



Municipal Risk Management

Implications of the use of different risk tools

Doctoral Thesis by

Aud Solveig Nilsen

BSc Social Science
University of Bergen

MSc Risk Management and Societal Safety
University of Stavanger

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Preface

I started my PhD study in 2001 as the first research fellow in the Risk Management and Societal Safety programme at the University of Stavanger. This is a multidisciplinary study including technical, economical and social sciences. I applied for a pre-designed project, although this has undergone major revisions in the process. Since this was the first PhD project within the social science part of the programme, I have been a guinea pig in the developing research tradition.

I am very grateful to Klepp and Time municipalities for permission to do this PhD study. Without them this study would not have been possible.

At the department of Risk Management and Societal Safety, Kjell Harald Olsen introduced me to the theory of planning. Odd Einar Olsen, my main supervisor, has helped me in writing articles and been co-author of most of them. He has encouraged me and I have highly appreciated his creative and supportive help. I will also mention the research fellow milieu that has contributed valuable discussions and sharing of experiences. Also thanks to the librarians and the canteen people at the University of Stavanger for support. At the University of Karlstad, during my foreign stay, I had many fruitful discussions with the research milieu at the Institute of Public Health Science.

In 2003 I met Keith Vanning, my partner, who has been of invaluable help in correcting my English. He has a PhD in adders and knows how time demanding a PhD can be. I am grateful for the encouragement. Also thanks to my friends for listening about the work.

Stavanger University Foundation and the University of Stavanger have given me financial support, which has made this research possible.

This thesis is my responsibility alone.
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Aud Solveig Nilsen

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Summary

The municipalities are part of an overall emergency and risk management system in Norway. The municipalities have a sole responsibility for daily social welfare and safety at the local level. The Supervisory Authorities' (SA) tasks are to guide and inspect how municipalities conduct emergency and risk management. The intention of the thesis is to contribute knowledge for improving the quality of municipal risk management. The main research question addressed in this thesis is: How does the use of different risk tools influence risk management in municipalities? The risk tools that are analysed and compared are Risk and Vulnerability Analysis (RAV) and Mini Risk Analysis (MRA).

Part 1

Part one covers the main research question and background, addressing the research as a whole and considering both theoretical and methodological issues common to the articles presented in part 2. Theories of planning, organisation and risk have given a wide variety of perspectives with which to examine the tools. Rational and communicative planning perspectives have provided a useful way of analysing the different approaches to municipal risk management revealed in the empirical material. In 1994, the Directorate for Civil Protection and Emergency Planning (DCPEP) made the Risk and Vulnerability analysis guideline (RAV), which is still a risk tool recommended for use in municipalities. RAV can be considered as a rational planning approach due to an underlying assumption of having an overview of all possible risks and their consequences. RAV is used within a top-down strategy, where the top management and experts conduct the analysis. The Mini Risk Analysis guideline (MRA), developed in Klepp municipality in 2002, is a risk tool made to fit a municipal context and is thus of interest to this research. MRA shares elements with a communicative approach. It is mostly used in a bottom-up strategy where the middle and street level bureaucrats in the municipal organisation conduct MRA as a tool for assessing daily risks.

This is a qualitative study based on a case study design. The context is the municipalities Klepp and Time, who use MRA and RAV respectively. Klepp has developed MRA. Time uses the ordinary RAV

as recommended in the DCPEP guidelines. The risk tool is the case and phenomenon of interest. The main challenge in this research has been limited experience in the use of MRA since it is a new tool; on the other hand it has been valuable to follow the start of an implementation process. The use of two different risk tools is contrasted to be able to explain both similarities and differences.

Comparing these different tools has shown different implications. RAV and MRA are suitable in different situations. RAV is most appropriate in long term planning and when making overviews of severe risks, whereas MRA invites involvement of low and middle level employees in collaborative assessment and handling of daily risks. The introduction of MRA seems to have filled a gap that has been lacking in traditional risk assessments.

Part 2

The articles are presented in part two. Each of the articles addresses part of the main research question.

Article I compares RAV with MRA. RAV has a long term planning focus, concentrating on serious accidents. MRA has a short term procedural focus, concentrating on daily incidents. The findings show that the tools are complementary. They can provide a broader view of risk management if used in combination (A I).

Article II is a critical analysis of whether different strategies in risk management have an effect in the municipalities of Time and Klepp. The focus is on the implementation process and how the different risk tools have, or have not, been assimilated thoroughly at all municipal levels. The main findings in both municipalities are mostly similar despite Time using RAV in a top-down risk management strategy and Klepp using MRA as part of a bottom-up strategy. Similar methods of risk assessment were found, even where the concepts of RAV or MRA were not known. These similarities can be explained by common safety regulations, professionalism and institutionalism. However, where MRA was used regularly, an increased systematisation and consciousness in risk assessment was reported. This article also

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discusses the importance of implementing new tools based on already existing practice and knowledge (A II).

Article III examines the Supervisory Authority's (SA) role. The SA's tasks are to guide and inspect municipalities in risk and emergency management. The municipalities have been trained in emergency and risk management by participating in exercises organised by the SA. The supervision has been analysed using rational and communicative planning perspectives. Time has been a passive recipient of SA guidance whereas Klepp has resisted readymade templates and inspections. Klepp has acted as a political body, contributing to its own solutions. SA and the other municipalities have gained knowledge of a new risk tool through dialogue, despite a difference of opinions (A III).

Article IV examines MRA as an empowerment tool. MRA has been developed as part of proactive Safe Community work in Klepp. There have been many attempts to involve participants in local injury prevention in Safe Communities (SC), but SC research has focused on statistical injury registration. What is lacking is research in how to improve involvement of street-level workers in local health promotion and risk management. Empowerment in working processes is found in Safe Communities although it is sparsely mentioned in SC research literature. Empowerment theory and experiences from SC have been used to analyse MRA. The findings show how MRA can contribute an empowerment tool for injury prevention work and local risk management.

In conclusion, RAV and MRA share the common aim of revealing risks, but use different methods. The use of RAV and MRA has different focuses. RAV focuses on catastrophes and crises, MRA on daily risks. RAV has a long-term planning focus, whereas MRA is a procedural planning tool, which considers risks in daily working tasks. In this way the different risk tools complement each other. The main research question in this research is: How does the use of different risk tools influence risk management in municipalities? The different tools address different areas within risk management invoking different actions and addressing different issues. Combining both risk tools can be a way to increase the quality of risk management in municipalities because together they cover a wider range of risk situations than if one

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tool is used alone. However, this relies on an adaptation of new tools to already existing knowledge and practice. If not, the new tools could easily be neglected in daily risk promotion. There is a need for research on how to optimise the combination of the different risk tools in order to solve the dilemmas found in risk management.

Part 1

1. Background and problem

Stories about risks and accidents appear daily in the papers. We live in a risk society where many risks are global and can affect everybody (Beck, 1992). Knowledge of risks and hazards is increasingly focussing on awareness of systemic risk production in addition to human failures. Systemic risks can be found in the interdependencies between economy, society and technological development (OECD, 2003). Handling such risks demands different perspectives and solutions. A societal safety perspective can contribute a broader context than that of single private enterprises.

The focus on risks and accidents leads to a demand for public risk management, where mitigation, preparedness and efficient responses to crises are central. A continuous learning system is needed in order to manage new and emerging risks. There are many laws and regulations in risk management. There is a knife-edge balance between rules and regulations and peoples' belief in their own ability to handle risks. Focussing too much on regulations can have the pitfall of using too many resources in making rules and not fostering the ability of robustness in organisations and personal life (Adams, 2006, Clarke, 1999, Power, 2004). It is the balance between the different stances that can be a dilemma. These are considerations to take into account when conducting public risk management.

1.1. Risk management in public planning

The hurricane in the northwest of Norway in 1992 and the severe flooding in the east of the country in 1995 highlighted a need for further development in risk and crisis management. There was an increased awareness of society's vulnerability. A Vulnerability Committee was established by the government to investigate the most critical areas in Norway (NOU, 2000). The main challenge was that emergency management was too fragmentary. The committee saw a need for further research into general 'societal safety'. This concept is defined as: 'a process of applying scientific principles and practices in dealing with threats, dangers, risk, losses and other dynamic side effects of modern society. It aims to be a systematic approach to understand and respond to social problems such as accidents, emergencies, crises and disasters, both intentional and accidental'

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(Olsen et al., 2007). Critical analysis of the administrative bodies from governmental to local level, revealed a need for better coordination. Although there has been a positive development in the municipalities' ability in crisis and risk management, there is a further need for integrating Risk and Vulnerability analyses (RAVs) in municipal planning (NOU, 2000). This will enable systematic prevention work. There is still a debate about making a statutory provision on emergency duty in municipalities.

Another element in municipal risk management is less focus on everyday risks in municipal planning than on large accidents (Johansson et al., 2006:5, Nilsen and Olsen, 2004, Hood and Jones, 1996:5). Traditional (Norwegian) risk analyses in municipalities focus on large events, rather than risks in daily services. The focus is on a long-term planning perspective rather than a procedural focus on daily work operations. Using a reactive rather than a proactive approach in risk management tends to focus on known rather than developing risks (Rosenberg, 2004).

The municipalities are a central part of a national risk and emergency management system (Norwegian Parliamentary Bill, 2002). Risk management in municipalities is important, because this is often where risks occur and accidents happen. During extraordinary challenges and accidents, municipalities receive help from other institutions as described in Table 1, but the municipalities have a sole responsibility for daily social welfare and safety at the local level. The municipality organisation is multi-purpose, providing many different services from running kindergartens to building roads. This makes the organisation very heterogeneous, leading to challenges when it comes to risk management in the whole organisation.

There are three main principles that are central in Norwegian emergency management:

- **The principle of Responsibility.** Every agency has a responsibility for taking preventive measures, emergency preparedness and crisis handling.

Background and problem

- **The principle of Equality.** The organisation should be as similar as possible in peace, crisis and war.
- **The principle of Proximity.** The crisis shall be handled at the lowest level possible. In practice this means that the municipalities have the primary responsibility for handling crises occurring in peacetime (DCPEP).

These principles form a framework for safety work in society, both in preparedness and crisis handling. The municipalities have a central role, with responsibility for management and handling of local risks. When there is increased severity, other institutions will become involved.

In Norway the Ministry of Justice and the Police are the head of the Directorate for Civil Protection and Emergency Planning (DCPEP). The directorate's aim is 'to help prevent loss of life and to protect our health, the environment and material assets in connection with accidents, catastrophes and other undesired incidents in times of peace, crisis and war' (DCPEP homepage 2006).

DCPEP is the national public authority for the Supervisory Authorities¹ preventive, emergency and response work. The task of the SA is to supervise and inspect the municipalities' ability to conduct public risk and crisis management. This way of organising shows how municipalities can be a part of systemic risk prevention (A III). Table 1 shows the institutions of relevance to this study. The Supervisory Authority (SA) in Rogaland County has the responsibility to inspect and supervise the 27 municipalities in Rogaland. This study compares and contrasts the risk tools RAV and MRA used in the two Rogaland municipalities of Klepp and Time.

¹ In this study the term Supervisory Authorities (SA) is used instead of County Governor.

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| Institution | Purpose |
|--|--|
| Ministry of Justice and the Police² | Political decisions about top-level aims and frameworks for crisis management. |
| The Directorate for Civil Protection and Emergency Planning (DCPEP) | To maintain a full overview of risks and vulnerability for society in general. The aim is to promote measures which prevent accidents, crises and other undesired incidents and to ensure sufficient emergency planning and management of crises and accidents. DCPEP provides information and advice, and carries out supervision of supervisory authorities and municipalities. ³ |
| Supervisory Authorities | Responsibility for coordination of regional crises, supervision, inspections of municipalities. |
| Municipalities | Primary responsibility for handling crises which occur in peacetime. Make RAV and emergency plans. |

Table 1 *Norwegian emergency and risk management system*

1.1.1. Public risk assessment tools in Norway

In 1994 DCDEP⁴ made a guideline for Risk and Vulnerability analysis (RAV) to be followed by the municipalities. However there is no statutory provision. RAV is supposed to be used in ‘municipal emergency planning to give municipalities a tool for preparing a coordinated emergency response plan in the event of accidents and disasters’ (DCDEP, 1994:4). A guideline from 2001 about systematic societal safety and emergency work in municipalities states the expectation that municipalities use RAV thoroughly in municipal

² Other departments are also included, but the department of concern in this study is the Ministry of Justice and the Police

³ The information is from DCPEP Internet 2006. www.dsb.no

⁴ DCDEP is the former abbreviation for the Directorate for Civil Defence and Emergency Planning. On 1st September 2003 the name of the Directorate changed to The Directorate for Civil Protection and Emergency Planning.

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planning (DCDEP, 2001). The risk tool RAV is also a part of a political aim to reduce vulnerability in society. In 2005, 67% of all municipalities in Norway had produced an RAV within the previous 4 years (DCPEP, 2005).

The analysis stage of the RAV guideline is presented here in order to explain the tool. The analysis stage consists of the following steps (DCDEP, 1994):

1. Identify undesirable events
2. Causes and probability
3. Consequences
4. Systematization
5. Proposed countermeasures.

A risk matrix is used to classify risks with regard to probability of occurrence and severity of the consequences. The example events in the guideline are mostly major accidents.

Probability of events

| | | | | | |
|---------------|-------------|---------|---------|--------------|--------------|
| Very probable | | | | | |
| Probable | | | | | |
| Less probable | | | | | |
| Improbable | | | | | |
| | Unimportant | Limited | Serious | Very serious | Catastrophic |

Consequences of events

Table 2 *Risk matrix*

The risk matrix is a foundation for deciding which risks to prioritise, and has a long term planning focus. In the RAV guideline “Risk” is

Background and problem

defined as ‘the threat posed by undesirable events to people, the environment, property and essential functions and activities of society’ (DCDEP, 1994:3).

In 1998, Klepp municipality started work with a new risk and vulnerability analysis, the Mini Risk Analysis (MRA) as part of preparation for an application to be designated a Safe Community. In 2002 the analysis had undergone testing and was published on the DCDEP public Internet site. Mini Risk Analysis (MRA) is a tool for mapping everyday risk and vulnerability (Klepp-Municipality, 2002). It gives an overview of dangers that can occur and identifies how to reduce or handle these if they do occur. It also allocates responsibility for preventing and handling accidents and is a way to make activities safer.

The specific MRA method (Klepp-Municipality, 2002)

1. Which activity/situation are we going to take into consideration?
2. This is what we fear might happen.
3. What must and should we do something about?
4. What can we do to reduce the chances of these incidents occurring?
5. What can we do to reduce the consequences if these incidents do occur?
6. Evaluation.

The MRA method has a here and now focus considering risk in daily work situations or leisure activities.

1.2. The research problem and purpose

This thesis focuses on municipal risk management. The municipalities have official responsibility for the inhabitants in their area. To be able to lay the foundation for a safe municipality, different strategies and risk analysis tools can be used to make preventive efforts and a foundation for emergency handling. The study is limited to the employees in the municipalities. This means when using the term bottom-up strategy it does not include lay-persons and non governmental organisations. This is done to have a more limited design and to be able to compare the municipalities in a similar way.

The newly developed risk tool MRA has not been studied before. By contrasting MRA with the traditional RAV, the differences and similarities between the two tools can be described and explained more clearly. Rational and communicative frameworks⁵ have been used as theoretical contributions for explaining the risk tools RAV and MRA. Other theories such as safety, organisation and learning theory have also been used to explain the tools. Although theory from planning has been used to describe the rational and communicative frameworks, the purpose is to illuminate the field of risk management with a focus on different risk tools. The field of risk research is here used in an interdisciplinary way; using theories from a wide range of fields can contribute to a generic insight rather than specific theoretical insights. The planning perspective has not been the major focus, but has been useful for explaining the differences in risk tools and the implications of these. The research problem is: How does the use of different risk tools influence risk management in municipalities?

The purpose of this study is to contribute to knowledge about municipal risk management:

⁵ Rational and communicative planning perspectives are used as labels. This may be misleading as both perspectives are rational, but use different rationalities. Another dichotomy, not used in this thesis, is instrumental versus communicative rationality. The rational planning label has its origin from Banfield and is therefore used here. The communicative rationality is described by Habermas. A further explanation is given in the theory chapter.

Background and problem

- To improve the knowledge of different kinds of risk tools and their advantages and disadvantages in the municipal context.
- To improve the insight into which factors can be necessary to contribute to learning and local involvement in the municipal context.
- To contribute knowledge for improving the quality of municipal risk management.

1.3. The structure of the thesis

This thesis is in two parts. Part 1 covers the research as a whole and considers common issues in the articles, both theoretical and methodological. Rational and communicative frameworks are used to analyse the risk tools RAV and MRA and explain the differences in the empirical material and the implications of the different risk tools. When the risk tools are compared, the Supervisory Authorities are included to further describe and explain how the municipalities participate in a national learning system for improving risk management. Involvement of the risk tools' users has been investigated through use of experiences from Safe Communities and using empowerment theory. Different challenges in municipal risk management are discussed and a conclusion is given summing up the research.

Part 2 comprises four articles:

- I. RAV is compared with MRA. Differences and combinations of the different tools are explained (A I).
- II. The use of top-down and bottom-up strategies is analysed and compared. Despite using different strategies, a pattern of similarities in use was prevalent (A II).
- III. Supervisory Authorities (SA) use rational and communicative strategies. Resistance against readymade templates in Klepp municipality has resulted in development of MRA. Through a communicative supervision approach, despite different opinions, SA and the other municipalities have learned about MRA (A III).
- IV. The challenge of how risk managers can supply a tool for local involvement in risk assessment is investigated using empowerment theory. (A IV).

The articles contain a wider range of theoretical perspectives, a more in-depth analysis and discussion of the specific research questions raised in each of the articles, than in the more general part 1.

2. Theory

This chapter presents the general theoretical contributions relevant to the theme. The research problem is: How does the use of different risk tools influence risk management in municipalities? This research problem gives some of the structure in this theory chapter. Some central concepts in the research problem will be in focus. Rational and communicative explanation frameworks are used in analysing both the municipal organisation and the different risk tools. Theory leading to the research questions will be discussed briefly. Each of the articles will give a more in-depth description and discussion of a wider variety of theories.

2.1. Risk definition

‘The essence of risk is not that it *is* happening, but that it *might* be happening’ (Adam et al., 2000:2). Therefore it is difficult or uninteresting to look at risks as an ontological entity, it is both ‘im/material’ according to Adam et al. Examining risks from a factual or a socio-cultural dimension gives different implications according to epistemology (how we understand the world). Risk can be seen as material in the sense that risks have occurred and can be seen as positivistic facts. A traditional natural science definition of risk is expressed in numbers: ‘Risk is a result of the probability (frequency) and consequences of undesirable events’ (DCDEP, 1994). These facts can give, for instance, a foundation for probability analysis of risks. Terje Aven of the University of Stavanger challenges this traditional definition. He defines risk together with insecurity. ‘Risk is a combination of possible consequences and associated insecurities’ (Aven, 2007:41). Instead of treating statistical probabilities as ‘the truth of risks’, they should be regarded as numbers with incorporated insecurity which should be taken into consideration in the decision-making process. Numbers do not include risk perception and political decision processes. Taking the immaterial stance into consideration, culture relativists see risks as constructs (Douglas Mary, 1983), but constructs in themselves cannot harm people (a further debate can be found in the book *Risk and Rationality* (Shrader-Frechette, 1991)). The immaterial stance is connected to risk perception; how do people interpret and understand risks? A bridge between factual and socio-cultural positions takes both stances into consideration,

focussing on both statistical material and value evaluations as important when considering risks (Aven et al., 2004). Taking both experts' statistical knowledge and political and laypersons' risk perception into consideration when making decisions about risks, incorporates different positions in planning.

In the philosophy of science there are similar considerations of risks. A need for a middle position between objectivists and relativists is outlined (Shrader-Frechette, 1991). This position is called scientific proceduralism: 'There is an unmet need for placing ethical and evaluative weights on the risk evaluations, so that members of the affected public can choose how to evaluate risks they face....risk evaluations often exhibit only one type of ethical norms, those of utilitarianism' (Shrader-Frechette, 1991:194). Taking a pragmatic view, both objectivism and relativism in philosophy of science can be used as a framework to understand complex risks. The philosopher Bernstein sees a need for going beyond objectivism and relativism (Bernstein, 1989). Bernstein uses Habermas's ideas about communicative discourse as a way to consider problems and confront them with different arguments. Communicative planning states that those affected by a decision shall have the opportunity to contribute their opinions in a dialogue. In this way utilitarian rationality can be confronted by ethical considerations where a consensus is an ideal.

This research can be linked to a debate about risk in a rational actor paradigm and a need for a more dialogical rationality in safety research (Jaeger et al., 2001). The background for the need for dialogue was a one-sided focus on rational actor perspectives and utilitarianism, where social evaluation was lacking. A part of the debate resulted in a framework of risk governance developed by Renn, including risk management/risk analysis and how risk-related decision-making is carried out between actors (Renn, 2005). This is further described in the discussion.

Hazards and risks are related but not similar concepts. 'The term "hazard" generally denotes a phenomenon or circumstance perceived to be capable of causing harm or costs to human society' (Hood and Jones, 1996:2). Risk has a broader meaning. '[Risks] should not be restricted to the mere likelihood (probability) of an adverse impact but rather to "'

a combination of the probability, or frequency, of occurrences of a defined hazard and the magnitude of the consequences of occurrence” (Hood and Jones, 1996:3) This definition is used in this thesis. ‘Risks’ has a wide research area, covering technological, natural and societal risks. Some researchers are concerned about severe hazards and accidents. Others focus on ‘incidents of lower magnitude and higher probability (such as road accidents and accidents in the home) which may, nevertheless, have a larger absolute fatality rate’ (Boyesen, 1997, Hood and Jones, 1996). This study is about risk management in municipalities, focussing on risks that can happen at a local level and which municipalities have a responsibility to handle.

2.2. Risk management

Risk management is defined as ‘a range of related activities for coping with risk, including how risks are identified and assessed and how social interventions to deal with risk are monitored and evaluated’ (Hood and Jones, 1996:7). Risks are different and this can have an effect on how risk management is conducted. Risk can be classified according to complexity. Simple risks, complex-, uncertain-, and ambiguous risk problems (Renn, 2005). Simple risks are easy to solve, ambiguous risks need to be handled in another way. The classifications of different risks can be managed using different strategies. An instrumental rationality can be appropriate when handling simple risks and where routines can be used to solve the risk problem. When risks are more complex, uncertain and ambiguous, a communicative strategy can be more appropriate (Renn, 2005). Ambiguous risks contain normative elements and including more participants can increase the ability to see risks from different views and take these into consideration when making decisions. Risk management can be a prescriptive strategy where experts provide risk solutions. Risk management can also be laying the foundation for creating deliberative forums for solving complex risk problems.

2.3. Rational and communicative planning perspectives

Two main normative perspectives have been used to analyse the findings in this study. These are the rational and communicative planning perspectives. Both perspectives are rational, but they have

different rationalities; ‘rational’ rationality and communicative rationality. The terms instrumental or purposive rationality can also be used instead of rational rationality. I have chosen to concentrate on rational planning because analysis of Banfield’s ideal planning prerequisites and the RAV guideline revealed many similarities. The label rational planning is found in Banfield’s theory of an ideal decision and planning situation. I have chosen to use rational planning as a label and use communicative planning as a contrasting perspective. ‘In contexts of communicative action, we call someone rational not only if he is able to put forward assertion and, when criticized, to provide grounds for it by pointing to appropriate evidence, but also if he is following an established norm and is able, when criticized, to justify his action by explicating the given situation in light of legitimate expectations’ (Habermas, 2004:15). In communicative rationality, the rationality is to find the best solution based on dialogue and common consensus reached by the stakeholders. The rational and communicative planning methods have been used as frameworks to explain the municipality as an organisation and to analyse the different risk tools. The risk tools RAV and MRA will be analysed later in this chapter. Examining municipalities from these different perspectives gives diametrically opposite results. These implications will be taken up in the discussion.

The context of this study is municipalities. This research is limited to the municipal organisation; in this respect the employees working in the organisation.

2.3.1. The rational planning perspective

The foundation of the rational perspective can be found in Weber’s development of action theory. The agent tries to realise intentions and purpose through actions. Weber’s concern was to reveal the Western rationality. The transition from a traditional to an industrialised society made upheavals in organising work. Work tasks were more specialised in industry, for instance in assembly lines. Accuracy, efficiency and the ability to follow rules became central. The development of efficient institutions was central to be able to develop a functional society with high material standards. Weber found that purpose rationality was central; ‘..the perspective is a utilitarian one, where the purpose of the action is to maximise those values that are

ranked highest by the actor, whether they are expressed by terms such as 'utility', 'self interest' or by way of some other concept' (Eriksen and Weigård, 2003:22). In the instrumental rational action typology; means, ends, values and consequences are prevalent. Only the description of the purposive rationality is covered in this study, although Weber has more action typologies (Weber, 1978). This is in order to present a purified rational perspective on an abstract level, which can be seen further in rational planning.

Banfield is central in rational planning theory. A rational perspective presupposes a stable environment. Banfield has a natural science approach to planning. The world (ontology) is predictable. Actors can be seen as rational actors with rational choices. 'Planning is the process by which he selects a course of action (a set of means) for the attainment of his ends'(Banfield, 1959:139). The normative ideal of a rational planning decision is:

1. 'The decision maker lists all the opportunities for actions open to him'
2. 'He identifies all consequences which would follow from the adoption of each of the possible actions'
3. 'He selects the action which would be followed by the preferred set of consequences' (Banfield, 1959:140).

This is a normative model for decision-making. In the rational planning tradition, clear means and ends are prerequisites (Banfield, 1959). It is possible to get an overview of action alternatives and their consequences. There is a belief that the best solution will be chosen in the end. In the hierarchic organisation, the top level makes decisions and the lower level executes the tasks according to the top-down strategy. The rational planning ideal presupposes a harmonic model, where conflicts are minimised. This is the pure form of the rational planning perspective and it is hard to find all these elements in practice.

It has to be stated that this perspective is a normative one. Banfield underlines that in practical life 'these ideal criteria are hard to find in a purified form.' Rationality, as defined above, is less likely to be found in public than in private organizations. One reason for this is that 'the public agency's ends often reflect compromise among essentially

incompatible interests' (Banfield, 1959:148). Other theories have been developed in the wake of Banfield's purified rational planning perspective. Herbert Simon introduced the 'bounded rationality', where it is not possible to get an overview of all possible consequences. He introduced the term 'satisfice' which means satisfactory action rather than to be able to fulfil an ideal action (Simon, 1977).

2.3.2. The municipality in a rational planning perspective

Both Weber and Banfield's foundations in the rational perspectives are normative perspectives. Analysing municipalities using a rational planning perspective has elements from such a foundation. The municipalities and planning will be examined in this chapter. In a rational framework, the municipality can be seen as a bureaucracy.

The ideal typology of a bureaucracy was developed by Weber (Weber, 1976, Weber, 1978). The bureaucracy is seen as a rational institution to fulfil assigned tasks. A metaphor to describe this is a 'machine organisation'. 'A machine is certainly precise; it is also reliable and easy to control; and it is efficient- at least when restricted to the job it has been designed to do' (Mintzberg & Quinn 1996: 640). The classic bureaucracy is a hierarchical organisation, where the top level in the bureaucracy assigns tasks to the lower levels. In a classic bureaucracy the top level in the organisation uses a top-down strategy, where the lower levels execute the top level's decisions with no interference (further description is given in A II).

The 'ideal bureaucratic' institution has hallmarks of:

- Legal authority
- Accuracy, rapidity, clarity
- Hierarchy (Weber, 1982).

The management values are to be accurate, rapid and to be able to work as an effective bureaucracy. Rational planning in municipalities should, according to the theory above, lay the foundation for rational planning situations. This presupposes minimal conflicts and unified means. The top level manages the municipality with use of a top-down strategy, and the lower levels execute the tasks without any interference. Combining this perspective with risk management in municipalities gives a straightforward planning situation. Experts and the top level in

the organisation make an overview of the risks in the municipality. This oversight is exhaustive and all the consequences are known. The top level decides which risks should be prioritised according to severity and the lower levels execute the decision.

2.3.3. The communicative planning perspective

The foundation of the communicative perspective is Habermas' theory of communicative action (Habermas, 1995, Habermas, 2004). Speech is considered as action (Austin 1962,). 'By this he meant that the use of linguistic utterances is a fundamental element in human interaction, and that social conditions are to a great extent formed and transformed through the use of language' (Eriksen and Weigård, 2003:38). The opinions that the actors contribute within a dialogue are central. In this theory there is a subject-subject relationship in planning in contrast to the subject-object relationship found in the rational planning perspective. Communicative rationality is procedural. 'What is rational, then, is the opposition or claim which is supported by the weightiest arguments. A procedural approach to rationality does not guarantee that we will arrive at the right answer in all cases, but it guarantees that we can continuously test the answers again if there is reason to doubt their correctness' (Eriksen and Weigård, 2003:4).

In an ideal speech situation:

- Every interest has to be present
- Everybody must be able to present his or her view
- The best argument will be the basis for the consensus which the dialogic group will reach at the end of a debate.

These elements are abstract and normative ones.

There are critical remarks about the communicative theory due to its very normative foundation. Time pressure, power, and lack of influence are critical factors, which are not incorporated in the normative theory (Flyvjerg and Richardson, 2002). Thus using a normative framework in an analysis gives a tool to investigate similarities or differences from the normative ideal.

In communicative planning tradition, Habermas' theory has been refined for more practical planning arenas. The communicative planning perspective describes decision processes as a dialogical

activity between involved participants (Healy, 1997, Forester, 2000). From Innes general experiences ‘..in communicative planning, information becomes gradually embedded in the understandings of the actors in the community, through processes in which participants, including planners, collectively create meaning’ (Innes, 1998:53). The procedural learning process is central. Both the inhabitants and the planners are in a dialectical process in order to reach a decision on the basis of mutual understanding. Not only the expert knowledge but also local considerations and political assessment are central in this process.

