

# Welcome

Workshop on  
The field and science of risk analysis



*Hotel Residence Inn by Marriott, Ann Arbor, USA, 5-6 May 2016*



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# Issues to be discussed

- a) Defining the risk analysis field/science. Is risk analysis actually a field/science? Is it really important?
- b) What are the main challenges/obstacles for the development of this field/science? How can we best meet these challenges/obstacles?
- c) Define key, concrete subjects of the risk field/science

SRA: risk analysis is 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.

# Is risk analysis scientific

The editorials of the first issue of the journal, *Risk Analysis*, in relation to the establishment of the Society for Risk Analysis, by Cumming (1981) and Weinberg (1981); see also Weinberg (1985):

It was concluded that risk assessment is a “trans-science” – risk assessment is not a scientific method in itself, as accurate risk estimation and predictions cannot be achieved in the case of large uncertainties.

SRA President, Gail Charnley (1998-99), “took up the charge, but in her past president’s message she expressed the concern about risk analysis remaining **far from becoming an established and well-accepted discipline** and about risk analysis being under fire. She saw a growing anti-risk analysis sentiment with critics suggesting alternatives such as the precautionary principle as methods of conducting rational governmental decision making, with these critics decrying risk analysis as part of the problem and not a part of the solution” (Thompson et al 2005).

I am a psychologist, sociologist, economist, statistician and so forth

We have professorships in risk, Master's programmes, PhD programmes, scientific journals and scientific conferences, as all other fields and disciplines



A

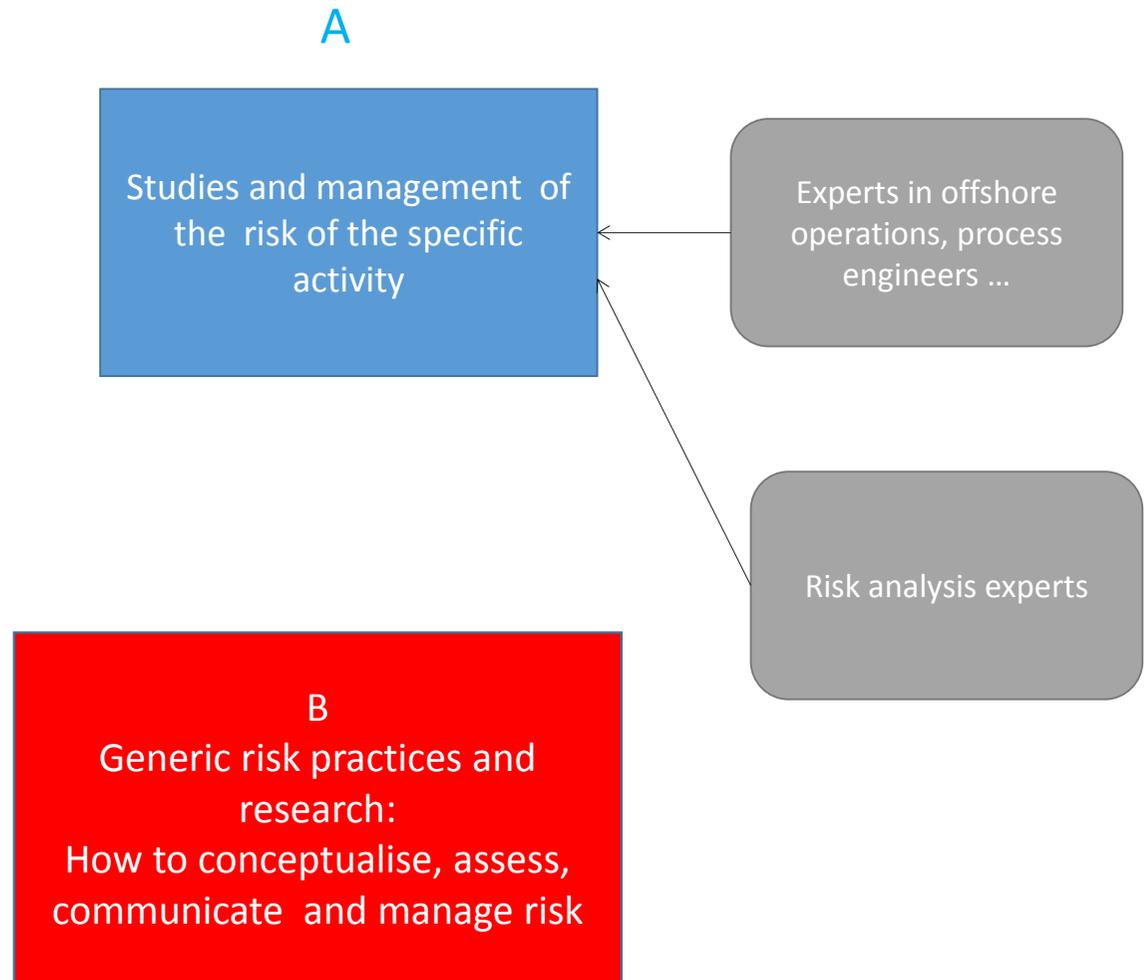
Studies and management of  
the risk of specific activities

B

Generic risk practices and  
research:  
How to conceptualise,  
understand, assess,  
communicate and manage risk



We may ask, is the risk too high? Should we reduce it? And by how much, and how can we best achieve such a reduction?



