



UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Gothenburg Research Institute



Gothenburg 14-15 November 2016

SRA Nordic Chapter Annual Meeting

***Where are we and
where are we going?***

*New insights into risk analysis
in the Nordic countries.*

Book of abstracts

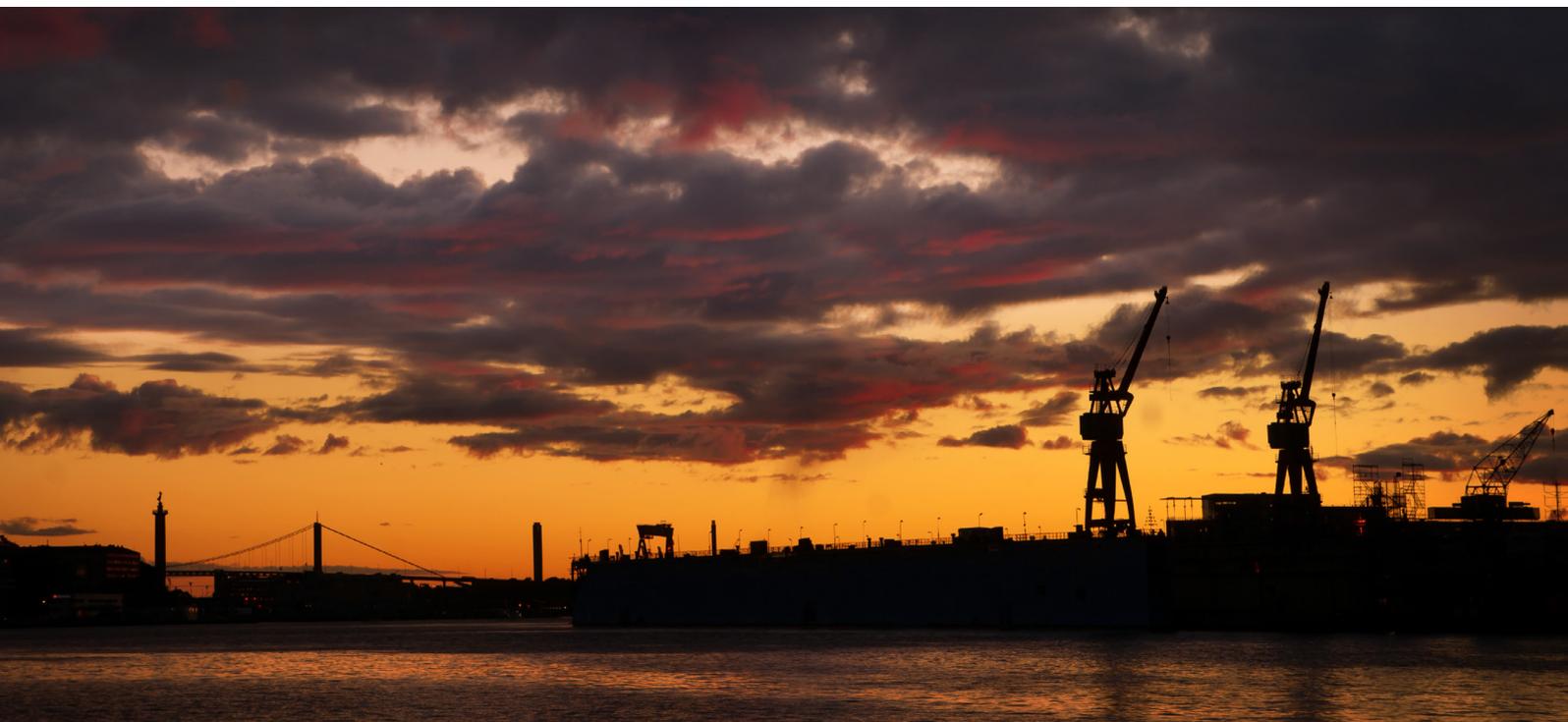


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WELCOME TO SRA EUROPE: NORDIC CHAPTER ANNUAL MEETING 2016

“Where are we and where are we going: New insights into risk analysis in the Nordic countries”

SRA Europe 2nd Nordic Chapter Meeting in Gothenburg 14-15 November, 2016

The conference aims to bring together individuals and organisations interested in risk assessment, risk management and risk communication in Europe. The Society of Risk Analysis Europe: Nordic Chapter promotes specifically Nordic and Baltic issues in the field of risk, and aims to facilitate debate and exchanges of information and opinion between professionals in industry, government, universities, research institutes, and consultancies. It has the ambition to convene and promote scientific and educational meetings on risk research, risk analysis and risk management in the Nordic and Baltic countries.

The Society for Risk Analysis is a multidisciplinary, interdisciplinary, scholarly, international society that provides an open forum for all those who are interested in risk analysis. Risk analysis is broadly defined to include risk assessment, risk characterization, risk communication, risk management, and policy relating to risk, in the context of risks of concern to individuals, to public- and private-sector organizations, and to society at a local, regional, national, or global level. SRA includes numerous regional organizations around the world that provide opportunities for members to interact with other risk analysts near to their homes. SRA also includes many specialty groups for members to interact with risk analysts in their disciplines. A students and young professionals group is devoted to supporting students and recent graduates with an interest in risk analysis. (<http://www.sra.org/about-society-risk-analysis>)

The conference is hosted by Gothenburg Research Institute at the School of Business, Economy and Law at the Gothenburg University.

It is sponsored by the Partner Program at the School of Business, Economy and Law, Gothenburg University.

Welcome!

Ullrika Sahlin, SRA-E: Nordic Chapter president, Lund University

Åsa Boholm, Gothenburg University & the local organization committee

PROGRAM OVERVIEW

MONDAY 14 November

9 30	Welcome!			
9 35-10 45	PLENARIES (Room: Brevsorterarsalen) James H. Lambert: "Must risk analysts mean what they say: Advances in the disciplines of resilience and risk" Ortwin Renn: "From conventional to systemic risks: New challenges in risk assessment and governance" Chairs: Ullrika Sahlin & Åsa Boholm			
10 45 -11 15	COFFE - TEA			
11 15-12 45 (90 min)	PARALLEL TRACKS			
	Risk framing, communication, and discourse – part I (Room: Brevsorterarsalen) Chair: Ragnar Löfstedt	Organisational frameworks for risk management: administrative tools, control and information systems – part I (Room: Post 1) Chair: Airi Raivio-Johansson	Risk perception (Room: Post 4) Chair: Dominic Way	Climate change, natural hazards, resilience and governance (Room: Post 5) Chair: Anna Bendz
12 45 -14 00	LUNCH			
14 00-14 40	PLENARY (Room: Brevsorterarsalen) Nick Pidgeon "The European Perceptions of Climate Change (EPCC) project" Chair: Åsa Knaggård			
14 45-16 15 (90 min)	PARALLEL TRACKS			
	Risk framing, communication, and discourse – part II (Room: Brevsorterarsalen) Chair: Frederic Bouder	Organisational frameworks for risk management: administrative tools, control and information systems – part II (Room: Post 1) Chair: Airi Rovio-Johansson	Risk and decision making (Room: Post 4) Chair: Ullrika Sahlin	Water management, risk assessment and governance (Room: Post 5) Chair: Lars Rosen
16 15-16 45	COFFE/TEA			
16 45-18 15 (90 min)	PARALLEL TRACKS			
	Symposium: Nanotechnology and risk (Room: Brevsorterarsalen) Chair: Åsa Boholm	Risk policy: accountability, acceptability, the role of risk professionals (Room: Post 1) Chair: Henrik Hassel	Risk analysis: approaches, methods and concepts – part I (Room: Post 4) Chair: Ullrika Sahlin	Wildlife natural resource management: governance, challenges and concepts (Room: Post 5) Chair: Annelie Sjölander-Lindqvist
18 30-19 30	SRA NORDIC CHAPTER BUSINESS MEETING (Room: Brevsorterarsalen)			
19 30 -	DINNER			

TUESDAY 15 November

9 00-10 30 (90 min)	PARALLEL TRACKS			
	Symposium: drinking water risk management (Room: Brevsorterarsalen) Chair: Rickard Arvidsson	Local level: crises, risk and emergency management and framing (Room: Post 1) Chair: Johan Bergström	Risk analysis: approaches, methods and concepts – part II (Room Post 4) Chair: Ullrika Sahlin	Finance, insurance and economic uncertainty (Room: Post 5) Chair: Juha Hiedanpää
10 30-11 00	COFFE/TEA			
11 00-12 45	PLENARIES (Room: Brevsorterarsalen) Barbara Czarniawska "Operational risk, translation, and glocalization" Jaana Kallio Husu "Has risk assessment improved food safety in Europe?" Sven-Ove Hansson "Ethical risk analysis" Chair: Ragnar Löfstedt			
12 45 -	LUNCH (end of conference)			

PLENARIES

James H. Lambert: *Must risk analysts mean what they say: advances in the disciplines of resilience and risk*

Monday, plenary session 9.35–10.45, room: Brevsorterarsalen

This talk will highlight theory and applications of resilience and risk analysis to emergent and future conditions including technology innovations, environment, regulations, markets, behaviors, demographics, missions, and others. A canonical form of risk programs in industry, government, non-government institutions, and the military will be introduced. Scenario-based preferences will be shown to influence agency priorities across multiple performance criteria and initiatives. Examples from the presenter's recent efforts include: Simulation and optimization of container-port operations, advanced chargers that reduce ownership costs of electric vehicles in fleet operations, capacity expansion of the power grid of Afghanistan, corridor risk management for transportation and other infrastructure, airport runway incursions and associated safety-training benefits, and asset management across large-scale infrastructure systems for hydropower, navigation, and flood control. Other key challenges for careers and the field of risk analysis will be identified. The talk will describe aims and accomplishments of the Society for Risk Analysis and its members across its dozen regional organizations, several chapters, fifteen specialty groups, journals, and governance bodies. The advantages and benefits of career-long membership in the Society will be presented. Worldwide opportunities to organize and participate in upcoming SRA-sponsored events, activities, social media, professional networks, awards, leadership, etc. will be announced.

Ortwin Renn: *From conventional to systemic risks: new challenges in risk assessment and governance*

Monday, plenary session 9.35–10.45, room: Brevsorterarsalen

The history of the last four decades has been a success story in terms of conventional risk management. All data show that life expectancy is increasing, accidents become less frequent and habitual risks less severe. The picture becomes, however, less favorable if we look at globally interconnected, non-linear risks such as those posed, for example, by climate change or the global financial system and the closely related growing inequality between rich and poor. Systemic risks can be characterized by four major properties: they are (1) global in nature, (2) highly interconnected and intertwined leading to complex causal structures, (3) non-linear in the cause-effect relationships and (4) stochastic in their effect structure. The main features of systemic risks include ripple effects beyond the domain in which the risks originally appear and the threat of a multiple breakdown of important or critical services to society. The main problem is that it is often difficult to predict when a system will suffer a breakdown or collapse. Threats to the system, such as climate change, may be hidden in small incremental effects that provide no hint about when thresholds have been reached. Or a collapse may occur due to a domino effect where a small glitch is released that affects multiple elements within a system or even multiple systems in parallel, thereby amplifying the overall risk.

Insidious systemic risks tend to be underestimated and do not attract the same amount of attention as catastrophic events that occur suddenly. There are three main sources of global hazards that we need to focus on: the growing extent of human intervention in nature (climate change, pollutant emissions, use of land and water); inadequate or ineffective control of central processes in the realms of business and politics (capital markets, corruption, capacity deficits); and adverse by-products of globalization and modernization (unequal living conditions, lack of security, cyber-risks, loss of identity). Although most people are usually familiar with them, they do not get the same attention as the conventional hazards and risk have been given in the past. This can have disastrous consequences – and not only in financial markets.

Responding adequately to global systemic risks is a challenge for our world society where national interests and different cultures conflict with efficient responses. Governance of systemic risks require strategies that address the complexity, scientific uncertainty and socio-political ambiguity of its underlying relationships. However, national as well as international attempts to address systemic risks have decoupled risk anticipation from sustainable and resilient risk management processes and structures. Furthermore, the modernization process facilitates the emergence of plural knowledge and value claims that leads to the request of multiple

stakeholders to be part of the risk management process. Public participation has proven to be an important part and often key driver for successful and legitimate risk governance for advancing effective policies to curb systemic risks. In the end risk management and communication needs to address the four characteristics of systemic risks and develop the appropriate instruments to deal with global, interconnected, stochastic and non-linear risks.

Nick Pidgeon: *The European Perceptions of Climate Change (EPCC) Project*

Monday, 14.00–14.40, room: Brevsorterarsalen

This paper describes the background rationale, core methodology and sampling, and initial headline findings of the EPCC Project - European Perceptions of Climate Change. This is a major risk perceptions survey undertaken by 4 collaborating national teams in 2016 and supported by the Joint Programme Initiative on Climate Change (JPI-Climate). A total sample size of 1000 nationally representative respondents was collected in each of Great Britain, Germany, Norway and France using a multi-item survey instrument. The aim of the survey is to understand how cross-nation differences in - e.g. climate scepticism, the psychological distance of climate change risk, and political orientation, together with key aspects of national cultural and energy systems contexts - might help us understand both climate risk perceptions and policy responses.

Barbara Czarniawska: *Operational risk, translation, and glocalization*

Tuesday, plenary session 11.00–12.45, room: Brevsorterarsalen

In this talk I compare a translation of an international regulation into two local contexts, setting this process in a broader context of the all-pervading risk management. The two countries are Sweden and Poland, and the regulation is Basel II Accord. In both countries, the translation was shaped by the past history, and the present circumstances. The results show that, in spite of local differences, there is a common belief in quantification of risks as the main remedy and therefore the main way of managing them. Abstract and vague formulations, combined with sophisticated calculation techniques, win over the complications of actual practices.

Jaana Kallio Husu: *Has risk assessment improved food safety in Europe?*

Tuesday, plenary session 11.00–12.45, room: Brevsorterarsalen

The General Food Law Regulation (Regulation EC 178/2002) was adopted within the European Union as a result of several food-related alerts. Although risk assessment had been in use all across the EU, the functional distinction between risk assessment and risk management and, especially, the establishment of the European Food Safety Authority EFSA started a new era in the history of food safety in Europe.

