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Ethische grondslagen van de stralingsbescherming

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Programma

- **Ethische** grondslagen: wat is ethiek?
- Ethische **grondslagen:** welke grondslagen?
- Verdieping

Wat is ethiek?

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OEFENING

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Ethiek

- Ethike aretai: morele deugd (karaktervorming)

- Volgen van morele principes

- Two ethical approaches:
  - Utility
  - Equality

Utility

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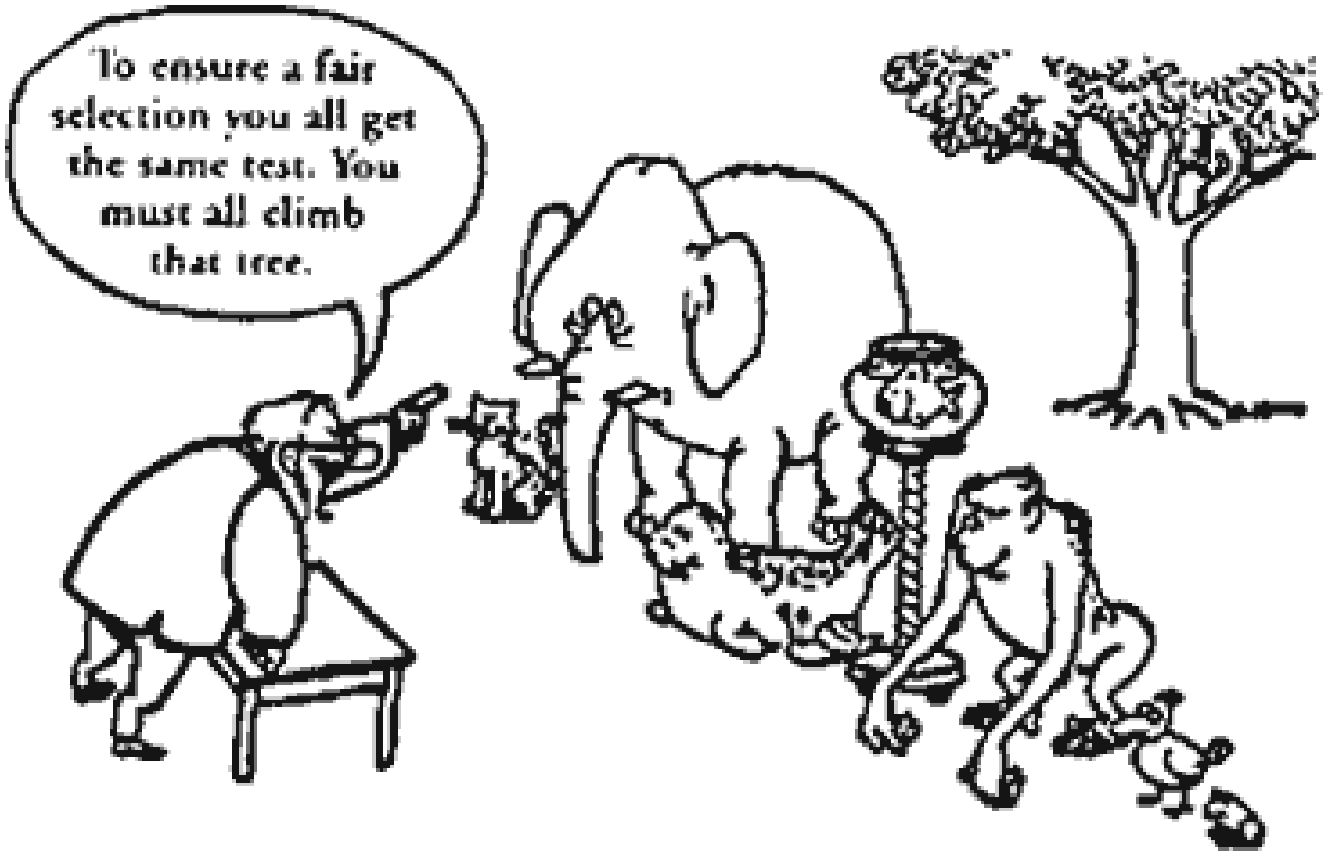
Utility

- *An act is morally right if and only if that act causes "the greatest happiness for the greatest number".*

- Maximizing happiness – minimizing suffering

Equality


To ensure a fair selection you all get the same test. You must all climb that tree.

