

Seven Myths of Risk

– an introduction to risk and the precautionary principle

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The concept of risk

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3. the *probability* of an unwanted event which may or may not occur.

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2. the *cause* of an unwanted event which may or may not occur.
3. the *probability* of an unwanted event which may or may not occur.
4. the statistical *expectation value* of unwanted events which may or may not occur.

The concept of risk

1. an *unwanted event* which may or may not occur.
2. the *cause* of an unwanted event which may or may not occur.
3. the *probability* of an unwanted event which may or may not occur.
4. the statistical *expectation value* of unwanted events which may or may not occur.
5. the fact that a decision is made under conditions of *known probabilities* (“decision under risk”)

The first myth of risk

“Risk” must have a single, well-defined meaning.

Risk analysis

$$\text{risk} = \text{probability} \times \text{disutility}$$

The second myth of risk

The severity of risks should be judged according to probability-weighted averages of the severity of their outcomes.

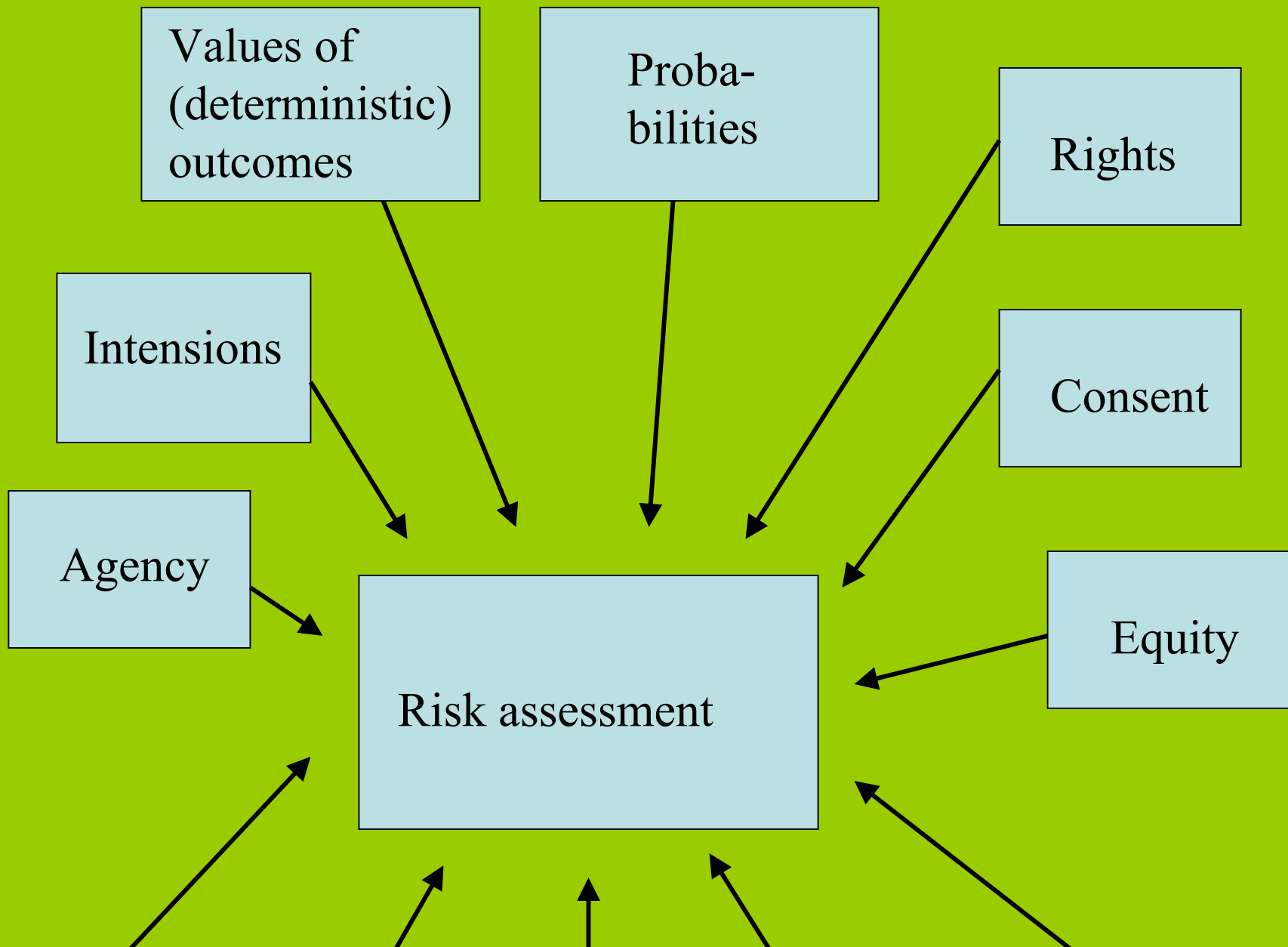
Values of
(deterministic)
outcomes

Proba-
bilities

Risk assessment

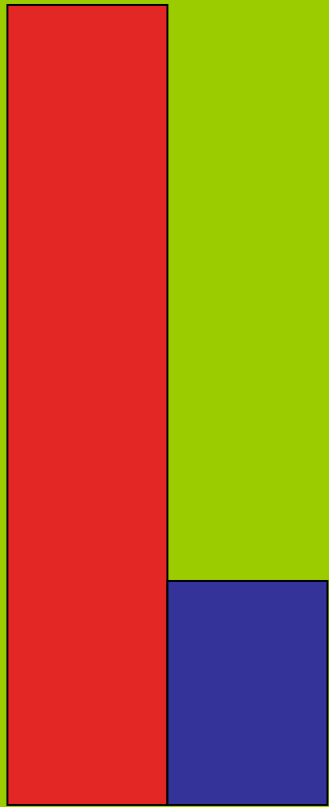
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graph TD; A[Values of (deterministic) outcomes] --> C[Risk assessment]; B[Probabilities] --> C;
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The diagram illustrates a process flow where two input factors, 'Values of (deterministic) outcomes' and 'Probabilities', are combined to lead to 'Risk assessment'. The flow is represented by lines connecting the top boxes to a central point, which then leads to a downward arrow pointing to the bottom box.

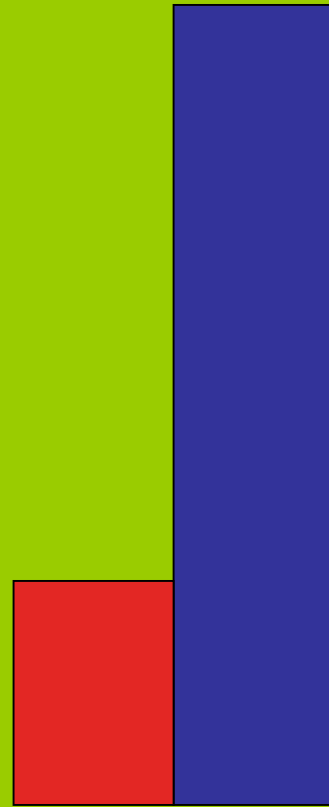


The third myth of risk

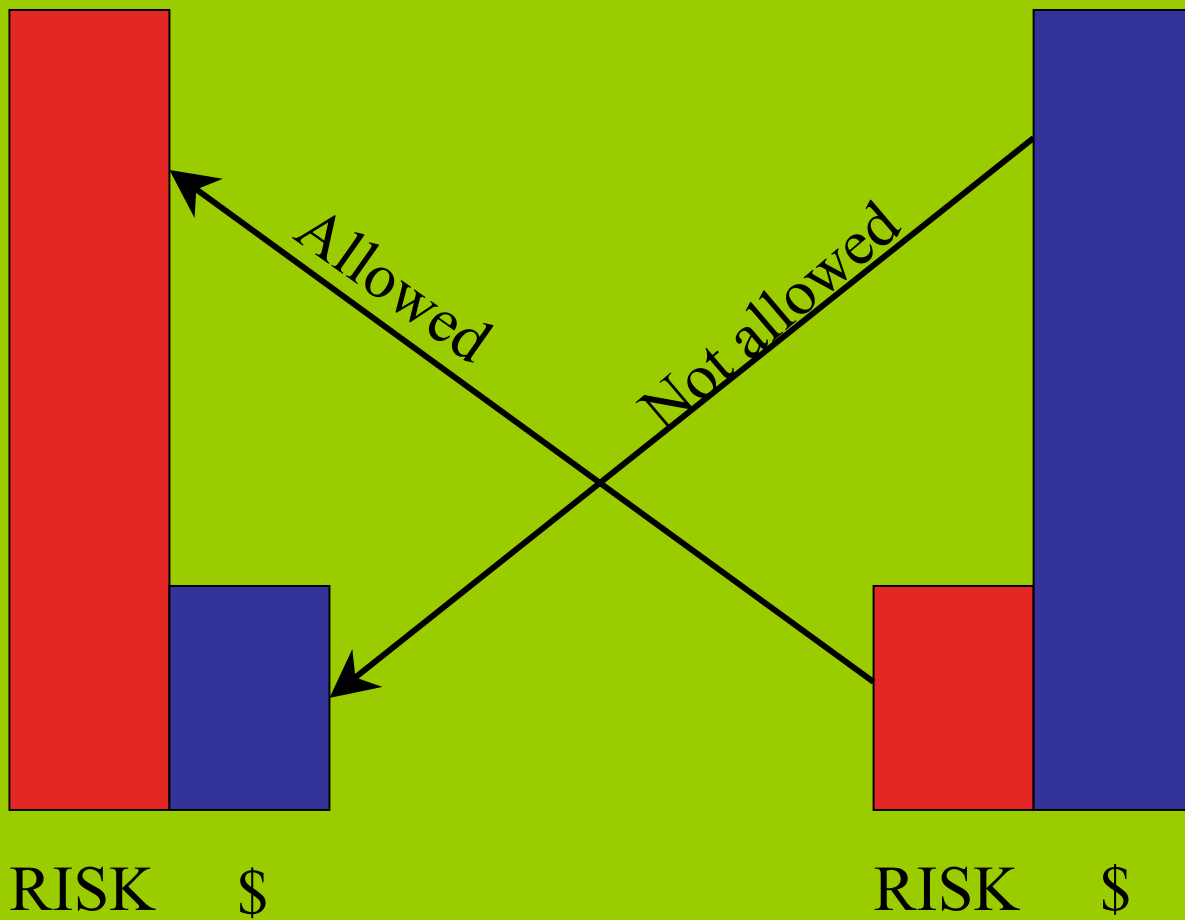
Decisions on risk should be made by weighing total risks against total benefits.



