural changes since its establishment. The main approach used to implement these changes throughout the years has been *top-down initiated campaigns*, usually supported by a project implementation team.

As a central element in the repertoire of change approaches, it is thus not surprising that the same approach is applied when 'a sound HSE culture' is the issue. In company A, the two programmes were both initiated by top management, and support staff arranged thoroughly planned conferences and produced material for local follow-up, laying the foundation for the entrenchment of the initiatives. The historically based, top-down, campaign style approach in company A can also explain why the programmes have remained stable. The content and form of the programmes have not changed in any fundamental way within their respective programme periods.

Company B on the other hand has a short history on the Norwegian Continental Shelf, with no set traditions for implementing change or development projects. They thus had the opportunity to start with a 'clean slate', and to orientate themselves in the landscape of change approaches. This can partly explain why they chose an entrenchment approach that was less conventional, including reflection arenas and broad involvement from everyone in the translation of the HSE culture concept. Even though the HSE culture project was initiated by top management, it had a bottom-up design, involving the organization in developing the content.

5.1.2 Differences in size and complexity

The two companies are quite different with regards to size and complexity. Company A has several times more employees and has a wider range of products and activities compared to company B. This is reflected in a more complex organizational structure, and also the involvement of more contractor firms in company A.

These differences also seem to influence how the regulation on HSE culture has been contextualized in the two companies. The size and complexity in company A can explain why they chose a top-down design for implementing the regulation, and the rundown of static programmes not subject to any substantial changes during the respective programme periods and the longer maturation period due to the large number of employees and contractor firms. The lesser size and complexity of company B made it possible to have a shorter implementation period, and more local and broad involvement from employees.

5.1.3 Different strategic views

Another dimension to be considered when understanding different approaches in developing HSE culture has to do with the underlying strategic views on how to achieve good HSE results.

There is a variety of proprietary behavioural safety programmes on the market worldwide, "all aimed at encouraging workers to behave more safely" (Hopkins, 2006: 584). One common explanation for implementing such programmes is the view that the great majority of accidents are caused by "human factors" (Krause 1990 in Hopkins 2006, 585). Also, Rasmussen (1990, 1993) states that accidents typically are judged to be caused by "human error." This is often an argument behind implementing behavioural safety programmes, which are usually standardized and seen as applicable for all employees, and often aiming at strengthening compliance.

The opposite side of this strategic dimension can be called the systemic organizational approach (e.g. Hollnagel and Woods, 2006; Woods et al., 2010). This approach implies an emphasis on collective

measures for safety improvement, e. g. by creating favourable conditions for knowledge development and learning processes (Solem and Kongsvik, 2013). Programmes or projects influenced by a systemic, organizational approach are usually tailored for different groups and work tasks, and has a character of organic emergence.

Most safety programmes will lie somewhere in between these opposites. Through the virus theory used above, we see that company A approached the regulation in a much more behaviourally based manner, while company B applied a more systemic organizational approach. There are several reasons for this, i.e. enlightened by the size and history dimension, but the choice the two companies have made, should also be seen in the light of the fundamental strategic values within these companies.

5.2 The virus metaphor, learning and HSE culture

The second research question involved a normative consideration; whether the HSE culture regulation has led to good organizational learning about HSE in the companies studied.

By using the virus metaphor we have demonstrated the differences in the learning process that have taken place in the two companies. The virus metaphor is not normative in itself though, and the inherent concepts do not directly indicate what are good or bad translations. Being normative in this respect is a difficult task, as one may ask good or bad learning for whom? The answer may differ considerable, whether you ask the regulators, managers, employees or contractors.

Still, related to our case, we could ask if there are signs that the PSAs *intentions* behind § 15 are accomplished, that is if the two companies have encouraged a sound HSE culture. In the brochure provided by the PSA (2003), meant to support the company efforts, culture is defined in a standard way: as the knowledge norms, ideas and attitudes, which characterize a group of people. Further, the requirements for a sound HSE culture were regarded to include efforts to *integrate* health, safety and the environment in improvement work and also to maintain *a good balance* between individual responsibility in HSE work and the responsibility of the enterprise.

In company A, the health (H) and environmental (E) issues were barely addressed in the two programmes studied. Both had *safety* improvement as their primary objective, and the company by and large omitted the other two concepts, even if integration of the three was regarded as important for the PSA. It must be mentioned that to consider HSE in concert was and still is rare, with some notable exceptions (e. g. Høivik, 2009).

In company A, the mutation from programme 1 to programme 2 also seems to have distanced the efforts away from the PSAs intentions. The first programme was very ambitious. The wish was to create some common ground regarding safety knowledge, norms and attitudes, involving large scale conferences and thousands of employees and contractor, and later follow-up at their work places. Members of the project group also see the first programme as a cultural change programme.