The food-based outbreaks we had seen over the past years highlighted the importance of the whole food chain. Risk management measures and preventive work should cover the link “from field to fork”. At the same time research and scientific risk assessment all through the food production chain were placed higher than ever before on the agenda of policy- and decision-making.

Since its adoption the General Food Law Regulation has given EFSA the mandate and obligation to provide impartial, high-level scientific opinions and advice to help policy makers in making their decisions. The European Food Safety Authority is not alone in this challenging work. EFSA is dependent on data produced by others, while at the same time sharing information and collaborating with European and international partners. This also fosters high-level scientific debate. The number of scientific outputs produced by EFSA each year is impressive indeed. In 2015 over 100 scientific outputs were published, covering the whole of EFSA’s broad mandate.

Over the years since its establishment EFSA has taken its place as “a science-based organization that protects and informs consumers”. There is a high degree of trust in and respect for EFSA, based on the authority’s competence in delivering high-quality scientific advice. Together with the appropriately targeted, cost effective risk management measures by the Member States and European Commission, scientific risk assessment has definitely worked for the benefit of the consumers.

Sven-Ove Hansson: *Ethical risk analysis*

Tuesday, plenary session 11.00–12.45, room: Brevsorterarsalen

Many of the issues that tend to be insufficiently covered in traditional risk analysis belong to the realm of ethics. This includes topics such as who contributes to the risk and with what intentions, what role those exposed to the risk have in the decision to take the risk, and how the risk and its associated benefits are distributed. This presentation introduces Ethical Risk Analysis as a practice aimed at complementing standard risk analysis with a systematic account of ethical issues that are important for risk management. The main tool proposed for the analysis is a risk-role analysis focusing on the three major roles of being risk-exposed, a decision maker, and a beneficiary (i.e. someone who benefits from the risk-taking). Important issues to be asked are whether these roles coincide and whether people who have one of these roles are dependent on those with another role. For instance, are the risk-exposed also decision-makers about the risk, and is it they or someone else who benefits from the risk being taken? Do the decision-makers benefit from the risk being taken, or do they depend in some way on those who do? Additional tools of thought for the ethical analysis of risk are also introduced, including hypothetical retrospection, mutually beneficial risk acceptance, and the notion of background decisions.

PARALLEL TRACKS & SYMPOSIA

RISK FRAMING, COMMUNICATION, AND DISCOURSE – PART I

Monday, 11 15-12 45, room Brevsorterarsalen

Chair: Ragnar Löfstedt

Towards genetic risk communication: conceptual issues

Frederic Boudier

Maastricht University

The promises of using personal genomics in predictive and precision medicine has led to a surge of genetic risk information provided not only to patients but to virtually anyone, whether in medical setting or through companies offering their services online. This has also led to the development of genetic risk consultations led by healthcare professionals and genetic counsellors. New practices have developed rapidly with virtually no input from risk communication science. The starting point of the MindTheRisk project has been to raise a number of socio-political questions i.e.: are lay publics - including non-geneticist healthcare practitioners - satisfied with the quality of the information they receive? Do non-geneticists feel that they understand the risks involved? Do regulators take this aspect on board when they decide to allow or restrict genetic testing or to communicate about genetic testing? How is this new technological development regulated and by whom - e.g. by Government or self-regulated by Industry? This paper is an exploratory attempt to reflect on conceptual issues in relation to genetic information and communication. The author also suggests some direction for research. This project is based on desktop research supplemented by pilot interviews conducted with the European Medicines Agency, National regulatory agencies, academic and members of a patient organisation, all directly involved in policy.

Inconsistent definitions of “risk” by Swedish government agencies

Max Boholm

University of Gothenburg

The paper describes and evaluates definitions of “risk” by Swedish government agencies. The empirical material of the study derives from the websites of Swedish agencies. Two types of inconsistency are distinguished: internal and external. External inconsistency refers to situations when “risk” is defined in a way inconsistent with more general and ordinary uses of the word “risk”. Internal inconsistency means that “risk” is defined in a way inconsistent with how the term is used in the very same text as the term is defined in (e.g., a report). For example, “risk” is often defined as a combination of probability and consequences, but is used in other ways (e.g. to refer only to the probability

of an unwanted events). The paper discusses whether these inconsistencies constitute a problem and what the implications of such inconsistencies are for risk communication and risk management.

A scenario exercise on zoonosis collaboration, risk assessment and communication for Swedish authorities in the health risk sector (ZORK)

Karin Nyberg^a, Åsa Svanström^a, Stayesh Abdollahi^b, Jonas Hardenstam^b, Ingrid Nilsson^b, Mia Holmberg^c & Cecilia Hultén^c

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Outbreaks or other events concerning zoonotic disease, often cross the sectorial borders between humans and animals or food. In the occasion of a cross-sectorial zoonotic event, collaboration between authorities with different responsibilities is often required, as well as between national, regional and local level authorities. In order to assist such collaboration there is an intergovernmental working group for zoonoses (Zoonossamverkansgruppen), in which information can be shared, and for coordinating management and communication actions. This working group has proven to be very useful, but there have been events when conflicting views have led to confusion and uncoordinated communication. Therefore, as part of a two-year project funded by the Swedish Civil Contingency Agency (MSB), an exercise was organized where a new approach for improving the efficiency and coordination of this working group was tried. In addition, the exercise aimed at strengthening the risk assessing authorities’ ability for rapid risk assessments and communication, as well as increasing the insight into these procedures at the risk managing authorities. The organizing committee consisted of both risk assessors and communication specialists from the National Food Agency, the Public Health Agency and the National Veterinary Institute, which are the Swedish authorities that perform risk assessments in the area of zoonotic health risks. The exercise was performed during two days in May 2016, in the form of a table-top exercise with elements of simulation. The scenario concerned an outbreak of the infectious disease tuberculosis at farm level, with subsequent spread through direct contact as well as food. Around 50 professionals participated in the exercise and they represented essentially all functions that can be involved in a case of zoonotic infection. Prior to the exercise the participants were given selective information depending on which role their organization represents and during the exercise the risk assessing authorities had the task to perform rapid risk assessments and communication specialists had the

task to develop a communication plan for the simulated event. The result of the exercise demonstrated the difficulties in finding an approach that is effective and applicable to various types of zoonotic risks, especially when time is short. The importance of communication as well as concise and effective meeting techniques was also stressed.

On the rhetoric of obesity and overweight – a comparative analysis of risk communication in Sweden and Malaysia

Jens Allwood^a, Pavel Rodin^a, Stefano Lanzini^a, Elisabeth Ahlsén^a, Nataliya Berbyuk-Lindström^a, Chee Leong Yee^b, Aliyyah Nuha Azman^b & Azirah Binti Hashim^b

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Obesity is quickly developing into a global health problem. According to some sources it is at present as serious as the problem of hunger. This means that an investigation of attitudes to health and especially to the problem of obesity in different parts of the Earth could be helpful in coming to grips with the problem. Do some cultures have a more positive or negative attitude to overweight and obesity than others? Specifically, what are the attitudes to overweight and obesity in Swedish and Malaysian culture?

We want to make a contribution to answering these questions by examining the rhetoric that is related to the formation of attitudes concerning the risks of obesity and overweight. How are people persuaded to have a particular attitude to obesity and overweight? In order to explore this topic, we examined and analyzed three influential types of sources that exist in both Swedish and Malaysian society today: Official websites sponsored by the government to give expert advice to the general public, influential quality newspapers and personal blogs. This paper is the result of a rhetorical analysis of material from these three types of sources

ORGANISATIONAL FRAMEWORKS FOR RISK MANAGEMENT: ADMINISTRATIVE TOOLS, CONTROL AND INFORMATION SYSTEMS – PART I

Monday, 11 15-12 45, room Post 1

Chair: Airi Raivio-Johansson

Safety and the use of management control systems and Key Performance Indicators at a Swedish nuclear power plant

Christina Mauléon^a & Maria Spante^b

^a *University of Gothenburg*

^b *University West*

Continuous control, testing and maintenance of systems and components are of utmost importance for maintaining safety at a nuclear power plant (NPP). And key elements for safe practice in organizations overall are often claimed to be adaptation, change and the ability to reflect and maneuver in paradoxical situations. Identifying new innovative ways of organizing in order to control growing demands regarding safety, efficiency, quality, reliability, profitability etc. is a challenge in all types of organizations. Following this development organizational and management control theory and practice have progressed rapidly in organizations in recent years and one profound idea to manage and control for organizational efficiency and success is to implement management control systems (MCS:s) in which Key Performance Indicators (KPI:s) play a key role. This paper will present an example of when a safety KPI at a NPP was presented as green, orange and red simultaneously within the same NPP. Questions raised were: how could this happen? and what consequences might this have upon safety? What was found is that different stakeholder demands were being met at different levels of the organization when reporting the safety KPI in three different ways. However no deeper analysis of what consequences this might bring in terms of safety was conducted at any level. There exists some research on how management control systems and KPI:s shape organizational outcomes. However there exists a knowledge gap considering the long term effects the use of such systems and measurements have upon i.e. safety.

Mapping “risks” in register studies and the (non-) ethical considerations. The importance of ethical information in official reports

Charlotta Thodelius^a & Jörgen Lundälv^b

^a Chalmers University of Technology

^b University of Gothenburg

In this study we want to discuss and highlight the ethical considerations regarding the use of hospital data in research. The main argument to use such data is the possibilities of getting a better healthcare and more effective measurements by using big scale data. In our own project we use some of the national and local data to analysis injury risks in the residential areas, and even if we study has an ethical approval from the regional ethical board (EPN Gothenburg). We want to discuss the possible consequences of such studies in relation to how other projects based on the same kind of primary data. In our opinion there is a distinction between the research aim to “sustain societal values and work for the bigger good” and the obligation to restore and protect the individuals own interests and rights. The aim is to conduct a content analysis of electronic official reports based on register studies. The reports in the scope is from year 2014-2015 and collected from the website Center of register in Västra Götaland [www.registercentrum.se] and the website of The National Board of Health and Welfare [www.socialstyrelsen.se]. The research questions in the study are: - Which hospital register exists and how many discuss the research in terms of “mapping risk” and/or prevention aspects? - In how many registers are the individual informed about their participation and in how many has the patient given an informed consent (written and/or oral consent)? - Is it possible to cancel or disrupt the participation? - In what way does this affect the ethical consideration and ethical stance in research projects? Keywords: register studies, ethics, ethical information, official reports, hospital data, risk

The rise and fall of injury prevention programs in Sweden

Hans Ekbrand, Robert Ekman, Charlotta Thodelius, Jörgen Lundälv, Björn Andersson, & Inga Malmqvist,

University of Gothenburg

This paper is a spin-off from a project about injury events - falling, cutting and poisoning - in residential settings. We were struck by the apparent gap between the systems for injury registration, which are, or at least have been, quite extensive and the (lack of) systems for injury prevention interventions. The purpose of the analysis is thus to understand the present situation in this area by examining its history. The history of injury prevention in Sweden is by and large the history of the welfare state, but a non-profit association was instrumental in preventive interventions during the 1950-60s. It was not until the

1980s that this non-profit association became institutionalised, and formally a part of an administrative authority. Since the mid 1980s quite a few grand visions for the collective action in the injury prevention area have more or less failed. We explore the connections between the transformations of the Swedish welfare state and these failures.

When digital support systems in school risk to fail: on the investigation of intended and unintended consequences on individual, organizational and societal levels.

Maria Spante^a & Christina Mauléon^b

^a University West

^b University of Gothenburg

The aim of the suggested project is to study the enactment of digitalized management and control systems in Swedish schools. There is a risk that the increased influx of digitalized management and control systems (MCS) takes time away from actual educational practice and interaction with students, thus hindering the development of IT didactic competence, IT enhanced learning, students well-being and school performance in general. Therefore, it is essential to investigate the consequences of the implementation and use of digital MCS in schools to provide support for relevant use of these systems. The Swedish school system is at the center of an intense public debate due to the dramatic decline of students’ PISA results. Consequently, the Swedish government commissioned the OECD to analyze the Swedish school system and provide recommendations. The recommendations given are to increase control, accountability and evaluations through implementation and use of digital management control systems (MCS) in which indicators (KPI:s) play a key role. However, Swedish schools already use digital MCS and KPI but little is known about their relevance, effects and consequences. In a pilot study we investigated the use of a digital incident reporting system (a type of MCS) at one school. The results show that the enactment of the system risked to harm students subjected to being reported in the system. Therefore we need to learn more about consequences of digital MCS and KPI in schools. It is therefore important investigate intended and unintended consequences, both short-term and long-term, on individual (students/teachers/school leaders)-, organizational (school)- and societal levels. Three case studies will be conducted over three years, including three schools in different municipalities. Data will be collected through readings of regulatory- and policy documents, studies of existing digital MCS’s and KPI’s, interviews and shadowing.

RISK PERCEPTION

Monday, 11 15-12 45, room Post 4

Chair: Dominic Way

Is ignorance bliss? - The effect of knowledge and ignorance assessments on perceived risk

Carl Martin Allwood

University of Gothenburg

People's perception of risk is influenced by a multitude of factors and the results often differ in different risk domains. This contribution focuses on the relation between the knowledge (or lack of knowledge) of a hazard that people believe that they have (subjective knowledge) and their perception of risk. This is an under-researched area in risk research, given the importance for their behavior of people's subjective knowledge about risk hazards. Previous research has found different relations between subjective knowledge and risk perception ranging from negative to positive. Given this, we explored the effect of different conditions under which subjective knowledge is activated for perceived risk. One aspect of subjective knowledge that may impact perceived risk but has not been much attended to is people's understanding of their own ignorance (lack of knowledge). This was investigated in the present contribution. 342 individuals (community based sample; 166 women, mean age 46 years, SD = 16.7, range 18 to 80 years) participated in four between-subjects experimental conditions: 1. the knowledge first condition, where the participants first made all 25 knowledge assessments, five in each of 5 different domains: environment, health, crime, economy and transport; followed by the 25 risk assessments in the same domains, 2. the risk first condition, where the reversed order was used, 3. the alternate condition, where the participants first made a knowledge assessment directly followed by an associated risk assessment, etc., and, 4. the ignorance condition, where the participants made the 25 knowledge assessments in the form of ignorance assessments and then the risk assessments. The results showed that both risk domains and the experimental conditions differed with respect to the level of the knowledge assessments. The results showed higher subjective knowledge for all areas when the participants were asked about their ignorance (with reversed scale) compared to when they were asked about their knowledge. When the knowledge assessments were made before the risk assessments (as is nearly always the case in previous research) the correlations between subjective knowledge and risk perception were all positive and ranged between .20 (environment) and .32 (economy). The correlations between ignorance assessments and risk perceptions were all negative but only the correlation for crime was significant. In contrast to findings for U.S. samples, no

gender differences were found in this Swedish sample. The implication of these results will be discussed.