RISK \$



RISK \$



Ethical risk analysis

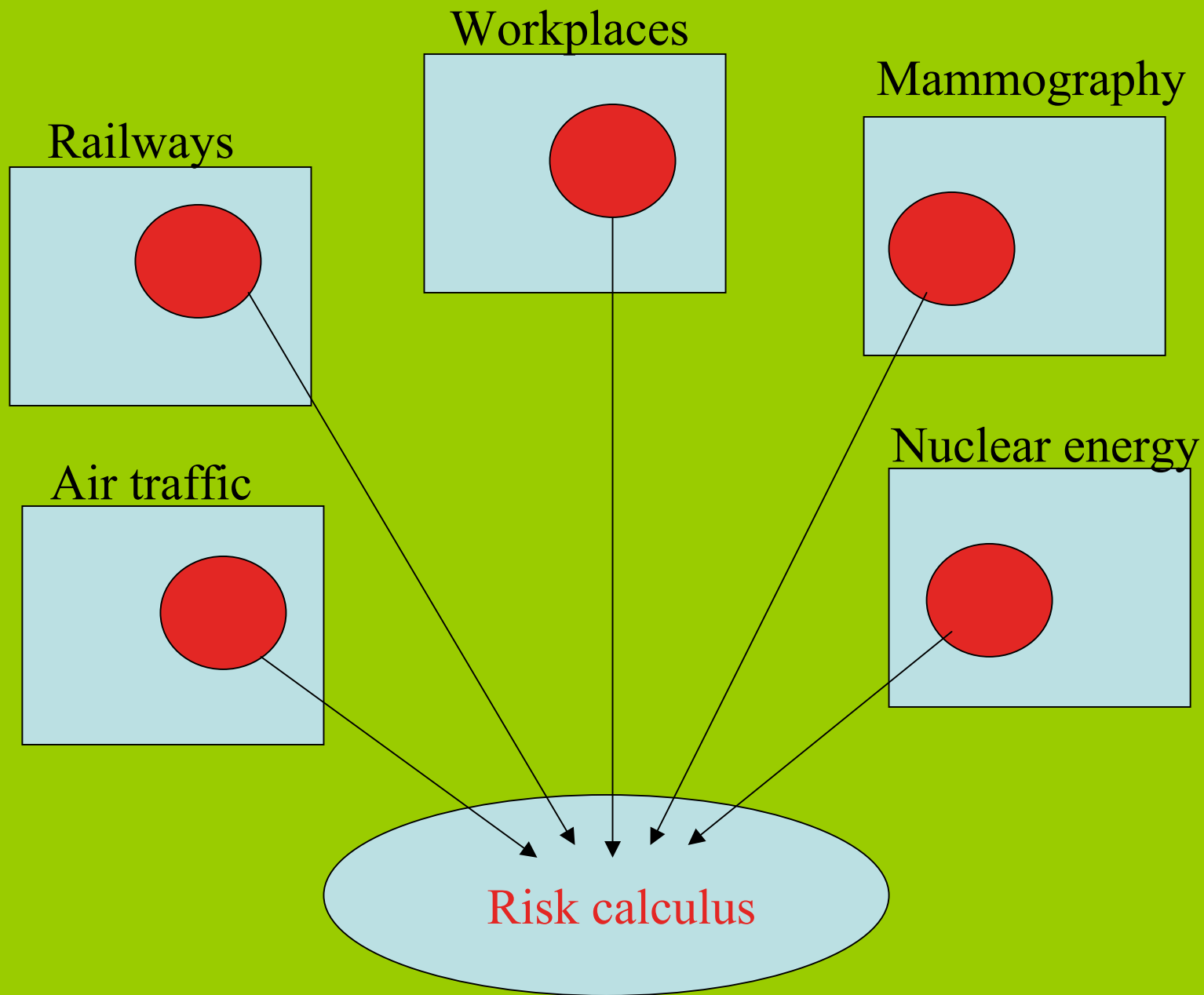
Respect every person's prima facie
right not to be exposed to risks!