Equality

"treat like cases as like"

(Aristotle, *Nicomachean Ethics*, V.3. 1131a10-b15; *Politics*, III.9.1280 a8-15, III. 12. 1282b18-23)

Grondslagen volgens ICRP-1xx

- **Goed(gunstig)heid/niet-kwaad(willend)heid**
- **Wijsheid**
- **Rechtvaardigheid**
- **Waardigheid**

ICRP-1xx

VOORZORGSPRINCIPE
Wetenschappelijke onzekerheid
Schadedrempel
Omkering van de bewijslast

- **Goed(gunstig)heid/niet-kwaad(willend)heid**. Bevorder het goede, handel goed en vermijd het veroorzaken van schade.
- **Wijsheid**. De vaardigheid weloverwogen keuzes te maken, ook als je niet de volledige reikwijdte en consequenties van je handelen kunt overzien. Het voorzorgsprincipe is hier zeer nauw mee verwant.
- **Rechtvaardigheid**. Het op een eerlijke wijze (i) verdelen van de voor- en nadelen onder bevolkingsgroepen, (ii) compenseren van schade en (iii) reguleren van het proces voor het nemen van beslissingen.
- **Waardigheid**. Ieder individu, ongeacht geslacht, leeftijd, etnische oorsprong, religie, gezondheid of sociale afkomst verdient onvoorwaardelijk respect.

ICRP-1xx

- **Goed(gunstig)heid/niet-kwaad(willend)heid**
- **Wijsheid**
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- **Waardigheid**

Biomedische ethiek

- Respect voor autonomie
- Niet-schaden
- Weldoen
- Rechtvaardigheid

ICRP-1xx

- **Goed(gunstig)heid/niet-kwaad(willend)heid.**
- **Wijsheid.**
- **Rechtvaardigheid.**
- **Waardigheid.**