Environmental and Technological Risk Perception in Nordic-Baltic countries in European Context

Aistė Balžekienė & Audronė Telešienė

Kaunas University of technology

This presentation aims at exploring environmental and technological risk perception in Nordic-Baltic countries compared to risk perception trends in Europe. The analysis explores how risk perception at country level is based on macro-level factors and also what environmental problems are perceived as most important in Nordic-Baltic countries compared to other regions in Europe. This presentation is based on the data from International Social Survey Programme (ISSP) "Environment" module that was conducted in 2010, and that included among other 19 European countries representative surveys in Norway, Finland, Denmark and Sweden from Nordic region and Lithuania from Baltic countries. At country level this presentation explores the relations of risk perception to these macro-factors: affluence, human development level, democracy, pace of societal transformations and environmental health. Analysis also revealed that macro-level indicators at country level are significant predictors of risk perception. GDP per capita, non-income HDI and Democracy index have significant negative impact on environmental risk perception and pace of societal development has a significant positive influence on environmental risk perception. This implies that changes in risk perception are to a great extent dependent upon general societal transformations. Data also indicates that environmental and technological risk perception in Nordic countries is lower than in other regions in Europe, especially if compared to Central Europe. Furthermore, there is coherence across Nordic countries in the public perception of most urgent environmental problems. Lay people in Nordic countries indicate climate change as the most important problem among other problems, however public in other European regions mostly tend to see air pollution as most important. Countries in Nordic region usually falls in to the same patterns in risk perception, however people in Baltic region (represented here by Lithuanian case, based on data availability) perceive risks quite different if compared to Nordic countries. We propose that vulnerability is the key to explain these differences in risk perceptions across regions in Europe, as the analysis show that people in countries with more vulnerable social, economic or political situations tend to express higher risk perceptions.

User Centered Design of the Visualization of Risk of Dynamic Positioning Operations

Sandra Hogenboom, Jan Erik Vinnem & Ingrid Bouwer Utne

Norwegian university of science and technology (NTNU), Trondheim

Human error is a contributing factor towards almost all major accidents involving Dynamic Positioning (DP) systems. The expectations of the DP operators' performance are high. Their jobs are said to entail roughly 99% boredom and 1% action, where their main task is to monitor the computer screens, and they need to be ready and able to recover the position of the vessel within seconds of an emergency. The DP operator is the last barrier for avoiding collisions or loss of position with potentially major consequences. The aim of this presentation is to advance an understanding of how to improve the DP operators' performance situation. The objectives are to develop principles for the visualization of risk information, and illustrate how this can improve detection of hazardous situations and decision-making processes for DP operators. User-centered design and human factors analyses are critical for the principles for the visualization of risk information. User-centered design emphasizes the gathering of information on the user context and user needs. Methods for gathering this information include interviews and observations. The focus of the presentation is on human machine interface, risk communication, the visualization of risk, and how this can improve decision-making for DP operators. Furthermore, the presentation concludes with possible other applications of the principles for visualization of risk for DP operations, and the need for further research.

Stigmatization of healthcare staff

Johan Giesecke^a & Misse Wester^b

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Exposure to infection is a professional risk for all healthcare workers (HCW). But this risk acquires another dimension in an outbreak of highly contagious, lethal disease. Examples of such outbreaks are the AIDS epidemic in the early 1980's, the SARS outbreak 2003, the influenza pandemic 2009 and, most recent, the Ebola epidemic in West Africa. One can assume that HCWs are well and correctly informed about the risks from highly contagious disease. But family, neighbours, friends, colleagues may react very strongly to the risk that staff bring infection home from the hospital - or from an epidemic overseas. There are anecdotal accounts of such stigmatisation in Sweden, ranging from partner's strong dislike and the distancing of colleagues to discussions about a child's right to attend day care. But research around how common stigmatisation is, which expressions it assumes, and how it is influenced by dissemination of information is

completely lacking in our country - as well as being very scarce from other countries.

Method: In April 2016 we contacted colleagues and NGOs to secure names of six HCWs who had worked in West Africa during the 2014 outbreak of ebola, and who were also willing to supply the name of a close contact person. The HCWs were three doctors, two nurses, and one biomedical analyst. The contact persons were two partners, two sisters, one mother, and one friend. These 12 people were interviewed in May and June 2016 by the authors in semi-structured interviews, one for the HCW, one for the contact person. Interviews covered: reactions from the environment before leaving for Africa, reactions from the environment after return home, information received by contact person - how?/adequate?, reactions from others after the HCW had come home.

Preliminary results: The majority of the contact persons felt no or little concern, neither when the HCW revealed the plan to leave, nor on return. The most common reason for this was that the contact person felt a strong trust in the judgement of "their" HCW. This also meant that the contact persons mainly used the information they received from their HCW to assess risks, and relied relatively little on other information channels. An interesting finding was that several of the HCWs failed to follow the quarantine rules to the point after return.

CLIMATE CHANGE, NATURAL HAZARDS, RESILIENCE AND GOVERNANCE

Monday, 11 15-12 45, room Post 5

Chair: Anna Bendz

Responsibility distribution in climate change risks

Åsa Knaggård, Kerstin Eriksson & Erik Persson
Lund University

How to distribute responsibility for the risks of negative impacts connected with climate change is an increasingly important issue. The extreme weather events of the last years have, for example, led to increasing discussions and conflicts. Given the effects of and conflicts over climate change, which society already faces, increased warming could lead to even more tension and conflicts over responsibilities. We argue that climate adaptation, as the policy area where these risks are managed, cannot only be seen as a planning issue that needs efficient solutions. Instead, it is a matter of both democratic and ethical concern to make decisions about the distribution of responsibilities explicit, so that they can be clearly justified to those concerned. This is crucial for enhancing the legitimacy of climate change adaptation policies, and through that possibly also the efficiency of risk management policies. For society it is thus a question of utmost importance, yet one that has neither been sufficiently studied, nor discussed enough. We present a theoretical framework for how these issues can be studied in a fruitful way. It is based on a theoretical understanding of responsibility as prospective, or something connected to preventing negative future events. This form of responsibility is most in line with the management of risk, as negative future events, as well as with climate adaptation. Prospective responsibility can be divided into four categories, based on Tennekes et al (2014), as responsibility for (1) taking initiatives, (2) implementing projects, (3) paying for projects, and (4) taking on the residual risk. A number of possible combinations of private and public responsibility are perceivable. The framework is further based on a number of ethical principles that can be used to distribute responsibility in society. These principles are equality based, desert based, ability based, need based, and efficiency based distributions. The framework does not rank the principles according to what is better, but uses them to study what principles policy-makers and citizens use today. We believe that in most cases these principles are not made explicit - policy-makers and citizens can even be unaware of them. Our theoretical framework can contribute to making these principles explicit, and thereby enable democratic discussion on how responsibilities over risks, in this case connected to climate adaptation, should be distributed in society.

Climate Change and Risk Management in Swedish Municipalities: Risk Perception of Decision Makers and Experts and Implications on Resilience

Andrea Morf & Madeleine Prutzer

University of Gothenburg

This paper explores public servants' and politicians' perceptions of risks and problems of climate change (CC) related to natural hazards on the coast of Ystad municipality and in the watershed area of Göta Älv. Already today, Ystad and the region of Scania (Skåne) in South Sweden are affected by climate and weather related natural hazards. The sandy seashore of Ystad is erosion prone and has since decades been experimentation site for various types of shoreline management. The shoreline is highly attractive for recreation and features camping areas, cottages, forest, conservation areas, but also an international harbour and the expanding town of Ystad with a medieval centre and high cultural values. Behind the shoreline lies Sweden's most fertile agricultural land and important drinking water resources. Similarly, in the Gothenburg area the river valley is highly attractive in terms of infrastructure, transport, industry, Scandinavia's biggest harbour, dwelling, recreation, culture and nature values, and at the same time is the river used as the drinking water source for 600 000 people. Public, administrative and political awareness of coastal erosion as climate related hazard is relatively high in Scania. In comparing the views of municipal and higher level decision makers on climate related risks and their management, we have found interesting gaps of understanding and interaction in relation to risk as concept and CC-related problems. This includes both practice related knowledge gaps, discrepancies of views between sectors and levels, and gaps in organisation structures and responsibilities. With our study we want to contribute to the Swedish debate on management of CC and to scientific discourses on risk management and institutional learning to address complex societal problems. The complex and changing character of such problems and their conflictive nature requires well-developed, broad communication and both individual, social and institutional learning.

Resilience at risk in rapidly changing cities

Marie Thynell

University of Gothenburg

In rapidly growing cities some 40-60 percent of the population often ends up living on the margins of society and in places that are unfit. While coping with the challenges of everyday life they may experience different kinds of risks. Many of the risks or hazards have "always" been present and people tend to get used to them even though they are extreme. People adapt their behavior since "everyday risks" are enforced upon people due to their economic and political

marginalization (Noteboom, 2014). Earlier studies show that the “everyday risks” have developed into “neglected disasters” in Jakarta and become part of life. I will use research results from Jakarta to explore urban risk and resilience. The urban villages, kampongs, are known to be resilient, partly due to traditions of sharing resources and helping out. But Jakarta has been driven by private investments and is marked by elevated levels of inequality and resilience has become a topic on the agenda. The marginalized urban villages suffer from hazards and I will focus on risk in relation to institutional and infrastructural weaknesses. Due to public shortcomings exposure to risk is a fact. Floods are only one of many risks (climate change, heat, cyclones) that add to lack of progress in terms of enhanced conditions for harmony, sustainability, health, communication and security (Hornborg 2013). How does local government perceive the risks and do they take any action? Studies shows that risk behavior of humans vis-à-vis natural hazards is heterogeneous, but actions taken by authorities remains similar and do not match the needs of the exposed families. The city government does not differentiate their interventions and they remain largely ineffective. Instead, distrust and the distances between the exposed and the city increase (Lavigne et al, 2008; Zoleta-Nanthes, 2002; van Voorst 2015). Viewing people’s practices in the face of risk it becomes evident that earlier experiences with authorities have an important and negative impact (Bankhoff, 2007; van Voorst, 2015). Studies of flood prone neighborhoods show that victims have developed “pragmatic and more or less effective styles” of handling risk. These practices help to protect their physical and mental well-being despite of the constant threats to floods (van Voorst 2015). Disaster management and urban risk are growing areas of study. I will have a closer look at the context of risk and resilience to recover from hazards, and the institutional short-comings that strengthens vulnerability and inequality.

Systematic Knowledge Sharing in Public Private Partnerships in Sweden - Lesson from a Swedish Natural Hazard Context

Monika Rydstedt Nyman

Karlstad University

Keywords: lessons learned, public private partnership, natural hazards, critical infrastructure. Goal: In line with the shift, that the neoliberal politics has made it is of importance to understand how knowledge transfer is practiced in public-private partnerships to entail lessons learned to become tools for a more resilient society.

Method and Material: Case study with qualitative semi-constructed interviews, respondents from public and private entities in Sweden are interviewed, regarding lessons learned in maintenance of roads after extreme weather events. A socio-technical system perspective is used for the analysis. Findings: Adverse effects of

climate change are one of the most highly profiled concerns we are facing in terms of both direct and indirect aspects. Systematic learning is, along with e.g. adaptive management and innovation, essential to meet future changes. During the 1980s and 1990s, a shift in society took place when neoliberal ideas of freedom through deregulation, smaller government and market facilitation became the norm to steer and govern society. As a result, deregulation and liberalization of the public sector in Sweden and Europe evolved. The competitive tendering processes became a tool to operate through strategic collaboration and cooperation across boundaries in society. Through collaborations and cooperation cross-border is a resilient society build, with actors that are well informed and prepared for the challenges that lay ahead. It is argued that strategic outsourced procurement allows organizations to concentrate their abilities to controlling processes. The argument is that public private partnerships (PPP) will get stronger over time. The PPP is argued to involve all parties for innovations, and building a stronger society. Scholars have found barriers hampering cross-border sharing of knowledge. These barriers can be of different types, policies, plans, goals and means for each organization, resources, abilities to handle problems, knowledge and understanding of problems and solutions.

RISK FRAMING, COMMUNICATION, AND DISCOURSE– PART II

Monday, 14 45-16 15, room Brevsorterarsalen

Chair: Frederic Boudier

Conflicting futures? Risk in petroleum exploration and nature conservation narratives in the Lofoten Islands, Norway

Marianne Karlsson

Nordland Research Institute

The question of whether ocean blocks outside the Lofoten Islands in Northern Norway should be opened up for petroleum exploration has been heatedly debated for two decades. In parallel political processes, large-scale conservation measures through applying for world heritage status and establishing a national park have emerged as an alternative development path to petroleum. The prospect of both oil extraction and conservation has stirred up strong feelings and resistance in Lofoten and beyond as these processes are seen to threaten livelihoods, land and seascapes in different ways. This paper examines the links between petroleum and conservation processes in Lofoten from 2008 to 2016 and analyses how risk figure in local narratives supporting and/ or resisting petroleum and conservation. Drawing on interviews with local residents, politicians, officials and businesses as well as an analysis of local newspapers, the paper seeks to identify relationships between framings of risk in petroleum extraction and conservation debates. The paper will discuss how reactions to conservation also shed light on why the matter of petroleum is so controversial in Lofoten and how notions of securing and developing the area are central to how risk is understood and expressed.

