The risk field. The risk science

What are their aims and features?

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

We have professorships in risk, Master's programes, 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

A

Studies and management of the risk of the specific activity

Experts in offshore operations, process engineers …

Risk analysis experts

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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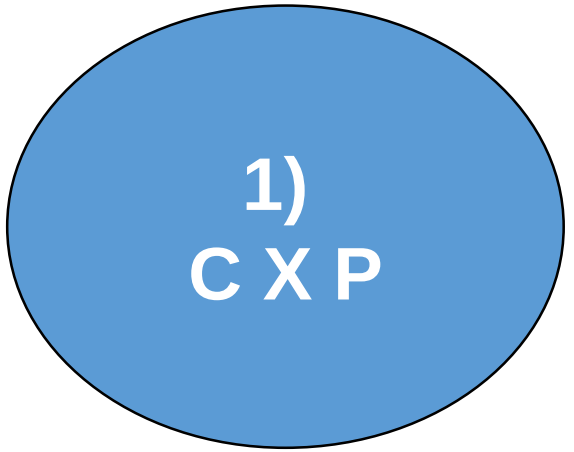
Let us see what is going on in the B world using the WHAT IS RISK topic as an example

- Risk = expected loss/consequences



Abraham de Moivre 1711

C: Consequences (loss)

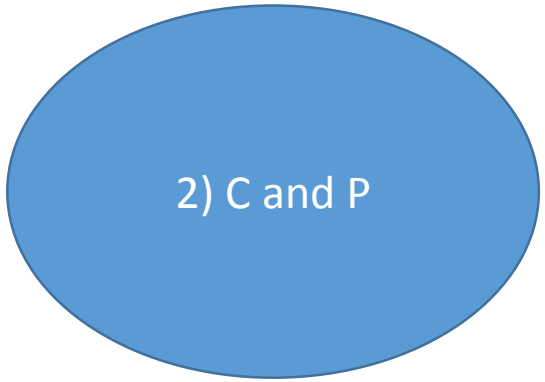
P: Probability

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.



The challenge is this:

Same probability

But the knowledge supporting these could be poor or strong

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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The risk field faces a big generic research challenge: How to best incorporate the knowledge dimension in the risk conceptualisation, assessment and management.

B
Generic risk practices and research:
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This is just one example of the many issues that the generic risk practice and research address: what is risk and how to best describe risk.

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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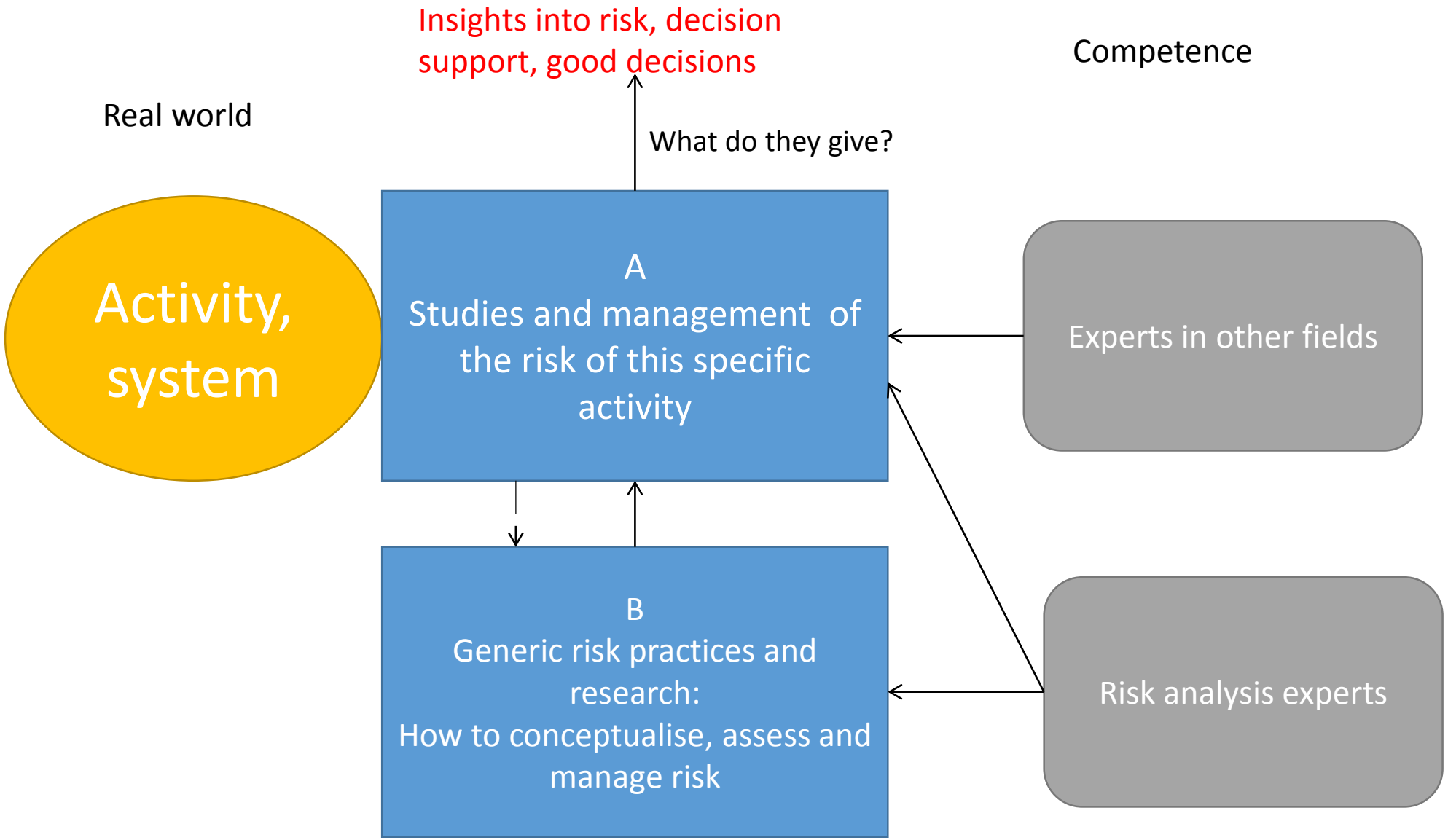
Is the risk field scientific?

Science

- The practice that provides as with the most reliable 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)

Prof Sven Ove Hansson


Insights into risk, decision support, good decisions
Competence
Real world
What do they give?
Activity, system
A
Studies and management of the risk of this specific activity
Experts in other fields
B
Generic risk practices and research:
How to conceptualise, assess and manage risk
Risk analysis experts

Hansson, S.O. and Aven, T. (2014) Is risk analysis scientific? Risk analysis, 34(7), 1173-1183.

Aven T, Zio E. Foundational issues in risk assessment and risk management. Risk Analysis, 2014; 34:1164–1172

(i) knowledge about risk-related phenomena, processes, events, etc., and

(ii) concepts, theories, frameworks, approaches, principles, methods, and models to understand, assess, characterize, communicate, and (in a wide sense) manage risk

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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The risk field is challenging but also fascinating. What attracts me is

- The complexity of key concepts
- And the fact that we would like to reduce risk but also increase

Balance

Development and protection

Weight given to E
Take risk

Reduce the risks
and uncertainties

E[NPV], cost-benefit analyses

ALARP Cautionary-precautionary

Risk acceptance criteria

E[NPV]= Expected net present value

ALARP: As Low As Reasonably Practicable

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