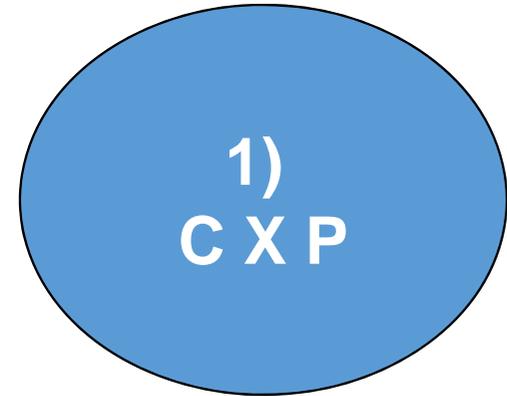
B

Generic risk practices and research:  
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Let us see what is going on in  
the B world using the WHAT  
IS RISK topic as an example

• Risk = expected loss/consequences

Abraham de Moivre 1711



C: Consequences (loss)

P: Probability

2) Risk description= The combination of magnitude/severity of consequences C and probability P

Alternative formulation:

Events/scenarios A, consequences C, probabilities P

Kaplan, S. and Garrick, B.J. (1981) On the quantitative definition of risk. Risk Analysis 1, 11-27.



# SRA Glossary 2015



## The risk concept

- Risk is the possibility of an unfortunate occurrence
- Risk is the potential for realization of unwanted, negative consequences of an event
- Risk is exposure to a proposition (e.g. the occurrence of a loss) of which one is uncertain
- Risk is the consequences of the activity and associated uncertainties
- Risk is uncertainty about and severity of the consequences of an activity with respect to something that humans value
- Risk is the deviation from a reference value and associated uncertainties



## How to measure or describe risk

- a) Expected consequences (damage, loss)
- b) The combination of probability  $P$  and magnitude/severity of consequences  $C$
- c) The triplet  $(C', Q, K)$ , where  $C'$  is some specified consequences,  $Q$  a measure of uncertainty associated with  $C'$  and  $K$  the background knowledge that supports  $C'$  and  $Q$

Meeting the need of the decision situation



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Here are some examples of other issues:

- Is there an objective best policy on how to deal with risk?
  - For you?
  - For the company?
  - For the society?
- How can we use methods and principles like
  - Cost-benefit analyses
  - Precautionary principle *what does this principle say, how can it be used?*
- How should activities be best regulated to balance development and risk?
- ...

B  
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Is risk analysis scientific?

A

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# Science

- The practice that provides us with the epistemically most warranted statements at the time being on the subject matter covered by the knowledge disciplines (nature, ourselves, social sciences, our own physical constructions, our own mental constructions)

# What defines us as professionals in the field of risk analysis?

Pamela Williams (SRA President):

the ability and desire to tackle difficult problems using a risk analytical approach

**TA: the ability and desire to develop the risk analysis approach and use it for tackling real-life problems**

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I am a psychologist, sociologist, economist, statistician and so forth

My field is risk, risk analysis, risk management, ...



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# Output/deliveries from the workshop:

- **Increased understanding** of what are the obstacles for the further development
- of the risk analysis field
- **Increased understanding** of what it means to be a risk analysis professional
- **Ideas** for how to improve the current situation
- Draft of a set of **principles/subjects** defining the core of the risk field and science
- **Paper ideas** addressing the issue

**Workshop  
invitation text**



## **Program**

*Day 1 (May 5<sup>th</sup>)*

09.00 Welcome, opening and motivation for the workshop  
Terje Aven and Seth Guikema

09:30 Reflections by the participants

What is the risk analysis field and science for you in your work and research? Feel free to express any experience, idea or view related to the workshop topic. No need to be systematic or comprehensive, the more personal the better.  
(about 15 min each)

10.30 Coffee break

11:00 Reflections by the participants (continued)  
(about 15 min each)

12.00 Lunch

13.00 Working groups' set-up and start-up

The aim of the group work is to discuss and conclude on the following issues:

- Defining the risk analysis field/science.  
Is risk analysis actually a field/science? Is it really important?
- What are the main challenges/obstacles for the development of this field/science? How can we best meet these challenges/obstacles?
- Define key, concrete subjects of the risk field/science

16.00 Presentations by the working groups – issues a) and b) and discussion

17.30 Closing

Dinner

*Day 2*

09:00 Group work

10.00 Coffee break

10.15 Presentations by the working groups – issue c) and discussion

11.15 Overall discussion and conclusions  
Plans for future activities

12.00 Closure of workshop and lunch



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