2.3.4. The municipality in a communicative planning perspective¹

The municipality can have the role of partner and contributor in a dialogue with the Supervisory Authorities (SA). The SA has the responsibility for supervising municipalities in risk management in Norway. Risk management ability is trained and evaluated through both exercises and inspections. It is often perceived that governmental guidelines have little connection with the local reality (Clarke, 1999), which may lead to a wish for more contextual solutions. Instead of having an inspector role as is prevalent in a rational perspective, the SA can consider the municipality as a communicative partner where local considerations are seen as valuable in the field of risk management (A III).

Examining the communicative perspective within the municipality reveals a need for a strategy where employees are included in assessing risks. A bottom-up strategy can be prevalent in this respect. The ideal is that there should be mutual interaction between the participants and everyone’s opinion should be heard. The decisions should be reached through a dialogue where consensus has been achieved as a result of discussion between the different parts. The information should be based on many sources. Contextual factors and different assessments are important contributions in addition to those of risk experts. Different views shall be displayed and the aim is to achieve a mutual understanding through a procedural learning process. The

¹ The municipality is presented in a communicative planning perspective for reasons of analysis. In practice, a communicative perspective cannot be used as a label for the municipality as a whole but can be found in some situations. The communicative perspective can be seen as an ideal.

management's responsibility is to lay the foundation to include the whole organisation in risk assessment and to be able to increase risk-handling capacity.

This description is normative and difficult to achieve in practice, because of inequality in power and resources. The possibility of achieving elements from the communicative ideal is defined by each situation. The findings in article IV show how some of the elements can be fulfilled in practice.

2.4. Analysing risk tools using rational and communicative perspectives

Risk and Vulnerability Analysis (RAV) and Mini Risk Analysis (MRA) are the risk tools analysed in this research. In 1994 DCDEP produced a municipal Risk and Vulnerability guideline (RAV). This was a template mapping risks according to their degree of seriousness. The risks in consideration were of interest at a management level, with a focus on catastrophes. In contrast, MRA is a locally developed tool made to fit a municipal context. MRA focuses on daily risks in work operations at an operational level. The aim is for street level workers to be independent in risk assessment and handling. The middle and top level also use the bottom-up strategy, but more sparsely.

A common element in both RAV and MRA is the aim of mapping risks in order to take preventive measures and increase the safety of the municipality's inhabitants. However the risk tools have been used with different focus. RAV has had a focus on major accidents whereas MRA has a daily risk perspective where dialogue becomes important for learning and implementation. (Nilsen and Olsen, 2004).

The analytical purpose of using rational and communicative planning perspectives is to describe and explain the different implications of the tools more clearly so that municipalities can select the most suitable tool according to the situation. The different tools are suitable for different situations. This is explained in further detail in the discussion and the articles.

2.4.1. RAV and the rational planning perspective

The main intention with RAV was to make a tool to reveal risks in municipalities. It seems clear in the guidelines from 1994 that DCDEP considered the municipal institution as a rational bureaucracy. Jaeger et al describe formal risk analyses as an operational tool for the rational actor paradigm (Jaeger et al., 2001:168). A thorough review of the guidelines by the author, showed many similarities with Banfield's planning theory (Banfield, 1959). In a rational planning situation every choice and consequence is analysed, thereafter the best possible alternative is chosen. To a great extent the DCDEP supposed that the top level in the municipality would map risks. This would give a foundation for prioritising of measures to be implemented further down in the organisation. On this basis RAV has been connected to a top-down strategy in municipal risk management.

This strategy is usually based at the institution's top level. It is the top level administration together with experts, who make overview plans for the risk situation in the municipality. The focus is mostly on catastrophes and large accidents (Nilsen and Olsen, 2004, Johansson et al., 2006). Possibilities, causes and consequences are assessed and used as a foundation for prioritising which measures to execute (Banfield, 1959). The assumption is that all factors can be described in an accurate and objective way. This complete overview will give an idea of what risks to meet. The analysis recommended by DCDEP is described in 5 steps: 'identify undesirable events, causes and probability, consequences, systemization and proposed countermeasures' (DCDEP, 1994:7). Sources of information are mostly statistics, 'expert' opinions and inspection reports, although local knowledge is also mentioned. The main impression of the guidelines is that they share many similar elements with the rational planning ideal.

It is known within critical bureaucracy theory that strategies from the top level are difficult to implement at the street level. Factors like working pressures, too many and ambiguous goals and lack of resources are explanations of why new goals or strategies are not accepted by the street level bureaucrats (Lipsky, 1980).

The objection to such rational handling of risks is that accidents often have an unpredictable course of events. Accidents can start to develop a

long time before they happen (Reason, 1995, Reason, 1997, Turner and Pidgeon, 1997). A crisis is often hallmarked by different phases; measures for reducing risks, emergency, crisis and recovery (Turner and Pidgeon, 1997). A too narrow focus on major accidents can hinder the prevention of small and emergent accidents (A I). These phases have different planning needs, including both long term and short time horizons. Both scenario planning and immediate crisis handling are important in order to cover the complexities of crises.

The advantage of the rational planning embedded in RAV is an increased ability to prioritise the most severe risks. RAV is also used as a preparedness resource. The top level is also informed about risks and therefore can be more likely to give the financial and organisational support needed. A further description is given in article 1.

A 5 year research programme on RAV (called ROS in Norwegian) was conducted from 1993 to 1997 (Norges-Forskningsråd, 1993-1997). Various governmental and research institutions in Norway contributed. The relevance for this thesis is research into risk and vulnerability in local communities (Norges-Forskningsråd et al., 1997). There are examples of RAV used in a nursing home and in municipal planning. Experiences from the nursing home show that RAV can be used to supply internal control and the quality management system. RAV is not entirely restricted to use at a management level; there are also examples of its use in medical operations in hospitals. In this study, however, the use of RAV has been found only in the top-level of the municipal organisation.

2.4.2. MRA and the communicative planning perspective

MRA is a risk analysis which focuses on prevention and handling of risks mostly at a low level. It is an adjustment of the ordinary RAV. The thought behind MRA is that employees, voluntary organisations etc shall be enabled to assess, prevent and handle their own risks in a systematic and conscious way. MRA is in this research mostly used in a bottom-up strategy, where employees at a low level are supposed to handle dangers. 'The method is intended first and foremost for people in charge of other people's safety and welfare, either at work or in their spare time, but can also be useful when considering your own safety' (Klepp-Municipality, 2002:2). This study is limited to the use of MRA

within municipal organisations and does not cover leisure activities or voluntary organisations in order to achieve a design that allows comparison between Klepp and Time.

When MRA is analysed in the framework of a communicative planning perspective, we find that the collaboration processes have many similar elements. One of the phases in use of the MRA method is to discuss every possible risk between peers. Every consideration is allowed in a brainstorming. The process of contributions should not be criticised. The following phase is to discuss prioritising the risks to handle. Everybody can contribute with his or her views. The ideal is to reach a common understanding, which makes it possible to reach a decision based on consensus. A further description of the MRA method is given in article IV.

MRA can be linked to empowerment theory, where the focus is on locally developed solutions (Crawford, 1999, Day et al., 2000, Freire, 1970, Lee and Koh, 2001). The hallmarks of empowerment are that people collaborate and have self-confidence in their own solutions. There are many critics of empowerment theory. Argyris writes that it can have a function as a leading star, as an ideal to stretch after, but is not easy to find in practice (Argyris, 1998). In article IV MRA is analysed using empowerment theory.

MRA is a tool for preventing daily risk incidents. The aim for Safe Communities (SC) is injury prevention and health promotion. In this respect MRA can be used by SC participants as a practical tool for preventing risks. SC research is often presented as statistical charts of changes in injury frequencies (Andersson and Menckel, 1995, Klepp-Municipality, 2002, Lund, 2004, Timpka and Lindquist, 2001). What is lacking in SC research literature is how and why different strategies or tools do or don't work. The reasons for why participants are involved in the activities and why they are motivated have also little focus. There are many practical experiences, but these have not been sufficiently incorporated in the research literature. A further treatment of this theme is given in article IV.

2.5. Municipalities and risk management

The municipal organisation has external influences from government which assigns many, sometimes ambiguous, tasks (Andersen et al., 2002). The street level bureaucracy's ability to handle these tasks may not always follow a rational pattern. Street level workers are employees who; 'interact directly with citizens in the course of their jobs' (Lipsky, 1980:3), for instance teachers, social workers and community nurses. The street level bureaucracy is not always predictable because of ambiguous goals and impossible tasks. A municipal organisation has many different services to fulfil and is separated into different departments with different means and ends. This produces an institution with very little homogeneity. Brunsson introduces the concepts 'talk' and 'action' in studies of organisations (Brunsson, 1989). He claims reforms often give great changes in 'talk' (what is said to be done), but it is more difficult to trace changes in 'action' (what is actually done). Within critical bureaucracy theory it is known that strategies from the top level are hard to implement at the street level (Lipsky, 1980). Working pressure, lack of resources and many ambiguities in purposes/aims are explanations of why new strategies or aims are not admitted at the street level (Nilsen and Olsen, 2005).

The municipal organisation often has many ambiguous goals and political tasks, decisions and duties to execute. A clear strategy can be a way to sort out what is relevant in the constant flow of information and demands. Strategic management can be seen in different frames of reference. There is a distinction between a linear environment, where cause and effects are clearly interlinked, and an environment that does not presuppose such causal relationships, regarding ambiguities and differences in views as a more appropriate description of the contemporary world (Stacy, 1993). These different environments affect how municipal strategic management can be conducted. A top-down strategy fosters a more stable environment, whereas a bottom-up strategy gives room for self-organising activities. 'A strategy is the pattern or plan that integrates an organisation's major goals, policies, and action sequences into a cohesive whole' (Mintzberg and Quinn, 1996:3). There is a major difference between strategic planning strategies and seeing strategy formation as a process. 'The formal planning process repeats itself so often and so mechanically that it desensitizes the organisation to real change, programs it more and more

deeply into set patterns, and thereby encourages it to make only minor adaptations' (Mintzberg and Quinn, 1996:108). This is a strategy for managing stability. To craft a strategy 'requires a natural synthesis of the future, present and past' and has a more procedural focus (Mintzberg and Quinn, 1996:110).

Municipalities are multipurpose organisations with limited resources. Municipalities are similar to a loosely coupled system (Perrow, 1999), which interacts with external influences. Research on High Reliability Organisations (HRO) comes from technically advanced industries like the aircraft, space and nuclear industries. HROs are known for their ability to handle risks. HROs have many resources and are closed systems. HROs and the municipalities can never be similar but some organisational principles and experiences in risk prevention and management can be transferred from HROs to the municipalities. The concept of collective mindfulness is an organising principle that can be transferred to organisations with less serious hazards than HROs (Weick et al., 1999). Collective mindfulness is being preoccupied with failures, reporting deviances and reflecting about safety as an ongoing learning process. To use these principles in municipal risk management can increase the ability of handle and have an awareness of risks. A further explanation is given in article I.

2.6. Implementation

'Planning is a remedy to fulfil changes in organisational behaviour. When it comes to planning, the general experience is inertia in municipalities following governmental laws, regulations and recommendations (Olsen, 1994). Implementation takes longer than planned and there is little accordance with the content of the plan, the formulation of the plan and the recommendations given in the guidelines (Kleven, 1990). These are experiences also found from implementation in other countries (Pressman and Wildavsky, 1973)².

² These excerpts are translated from Kjell Harald Olsen in the description of the initial PhD project.

However, research from Safe Communities shows that if participants are included early in the process of injury prevention, it is more likely that they continue the work after a project period is over. Therefore early involvement can be a remedy to fulfil implementation (Bjärås, 1992). Other factors to succeed in implementation found in municipal accident prevention is that the top level supports lower levels, all levels in the municipality should be included, financial resources should be provided and safety matters should be included in both municipal and departmental plans (Boyesen, 1995). Knowing about the challenges in implementation can help the municipality seek for good examples in order to avoid pitfalls. Different levels can be used according to the implementation phase. When introducing new tools, the top and middle levels are often in focus at the beginning and the street level bureaucrats when the tools are used in daily work tasks (Mikkelsen, 1999, Mikkelsen, 2000).

In this study, rational and communicative perspectives are used to analyse the municipal risk management context. Although this research is on a local level, the research implications can be of relevance both theoretically and as an empirical example. The use of risk tools is analysed using both rational and communicative perspectives, the implications of which are described in the findings and discussion chapter. Using both perspectives in analysis includes both factual and socio-cultural perspectives and can give a wider background for decision making in risk management than within only a rational perspective.

2.7. Formulation of research questions

According to the theory above there are different analyses of municipal risk management that are interesting. Throughout the study, the main dimension of the rational planning perspective and elements from the communicative planning perspective were used to analyse the findings.

In the first article, the differences between MRA and RAV are investigated with regard to the rational and communicative planning perspectives. These perspectives are not so prevalent in the first article, since the pattern of both rational and communicative planning perspectives emerged in the research process, but the underlying thoughts will be found. In RAV the focus is on major accidents, whereas MRA has a focus on everyday risks. Different planning needs are uncovered using safety theory about the different phases in crisis development; combination of the two tools is discussed in the article. The research question is: *How can a strategy for coping with daily small risk issues be a way to enhance the capacity to mitigate disasters?*

The second article is a critical analysis of whether different strategies in risk management have an effect in practice. Top-down and bottom-up strategies are analysed using strategic management theory. This article also focuses on the implementation process and sees how the different risk tools have or have not been assimilated thoroughly in all the municipal levels (top, middle and street level). The two municipalities' use of different risk tools is analysed. The research question is: *How can practices be so similar, when strategies are so different?*

In the third article, supervision by the Supervisory Authorities (SA) is examined within the frameworks of the rational and communicative planning perspectives. The municipality can be either an executive body or a political body according to these perspectives. These different roles have learning implications. Criticisms of ready-made templates and a lack of contextually suited tools are examined. The main focus here is to see how DCPEP guidelines are understood and conducted in municipalities. This leads to the question: *How does resistance against pre-designed national risk management standards influence learning between the regulator and the regulated?*

The last article focuses on one municipality only. This examines the newly developed MRA using safety, empowerment and communicative planning theory. In order to achieve a collective mindfulness, all the involved workers need to be included in risk assessments on an ongoing basis. Practical experiences from Safe Communities are also related to the experiences in use of MRA. The question of concern is: *How can empowerment be related to risk management and how can MRA strengthen an empowerment strategy in local health promotion and risk management?*

These questions will be discussed in the findings chapter.

3. Methodology

Methodological questions will be discussed using a general theoretical description of a methodological theme followed by a description of my own research. The specific method of data gathering on an empirical level will then be presented. Finally, a consideration of this case study will be given.

The main challenge when conducting this study has been the lack of experience in using MRA and to some extent also RAV. There is information about the extent of use of RAV, but no research on its use as a continuous risk tool in municipal plans. Since MRA is newly developed there was only limited experience with its use. It was therefore not possible to research MRA as an ongoing process over several years. MRA was a new phenomenon at the start of an implementation process. The empirical findings have been gathered using a case study strategy. RAV and MRA are contrasted in order to reveal differences or similarities.

3.1. Case study as a research strategy

According to Yin ‘a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident’ (Yin, 1994:13). The case study is suitable for research questions whose aim is to understand processes and behaviours because of the richness of data collected in context. The aim is to see how behaviour or processes are influenced by, or influence context. ‘The overall approach is similar- generally inductive analysis focussing on processes in their social context’ (Hartley, 2004:323). Having a rich description of a context with a wide variety of variables can allow theory development to emerge through a process of linking theory and evidence and producing theory for a wider public. A case study can be of relevance when new and emerging processes are of concern. In this process, hypothesis generation and development of theory are of interest. New processes often need adjustments of theory, combinations of theory or a totally new theory as a framework of understanding for a wider public. This is because the aim is to learn more about the phenomenon in an ideographic way. Rich contextual descriptions

characterize case studies. The researcher has little or no control over the behaviour of the subjects in the study in contrast to experiments.

A case study is not a method, it is a research design. According to Vaus, even if you choose other research strategies the method of data collection can be the same (Vaus, 2001:10). For instance, using experiment or longitudinal or case design, data collection methods like questionnaires, interviews, observation, analysis of documents and unobtrusive documents can be the same. What purpose the research shall serve is relevant to consider when choosing a design.

A case study is not defined in the wake of its research methods, rather through its theoretical orientations. ‘Although a case study begins with only rudimentary theory or a primitive framework, the researcher needs to develop theoretical frameworks during the course of the research which inform and make sense of the data and which can be systematically examined during the case study for plausibility’ (Hartley, 2004:324). The case study design is flexible and is able to handle changes in processes and to adopt planned but also developing theory.

3.2. The choice of case as an inquiry design¹

When I decided to use a case study, there were some factors of special interest. The field to be examined, using MRA and RAV, was at the start of a process. Although the RAV guideline was introduced in 1994, there is little knowledge about how municipalities use RAV in their own planning processes. There have been surveys on extension, but there is a lack of research on how they are committed. The street level workers in the municipalities had a limited familiarity with the risk concepts used. This put constraints on the inquiry tradition that were of relevance to this project. Because of these facts it was not relevant to use a survey. Here was a new and ongoing process at the start of the study and asking street level workers about unfamiliar concepts is not suitable in a survey. Questions of interests were why they did or did not use the concepts and if they had some similar safety assessments in

¹ Inquiry design and research design are used synonymously as in CRESWELL, J. S. (1998) *Qualitative inquiry and research design. Choosing among five traditions.*, Thousand Oaks, California, Sage Publication Inc.

their practice, which required a different inquiry strategy. In experiment design, the researcher has to interfere with the informants. Research on specific parameters and the subjects has to be performed on the designed research occasions. To research naturally occurring practice and not interfere, as in experimental design situations, implied use of another research strategy. The employees did not use the different risk tools on a regular basis. The risk tools were used or not used when the users found them relevant to their daily work. There was a need for a research design that allowed practice without interfering or without accelerating a naturally occurring process. However, being a researcher interviewing people may nevertheless have interfered in a limited way because the focus on risk handling might not have been so high if I had not been there. This is a dilemma known as the Hawthorne effect² where the researcher's presence at the work plant interfered with the research. Not having such regular contact with my informants may have lessened the interference, but would not have removed it totally.

3.3. Building theory from case study research

What is the purpose of the case study? Is it to test theory, develop new theory or to introduce propositions or possible middle range theory? To test theory it is necessary to have a fixed design. There have to be some known connections or relations in the theory that will be part of the design. Anthropologists have sometimes found new theoretical explanations of how natives organise or understand their lives. A new insight into a phenomenon can result in an entirely new theory or modification of an existing theory. Theory can also be used to analyse new fields of reference and to develop new propositions.

In Eisenhardt's article about theory building from case studies, there is a roadmap of how a theory-building process can be carried out and how theory from case studies can be relevant in the larger context of social science (Eisenhardt, 1991). Some phases in the theory building process are as follows:

² The Hawthorne effect: an increase in worker productivity produced by the psychological stimulus of being singled out and being important. Elton Mayo experiment in 1927. Encyclopædia Britannica Online.

An ideal is not to be preoccupied with a strict theoretical framework when the research is starting. Although an a priori starting point, no theory, is desirable (Glaser and Strauss, 1999) this rarely happens because the insights we, as skilled researchers, already have, shape the research focus in some way or another. On the other hand, using the case study as a theory test may limit the awareness of emerging themes. 'Although early identification of the research question and possible constructs is helpful, it is equally important to recognize that both are tentative in this type of research' (Eisenhardt, 1991:536). As the research process emerges, the initial research question sometimes changes or the research focus sometimes become clearer after gathering the data.

Choosing cases in case study research is done on the basis of theoretical sampling to replicate or extend theory. Since the number of cases is relatively limited, the process of choosing is not done within the framework of a sampling logic. The results are not going to be used as extensive proof, but to present a limited context from which general theoretical implications can be drawn. This is presented further in the description about generalisation.

When building theory, there is a continuous overlapping of data analysis and data collection. Flexible data collection gives the researcher freedom to adjust the data collection as the research emerges. 'The flexibility is not a license to be unsystematic. Rather, this flexibility is controlled opportunism in which researchers take advantage of the uniqueness of a specific case and the emergence of new themes to improve resultant theory' (Eisenhardt, 1991:539).

The amount of data found in the research is often overwhelming. To be able to make sense of all present data Eisenhardt presents two analysis models. Analysing within-case data and searching for cross-case patterns. A within-case analysis is a detailed writing up of each site. The aim is to know the uniqueness in each case. After this analysis has been done a search for cross-case patterns can be done. The aim here is to look for patterns. Are there differences or similarities or are categories/dimensions useful for analysing the cases? The cross-case comparison may find that there are similarities or differences in the cases.

Shaping hypotheses can be done in a two part process ‘(1) refining the definition of the construct and (2) building evidence which measures the construct in each case’ (Eisenhardt, 1991:541). There is a constant iterative process between data and theory, to make the theory closely fit with the data. As a framework of understanding emerges, more evidence can be examined in a systematic way to strengthen or reject the findings.

Theory building is often linked to existing theory, sometimes findings are confirmed in existing theory, other times analysis of data shows a need for adjustment or even totally new frames of explanation.

Within-case and cross-case pattern analysis has been used in this research.

3.3.1. Within-case analysis

The within-case analysis helped to get a better understanding of the implementation processes in each of the municipalities. When analysing the findings there was a need to properly identify each municipality’s risk management and use of risk tools. Did every level in Klepp or Time work with MRA or RAV respectively? The within-case data analysis showed that MRA was found at all levels in Klepp; at the street level it was not used in community nursing, was used occasionally in schools and regularly in kindergartens. The findings in Time showed use of RAV at the top and partly at the middle level, but not at the street level (A II).

3.3.2. Cross-case pattern

Once the knowledge about each municipality’s risk management was established, a cross-case pattern was searched for using thematic analysis of documents and interviews. Analysis of RAV guidelines showed a top-down strategy pattern founded in a rational planning ideal and explained by bureaucracy theory. The interview findings showed that RAV was done at the top-level and was supposed to be implemented further down in the organisation, something that had not occurred at that point in time. Later follow-up questions confirmed that RAV was not thoroughly implemented in Time. Analysis of MRA guidelines revealed a bottom-up strategy pattern. Interview analysis

supported this as it was supposed that people at the lower level should use MRA and try to solve problems at the lowest possible level. The patterns of top-down and bottom-up constructs were then used as tools for searching for differences (or similarities), and also for consistency in the patterns. Supplementary information gathering revealed that the cross-case patterns were not as black and white as originally thought. There was a mix of both similarities and differences (A II).

3.3.3. What is it a case of?

When reading about previous case studies it is clear what the cases are, but the process of finding them is often not straightforward. The empirical findings are often unlimited. Theoretical ideas can contribute to limit the evidence of interest. Theory (often vague) is a tool to sort out the empirical evidence that is needed in a case study. As a research tactic Ragin uses the term *casing* 'to resolve difficult issues in linking ideas and evidence' (Ragin Charles and Becker, 1992:217). The casing can be done in several phases, from a conceptual narrowing of the research field to specifying a more specific focus when the evidence is gathered. Evidence is often too complex to understand, and theoretical lenses may help to see what is important. Even when the cases are found, the casing process continues linking ideas and evidence to find a proper match. As Stake defines a case study it 'is both a process of inquiry about the case and the product of the inquiry' (Stake, 2000:436).

Presumptions often change when meeting the field and have to be adjusted (Flyvbjerg, 2003, Eisenhardt, 1991). 'The initial identification of research questions and theoretical framework will work best where it is tentative - with a recognition that the issues and theory may shift as the framework and concepts are repeatedly examined against the data which are systematically collected' (Hartley, 2004:325). It is processes of inquiry where new insights might help to make different choices than originally thought which makes case study a flexible design to handle changes.

In this research the case is risk tools. The risk tools RAV and MRA are contrasted to see whether there are similarities or differences, how they are implemented and what their implications are.

The choice of cases was based on the following information. The research theme was to see how the implementation process concerning risk management tools was interpreted and conducted in municipalities. This is a broad question and to be able to do empirical research there was a need to refine it. Through the pre-study (presented in the method chapter) I learnt more about risk management in municipalities. There were surveys on the extent of risk and vulnerability analysis (RAV) used by all municipalities in Norway, but there was a lack of research on what implications these risk analyses had in municipal risk management. At the local SA, a key informant told about Klepp municipality who had developed their own mini risk analysis (MRA). This was a unique practice in Norway. I wanted to find out if there were any contrasts in using either MRA or RAV. The municipality Time was selected on the background of ‘most different systems’(Tranøy, 1993). The ‘most different system’ is a strategy in choosing cases, where the phenomenon of interest is expected to be different. In this study the municipalities used different tools and I wanted to see if this had an effect in implications. Other factors were similar, like geography, number of inhabitants, industry, and risks.

Methodology

| | Klepp | Time |
|---------------------|---|---|
| Geography | Western part of Norway, coastline, 115 km ² . Flat landscape | Western part of Norway, 182 km ² . Flat and partly hilly landscape. Neighbour to Klepp |
| Inhabitants | 14 832 (year 2006) | 14 800 (year 2006) |
| Industry | Agriculture (80 km ² .) industry, public and private services | Agriculture (68 km ² .) industry, public and private services |
| Risk profile | Low risk profile. General risks arising from: <ul style="list-style-type: none"> • transport • health • social activities • agriculture • critical infrastructure | Low risk profile. General risks arising from: <ul style="list-style-type: none"> • transport • health • social activities • agriculture • critical infrastructure |
| Risk tools | MRA | RAV |

Table 3 *Comparison of Klepp and Time municipalities*

Both municipalities have joined the same risk management training and exercises organised by the local SA. The difference is connected to the phenomenon risk tools. Within the strategy of ‘most different systems’ similar factors in both municipalities are used to focus on the differences in phenomenon. In this study the phenomenon is different risk assessment tools, RAV and MRA. It may be easier to find differences in the phenomenon when other factors in the municipal context of Klepp and Time are similar.

3.3.4. Casing

According to Ragins’ use of the concept casing, the aim is to connect theory and evidence and use theory to explain the evidence. ‘Casing is an essential part of the process of producing theoretically structured descriptions of social life and of using empirical evidence to articulate

theories' (Ragin Charles and Becker, 1992:225 Ragins article). Casing is seen as a research operation. Some casing operations in this PhD research will now be described.

Where there any differences in Klepp and Time regarding implementation of the different risk tools? This was the focus in A I and A II. The casing here was to see how municipalities conduct either RAV or MRA and find any contrasts. After the core interviews were conducted, a cross pattern was found through analysing interviews and documents. Planning and management theory gave insight into different strategies in implementation processes. These theories were used when analysing documents. The findings showed a top-down strategy using RAV and a bottom-up strategy using MRA. The casing was to look for differences.

To be devil's advocate there was a need to have follow-up interviews to confirm whether different strategies lead to different practices or not (A II). The findings showed that there were a few differences but a lot of similar practices that were conducted despite the different strategies. I found explanations for these in bureaucracy and professionalism theories. Changes in bureaucratic institutions (here municipalities) are often difficult (Kleven, 1990). The different strategies may not have as strong an effect as supposed in the first research question; how can practices be so similar, when strategies are so different? (A II). Having a profession gives common education and similar skills, which may also explain why it can be difficult to implement new tools. Some of the professionals found they already had taken care of risks well enough and did not consider a need for new tools. The casing, combination of theory and evidence showed a pattern of mostly similarities (Nilsen and Olsen, 2005). This was a test to see what effect different strategies had. The assumption that different strategies would have an effect was not supported by the findings. Therefore there was a need for alternative explanations.

The casing process concerns linking evidence and theory and also using theory to explain evidence. Looking for cross patterns (Eisenhardt, 1991) is a tactic to try to find patterns in the data collected. Patterns of similarities or differences are often revealed when using this tactic in

comparative cases. Sometimes both similar and different patterns are found when comparing cases.

A brief introduction on reliability, validity and generalisation will now follow. This will be related to considerations in this case study after the method chapter.

3.3.5. Reliability and validity

Quantitative research

There is a need for clarification of the concepts reliability and validity. These concepts were developed in the tradition of quantitative research. This is a brief description only, covering some main elements in order to present my own choices. In the quantitative tradition: ‘Reliability is fundamentally concerned with issues of consistency of measures’ (Bryman, 2001). It means being able to replicate, for instance, an experiment or a survey. The exact procedure or method is used in order to give the same results, independent of the researcher. If the same results are found it is research that has reached high reliability. ‘Validity refers to the issue of whether an indicator (or set of indicators) that is devised to gauge a concept really measures that concept’ (Bryman, 2004:72). In the quantitative tradition the research is often based on a huge number of samples. The results are often used to describe extensiveness.

Qualitative research

The use of the concepts reliability and validity varies in a qualitative tradition. Some researchers use reliability and validity more or less as in the quantitative tradition, some adjust the content of the concepts to fit the qualitative research tradition, and some researchers find these concepts not useful (Bryman, 2004:272). I will use the definitions of an adjusted version of reliability and validity as described by LeCompte and Goetz. They show problems with the concepts of reliability as adapted to qualitative research. The problem of using reliability in the quantitative meaning is ‘...because human behaviour is never static, no study can be replicated exactly, regardless of the methods and design employed’ (LeCompte and Getz, 1982:35). They show different solutions to this problem, for instance taking similar roles (as researcher) in ethnographic studies. Although their reliability definition ‘to the extent to which studies can be replicated’ (op cit) is close to the

quantitative one, they reflect on in what way it is possible to try to achieve this ideal in a qualitative research tradition. To be able to reach reliability in qualitative research is:

- To be clear about the limitations of the work,
- To relate it to the research design and use of methods,
- To outline theoretical premises and defining concepts,
- To use different information sources and to thoroughly describe how the data was provided

These are some ways of trying to achieve reliability adjusted to qualitative research.

Internal validity concerns: ‘do scientific researchers actually observe or measure what they think they are observing or measuring?’ (LeCompte and Getz, 1982:43). Are the research findings authentic representations of reality? The threats to internal validity are when studying process and change. As time passes the respondents can develop new understandings of concepts, which can lessen the consistency in use of concepts. LeCompte and Getz give some advice on how to reach internal validity. To ensure internal validity in social research is to:

- Test the informants’ understanding of concepts in direct communication
- Use rival explanations to test if there are alternative understandings
- Collect data in a long time period to be able to understand changes
- Do cross-informant interviews
- Be conscious about observer effects

Direct communication with the informants gives the possibility to test out their understanding of concepts to examine if there is mutual understanding. Using a rival explanation control can be a way of testing official understandings. To test the interview questions in another often similar setting, can reveal if the questions are relevant or not. The definition of external validity is used equivalently with the concept of generalisation and in what way the research has relevance for others. In a qualitative research tradition, the research has more of an ideographic

concern; to learn more about the research problem in depth. There are often few informants and the results cannot be used as proof of extensiveness, although they can be used as limited generalisation (Williams, 2000).