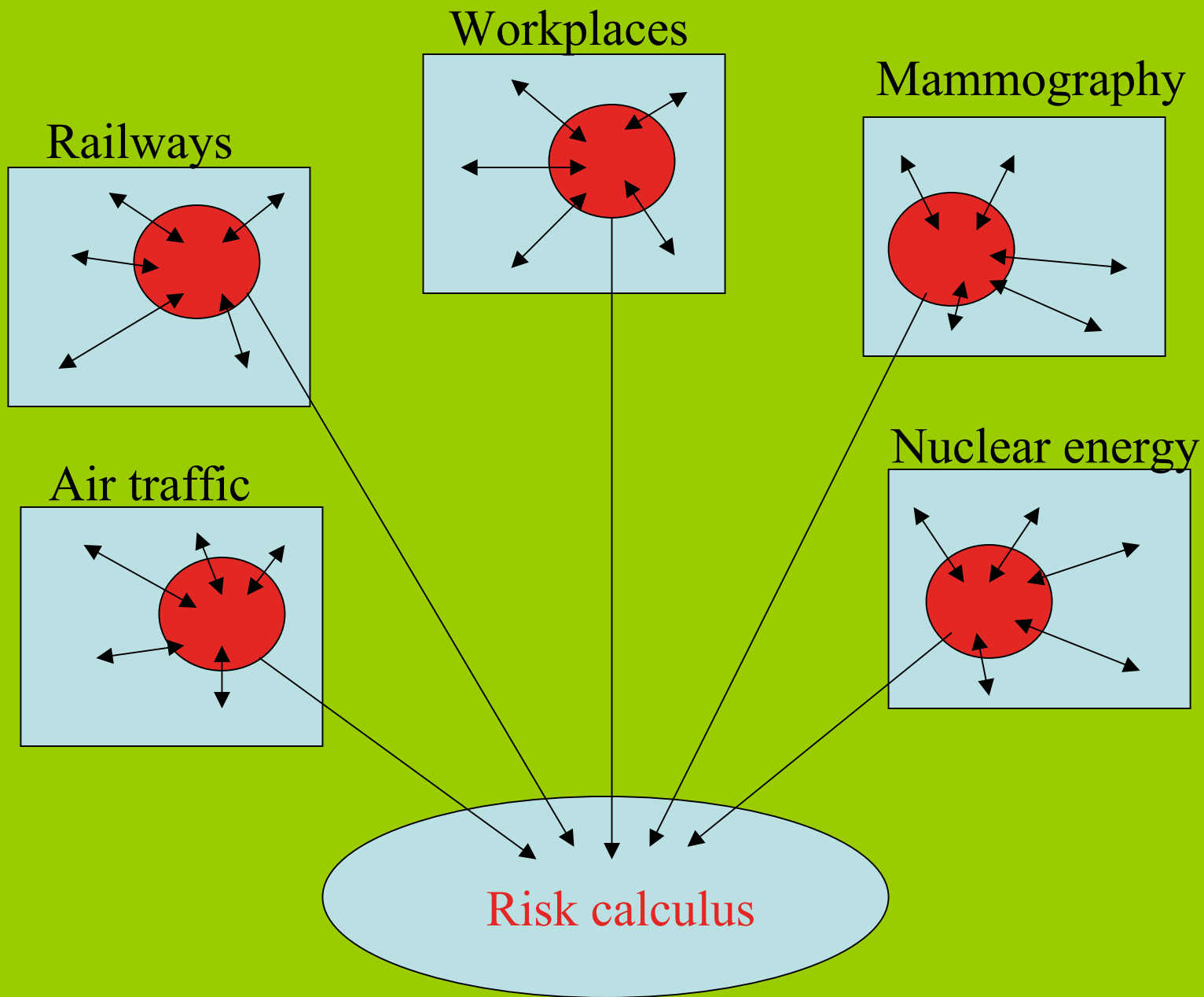
The fourth myth of risk

**Decisions on risk should be taken
by experts rather than by laymen.**

The fifth myth of risk

Risk-reducing measures in all different sectors of society should be decided according to the same standards.