Rearticulating Intersecting Structures of Risk in Everyday Life of Young Migrants

Anna Olofsson, Susanna Öhman & Katarina Giritli Nygren

Mid Sweden University

The aim of this paper is to study how the discursive construction of risk is entangled with notions of risk, adolescents and processes of othering (Douglas 1966). Risk prevention frameworks tend to specifically target “risky” youth for intervention as means to prevent future social, economic, criminal and political problems. In Sweden, for example, the word “immigrant” is frequently discussed in terms of risk, and is often associated with discourses of integration, segregation, and “Outsiderhood”, especially for people with an origin in Asia, the Middle East, and Africa. This type of discourses act through moral norms; however, the imperative of self-governance as a response to risk is

carried out in relation to collective subject positions of dangerous “others” and/or (un)precarious lives. In everyday life, risk-taking and risk-making are interwoven with processes of identity, stigma and routinized behaviour, which both contribute to processes of othering and inequality. By analysing how risk is intertwined with the processes whereby age, gender and race, are constructed in relation to unaccompanied immigrant youth our analyses show how logics of risk are intersecting with discourses of the immigrant to produce a particular framing of immigrant youth as “at risk” and/or “risky”. This gives rise to particular strategies designed to profile and manage those labelled as “risky” immigrant youth which also reproduce the racist formations in the Swedish society.

Communicating the Ebola Epidemic: A Comparative Study of Swedish News Media and Social Media

Pavel Rodin & Marina Ghersetti

University of Gothenburg

The latest Ebola outbreak was the most serious since the virus was discovered in 1976. From the first reported death in Guinea in December 2013 to January 2015, when the spreading of the infection flattened out, about 22,000 suspected cases of infection and 8,900 deaths were registered (www.WHO.int). By June 2014, some cases of Ebola had spread to the U.S. and Europe, and in January 2015 three Swedish citizens were sent home from Sierra Leone. None of them proved later to be infected. News media play a fundamental role in crisis communication around social crises, like the Ebola pandemic. It is through news media that people inform themselves, make sense of what is happening, and decide on which precautions to take. However, also social media are growing in importance in these situations. On Facebook the Ebola epidemic was communicated and commented in less regulated ways than in news media.

The Ebola epidemic was widely reported in Swedish news media during the autumn of 2014, when the rapid spreading of the virus encompassed three continents. In parallel, an intense and extensive communication on the infection went on in social media, including the sharing of news messages, personal experiences, rumours and expressions of anxiety. This study departs in theories of media logic and of rhetorical arena. The concept of media logic refers to the underlying formats, norms, organisation and economics of news media (Altheide & Snow 1979) and of social media (van Dijck & Poell 2013) through which the media present and transmit communication. The concept of the rhetorical arena refers to an extended and complex communication space opening around a crisis, where various voices are contesting, supporting, expressing feelings and influencing other participants (Frandsen & Johansen 2010, 2013).

The purpose of the study is to compare Swedish news media content on the Ebola infection with the content of corresponding communication in social media. Issues of special interest are how risks of infection are described and perceived, how actions and preparedness of Ebola handling authorities are represented and interpreted. The overall aim of the study is to describe and explain how news media and social media constitute interrelated platforms for sense making and opinion building in the context of social crisis. The study builds on content analysis of main Swedish news media, and of commentary threads on news articles and authorities' publications on Facebook. The time period for the empirical analysis is 1 August 2014 to 31 January 2015, a total of six months under which the spreading of the infection peaked in Africa, the U.S. and Europe.

Environmental risk (non)communication? Media discourses on Environmental Compensation in Cases of Urban Infrastructure projects

Audronė Telešienė, Aistė Balžekienė, Jurgita Jurkevičienė Audrone Telesiene

Kaunas University of Technology

This presentation aims at discussing the public discourses around risks related to urban infrastructure projects in Lithuania. Specifically, we focus on measures of environmental compensation as negotiated or communicated through public media channels. We question the ways that threats, risks and environmental measures associated to urban infrastructure projects are being communicated in public media arenas. Results presented during this conference are part of a wider project that is generally designed to foster sustainable urban development, by analyzing experiences related to urban infrastructure projects, their environmental impact, and environment compensation measures in Lithuania and Sweden. The project is grounded upon multiple case study approach and focuses on specific preselected urban infrastructure projects. In Lithuania these include: Western bypass in Vilnius, cogeneration power plant in Vilnius, development of residential area with infrastructure in Kaunas, construction of sludge treatment facilities in Kaunas, commercial building construction Klaipėda, and recreational park in Šiauliai town. Media content research strategy follows critical discourse analysis approach. Data includes texts produced by various stakeholders and published in public media channels (newspapers, web pages, forums, etc.). NVivo is used for data processing. Code structure follows previous research conducted by Swedish researcher dr. Jesper Person (now member of Lithuanian project) and Lithuanian regulatory documents. The codes (this list sheds light on the topics to be discussed within the presentation): Environmental threats imposed by activities (related to an infrastructure project); Activity impact area;

Stakeholder relations; Compensation practices; Object of compensation; Damage coping strategy; Compensation technique; Equivalence damage compensation; Image presence; Emotional load, etc. Questions to be discussed: What risks of urban infrastructure projects are discursively constructed? By what discursive and rhetoric means? What are the power relations and what discursive coalitions are being formed? What are the dominant story-lines? Do the discourses encourage or discourage (or provide other repertoire of meanings) the environmental compensation measures in urban infrastructure projects in Lithuania? The research project "The Perception and Practices of Environmental Compensation: Urban Infrastructure Projects in Lithuania and Sweden (EnCoM)" is funded by a grant (No. MIP-011/2015) from the Research Council of Lithuania.

ORGANISATIONAL FRAMEWORKS FOR RISK MANAGEMENT: ADMINISTRATIVE TOOLS, CONTROL AND INFORMATION SYSTEMS – PART II

Monday, 14 45-16 15, room Post 1

Chair: Airi Rovio-Johansson

Project risk management: potential in the field and the NUSAP scheme

Miroslava Tegeltija & Igor Kozine

Technical University of Denmark

Project risk management (PRM) is a rising topic particularly in the Nordic countries. It is distinct from the risk management in the safety, environment, finances, insurance and other conventional domains. Uncertainty represents one of the main challenges in projects and can significantly impact the overall performance. Therefore, the way we manage uncertainties and how we cope with risks plays an important role. PRM remains an underdeveloped discipline and we argue that it represents a relatively new, important, domain for applying risk analysis methods and techniques. There are a number of issues that arise due to complexity of the projects, a large number of stakeholders, technological innovation and long lifecycles. With the growth of project scales and scopes it became more noticeable that risk analysis in this context should be studied and better understood. Current best practice tools (such as Primavera) lack some capabilities to analyze important correlations among different types of risk. In addition, these tools do not address uncertainties connected to human behavior, societal impact, public acceptance etc. In the recent years, new approaches have been developed in order to carry out risk assessment on projects and to support the decision making process. Here we introduce the NUSAP scheme. Working in the field of policy-related research, Funtowicz and Ravetz developed a novel approach for dealing with uncertainty and quality of information available. The acronym NUSAP stands for Number, Unit, Spread, Assessment and Pedigree, the five elements that constitute an information set regarding uncertainty in their method. The trigger for Funtowicz and Ravetz to construct the NUSAP notation was the misuse of numbers in debates about nuclear safety levels and later the misuse of scientific findings by climate change "sceptics" to delay climate action. The underlying idea is that a single number does not inform sufficiently and therefore, properties of numbers should not be ignored. On top of it, the developers' view on certain uncertainties associated with problem framings and assumptions can only be described through a qualitative connotation, since those uncertainties cannot be quantified. In the presentation we will first

demonstrate current main challenges in project risk management as collected in the broad literature from project management, product development and systems engineering fields. We will emphasize the importance of addressing these challenges more thoroughly in future risk analysis research. Second, we will demonstrate the successful application of the NUSAP scheme in the environmental and policy related research in the Netherlands. This approach has a great potential for application in the Nordic countries.

Lethal school violence: linking conflict, relation and intended victims

Charlotta Thodelius^a & Hans-Olof Sandén^b

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The lethal violence in school are mainly associated with the acts of multiple killings in the educational institutions, so called school shootings. These types of attacks are also challenging to prevent, since the perpetrator often are impossible to profile in advance. Instead of focusing on the perpetrator, the aim in this study is to highlight the relation between school, perpetrator and victim. By developing a typology of lethal school violence in a dominating European context, based on key concepts from previous research. The previous studies of the phenomena are challenged by both definition problems and data collection problems, and previous typologies are often weak in explanation if they are applied in another context. The results indicates that there are three types of lethal violence in the school setting, defined as motivated of interpersonal revenge, institutional revenge and societal revenge. By conducting a study exploring the schools role in the events instead of the offender, the aspects and importance of the school setting in the event becomes stronger and can become the ground for further prevention measurements related to school safety and security.

RISK AND DECISION MAKING

Monday 14 45-16 15, room Post 4

Chair: Ullrika Sahlin

A society of risk analysis in place of sound decision making?

Jonatan Gehandler

Technical Research Institute of Sweden (SP)

According to Fischhoff and Kadvaný “the foundations of risk lie in decision theory, which articulates concepts whose emergence must have begun with the first human thought about uncertain choices”. There is an obvious link between risk analysis and decision making since most decision theories are based on the idea that choice depends on the likelihood of various outcomes (consequences). Risk analysis has achieved a more and more distinct and separate role in relation to decision-making. This separation can be traced to a National Research Council (NRC) report in the 1980s that proposed a division between analysis and evaluation arguing that it would remove overt policy values from the assessment part and ensure scientific expertise without value judgments. An earlier NRC report warned that it is difficult and sometimes unwise to separate analysis from evaluation. Some members of the committee felt that setting an ideal of value-neutral reporting of uncertainties is so unattainable that it distorts the analytical process. Fischhoff et al. argue that, although a distinction between facts and values enrich risk debates, such a distinction is often impossible to attain. The objectivity of a fact is always contingent on a correct statement of the problem. Beliefs concerning “facts” shape our values and those values in turn shape the facts we search for and their interpretation. According to Fischhoff et al., the search for an objective method such as risk analysis is doomed to fail and may obscure the value-laden assumptions that inevitably will be made. The logic of decision-making is to choose the option that promises most of what you want. In current fire safety engineering and risk analysis practice examples of an overt focus on technical risk analysis and a poor or seemingly non-existent decision making practice are easy to find: great emphasis on finding an appropriate prescriptive imagined reference building (working on the wrong problem), failure to identify key objectives (e.g. to aim for an “acceptable” design rather than “saving as many lives as possible”), or to only develop and evaluate one design alternative). Many of these errors seem to contradict common sense and shouldn’t be so frequent in a professional discipline. It is argued that they can be reduced if the decision-problem is acknowledged and systematically dealt with. Have we created a society of risk analysis in place of sound decision making?

Decision-making on Uncertainty and Ambiguity Grounds or How to Choose Between Plague and Cholera: a retro perspective study of four threat situations at Swedish Universities

Per Gustafson & Fredrik Nilsson

Lund University

11 October 2015; Lund University urges all students and staff to stay home the next day after a threat at the JODEL app. 13 October 2015; Karlstad University gets an equal threat on JODEL, but decides to stay open. 23 October; Umeå University gets a similar threat.

24 January 2016; Örebro University choose to close the university next day according to a different JODEL threat. All three cases had different grounds to decisions-making, both in uncertainly and in ambiguity. The aim of this study is to describe the three situations and discuss how ambiguity can arise by too much or too little facts combined with disturbance while uncertainty is caused by diffuse interpretations of prior knowledge and experience. We will also discuss the experience of the ongoing risk communication from a university department view.

All decision-makers at universities need to be provided with right and trustable facts, to make the right decisions concerning the security of students and staff members. Uhr & Frykmer (2015) puts the question about what is the difference between a situation characterized by lack of information (uncertainty) and situations characterized by lack of transparency (ambiguity). Uhr & Frykmer (2015) states that the decision-makers have to make mental models of the situation they have to handle. Therefore, we unconsciously or consciously make a choice of what to include in the mental model that can represent the current reality at a given moment (Uhr & Frykmer, 2015). Schrader, Riggs & Smith (1993) states the difference between uncertainly and ambiguity, where solving under ambiguity involves fundamentally different tasks than problem solving under uncertainty. Ambiguity arises therefore by too much or too little facts combined with some disturbance while uncertainty is caused by diffuse interpretations of prior knowledge and experience. Media’s description of situations like this has a great impact on the security decisions and in the initial stage, the media’s presentation of the facts may be all that is available (Gustafson, 2015). The media can both be the cause of the situation as well as being a great help in communicating. This retrospective study of three threat situation at Swedish Universities will try to understand, explain and improve the management to future equal situations. In the future, decision-makers at universities will have better prerequisites to act on facts and take control on situations, instead of be forced to choose between plague and cholera.

The Precautionary Principle as a Heuristic Patch

Kim Kaivanto

Lancaster University

In this paper we attempt to recover an integrated conception of the Precautionary Principle (PP). The $\alpha = .05$ inferential-threshold convention widely employed in science is ill-suited to the requirements of policy decision making because it is fixed and unresponsive to the cost trade-offs that are the defining concern of policy decision making. Statistical decision theory -- particularly in its Signal-Detection Theory (SDT) variant -- provides a standard framework within which to incorporate the (mis)classification costs associated with deciding between intervention and non-intervention. We show that the PP implements preventive intervention in precisely those circumstances where the SDT-based model yields a (1, 1) corner solution. Thus the PP can be understood as a heuristic variant of the SDT corner solution, which in turn serves to patch the incongruity between the inferential practices of science and the inferential requirements of policy decision making. Furthermore, SDT's analytical structure directs attention to a small number of variables -- (mis)classification costs and prior probabilities -- as determinants of the (1, 1) corner solution. Subjective biases impinging upon these variables -- omission bias, protected values, and the affect heuristic in particular, moderated by the decision maker's industry-aligned (insider) or industry-opposed (outsider) status -- combine within SDT to successfully retrodict features of the PP previously considered puzzling, if not inconsistent or incoherent. These psychological biases do not exclude, and may in part reflect, the decision maker's deontological moral beliefs, or indeed social norms embodied in the nation's legal system (common law vs. civil law).