3.3.6. Generalisations

The purpose of the research can be linked to generalisations. Researchers often want to share their research with others. How is it possible to make generalisations from case studies? Generalisations are usually connected to representations on behalf of high numbers of informants. The generalisations from case studies cannot be drawn from large samples simply because the numbers of cases are too limited. The field of interest is –‘interpretivism to indicate those strategies in sociology which interpret the meaning and actions of actors according to their own subjective frame of reference’ (Williams, 2000:210). It is to make sense of the natural settings where the actor’s actions and language occur. The aim is to get an increased understanding of a phenomenon that can be generalised.

Generalisations can be considered from different frames of reference. The concept generalisation is often connected to natural science. As Williams explains, there can be three sets of explanations concerning generalisations in science.

1. Total generalisations. ‘Where a situation S is identical to another S in every detail, for instance the law of gravity’. Apples fall to the ground from apple trees everywhere. In social science such axiomatic laws like gravity do not exist because of the interpretative nature of humans. Hence, this is not appropriate in this study.

2. Statistical generalisations. This is within a framework of sampling logic. ‘Where the probability of situation S occurring more widely can be estimated from instances of S’. Probability sampling is often done in social science to be able to find statistical evidence. This is to prevent bias and all the sites have an equal chance to be drawn from the research population. Generalisations are done on the basis of extensiveness. This kind of generalisation is less relevant in this study.

3. Limited generalisations. ‘Where aspects of S can be seen to be instances of a broader recognisable set of features’. It is a kind of inductive reasoning, is a way of generalising everyday life and is interpretive research. (Williams, 2000:215 all quotations are from Williams). In this study this kind of limited generalisation is most relevant.

Generalisations other than statistical generalisation can be made from case studies. It is not necessary to think about a case study in terms of statistical sampling. A case is a sample of one or a few and therefore cannot be representative in the meaning of extensiveness. Using a limited generalisation argument broadens the way in which generalisations can be made in social science.

Within the framework of limited generalisation, social findings can be a basis for generalisation. Case study researchers often relate their findings to comparable cases and contexts (Bryman, 2004). This is a way to extend the understanding of similar contexts, phenomena, processes etc. found in other cases.

The method described in the next chapter will be described on an empirical level, and then the whole research will be considered in a concluding chapter.

3.4. Method

This is a description of how the data was gathered. Table 3 shows the details of data. A description of the methods used will then be presented.

| Year | Activity | Organisation | Details |
|-------------|----------------------------|---------------------|--|
| 2001 | Meeting | DCDEP | Key information about BiS and general risk management and emergency work |
| | Seminar | DCDEP | To learn about societal safety. |
| | Interview | Klepp | Information from the project leader about MRA. |
| | Exercise | SA | The municipalities trained at the topic of a hurricane. Observation |
| | Document collection | Klepp | MRA documents to get background info |
| | | SA | Exercise, inspection reports, as background information about differences in risk management |
| | | DCDEP | Generic information in annual reports |

Methodology

| Year | Activity | Organisation | Details | |
|-------------|----------------------------|------------------------|--|--|
| 2002 | Interview | Stavanger Municipality | An interview with the emergency leader to get an overview of topics in risk management | |
| | Interview | Klepp | To get further information about MRA process | |
| | Test of interview guide | | To test the validity of questions. An anonymous municipality. | |
| | Talk Observation | Time | Conversation with emergency leader and to be informed in meeting with executive committee information about RAV. | |
| | Course | DCDEP | National course in municipal emergency management. | |
| | Public Health Conference | Klepp | Participation when Klepp was designated as Safe Community. | |
| | Document collection | | Klepp | To get information about SC work. Letter with research confirmation. |
| | | | Time | To get information of their RAV. Letter with research confirmation. |
| | | | SA | Inspections reports about risk management in municipalities. |
| | | | DCDEP | Annual reports |

Methodology

| Year | Activity | Organisation | Details |
|-------------|---------------------------------|---------------------|---|
| 2003 | Core interviews | Klepp and Time | 10 interviews in each municipality. The persons having the same position in both Klepp and Time. |
| | Additional telephone interviews | Klepp and Time | 10 fulltime kindergartens and 8 primary schools to find out extent of MRA. 1 teacher in both Klepp and Time to learn how they work with safety procedures. |
| | Inspection meeting | Klepp | To learn more about inspections. |
| | Internal meeting | SA | To have observation and learn more about reflections about supervision. |
| | Documents | Klepp and Time | Municipal plans, annual reports, area planning documents, emergency reports, inspection reports, material about risk and emergency management, crises plans. Information about exercises at SA. Traffic safety plans, political decisions concerning safety, injury statistics, health emergency plans, RAVs, MRA examples, safety procedures in schools and kindergartens. Examples from engineering department of safety and various papers about safety in the municipalities. |

Methodology

| Year | Activity | Organisation | Details |
|-------------|-------------------|---------------------|--|
| 2004 | Interviews | Klepp and Time | To have follow-up questions with the emergency leaders in each of the municipalities about SA exercises. |
| | Interviews | SA | Two interviews to learn more about exercises and the supervision policy at SA. |
| | Interview | Klepp | An interview with the council physician to see how injury prevention and SC was interlinked with MRA practice. |
| | Documents | DCPEP | Reports about municipal risk management and annual reports. |
| | | SA | Material about exercises. |
| 2005 | Common interview | Klepp | Project leader and the council physician about SC and how this is linked to MRA. |
| | Documents | Klepp | Statistics about injury registration. |
| 2006 | Information check | DCPEP | Facts about DCPEP, Klepp and Time |

Table 4 *Overview of data gathering*

This table gives an overview of the data gathered. It holds a variety of methods; observations, different types of interviews and collection of documents. Since the experience in use of MRA (and partly RAV) was limited, a wide variety of information sources was needed to reveal the practice. In addition, telephone interviews were taken successively to ask questions of the organisations involved. These are not registered in

the table. Information from homepages and other varied sources have also been used.

3.4.1. Pre-study

When starting the PhD project there was a fixed research question about how municipalities implement BiS³. A pre-study was conducted in 2001 and 2002, through interviews, meeting, seminar and reading documents. The information gathered showed a lack of understanding of the concept BiS, it was vague and at the time there was little practice of BiS in the municipalities. At the local supervisory authority (SA) the same findings were stated through interviews and documents. Joining a national course about municipal emergency management (2002) confirmed that BiS was still too vague to be used.

Key personnel in organisations or in the sites were of great importance in getting an overview of the research field. Therefore the pre-study gave valuable indications of which question(s) could be of relevance. At the SA I got information about a newly developed risk tool, MRA. As a result of the pre-study, the field of interest became the implementation and use of different risk tools in municipal risk management.

An alternative research choice could be a one-sided documentary analysis with a rhetorical focus on the BiS concept. The overall consideration was, however, that the limited experience on the subject could lead to a lack of sufficient material for a doctoral study, so there was a need to change the original research question as a result of the pre-study. The revision was thematically from BiS to risk management where the use of different risk tools was prevalent. The focus was still on implementation and safety planning.

3.4.2. Core study

In the core study (in 2003), 10 people in each of the municipalities of Klepp and Time were interviewed using an open-ended semi-structured

³ The initial title of the PhD project was: Process design and the effect of implementation - The planning process importance for prioritising BiS in societal planning. "Beredskap i Samfunns – planlegging" (BiS concerns emergency and risk matters in societal planning. There is no equivalent concept in English.)

interview guide. The interview guide is in the appendixes. These were the positions in each municipality: One average politician, the chief administrative officer, chief executives of the health, education and planning/engineering departments, the emergency manager, and at the street level a community nurse, one school headmaster, one kindergarten manager and an employee in the planning/engineering department. They represent different political and administrative positions, ranging from top level management to people working as street level bureaucrats in the departments for health, education and engineering/planning. The main aim was to map their practical work with safety, knowledge and differences between the top and the bottom of the organisation. Interviews from these different levels could also show if the implementation had been done thoroughly in the municipality or only at the top level. It also revealed a need for further information. The aim was to see whether the street level had been introduced to risk tools or not. The interviews were recorded to be able to give exact quotations when needed. In addition, information was collected through available documents, observations in meetings and follow-up interviews.

The interview guide had to take different municipal levels into consideration. The top and partly middle levels in the municipalities were familiar with the concepts or used the DCPEP or MRA guidelines; the street levels were not so familiar with the RAV and MRA concepts. Alternative safety concepts were used in their working situation. An important concern has been to observe how strategies from top management are implemented in the organisation. A case log from both Klepp and Time was written to have an overview of the interviews and to write down the experiences from the interview situations.

3.4.3. Follow-up interviews

The follow-up questions (after 2003) were developed on the basis of the core interviews. A need for more in-depth information and a more focused research on emerging themes were revealed in the analysis process. The follow-up questions were focused according to the different themes in the articles. To find out about the extent of MRA in Klepp, I interviewed, by telephone, the managers in all of the fulltime kindergartens and the headmasters of all of the primary schools, and the

leader of the health and engineering department. This was needed since the core interviews were limited. The supervision subject revealed a need for follow-up interviews with emergency managers in the municipalities and representatives from the SA. Since the last article focuses on MRA only, more follow-up interviews with the project leader and the council physician in Klepp were conducted to cover the theme about Safe Community.

3.4.4. Document analysis

The RAV guidelines were analysed using the rational planning perspective. There was accordance with rational planning ideals (Banfield, 1959) and RAV, as described in the theory chapter. The rational planning perspective is used as an explanatory framework for RAV in order to explain the hallmarks of the risk tool. Analysing RAV using the communicative planning perspective showed little accordance and thus that this perspective was not suitable as an explanation framework for this tool. A top-down strategy was revealed in the guidelines using management theory in the analysis (Mintzberg and Quinn, 1996).

The MRA guidelines were analysed using the communicative planning perspective (a further description is given in the theory chapter). There was accordance in the procedural focus, the collaboration process and the seeking of consensus. Although some elements in the analysis have accordance with some hallmarks from rational planning theory, the total consideration of the MRA guideline showed a lack of coherence. Therefore the rational planning perspective was not considered sufficient as a theoretical explanation framework for MRA. MRA document analysis showed a bottom-up strategy way of thinking.

3.4.5. General documents

Documents were gathered from a wide range of sources ranging from governmental guidelines to safety plans in kindergartens. According to the different article themes, some quotations from documents have been used. This was done in addition to quotations from the interviews to be able to fill in supplementary and more detailed written information. The document gathering was also done to gain an understanding of the risk management field as a foundation for making relevant questions.

3.5. Considerations of this case study

Now that both general methodology and concrete methods have been presented, it is possible to assess this study. The considerations in this chapter will focus on reliability, validity, generalisation and general methodical challenges during the research.

The initial PhD project was changed because of little knowledge of BiS. This was due to the findings in the pre-study, which showed a lack of external validity. It was not relevant to do research on a subject that was more or less unknown in the municipalities and which had little or no experience at all. The BiS concept was unfamiliar, had little internal validity and was therefore difficult to research.

One of the main challenges in this work has been studying the phenomenon MRA use that had limited experience when the core interviews were done in 2003. However, seen in relation to BiS, it was possible to do research on MRA because it was developed and had started trialling. Although MRA had been used in some areas before it was introduced in Klepp municipality as a totality, there were few examples of regular use. This has lessened the experience of an ongoing activity in this research, but has made it possible to follow the emerging use of MRA. This also gave insight into how a new tool is introduced into a municipality. It is the research question that makes implications for how research can be conducted. Since the subject of concern in this study was in its infancy, there was a need to explore what this limited experience was. This is a procedural way of research using a case study design in order to explore an emerging process of implementation and use of a new risk tool. RAV showed an uptake of 68% in 2004, in all municipalities in the country. What was of concern in this study was to see *how* and to what degree the risk tool was implemented and used in the total municipal organisation. RAV is also used to in order to explain MRA in a comparative way.

In all research it is important to know how the data was gathered in order to assess reliability. Social science research does not give replication logic as in most natural science research and experiments. As time passes, differences in experiences, new tasks and public opinion can influence the informant and the same questions that were

asked can be outdated or not give the exact same answers (Bryman, 2004). In this study the data gathering is described in Table 3. Interviews were conducted over a long time, as there was gradually more learning and a need for further refinement of the data. The core interviews in 2003 gave an information base which was used to sort out what was of further interest to the study. Other information sources like document gathering and participating in meetings was done in order to have more sources that could secure reliability of the findings; in other words to see if the different data sources confirmed each other or if there were any discrepancies. Using documents was also a way of securing historical data and testing the memory of the informants.

3.5.1. Interviews

In what way is validity secured in the core interviews? Do, for instance, concepts used in the interview guide cover the experiences in municipal risk management and have those concepts relevance in other settings too? I wanted to see if the concept I asked about in the interview guide was credible for an external municipality. The questions to be asked in the interview guide were tested in advance. In the autumn of 2002 a chief administrative officer in a neighbouring municipality had a test interview and gave comments afterwards. This led to an additional question.

Making an interview guide for the core interviews did represent some challenges according to internal validity. There were different levels in the municipalities to interview. The top level and usually the middle level were familiar with the risk concepts that were referred to in the interview guide. However, the street level needed to relate the concepts to their context. My experience from earlier work in a school department was valuable in order to ask similar questions in both kindergartens and schools. Similar concepts were found in community nursing and the planning/engineering department, related to the street level workers' own work experience. Neither of the informants in community nursing used the concepts RAV or MRA. For instance 'assessment visit' was a concept used in both municipalities in community nursing, which has some similar elements to both RAV and MRA. Both overview of risk and considerations of proactive risk assessments were prevalent. The challenge of interviewing in the municipal organisation was that there was a wide range of different

services with different skills and professions and it was not a single purposed organisation with one common aim. Only interviewing the top level may have increased the internal validity, the consistency of concept understandings, but an aim was also to see if the lower levels in the organisation had implemented the risk tools RAV and MRA. Our assumption was that even if the street level bureaucrats did not use the exact same concept, there were similarities in practice. This was tested in article II.

The main aim of the interview guide for the core interviews was to cover questions thematically, not to follow it slavishly. It was a semi-structured interview guide. A description of the interview guide's intentions is presented in the appendixes. This is done to give the reader insight into the themes that are covered and the reflections about how to question the different municipal levels. The specific interview questions are also included in the appendixes. Making the interview guide available will give the reader insight into the considerations to make the guide as internally valid as possible to the different municipal levels. The core interviews are formulated widely because the aim was to learn more about an unknown field. Looking at this guide will show that the questions asked are a starting point. The follow-up questions are more specifically related to the different themes in the articles.

The interviews were taped to be able to give exact quotations, when illustrations of different themes were appropriate. The interviews had mostly one to one and a half hours duration. This was in order to meet a criterion of saturation and give time for the informants to fill in other relevant information. The interviews were transcribed and used as an extended memory to ensure reliability of the findings.

There was a parallelism in conducting the interviews. This was due to a comparative purpose. In both municipalities the same 10 positions were asked about their experience with the risk tools. This gave some insight in two matters:

1. How the risk tool was implemented from the top to the bottom in each of the municipalities. The extensiveness of the risk tool in the organisation was then covered briefly and could be a basis for further data gathering.

2. If there were any similarities in use of the different risk tools across the different municipalities. Therefore the same positions in each municipality were chosen to have a consistent comparison foundation and to increase reliability.

The reason for using a semi-structured interview guide was to be able to understand the respondents understanding of the themes raised. There were common themes that were asked in each interview, in order to gain an understanding of the different respondent interpretations. The semi-structured interview also laid the foundations for the respondent's own understandings and reflections that they raised. As more learning was gained, follow-up questions were asked in order to gather more data on the research questions raised in the articles.

The questions in the core interviews were widely formulated and related to learning theory. Afterwards I could see that some of my presumptions about facilitating for learning and implementation in the municipalities were not so valid and there was a need for further revised theory. There was also need for follow-up interviews that were more focussed according to the emergent research questions that were raised in each of the articles. Those research questions were developed as a result of intermediation between data and theory. There was a change in some of the theoretical prerequisites because the data did not fit with the theory properly. New theory gave a better explanation framework, which increased the external validity (generalisation).

3.5.2. Limited generalisation

According to generalisation the theoretical explanation frameworks can extend use of theory or adjust theory. The use of the concepts bottom-up and top-down strategies has been theoretical lenses to describe the implementation of tools. The dimensions rational and communicative perspectives have also been used as theoretical frameworks. The field of risk management is an interdisciplinary field and combining different theories can broaden the understanding of the field. Theories of bureaucracy, institutionalism, risk management, learning, planning, safety and organisation have been combined in this research to contribute to a framework of understanding. The different articles focus on different aspects with the help of different theories. The theoretical lenses used in the study may introduce new ways of combining theory

and data. When starting the pre-study the focus was on learning theory, but as the research process continued I found that learning theory had only a limited explanation according to the data. Including different sources of theory seemed to give a better fit with the data and was a way to increase internal validity. A wide variety of theoretical glasses can contribute to different explanations of data. The theory helps shape the findings. Other perspectives may have been found in this material using other theoretical lenses, for instance a cultural perspective or a behaviouristic perspective.

This case study can be seen as mostly limited generalisation. According to the limited generalisation argument case studies can be related to other comparable cases on the basis of the findings and what is known about similar contexts. Here, the explanation and the implementation of different risk tools in municipalities is one subject of concern. The theoretical explanatory framework of different ways of handling risk management may contribute to new insight and to a reflection of own practice. This explanatory framework can have relevance for other municipalities, SA and DCPEP concerning learning about different risk tools and their implications. A more general topic of interest can be implementing new tools in municipalities. What hampers or encourages the implementation can be findings of more general interest. A further treatment of generalisation is given in the discussion chapter.

4. Findings

The theme in this thesis is risk management in municipalities and implications of the use of different risk tools. Each of the articles focuses on the research questions that were raised at the end of the theory chapter. The co-writer of the three first articles is my supervisor Odd Einar Olsen. An overall assessment of the relationship between the articles will be given, followed by an overview of the main findings.

Article I

Universal and contextual tools as a double strategy in emergency planning.

Aud Solveig Nilsen and Odd Einar Olsen

How can universal and contextual tools be a double strategy in emergency planning? MRA and RAV are compared and combinations of the tools are examined.

Article II

Different strategies – Equal practice? Risk assessment and management in municipalities.

Aud Solveig Nilsen and Odd Einar Olsen

How can practices be so similar, when strategies are so different? RAV is used in a top-down strategy, whereas MRA is used in a bottom-up strategy. Despite the different strategies there were many similarities in practice.

Article III

Resistance or acceptance? Mitigation strategies in risk management.

Aud Solveig Nilsen and Odd Einar Olsen

How does resistance to pre-designed national risk management standards influence learning between the regulator and the regulated? Because of resistance to readymade solutions, the SA has gained knowledge about MRA as a new way of handling risks.

Article IV

Mini risk analysis – tools for empowerment in local risk management.

Aud Solveig Nilsen

How can MRA strengthen an empowerment strategy in local risk management?

How MRA can be an empowerment tool to be used in injury prevention work and local risk management.

4.1. The relationship between the articles

The research problem in this thesis is: How does the use of different risk tools influence risk management in municipalities? The four articles cover different aspects of risk management in municipalities. These aspects are briefly:

- I. The differences and complementarities of RAV and MRA.
- II. The similarities in use, despite different strategies.
- III. The SA's supervision strategies, the relationship with the municipalities and resistance to readymade templates.
- IV. MRA as a practical empowerment tool.

The findings in each article will now be described in more depth.

MRA is a new risk tool and the implications of its use have not been analysed before. The rational and communicative frameworks have been used to explain the implications of both RAV and MRA. MRA is an alternative contribution to risk management, where the local level is in focus. RAV focuses on the top level in risk management and not the executive level. When comparing and analysing these different tools, the differences in implications are explained. Without a reflection on the use of different risk tools, the traditional RAV would not have been challenged. MRA can give valuable contributions of awareness and systematic risk handling at the street level and in people's daily work operations where risks can occur.

In articles I and II, the main purpose has been to describe and explain MRA and RAV. Both risk tools have, in general terms, the same aim,

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to map risks, prevent accidents and to reduce the severity if an accident should occur.

In this study the use of RAV concentrated on severe risks, whereas MRA focussed on everyday risks. The tools have been used with different risk focuses which are relevant in different contexts. RAV has been used to obtain an overview of risks in a long-term planning context whereas MRA has been used with daily risk assessment in an operational context.

The articles describe strengths and weaknesses of the different tools. The strength of RAV is that it gives a ‘total’ overview of the risks in the municipality. This makes it easy to prioritise the most urgent issues. MRA has increased the systematisation of safety work in daily work operations. RAV is found mostly at the top level in the organisation and is not used at street level. MRA is lacking the perspective of long term planning. MRA and RAV were found to have different implications. The tools are complementary rather than competing and use of both tools can strengthen mitigation and risk management.

RAV is in this research used in a top-down strategy and MRA is used in a bottom-up strategy. The foundations for these strategies were found by analysing the RAV and MRA guidelines and also in how the different tools were used in practice. Although the different tools are used in different strategies, the findings show similarities in practice (A II). This was found to be due to professional norms and institutional structures. With some exceptions, where MRA is used regularly the users find that their work with safety has been more conscious and systematised (A II). RAV and MRA have differences in implementation in the organisation. RAV in Time is used at the top and sparsely at the middle level. At the street level, RAV is not used at all (2003). The intention was that RAV should be made in each of the departments and then further used in local services. This did not happen due to a major reorganising and lack of prioritising (A II). In Klepp, MRA was made to have a risk tool more fitting for a municipal context, in daily risk assessments. MRA is used thoroughly in the organisation, but in community nursing there was a lack of knowledge about MRA. In schools, MRA is used sparsely. Kindergartens and the planning/engineering department used MRA regularly (A II).

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In article III, we have taken a step upwards and included the Supervisory Authority (SA). The SA's tasks are to guide and inspect municipalities in risk and emergency subjects. They are the local representatives for governmental institutions. A resistance to readymade governmental templates has been prevalent in Klepp. This was due to unsatisfying experiences with RAV and a belief in own solutions. Due to this background, Klepp has made its own tool, MRA. Klepp and Time have different roles in their relationship to the SA. Despite resisting inspections for several years, Klepp has contributed a new risk tool. Klepp has challenged the traditional solutions, resulting in a more procedural tool. Time has had an adaptive role following the template recommended by DCPEP. Rational and communicative supervision strategies are prevalent in the relationship between the SA and the municipalities. Klepp has been a contributor of solutions and the SA has taken this into consideration. Here we find elements of communicative rationality. In Time, which has had a more adaptive role, there is some familiarity with the rational supervision strategy. Where the municipality has a role of contributor, a more communicative dialog is prevalent.

Articles I to III have focussed on the differences between MRA and RAV. The last article focuses on MRA only. This is to strengthen the explanation of MRA and I relate this tool to empowerment theory, safety theory and Safe Community experiences. MRA is a tool for involving people in local risk management. MRA has a unique focus on process and involving users in their own risk assessments. The MRA working process has hallmarks from empowerment and can be seen as a practical empowerment tool that can contribute to lay the foundation for the involvement of people, especially at the street level.

4.2. Summing up the findings

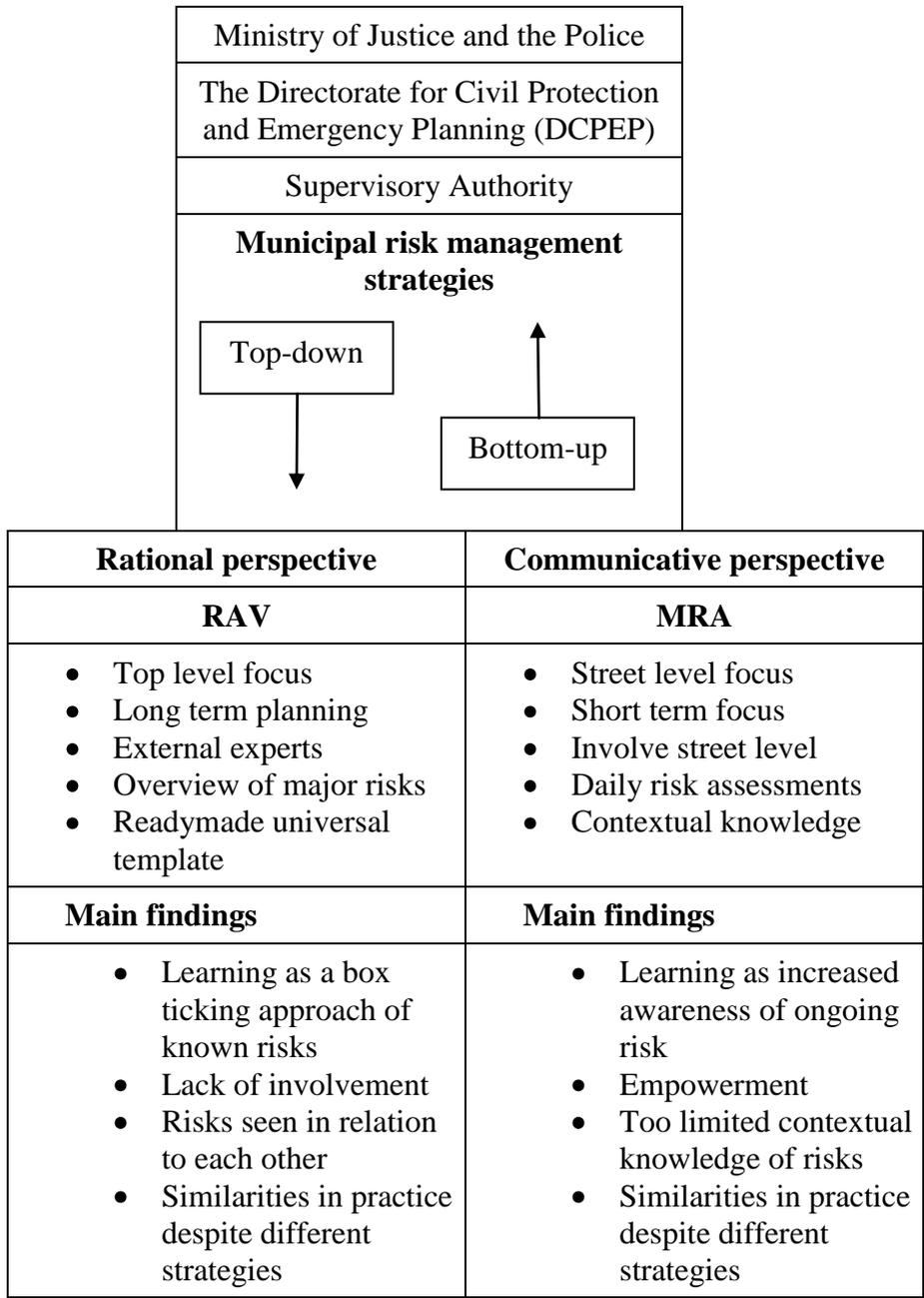


Figure 1. Main findings

Findings

Using the rational planning perspective has been fruitful for explaining the hallmarks of RAV. The RAV guideline and the rational perspective have many similar elements. On the other hand, MRA can be seen as a tool with elements from communicative planning. Examining these tools in the light of the different planning perspectives has revealed differences in implications.

The different tools are suitable in different situations. RAV is conducted at the top level in the municipal organisation and used in long term planning purposes. The focus is on major accidents that can occur in the municipality. RAV gives an overview of risks, which makes it possible to prioritise the most severe risks to handle. External experts are often used in order to make an RAV. The readymade RAV is implemented in the municipality with use of a top-down strategy. The RAV is supposed to be used by all the levels in the municipality, but in this study this was not found. The pitfall of this rational planning procedure is that learning can be reduced to a box ticking approach. Instead of proactive risk awareness, there is a reactive handling of known risks. RAV is suitable for major risks, but lacks focus on daily risks at work. From 1994, RAV has been the governmental risk tool recommended by DCPEP for use in municipalities. The implications of RAV show limitations that can be challenged by the alternative tool MRA.

MRA has a street level focus, where involving employees in daily risk handling in work operations is central. Findings show that experience with MRA has increased awareness about risks. The disadvantage with MRA is that it lacks a long term planning dimension. It has a more procedural planning focus. MRA is suitable for risk assessments with a short term focus, but is unsuitable when an overall assessment of major risks is needed. MRA has a contextual focus and is limited to daily risks in own work. MRA and RAV are suitable in different situations and can therefore complement each other.

MRA can be a contribution to development in local risk management, introducing other perspectives than in the rational RAV. Analysing MRA showed similarities with empowerment theory. This could illuminate other sides of conducting risk management. Focussing on

Findings

involving, stimulating belief in own skills, risk assessments as an ongoing procedural activity and a focus on risks in daily work operations. Including these factors in risk management gives a broader view on how to manage risks. MRA can be seen as a practical empowerment tool to be used in municipal risk management. The MRA method has a communicative focus, where peers are supposed to collaborate in order to reveal and handle risks. Everyone's opinion should be present and afterwards a conclusion based on a discussion should be reached. The new elements in risk management here are a focus on the street level bureaucrats as important contributors to the municipal risk management system. A procedural planning focus, preventing and handling daily risks, is a supplement to a static long term planning method focussing on already known risks.

5. Discussion and contribution

The aim of part 1 of this thesis is to examine common findings and main patterns. Part 1 gives a comprehensive presentation of methodology, something that there is often limited space for in articles. In part 2 the more detailed findings and discussion are presented in the articles. The overall intention of this research is to contribute knowledge for improving the quality of municipal risk management. The research problem is: How does the use of different risk tools influence risk management in municipalities? This thesis has examined two risk tools, RAV and MRA. These tools have different hallmarks. RAV has a long term planning perspective, focuses on large accidents and concentrates on a top level municipal analysis. The findings show that RAV is made primarily by the top and to some extent the middle level in Time municipality. MRA has a short term planning perspective, concentrates on daily risk assessment amongst employees (mostly street level bureaucrats) but is also a tool for the middle and top levels (A II). Rational and communicative perspectives were used to describe the main patterns of RAV and MRA. The frameworks have made it easier to see the strengths and weaknesses of the risk tools in different settings. In the rational planning perspective, the prerequisites of an ideal planning situation were used to analyse the RAV guideline, revealing many similarities due to an overview of risks and consequences and a hierarchical way of working (A I). Using the communicative planning perspective to analyse the MRA method showed similarities in that everyone in the work situation is involved in the risk assessment process, everyone's opinion should be heard and consensus is the aim for the end of the discussion process (A IV). The findings show different implications in use.