Focus vaak op:
Risico (niet-schaden en goed-doen) en Rechtvaardigheid

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1.Rechtvaardigheid

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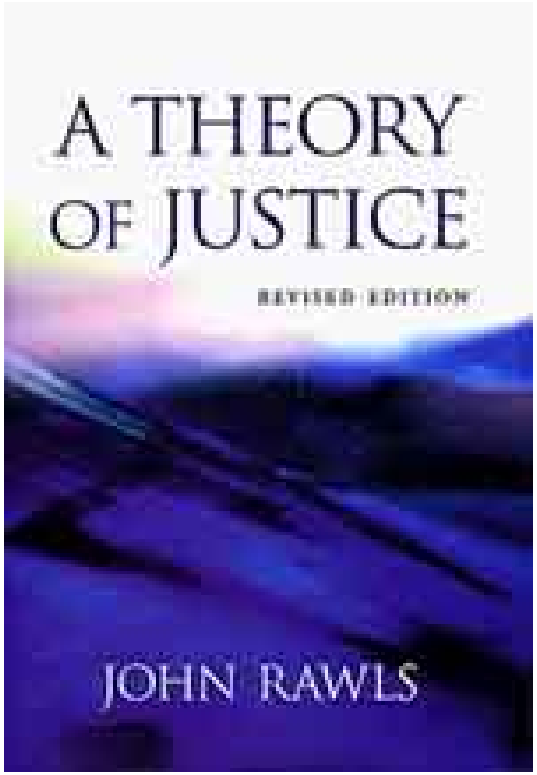
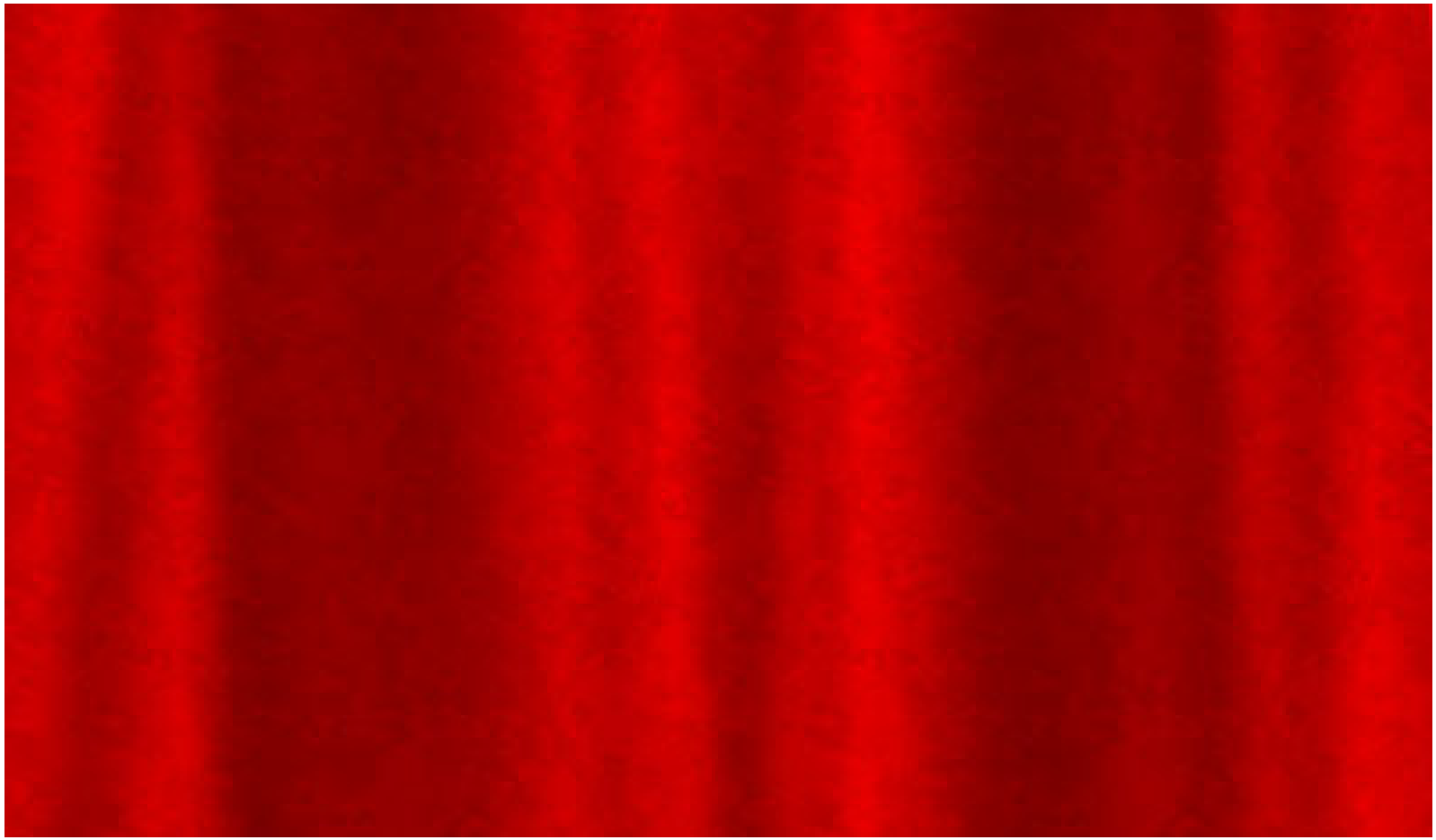
Equality revisited