Forget about the carrots, look for the sticks: an alternative methodological approach to exploring risk

Chris Bennett

King's College London

In the field of risk research, investigation of risk perception and decision making is underpinned by three core assumptions: 1) that people are aware of threats and hazards and make assessment of the degree and imminence of risk of harm to themselves and/or others; 2) that this risk perception results in decision making and behaviour; and 3) that clues to understanding risk perception can be identified by investigating behaviour. The usual way of carrying out this process involves identifying a particular behaviour and trying to work out what stimulus (the perception of risk engendered by a specific threat or hazard) provoked that response. Fundamentally, this approach is based on a view of behaviour as incentivised or motivated by a preferred outcome (that of harm

reduction or avoidance). This presentation, based on work undertaken for a PhD thesis exploring the links between multiple risk perceptions and behaviour, offers an alternative approach to data analysis. It suggests that behaviour may instead be seen as the end result of a process which looks for, not so much the most desirable course of action, but that which is least undesirable. The basic premise of this alternative approach is that behaviour in response to perceived risk is conceptualised as originating not from a single threat or hazard but from multiple and often qualitatively different threats in the environment. A prioritisation process then leads to decision making and action on the most salient (imminent/important/dreaded) of those threats. Analysis of people's behavioural responses concentrates on determining the multiple threats perceived, how the severity and imminence of the risk that each threat poses is determined, and what options for action are rejected and why. The focus is thus on what potential outcomes are being avoided. Put more simply, the data analysis is concentrated on what people didn't do and why. The argument in this presentation is supported by data drawn from this PhD study and from previous work carried out by the author. It is hoped to demonstrate that this novel approach may be helpful when considering how people may assess and prioritise for action the many threats they perceive in their environment.

WATER MANAGEMENT, RISK ASSESSMENT AND GOVERNANCE

Monday 14 45-16 15, room Post 5

Chair: Lars Rosen

Risks related to cooperation and participation in water organisations and water management

Madeleine Prutzer & Linda Soneryd

University of Gothenburg

To increase the water quality in Europe the EU Water Framework Directive (WFD) was set to be implemented latest 2015. In addition to the objective of water quality to reach "good status" (i.e. good ecological, quantitative and chemical status and good drinking and bathing water) (EG 2000) there is an objective to get citizens involved and include various groups affected/ing the water quality in each river basin. The public shall be guaranteed the right to information and consultation, and all the interested parties shall be encouraged active involvement (EG 2000, Article 14, 1-2§). In this study we focus on the knowledge base and research on different forms of participation and cooperation; and in relation to this we have identified challenges that in the end pose risks to the goal of obtaining good water quality. The study is based on articles, reports, and material from authorities and water organisations. One challenge has to do with the organization of water management in Sweden which is based on a structure of pipes working more or less side by side rather than trans-sectorial. The County Administrative Board has started a work to overcome these problems, but still the top levels need to work more transboundary. The study also points out challenges related to the participation form and type of actors identified in the study. In many cases it seems to be a focus on information to and dialog with the public rather than involvement and influence by the public in the practical work such as the river basin management plans. The identified involved actors seem sometimes to represent a wide range of interest and actors, but some interests such as culture landscape is never mentioned. Some groups (industries and municipalities) sometimes dominate the process in a way which decreases the ambitions to increase the water quality. The risk connected to the organisation and actors are risks which constitute obstacles for the management and therefore compose a web of risks for good water quality and good ecological status. Sweden has ratified the European Landscape Convention, which accentuate a broader definition of the landscape and include both the nature and culture surroundings. One important fundament for the environmental work in Sweden is the Swedish Environmental Quality Objectives, which emphasis the involvement of culture landscape and outdoor life in. Based on those important directives the study proposes that knowledge about culture landscape

and outdoor life are important for the water management work.

Finding the balance between use and protection of water in a river catchment using the Relative Risk Model approach

Indrani Govender

Durban University of Technology, South Africa

The Relative Risk Model (RRM) is an approach in ecological risk assessment which, on a spatial scale evaluates the cumulative threats of multiple stressors to several management objectives. This study demonstrates the use of a RRM approach to guide water resource management by assessing the trade-offs between water use and protection scenarios in the uMngeni River Catchment in South Africa. South Africa is a water scarce country with limited water resources, which must be used equitably and protected to ensure sustainability. Water resource use is often excessive, and uneven availability of water resources adds to the challenges facing water resources management in the country. The uMngeni River Catchment, located along the east coast of South Africa, is economically important and contains a wide range of land use practices, ranging from urban to rural, and from formal to informal, with various challenges common to developing countries. The majority of the economically important water resource use activities in the catchment are totally dependent on the ecosystem services provided by the uMngeni River. To ensure sustainability, the balance between the use and protection of the water resources in the catchment, is urgently required. The authorities responsible for water resources management recently proposed Resource Quality Objectives (RQOs) to manage the ecological state of the uMngeni River. Here, the RRM approach was applied to identify management strategies to reach these objectives. The RRM was able to identify unacceptable risks to the aquatic ecosystem in the middle and lower reaches of the catchment. In addition, the large-scale flow reductions associated with impoundments have a relatively greater impact than the isolated habitat alterations associated with other stressors in the catchment.

Method development for decision-making processes aiming to optimize the selection and design of flood reduction measures within Gothenburg's hydro-model

Johan Nimmermark^a & Lars Rosen^b

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As a part of the ongoing climate change adaption programme, Gothenburg municipality has developed a hydro-model for the Gothenburg region. This model simulates the current situation and future events of the

rising sea level, changing precipitation patterns and increasing stream and river currents. The model provides important input in order to analyse and evaluate the most suitable climate adaptation measures in the city, both in the short and long-term perspective. Possible measures to prevent floods include various types of flexible solutions and levee barriers to protect against rising sea-levels and/or increased currents in streams and rivers. Other measures could be adaptation of streets, green areas etc. that increase the city's resilience towards heavy rainfall. The multitude of measures of preventing floods in different urban situations calls for a practical tool to evaluate measures. As a part of the hydro-model, generic GIS-data is available. This data is useful to perform a cost-benefit analysis (CBA) of different flood risk reduction measures. The aim of the current project is to attain a more practical and applicable decision model including the economic, social and environmental values of the studied measures. The updated model provides a holistic view of the options and solutions available to decision-makers and thereby enhance an optimized distribution of resources in the society

Evaluation and analysis of flood risk perceptions

Maria Giovanna Pagnotta & Chiara Biscarini
Università per Stranieri di Perugia

The conventional method of risk analysis (with risk defined as Risk = Hazard x Exposure x Vulnerability) does not allow for a pluralistic approach that includes the various risk perceptions of stakeholders, people within a given social system. Research suggests that newer forms of technology present useful options for building disaster resilience. A key task is risk communication as a two-way process that can be defined as "the exchange of information among interested parties about the nature, significance or control of a risk". The concept of risk is complex and it is difficult to communicate in ways that are convincing and that subsequently lead to effective decision-making. The traditional educational approaches have been increasingly questioned and have been considered as too linear and unidirectional. In fact, the communication process was often one way and assumed that the audience was an indistinguishable group of individuals with the same needs and values. This work provides an overview for authorities who wish to carry out flood hazard and risk assessments and who must develop a plan that is appropriate and feasible in the local context. Part of the problem in communicating risk in a convincing way is the lack of understanding of what the risk is and how it is perceived by the audience. We use primary data from in-person surveys, interviews and detections of the population of different local contexts to investigate the perception and the acceptability of flood risk. These analyses will be fundamental to acquire the basic knowledge used to develop the communicative

interventions. After that, communicative products, elaborated "ad hoc" such as two-step communications to the community and educational programs, are going to be arranged. Furthermore, acts of participated planning will be experienced with the active involvement of the citizens. The tools that will be used to strengthen people's risk awareness and motivate people to be prepared for an emergency case are based on flood risk maps with an ex post evaluation of the effectiveness of the communicative actions submitted. This combination of methods is applied to the Tevere River Basin. The river runs through the Italian capital and covers an area of about 17,500 km², our results also amplify the importance of risk information deficit models for understanding communication of flood risk.

SYMPOSIUM: NANOTECHNOLOGY AND RISK

Monday 16 45-18 15, room Brevsorterarsalen

Chair: Åsa Boholm

Nanotechnology deals with manipulating the nanometer scale, the level of single atoms and molecules. During the last decades nanotechnology has moved from laboratory science to consumer products. Accordingly there are also increased concerns from the public, policy makers and toxicologists that there might be undiscovered risks with the new technology. A problem with nanotechnology is that single particles act differently than in bulk, as the surface-to-volume ratio increases. Due to the minuscule size nanoparticles can also pass through cell walls and bio accumulate, which may be a health hazard. This symposium aim to discuss different aspects of risks associated with nanotechnology. Different interest groups have different agendas with the new technology and consequently perceive possible risks with nanotechnology differently. At one end you have nanoscientists and other scientific experts, such as toxicologists and environmental scientists, that on a daily basis deal with nanotechnology; then there are different intermediate groups, such as innovation advisors and entrepreneurs, which push science to become consumer products for the public. At the other end there is the public, who are the recipients of the novel technology. Perception of risk of nanotechnology, however, not only varies between different interest groups but also varies spatially. The consumers and developers of nanotechnology are not only in industrial societies but also in development countries, which have their own histories and practices. As the symposium will discuss, risk perception of nanotechnology is multifaceted and cannot be separated from the local contexts they are founded in. No matter if it is nanoscientists, entrepreneurs selling nanotechnology or general public in development countries.

Risk scoring and ranking of nanomaterials - a way forward?

Rickard Arvidsson, Anna Furberg & Sverker Molander

Chalmers University of Technology

Assessing environmental and health risks of chemical substances is a formidable challenge. Where they will be transported in the environment, which organisms will be exposed to them, and what the effects will be, are difficult questions to answer. To enable such assessments, multi-media environmental fate models and (eco)toxicological data are often employed in so-called chemical risk assessments. Nanomaterials (NMs), having at least one dimension in the nanometre size range, are a new class of substances, and their risks have proven to be even more difficult to assess. This is because models developed for conventional chemical

substances are generally not applicable to NMs. In order to still be able to say something about NMs' risks, less complicated risk scoring and ranking methods have been developed. We have conducted a review of these methods, identifying 20 in total. In these methods, risk is not assessed in terms of comparing exposure and effects as in conventional chemical risk assessment, but instead scored and ranked on ordinal scales, for example from 1 to 5 or from green to red. They often follow decision tree-like frameworks, where different hazard-related properties, such as whether the NM is bound to a surface and is in the form of bio-persistent fibres, are employed to score and rank NMs. Some methods assess NMs specifically, some assess products containing NMs, and some assess labs using NMs. Human health risks - in particular occupational health - is more often covered than are environmental risks. These methods provide easy-to-understand scoring and ranking of NMs. However, some methods are complicated to the extent that they rival the complicatedness of conventional chemical risk assessments. The use of ordinal scoring scales in risk assessment has also been questioned due to their subjectivity and mathematical limitations, which include that common mathematical operations such as addition and multiplication are strictly not allowed for ordinal scales. Ultimately, the question is to which extent such scoring and ranking methods can escape uncertainties related to the release, environmental fate and potential effects on humans and other organisms? However, it is clear that risk scoring and ranking can be used for screening assessments and thereby aid prioritization for more detailed assessments. Methods employed should be transparent, relatively simple and assure that factors included are cautiously selected to include important aspects of NM release, fate, exposure and effects.

Risk and responsibility in nanotechnological innovation as seen by innovation advisors in Swedish universities

Monica Lindh de Montoya,

University of Gothenburg

The last three decades have seen nanotechnology become increasingly well-known among the public, and research initiatives have proliferated in the hope that nanoparticles can be used to improve our lives and ameliorate our impact on the environment through new or improved products and processes. However, significant innovations are slow in being realized, and discussions of the possible risks associated with nanotechnological products, as well as their possible benefits, are ever present in the media. This paper examines the ideas concerning risk that are held by an occupational group responsible for assisting nanotechnological discoveries in their journey from the laboratory to becoming integrated into commercial products; either through the development of new

companies or via collaboration with existing market actors. The innovation offices attached to Sweden's main universities are tasked with promoting and assisting innovation in all areas of the university; and it is the advisors at these offices and at collaborating business incubators who, in many cases, are the first to meet and advise prospective innovators, often researchers, regarding the commercialization of their ideas for products that involve nanotechnological components. How do these advisors regard the possible risks of nanotechnology? Where do they see potential dangers? And where do they place the responsibility for avoiding or mitigating risk? These are some of the questions that this paper will discuss.

Perception of risk among scientists working with graphene

Mikael Johansson
University of Gothenburg

Graphene is often presented as a new hot material evolving from nanoscience. In 2010 two researchers got the Nobel Prize in physics for their success in producing, isolating and characterize graphene. Graphene is what is generally called a two-dimensional crystalline material. In laypersons term it is a carpet made out of carbon, one atom layer thick. Graphene is already used in touch-screens and transistors and future uses might be artificial limbs, bendable touchscreens, and stronger building materials. As with all new materials there might be health hazards associated with the new technology. This paper explores how scientists working with graphene perceive risks associated with the novel material. The study is based on ethnographic fieldwork at Chalmers Technical University in Gothenburg between April 2015 and April 2016. In total 16 scientists have been interviewed but the study also includes conferences, symposiums etc. where graphene researchers present their work to fellow researchers. In short, the scientists do not perceive any risks with graphene. If there are any risks they are in the manufacturing of graphene or in the disposal of graphene. Not in the material itself. A common reply among the scientists why graphene is safe is because it consists of carbon. An often used allegory is the pencil. Pencils have been used for a long time without any health issues and thus graphene is safe. It seems the scientists perceive graphene from two perspectives, one as a novel material when it comes to its uses but as something old when it comes to risk. From the scientists perspective what is new with graphene is not the material, which are carbon atoms, but the engineering thereof. In the same sense as clay turned into bricks are safe are carbon atoms turned into graphene safe. An understanding not necessarily shared with the public or politicians who seemingly perceive graphene as a new material with unique properties and possibly novel risks.