There is a dilemma when making governmental guidelines for risk management for all of the municipalities in Norway. The guidelines need to be general, but general guidelines do not cover contextual factors in each and every municipality. The challenge for DCPEP and SA is to be able to cover both general and contextual risk management in order to give the municipalities different tools to cover both stances. The RAV guideline has its strength in making a grand overview of severe accidents; MRA has its advantage in making preventive efforts and risk assessment a daily work item. Where RAV has a long term planning focus, MRA has an ongoing planning focus. There are

different phases in accident development; measures for reducing risks, emergency, crisis and recovery are prevalent. These phases have different planning needs. The dilemmas to be found here are, for instance, making preventive risk efforts, but not being able to foresee every single risk that can occur. Another is making probability analyses based on known risks, but then new risks occur. There is a dilemma of predictability that is not often found in crises. Other strategies therefore need to be developed in order to be proactive and to handle unknown risks. RAV can contribute with an overview, whereas MRA can help in preventing and handling risks in everyday life. When focussing on day-to-day low-level risks, the overview of severe risks is lacking. On the other hand, focussing on a long-term perspective and the use of statistics can lead to the daily risks being overseen. RAV and MRA therefore complement each other; it is not a question of either or, but that both tools are needed in order to consider all elements in municipal risk management. RAV has its strengths where MRA has its weaknesses and vice versa.

Some of the foundation for the development of RAV is based in the Norwegian oil industry. Probability analyses are used in order to reach high reliability in high hazard organisations. This experience cannot be transferred automatically to other contexts without an adjustment. RAV is systematised in a chart according to probability (DCDEP, 1994). Reflecting on the RAV guidelines reveals some pitfalls about its transferability and suitability to cover the complexity of municipal risk management. The RAV guideline is general, but contextual factors are also needed in risk assessments. Language from experiences in technological organisations cannot be automatically used in a municipal context. Although DCPEP have adjusted RAV to a certain extent, the rational planning perspective is very prevalent. The municipalities are not rational bureaucracies, due to lack of resources, time demands and ambiguous ends. This study revealed criticisms of RAV because of lack of suitability for the municipal organisation (AIII). This was due to not taking into account the complex municipal organisation that does not act as an ideal bureaucracy and lack of an ongoing procedural awareness about risks in daily work. A similar experience is found in health research where a petroleum-based reporting system was transferred to a health institution. The

terminology was unfamiliar and not properly adjusted to a health context (Høyland and Aase, 2006).

To lay the foundation for risk assessment and handling in everyday work, the employees on site have to be included. They have contextual knowledge and experience in safety considerations due to professionalism and governmental guidelines (A II). In order to have both an overview and a procedural focus on risk, the top level in the municipality has to facilitate tools which make this combination possible. Implementing MRA has shown that this tool can be seen as an empowerment tool to be used in local risk management. It enforces a belief in own skills and ability in local solutions, due to the MRA method of working (A IV).

The reorganisation of DCDEP to DCPEP in 2003 transferred some of the tasks to other institutions. MRA was moved to the Directorate for Health and Social affairs and their Internet site. The reason was that this directorate worked with Safe Communities and MRA was linked to this specific task. This is a traditional way of thinking, putting prevention in the tradition of health promotion work. To see prevention and risk management as two sides of the same coin could have strengthened a systemic way of preventing risks. To be able to handle daily risks may also increase the ability to handle more severe risks (A I). However, it was hard to find somebody in the Directorate for Health and Social affairs who had detailed knowledge of MRA¹. They lacked ownership of MRA due to not being involved in the development process. DCDEP had given financial support to Klepp in order to develop the tool and was engaged in the process.

Regardless of whether RAV and MRA are used in the municipalities, other methods of risk assessment are also prevalent. One of the main findings showed a pattern of similarities in practice despite the use of different tools and strategies (A II). Professionalism, similarities in work tasks and other governmental safety and health regulations that apply to all municipalities, were factors that could explain these similarities. To investigate safety work at the street level was a way to

¹ The Internet site of the Directorate for Health and Social affairs was under revision for more than six months. MRA was not available in this period. Several telephone calls also showed a lack of knowledge about this tool in the administration (2004).

challenge an assumption about differences in practice due to the different RAV and MRA methods. The challenge here was due to limited experience in use of MRA as an ongoing practice, since the tool was newly developed. On the other hand there is also limited insight into how RAV is conducted in municipalities, but there are surveys of extent. Revealing safety in working practices independent of the use of RAV or MRA, did show accordance with these methods. There was, however, an increased awareness and systematic thinking about safety where MRA was used regularly.

There is a growing debate about risk and a need for communicative rationality (Webler, 1999, Jaeger et al., 2001, Renn, 2005). In a rational actor paradigm, societal context factors have been lacking (Jaeger et al., 2001). In the area of planning tradition there are many empirical examples of participative planning situations that have taken on problematic and complex issues (Forester, 2000, Healy, 1997, Reuter, 2000, Innes and Booher, 2004). These experiences can also be of relevance in risk and participative discourses. Including societal contexts in risk management and a categorisation of risk-related knowledge is included in a new concept of risk governance. 'Risk governance comprises a broad picture of risk: not only does it include what has been termed 'risk management' or 'risk analysis', it also looks at how risk related decision making unfolds when a range of actors are involved, requiring co-ordination and possibly reconciliation between a profusion of roles, perspectives, goals and activities (Renn, 2005:363). This research can contribute to the debate on governance due to the use of rational and communicative perspectives.

5.1. Research contributions

The implications of using the different risk tools MRA and RAV have been studied. The contribution is to improve the knowledge about different risk tools and their advantages and disadvantages in the municipal context. The use of MRA has not been studied (by an external part) before. There are implications from the use of this risk tool that can strengthen the assessment of risks in daily work operations at a lower level in an organisation. The MRA method encourages street level workers to assess and handle risks at their own level. It is a tool for strengthening the ability and self-belief and empowering workers to take care of risks in daily operations. MRA is procedural, enforcing the

ability of risk awareness as an ongoing activity. The experience in use of MRA is that it raises consciousness about risks and helps individuals to be more systematic in preventing and handling these. MRA can help organisations to lay the foundations for risk assessment and analysis in daily work operations, where the main focus is on the employees at the middle and street level (or laypeople). MRA is complementary to RAV.

The implications of the use of RAV have not been contrasted with MRA in other research. This contrasting can contribute to an increased consciousness about the different implications of the tools. This study shows advantages and disadvantages with the different kinds of tools. MRA is a tool which has filled a gap that has been lacking when only using RAV.

Since 2002, the Supervisory Authorities (SAs) have had a new risk tool MRA, to consider when giving supervision. Before 2002, only the RAV template was available. An alternative tool can be more convenient in some of the municipal services. This research can give insights to the SAs and DCPEP about the differences in use of RAV, MRA, or a combination of both. The use of MRA is fairly new and the implications of use can, through this research, give increased knowledge about MRA. This PhD research can give input to SAs on introducing MRA in their guidance of the municipalities.

5.2. Practical implications for risk management

5.2.1. Municipalities

Research on High Reliability Organisations (HROs) shows patterns of how safety work performances can be reached. This HRO research is from high hazard organisations and contains elements from organising and cognitive sets of thinking, which can have relevance for other kinds of organisations. According to Weick, Sutcliff and Obstfeld there is a pattern of collective mindfulness that is found in HROs that can be of relevance for others (Weick et al., 1999). Some of these hallmarks are awareness and an ongoing focus on safety in working operations. This is a procedural way of working, focusing on safety assessments in working operations in here and now situations. In municipalities there are a wide variety of tasks and the organisations are not unified in their

ends and production as in HROs. However the collective mindset can be a way to reach safety in ongoing situations. MRA has some elements similar to the collective mindfulness: concentrating on the local level's ability to do their own risk assessments and handle risks on a local level. Using Weik et al's theory can be a way of explaining MRA and using it as an empirical example of how elements of collective mindfulness can be transformed into municipal risk management in order to reach an ongoing awareness about risks. The MRA way of working is also to empower people to believe in own skills.

To build on already existing safety practices makes it easier to adopt tools. Examining routines and procedures can give an insight into potential for further knowledge development. Adjusting the risk tools to already familiar practice, can be a way of incrementally increasing systematisation and further strengthening the abilities in risk assessments.

This thesis has shown different implications of the risk tools RAV and MRA. This insight can be a contribution to other municipalities in new ways of conducting their risk management. When the differences of the tools are made clear it is easier to choose the most suitable tool for a given situation. When planning and overview is needed RAV is most suitable; in daily risk assessments of work operations MRA is more suitable. Combining both risk tools gives a wider variety of risk assessments.

5.2.2. Supervisory Authorities

The different supervision strategies used by the SA are analysed in this research according to the rational and communicative planning perspectives. This difference in supervision strategies implies different roles. The municipality can be seen as an executive body or an own political body. The role of the SA can be as an inspector or as a collaborative partner. The analysis can give SA insight into its own role. There can be a dilemma between having the role of inspector or partner. The SA has the overall responsibility for guidance of the municipalities; this gives insight into how many of these conduct their risk management. This insight can be a way to benchmark quality in risk management where the different municipalities are seen in relation to each other. This insight gives an indication of best practice in

municipal risk management. An inspector role can be needed when assessing the overall quality of risk management in municipalities. A role of collaborative partner can be more suitable in learning situations and development of new knowledge. Dilemmas need to be considered in the light of the relevant supervision situation, there are no readymade solutions. However, insight into the different implications can make it easier to choose a solution. But it is also important for the SA to go beyond formal regulations and exploit existing routines, to be able to lay the foundation for further supervision.

5.2.3. The national risk and emergency management system

In order to reach a high quality of risk management, the municipalities need to be incorporated in an overall management system. In this way the different municipalities get the same tools and guidance in order to learn to perform better. This research has shown that both RAV and MRA are tools needed in municipal risk management. Including MRA in governmental priorities can be a way to enhance the capacity of ongoing risk assessments in municipalities.

5.3. Themes for further research

The intention in the RAV guideline from 1994 was, first and foremost, to strengthen the municipalities' ability in crisis management. As time passed there was also another expectation from DCPEP; to use RAV as a foundation in municipal planning and services (DCDEP, 2001). There are surveys on the extent of RAVs but insights are lacking on how they are *used* in the municipalities. It is not enough to make an RAV, the intention is that it shall also be possible to find this in planning documents and services. There is no statutory provision requiring use of RAV in municipalities in Norway. This has been an ongoing debate lately, but the use of RAV is still voluntary. For municipalities, displaying an RAV does not mean it is used in planning activities on an ongoing basis. DCPEP reports in 2006 that 64% of the municipalities do not use RAV in area planning² and sees a need for improvement. There is a need to investigate how municipalities have included RAV in their planning processes or why they do not use RAV in planning.

² 2006 Internet site about RAV www.dsb.no.

The use of MRA was in its infancy in 2003. It had been introduced to other municipalities but was barely used. This meant that there was little experience in the use of MRA. There is still a lack of experience about the use of MRA as a regular activity. The factors that encourage or hamper this way of working can be of interest. There is a need for further research on the use and implications of MRA from other settings.

There is a need for research on optimising the combination of RAV and MRA. Using both tools covers more elements than using only one. Laying the foundation for the use of both tools in risk assessments can increase the quality of risk management. There is also a need to link the tools to existing knowledge and routines for informal risk assessments to build upon already existing knowledge and experience. There is a need for research on how to combine these different risk tools in order to incorporate the dilemmas found in risk management.

In the Safe Community (SC) movement there are experiences with local injury prevention (Backe, 2003). These experiences are often presented in SC research as statistics showing figures explaining decreases, similarities or increases in injuries. There is a lack of explanation of the local working processes and what encourages or hampers such local involvement³. An empowerment perspective can be useful in this respect. MRA has in this research been characterised as an empowerment tool in local risk management where peers collaborate and are involved in the risk assessment process. Per Nilsen writes that further research is needed on why and how community-based intervention works. This should include social science in addition to natural science (Nilsen, 2006:15). There is a need to know how to supply and enable people on a local level to be involved with, and have an ongoing focus on, injury prevention.

³ A Safe Community Conference was held in Karlstad Sweden in November 2005, where the theme was Empowerment. The author held a presentation about Safe Community and empowerment. It was the first time empowerment had been a main theme of a Safe Community Conference.

6. Conclusion

The conclusion in this thesis is that a combination of RAV and MRA, rather than exclusive use of one of the tools, can increase the quality of municipal risk management. RAV has the pitfalls of not covering ongoing risk awareness and a lack of implementation at the lower level in the municipal organisation. MRA lacks a long term planning perspective and also a total overview of municipal risks. The different tools seem to complement each other. Where weaknesses have been found in the use of RAV, MRA could strengthen these and vice versa. RAV has its strength in a long term planning perspective and where risks are seemingly easy to detect. The tool is founded in a rational planning perspective, where ends and means are clear and where the best solution is chosen from all possible alternatives. RAV has been the tool officially recommended by DCPEP up to 2002.

MRA is an alternative tool providing a procedural way of detecting risks, which enforces an ongoing focus on risk awareness. Enabling peers to analyse and handle risks themselves is a type of empowerment. Analysis of MRA has shown similarities with empowerment theory. A belief in one's own skills is central. MRA can be seen as an empowerment tool in local risk management since the peers collaborate and find local solutions.

To have tools that lay the foundations for local involvement is important, because this is where the daily risks occur. In order to handle emerging risks that are uncertain, there is a need to build up resilience in the municipal organisation. Experiences and knowledge from research of High Reliability Organisations show that a cognitive attitude of collective mindfulness can be transferred and used in other organisations outside high hazard technologies. Some of these elements are found in MRA's focus on procedural risk preparedness, detection and handling.

There is a dilemma in using general guidelines for specific contexts. Readymade templates may not have the ability to catch emerging signals of risks. A procedural focus and a more context-based tool may enhance the handling of locally emerging risks. Instead of "either-or" the effort is to find a suitable balance between general and contextual guidelines in risk management. Different situations require different

Conclusion

solutions. This research has found that MRA is complementary to RAV and include sides in risk management guidelines that not have been considered before. Without MRA, the traditional method of using RAV would not be challenged. Including both tools can increase the quality of risk management since more risk situations are considered.

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Part 2 - Articles

Article I

Universal and contextual tools as a double strategy in emergency planning

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Universal and contextual tools as a double strategy in emergency planning

Aud Solveig Nilsen* and Odd Einar Olsen**

Department of Resilience and Emergency Management,
Stavanger University College,
Post box 8002, 4068 Stavanger, Norway
E-mail: aud.s.nilsen@tn.his.no E-mail: oddeinar.olsen@oks.his.no
Main author*
Corresponding author**

Abstract: Emergency planning is normally focused on larger unexpected events. A basic planning tool is the risk and vulnerability analysis (RAV) based on a top-down rational planning process. In this paper, we discuss a concept of mini-risk analysis (MRA) as an additional strategy to cope with accidents and disasters in the local community. MRAs focus on daily risks and small incidents.

The MRA argument claims that if the employees are accustomed to cope with daily incidents, this competence will enhance their capacity to mitigate disasters. Findings from two small Norwegian municipalities indicate that the MRA strategy is a complementary tool in emergency planning, taking care of aspects poorly dealt with in a top-down rational planning process like the RAVs. The main challenge is to combine the two approaches in emergency planning.

Keywords: emergency planning; municipality; risk and vulnerabilities analysis; mini risk analysis; preparedness.

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Biographical notes: Aud Solveig Nilsen holds a MSc. in Resilience and Emergency Management. In her PhD work, she is concerned with local governments and safety. The focus is on how the safety work is implemented in organisations.

Odd Einar Olsen PhD Professor Scholarship in Resilience and Emergency Management at Stavanger University College and is Senior Researcher at Rogaland Research. He has been working with organisational and technological development, technology transfer to LDCs, regional development and complex emergencies in several African countries

1 Introduction

Emergency planning normally focuses on the big unexpected events. According to the Norwegian Directorate for Civil Defence and Emergency Planning (DCDEP), a typical tool used by larger organisations to prepare for emergency situations is the risk

and vulnerability analysis (RAV) [1]. The basic planning concept in RAVs is most often a top-down rational planning process where potential threats are defined and optimal solutions to meet the threats are identified. The rational planning approach may, however, have some shortcomings in emergency planning [2–3].

In this paper, we discuss the concept of mini-risk analysis (MRA) as an additional strategy to cope with accidents and disasters in the local community [4]. MRAs focus is on daily risks and small incidents. It is a bottom-up strategy where all employees in the organisation use the simplified MRAs in their daily work. A bottom-up strategy in safety work has been used in Safe Communities [5–6]. According to Weick et al. [7], efficient safety work relies on the concerns about safety issues among all organisational members. The problem discussed in this paper is to see how a strategy for coping with daily small risk issues is a way to enhance the capacity to mitigate disasters.

2 The context

In 1994, the Directorate for Civil Defence and Emergency Planning (DCDEP) in Norway distributed guidelines that local governments were supposed to follow in their mitigation and emergency planning. The guidelines for RAV analysis should equip local governments with the tools necessary to produce emergency plans and lay the foundation for resilient ways of organising the municipality. The guidelines rely on standardised planning tools and are attached to rational planning procedures. It represents a top-down approach focusing on more and less possible disasters. Up to 2002, about nine of ten municipalities had produced an emergency preparedness plan [8].

The municipality Klepp has about 14,000 inhabitants. The municipality is responsible for schools, technical infrastructure, healthcare etc. within its geographical area. The landscape is flat and there is no risk of flooding, avalanches or snow slides. In spite of this, the municipality has chosen to work with subjects related to safety. The concept of MRA has been developed in the Norwegian municipality Klepp. The municipality has recently been a member of the ‘Safe Communities’. The MRA strategy is part of this Safe Community engagement and Klepp has received additional economic resources to develop and maintain this work. Klepp has received ‘The Emergency Prize’ from DCDEP in Norway partly because of the development and use of the MRAs.

Time, the neighbouring municipality to Klepp, has 13,500 inhabitants and has similar industrial structure, nature and risk scenarios as Klepp. Time has applied the traditional RAV as a part of the risk management and emergency planning. Apart from Klepp, Time has no additional resources available for emergency planning.

3 Method

In this study, ten persons in each of the municipalities of Klepp and Time have been interviewed using an open-ended semi-structured interview guide. They represent different political and administrative positions, ranging from the top-level management to people working as street level bureaucrats in the departments for

health, education and engineering/planning. The main issue was to map the employees' attitudes and practical work with safety. The interview-period was from January to April in 2003. In addition, information has been collected through available documents, observations in meetings and telephone calls. An important concern has been to observe how strategies from the top management are implemented in the organisation. The approach applied in this study, differs from former (Norwegian) studies where the focus have been limited to the top level in the organisations [9,8].

4 Theory

Emergency situations and planning needs

Efficient emergency planning needs to cover mitigation, preparedness, response and recovery [10]. In the pre-crisis stage (mitigation, preparedness), it is essential that the crisis management can have some scenarios about future crisis [11]. The scenarios can then guide the planned design of the crisis organisation, the allocation of resources for mitigation and resources to meet a crisis, planned communication channels, training of personnel, the drilling for roles, responsibilities and cooperative channels.

Emergency planning in the pre-crisis stages often have some common features. First, it is normally very difficult to get political and administrative leaders interested in emergency planning before the crisis appears [10]. As a consequence, emergency planning receives low attention, resources and support. A next question is the inclination to focus on legal and technical aspects. This narrow focus tends to block for social and psychological aspects that are important to take into account in emergency planning [12–14,7]. Turner puts the focus on the process leading to the accident [15–16]. According to Turner, accidents develop over time through a long chain of events, and should be viewed as the outcome of interactions between the human and the socio-technical system. Turner refers to the period where chains of discrepancies develop and accumulate unnoticed as the 'incubation period' leading up to the accidents. One reason why such dangerous discrepancies can pass unnoticed is that the flow and interpretation of information about hazards are hampered by poor communication, ambiguous messages and cultural differences. Another reason may be that beliefs and norms among actors do not comply with the existing regulations. Reason explains organisational accidents as the combination of latent conditions for accidents, work place factors triggering failures, and active failures done by people at the wrong time [17–18,12]. Latent conditions in the organisation could be poor planning, inconsistent procedures, unclear responsibilities, and unfortunate workplace factors etc. All these aspects direct attention towards organisational and psychological factors as core variables in emergency planning

During a crisis period, crisis decision-making tends to be increasingly centralised, give way to informal processes and improvisation, and technical and political experts may advance into decisional positions [19]. The volume and speed of the information flow increases, it becomes very difficult to control the information flow, and decision makers tend to pay more attention to the information source than the information provided. It may be very difficult for the decisions makers to redefine the situation

and they can easily get victims of groupthink [10]. To reduce uncertainty, they may supplement sparse and confusing information with analogous data and other experiences. All these processes are basically organisational and psychological processes generated in a situation of extreme collective stress [20].

The crisis aftermath also contains some specific features making it difficult to go through a process of organisational learning and evaluation. People may want to hide their own failures, conflicts of power may arise etc. [21–22]. Ideally, emergency planning should take all these factors into account. In practice, this is very difficult. Not only because of the complexity and uncertainty facing all emergency planning [3], but also because the crisis management fails to design a planning process able to improve preventive measures, preparedness, efficient response and recovery. The impacts of a plan will often depend more upon the planning process and the actors involved in the planning process, than the written document itself [23]. Taking into consideration all the well-known characteristics of a crisis, it is relevant to ask whether a comprehensive and standardised planning procedure is able to catch all these elements.

5 The limits of rational planning in emergencies

The DCDEP guidelines for RAV are based on a variant of the rational approach to planning [24]. One basic assumption in this theory is that the world is predictable. Another one is that it is possible to identify and agree upon clear and predictable means and ends, and that it is possible to get an overview over all alternatives and consequences of decisions. Hence, it is possible to choose the best solution to all problems based on total information and universal decision criteria. The instrumental planning ideal may work in a stable and predictable environment, facing simple and clear-cut problems. The pre-conditions for such planning are difficult to grasp when dealing with extreme uncertainty as faced in emergency planning [2].

The Rational planning ideal applied in emergency preparedness is only possible to some extent [2]. A rational planning process may contribute to draw a map of the crisis management organisation, the acquisition of physical resources, a plan for communication and information, and some training of staff. The rational plan may point to the responsible actors, and give some guidelines for action in case of emergency. Clarke however, found that some emergency plans were pure fantasy documents with poor linkages to a real emergency situation [2]. The plans were rhetorical documents only useful to convince decision makers and the public that everything was under control. They suffered from weaknesses such as widespread use of analogous data and irrelevant experiences to describe a potential crisis, the misuse of calculations, focus on irrelevant but controllable factors as conditions for the planning, and doubtful assumptions about the functionality of a complex crisis organisation [2].

It should be obvious that a rational approach to emergency planning as described by Banfield or even an approach taken the bounded rationality of decision-makers into account [25], will have some important shortcomings in the case of a real crisis. From an organisational learning perspective, Gherardi and Nicolini found that different communities of practice in the same organisation make their own

interpretation of safety matters [13]. They found that the ‘technical route to safety’ containing rules and regulations, formal risk analysis, cost and benefit analyses etc, did not include social factors contributing to the understanding of safety matters. Thus emergency planning seemingly require some alternative planning strategies to increase the preparedness, and to mobilise people working in the organisation to take responsibility for safety issues.

6 Some aspects of safety and learning in organisations

High level managers, who often are the people responsible for the rational emergency planning, may be more prone to take risks than operators on the ground for two reason [26]. Due to their professional background (very often business administration) and their distance to daily operations, they may not fully comprehend the risks they are taking. The different levels of authority that are involved (or responsible for) safety issues, will often interpret safety issues in accordance to their own position, responsibility and knowledge. Thus, the information about hazards that are the basic input information in the rational planning process may be twisted and turned on its way through the bureaucracy. In worst case, the plan could as Clarke noticed, rely on wrong conditions. In addition, the incentive systems both in public and private organisations normally direct management attention towards efficiency and economic profit at the expense of safety issues [27–28]. If safety issues are not focused in daily operations, workers may take short cuts to overcome a hard work pressure, or make individual decisions without knowing fully the consequences for the safety situation in the organisation. Gradually, the organisation could move beyond a boundary of safe state of affairs [27].

Some organisations are known for their ability to avoid serious accidents, and effectively contain consequences of a dangerous situation. Such high reliability organisations (HROs) have usually been studied within the nuclear industry, armed forces (aircraft carriers) and other high hazard industries [29–30,19]. Weick et. al. has tried to adjust the theory of HROs to other organisations with a ‘normal’ exposure to hazards and risks [7]. The concept of ‘collective mindfulness’ is used as the key to describe processes and characteristics possible to transfer from HROs to ‘normal’ organisations [7].

Within a concept of mindfulness, members of the organisations are constantly worried about failures, not about their successes. Therefore they encourage the reporting of failures and near misses as well as a collective analysis of the incidents in order to learn from them. This perspective is familiar to the ‘iceberg theory’ developed by Heinrich in 1931, postulating a more and less fixed ratio between near misses, small accidents and big disasters [31]. According to this logic, it should be possible to reduce the number of big accidents if it is possible to reduce near misses and the number of small incidents [12]. These principles are still active in the Safe Communities movement [32–34].

Furthermore, the concept of mindfulness emphasises the avoidance of simplifications in incident analysis because such shortcuts may reduce the understanding of accident processes. Multi-skilled teams look upon complex problems together to get a broader view on possible solutions. People talk together to

get different interpretations and to avoid automatic action. This learning process may enhance the capacity to have sensitivity to operations.

The HROs also have a strong commitment towards resilience. The best-qualified employees should handle a crisis if it occurs, whatever formal position they may have [19]. It is important to respond adequately and not to follow procedures in a mindless way. Westrum have used the phrase ‘license to think’ to illustrate this point [35]. The workers are empowered to contribute to practical solutions if a crisis occurs.

7 The MRA approach: small steps towards great changes?

The MRA approach relies on ideas close to ‘mindfulness’ and organisational learning. The collective learning processes presuppose that people can contribute with different perspectives to get a broader view of problems, and learn about relevant solutions through direct or indirect experience transfer [36]. If a culture of mindfulness should flourish, it is important to establish systems of reporting, analysis and discussion of incidents, and to make all employees responsible for safety aspects in the organisation. Collective learning processes are normally presented in stepwise ‘learning cycles’ inspired by the logic derived from the ‘Deming circle’. Deming, as the father of the ‘total quality’ movement, focused on the basic elements planning, doing, checking and acting as an ongoing process in any organisation aiming to improve quality [37–38]. Since the mid 1970s the quality movement and OHS (Occupational Health and Safety) management has gradually been merged [39]. In that respect, the MRA approach could be regarded as a continuation of a long development path within quality and safety management.

8 Comparing RAV and MRA analysis

There are some main features characterising the two planning approaches when used in practice. Some themes are listed in Table 1 below.

Table 1 The RAV and MRA compared

| | <i>Risk and Vulnerability Analyses (RAV)</i> | <i>Mini Risk analyses (MRA)</i> |
|---------------|---|--|
| Level | Strategic | Operational |
| Perspective | Catastrophes | Small events, Daily incidents |
| Focus | Superior Universal | Detailed Contextual |
| Planning | Linear, plan Mapping | Circular, process, catch signals |
| Timeframe | Long term, There and then | Short term, Here and now |
| Management | Top-down | Self sustained |
| Participation | Experts | Users |
| Preparedness | Calculations as a decision tool for prioritising risks | The precarious principle in all working processes, mindfulness |
| Learning | Exercises, textbooks and rules of behaviour | Practice in daily work Learning-by-doing |

The Risk and Vulnerability analysis guidelines [1] suggest that the planning process should be organised by the top management. Participants should be decision makers and experts to ensure ownership to the plan in the top management. The guidelines advise local governments to make an overview over all possible risks within their areas. The risk and vulnerability analyses should describe causes, probabilities and consequences. These factors should be systematised and proposals for the best countermeasures should be decided. The assumption is that all factors can be considered and described in a precise and objective way, and thereby provide a complete overview over threats, preventive measures and actions to be taken in all situations. The examples of crises used as illustrations in the RAV-guidelines include:

- floods
- avalanches
- hurricanes
- pollution of the drinking water
- explosions

- breakdown in electricity supplies.

They are all big accidents, supposed to be handled in a rational way based on a rational plan. This could be a doubtful assumption, due to the unpredictable character of risks and crisis.

The Mini-Risk Analyses [4] is a simple mapping of everyday risks and vulnerability situations. Based on simple categories, both potential risks and preventive measures are identified. The use of MRAs is closely linked to the daily work or leisure activities. The planning process is adjusted to the local context and daily operations. The main participants are the users and the operators close to the potential hazard. Safety should be considered in all operations by using the MRA. The aim is that users and operators should improve the organisational awareness, follow the precautionary principle and implement preventive measures as an integrated part of their daily work. The MRA is partly a guideline for analysis, partly a tool capable to structure reporting and prioritise actions. It is an attempt to combine activities aiming to increase awareness and to contain everyday risk sources. The intention is also that the MRA should equip operators to conduct the simple analysis with a systematic approach to emergency planning. The differences in participation between the RAV and MRA approaches reflect the old discussion about participation in planning and risk management [40].

9 The RAV in practice

The emergency plan in Time is comprehensive, containing everything from responsibilities to warning chains and economic responsibilities. It is following the main principals for a crisis organisation recommended from the DCDEP. The municipality has made an overview of all anticipated risk factors. In the plan, several scenarios are developed and weighted in accordance to degree of seriousness. The most severe risks for human accidents they found were:

- traffic accidents
- lapse of electricity
- fire in buildings
- failure in the drain system
- industrial accidents.

An example of the use of RAV is showed below and is about traffic accidents.