- John Rawls



Behind the veil



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Behind the veil

- Maximin rule: maximalising the worst (min) conceivable situation

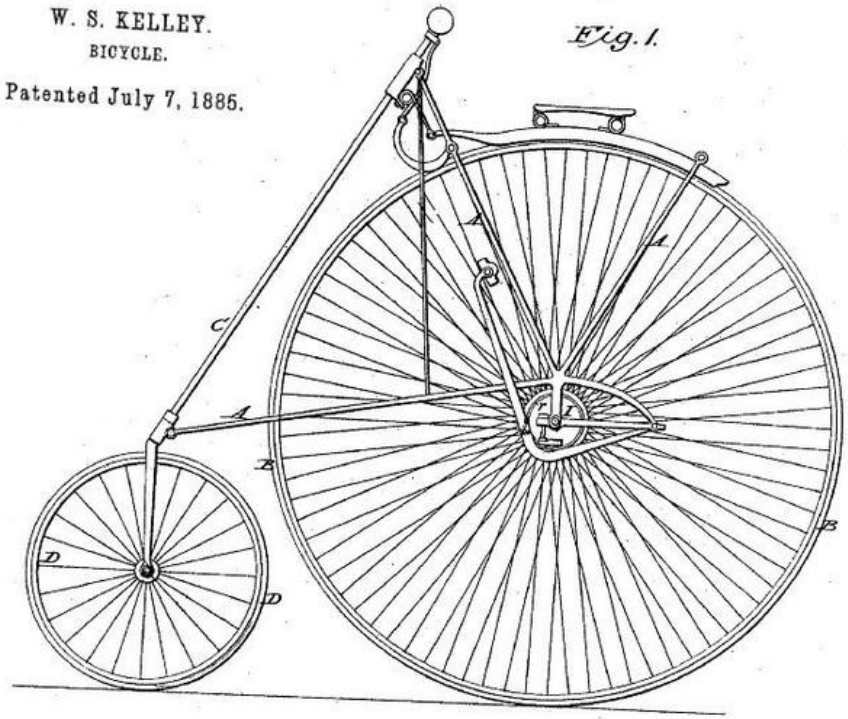
Two principles of justice as fairness

- Equality: Each person has the same indefeasible claim to a fully adequate scheme of equal basic liberties, which scheme is compatible with the same scheme of liberties for all;
- Difference: Social and economic inequalities are to satisfy two conditions:
  - They are to be attached to offices and positions open to all under conditions of *fair equality of opportunity*;
  - They are to be to the greatest benefit of the least-advantaged members of society (the *difference principle*).

2. Risico

Measurements of success and failure

- Evaluation of performance :
  - Does it work (effectiveness)?
  - Is it the best way to reach the end for which we strive (efficiency)?
  - Consider whether or not it will be likely to work (reliability).
  - What adverse implications might we face (risk)?



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Technological succes and failure

- National Society of Professional Engineers:

  Engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health and welfare of the public.

  Safety and risk: technical + ethical concepts

Technological succes and failure: safety criteria

1. The design must comply with applicable laws.
2. The design must adhere to ‘acceptable engineering practice’.
3. Alternative designs must be sought to see if there are safer practices.
4. Possible misuse of the product or process must be foreseen.

Risk as a Bioethical Concept

- Risk = the chance that something may go wrong or that some undesirable effect will occur.
- Risk analysis = understanding the factors that lead to a risk.
- Risk management = reduction of risk.
- Risk assessment = scientific considerations of a risk.

Safety = Value Judgment

- *Wijsheid!*
- *Probable impossibilities are to be preferred to improbable possibilities*

- Aristotle

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Components of Risk Decision

1. Inventory of relevant choices
2. Identification of potential consequences of each choice
3. Assesment of the likelihood of each consequence actually occurring
4. Determination of the importance of these consequences
5. Synthesis of this information to decide which choice is the best