Travelling risks. Nanotechnology risks in India and South Africa

Koen Beumer
University of Groningen

This paper investigates the construction of nanotechnology risks in India and South Africa. Even though "risk" has widely spread as an organizing concept of governance, up to the point that we may speak of a world risk society, I argue that the way risks are constructed varies from place to place. Developing countries are particularly interesting in this respect. While they are increasingly exposed to modern technologies, they did not go through the particular form of modernization that is implied to precede the stage of reflexive modernization and often lack the institutional arrangements associated with first modernity. Hence it is unlikely that the construction of risks in developing countries followed a similar pattern as in reflexive modern societies. The construction of risks is investigated by focusing on the way that nanotechnology risks travelled from their European and North American places of origin. Risks were not an issue in India and South Africa when these countries started engaging with nanotechnology in the mid-2000s, despite the fact that by that time risks were the dominant concern in Europe and North America. Nowadays, however, risk is a prominent concern in both India and South Africa. The origins of risk discourses concerning nanotechnology in India and South Africa is traced by a combination of semi-structured qualitative interviews and in-depth document analysis. Over fifty interviews were conducted with key stakeholder involved in Indian and South African nanotechnology since the early days and a wide variety of publically available documents (including policy documents, speeches, institutional mandates, newspaper articles and cartoons) were analyzed. The results of this investigation are two-fold. First, highlighting the role of globalization in the construction of risks, the paper identifies various mechanisms by which risk discourses travel - these include high-level procedures such as OECD best practices and WTO trade agreements but also include more "mundane" mechanisms like NGO e-mail lists and international conferences where scientists from developed and developing countries meet. Secondly, the paper shows that the way risk issues are formed cannot be understood without attending to local meanings of science and society. Although in both India and South Africa risks have emerged as the dominant issue following their engagement with nanotechnology, and hence one could indeed speak of a world risk society, these risks have been given different meanings and they are dealt with in different ways. The construction of risks cannot be separated from local histories, meanings, and practices.

RISK POLICY: ACCOUNTABILITY, ACCEPTABILITY, THE ROLE OF RISK PROFESSIONALS

Monday 16 45-18 15, room Post 1

Chair: Henrik Hassel

Damned if you do, damned if you don't: rigidity and flexibility in safety policy

Johan Bergström

Lund University

At the last SRA Europe Nordic Chapter meeting I asked whether the resilience discourse is likely to end up in empowerment, responsabilisation or abandonment of citizens. My conclusion was that there are openings for all three possibilities and that responsabilisation seems to be a strong trend in today's increasingly securitized societies. For this meeting I would like to continue the discussion on a similar note, but more concretely by looking at what happens when the notion of resilience makes its way into actual safety policy. While the public European discussion has not yet transformed a merely ideological discussion on the need for resilience into concrete measures and policy; some high-risk organisations have come slightly further. One example, which I will also use in the presentation, is the most recent European Aviation Safety Agency (EASA) amendment addressing the safety issues (and content) of so called Crew Resource Management (CRM) training of air crews. This training amendment makes clear how crew behaviour can contribute to the resilience of the operating process (through mental flexibility and performance adaptation). I will conclude that the result of introducing resilience to a safety training curriculum introduces an interesting balancing act between on the one hand the need for rigidity and adherence to procedure and protocol and on the other hand flexibility and adaptation in situations where there is no set procedure. The critical question to ask becomes one of where this leaves the agent for whom the policy is targeted. With what confidence can she/he adapt beyond rules and procedures in an environment where rules and procedures are still the norm? How obvious can a situation be in terms of the applicability of procedures? The risk is that we have now created a regulatory environment in which there is always the possibility to hold agents accountable for either not adhering to procedure or too strictly adhering to procedure - an undesired outcome will always allow for either.

Explosive remnants: A risk governance challenge

Fredrik Johnsson

Lund University & the Swedish Defence University

In Sweden there are large areas contaminated with explosive remnants from unexploded ordnance on former shooting ranges and dumped ammunition in lakes and rivers. Defense cuts have led to the release of areas that are no longer needed for military purposes. A complete elimination of the contamination is normally not possible. Instead, remediation measures need to be taken on the basis of what constitutes an acceptable residual risk in relation to the new usage. A complicating factor is a risk picture composed of several fundamentally different parts. The basis is the safety aspect, i.e. the risk that individuals or property will be harmed. Additionally, both environmental impacts and security aspects have to be considered. Several governmental agencies are involved in the handling but none has the designated overall responsibility. Their respective roles imply different rationales to manage the risk, creating conflicting interests. The problem is surrounded by significant uncertainties. Scientific data for both the probability for an adverse event and the consequences thereof are lacking. Instead confidence is given to expert assessments; however, studies indicate major disagreements among clearance experts. The problem is not unique for Sweden. Several countries have explosive remnants from former conflicts or defense related activities. The technical problem may differ; however, the fundamental questions are the same. What is an acceptable risk from a societal perspective? How can risks from explosive remnants be analyzed and communicated to decision makers? International cooperation is desirable to utilize existing knowledge and to get similar criteria. A risk based approach that considers the different risk types, accounts for the uncertainties and provides necessary decision support to stakeholders is needed. A doctoral project has been initiated in collaboration between Lund University and the Swedish Defence University. The research is focused on the development of a risk management concept for the release of areas contaminated with explosive remnants. A scoping study is ongoing to map existing knowledge and identify research gaps on this topic. The considerable state actor involvement implies that both academic and grey literature has to be included. In the presentation challenges will be discussed from a risk governance perspective and initial findings of the scoping study will be presented. Several other threats to our modern society have a similar complexity, significant uncertainties and affect multiple societal functions. A risk based approach to explosive remnants could be a basis for generalization to other fields of application.

Evidence based and risk informed policy making in Europe - what are the possible consequences of Brexit?

Ragnar Löfstedt

King's College, London

This presentation, based in part on 25 interviews with leading regulators and policy makers in Europe, will focus on how evidence based policy making in the European institutions will possibly be effected by Brexit. Among the issues raised is the fact that the UK is known to be a nation that promotes science based policy making more than others, the concerns that UK based scientists may now be ignored by the Brussels machinery and whether the chief scientists of European agencies who happen to be UK citizens will now be replaced. In conclusion the author will make a number of policy recommendations on what is now needed going forward as to ensure that policy making in Europe becomes increasingly science based

Some reflections on how it is to be a young risk researcher

Torbjørn Bjerga

University of Stavanger

With a recently finished PhD in risk management, I have learnt a lot about risk, but what have I learnt about doing risk research? In the talk, I intend to share some of my thoughts on where ideas come from, how some of them become published papers, and some of the challenges in doing risk research.

RISK ANALYSIS: APPROACHES, METHODS & CONCEPTS – PART I

Monday, 16 45-18 15, room Post 4

Chair: Ullrika Sahlin

An Investigation of Evaluations of Risk Analysis Methods

Björn Nevhage^a & Misse Wester^b

^a *FOI Swedish Defence Research Agency and KTH*

^b *Lund University*

Risks threaten humans in various ways and may lead to disastrous consequences if manifested. For instance, cyber-attacks have shown the potential devastating effects that insecure or manipulated information can lead to. In order to identify and manage such risks, Risk Management Systems are usually needed, which includes conducting risk analysis. There are many different methods that describe how to conduct a risk analysis, but the task of selecting the most suitable methods can be both time-consuming and daunting. One way of facilitating this task is to compare existing evaluations of different risk analysis methods. However, in order for an evaluation to be useful, it needs to be of high quality. We propose five specific quality criteria that sound evaluations of risk analysis methods need to fulfil. We argue that an evaluation needs to explicitly state its purpose or aim, method, selection of risk analysis methods, central concepts and evaluation parameters. We investigate whether these criteria are met in evaluations of risk analysis methods in the domain of information security. The investigation shows that less than one-third of the selected evaluations meet the proposed criteria. This means that two-thirds of the evaluations are not transparent enough to be able to assess their quality; this in turn raises the question of the extent to which the scientific foundation for evaluations of risk analysis methods is unsound. Further research is needed in order to more fully address this question and contribute to the development of sound evaluations for risk analysis methods

Experiences in oil accident risk analysis

Sakari Kuikka

University of Helsinki

The export of Russian crude oil has expanded significantly during the last 20 years, and growth will likely continue in the future. This has created a risk of serious oil spills, as one tanker can include more than 100 000 tonnes of crude oil. Gulf of Finland is prone for accidents due to archipelago areas and the crossing passenger traffic between Helsinki and Tallin. Also the ice cover in wintertime can create an important source of risk. Modelling of risk in this kind of case is not simple. The aim of the risk management is not to see

the data, which creates challenges for analysis. The past oil accidents have provided data and estimates, but these are rarely in such a format that they could be used in a risk analysis carried out for Gulf of Finland. There has been a clear increase in overall traffic, but at the same time the frequency of accidents has decreased, likely due to better adaptation of best practices in the vessels. Our research group has applied Bayesian statistics for several reasons, most important being the fact that Bayesian inference can utilize prior information from previous analysis or from expert knowledge. This offers a learning possibility, if results of one accident are published in such a format that coming oil accident impact analysis can utilize the results from previous accidents. Bayesian inferences offers also all parameter values in a probabilistic format, which offers a many-sided possibility to assess various variables in a decision analysis setting. Moreover, the long history of Bayesian decision analysis offer excellent tool for risk management.

Statistical analysis of extreme sea water levels at the Falsterbo Peninsula, South Sweden

Caroline Fredriksson

Lund University

Falsterbo Peninsula on the south coast of Sweden is low-lying and exposed to flooding. In 1872 the extreme storm surge Backafloden caused large devastation on the Swedish, Danish, and German coasts in the South Baltic Sea. For the Falsterbo Peninsula, the peak storm surge level is estimated to have been 240 cm above normal. If a similar event happened today, the consequences would be far worse, as extensive flood prone areas have been developed since 1872. Due to climate change, the mean sea level is expected to rise and increase the flood risk unless preventive measures are taken. This project discusses the occurrence of extreme sea levels at the Falsterbo Peninsula and design levels for coastal protection. Sea level observations from Skanör, Klagshamn, and Ystad are analysed with General Extreme Value and General Pareto Distribution models to estimate sea levels with return periods of 100-500 years. The estimated return period of the 1872 event, based on these models, resulted in an unrealistically low probability. To better understand the statistical behaviour of extreme storm surges of this magnitude on the Swedish south coast, development of more advanced statistical models will be required.

Ruling out risks based on implicit value judgments: lessons from non-inferiority trials

Sten Anttila

Lund University

Harmful effects cannot be “ruled out” without explicit or implicit value judgements regarding clinically

relevant thresholds. We argue that transparency is needed, as in the case of non-inferiority trials, and that CONSORT and PRISMA statements should be revised accordingly. A systematic review illustrates our arguments.

WILDLIFE NATURAL RESOURCE MANAGEMENT: GOVERNANCE, CHALLENGES AND CONCEPTS

Monday, 16 45-18 15, room Post 5

Chair: Annelie Sjölander-Lindqvist

Political leadership and accountability in the governance of large carnivores

Katarina Hansson^a, Aslak Litleskare Borge^b & Annelie Sjölander-Lindqvist^b

^a Umeå University

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Around the world, governing large carnivores has proven to be a difficult task because certain stakeholder groups (hunters and farmers) are skeptical towards their presence in the landscape, debating how the long-term survival of large carnivores affects the prospects for continued livestock husbandry and hunting interests. Many countries have therefore designed and implemented various forms of participatory approaches, assuming that the inclusion of stakeholders and varying degrees of power sharing will lead to legitimate governance of large carnivores. However, it is still largely unclear how such participation affects the governance system in terms of democracy and legitimacy. In this paper, we explore this issue through the case of large carnivore management in Norway and Sweden. The two countries have adopted different decentralized models to improve and extend collective concern for wildlife and to seek acceptable outcomes. Both have incentivized wildlife committees to increase public involvement in the management of large carnivores. In Sweden, the committee is composed of politicians and stakeholders, while in Norway the committee only comprises politicians. This opens up for comparison. The purpose of this study is to investigate if and how the composition of the wildlife committees affects legitimacy and the representative democratic system as a whole with a particular focus on the role of politicians. Based on in-depth interviews with members of the committees, regional administrations and leadership, state agencies and stakeholder organizations in both countries, it will be discussed how the role of the politicians within these committees are problematic. It seems that politicians in both countries, to a larger extent than other members, have double roles in that they are both state officials and representatives of a political interest. This creates difficulties in power relations and accountability among actors and between levels. The main conclusions from this study are that the mechanisms for accountability need to be strengthened, and the election of representatives in these committees need to be carefully designed. Furthermore, our study emphasizes the need for more comparative research in order to increase our knowledge both on how to measure and how we can understand the effects on democracy and

the legitimacy of natural resource decision making. Key words: democracy, governance, large carnivores, legitimacy, politics

Collaborative practice and interaction: Generative moments for trust, credibility and commitment in Swedish large carnivore management?