The backdrop for programme 2 was some serious accidents, and the following investigations highlighted lack of compliance on different levels as important causes. Compliance also became the main issue in programme 2, signalling the importance of rule following and of every individual to take responsibility for safety. Systemic efforts for accident prevention were downplayed. Programme 2 can also be labelled as reactive, as it was a response to some serious accidents, whereas cultural approaches aim to be proactive, and to prevent accidents before they happen. Thus, the intention behind programme 2 seems not to be to encourage a sound HSE culture, at least not directly. This

does not exclude the fact that safety may have been supported in other ways than by a cultural approach.

When we look at Company B, their translation seems to have been more consistent with the authorities' intentions behind the HSE culture regulation than company A. The company uses the term 'HSE', and not only 'safety', even if the programme now more often is referred to as general culture programme and not 'HSE culture programme'. When we look at the PSA's guidelines for §15, it is stated (PSA, 2011) "...that health, safety and environment work cannot be viewed independently from each other or from other value-creating processes in the enterprise", company B's integrated way of working with HSE culture corresponds well.

Company B's HSE culture project is still, 6 years after the introduction, very much alive. The outcome of the project in terms of activities and artefacts is used in all departments and in all levels, and the employees trace the company's identity and "way of doing things" back to the HSE culture project. Since § 15 was one of the motives for the programme, it seems that it has had a significant influence on company B, both directly and indirectly. In that sense the HSE culture regulation has stimulated organizational learning by giving this company a basic foundation.

The above illustrates that the virus metaphor provides a terminology that not only can be used to describe an organizational learning process related to an idea, but also to consider some normative aspects. On a general level, failed organizational learning processes related to an idea can be explained by terms such as immunity or non-adoption, no or limited replication, mutations into something that does not support the original intentions or dormancy/loss of momentum due to competing activities etc.

In a similar way, the virus metaphor can provide some criteria that characterize positive learning processes based on organizational ideas. Using the HSE culture regulation, and taking the regulator´s view, this can be exemplified in the following way:

First, HSE culture as an idea must be adopted, involving commitment to the idea from top-management. This demands some form of interaction between regulators and top management, and a common understanding of the inherent concepts (culture, HSE), intentions and goals. Although a regulatory requirement cannot be rejected, the understanding of such an abstract concept may still vary and influence the subsequent translation of the idea.

Second, a successful translation involves replication, in our case a company wide application of HSE culture as an idea. In making this concrete, one should be knowledgeable about the context and particularities of the organization in question so that the vehicles for replication are suitable. Still, a basic premise should be that cultural development demands some form of interaction between the members of the organization (Solem & Kongsvik, 2013). The programmes should lay the foundation for such interactional processes to take place. In some cases one might also observe a *decoupling* between an idea and internal activities (Meyer & Rowan, 1977). External demands may seemingly be adopted, but the internal units may still be buffered and unaffected. In other words, compliance is signaled but no learning has really taken place. Replication and learning involves coupling between an idea and practice.

Third, one should look out for mutations or changes in the efforts to encourage a sound HSE culture. Mutations may represent positive adaptations of an idea to the given context, but may also imply that it no longer serves the original purpose. A critical, external view might be helpful, a function which may be served by the regulator.

A fundamental condition for good translations is also translator competence (Røvik, 2007). This implies that the translators should have thorough knowledge of the organizational idea in question, as well as the context it comes from and the context it is intended to be used. In our case, this applies for both regulators and for industry representatives. It also implies that the regulators and the companies should collaborate to improve the translator competence in the industry in general, and that the regulator have a special responsibility in this respect as the initiator of the regulation (§ 15). Lack of translator competence can contribute to failed organizational learning processes, for example related to non-adoption or decoupling.

6. Conclusion

By using an institutional approach, we have analysed the translation of a regulatory requirement in two petroleum companies, stating that one should encourage a sound HSE culture.

The study has illustrated that the translation concept provides a framework for analysing organizational learning as a process, and provides means to consider what happen when safety concepts are introduced in organizations. How translations turn out depend on both *the institutional environment*, shaped by an organization´s history, it´s members, and it´s structural adaptions to the environment, and *the translators* and their competence. Further, the study shows that the virus metaphor can be used to evaluate aspects of a learning process related to organizational ideas, e.g. to consider different replication strategies and different mutations of an idea.

Regarding safety regulation, the translation concept may be particularly useful for analysing how *functional* requirements are met by the industry, as such requirements may be met in different ways. Functional requirements or performance-based regulations describe desired outcomes, rather than detailed prescriptions. It may be fruitful to consider translations of such requirements as a joint venture, involving both regulators and industry partners. This would imply stretching the advisory role of regulators, and also developing the translator competence for both parties. Positive results of such a venture may include concrete and well adapted safety measures, as well as a foundation for learning on an industry level.

References

Abrahamson, E. (1991). Managerial fads and fashions: The diffusion and rejection of innovations. Academy of Management Review, 16 (3), s 586-612.

Anderson, P. (2003). Cracking the code – The relevance of the ISM code and its impacts on shipping practices. London, The Nautical Institute.

Bye, R. & Lamvik, G. (2006). Small facts, large issues – towards a Hermeneutic risk assessment. Safety and Reliability for Managing Risk – Guedes, Soares & Zio (eds). London: Taylor & Francis Group

Czarniawska, B. & Joerges, B. (1996). Travels of ideas. In: Czarniawska, B. & Sevón, G. (eds.): Translating organizational change. Berlin: Walter de Gruyter.