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Table 2 RAV example of traffic accident

| | <i>Humans</i> | <i>Environment</i> | <i>Economic values</i> |
|--------------|---------------|--------------------|------------------------|
| Unimportant | | | |
| Limited | | X | |
| Serious | | | X |
| Very serious | X | | |
| Catastrophic | | | |

Note: The frequency of risks of traffic accidents is estimated to be more than one accident every year

In 2002, the politicians decided to use RAV as a basic planning tool in all departments. The engineering and planning department also tried to include the RAV in the comprehensive municipality planning process. During the information-gathering period (January to April) the other departments did not succeed in producing any RAVs. This was partly due to an ongoing reorganisation process causing new personnel in key management positions. It was only the emergency manager, the municipal doctor and the municipal legal practitioner that really worked with the RAV before the reorganisation started. They had external guidance from The Directorate for Civil Defence and Emergency Management. So the planning process became very vulnerable to organisational changes. Most important was the replacement of the person responsible for the emergency planning process. As a consequence, emergency planning got a low priority and some of the ‘organisational memory’ got lost. The findings from Time show that the planners had ‘followed the book’ during the emergency planning process. But after the final presentation of the plan, it was filed and forgotten. Since the new leaders also lacked experience, attempts to revitalise emergency planning became fragmentary and poorly connected to former efforts. The RAV activities in Time are anchored at the strategic level, and very little has been implemented in the departments on a lower level. The scenarios presented in the RAV were of a catastrophic and abstract nature that has been very difficult to adjust to an operational level. Even though the top management in the municipality is included in the work with RAV through the regular management meetings, only a few of them have training in risk and safety issues. The middle level management in the organisation is not familiar with the concept of RAV.

Klepp has a long tradition in working with the RAV concept. A risk and vulnerability analysis based in a rational top-down approach was used in the department of education between 1992–1995. Accident scenarios were identified and the scenarios were weighted in accordance to degree of seriousness. This exercise made the department of education aware of potential risks within the sector and revealed the need for improvements. This experience was transferred to the health department when working out a preventive health work-emergency plan in 1998 [41]. The health department in Klepp used the RAV-guidelines from DCDEP, but adjusted them in accordance to former experience from the department of education. The RAV was made simple and user-friendly, but still the concept and approach remained the

same. Between 1999 until 2003 Klepp received external financing in order to develop the RAV. These efforts resulted in the concept of Mini-Risk Analysis.

Klepp has made an overall and simplified crisis plan. It's main content is a planned crisis management organisation where different positions have been assigned to special responsibilities. The warning and mobilisation plan is converted into a mini-bank format card where the entire mobile numbers to the crises team and important emergency contacts are printed. This card has been distributed to the middle management level in the bureaucracy and is expected to increase the efficiency to handle a crisis should it occur.

10 Some experiences with the RAV

10.1 Time

"We as politicians have just little knowledge about RAV." (A Politician in the technical board). The different check-offs and considerations made in the RAV turned out to be almost impossible to understand for laymen and politicians. In that situation, it was hard to mobilise interest or enthusiasm about emergency planning.

The transportation of dangerous goods was one of the scenarios that Time found to be relevant in connection with the work on a comprehensive RAV. The former emergency manager had been in contact with The Norwegian Pollution Control Authority to get information about transportation of dangerous goods, and he was deeply disappointed because they did not have a decent overview. *"It is impossible to find out what dangerous goods are transported."* (Former emergency manager).

One of the questions asked was how useful RAV is for Time municipality.

"I think RAV is useful for us, but there is much that is not relevant. It is sometimes like filling in a betting slip. And it is distant from what we are doing in daily work. The most important is that we have started a process with to identify risks, and we have to think about the critical questions on the way." (City manager).

The Time administration see failures and challenges in their work with the RAV and are open about it. *"We have made our first generation of the RAV, but it needs further adjustments and improvement"*, (Former emergency manager). One main reason for the shortcomings is the theoretical approach to potential hazards and preparedness measures hardly tested in practice.

10.2 Klepp

"If we are listing up ten accidents that can happen, then it is the 11th that will come up." (The former emergency manager). This expresses frustrations about using energy on plans that they find uninteresting and a waste of time. Instead of having plans that are useless because nobody knows them, Klepp try to integrate safety thinking in the daily work, which can make them prepared for unexpected events.

The manager in a kindergarten in Klepp has earlier worked with the ordinary Risk and Vulnerability analysis. *"I found it so distant, it was far away from my daily work. ...RAV was of a catastrophic distinctive character. If we are used to safety thinking*

through MRA in the daily life, we are better prepared to handle crises too.” (Manager in kindergarten).

10.3 The MRA in practice

The municipality of Klepp has a stable administrative top-management. The leaders in the department of health, education and engineering/planning have worked in the municipality for four to 14 years. Even though Klepp have had a reorganisation going on since 2002, the ‘organisational memory’ did not get lost due to their experience and knowledge about the organisation. The long experience in using RAV and stable personnel are some resources that Time lack in their organisation.

The local administration in Klepp realised after eight years of experience with the RAV that the DCDEP guidelines were too cumbersome, and based on planning procedures poorly adjusted to the daily routines in a complex and multi-purpose organisation. As a consequence, the local government started to develop the concept of MRA as a simplified alternative to the RAV analysis. One objective was to cope with daily incidents and bring the planning process closer to the operators in the ‘street level bureaucracy’ [42]. The project of developing MRA aimed to introduce risk handling as a continuous way of thinking in daily operations and services. Some parts of the organisation use MRA as an ordinary planning tool, but the work with the MRA is not implemented in all parts of the organisation. Some of the street level bureaucrats had not heard about the concept, and Klepp has still a way to go implementing the planning tool in the whole organisation.

The focus in the MRA is on a detailed and contextual level. The idea is that the workers should be trained in using MRA through daily operations. The strategy from the top management team is that people in the organisation dealing with the operational problems are best suited to mitigate and work with daily safety issues. The MRA is a continuous process and the Klepp administration finds it suitable in their organisation. This means that the top management may not have all the information about all thinkable risk factors in the organisation, but they have given the organisation a tool to use in mitigation and containment of potential crisis. But the MRA, as a common language in the organisation, is also used to report about safety problems and give managers an opportunity to catch updated information about risk factors.

One example is the health department using the MRA analysis to document a need for increased staffing in order to prevent violence from patients. The situation was so threatening that some health workers were afraid of going to work. The simplicity in the MRA logic made it easier to communicate the problem to higher levels in the organisation and to the politicians. Used in this way, the MRA supported decision-making among politicians and made it easier to prioritise actions. The health department received additional resources in order to increase the staff.

Another example of MRAs in use is when the kindergarten is going on a trip. The employees in the kindergarten have to analyse potential risks and prioritise actions in advance. Using the MRA as a guideline, they have to ask themselves what they can do to reduce risks and hazards, and also how they can reduce the consequences if an incident occurs. The employees are forced into thinking and planning in advance. If possible, they have to implement preventive measures. If not possible, the operators have to report the problem back to their superiors. They also have to clarify

responsibilities. Who is going to bring the first aid kit, take responsibility for transportation and bring mobile numbers to medical treatment and parents.

One important goal by using MRA, is to include the precarious principles in all working processes. It is a way of learning by doing. In the kindergarten the manager finds it challenging to use temporary, unskilled, and young people. “*Some of us have worked here several years and got the safety thinking in our backbone.*” (Manager in kindergarten). Inexperienced stand-ins are only allowed to have a limited responsibility before they get proper training. In that process, the use of MRA contributes to improve the training given to new employees.

MRA is found both on an operational and strategic level. The engineering and planning department has for instance used the MRA when rebuilding a creamery. The risk factors identified were linked to increased traffic, and preventive implemented measures were based on the MRA. The Mini-Risk Analysis is also used as a simplified tool in cross-sector planning sessions in the municipality. The departments of education, health and engineering/planning use MRA on a regular basis to develop different views on area planning and other cross sector problems.

11 Some experiences with the MRA

11.1 Klepp

“We are more interested in involving the whole organisation, something is coming to happen but we don’t know what or where. I am interested in having a mental preparedness in a way” (City manager). “We have applied a way of thinking where we do not want to focus on big accidents, but rather look upon the small crises that often occur” (Former emergency manager).

As the project leader for MRA told in a newspaper: “*We want to have more grazes, but fewer serious accidents*”.

The intention behind the Mini-Risk Analysis is to mobilise people to participate in different activities, increase awareness among all employees, and encourage employees to take more responsibility for safety issues.

11.2 Time

But why does Time not choose to work with MRAs? There were some different explanations. “*We have a quality system that has similarities with the MRA, and therefore we have not considered using this kind of tool*” (The planning department manager). He was working with a total quality system, and meant that this system had great similarities with the MRA.

There was another meaning expressed: “*We are not mature [enough] for using the MRA yet*” (Former emergency manager). The emergency leader had the opinion that the risk consciousness should be more widespread in the organisation before the MRA approach could be introduced. He was supported by the city manager: “*We have not worked as systematically as Klepp have done with these matters, and therefore we have not considered using MRA*” (City manager). This is the quite opposite approach compared to Klepp, where the introduction of MRAs is expected to increase awareness and consciousness.

12 Strengths and weaknesses in the use of RAV and MRA

The RAVs and MRAs approaches have similarities. Both approaches go through similar phases. Their main focus is on identifying risks and vulnerabilities, and to implement preventive measures. It is also emphasised that the analysis process should be a collaborative effort.

The RAV reveals some risks and make it easier to prioritise the most urgent issues to handle. It is a tool that the top management can use to prepare long-term emergency plans for the municipal. The advantage of having the RAV at a strategic level is that the management in the organisation could be informed about risks, and be entrusted with the arguments necessary to allocate resources to improved preparedness.

The scenarios in the RAV give ideas about recourses and personnel needed in a crises organisation. The emergency plan has a description of a centralised crisis management, standardised procedures to be followed and the distribution of tasks and duties in case of a disaster. It also contains a plan for warning, mobilisation of team members and information.

The problem with the RAVs is that the emergency plan is mainly theory and hardly tested in practice. The planned crisis management members are too busy with their daily work and therefore rarely involved in crisis management. Some of the big accident scenarios identified in the RAV, also seem to be distant from ordinary work and therefore difficult to take seriously.

The RAV is usually connected to at a strategic planning level. This means that the rest of the organisation is not included in the work with risks. The collaboration is limited to those at the top management level and experts. The RAV misses the process of how risks should be handled at the street level.

In Klepp an internal evaluation indicates that the MRA practice [43] has contributed to systemise the safety work where it is used, and has increased the consciousness about safety issues among operators and users of different facilities. In addition, the use of MRAs make employees feeling more secure in the performance of daily work tasks and decisions related to safety problems at work [43].

After a crisis, evaluations should be conducted in order to improve the organisational learning effects. Within the MRA approach, this is a continuous and ongoing process. The lessons learnt should be brought back to the organisational level with the hands-on experience, because the people responsible for daily operations should have the best opportunities to solve new problems. The strength is also that the MRAs represent a common language making it easier to communicate across sectors and professional boundaries. Through cross-sector collaboration it is possible to ensure that different views can be present and taken into consideration. The analysing process, however, presupposes a broad participation if the planning and analysis based on the MRA should be successful.

When used by employees dealing with potential risks, and also used at a sector or even a cross sector level, the MRAs appear as bits-and-pieces risk and vulnerability analysis. A weakness is that MRAs only can be a partial foundation for an emergency plan in the organisation. In comparison with the ordinary RAV, the MRAs seem to be narrow-minded with a limited focus. It contributes to maintaining different views on risks and hazards in different communities of practice. The major pitfall is that MRAs may loose the comprehensive perspective necessary in a crisis situation, and also to

build a common understanding about identified risks and hazards throughout the whole organisation. Here the ordinary RAV has got its strength because the crises organisation is settled and the responsibility for operations and the overview of recourses have been prepared in advance.

The development of the MRA has claimed a lot of time and recourses. If it were not for the external financing, the tool would not have been developed or used. *“It is not a part of the ordinary work in the municipality. The mini-risk analysis is something that they (the local administration) have brought into the acquisition of resources as participant of the Safe community movement” (A politician).*

Klepp did not want to produce a comprehensive plan analysing all kind of scenarios as recommended in the ordinary RAV analysis. A major pitfall is that the MRA approach may be applied as an alternative to RAVs in situations where the two approaches are incompatible.

The traditional RAV analysis seemingly has its strengths where the MRAs have their weaknesses and vice versa. The MRA perspective does not focus on the top-level organisation and the preparation of a crisis management team. Street level bureaucrats in Klepp who are familiar with the MRA, had a limited knowledge about crisis management and resource mobilisation in case of a real disaster.

On the contrary, the MRA approach has got the precarious principle as the main guideline in all daily work operation. The prevention of accidents is a continuous process. The MRA approach requires that persons responsible for daily operations have to think through potential risks and make a plan for how to handle it – before it occurs.

The MRA approach is context specific and oriented towards practical solutions to operational problems, whereas the RAVs have a universal focus based on scientific analysis and calculations. The weakness in MRA is that it does not handle the long time perspective; it is more focused on ‘here and now’. Klepp have tried to use the MRA in the planning activities and found it a bit difficult because of the short time perspective. The strong focus on simplicity and short-term solutions may lead to a neglect of comprehensive plans, standardised procedures, and a top management responsibility in case of emergencies. The combination of two different planning approaches and tools, do seemingly lead to a better integration of safety thinking in the municipality.

13 Reflections

It is a great challenge to make guidelines for RAV analysis that are relevant for different organisations. Such guidelines need to be general and universal, and one has to try to establish a similar practice in different organisations. The guidelines are given without taking into consideration local and geographical differences. Such guidelines are also unaware of the local efforts going on to cope with risks and safety issues. The RAVs set an ideal standard for implementation. This normally claims an instrumental way of thinking and the municipals become tools for implementing national standards poorly adjusted to the local context. They also claim an equal practice in every municipality, which can contribute to a more efficient emergency planning. Similar standards on local and national administrative levels can make the emergency planning more predictable and give clear frames of responsibility.

A procedural way of thinking takes the context into consideration. Instead of thinking of something fixed and ready, a contextual learning process concerning risks and hazards never finishes. This perspective is more connected to the Mini-Risk Analysis. Employees with 'hands on' experience need to collaborate to develop a decent MRA. Instead of getting fixed directions, the aim is to get the precarious thought into 'peoples head' in such a way that they use it in everyday working operations. The ideal is that people have got enough time to reach consensus after defining and analysing the problems [44]. Enough time, power (and resources), is always a constraint in almost all organisations [45]. Collaboration forums where representatives from different departments and levels in the organisation can meet and discuss risk scenarios from both a RAV and a MRA perspective may contribute to bridge the gap between the two planning worlds.

14 Bridging the tools? Towards a double strategy in emergency planning

A systematic bridging of the two planning tools has not been tested out. Still, several options for combining them exist. Data registered and analysed through the MRAs may be used as an input to a comprehensive RAV, covering all sectors and organisational levels in the municipality. This may enhance and improve the information flow from the bottom to the top-level in the organisation and contribute to the identification of specified risks. When using RAV and MRAs simultaneously, it is easier to harmonise the information and communicate it to all potential stakeholders, and not only to the experts. Data (risk identifications and measures taken) accumulated through all MRAs within a specific field, may constitute a unique and highly relevant database for strategic plans.

The MRA already serves as a tool for increased awareness and understanding of risk issues among the street level bureaucrats. Consequently, the MRA is a good starting point to improve the understanding of the role and content of a RAV. This may enhance the legitimacy of emergency planning in the community and improve opportunities for presenting risk issues to the right organisational level and initiate participative RAV planning processes.

The RAV plan, often describing the centralised crisis organisation and emergency resources on standby, has to be introduced to all organisational levels. Then the MRA users will know more about potential assistance in case of emergency, which in turn may improve their confidence in the top management capacity to handle crises. It is essential that the street level bureaucrats collaborate, because it is in these working conditions that most risks are developing.

15 Conclusion

The RAV and MRA approaches provide different contributions to emergency planning and safety. The traditional RAV analysis seemingly has its strengths where the MRAs have their weaknesses – and vice versa. If only one perspective is applied, important factors contributing to the reduction of risks and the containment of hazards may get lost.

Universal and contextual tools as a double strategy in emergency planning

The concept of 'collective mindfulness' seems to be familiar with some of the basic ideas behind the MRAs. It is process oriented, focused on context specific analysis as well as participation from the employees with hands-on experience. Furthermore, it relies on collaboration within a framework of respect for different specialities and perspectives. MRAs contribute to mitigation, the increase of awareness and motivation among employees. The MRA concept, however, misses the overview and the centralised planning of crisis management much needed to prepare for disasters.

On the contrary, the traditional RAV applies a top-down approach under estimating the importance of contextual knowledge, participation and personal experience in crisis situations. In a RAV approach, experts and technicians are supposed to solve the problems. The RAV approach does, however, not give much room for interpretation of local contexts.

The main challenge is to combine the two approaches and methods. The problems faced are among other things to maintain the interest and engagement for safety work and resource allocations to conduct MRA and RAV analysis as parallel exercises. Furthermore, it is important to develop better strategies for mutual exploitation of the benefits from the engagement, awareness and participation mobilised through the MRAs, with the strengths of comprehensive strategies produced in RAVs. Instead of using time on 'fantasy documents', the combination of RAV and MRA give an opportunity to utilise the resources already present in the organisation.

Internet addresses

The Internet address to DCDEP is www.dsb.no and it is possible to get an English version of MRA and RAV under the icon publications.
www.safecommunity.net is about Safe Communities work.

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Article II

Different strategies equal practice? Risk assessment and management in municipalities.

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Different Strategies - Equal Practice? Risk Assessment and Management in Municipalities

Aud Solveig Nilsen and Odd Einar Olsen¹

A study of two municipalities shows that totally different organisational strategies in risk assessment and management lead to very similar practices at the operational level. Klepp municipality is a member of 'Safe Communities' and works with a bottom-up strategy using 'mini risk analysis' (MRA). Time municipality has a top-down strategy based on a rational planning approach and uses 'risk and vulnerability analysis' (RAV). The implementation of MRA in Klepp started in 2000 and experience is growing. Some sectors adopt the tool more readily than others. Despite very different strategies both mitigation and preparedness practices and measures at the operational level are very similar in both municipalities. Similar rules and regulations from government shape a strict framework for safety management. Furthermore, professionalism among street-level bureaucrats is seemingly a more important guideline than organisational strategies in risk assessment and management

Key Words: Safety strategy; risk assessment; risk management; municipality; institution

Introduction

'A strategy is the pattern or plan that integrates an organisation's major goals, policies, and action sequences into a cohesive whole.' (Mintzberg and Quinn, 1996:3). Municipalities have multiple sets of goals and policies to execute, and a clear strategy may help to identify priorities in the constant flow of information and demands. This also applies to the assessment and management of risk. Aven and Kristensen (2004) discuss how different perspectives on risk may lead to different mitigation and response strategies. The traditional 'command and control' paradigm of strategies to mitigate and respond to accidents and disasters has been contested from different angles. Dynes (1993) argues that the most important input to such strategies should come from local communities, where people know the risks and potential hazards better than distant planners without local knowledge. Some authors argue that local self-organisation appears to be an efficient and rational response to crisis, and that people usually act in rational ways during times of crisis. Comfort (1990), Quarantelli (1998), Helsloot and Ruitenberg (2004) and Comfort *et al* (in

progress) support this view, and emphasise an important implication: that authorities should develop tools to improve citizens' response to risks and disasters. One way to strengthen the local capacity to assess risks and respond to unwanted incidents is to introduce concepts of risk assessment and management that build on the knowledge and experience possessed by street-level bureaucrats.

Reports on emergency management in municipalities from the Directorate of Civil Defence and Emergency Planning (DCDEP) in Norway focus on the top administrative level (Directorate of Civil Defence and Emergency Planning, 2001; 2002; 2003). These reports lack information about how safety strategies are implemented at the operational level. This study is about how the operational levels do (or do not) implement safety strategies based on different concepts of risk assessment and management. The 'risk and vulnerability analysis' (RAV) model recommended by DCDEP relies on ideas from the rational planning ideal found in Banfield's theory, where a top-down perspective is prevalent (Banfield, 1959). RAV is used to systematise the grand overview of risk factors in the municipality, and to prioritise preparedness measures based on calculations about probabilities and consequences. Experts are supposed to work out plans and top management is responsible for implementation. In this approach, organisations are seen as simple instruments for executing strategies formulated at the top level of the organisation.

'Mini risk analysis' (MRA) is part of a bottom-up strategy in which the purpose is to reveal risks and implement appropriate measures at an early stage. This concept was developed as a response to shortcomings in the rational RAV concept. MRA is supposed to be executed in an ongoing process of preventing and handling risks 'here and now', at the lowest possible level, and to be used at all levels in the organisation, the aim being to ensure that all employees use it in their daily work. MRA is supposed to be the core tool in mitigation, but also prepares employees at all levels in the organisation to respond in relevant ways if a crisis occurs. A further comparison of the RAV and MRA strategies is to be found in Nilsen and Olsen (2004).

In our case study we examine Time and Klepp, two neighbouring municipalities of about 14,000 inhabitants each, located on the west coast of Norway. The landscape is flat and there is no risk of flooding or avalanches. The two municipalities have very similar industrial structures, transport systems and organisational arrangements, and are seemingly exposed to a very similar risk scenario. Time uses RAV and Klepp MRA strategies. Klepp became a member of 'Safe Communities' in 2002, and in the same year received the 'Emergency Prize' from DCDEP, partly due to its development of MRA.

Given the two municipalities' reliance on totally different strategies for risk assessment and management, one would expect to find different practices. On the contrary, we found that the practical handling of risks and hazards in the towns is very similar. The question arises as to how practices could be so similar, when strategies are so different. In attempting to answer this question, we shall first look at theoretical explanations.

Theoretical framework

Institutionalism

Bureaucracy theories explain organisations as rational systems with hierarchical structures, defined divisions in labour and authority, and defined procedures for the execution of work tasks (Weber, 1982). Strategies decided at the top level are supposed to be executed in the rest of the organisation without hesitation. A basic assumption in the RAV strategy is that organisations function as the perfect bureaucracy.

Lipsky gives a more descriptive and contextual picture: the street-level bureaucrats are for instance teachers and social workers, employees who ‘.. interact directly with citizens in the course of their jobs’ (Lipsky, 1980:3). Lipsky’s focus is on how street-level employees work in practice and why there are so many discrepancies with expressed policies. Explanations may be that goals are often idealised, ambiguous, multiple and diffuse. The output could be difficult to measure in terms of goals, or because clients would have different needs. An insatiable need for more service provision combined with scarce resources is a dilemma that employees have to handle in their daily work. The street-level bureaucracies ‘may be asked to “trim the fat”, but never to reduce the quality of services or affect “vital programs” and “necessary” services’ (Lipsky, 1980:39). Another characteristic is that talk and action are not connected: strategies produced at the top level, for instance, do not necessarily influence practice in the organisation (Brunsson, 1989; Røvik, 1998). Consequently, street-level bureaucrats need to take shortcuts to be able to manage their work tasks. Time pressure may also affect safety work (Lawson, 2001). These shortcuts could be institutionalised over time as part of daily practice, and transformed into more and less tacit knowledge (Brown and Duguid, 1991; Reason, 1997; Turner and Pidgeon, 1997). Managerial decision makers will often have a limited understanding of risk issues, due to an administrative background (Rosness *et al*, 2002). They will often tend to pay attention to those processes and events that are easy to measure, and to take less account of intangible issues like successful safety work; this could be regarded as a dynamic process of non-events (Weick, 1990).

By using Perrow’s (1999) terminology as a metaphor, municipalities may be seen as loosely coupled and complex systems. They are responsible for the delivery of a wide range of services (health, education, transport, infrastructure, etc), and the complexity of their work tasks is combined with a widespread interpretative flexibility in the performance of those tasks. As in most service delivery, the coupling between different delivery sequences is very loose. All these factors contribute to a situation where it is difficult to discover or judge the consequences of deviations between strategy and practice. When organisations have similar structures and practices, DiMaggio and Powell (1991) argue that there will be a process of defining ‘decent’ practices among institutions, and that this is connected to values and attitudes also present in similar organisations.

The term institution refers to regulatory structures, governmental agencies, laws, courts, professions, interest groups and public opinion (Oliver 1991) that are able to exert pressure on organizations and their members. (Wicks, 2001:663)

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According to Scott (2001) there are three pillars that can constitute institutions: the regulative, the normative and the cognitive pillar. The regulative pillar presents a rational actor model of behaviour, based on conformity and sanctions (Wicks, 2001:664); this is an instrumental way of looking at institutions. The normative pillar concerns values, norms and role expectations among members in the organisation. The cognitive pillar is about self-constructed rules, meanings and identity. These pillars have usually been examined separately. Using the three perspectives simultaneously when analysing behaviour in an organisation Wicks found that this could broaden our understanding of the processes constituting institutions. As an alternative strategy to the 'command and control' paradigm, Dynes (1993) discusses the importance of the community and street level in risk assessment and management, arguing that the local population and street-level bureaucrats often have an undervalued knowledge of mitigation, relevant responses to crises and recovering strategies. He can be interpreted as emphasising the importance of the normative and cognitive pillars in institutions:

Rather than forcing people to fit some artificial plan, it is always more effective to use, as the planning base, the patterns of existing behaviour, which then can be adapted to the 'new' situation. (1993:181)

All these factors may explain why there will be deviation and inertia between top-level strategies and practice 'on the floor'. But it cannot explain why the practice should appear similar when the strategies are totally different.

Laws, regulations and professionalism

The municipalities have obligations to both a central and a regional government concerning safety issues. Government rules and regulations are supposed to be implemented at the municipal level. Rasmussen and Svedung have developed a socio-technical model that illustrates the complexity in risk management (Rasmussen, 1997; Rasmussen and Svedung, 2000). Figure 1 illustrates different levels included in risk assessment and management. The authors are critical of a traditional top-down management approach and of relying on a one-sided belief in what Scott labels the 'regulative pillar'. Rasmussen discusses the problem of interpreting laws and externally imposed regulations: 'In consequence, rules, laws and instructions practically speaking are never followed to the letter' (1997:187). Although laws and regulations may be difficult to implement in exactly the same way in all organisations and at all levels, they still play an important role in structuring work tasks and priorities.

A description of the professional organisation can also explain why bureaucracies may react similarly to the same type of problems. According to Mintzberg, organisations can be bureaucracies without being centralised (Mintzberg and Quinn, 1996). This happens when work tasks are complex and a great many decisions have to be taken in a short time. In many situations, a municipality may act as a professional bureaucracy: similarities in performance are connected to the competence that the professional employees possess:

Many of the standards of the professional bureaucracy originate outside its own structure, in the self-governing associations its professionals belong to with their colleagues from other institutions. These associations set universal standards,

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which they ensure are taught by the universities and are used by all the organizations practicing the profession. (Mintzberg and Quinn, 1996:659)

When performing work tasks that are difficult to describe in detail, and when the ties to the profession are stronger than to the organisation, the professional employee may pay more attention to the professional norms than to a specific strategy implemented in the workplace (Malin, 2000). Professionalism based on knowledge, rules of thumb, values and role expectations seems to be closely connected to the normative pillar in institutions.

Method

It is a challenge to illustrate similarities in practice. If we look at written papers and material from both municipalities, it is easy to find that they have different strategies. It is more difficult to document similar practice, because most of it is not written down or easily available.

Ten core interviews were conducted in each municipality, during spring 2003. The informants were picked at three organisational levels:

- *the strategic level*: one politician, one chief administrative officer;
- *the tactical level*: chief executives of the health, school and planning/engineering departments, and the tactical emergency manager; and
- *the operational level*: one community nurse, one school headmaster, managers in kindergartens, and one employee in the planning/engineering department.

Additional interviews were conducted with teachers, assistants in kindergartens, a municipal doctor and the project leader of MRA. In addition to the in-depth interviews with some of the operational managers, the rest of the headmasters and managers of kindergartens in Klepp were interviewed about the use of MRA. Supplementary information sources used were documents about RAV and MRA, municipal plans, annual economic reports, safety, quality and health, safety and the environment (HSE) manuals, and written materials on risk and safety regulations. We also observed discussions at political and supervision meetings concerning risk and vulnerability analysis.

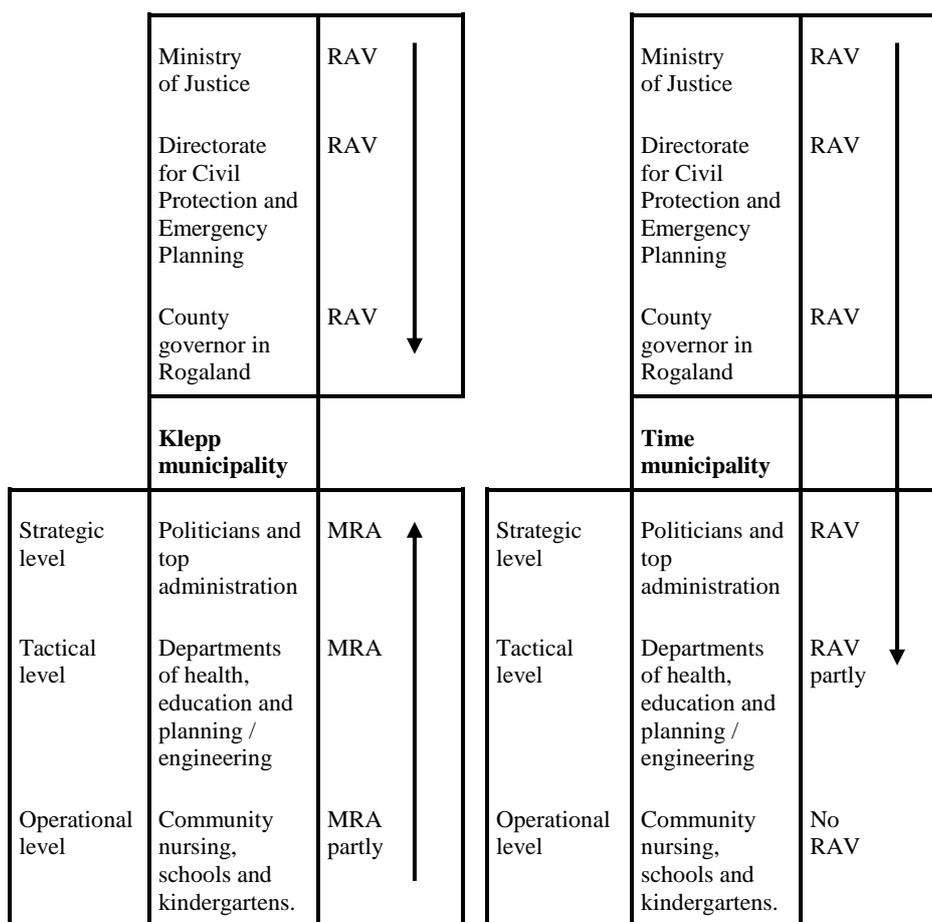
We have chosen to concentrate on community nursing, primary schools and kindergartens in both municipalities, although we also use some examples from the planning/engineering department. We do not focus on individuals, but on their roles present in the organisation. In that the study is a comparative one, some information at the micro level is lost, but there are better opportunities to compare different departments at an organisational level.