Madeleine Prutzer, Serena Cinque & Annelie Sjölander Lindqvist

University of Gothenburg

Over the last decades, inducements for public involvement in resource management have increased to deal more effectively with questions concerning contested values. This is in line with different political directives and agreements (e.g. the Convention on Biological Diversity, ratified by Sweden in 1993). Common to the agreements is the understanding that for natural resource management to be sustainable, the lowest functional level should be acknowledged. The matter of stakeholder rights and interests should be recognized as to allow for the development of a wise and fair management of land, water and living wild resources. This has led to the restructuring of the governance and management of natural resources from top-down, single-function and science-based with a low degree of public involvement to new and more flexible approaches where the inclusion of the knowledge and values of lower-level actors constitutes an important component. This, as suggested by natural resource politics, is necessary to reduce the level of local conflict and yield consensus on the contested matters of large carnivore presence. Often, the implementation of such measures is staged against the backdrop of conflicts regarding how to manage, who should be allowed to have a say in the management process, and how to design regulatory renewal to resolve previous failures of the management and their inadequate responsiveness to local circumstances and values. In this paper, we use the empirical example of Swedish wildlife management and the implementation of the Wildlife Management Delegations, initiated in 2009 to promote dialogue and stakeholder involvement in the of the recovery of protected large carnivores, to explore whether the reform have helped resolve polarization and inspire mutual agreement. Whether the implementation of the delegations, consisting of a broad spectrum of stakeholders and politicians, has been able to inspire increased legitimacy through the building of integrative and mutually-shared visions to avoid local criticism of the value of state action as a whole, will be discussed. Trust for, credibility in, and commitment regarding the implementation and the function of the delegations, serve as entry points in the exploration of how the delegate members' and public managers' understand the reform, with particular emphasis on the ensuing change in decision making and decision ability.

The dilemmas of public managers in moving collaboration forward: the case of Wildlife Management Delegations in Sweden

Serena Cinque

University of Gothenburg

Collaborative initiatives in natural resource management are frequently adopted by Governments to increase the participation of local communities in order to achieve sustainable and legitimate outcomes. The reason is based on the assumption that through collaboration across state and organizational boundaries, agencies will be able to reducing uncertainty and deal more effectively with issues assembling vast and conflicting interests. The governance of wildlife presents such a case. During the recent decades the Swedish wolf population has rapidly increased. The latest survey suggests that there are around 340 gray wolves living wild in Sweden, currently growing at a rate of about 21 percent annually. As wolf numbers increase, the animals are moving closer to human territory, and conflicts are on the rise as farmers and hunters feel that decision-makers have left the consequences of wolf recovery unaddressed. To overcome these criticisms and improve trust and credibility, the Swedish government delegated to the regional authorities the responsibility to organize, coordinate and translate into action the work of stakeholders-based collaborative groups (Wildlife Management Delegations). Several studies have pointed out that public managers who work collaboratively are frequently thwarted by dilemmas that they have to cope with in order to achieve their tasks. As the collaborative settings are highly decentralized, there is frequently ambiguity about which the partners are, how the process should be conducted and what are the goals to be achieved. This paper investigates the role of administrative leadership in moving the collaboration process forward focusing on how public managers responsible for the Wildlife Management Delegations solve the tension between multiple tasks, different goals and conflicting interests (i.e. collaborative dilemmas).

Complexity thinking and ecostructure policy: Understanding how bioeconomy becomes

Juha Hiedanpää

Natural Resources Institute Finland

Bioeconomy is one of the most hopeful catchphrases of our time. It forces us to consider the use of natural resources through the lens of circular economy, greater resource-efficiency and nature-based innovations. The attempt to reorganize societies in response to something that is still becoming consists of immense possibilities, uncertainties and risks. In my presentation, I will argue that ecostructure is a good concept to think with when identifying and diagnosing the uncertainties

in a societal shift towards bioeconomy. The concept of ecostructure was introduced by David Colander and Roland Kupers in their *Complexity and the Art of Public Policy: Solving Society's Problems from the Bottom Up* (Princeton, 2014). Ecostructure refers to a complex contingent institutional (incentive) structure that constitutes an environment for particular economic and social activities. Within ecostructure the bottom-up solutions and top-down interventions take effect and produce their intended results and unintended consequences. They hold that complexity thinking and complexity sciences are necessary in gaining robust understanding about the conditions of these solutions and intervention and their foresighted and surprising outcomes. This is so because even carefully planned collective actions disturb the established status quo, i.e. the set of rights, property rights, legal and social norms, habits and practices in unknown ways. In my presentation, I will expand the conception of ecostructure offered by Colander and Kupers to fit it better with bioeconomy policy requirements and discuss in depth how this eco-ecostructure thinking might contribute to policy practice.

SYMPOSIUM: DRINKING WATER RISK MANAGEMENT

Tuesday, 9 00-10 30, room Brevsorterarsalen

Chair: Rickard Arvidsson

The supply of drinking water is of primary importance in society. Public health and economic development are examples of factors that rely on access to and the quality of drinking water. However, drinking water supplies are exposed to a wide range of risks. The water source may be contaminated, failures may occur in the treatment plant or the supply of treated water may be interrupted due to pipe bursts or other failures in the distribution system. Furthermore, climate changes, societal development and emergence of new contaminants constantly present new risks. The vital importance of a reliable and safe drinking water supply makes efficient risk management necessary for water utilities. Risks must be assessed and possible risk-reduction measures evaluated to provide relevant decision support. Furthermore, risks must be communicated and different organisations and stakeholders must collaborate to implement water safety measures. This symposium is focused on the risk assessment and decision-making process within the drinking water sector. The aim is to discuss what constitutes a useful risk assessment, how the results can be used as decision support and what is required for successful decision-making. This also includes discussions concerning how drinking water risk management is organised. The symposium will include presentations illustrating the importance of proper risk models that can be used to understand inherent risks and limitations in water supply systems, as well as models used to calculate risk levels in detail. Further, presentations will deal with how the results transfer to decision support that illustrates the societal benefit of possible measures. Finally, the symposium addresses general questions concerning how risk management is organised and handled by decision-makers and other actors that are involved in drinking water risk management.

Risk-based decision analysis of water safety measures from source to tap

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Risk assessments aim to identify and analyse possible hazards so that well-informed decisions can be made. The importance of assessing risks in drinking water systems is emphasised by many, e.g. by the World Health Organisation (WHO). In drinking water applications several different risk assessment methods can be used but they must be combined with relevant decision analyses to provide useful decision support. Economic resources are limited and economic

evaluation of mitigation measures is therefore an important part of the decision support. Examples of economic decision analysis methods are cost-benefit analysis (CBA) and cost-effectiveness analysis (CEA). The WHO provides a comprehensive description of CBA applications to small water supplies. However, quantitative risk assessment methods are typically not combined with CBA and no common approach for how to do this for entire water systems, from source to tap, exists. The research project Risk-Based Decision Support for Safe Drinking Water (RiBS), funded by the Swedish Water and Waste Water Association, aims at developing a CBA model for economic analysis of risk reduction (improved water safety) measures in drinking water systems, from source to tap. The project is directed at microbial risks and main objectives are to: (1) develop a decision support framework, integrating microbial risk assessment and CBA; (2) identify decision-problems most relevant to water utilities when managing microbial risks; (3) develop a microbial risk assessment model for the entire system, thus including the potential pathogen load on raw water sources and expected public health impact given used water treatment and distribution conditions; (4) examine the effect of possible risk reduction measures; and (5) value the expected risk reduction (benefit) against the cost for implementing and maintaining measures. The CBA is divided into a producer perspective analysis and a societal profitability analysis. The societal profitability analysis takes into account consumers' risk preferences. The risk-based decision support framework will be presented as well as major decision-problems identified by water utilities. An example will be used to illustrate how integration of microbial risk assessment and CBA can be used to compare mitigation measures that reduce microbial risks posed by agriculture activities and by wastewater systems in catchment areas.

How local governments solve the dilemma of transboundary risks: the case of Drinking water in the Göta Älv water system

Anna Bendz

University of Gothenburg

Drinking water is necessary for the existence of human life. In some parts of the world it is a scarcity, while in other parts readily available in abundance. Even in the latter case, clean drinking water is not to be taken for granted due to the threat of several possible risks. The responsible actors must carefully manage risks such as climate change, polluting or sabotage. If risk management fails, the consequences could be severe. Risks in relation to drinking water often have a transboundary character, and management demands co-operations and interactions between a multitude of actors and therefore constitutes a growing challenge for policy makers. In Sweden, the provision of drinking water is a responsibility of local municipal authorities. The municipalities are by law obligated to organise and

monitor the flow from raw water sources to the consumer's tap in a way that guarantees safe drinking water supply for their residents. This responsibility means that they have to deal with potential risks, by identifying them and taking necessary measures to prevent them. Some responsibility is also located on the regional level, where the county boards for example monitor and coordinate the municipalities' work. In addition, a number of national authorities are involved. The organisation and risk management of drinking water is thus a complicated web where the responsibilities are divided among several actors on multiple levels. This presentation focuses on how local decision makers manage risks that threatens the safe provision of drinking water. How do they perceive their responsibility for managing risks? Do they cooperate with other actors (and in that case, which ones?) in order to deal with risks in an effective way? The study uses a rich material consisting of interviews with local politicians and public administrators in the seven municipalities that draws drinking water from the Göta Älv area of Sweden.

Probabilistic modeling of water supply safety measures in drinking water systems in arid areas

Andreas Lindhe^a, L. Rosén^a, P-O. Johansson^b & T. Norberg^a

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^b Artesia Groundwater Consulting, Sweden

Drinking water systems are exposed to risks of different kinds. The systems typically include several subsystems and undesired events may thus occur in many different parts and cause harm. In order to manage these risks they must be assessed in suitable ways and possible safety measures must be evaluated. In order to avoid overlooking interactions between subsystems and events and to minimise sub-optimisation of risk-reduction measures the entire supply system should be considered. The development of models that can simulate future water supply scenarios is a powerful way to provide important decision support. Here, the problem of water scarcity in Botswana is used as an example to illustrate the development and use of such a model. This type of model is applicable also to other problems and regions. Water scarcity is a major challenge for sustainable development in many regions and calls for integrated water resources management. The arid and semi-arid climate of Botswana provides a situation with low rainfall and high rates of potential evapotranspiration, which results in low rates of surface runoff and low rates of recharge to groundwater. The hydrological conditions and a continuously increasing water demand result in a water stressed situation. To cope with this situation Managed Aquifer Recharge (MAR) is considered, among other measures, to increase available water quantities for water supply and to improve water quality. To evaluate the possibility for increased water supply safety a probabilistic and

dynamic water supply safety model was developed. The model uses statistically generated time series of source water availability, together with dynamic storages in dams and aquifers and water demands, in order to simulate the magnitude and probability of water supply shortages. The model is capable of modelling future water supply scenarios, taking into account the dynamic variations over time of water availability and demand in the supply system along the so called North-South Carrier distribution system in eastern Botswana. The model simulates the system and its connected components from 2013 to 2035 (23 years), using one-month time steps. The study assesses the need for increased water supply safety and if large-scale MAR can provide the desired increase in water supply safety. The development of the water supply safety model, the results achieved in this project, and future developments and applications of the model will provide important support to decisions on more efficient and sustainable use of water resources in Botswana.

Experts' understandings of drinking water risk management in a climate change scenario

Åsa Boholm & Madeleine Prutzer

University of Gothenburg

The challenges for society presented by climate change are complex and demanding. This paper focuses on one particular resource of utmost necessity and vulnerability to climate change: namely, the provisioning of safe drinking water. From a critical perspective on the role of expertise in risk debates, this paper looks at how Swedish experts understand risk to drinking water in a climate change scenario and how they reason about challenges to risk management and adaptation strategies. The empirical material derives from ten in-depth semi-structured interviews with experts, employed both at government agencies and at universities, and with disciplinary backgrounds in a variety of fields (water engineering, planning, geology and environmental chemistry). The experts understand risk factors affecting both drinking water quality and availability as complex and systemically interrelated. A lack of political saliency of drinking water as a public service is identified as an obstacle to the development of robust adaptation strategies. Another area of concern relates to the geographical, organizational and institutional boundaries (regulatory, political and epistemological) between the plethora of public actors with partly overlapping and sometimes unclear responsibilities for the provisioning of safe drinking water. The study concludes that climate change adaptation regarding drinking water provisioning will require a new integration of the knowledge of systemic risk relations, in combination with more efficient agency collaboration based on a clear demarcation of responsibility between actors.

LOCAL LEVEL: CRISES, RISK AND EMERGENCY MANAGEMENT AND FRAMING

Tuesday, 9 00-10 30, room Post 1

Chair: Johan Bergström

Integration of risk analysis and continuity management: using action research in a municipal context

Henrik Hassel

Lund University

Each municipality in Sweden has a legal requirement to perform a risk assessment of its entire geographic area. Municipalities are facing various types of challenges in their efforts of satisfying this requirement. While smaller municipalities typically face a lack of competence and/or resources to conduct such comprehensive assessments, larger municipalities often primarily struggle with getting their various departments to perform department-specific assessments in a consistent way and to deal with the complexity associated with compiling the information from these analyses into a single analysis. In this presentation we draw on our findings from action research undertaken in the municipality comprising Sweden's third largest city. The presentation particularly focuses on how the research group followed, and actively participated in, the efforts of satisfying the legal requirement of conducting both a risk assessment and to perform continuity management (although the latter is not a strict legal requirement). Such a process had previously been initiated by the municipality but not yet successfully implemented in its different departments. A main problem, experienced by the representatives in the departments, was that the risk assessment and continuity management had been conducted as separate, isolated steps, although there are several synergies that could potentially be exploited. This problem was addressed by revising the existing risk assessment method adopted in the municipality through an integration of the risk analysis and continuity management steps. Another challenge that was addressed related to whether the municipal departments should perform all steps of the assessment or if some steps, e.g. the hazard identification and estimation of likelihoods, should preferably be performed by other actors and simply provided as an input. While the staff at each municipal department typically possess very valuable knowledge of the working practices and potential consequences of disturbances, it was questioned whether they actually possess the required knowledge about which hazards that may occur and their associated likelihoods. Assessments may constitute a better basis for decisions if this information was provided to the departments. On the other hand, performance of these steps could give rise to other positive effects in the municipal

departments, such as increased risk awareness, stimulated learning, etc. It is concluded that the findings from this study may be of high value to practitioners facing similar challenges or researchers interested in delving into the practical challenges related to risk assessment in the public sector.