Deal, T. E. & Kennedy, A. A. (1982). Corporate cultures: The rites and rituals of corporate life. Reading, US: Addison-Wesley.

DiMaggio, P. J. & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48 (2), s. 147-160.

Granerud, L. & Rocha, R. S. (2011). Organisational learning and continuous improvement of health and safety in certified manufacturers. Safety Science, 49, 1030-1039.

Grote, G. & Weichbrodt, J. (2013). Why regulators should stay away from safety culture and stick to rules instead. In: Bieder, C. & Bourrier, M. (Eds.) Trapping safety into rules. How desirable or avoidable is proceduralization? Farnham, UK: Ashgate

Hollnagel, E. (1993). Human reliability analysis: Context and control. London: Academic Press.

Hollnagel, E. & Woods, D.D. (2006). Epilogue: Resilience engineering precepts. In: Hollnagel. E., Woods, D.D. & Leveson, N. (Eds.): Resilience engineering: Concepts and precepts. Aldershot, UK: Ashgate

Hopkins, A. (2006). What are we to make of safe behaviour programs? Safety Science, 44 (2006) 583-597.

Hudson, P. (2007). Implementing a safety culture in a major multi-national. Safety Science 45(6), 697-722.

Huzzard, T. (2004). Communities of domination? Reconceptualising organisational learning and power. The Journal of Workplace Learning, 16, 350-361.

Krause, T. (1990). The Behaviour-Based Safety Process. New York: Van Nostrand Reinhold.

Kringen, J. (2008). Culture and control. Regulation of risk in the Norwegian Petroleum industry. PhD-thesis. University of Oslo, The Faculty of social sciences, Centre for Technology, innovation and culture.

Latour, B. (1986). The powers of association. I: Law, J. (ed.): Power, action and belief. London: Routhledge and Kegan Paul.

Lave, J. & Wenger E. (2005). Situated learning. Legitimate peripheral participation. Cambridge: Cambridge University Press

Le Coze, J.-C. & Wiig, S. (2013). Beyond procedures: Can 'safety culture' be regulated? In Bieder, C. & Bourrier, M. (eds.): Trapping safety into rules. How desirable or avoidable is proceduralization? Farnham: Ashgate.

Meyer, J. W. & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. The American Journal of Sociology, vol. 83, (2), 340-363.

Peters, T. J. & Waterman, R. H. (1982). In search of excellence. Lessons from America's best-run companies. London: Profile Books LTD.

PSA (2003). HSE and culture. Obtained from http://www.ptil.no/getfile.php/z%20Konvertert/Products%20and%20services/Publications/Dokumenter/hescultureny.pdf

PSA (2011). Regulations relating to health, safety and the environment in the petroleum activities and at certain onshore facilities (The framework regulations). Stavanger: The Petroleum Authorities in Norway.

Rasmussen, J. (1990). Human Error and the Problem of Causality in Analysis of Accidents. Phil. Trans. R. Soc. Lond. B 327, 449-462.

Reason, J. (1997). Managing the Risks of Organizational Accidents. Ashgate, Farnham.

Røvik, K. A. (1998). Moderne organisasjoner: Trender i organisasjonstenkningen ved tusenårsskiftet. Bergen: Fagbokforlaget.

Røvik, K. A. (2007). Trender og translasjoner. Ideer som former det 21. århundrets organisasjon. Oslo: Universitetsforlaget.

Røvik, K. A. (2011). From fashion to virus: An alternative theory of organizations' handling of management ideas. Organization Studies, 32, 631-653.

Schein, E. H. (1996). Three cultures of management: The key to organizational learning. Sloan Management Review, Fall, 9-20.

Schiefloe, P.M. & Vikland, K.M. (2006). Formal and informal safety barriers: the Snorre A incident. Safety and Reliability for Managing Risk – Guedes, Soares & Zio (eds). London: Taylor &Francis Group.

Selznick, P. (1957). Leadership in administration. A sociological interpretation. New York: Harper & Row.

Selznick, P. (1996). Institutionalism "old" and "new." Administrative Science Quarterly, 41 (2), s. 270-277.

Solem, A., Kongsvik, T. (2013). Facilitating for cultural change: Lessons learned from a 12-year safety improvement programme. Safety Science Monitor, Issue 1, Article 4.

Vikland, K. M., Gjøsund, G., Fagernes, E. (2011). Step by step developing and implementing a HSE culture project. Paper presented at the SPE European Health, Safety and Environmental Conference in Oil and Gas Exploration and Production, Vienna, 22.-24. February 2011.

White paper no. 7 (2001-2002). Om helse, miljø og sikkerhet i petroleumsvirksomheten. [Health, environment and safety in petroleum (in Norwegian only)]. Oslo: Ministry of Labour and Social Affairs.

Woods, D. D., Dekker, S., Cook, R., Johannesen, L., Sarter, N. (2010). Behind human error. (2. ed). Farnham: Ashgate.