Results

A simplified version of Rasmussen's vertical model has been used to illustrate our findings (Figure 1). The Ministry of Justice and DCDEP form a common framework to which all municipalities have to relate; the county governor supervises the

municipalities. emergency work. Klepp and Time are then treated individually to show their different strategies. The bottom-up strategy is partly implemented at the operational level in Klepp. At the operational level in Time, RAV is hardly used.

Figure 1. Current emergency strategies and vertical management in the two municipalities



Municipalities are responsible for emergency planning and preparedness

In 1993, a Norwegian Parliament white paper stated the need for new tools to build societal resilience and improve safety and preparedness:

Risk and vulnerability analysis could be a sufficient tool to give a more systematic examination of situations that can occur, to improve preparedness in society and our ability to handle unexpected events. (Norwegian Parliament, 1993:33, translated)

Different strategies equal practice?

In 1994 the DCDEP issued guidelines for RAV analyses in municipalities. There was a discussion as to whether RAV and emergency planning should be a statutory provision, but it was linked to a regulation on internal control introduced in 1992. Hence, risk assessments and management became the municipalities' own responsibility.

In 1998 the responsibility for supervising municipalities in their emergency planning and mitigation work was assigned to county governors' emergency staff. As part of this supervisory role, the county governor is also responsible for training and guidance. In the period 1999-2003, 75 per cent of municipalities in Norway carried out an RAV analysis (Directorate of Civil Defence and Emergency Planning, 2003), and Time has followed this practice.

Klepp started to develop MRA in 2000, after a period of mixed experience with RAV. They saw a need for a more contextual approach and to link risk assessments to daily mitigation work in the municipality. A project group, including street-level workers from all departments, developed the MRA together, the project manager taking the approach of 'being a missionary rather than a dictator' (chief administrative officer). When they presented MRA to the different departments, the project group had already tested it in practice and had relevant examples to show to different stakeholders in the organisation.

MRA in the Klepp municipality

Since Klepp became a member of Safe Communities in 2002, the municipality has worked with safety and health issues in an extensive way. The bottom-up strategy assumes that workers at the operational level identify and manage their own risks: 'The MRA is a simple and useful tool and it feels sensible to work with it' (chief administrative officer). The politicians intend to implement MRA practice in each core activity in the municipality. The municipal plan's slogan is 'active and safe', and safety thinking is supposed to be implemented both in planning and in practice.

Klepp has a stable staff of officers at the tactical administrative level. The department managers have been employed in Klepp for between four and 12 years, and when the municipality was reorganised, in September 2002, they became important carriers of the organisational memory about ongoing emergency management. Personnel at the tactical level know and work with MRA. They use it in planning activities, and the department managers in planning/engineering, school and health sometimes use MRA to develop different perspectives on the same topic. For instance, MRA is used when the technical board is planning a road in a populated area or when preparing other municipal plans. At the community nursing tactical level, MRA is used for instance when analysing what to do when patients are violent or how to reduce risks and prevent accidents among employees and patients.

The main findings at the operational level are from community nursing, schools and kindergartens. According to the charge nurse, MRA is not a concept that is used at the operational level, even though some are familiar with the tool. Instead they use similar risk assessments focusing on the security of personnel and on the quality of service. Thinking on safety is similar to MRA, but the nurses do not use the concept as such. Shortcomings in the use of MRA are due to too little experience with it and

to a lack of education among community nurses. The (eight) primary schools use MRA arbitrarily. All the headmasters, but not all the teachers, know about it. Some schools use MRA, but the prevailing opinion is that this is a new tool whose implementation takes time. In Klepp, seven out of ten full-time kindergartens use MRA on a regular basis, two plan to use it in the future, and one has no plans. MRA is often used when going on trips. Earlier experience with the use of RAV is expressed like this: 'I found it so distant. It was far away from my daily work' (kindergarten manager). Kindergartens' experience with MRA is that the tool has contributed to more systematic planning and an increased consciousness of risk factors. They consider MRA a useful tool in safety planning.

The planning/engineering department uses MRA frequently when making plans that include safety considerations - for instance, constructing roads, building a new school or considering bicycle trails. The chief executive of the planning/engineering department states that they sometimes put the MRA in writing and sometimes just discuss it on the spot.

RAV in the Time municipality

Politicians in Time decided to implement RAV in 2002. An RAV was carried out at the strategic level, and contained an overview of potential risks in the municipality. The plan was that each department should carry out their own RAV in 2003, but this has not been done due to a reorganisation and to lack of prioritising. Consequently, it has not been possible to introduce RAV at the operational level as this is supposed to be a top-down implementation strategy. The municipal mayor is well informed about RAV, but the other politicians have varying degrees of knowledge.

Time municipality introduced a new organisational set-up in January 2003. The chief executives of the health, education and planning/engineering departments have been employed in Time between one and 12 years. After the reorganisation, the department managers' posts were redefined. They had not produced departmental RAVs by the time they were interviewed, although they all knew about the emergency strategy and the RAV concept. Time has not run internal courses in RAV analysis, but political and administrative leaders have participated in external courses. The reorganisation affected safety management, and caused delays.

Time has not considered using MRA, because of differing opinions. The emergency manager and chief administrative officer do not consider the municipality as mature enough for it; the chief executive of planning/engineering, on the other hand, considers the existing quality system as satisfactory, and therefore regards the use of MRA as unnecessary:

The county governors emergency staff regarded our quality system as about the same as MRA, which contains the same safety systems as we have in our activities.

The chief executive of the health department states that the RAV concept is not in use. In spite of this, she feels the department has reliable safety systems:

I think we (as nurses) are fairly good in thinking about preparedness. It is in our profession. We have the education to do it.

However, she notes problems related to the conflict between a heavy workload and safety management, a theme that arises every day in nursing: ‘This is because we have more needs than it is possible to meet’ (chief executive of health department).

Examples of similar practice in Klepp and Time

Existing emergency planning and safety systems in Klepp and Time are quite similar. In both organisations, staff have to adapt to government rules and regulations, both have HSE and quality systems built on the same logic and to the same guidelines, and both have a system of internal control built in compliance with the same government regulation. In addition, both municipalities have procedures for nursing based on current the professional knowledge and ethics within nursing.

The assessment visit is an activity which illustrates the points above, and has some parallels with a risk analysis. Before new patients enter community nursing, a nurse and ergonomic personnel visit their homes. The patient’s security is considered: if there is, for instance, a slippery floor, the nurse requisitions anti-slip mats to put under rugs, and there is consideration of whether there is enough light and whether technical remedies are required for the patient’s health. In addition, health personnel also consider their own working environment: if patients are heavy, for instance, a bed lift could be installed or a hospital bed requisitioned. The nurses did not use safety concepts like RAV, consequence assessments or MRA, but recognised that the analyses they carried out during their assessment visits were similar in nature.

At the operational level in primary schools

Klepp has a written MRA that the teachers are supposed to use, but the strategy is sparsely implemented in schools. One headmaster, who had earlier participated in the MRA project group, trained his staff in MRA, and this school actually uses MRA as a tool in its planning activities. The headmaster at another primary school revealed another, more common practice: he had told the teachers about MRA, but it was not implemented in the school. A teacher at the same school knew about MRA from the newspaper; he was not aware of MRA practice, but followed the established safety rules and procedures at his school, for instance when taking pupils on trips, etc. All headmasters of the primary schools in Klepp had heard about MRA; they define it as partly implemented, and still regard it as a tool for special occasions. When performing routine day-to-day activities, some schools use MRA and others do not. It is thought of as an additional tool for identifying risks and deciding safety measures.

Teachers in Time are not supposed to use RAV at the operational level. Instead, teachers in primary schools use established guidelines for HSE resulting from governmental safety regulations. Primary schools in Time apply very specific and carefully reasoned safety rules. Both when assessing risks and responding to hazards, teachers in the two municipalities act in very similar ways.

Although the kindergartens in Time do not use MRA, they have very specific safety rules to follow. There has been one fatal accident and some serious incidents during recent years, which may explain the focus on safety in kindergartens generally.

Discussion

RAV and MRA strategies are in use at the strategic and tactical levels. In Time, the RAV strategy is not in use at the operational level. In Klepp, the MRA strategy is not in use at the operational level in community nursing, and to some extent in the education department's schools. In kindergartens, MRA is used on a regular basis.

Different strategies

MRA is based on a bottom-up strategy, following Dynes's (1993) arguments about exploiting local knowledge in risk assessment and planning. Instead of having fixed plans for all possible incidents (Clarke, 1999) and a top-down organisation to respond to them, the MRA strategy aims to empower the people already at the site and to strengthen their existing capacity to prevent and respond to occurring events. When MRA is used both at the top and the bottom of the organisation, it may improve communication between the levels. Some of the experience with MRA is that it is simple and clear. The MRA project leader reports that it contributes to a more systematic approach to risk and raises consciousness of risk factors and safety measures (Aanestad, 2001). Employees are recommended to carry out this analysis together to get a broader view and reach a common understanding of risk factors. MRA is a tool for assessing risks in activities taking contextual 'here-and-now' questions into consideration. MRA can be seen as 'common sense put into a system' (chief administrative officer, Klepp).

In Time RAV is used at the strategic and partly at the tactical level in the organisation. It was supposed to be fully implemented at the tactical level, but this has not happened, partly due to reorganisation and thereby to a relocation of responsibility for emergency planning. RAV gives a universal overview over risk factors, and simplifies decisions about mitigation and preparedness instruments. It is based on a rational planning paradigm, focusing on expert-based anticipations about risks and hazards.

Similar practice

It seems as though the institutional risk assessment and management systems established through government regulations, internal control systems and professional knowledge guide safety considerations in everyday work situations. Despite different strategies, safety practice in schools and procedures in health departments may contain so many similarities that employees in the sectors see no need for another concept or further safety procedures.

Although teachers, kindergarten managers and community nurses work in different municipalities, many challenges are the same because of similar structures and work tasks. They also undergo profession-related safety training that may overrule detailed administrative procedures and organisational strategies. In sum, laws and regulations, existing safety procedures in the organisations and professionalism seem to explain why practice is so similar, even when the risk assessment and management strategies are very different.

There is one exception to this pattern of close similarities. Seven of the ten full-time kindergartens in Klepp use MRA on a regular basis and their experience is that it makes employees more conscious of risk matters. MRA enforces systematic thinking

that makes it easier to handle risks. The employees in the kindergartens consider MRA a useful tool for avoiding hazards and preparing for unwanted incidents. A principal reason is that the existing contextual practices for safety work in Klepp kindergartens and the MRA strategy have similarities, and therefore the latter is easy to implement - it is an improvement on existing practice, but feels familiar to the employees.

Municipalities are multi-purpose organisations, and may be seen as loosely coupled and complex systems. Performance is often difficult to measure in exact terms. Employees often belong to strong professions (teachers, health personnel, engineers, etc) with inherent professional standards and ethical rules. Hence, institutional processes often have more influence on organisational behaviour than do formal strategies and plans. Risk assessment and management are also carefully regulated through government laws and formal procedures, reducing the number of alternative implementation strategies. In this case, the regulative and the normative pillars seem to institutionalise behaviour to the extent that similar practice occurs.

Conclusions

The characteristics of the municipal bureaucracy, lack of management attention and institutionalised modes of task performance seem to explain the fact that overall organisational strategies are more and less ignored at the operational level, being replaced with similar practices in different municipalities. Furthermore, the regulatory framework and systems for internal control leave street-level bureaucrats with little freedom in their daily work performance.

The top-down RAV strategy based on the rational planning paradigm does not influence practice at the operational level at all. The expert-driven approach is very difficult to implement in a multi-purpose organisation with strong institutional characteristics. The bottom-up MRA strategy, however, contributes to improved performance and consciousness of risks and hazards if it is introduced in operational areas where existing practice is comparable to MRA practice. In addition, introducing the MRA strategy has to be accompanied by a determined effort to train street-level workers; if not, practice will remain unchanged.

A bottom-up strategy combined with the use of MRA may be a contribution to more systematic and collaborative risk management, and also increase the awareness of risks among all employees. It should not represent a totally new way of working, but be designed as an extension to already existing practice; it appears that this will make it easier to implement in a complex organisation.

A paradox remains: without strong support from management levels, a bottom-up strategy is very difficult to implement in organisations with vague goals and strong professions. The main challenge is how management can support the lowest appropriate level of employees, and empower them to assess risks in systematic ways and to respond adequately to unwanted incidents.

Notes

- 1 Aud Solveig Nilsen is a doctoral student in the Institute of Media, Culture and Social Sciences, University of Stavanger; email: aud.s.nilsen@uis.no. Odd Einar Olsen is Chief Researcher, Rogaland Research/Institute of Media, Culture and Social Sciences, University of Stavanger; email: oddeinar.olsen@uis.no. The authors wish to thank Inge Svedung of Karlstad University, Sweden, for comments and inspiration. An earlier version of this paper was presented at the International Emergency Management Conference in Melbourne, Australia, in May 2004.

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Article III

Resistance or acceptance? Mitigation strategies in risk management.

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**Resistance or acceptance?
Mitigation strategies in risk management.**

Aud Solveig Nilsen

Department of Media, culture and social Science

University of Stavanger, Norway

Telephone: +47-51831936

E-mail: aud.s.nilsen@uis.no

Odd Einar Olsen

Department of Media, culture and social Science

University of Stavanger, Norway

Telephone: +47-51831675

E-mail: oddeinar.olsen@uis.no

Biographical notes

Aud Solveig Nilsen holds a master in Risk management and Societal Safety. In her PhD work she is concerned with local governments and safety.

Odd Einar Olsen is a professor in Risk management and Societal Safety.

Resistance or acceptance? Mitigation strategies in risk management.

Abstract

The tasks of a supervisory authority (SA) are to guide and inspect municipalities in mitigation, and risk and emergency management. Two municipalities, which have showed different responses to the work of SA, are compared. Klepp has resisted inspections by SA and created their own solutions to risk management. The other municipality, Time, has seen governmental guidelines as a facilitator to their work and accepted inspections.

Despite their negative attitude towards SA, Klepp has contributed to a mutual learning process between the municipality and the SA by introducing a new strategy and tool (mini risk analysis, MRA) in risk management. MRA is a tool, which may lay the foundations for empowerment and involvement in local risk management. It is especially designed for municipal contexts, focussing on daily risks in working processes. Time, on the other hand, has passively adapted SA inspections and not contributed in the learning process.

Keywords

Risk management, supervisory authorities (SA), municipalities, supervision, inspection,

Resistance or acceptance? Mitigation strategies in risk management.

Introduction

To cope with emerging and new risks, regulations have to be applied locally, nationally and internationally. The ‘.. modern industrial society is highly differentiated, and legislators must enact laws designed to coordinate this diversity and to define and protect public interests- as a society, technology and the economy evolve’ (Kirwan et al., 2002:2). Regulations can be placed on a scale, from strictly prescriptive to self-regulative.

Regulations can have some inbuilt dilemmas. A highly regulated area may limit individual’s initiative to perform his or her work tasks. Another pitfall with prescriptive regulations is that they hardly consider change. Research also shows that safety regulations, ‘practically speaking, are not followed to the letter’ (Rasmussen, 1997:187). On the other hand, a self-regulation strategy may not supply workers with the necessary competence to perform best practice, because the practice may be too contextually bounded. ‘Ironically, then, many small businesses prefer prescriptive regulations’ (Kirwan et al., 2002:261). Small companies may have fewer resources to be able to interpret a wide regulatory framework.

Still, a ‘responsive regulation’ can be flexible enough to include prescriptive, self - regulation and mixed methods, as different circumstances need different actions (Hutter, 2001:313). This takes into consideration that a wide range of different methods can be used. Acceptable risks are related to changes in ‘technology, scientific knowledge, public opinion, local circumstances, and so on’ (Hutter, 2001:314). Regulatory authorities may have the role of being both a controller and a coach, where the laws regulate what is legal or not.

Supervisory authorities (SAs) are a part of a regulatory regime. The focus in this article is on public risk management and the relationship between the regulator and the regulated. Risk management is defined as ‘a range of related activities for coping with risk, including how risks are identified and assessed and how social interventions to deal with risk are monitored and evaluated’ (Hood and Jones, 1996:7). The SAs task is to supervise and inspect the municipalities skills in risk management. It is emphasised in a Norwegian Royal proposition that the SAs shall have both a controlling and a guiding role (Royal-Proposition, 2005). The guidance can take several forms, for example informing municipalities about new regulations and ways of handling risks, network meetings and exercises and inspections to improve risk management.

Hood uses the terms Sprat (social pre-committed to rational acceptability thresholds) and Shark (selective handicapping of adversarial rationality and knowledge) (Hood and Jones, 1996). Sprat is a conventional, bureaucratic and rational approach which metaphorically speaking is seen as a thermostat. Shark is focused more on conflicting values, which are public debated. Shark promotes confrontation between risk creators

and risk receivers in a procedural debate (Shrader-Frechette, 1991). In real life there is often a mix between these basic styles (Hood and Jones, 1996).

Relations between the regulator and the regulated may vary from cooperation to competition or active resistance. In this article we discuss how different relations between SA and two municipalities influence the output from regulation. Resistance is central in one municipality and a passive adoption to SA is central in the other. We will consider a rational and a communicative perspective in our analysis. The question we will consider is: How does resistance against pre-designed national risk management standards influence on learning between the regulator and the regulated?

The context

The two municipalities in our study, Klepp and Time, have about 14 000 inhabitants and are neighbouring municipalities located on the Western coast of Norway. The landscape is flat and with no specific concerns about natural disasters. The risk scenarios are to a large extent similar, focused on infrastructure and technological awareness, breakdowns in vital service provisions and individual accidents. Klepp became a member of Safe Communities¹ in 2002. They received an “emergency prize” from the Norwegian Directorate for Civil Protection and Emergency Planning (DCDEP) due to the development of a risk tool called mini risk analysis (MRA) in 2003. Both municipalities have participated in exercises organised by the SA in their county since 1997. The Directorate for Civil Defence and Emergency Planning (DCDEP) is the regional SAs’ superior.

SAs have a responsibility to guide and inspect plans, mitigation and risk management, but SA has no statutory provision concerning municipalities using RAV and lacks the power to put force behind their demands for an proactive risk management. Plans can although be dismissed by SA if safety matters are not properly incorporated in municipal plans. In 1994 the DCDEP issued guidelines to all municipalities in Norway concerning the mapping of risks, called risk and vulnerability analysis (RAV).

Since 1998 the SA’s in Norway have had responsibility for:

- Inspections
- Coordinating the emergency work in the county²
- Motivating the municipalities to use risk analysis tools
- Informing and supervising the municipalities on how to integrate risk and safety issues in comprehensive planning.

¹ The Safe Community movement started in Sweden 1989 on behalf of WHO and the Ottawa charter. The main aim is to conduct local injury prevention in communities. www.safecommunity.net

² The three later tasks are from a directive (year 2000) from DCDEP to be executed by SA.

The SA has an emergency staff taking care of guidance and inspection of the municipalities in the region. Every other year exercises are held which all municipalities are supposed to join. Municipalities are inspected every fourth year. These regular activities may shape arenas for dialog or instruction. The aim is to increase knowledge about risk management and that learning shall lead to changed behaviour. This aim is ideal, motivational factors and self- efficacy (a belief in own skills), is also central in learning situations (Bandura, 1986).

Time and Klepp are compared. They have different strategies in risk management. Time has a top-down strategy engaging top management and experts in scenario building, risk assessments and planning. Time uses a traditional risk and vulnerability analysis (RAV) designed by the Directorate for Civil Defence and Emergency Planning (DCDEP). RAV focuses on the strategic level. Klepp has developed a bottom-up strategy which supposes that street level workers are best suited to take care of everyday risks at the operational level (Nilsen and Olsen, 2004). Klepp developed an alternative approach to the traditional RAV, mini risk analysis (MRA) that focuses on daily risks and small incidents. MRA stimulates collaboration, creativity, awareness of risks and ways to handle them. Empowerment to the street level bureaucrats is one of the ideas behind the concept (Nilsen, 2006a). However, closer analysis of how the strategies are performed in practice reveals similar outcomes (Nilsen and Olsen, 2005). Due to professional norms and institutional safety directives the two municipalities show a surprisingly similar performance. Klepp has resisted inspections by the SA and believe in their own capability in risk management.

Theory

Rational and communicative planning

The foundation of a rational planning paradigm can be found in theories about bureaucracy and rational planning. In a bureaucracy there is a hierarchal organisation where the executing level is supposed to fulfil tasks originating from the top level in a rational perspective. A machine is used as an analogue of a well functioning bureaucracy: 'A machine is certainly precise; it is also reliable and easy to control; and it is efficient- at least when restricted to the job it has been designed to do' (Mintzberg and Quinn, 1996:640). The 'ideal bureaucratic' institution has hallmarks of:

- Legal authority,
- Accuracy, rapidity, clarity,
- Hierarchy (Weber, 1982).

In critical bureaucracy theory, those ideal standards of a bureaucracy are scrutinized. Lack of resources, time constraints and many ambiguous ends and means in bureaucratic organisations makes it impossible to fulfil the tasks laid on the street

level bureaucrats³ (Lipsky, 1980:3). Another element is that what is 'said' by the top-level in a bureaucratic institution is not necessarily what is 'done' (Brunsson, 1989).

Banfield developed a theory of rational planning (Banfield, 1959) closely linked to the principles of a bureaucracy. Clear ends and means are prerequisites for an efficient planning process. Every condition that's relevant for a choice and its consequences is clear and known. The world is predictable and it is possible to decide on clear goals. It is possible to identify and evaluate all alternative options based on scientific methods. It is also possible to have an overview of all alternative courses of action. The best alternative will be chosen at the end. Banfield has developed an ideal theory, but ideal standards are difficult to find in practice. The rational planning perspective can also be found in more moderate theories, like Herbert Simon's restricted rationality (Simon, 1977), and Lindbloms 'muddling through' (Lindblom, 1959).

Habermas has developed a theory of communicative action (Habermas, 1995, Habermas, 2004). This theory is concerned with forums of dialogue. Human communication is a medium that functions as a coordination of actions (Austin, 1962, Eriksen and Weigård, 2003). It is said: '...that speech often is action. Conversation is a basic element of human interaction and that social interactions are shaped and reshaped through speech', Austin in (Eriksen and Weigård, 1999:58 Own translation). In an 'ideal speech situation' all the different interests must be represented. Everybody has a right to present his or her view. The power of the argument is the most important force in the discussion. The aim is to reach an understanding between the participants. 'In communicative action participants are not primarily oriented to their own individual successes; they pursue their individual goals under the conditions that they can harmonize their plans of action on the basis of common situation definitions' (Habermas, 2004:286). The aim of the discussion is to seek consensus.

These criteria in Habermas 'ideal speech situation' are rather abstract, but could be used as a guideline to prepare for collaborative agendas as they are recommended in planning theory (Innes, 1998). Excerpts from Habermas communicative speech ideals are used as ideals of dialogue situations. In a dialogue there is a right to state one's own viewpoints and a mutual respect for the other participant's interests and meanings. In a real dialogue there is reflection, clarification and mutual learning between the participants (Hanssen et al., 2004).

Habermas ideal standards have received massive critique. Much of this critique concerns the absence of power in Habermas' theory (Flyvjerg and Richardson, 2002). The theory is also seen as impractical, because of the ideal of consensus. Reuter discusses the complementary of power and discourse (Reuter, 2000) acknowledging the combination of both as a way of using power more discursively. Despite much critique, the theory has contributed in a wide variety of areas; for instance as an inspiration for resolution boards, management ideals and in collaborative planning (Healy, 1997).

³ Street level workers are employees who; interact directly with citizens in the course of their jobs'. LIPSKY, M. (1980) *Street-level bureaucracy*, New York, Russell Sage Foundation. For instance teachers, social workers and community nurses.

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The SA can have different roles in relation to municipalities. They could be traced back to principles embedded in the theories of rational and communicative planning as shown in the table.

| The SA role in relation to the municipalities | Rational planning perspective | Communicative planning perspective |
|--|--|--|
| Ways of interaction | One way information -Little contact and interaction | Mutual interaction |
| Management values | Effectiveness | Dialogue, mutual trust, mobilisation, equality and partnership |
| Decision making | Instruction/command (monologue) | Dialogue/mutual understanding |
| Municipal role in public system | Body of execution | Political body, with own strategies and goals |

Table 1. *Inspired by (Jenssen and Kleivan, 1999).*

Supervision

The principles of rational and communicative planning perspectives will now be related to supervision between SA and municipalities (Jenssen and Kleivan, 1999).

Supervision is usually conducted on the basis of legal authority (Weber, 1982) and the main aim is to see if there are deviations from laws and bylaws. When there are no statutory provisions, other strategies requiring collaboration may be relevant (Jenssen and Kleivan, 1999). Both the SA and the municipalities need to find solutions on the basis of a common challenge because there are no laws backing the inspection. The SA's role in relation to municipalities and the SA's use of different strategies will be examined in the different frames of reference. The SA can be seen as either having the role of an inspector or a collaborating partner. In Bekkers and Homburgs description, there is a demarcation between the role of cop and coach (Bekkers and Homburg, 2002). The municipalities can be seen as executors of laws and directives or as individual political bodies. The choice of a rational or communicative supervision perspective affects the SA's relation to the municipalities. A rational perspective characterises the SA as an expert, as the body taking care of laws and bylaws. On the other hand, a communicative perspective implies a belief in the municipalities' knowledge of their own context and that they can be collaboration partners in finding common solutions. The learning agendas are either stable or changing. A dynamic way of learning is needed when changing conditions are under consideration (Rasmussen and Svedung, 2000).

| Supervision | Rational planning perspective | Communicative planning perspective |
|------------------------|--|---|
| Supervision/inspection | SA has the right solutions and points out deviations in the municipalities. Inspector | SA contributes with knowledge to different solutions, and the municipalities contribute with contextual knowledge. Partner of discussion |
| Participation | Expert role | Laypeople, politicians etc are included in the decision process; experts take their views and criticisms into consideration. |
| Learning | Fixed solutions Stability, prediction. Overview over all relevant factors. | The communication as a mutual process Dynamic learning |
| Documentation | Formal reports, statistics, scientific knowledge, cost benefit analysis. | Many sources of information Contextual factors, understanding of scientific knowledge as not value free. Taking different views into consideration. |

Table 2. *The model is inspired by (Jenssen and Kleivan, 1999)*

We often find a mix of both perspectives in supervision and inspection. Classical bureaucracies are rarely found, but elements from this organisational form are living in almost all modern organisations today depending on the context and the situation. The command and control model does often survive as an ongoing habit in organisations (Argyris, 1998) even though a communicative perspective could be more suitable.

Method

The comparative case study focuses on use of different risk tools and strategies. Those differences also have influences on the relation to the supervisory authorities. This study contains ten core interviews with parallel positions in each municipality, carried out in 2003. Interviews have been conducted at top, middle and street levels in each municipality. Interviews at the SA, and supplementary interviews with the emergency leaders in each municipality were conducted in 2004/2005.

Additional information encompasses interviews with key personnel at the SA, diverse supplementary interviews in the municipalities and observation in meetings. Joining an inspection meeting between the SA and Klepp gave insight in how inspections were conducted. An inspection meeting with Time was not held in the research period. Other information sources used were documents from inspections and

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exercises, evaluation reports from exercises, municipal plans, risk analysis and contingency plans etc.

Combining both interviews and written material is done to increase the reliability of the findings. Using documents can help to provide details reported close to the event and can increase the accuracy of incidents happened. Different information sources can either confirm or disconfirm findings. The written material was a way to secure historical data. When using interviews there was an ongoing opportunity to test assumptions and ask whether they are correct or not, this can enhance validity. Asking the respondents about their use and understanding of different safety concepts, gave an overview of the concept prevalent in their working situation. Using the core interviews as a basis for more specific interviews was an advantage because it made it possible to have an overview of many risk management subjects. The more focused interviews have been conducted to get more detailed information to be able to answer the research question in this article. Whereas the interviews of the emergency leaders, the interviews of representatives of SA, joining inspection meeting and extensiveness of documents have been of special importance.

Results

We will use SA's focus on exercises as a way of guidance in risk management and how inspections are conducted. In this case the actual SA has the responsibility for 27 municipalities in its county. Exercises are a regular activity every second year with different subjects in focus, where half the municipalities are main players and the other half fellow players. In this way, SA guide and train the municipalities in risk and emergency subjects. The municipal inspections are conducted every fourth year. This is illustrated below, where one municipality is used as example

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------------------|--------------------|---------------------------|---------------|---------------|
| Exercise as main player | Inspection from SA | Exercise as fellow player | | As in year 1 |

Table 3

Exercises as supervision

In 1994, the Directorate for Civil Defence and Emergency Planning (DCDEP) introduced RAV guidelines. Municipalities showed a lack of interest in learning about RAV. Therefore SA asked municipalities in the county to choose among different guidance strategies in order to mobilise municipalities to engage in safety issues and contingency planning. Most of them decided that exercises would be an interesting way of working with emergency and risk management. In 1997 the first exercises were conducted. They focused on how to establish a crisis plan and how to make a RAV. Although a few municipalities did not participate in the first exercise, all of them have participated in the following exercises. In addition to the SAs requirements, the exercises also allow municipalities to test each other, giving an

element of friendly competition. The exercises can be seen as the main way of guiding the municipalities in emergency and risk management.