RVA guidelines and implementation in municipalities

Mette Leonhardsen, Odd Einar Olsen, Kjell Harald Olsen & Aud Solveig Nilsen

University of Stavanger

The municipalities play an important role in Norway regarding societal safety. Risk and vulnerability analysis (RVA) should provide a basis for implementation of measures to reduce risk and vulnerability. RVA as a tool is not familiar to everybody, and for the municipalities that do not have qualified personnel to conduct the RVA's, a variety of guidelines are available. Firstly, the Norwegian Directorate for Civil Protection has published several guidelines founded on formal regulation of societal safety. Secondly, Norsk Standard, a Norwegian standardization organization, has developed a standard (a guideline) for risk analysis for several sectors. Thirdly, several industries follow their own guidelines. Based on document-analysis the paper examine how guidelines developed for Norwegian municipalities encompass issues that can improve the chance of implementation. A decision do not reduce risk, but the implementation of decisions can. How do the municipalities implement results from RVAs, and why? We also look at how municipalities chose and use guidelines. Data is collected through interviews in three Norwegian municipalities. The adherence to guidelines seems to vary. The municipalities can chose which guideline to follow, if any, but are the impact of the choice considered? The theoretical perspectives are planning theory, risk governance and new institutionalism.

Local social services in times of disaster: Comparison of the Nordic countries

Ingibjorg Lilja Omarsdottir

University of Iceland

Due to the increasing number of disasters, societies and communities are increasing preparedness and prevention. There is a shift from traditional thinking on national security to the importance of national resilience. This is reflected in disaster research where emphasis on preparedness and enhanced societal resilience is increasing. Moreover, the literature addressing the importance of local social services in relation to risk management and disasters is growing. The Nordic countries are known for their extensive welfare systems and local social services is an important component of the Nordic welfare systems. Despite a growth in disaster research within the Nordic countries,

few studies have focused on the role of local social services in this context. The paper asks if and then how the role of local social services are embedded in the emergency management system in the five Nordic countries. First, the paper provides state of the art on the issue providing an overview of the literature about the role of social services. The legal obligation of the emergency management system and social services are examined in order to provide the necessary data for the policy analysis conducted. The main characteristics of the services are examined in order to provide a comparative picture of the institutional organization in each country. The models of social services in relation to disasters (risk reduction, response and recovery) in each country are compared in order to tell if there exists a Nordic model of local social services in connection with disasters, or if the countries have taken different paths in relation to policies on the role of local social services in times of disasters.

Framing Crisis

Erna Danielsson

Mid Sweden University

The aim of this study was to examine how the framing of a crisis directs the actors' understanding of the situation and identifies the responsible and legitimate actors. This research is based on interviews with personnel from a fire brigade (incident commander) and from a school (headmaster and teachers) that experienced a devastating fire. The interviewees were asked about their actions during the fire, and the results indicate that the informants framed the crisis similarly, specifically, as a school fire. From this perspective, the incident commander and the headmaster became the crisis managers, and the teachers and school children were perceived as the victims, i.e., people who are cared for. However, from the narratives of the teachers, a new frame emerges that widens the view of crisis management, as they were the ones who normalised the functions of the school. That said, this view is not supported by the actors.

RISK ANALYSIS: APPROACHES, METHODS & CONCEPTS – PART II

Tuesday, 9 00-10 30, room Post 4

Chair: Ulrika Sahlin

Towards application of risk management technique in building performance design

Krystyna Pietrzyk

Chalmers University of Technology

The presentation points out the role of risk analysis methodology in the broad field of design for sustainable development with focus on building performance design under uncertain environmental load. The author gives a holistic and systematic approach to the handling of the problem of uncertainties in the predictive modelling to support decision making at the design stage. The author indicates system theory as a proper theoretical tool to accomplish a safe design. Building/urban design has to ensure structural stability and well-being of people both indoors and outdoors under limited negative impact on environment for example in the form of excessive energy use. It includes urban, building (form, façade and material) and installations design in relation to the environmental, climatic and cultural conditions of the place where the building is constructed. Climatic conditions, human activities and criteria for human comfort are random in nature. Even the properties of structures are comparatively uncertain. Probabilistic risk analysis appears as the appropriate approach to account for those uncertainties when evaluating building/environment system performance. Eventually, the results of predictive modelling of the system performance in terms of probability of poor-performance (failure) or reliability (complement to the probability of failure) can support decision making concerning the choice of design/retrofitting strategies. A general idea of Probability-based design in application to the serviceability of the building/environment system performance gives opportunity to allow the estimation of system reliability at the design stage. It enables a quantitative comparison between alternative designs. Reliability of system performance is described in terms of the probability of exceeding the critical values by the physical measures as a result of the changes of physical state of a building due to variations of climatic, structural or serviceability parameters. The limit state approach based on demand-capacity model has been proposed. The method is presented and illustrated with examples (with building physics issues in focus). The existence and commonality of probabilistic tools enables Risk-based design, the application of risk management framework for rational decision making in design project. It becomes a useful tool to cope with possible failures by decreasing the object/system vulnerability to hazards and eventually preventing or

reducing property damage. The presentation is based on the results of the research project sponsored by the Swedish research foundation FORMAS as well as on the invited presentations for IEA Annex 55: Reliability of Energy Efficient Building Retrofitting Probability Assessment of Performance and Cost (RAP-RETRO) .

Operational implications of accepting and denying whether a true value of risk exists

Igor Kozine

Technical University of Denmark

It is suggested to look on probabilistic risk quantities and concepts through the prism of accepting one of the views: whether a true value of risk exists or not. It will be argued that discussions until now have been primarily focused on closely related topics that are different from the suggested one. In general, the values of risks are not known precisely and the analyst has the option to consider that convergence to a precise value of risk is possible in the limit. That is, the true value exists but due to limited time, resources or other limitations in assessing probabilities it is not known at the time being. Following this prospective, a single probability distribution over a set of possible outcomes can be chosen that is tacitly regarded as a “true” or “ideal” model of uncertainty. After that, computing other probabilistic risk measures of interest becomes a rather easy mathematical exercise. In fact, accepting the true-value view does not make the adherent use only a single probability distribution as a model of uncertainty. One can introduce a class of distributions in which a particular member is considered a plausible candidate to be an ideal distribution. Then, a risk quantity of interest can be computed for each distribution-candidate and after that, lower and upper bounds can be constructed as assessments of risk. This is a robust way of compensating for ignorance that studies the sensitivity of derived numerical values to variations in probability distributions. The completely different (the no-true-value) view is to consider again a class of probability distributions, but to regard that no member of the class can be a true model of uncertainty. Only the whole class itself - viewed as an indivisible entity - is a reasonable model for ignorance. Each single member of the class is not a reasonable model, because no single distribution can model ignorance satisfactory. This view allows computing only interval-valued measures of risk, the interpretation of which is different from that based on the ideal uncertainty model. This approach opens up other ways of deriving the assessments of the bounds. The operational consequences of adhering to one of the views will be examined and contrasted. Differences on how and what probabilistic measures can be assessed and how they can be interpreted appear tangible. In particular, this concerns confidence intervals, the use of Bayes rule, models of complete ignorance, hierarchical models of uncertainty, assignment of probabilities over possibility

space and interpretation of derived probabilistic measures. Behavioural implications of favouring the either view will also be briefly discussed.

The Society for Risk Analysis’s new risk glossary

Ullrika Sahlin

Lund University

The Society of Risk Analysis recently published a new glossary on risk related concepts (<http://sra.org/news/sra-develops-glossary-risk-related-terms>). A feature of this glossary is that it separates between risk as a concept and how we choose to describe it. Consequently, it allows different descriptions of risk as long as they capture the two basic features uncertainty and impact in relation to something humans value. Furthermore, uncertainty is seen as an element of risk. I will introduce the SRA risk glossary and present what the Nordic Chapter of SRA is doing to make it more accessible to a wider audience. The purpose of this talk is to encourage a discussion. Do we need this risk glossary? Can a wider perspective on risk, such as the one put forward by the SRA, influence the management of uncertainty in both research and decision-making?

FINANCE, INSURANCE AND ECONOMIC UNCERTAINTY

Tuesday, 9 00-10 30, room Post 5

Chair: Juha Hiedanpää

Risk Appetite Frameworks & Professional Principles - Accounting Quality and Audit Quality in the light of Financial Stability

Asgeir B. Torfason

University of Iceland and University of Gothenburg

The quality of accounting and auditing has gained increased attention after the global financial crisis. There are compelling reasons to see the lack of this quality having increased the damage from the crisis and that impairments, non-performing loans and other credit losses in the banking system play an important role in the resolution. The International Auditing and Assurance Standards Board, IAASB, issued in 2014 a Framework for Audit Quality focused on key elements that create an environment for audit quality. This framework influences the auditing of financial institutions' financial reports. Preconditions for good audit quality come from the quality of accounting. The International Accounting Standards provide Conceptual Framework that needs to be interpreted with regards to new dimensions of credit, especially regarding the growth and value reduction of loans that are banks' main assets. Post-crisis development has for example resulted in new International financial reporting standard, IFRS 9, to replace the International accounting standard, IAS 39, regarding financial instruments. The change has significant influence on the banking industry and professional financial services. These new standards of auditing and accounting influence risk management in banks in general and in particular the work of financial supervisors regarding guidelines (for example European Directives and relevant guidelines for Internal Governance) as well as globalized regulation like Basel 3 rules for banks' liquidity, funding and leverage. The new frameworks are affecting the operations and reporting of financial institutions, and commonly aim for better financial stability after the crisis. This research project investigates the potential influence of the different new frameworks on regulation of governance and risk control in banks. The study uses the perspective of professionalism on banks management and the perspective of corporate culture in supervision of banks. The approach departs from two standpoints. First, it is based on the Principles for an Effective Risk Appetite Framework issued in 2013 by the Financial Stability Board (FSB), the international body monitoring the global financial system. Second, it is based on Guidelines for the Supervisory Review and Evaluation Process (SREP) from the European Banking Authority (EBA) for assessing the organization and treatment of

risk. This regards the analysis of business models, assessment of internal governance and control arrangement, assessment of risks to capital and liquidity and adequacy to cover these. Conclusions are not yet reached, as this research looks at implementation process that is ongoing until 2018.

The role of financial expertise in investors' risk taking and ability to forecast risk on financial assets

M. Jansson, C-C. Trönnberg & S. Hemlin

University of Gothenburg

This paper investigates the role of expertise for professional (n=67) and non-professional investors (n=278) risk taking and ability to forecast risk and return on financial assets using surveys and rating scales. Results showed first that professional investors were more risk taking and financially self-confident than non-professional investors. Although professional investors perceived the financial markets as less rational than non-professionals, they expressed stronger beliefs in financial expertise and associations between risk and return. Secondly, risk taking in portfolio decisions was less well explained by financial self-confidence, financial risk attitudes and affects than among non-professional investors. Thirdly, there was no difference between professionals and non-professionals ability to predict risk. Professional investors and non-professional investors were equally accurate and better than chance in predicting 3 months risk on different stock indices. Non-professionals showed a reversed relationship between self-rated investment skills and ability to predict 3 months risk. In conclusion, the relationship between expertise and risk taking appears to be stronger than the relationship between expertise and ability to predict risk.

Driverless Vehicles: Changing the risk quotient for insurance companies

Partha Panda

Capgemini

Driverless vehicles have moved away from the realm of science fiction towards a new future of working. From the stage of trials on roads in the USA, UK and Sweden, to the point now where they are finding sanction from national regulators with rules being framed for adoption on the road, driverless vehicles are expected to be main stream in the very near future. Apart from the human impact of reduction of car crashes from driverless capabilities, fast moving changes in communication between devices and digital technologies and growing consumer interest are major levers for this. Market estimates of global installed base of cars with self-driving features could reach more than 10 million by 2020. One of the largest impacts of this new technology is expected to be on the insurance industry due to paradigm shift in managing the risk. Impact on the insurance ecosystem in turn could affect

financial services market, considering that insurance companies are key contributors to financial markets. With auto insurance accounting for almost 50% of the global non-life insurance premiums, insurance companies are going to be key stakeholders in the driverless vehicles context. But the question is - why would insurance companies be impacted and how? Underwriting of insurance risk is based on the premise of probability of financial loss arising from damage to the insured object - in this case a vehicle. This underwriting takes into account different parameters to analyse this probability of loss - driver behaviour, vehicle location, liability for damage etc. In present times, in the case of vehicle insurance, the driver is the key parameter. This is going to change completely in the new "driverless future. In addition, the question of liability of "which" party will come into play when there is an accident. The presentation will analyse the future of the insurance industry in a driverless vehicles scenario, provide a view of the impact on the insurance business and the risk and underwriting requirements. The analysis will also include perspectives on challenges that could come up for insurance companies, managing the data deluge, maintaining balance between possible declines in revenue versus stability increase and regulatory aspects. The presentation will close with next steps that would have to be taken in the short and long term by insurance companies to be able to meet the scenario of driverless vehicles at their doorstep.

Risks and Social Capital for Adaptive Agency in Times of Economic Crises: Evidence from Plant Closures in Sweden

Lucinda David, Lucinda

Lund University

Economic crises periodically hit regional economies. Their interdependence with the world economy makes vulnerabilities to recessions, downturns and restructuring seemingly inevitable. But not all regions have proven to be resilient with differences in their capacities to adapt. Adaptation and responding to the changes in the economic, social and political environment that a crises typically brings, requires a deliberate evaluation of risks and uncertainties and corresponding purposeful action in a region. To a large extent, this happens at the micro-level of individuals and organisations. An emerging strand of this resilience literature focuses on adaptation of regional actors and their agency in responding to crises (Bristow & Healy, 2014, 2015). This paper focuses on the regional response of these actors and the group creation of science parks as a response to the closure of the research and development facility of a large pharmaceutical firm in the region. It aims to identify how social capital enables and constrains these efforts to manage risks in regional adaptive agency. In order to investigate these questions, this paper employs a comparative case study with evidence from Astra

Zeneca and the plant closures in Lund and Södertälje, Sweden. Results show that social capital facilitates collective action from strong regional actors in the absence of government intervention. However, social capital is limited in scaling up and in the long term, in the interest of mitigating these risks. A co-management response of multiple stakeholders involving local governing bodies may be more scalable but subject to bureaucratic control and cooperation problems.