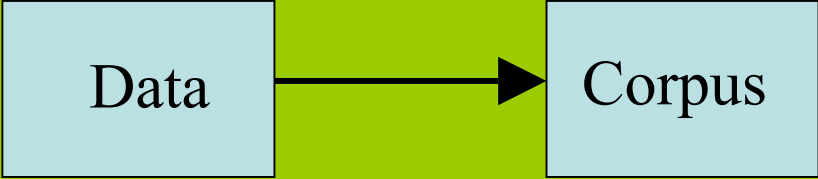


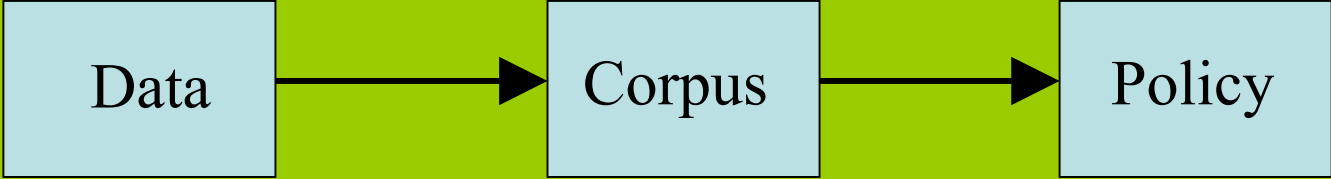


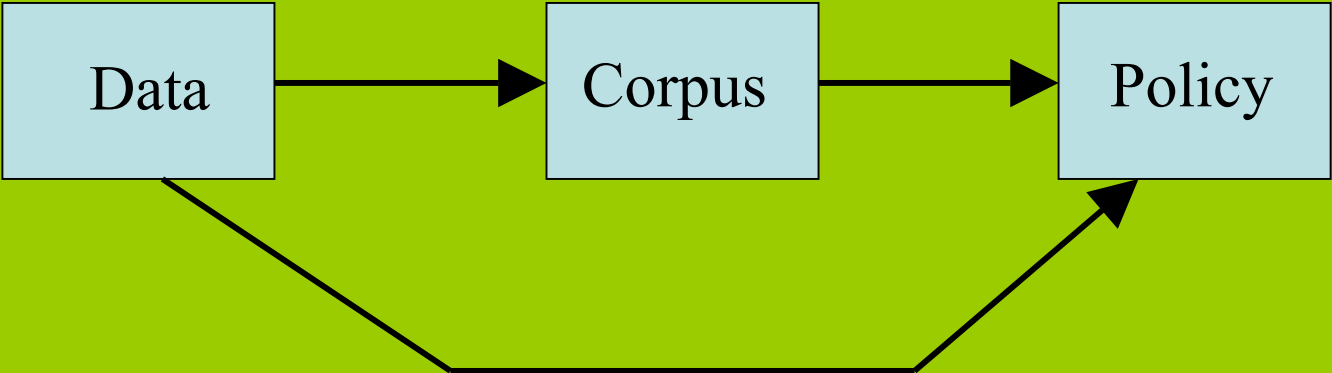
The sixth myth of risk

Risk assessments should be based only on well-established scientific facts.

Data







The seventh myth of risk

**If there is a serious risk, then
scientists will find it if they look for it.**

A 0.0% \Rightarrow 0.5%

A 0.0% \Rightarrow 0.5%

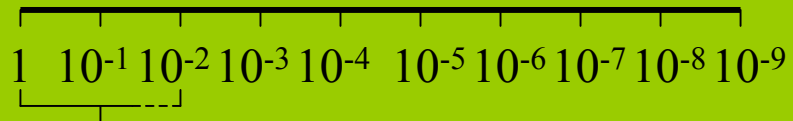
B 1.0% \Rightarrow 1.5%

A 0.0% \Rightarrow 0.5%

B 1.0% \Rightarrow 1.5%

C 10.0% \Rightarrow 10.5%

| | | | | |
|---|-------|---------------|-------|------------------------------|
| A | 0.0% | \Rightarrow | 0.5% | Detectable |
| B | 1.0% | \Rightarrow | 1.5% | Individually undetectable |
| C | 10.0% | \Rightarrow | 10.5% | Completely undetectable |



Detectable