Exercises 1997-2005

The SA organises exercises for the municipalities every second year. These exercises have fictive scenarios. Tora 1(1997) and Tora 2 (1999) was the name of fictive hurricanes. The main player municipality had to solve emergency tasks in the wake of the scenario. The fellow players (usually one of the neighbouring municipalities) introduce tasks that have to be solved in addition to the tasks from the SA. This puts a lot of pressure on the municipality on scene and makes the exercises more realistic when letting a lot of uncoordinated incidents happen at the same time. The focus in the early years was mostly on major disasters. In 2001 the training was focused on a smaller event, where municipalities had to take care of patients from the central hospital due to a fictive fire. This challenged coordination activities and made the municipalities aware of the resources needed in such situations.

In 2003 there was a tabletop exercise concerning water pollution and health problems. In 2005 there was a tabletop bird flu exercise.

Regarding the exercises as a whole, there has been an improvement in the municipal ability to handle crises (SA report 2003). Points of improvements from the municipalities have been taken into consideration by the SA and have been used in the development of the exercises. A quotation from a SA officer seems to sum up this experience:

‘ I think that the dialogue approach is very valuable. We do not have a statutory provision. It is better to convince, to show good examples and talk together. Then there is a common understanding and easier execution of the tasks’ (officer 1 at SA, 2004).

Exercises in the case municipalities

In 1999, Klepp was main player. The aim was to train the emergency management and to improve their capacities in crisis management. From the evaluation report it was stated that: ‘The exercise gave much more learning value than just speeches/courses’ (Fellow evaluation report 1999:4).

Time was main player in 2001. Klepp municipality was their fellow player. Time wanted to test their new contingency plan, and the evaluation showed a good knowledge of the different roles in the emergency management staff. The task in this exercise was to transfer patients from a central hospital to home municipalities (because of a fictive fire). Points of improvements were further improvements with information channels and an alternative room for crisis management with more telephones. The evaluation of the exercise concept was positive because it was a ‘realistic’ exercise (Klepp’s evaluation report 2001:4).

In 2003 Klepp was main player again. The subject was water pollution/health problems and information handling. The evaluation from the fellow player on both role clarification and information handling was positive. The evaluation of the SA’s

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exercise program was mainly positive. The most positive remark was that in the middle of the exercise there was a timeout, where main player, fellow player and the leaders of the exercise had an evaluation, which gave valuable suggestions for further playing.

Time was main player in 2005, where the theme was bird flu. The fellow player considered their play as satisfying. 'The exercise was realistic and the participants showed good spirit and involvement' (Fellow player report 2005). Especially the use of data and digital maps was considered advantageous.

Inspections –passive acceptance

The SA visits the main playing municipality to analyse performance and conduct supervision and inspection. They examine written material like overall municipality plans, contingency plans, RAV, and crisis management organisation to get a broad view of the state of art in the municipality. SA also has meetings with key management personnel in the municipality.

Time received inspections from the SA in 1998 and 2002. The main impression in 1998 was that the municipality did not have any systematic approach to risk and crises management, and that preparedness measures were incomplete or lacking. 'The municipality expressed a lack of motivation for working with emergencies because efforts was not based in their own wishes or needs, but in governmental expectations and pressures' (Page 1 in inspection report 1998 from SA).

In 2002 the SA was more satisfied with the improvements that Time had done since the previous inspection, but anyhow there were critical comments from the SA:

'The SA is less pleased with how the municipality has worked with incorporating preparedness on the agenda' and 'SA look forward to how the result from RAV is going to be incorporated and used in municipal planning and municipal service' (Inspection report 2002 page 3 and 4).

Findings from 2003 show, that RAV was not followed up in the municipal service (Nilsen and Olsen, 2004). This was due to a major reorganising and a lack of prioritising. The RAV was also considered as 'a distant tool, a bit apart of what we are doing in our daily work tasks' (Chief administrative officer). They saw the RAV as a first-generation work that needed to be developed further. Contingency planning and preparedness was not properly rooted in the top-management or in the rest of the municipal bureaucracy.

Inspections –resistance

Klepp refused to receive inspections. The chief administrative officer had a former career in SA (in 1992/1993). His attitude was that the SA contribution in risk management was of little value. 'We [Klepp] have our own decentralised emergency model. We have a high focus on accident prevention. We have a strong prioritising and do not want to spend more time on emergencies than we already do in our own project' (Letter from Klepp 2000). Since there is no statutory provision, there were no ways of making inspections obligatory and Klepp refused to have one.

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In 2003 the SA wanted to assess Klepp municipality in order to award a prize for good emergency work, but this was difficult since the municipality refused to receive inspections. Klepp had allowed discussions with the SA, but not inspections. Klepp were told that they would get the prize if they allowed the inspection. Since the SA seemed to value their work with MRA, the municipality was convinced that inspections could take place. They had their first inspection in 2003. The inspection did not follow the ordinary pattern with single interviews. In cooperation with Klepp, the interviews were conducted as group interviews. This was because Klepp insisted on contingency planning, mitigation and preparedness as teamwork and not a singular top management responsibility. The emergency leader claimed that he had a relaxed attitude towards the inspection. The work with contingencies and risk management had been incorporated as a part of daily work and therefore they have no facade to keep.

The inspection report from the SA says that: 'Safety is thoroughly incorporated in planning documents and is a very clear element in overall planning and in ongoing service and municipal activities' (Page 2 in inspection report). The name of the municipal plan 2002-2013 is called: 'Active and safe'. SA also considered MRA to be well on the way of being integrated in Klepp. The SA recommended developing an information plan for crises and some minor technical and administrative improvements.

The SA got a new experience in conduction group inspections, due to Klepps suggestion and got insight in how safety can be clear and systematic prevalent in municipal plans.

The SA can be both a controller and a coach according to the circumstances considered. Where Time has acted as an executive body, a controller role has been prevalent in the inspections. When Klepp has acted as an own political body, the coach role has been more present. Presenting data from 1997-1995 gives an overview of the learning process. What we see is that there has been gradually more learning gained trough exercises. Both Klepp and Time got more skills in risk management, although Klepp has a more overall perspective in risk management than Time.

Discussion

What we see is an opposite pattern of behaviour. Klepp has contributed with an alternative risk analysis (MRA) and Time has used the recommended one (RAV). Klepp has refused inspections for many years (the only municipality to do so) and Time has allowed all inspections. Since Time has accepted the SA's recommendations, there has been no contribution to the field of risk management. The passive acceptance has not resulted in learning input for the SA. The SA has a 'black sheep' in its group, which does not want to follow their 'order'. How can resistance against SA's working methods contribute to increased consciousness about different ways of handling mitigation and emergency/risk management? Klepp has developed MRA founded in a bottom-up strategy and finds that this tool is more suitable in a municipal context than the RAV. They believe in their own abilities in risk management (Nilsen, 2006a). The resistance is founded in a consciousness about alternative ways of risk management. This resistance has given input to the SA, which

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has broadened its competence in different kinds of risk analysis. The SA has presented Klepp's MRA to the other municipalities. The SA sees it as a valuable contribution in the handling of daily risks.

Klepp has acted as a political body, not an executive institution. Despite their resistance to inspections, they have contributed with different perspectives to the SA. Klepp developed MRA because they found it more suitable than the top-down and expert oriented RAV (Nilsen and Olsen, 2004). General guidelines in risk management may be challenged because they do not always fit with the local context. MRA focuses on collaborative processes in local risk management. This was a divergence in thinking between Klepp (using MRA) and the SA (recommending RAV). In communicative planning it is found that: 'unless the scientific information was related to practical action or to the context and particular situation facing policy makers and managers, participants rejected it' (Innes, 1998:58). Klepp has made MRA to fit with their context. The SA has as the learning process emerged, received valuable insight into how MRA can be more suitable in municipal contexts.

The resistance against inspections and ready-made templates from the SA has resulted in openness for dialogue. The resistance was founded in a consciousness about alternative ways of conducting risk management. Klepp is a Safe Community where MRA is part of a totality in preparedness and safety management. The MRA process has many hallmarks of empowerment and elements from the communicative perspective. This results in people's belief in their own skills. The MRA enforces collaboration and often results in involvement in risk handling at the local level. The top-level in the municipality trusts that the lower level handles their own risks. Enabling the lower level to take care of risks and unwanted hazards is part of a bottom-up mitigation strategy. Laypeople are in the focus, not external risk experts or the top-level management as in the traditional RAV.

Time accepted inspections and executed assigned tasks from the SA without hesitation. They have acted as an executive body. This may be the easiest way to handle demands from the supervisory authorities. But single tasks not seen in a broader context may not contribute to good mitigation and risk management. 'A prescriptive standard would have lead to a box-ticking approach' (Crawford and Stein, 2004:500). This may be relevant in some technical procedures, but considerations about changes in public risk management are often prevalent. The result in Time is passive learning. Time seems to lack an on-going contingency planning and risk management as an integrated part of the total municipality planning and administration system.

Time has expressed that a rational planning approach has been prevalent in the inspections. They saw the inspectors as cops, metaphorically speaking. The classical inspection approach is to use a template and identify deviations. The overall perspective and knowledge at the SA gives the official understanding of good standards. They can also use other municipalities as reference points. The classic inspection role has similarities to the rational planning perspective, where it is possible to measure deviances from ideal means. When Time has acted as an executive body, they have put themselves in a position 'to follow orders'. Municipalities have to execute a lot of compulsory tasks imposed by governmental agencies and are used to follow orders (Andersen et al., 2002). When Klepp has seen

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risk management as part of its Safe Community work, it seems as Time has just seen risk management as another obligation that has to be ‘ticked off’.

Conclusion

The findings from Klepp show a deviant response to inspections and an alternative way to perform risk management in municipalities. The SA found the alternative risk model (MRA) valuable. The SA has learned about the tool and presented it to the other municipalities. Klepp has been an innovative contributor to contingency planning and risk management and has contributed to learning in both the SA and other municipalities in the county.

A course with no deviations from the SA’s recommendations, may have contributed to a more passive learning agenda. Fulfilling the tasks (here passively using RAV and joining inspections) did not contribute to a higher reflection about risk management. A box-ticking approach may contribute to an artificial feeling of safe operations in mitigation and risk management. Diversity in thoughts has in this case resulted in different solutions and a higher level of reflection. The MRA contributes with a working method, which requires local involvement and mobilisation of employees. Laying the foundation for involvement in local risk management is more efficient than having readymade templates and guidelines. No perfect tool would help if there were no involvement and reflection about it.

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Article IV

Tools for empowerment in local risk management.

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Tools for empowerment in local risk management.

Aud Solveig Nilsen

Department of Media, culture and social Science

University of Stavanger, Norway

Telephone: +47-51831936

E-mail: aud.s.nilsen@uis.no

Biographical notes

Aud Solveig Nilsen holds a master in Risk management and Societal Safety. In her PhD work she is concerned with local governments and safety.

Tools for empowerment in local risk management¹

Abstract

In local risk management the overall aim is to prevent, reduce and limit injuries and deaths. In Safe Communities (SC) there are many experiences about involvement in local injury prevention but most of the *research* about SC has appeared to be statistical treatment of injury registration. What is lacking in this research is how to supply street level workers with appropriate tools for participation and influence on decisions. Empowerment strategies can improve health and safety promotion in activities at all levels in communities. This implies capacity building, influence and power to the primary users. Mini risk analysis (MRA) has been developed as part of a proactive SC work. MRA is a simple, practical risk tool to be used in local activities. MRA stimulates collaboration, creativity in local solutions, awareness of risks and ways to handle incidents if they occur. MRA and experience from local SC work can contribute to increase involvement in local risk management through enhancing empowerment. The results show how MRA can be used as a practical empowerment tool.

Keywords: Safe Community, empowerment, prevention, health promotion, risk management

¹ A former version of this paper was presented in a plenary session at The 6th Nordic Safe Community Conference 9-11 November 2005, Karlstad

1. Introduction

The Safe Community (SC) movement started in Sweden in 1989 on behalf of WHO and the declaration of health for all (based on the Ottawa charter). The Ottawa charter (1986) underlines the importance of health promotion and community encouragement in preventing injuries and to better people's health. The Safe Community movement has a worldwide network with 16 designated countries and 84 Safe Communities (autumn 2005). There are specific criteria to follow to be designated as a Safe Community (Rahim, 2005). The SC should have a cross sectional group where collaboration between different sectors can take place. There is a demand for long-term engagement. Injuries should be registered. Frequencies and causes in the statistical material should be used for injury prevention measures. Continuous evaluation has to be done. Participation in conferences and SC networks is supposed to be an ongoing process to learn from others experience both nationally and internationally. Other demands also follow. The Karolinska Institute in Sweden facilitates the WHO Collaboration Centre and designates the SC. There are widespread studies of SC covering the documentation of injury reductions and different projects in injury prevention (Andersson and Menckel, 1995:168, Bjerre and Schelp, 2000, Haglund and Svanström, 1999, Timpka and Lindquist, 2001, Ytterstad and Sogaard, 1995, Lund, 2004).

Challenges and problems when implementing the concept of SC and safety management work have been studied from different perspectives. (Boyesen, 1995, Bjärås, 1992, Fosse, 2000, Mikkelsen, 1999, Mikkelsen, 2000). The aim of SC is to have a holistic approach to mitigation and preparedness, including different sectors and flexible ways of organising work tasks. The bureaucratic organisation can be a barrier to these ideals (Boyesen, 2000). The bureaucratic organisation is designed for standard work with separate budgets and working tasks (Weber, 1976, Weber, 1978). Bureaucracies are hierarchical organisations. 'Bureaucracy tends to alienate staff members, and thereby reduce any personal responsibility' (Boyesen, 2000). This structure may therefore suppress new initiatives, which are essential in the bottom-up way of working in SC.

Some studies show that when project leaders quit, SC commitment decreases (Mikkelsen, 1999, Boyesen, 1995). The concluding remarks in Bjärås's Sollentuna study is that professionals have to support the street-level bureaucrats (Lipsky, 1980) to maintain the accident prevention programme (Bjärås, 1992). When including people at an early stage in SC it is more likely that they develop ownership to the SC themselves (Bjärås, 1992). Accident prevention experiences from municipal safety management conclude that some features have to be in place to make the prevention an ongoing process. Safety should be a responsibility for everybody in the municipality (street-level, middle and top level), safety has to be included in both municipal and departmental plans, financial support should be given and procedures for multi-disciplinary coordination should be in place (Boyesen, 1995;ASN translation). It is also essential that SC is grounded at the top level of the organisation in order to achieve support and an ongoing focus. Experiences from SC can be used in local risk management.

There are different strategies to be found in prevention work (Mikkelsen, 1999). The medical science and health planning approaches are top-down strategies where the

expert assigns tasks to their subordinates or co-players. There is a middle strategy where the middle level (professionals) in the municipality is mostly concerned with SC work and there is an empowerment strategy that is bottom-up. Forsberg and Starrins book compares the expert (top-down) and empowerment (bottom-up) models to show implications of the different strategies (Forsberg and Starrin, 1997).

There is a poor theoretical description of empowerment processes in SC research, even though empowerment is an important issue in public health traditions (Forsberg and Starrin, 1997, Rifkin, 2003, Rissel, 1994, Wallerstein, 1993). The problem with SC research is that empowerment theory has not been used, although the implicit thoughts in the SC movement are about empowerment². In SC the street level³ (Lipsky, 1980) is supposed to be most important in injury prevention efforts (Mikkelsen, 1999), but SC research has focused on health experts and statistical treatment of injuries. There seems to be a need to develop an empowerment framework in SC to strengthen consciousness about the street-level and how they can be better supplied to effect injury prevention. Although the theoretical framework is lacking a lot of examples of local involvement are prevalent in SC practice. Those experiences can also have relevance for local risk management. Empowerment theory and MRA processes seem to be very interlinked. The aim of this article is to discuss: *How can empowerment be related to risk management and how can MRA strengthen an empowerment strategy in local health promotion and risk management?* The purpose is to give an overview of empowerment in different areas and perspectives and relate those to risk management, which only sparely is covered in research before.

2. Theories concerning empowerment

This chapter is a review of a wide variety of experiences and theories about empowerment to give a contribution for reflections on how those insights may enhance a better ability for local risk management. Empowerment theories cover both general and specific levels of abstraction. To cover some general perspectives, descriptions of theoretical reflections about empowerment will be given. The focus is limited to organisations (communities) and empowerment. This is done to see if experiences with empowerment in these fields could contribute to insights about how empowerment can be linked to MRA, Safe Communities and local risk management.

There is a wide variation in the use of the empowerment concept in the public health tradition (Rifkin, 2003). Some common characteristics are found despite different countries, people and cultures. Empowerment includes the following: '(i) it applies to the individual and to the collective/community; (ii) it addresses the issue of power and control over the resources and the direction of one's own life; (iii) it addresses issues

² In November 2005 there was a Nordic Safe Community Conference where the theme was 'Community empowerment safety promotion and injury prevention'. This is the first time empowerment has had a main focus in a SC conference. The 6th Nordic Safe Community Conference 9-11 November 2005, Karlstad.

³ Street level workers; 'interact directly with citizens in the course of their jobs' LIPSKY, M. (1980) *Street-level bureaucracy*, New York, Russell Sage Foundation. For instance teacher, social workers etc.

of capacity and confidence building of both individuals and communities; and (iv) it sees active participation as a necessary but not sufficient contribution' (Rifkin, 2003:170).

In South America, Paulo Freire developed a pedagogy of the oppressed (Freire, 1970). He was interested in the master/knave relationship and used thoughts from Hegel in the development of this pedagogy. To be able to be free from oppression, there was a need to reveal the world of the praxis that oppresses and also to reveal double ness in one's own conceptions to be able expel old myths (Morrow and Torres, 2002). Critical education was a way to contribute to the freedom process in South America. Political, economic and social structures have to be changed in order to be free from oppression. 'Briefly, empowerment education involves people in group efforts to identify their own problems, critically to analyse the cultural and sosio-economic roots of the problems, and to develop strategies to effect positive changes in their lives and in their communities' (Wallerstein, 1993:221). Freire and his supporters trained people in critical thinking and were thus a supplier of social change.

The basic characteristic of reality found in Freires thoughts is humanisation. People are social beings and can only fulfil themselves together with others. It is a positive view of human life. The nature of praxis is seen as action-reflection. It concerns enabling people to believe in their own skills, a belief that things can change for the better through action. Freire and Habermas, have some similar thoughts that are relevant for empowerment. Whereas Freire is mostly concerned about practical matters and the process of enabling people to achieve critical thinking through education, Habermas contributes to the abstract framework underlying these matters. His books about communicative action (Habermas, 1995, Habermas, 2004) include 'validity claims as the ontological foundation for a discourse theory.' (Morrow and Torres, 2002:41). These claims include; comprehensibility, truth, sincerity, rightness. In a dialogue it is the power of the best argument that contributes to consensus in an ideal speech situation.

The communicative theory is also relevant for Freire because he stresses the importance of dialogue in knowledge theory as an epistemological stance. The epistemology is the study of the nature, origin and limits of human knowledge. This communicative rationality can be seen as a contradiction to banking education (mechanically accumulated knowledge) (Freire, 1970) where no dialogue is present. In Habermas' epistemology we find communicative rationality in contrast to strategic rationality. Strategic rationality has a subject/object relationship; communicative action has a subject/subject relation. The strategic rationality is often found in bureaucracies where assigned tasks have to be executed by the lower level that has limited influence in the decision making process. Where Habermas has his strength in the abstract framework, Freire contributes with contextual knowledge. In this way these perspectives can strengthen each other.

Empowerment can be found in different areas, like public health tradition, management and risk management.

2.1 Public health and empowerment

The concept of empowerment is central in public health theory and experiences from community participation in, for instance, health cities (Rifkin, 2003, Wallerstein, 1993). The improvement of health does not only cover biomedical and technological advances. It is also linked to the social, political and economic environment. It was a historic shift when WHO extended its strategy for disease prevention to include a wider focus on health promotion in the Ottawa charter of 1986 (WHO, 1986). Taking this wide definition of health into consideration opened for several new ways of dealing with primary health care. 'Data collected by WHO gave evidence that addressing the problems of those most in need and of involving intended health beneficiaries in decisions about how to solve these problems made a critical contribution to health improvements' (Rifkin, 2003:168). The health for all declaration from WHO in 1986 connected empowerment and health, like: 'the process of enabling people to increase control over, and to improve their health'. The focus is on enabling communities to take care of their own health issues. Some countries have since adopted the same perspective (NOU, 1998, SOU, 1997). 'Community empowerment becomes a social action process that promotes participation of people, who are in position of perceived and actual powerlessness, towards goals of increased individual and community decision making and control, equity of resources, and improved quality of life' (Wallerstein, 1993:219). Wallerstein is using Freire's thoughts about empowerment education in public health promotion.

2.2 Management and empowerment

Lee and Koh define empowerment as the 'psychological state of a subordinate perceiving four dimensions of meaningfulness, competence, self determination and impact, which is affected by empowering behaviours of the supervisor' (Lee and Koh, 2001:686). This is on an organisation/group level. We shall look at these dimensions more closely and relate them to work.

- **Meaningfulness.** This is related to how the employees find the work relevant according to their own values and ideas. It is also about internal commitment.
- **Competence.** The concept of self-efficacy from social learning theory (Bandura, 1977) is used to explain Lee and Koh's meaning of competence. Knowledge is not enough. The ability to believe in one's own resources is also necessary to be competent.
- **Self-determination.** Is about autonomy in personal working tasks. It concerns having the ability and authority to try one's own solutions.
- **Impact.** 'Impact is the perception of the degree to which an individual can influence strategic, administrative or operating outcomes at work' (Ashforth, 1989).

These four dimensions apply to the relationship between a supervisor and her/his subordinates. This relationship has an imbalanced power structure. The concept of empowerment cannot be used between peers, because there is a prerequisite for a

superior/subordinate relationship. Empowerment in the work setting concerns the supervisor's involvement in empowering the subordinates. Each of the four dimensions above has to be nurtured to reach a high level of empowerment (Lee and Koh, 2001).

2.3 Risk management and empowerment

Beck uses the phrase 'Richer is safer' to describe a world where many risks become more globalized, because the many polluting industries are placed in developing countries, where the dilemma is that it is better to have an unsafe workplace than no work at all (Beck, 1992). There are many dilemmas and challenges concerning risks. Beck sees a need for reflection, for ordinary people to engage in politics, for instance through social movements. Demonstrations are a way to influence the development of society and stimulate the prevention of hazards. Examples are fights against nuclear weapons, and aids and engagement in global environment movements.

Globalisation of the economy, poverty, wars, civil violence, disasters- they all affect vulnerability at national, local and individual levels. There are supranational institutions, which are concerned about human security, like The Human Security Commission and the Human Security Unit subject to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). These organisations aim to be 'shielding people from critical and pervasive threats and empowering them to take care of their own threats' (HumanSecurity-Commision, 2003). 'Everybody's right to minimum living standards, protection from violence, ensuring basic education and health is included in the concept of human security' (Alkire, 2002). 'Protection implies a top-down approach' with states having the primary responsibility'. Empowerment implies a bottom-up approach and is about individuals and communities acting on their own behalf' (OCHA, 2005). This work with human security is an emerging field in both research and practices and may contribute to insights about long-term global empowerment.

It is essential to include on site inhabitants when handling disasters and recovery (Comfort, 1990, Helsloot and Ruitenber, 2004). The golden hour comes just after the disaster, and rescue in this hour may mean life or death for many people. The people onsite are often the best ones to handle the crises (ICRC, 2004). Emergency personnel often take a long time to reach the area. The self organisation of local populations is a resource to enable recovery after catastrophes, instead of relying only on external experts (Comfort et al., IIsis probject ongoing, Comfort, 1990) There has been an overwhelming belief that external experts should manage disasters. There is a need for a shift to see how local communities can be enabled to handle disasters. World Disaster Report focuses on community resilience, 'local knowledge, skills, determination, livelihoods, cooperation, access to resources and representation are all vital factors enabling people to bounce back from disaster' (ICRC, 2004:9).

Despite high hazards, some organisations reach a high level of reliability. High Reliability Organisations (HROs) work under difficult conditions where one error might escalate into a catastrophe. It is therefore essential to organise in a way that can prevent accidents. HRO studies have often focused on the nuclear industry, air traffic control or other high hazard organisations (LaPorte and Consolini, 1991, Roberts,

1993, Vaughan, 1996). Weick et al argues that other organisations can learn from HROs resilience (Weick et al., 1999). ‘Resilience is not only about bouncing back from errors, it is also about coping with surprises in the moment’ (Weick et al., 1999:100). Other organisations also live under pressures like time constraints, economical pressure and demands to be effective, and have prevalent safety issues. What Weick et al found was a pattern of stable cognitive processes (collective mindfulness), and variations in action patterns in efficient HROs. In a mindful infrastructure for High Reliability there are five elements. It is essential to be *preoccupied with failures, to be sensitive to operations and to be committed to resilience*. It requires internal commitment of the people doing the work task and is a continuous learning situation. Another element is *reluctance to simplify* because they know that activities are tightly connected (Perrow, 1999) and deviant behaviour can effect other parts of the production process. The last element is the *under-specification of structures*. This is essential, because it fosters the ability for flexible organisation. When disturbing signals are discovered it is the skilled workers on site who take action immediately, ‘it is a subtle loosening of hierarchy in favour of expertise’ (Weick et al., 1999:103). There is a link between collective mindfulness and better safety performance in efficient HROs. The HRO culture of appreciating local workers’ ability to solve their own challenges is a hallmark of empowerment.

There is a distinction between reactive and pro-active perspectives in safety and accident prevention ‘Reacting to incidents and accidents once they’ve happened is no longer enough’ (Rosenberg, 2004). It is possible through leadership for safety prevention to work pro-actively. Through collective learning a focus on continuous improvement is possible (Kolb, 1984). Rosenberg has used Kolbs continuous improvement model in research on the Swedish Fire and Rescue Service in transition. There has been a change in attitudes when working pro-actively. Through dialogue with inhabitants in the municipality the rescue workers have gained a wider understanding of hazards, which can be in fire prevention. There is a shift from a supreme expert role to including laypersons knowledge.

2.4 Critics

There are critical remarks to the normative empowerment literature. Argyris discusses that empowerment may be full of inner contradictions. ‘Managers love empowerment in theory, but the command-and control model is what they trust and know best’ (Argyris, 1998). Empowerment is often used rhetorically, like the ‘emperor’s new clothes’, but little is seen in practice. To be empowered, the subordinate has to be internally committed in the process, but as Argyris states he does not think that top-level executives will permit total self-organisation in big organisations. It may be an illusion to believe that an entire organisation is able to reach empowerment, but parts of the organisations may be able to reach it. Empowerment can be seen as a leading star.

The debate about the concept of empowerment reveals a great variety of explanations. ‘Despite this increased attention to empowerment, there is unfortunately great disparity in the prevailing definitions, and an equal lack of clarity on how to measure its impact on a population’s health’ (Wallerstein, 1993:218). ‘The lack of a clear theoretical underpinning, distortion of the concept by different users, measurement

ambiguities, and structural barriers make 'empowerment' difficult to attain' (Rissel, 1994:39). 'Rappaport (1987) argued that empowerment could not be measured, but could only be considered case by case in its own unique context' (Rissel, 1994:40). Lee and Koh also underline that empowerment is not a dichotomous construct, 'subordinates will be considered more or less empowered, rather than empowered or not empowered' (Lee and Koh, 2001:687). Rissel sees a need to distinguish psychological empowerment and community empowerment because they have different implications, 'with regard to community empowerment, it seems possible that a group may be empowered on one issue, but not another. Therefore, the degree of empowerment may vary depending on the issue being considered' (Rissel, 1994:44)

I have presented a range of different perspectives. Some of these organisational perspectives are appropriate to highlight how empowerment can be achieved by using the risk tool MRA.

An infrastructure for collective mindfulness strengthens the capability to discover and manage unexpected events (Weick et al., 1999:89). This cognitive infrastructure makes it possible to reach high levels of reliability. 'It [mindfulness] is as much about what people do with what they notice as it is about the activity of noticing itself' (Weick et al., 1999:90). There are elements in collective mindfulness where empowerment seems to be prevalent. The superiors facilitate a climate of openness for failures. Weak signals about deviances have to be handled carefully and efficiently in order to not escalate into a catastrophe. Subordinates competence (Lee and Koh, 2001) and ability to handle failures at a local level is highly valued. Self-organisation around deviances is possible. There is a built in flexibility in HROs where the ordinary hierarchical organisation is loosened up when deviances are noticed (LaPorte and Consolini, 1991). The most capable person, despite their place in the hierarchy, handles the deviance.

There is a need for managers to know how to facilitate subordinates in empowerment processes. According to Lee and Hoh's definition of empowerment, four dimensions need to be present: Meaningfulness, competence, self-determination and impact (Lee and Koh, 2001). This means that superiors have to delegate some power over decisions. Flexibility in organising becomes possible. Argyris says it is easy to talk about empowerment, but more difficult to let it flourish in practice (Argyris, 1998). I will present some experiences and analyse MRA, to see how MRA can be an empowerment tool in practice.

3. Context and method

Klepp, the subject of this study, is a municipality in Norway with 14 000 inhabitants and became a SC member in 2002. As a part of the work with SC, Klepp developed a mini risk analysis (MRA) whose aim is to both prevent accidents and be prepared if they nevertheless occur (Nilsen and Olsen, 2004, Nilsen and Olsen, 2005). Participants from different departments developed the tool together and use it in their respective departments. Leisure organisations also use the tool. When using MRA people have to collaborate, to think through every possible risk and take decisions about what which ones they need to handle.

This paper is part of an explorative study and is based on interviews, observations, document studies and presentations. Core interviews were conducted in Klepp municipality in 2003⁴. Ten representatives from different political and administrative positions, ranging from the top-level to street level workers in the departments of health, education and engineering/planning. The interview guide was semi-structured, with fixed thematically issues. The flexibility was necessary to fit the context of the different positions in the municipality. Usually the top and partly the middle level managers were familiar with safety concepts used in the guide, but some of the street level bureaucrats needed to relate safety to own experiences. This weakened to some extent the reliability of the findings. Although the concept MRA was not used, familiar experiences were found (Nilsen and Olsen, 2005). The aim of these interviews was to map the people's work (or not) with MRA and how they managed to handle other safety issues in their daily work. Interviews were also carried out with all ten fulltime kindergartens in Klepp and the eight primary schools to map use of MRA. Additional telephone calls to the departments for health and engineering/planning were made about the widespread use of MRA. To strengthen reliability an interview with both the municipality's chief physician and the project manager working with Safe Community was conducted in 2005 to get an update status and to present findings and test out interpretations. To improve construct validity, which is a process for developing sounder interpretations of observations, other information sources and other activities took place in the period 2001-2005.

General information was gathered through participation at a Public Health Conference held by Klepp when they were designated a SC in 2002. Observation was carried out at an inspection meeting held by Supervisory Authorities (SA) in 2003. Two representatives from the SA were interviewed in 2004.

Documents concerning Safe Communities work, like the application for SC, the municipal plan, experiences concerning MRA as part of SC work, evaluation of MRA (Aanestad, 2001), statistical data concerning accidents, case documents about safety and prevention were also studied to strengthen the construct validity. The external validity has been tested towards theory and findings in other studies.

4. Results

The preparation work for SC in Klepp started in 1998 (unpublished work papers, Klepp municipality). There was a need to organise the SC work in the municipality to be able to fulfil the obligations to become a SC. In 1999 the local council decided that the chief administrative officer's management should be the steering committee for preventive work in the municipality. This was to secure a foundation at the top level and to take care of a multi administrative perspective where all the departments were included. The work with Safe Community was organised both as a retrospective way with the registration of accidents and a pro-active way of working through the

⁴ The core interviews were done in 2003 and are ten interviews in each of the municipalities, Klepp and Time (Nilsen and Olsen 2004 and 2005, see in references). This was done as part of a comparative study. This article focuses on Klepp municipality only.

development of Mini Risk Analysis (MRA). The MRA is a locally developed tool for accident prevention and handling (Nilsen and Olsen, 2004). It is a simple tool for use in daily work operations and in leisure activities. The project group developing this tool had members from a wide range of departments. In addition, collaboration with external institutions like the emergency staff at the County Governor, the chief county medical officer and University of Stavanger was included. The Health and Social ministry, the County municipality and the Directorate for Civil Protection and Emergency Planning has funded the SC work.

The MRA was also made as a reaction against the traditional risk and vulnerability analysis (RAV) recommended by the Directorate for Civil Protection and Emergency Planning, which was considered remote from daily work at the operational level (Nilsen and Olsen, 2004). 'I found it so distant it was far away from my daily work. ...RAV was of a catastrophic distinctive character. If we are used to thinking safety through MRA in daily life, we are better prepared to handle crises too' (Manager in kindergarten). The RAV concentrated more on catastrophes and long term planning with use of experts and a top-down strategy. A similar thought came from the middle level in engineering; 'We don't want to have shelves filled with directives gathering dust' (Chief executive in planning and engineering department). MRA is a way of being concerned about preparedness in daily life.

MRA is a proactive way of working. The participants use MRA to consider risks. On the basis of a common analysis they decide what needs to be done.

The MRA method (Klepp-Municipality, 2002)

1. Which activity/situation are we going to take into consideration?
2. This is what we fear might happen.
3. What must and should we do something about?
4. What can we do to reduce the chances of these incidents occurring?
5. What can we do to reduce the consequences if these incidents do occur?
6. Evaluation.

This method is a simple tool for mapping everyday risks, to prevent incidents or to handle incidents if they should occur. The thought behind the tool is that participants in the task/activity shall be enabled to take care of risks themselves. It is a decision about what is acceptable or not and a way to sort out what has to be handled. It is perceived as 'common sense put in system' (Chief administrative officer).

The steps in the method include both risk awareness and ways of handling them. The principles behind the MRA have similarities with the theory of collective mindfulness. The MRA method is supposed to be a common analysis developed and discussed by all participants. Step number two is brainstorming. Every risk that seems to be prevalent in the activity for the participants should be written down. In this step no criticism of the different suggestions is allowed, everybody should participate on an equal basis and there is room for creativity. In step 3 there is a need for prioritising. Through discussion, the most dangerous and obvious risks are chosen. Since this discussion is contextual, the tasks participants may have considerations that

are not so prominent for external people. This process has some hallmarks with the thoughts about dialogue and ideal speech situation. The discussion is supposed to conclude with a common prioritising. Step number four is about proactivity and taking measures to prevent or reduce incidents. The people's skills and experiences are valuable factors in the problem-solution process. In step four the ability to handle consequences is enforced. People's self-determination concerns the ability to try one's own solutions and having the authority to do this. The final step is evaluation. Reflection on experiences can better safety considerations in forthcoming activities.

4.1 Challenges

It is the professionals that have been a driving force in SC, not the top level. The first phase in this work was that the middle management introduced MRA, later it was supposed that this should be an activity mostly done at the grassroots level like a bottom-up strategy.

Educating the public was a challenge when introducing the SC work. European playground regulations were introduced at the same time and the public was sceptical about having an overprotective attitude to children's safety. According to the project leader they focussed more on activities and showed that MRA could be a way of making activities safer, not banning them. Klepp is against an overprotective attitude and believes that participants have the ability to assess risks themselves and the responsibility to handle them.

MRA training has been delivered in different sectors according to interest although some sectors have not asked for it (Nilsen and Olsen, 2005). New personnel need to learn the tool, which can be seen as a safety challenge due to time constraints.

4.2 Extensiveness of MRA

The extensiveness of MRA has been examined mainly in the school department, health department and planning/engineering department in Klepp municipality. Representatives from each of the departments participated in the project group developing MRA. Results show that people joining the MRA project use the tool regularly in their work afterwards. The main findings in 2003 are that 7 of the 10-fulltime kindergartens use MRA on a regular basis. The kindergarten manager from the MRA group has educated colleagues in the process. MRA use in the schools is sparser despite the headmasters having been educated in MRA. The one exception is the teacher from the MRA group, who later became a headmaster and has trained all of his teachers in MRA. This school uses it on a regular basis. In the health department some groups use MRA and others do not. At the middle level they have used it as a tool for handling violent patients and in other preventive activities. The community-nursing group that I interviewed did not know about MRA. It is the departments that prioritize how and who gets training in MRA and in the health department this was not done thoroughly. In the planning/engineering department they use MRA when they find it necessary, for instance when doing planning including safety considerations. The representative in the planning/engineering

department from the MRA group says that they sometimes use MRA without writing it down, because those involved know the tool well.

‘Joining the SC has led to more multi disciplinary work. Before, the responsibility in each department was more separate and cases were more separate’ (Chief executive in planning and engineering department). MRA is used when considering safety in municipal plans and other planning activities. Here different departments participate in making a common MRA with contributions from different perspectives.

MRA is also used, for instance, before the youth club goes on a weekend trip, to equip a minibus with safety tools to prevent falls of the elderly, to be able to conduct safe activities in schools and kindergartens and in land use-planning considering safety (Nilsen and Olsen, 2004, Nilsen and Olsen, 2005).

The work with MRA is also a product in demand from other municipalities, both local and regional. The Directorate of Health and Social Affairs also operate it. The project manager is active in teaching external municipalities and has a wide range of experiences to draw from Klepp and other municipalities.

5. Discussion

Weick et al suggest that organisations other than HROs can learn from the capacity to be resilient (Weick et al., 1999). When increasing the ability for awareness through collective mindfulness, the ability for both noticing and coping failures also arises. Through work with MRA, there is a process of thinking through activities in advance to see if there are safety challenges. They also think through the consequences of unwanted incidents happening and assign responsibility for different tasks if this should occur. There seem to be a link between collective mindfulness and processes in MRA work, which may contribute to mitigation and resilience. These are factors that can lead to both risk and injury reduction that are central in SC work.

How can a risk tool contribute to strengthen an empowerment strategy in local risk management? MRA is interlinked with empowerment. It is a simple, practical and non-bureaucratic tool. Participants become confident to take care of risks themselves. MRA is not time-consuming, and after experience people may use it by heart. It is useful in practice because it enforces systematic thinking through daily activities. MRA is considered useful and meaningful by the users (Nilsen and Olsen, 2004, Aanestad, 2001). The focus in MRA is on proactivity. Thinking through risks enhances the possibility to prevent unwanted incidents. When using MRA decisions are made by the street level workers, and not by risk analysis experts. In most cases there is no need for bureaucratic decisions. MRA is seen as a part of a bottom-up strategy (Nilsen and Olsen, 2005). MRA enforces the use of common sense by laymen. In the Ottawa Charter there is a link between empowerment and a positive effect on one’s own health. Empowerment is the ability to have control over one’s own life and to master situations. The thought behind MRA is to give people the confidence to solve problems locally and not to come with finished solutions. Although MRA covers risk management, the working process is similar to empowerment work in the public health tradition. MRA may be seen as a practical tool to meet the need for making ‘community empowerment operational’ (Laverack and Wallerstein, 2001). MRA can also be seen as a tool suitable for SC because of

enabling street-level workers in injury prevention. The criticism from Argyris underlines that empowerment is often talked about, but not done in practice. MRA may be seen as a practical empowerment tool.

Resistance against RAV and the development of MRA was done to have a more meaningful way of working with contextual risks. This was a reaction against prescribed solutions made by experts. The general guideline of RAV was not considered as useful for the bottom-level in the organisation. Here we see a dichotomy between the experts contra the laymen (Forsberg and Starrin, 1997). Another contradiction is about reactivity and proactivity. The reactive tradition focuses on statistics of accidents and injuries that have already happened; the proactive way of working has more focus on prevention (Rosenberg, 2004).

What is lacking in MRA is the macro perspective. Factors leading to risks in the surroundings may be overlooked because of a narrow focus (Nilsen and Olsen, 2004). Both SC and MRA seem to be interlinked with a harmony model (Boyesen, 2000, Nilsen and Olsen, 2004). If street level workers using MRA identify risks that cannot be solved at the local level, it is necessary to engage top-level management to acquire authority and resources to solve the problems. In times of lack of resources, time pressure and demands on efficiency it can be difficult. Thus the MRA is only an efficient empowerment tool as long as all stakeholders accept it, as a tool for mitigating and handling of risks and hazards. Another consideration is that MRA is not a unique tool as shown in the health department who already use similar tools and therefore have not adopted MRA (Nilsen and Olsen, 2005). The findings in this article shows that despite use of different risk tools, practice showed many similarities. This was found due to professional norms and institutional norms.

6. Conclusion

MRA can be connected to hallmarks in empowerment theory. The bottom-up strategy, the confidence of people finding their own solutions, the responsibility at the street-level to identify and handle risks can be seen as practical empowerment. Not offering fixed solutions or instructing people to follow readymade directions is a way of enabling people to solve their own challenges. MRA is a reaction against RAV and prescribed solutions made by experts. It is self-efficacy to believe in one's own skills and solutions. Taking all these hallmarks into consideration, MRA can be seen as a practical tool to enable empowerment in SC and in local risk management.

The question asked in this article is: How can MRA strengthen an empowerment strategy in local health promotion and risk management? The findings from Klepp municipality show that using MRA adds empowerment to the working process. This is through increased risk awareness, increased knowledge and action capabilities. Empowerment is often talked about; MRA is a practical tool used in activities. MRA seems to be especially suitable for street level workers. It is a combination of risk awareness and prevention where empowerment is a central way of working. The experience with MRA, empirical examples from SC and the presentation of a variety of empowerment theories may contribute to a better foundation of empowerment processes in local risk management.

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Appendix

This paper is based on a keynote speech about 'Empowerment and Safe Communities' made by the author at the 6th Nordic Safe Community Conference, Karlstad Sweden, 9-11 November 2005.

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Appendix I - The question guide

The questions shall be formulated according to three different levels; top-level, middle-level and street-level bureaucrats in the municipalities Time and Klepp.

1. Top-level.

Questions to the chief administrative officer and the politician are to uncover why they choose to work with RAV/MRA or not. What is prioritised in the RAV/MRA work? Who has the ultimate responsibility and who has the administrative responsibility? At this top-level the intention is to get the main picture of the organisation, because I do not assume that this level is directly involved in daily work with RAV/MRA.

2. Middle-level

The emergency leader and the department leaders represent the middle level in the municipality. The focus will be on how learning and integration of the tools is arranged in the municipality. What are their interpretations of this work? What happens in the process from overall aims to interpretation in practice?

3. Street-level

Here a community nurse, a kindergarten manager, a headmaster and a worker in engineering/planning department are informants. The street-level bureaucrats need adjusted questions which relate the work with risk tools to their own experience. The reason for this adjustment is that I presume that knowledge of the different risk tools may be sparse. I want to know if RAV and MRA are used and implemented at the street-level. But rather than just stating whether they know the concepts of RAV/MRA, I want to ask if they have experienced similarities with the procedures. To uncover this I use examples to illustrate the concepts and to ask them if they use risk assessments in their work and if so, in what way.

In the following questions, RAV was mainly used when interviewing in Time. Asking about MRA is to map why they did not choose to use it.

When interviewing in Klepp, MRA was mainly used, but RAV was also included since they have previous experience with it.

Appendix II - Questions to the top-level in the municipality

Begin with an introduction about my background (education and working practice) and a short description about the research project. Thereafter give an explanation of how the interview will be conducted (timeframe, tape recorder, confidentiality - use titles instead of names), ask for permission to use quotations. Give the mail address if they want to give extra information afterwards.

1. Background

Name:

Education:

Position:

How long have you been employed in the municipality?

General comments about earlier experience before you got his position:

2. Introductory questions

- 1) I am interested to learn how the municipality works with safety¹ and emergency matters, both accidents that occur rarely and daily risks which can happen in the departments. Can you give me a short description of how the municipality works with safety?
 - A. At a general level?
 - B. Specifically in the different departments
- 2) What would you say are the 3-4 most important general areas where the municipality works with safety?
- 3) In connection with the year 2000 problem, the municipality was instructed to elucidate unwanted incidents. What did the municipality do? Have you used these experiences in further work with safety?
- 4) How did the municipality solve problems during the power cut on 7th June 2002?
- 5) Has the municipality been exposed to large scale accidents in the last 5 years? (for human beings, the environment or material values?)

¹ In Norwegian, the term 'safety' includes both safety and security.

3. Planning tools for safety in municipalities.

- 1) When did you first hear about RAV?
- 2) RAV is not a statutory provision. In spite of this, have you chosen to use the tool?
 - If so, where?
- 3) Who has chosen to implement RAV/MRA? (Political or administrative resolution?)
 - Has RAV/MRA lead to changed safety practices after the tool was taken in use?
 - Is RAV/MRA suitable in your municipality? In what way?
- 4) If RAV/MRA is not used, is there any related activity? What is it?
- 5) Is there any other planning tool in use in safety work? (for instance: crises plans, emergency groups, HSE and internal control, BiS (safety incorporated in planning) quality management, consequence assessments or others?)
- 6) How do you understand the concept BiS?
- 7) Has the municipality drawn up aims for its safety work?
- 8) Who has made these?
- 9) Has the political leadership (city manager, chief administrative officer, city council) been involved in work with safety?
 - If so, in what way?
- 10) Is safety work found in planning documents such as the economy plan or others?
- 11) How is safety and emergency work organised?
 - Are emergency groups established?
 - Are there other groups involved in this work?
 - Is there one employee with responsibility for emergency and safety work?
- 12) Why did you choose to join Safe Community?

4. The relationship to the Directorate for Civil Protection and Emergency Planning (DCPEP), supervisory authorities and others

- 1) Has the municipality been in contact with DCPEP in the course of its safety work?
 - If so in what way? By mail, phone, participation on courses others?
- 2) Has DCPEP been of help in the municipality's safety work?
 - If yes, in what way?
 - If no, why not?

Have you been in contact with the Safe Community administration?

The supervisory authority's emergency² exercises

- 3) Has the municipality joined the exercises in the following years?
 - 1997
 - 1999
 - 2001
- 4) In what way were these exercises of benefit?
- 5) Has learning been achieved in the wake of the exercises?
- 6) How are the exercises evaluated afterwards?

The supervisory authority's inspections

- 7) What experiences has the municipality with inspections from the supervisory authority (SA)?
- 8) Has the municipality received feedback that certain changes must be made?
 - How do you consider SA's role?
- 9) How have you responded to the SA's remarks?

5. Political milieu and safety work

- 1) If we consider the political leadership, including city manager and town council, would you say that:
 - Safety is prioritized? How?
 - Safety work is more important now than before?
- 2) Are there any parties which have a greater focus on safety work than others? In what way?
- 3) Do some of the main committees focus on safety? Which ones?
- 4) Has there been a need for extra financing for safety work?
- 5) Have the politicians given extra grants for safety measures?
- 6) Are there other relevant factors concerning political involvement/lack of involvement in safety work?
- 7) How much understanding do the politicians have of RAV/MRA or other safety challenges in the municipality?

² The supervisory authority is the county governor's emergency staff in Rogaland County.

6. Learning

- 1) How has the municipality gained knowledge of safety work?
- 2) Have courses been held?
 - For the political leadership?
 - For administrative management?
 - In the different departments
 - In the different units?
- 3) Did the courses have different content?
 - Was the information adjusted for the different levels?
 - Did the participants take part in group work?
 - Did they work with tasks themselves?
- 4) Can you see some challenges regarding involving all employees learning and conducting safety work? Which ones?
- 5) Has there been cooperation between departments concerning RAV/MRA or safety work generally?
 - Are there any other instances where safety problems are discussed? Which ones?
 - Do you know of any conflicts that have arisen in safety work?
 - Between departments?
 - Between other non-governmental organisations and the municipality?
- 6) Is safety an integrated part of the municipality's work?
 - In the municipal plan?
 - The text part?
 - The area part?
 - Exemplars?
 - In the economic plan?
 - How?
 - Exemplars?
 - In departmental plans?
 - In more detailed area plans?

Appendix II – Questions to the top-level.

- 7) Do you know whether some departments work more with preparedness in safety work than others? Why?
- 8) Do more departments work with safety since the introduction of RAV/MRA?
- 9) Has the municipality experience with crises which have affected more than one department and where the emergency group has been included?
 - If you have experienced a crisis, is there something you can develop further in crisis handling?
- 10) Do you think that other municipalities' experiences (with RAV/safety work) have been relevant to your own municipality? Why? Which municipalities?
- 11) What safety challenges do you see ahead in safety work in your municipality?

Specific questions about RAV:

7. Risk and Vulnerability analysis

1. When did the municipality start to use RAV? From where did you get information about RAV? Do you know the content in the RAV guideline and the guideline about Systematic societal safety and emergency in municipalities? Do you think these guidelines are adjusted to a municipal context? Is the RAV guide systematic? Is there room for local adjustments of RAV? Is RAV ambiguous? How have you ensured that RAV is used in a continuous (yearly) process, what system do you have? Has there been interdisciplinary collaboration when conducting RAV? Has RAV been a tool to prevent risks? Has other municipalities' work with RAV been useful for your own municipality? As experience has been gained with the use of RAV, do you have positive experiences with the tool? Which ones? Have you any reservations about the tool? Which ones?
2. If the municipality has chosen not to work with RAV, how will you describe the safety work in the municipality? What is done to prevent accidents?

We have now discussed safety work and use of risk tools in the municipality. Is there anything else that you think is relevant?

Appendix III - Questions to the middle-level in the municipality

Begin with an introduction about my background (education and working practice) and a short description about the research project. Thereafter give an explanation of how the interview will be conducted (timeframe, tape recorder, confidentiality - use titles instead of names), ask for permission to use quotations. Give the mail address if they want to give extra information afterwards.

1. Background

Name:

Education:

Position:

How long have you been employed in the municipality?

General comments about earlier experience before you got his position:

2. Introductory questions

- 1) I am interested to learn how the municipality works with safety¹ and emergency matters, both accidents that occur rarely and daily risks which can happen in the departments. Can you give me a short description of how the municipality works with safety?
 - A. At a general level?
 - B. Specifically in the different departments
- 2) What would you say are the 3-4 most important general areas where your department works with safety?
- 3) In connection with the year 2000 problem, the municipality was instructed to elucidate unwanted incidents. What did the municipality do? Have you used these experiences in further work with safety?
- 4) How did the municipality solve problems during the power cut on 7th June 2002?
- 5) Has the municipality been exposed to large scale accidents in the last 5 years? (for human beings, the environment or material values?)
- 6) Which concepts are most used in the safety work in your department? (For instance: crises plans, emergency groups, HSE and internal control, BiS (safety incorporated in planning) quality management, consequence assessments, safety deputy or others?)

¹ In Norwegian, the term 'safety' includes both safety and security.

3. The municipality's general work with safety and emergency work.

- 1) What would you say are the 3-4 most important general fields in the municipality's work with safety?
- 2) Has the municipality drawn up aims for its safety work?
 - If yes, who participated in this work?
- 3) Are there any written plans for safety work in the municipality?
- 4) In which way is HSE work a part of the overall safety work in the municipality?
- 5) Have you made an overview of accidents or crises that can occur in the municipality?
 - What does it look like?
 - Who participated in making it?
- 6) In your opinion what's the most important focus in safety work?
 - The rare accidents?
 - The daily accidents?
 - How are these balanced?

Why did the municipality choose/not choose to work as a Safe Community?

4. The relationship to the Directorate for Civil Protection and Emergency Planning (DCPEP), supervisory authorities and others

- 1) Has the municipality been in contact with DCPEP in the course of its safety work?
 - If so in what way? By mail, phone, participation on courses others?
- 2) Has DCPEP been of help in the municipality's safety work?
 - If yes, in what way?
 - If no, why not?

Have you been in contact with the Safe Community administration?

The supervisory authority's emergency² exercises

- 3) Has the municipality joined the exercises in the following years?
 - 1997
 - 1999
 - 2001
- 4) In what way were these exercises of benefit?
- 5) Has learning been achieved in the wake of the exercises?
- 6) How are the exercises evaluated afterwards?

The supervisory authority's inspections

- 7) What experiences has the municipality with inspections from the supervisory authority (SA)?
- 8) Has the municipality received feedback that certain changes must be made?
 - How do you consider SA's role?
- 9) How have you responded to the SA's remarks?

5. Political leadership and prioritising

- 1) Is the political leadership involved in the municipality's safety work?
 - City manager
 - Town council
 - Local council
 - Different parties? Are some of them instigators in this work?
- 2) Have you, as a department leader, participated in emergency exercises together with the city manager?
- 3) To what extent do you think the city manager is informed about the safety work in the municipality?
 - Well informed - partly informed - slightly informed - not informed at all?
- 4) How do you perceive the political leadership's prioritisation of safety work in relation to other tasks?

² The supervisory authority is the county governor's emergency staff in Rogaland County.

Appendix III – Questions to the middle-level.

- 5) Have any resources been allocated in the economic or other plans for safety fields?
 - The municipal plan?
 - Area plans?
 - Crisis plans?
- 6) Have you noticed a movement towards greater focus on safety work and emergencies in the different departments?
 - If so, do you know why?

6. Employees in own department and own prioritising

- 1) Can you tell me about specific incidents concerning safety work in the department?
- 2) Has the introduction of RAV/MRA lead to new tasks in the department?
 - Which ones?
 - Who does these tasks?
- 3) Do you consider safety work highly prioritised in your department?
 - In relation to other tasks?
 - Statutory provision?
- 4) In which way is this reflected in the working tasks?
 - Is there sufficient time for the tasks?
 - Is there sufficient knowledge?
 - Are there opportunities for collaboration?
 - Is the work done systematically?
 - Is the work continuously updated?
 - How often is it updated?
- 5) Is safety work person dependent?
 - What system exists to take care of continuity if there is a change of personnel?
- 6) What future challenges do you see for safety work in your department?

In each of the departments, specific examples are used to discuss safety.

7. Engineering/planning department.

Can you tell me how the department works when using RAV/MRA or consequence assessments in work with traffic safety?

8. School department.

How do you use RAV/MRA when school classes are on trips?

9. Health department.

How has RAV/MRA been used to prevent falls amongst the elderly?

10. Learning

- 1) Can you describe how the municipality has laid the foundation for safety education?
- 2) Have courses been held?
 - For the political leadership?
 - For administrative management?
 - In the different departments?
 - In the different units?
- 3) Do you know if the courses have been adjusted for the different levels/instances in the municipality?

Own department

- 1) Have the department's leaders received training?
 - Was group work a part of the training?
- 2) What have you, as department leader, done to train/exercise your employees in safety work?
 - At the division manager level?
 - In the street-level bureaucracy?
- 3) Have the employees had the opportunity to test the RAV/MRA method in order to gain familiarity with it?
- 4) Has there been cross-departmental work with RAV/safety work?
 - At what level where those meetings held?
 - What experiences are gained in such groups?

Appendix III – Questions to the middle-level.

- 5) Do you know whether conflicts have arisen concerning safety work?
 - Between the departments?
 - Other non-governmental organisations?
- 6) Are people other than the municipal employees included in work with safety?
 - For instance inhabitants affected by traffic?
 - Non-government organisations?
- 7) Have there been crises in the municipality where different departments had to collaborate to solve the problem?
 - Was the crisis/emergency group included in this work?
 - Have you gained useful experience in the aftermath?
- 8) Do you think other municipalities' experiences with RAV/MRA/safety work are useful in your own municipality? Why and how?

Specific questions about RAV:

7. Risk and Vulnerability analysis

1. When did the municipality start to use RAV? From where did you get information about RAV? Do you know the content in the RAV guideline and the guideline about Systematic societal safety and emergency in municipalities? Do you think these guidelines are adjusted to a municipal context? Is the RAV guide systematic? Is there room for local adjustments of RAV? Is RAV ambiguous? How have you ensured that RAV is used in a continuous (yearly) process, what system do you have? Has there been interdisciplinary collaboration when conducting RAV? Has RAV been a tool to prevent risks? Has other municipalities' work with RAV been useful for your own municipality? As experience has been gained with the use of RAV, do you have positive experiences with the tool? Which ones? Have you any reservations about the tool? Which ones?
2. If the municipality has chosen not to work with RAV, how will you describe the safety work in the municipality? What is done to prevent accidents?

We have now discussed safety work and use of risk tools in the municipality. Is there anything else that you think is relevant?

Appendix IV - Questions to the street-level in the municipality

Interviews were carried out with street-level bureaucrats in the school, kindergarten, community nursing and engineering/planning departments.

Begin with an introduction about my background (education and working practice) and a short description about the research project. Thereafter give an explanation of how the interview will be conducted (timeframe, tape recorder, confidentiality - use titles instead of names), ask for permission to use quotations. Give the mail address if they want to give extra information afterwards.

1. Background

Name:

Education:

Position:

How long have you been employed in the municipality?

General comments about earlier experience before you got his position:

Concepts used in safety work

- 1) What concepts do you relate to safety work? Are these known concepts to you? RAV/MRA, crises plans, emergency groups, HSE and internal control, BiS (safety incorporated in planning) quality management, consequence assessments, safety deputy or others?

Your opinion can learn me to understanding of the practical realities in work with RAV/MRA or safety work in general.

- 2) Can you mention 4-5 safety challenges in your own work?
- 3) I am interested in how you work with RAV/MRA or safety in general. Can you tell me how you take care of safety in your work? (This question is the most comprehensive and is filled with detailed information about the specific work the street-level bureaucrats are conducting).
- 4) Mapping of use of RAV/MRA
 - When did you first hear about RAV/MRA? Do you use it in your work?
 - Do you understand the way of thinking in RAV/MRA?
 - In what way did the municipality lay the foundation for education in RAV/MRA?

Appendix IV – Questions to the street-level.

- Was this information easily understood?
- Have you experimented or tried out different forms of RAV?
- What are you satisfied with?
- To implement RAV/MRA is an aim, what happens in practice?
- Do you have any reservations about RAV? What are they?
- Do you have evaluations of RAV use?
- How many times a year do you use RAV/MRA?

If RAV/MRA is an unknown concept, questions about familiar methods, other ways of working are asked.

Learning

- 1) Has there been sufficient time for education in how to conduct safety work?
 - Is the administration responsive to challenges in the implementation of RAV/MRA?
 - Is there a need for further education, exercises?
 - Has the administration asked you what you think is most important with RAV/MRA or safety work in general?
 - Do you join working groups conducting RAV/MRA?
- 2) As experience with RAV/MRA has increased, have you gained some positive experience with the method? Which ones?
- 3) Has the implementation of RAV/MRA lead to new working tasks? If so, which ones?
- 4) Have RAV/MRA lead to new ways of conducting/assessing safety? Have they lead to changes at all?
- 5) Could you consult someone about safety work? Who?
 - If not, who would you have preferred to ask?
- 6) If there were problems with the implementation of RAV/MRA, what where these problems?
- 7) Is there something you do now that you did not do earlier?

The supervisory authorities (SA) and DCPEP

- 1) Do you know about the exercises which the SA has every second year?
- 2) Have you, in your work, received feedback from the SA's inspections? If so, which ones?
- 3) Do you know about DCPEP's work with safety? If so, what?

Specific examples concerning safety work in each department.

School / Kindergarten

- 1) Can you tell me about how you use RAV or other safety assessments in school/kindergarten? In what way do you proceed? Use an example of a school class/or kindergarten when they are going on a trip.
- 2) Are there any instructions in school/kindergarten about safety for children?
- 3) Have the school/kindergarten guidelines for swimming, trips or other activities that can involve risks?
- 4) Is there time and resources to work with RAV/MRA other safety assessments?
- 5) Do you think that RAV/MRA is a good way of being precarious, to think through what can go wrong in advance?
- 6) If you had responsibility for safety education in your work, would you do something that is not taken care of?

Is there anything else you would like to mention in this interview?

Engineering / Planning

- 1) Have you used RAV/MRA or other safety assessments in traffic safety cases in the engineering/planning department?
- 2) Can you tell me how you do it?
- 3) Are other departments included? Which ones?
- 4) If RAV has been used, has it had any effect on political decisions?
- 5) Have you an impression that others beside your department understand how you work with RAV? For instance when using a risk matrix.
- 6) Is there time and resources for work with RAV?
- 7) Has an adjusted version of RAV been made to suit your daily work?
- 8) Do you think RAV is a good way to work as a preparedness measure?

Is there anything else you would like to mention in this interview?

Community nursing.

- 1) A fall amongst elderly is chosen as an example. What is done to prevent falls amongst elderly living at home?
- 2) Is there any registration of falls in the municipality?
- 3) Have you had collaboration with other departments?
- 4) Who supports you with resources for preventive measure?

Appendix IV – Questions to the street-level.

- 5) Are there enough resources to execute measures?
- 6) Has an adjusted version of RAV been made to suit your daily work?
- 7) Do you think RAV/MRA is a good way to work as a preparedness measure?

Is there anything else you would like to mention in this interview?