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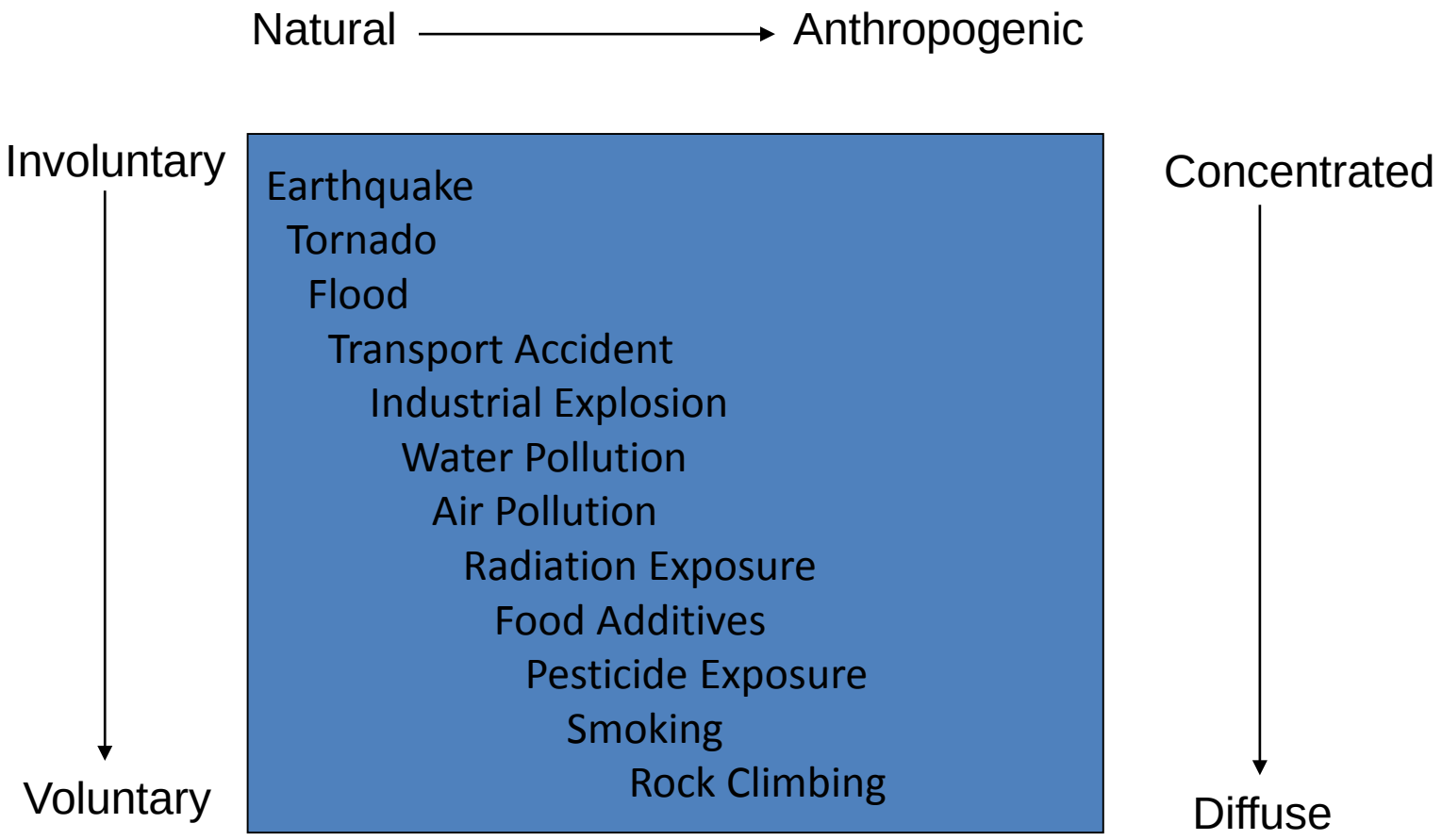
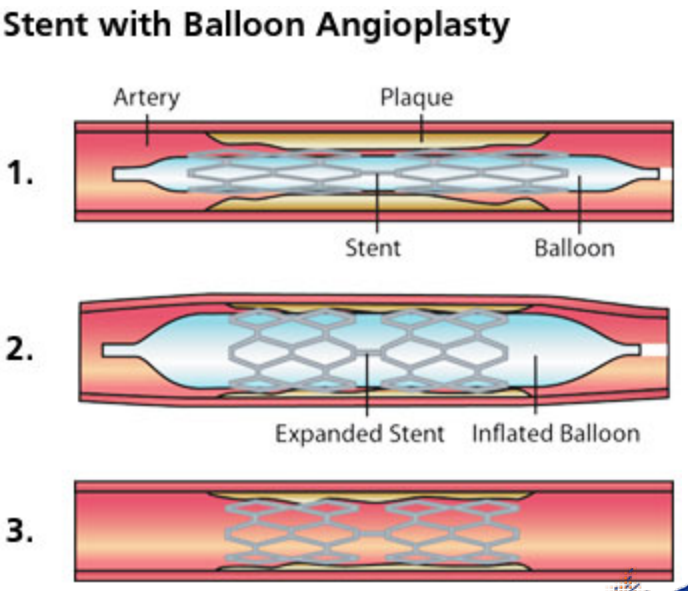

Natural
Anthropogenic
Involuntary
Voluntary
Concentrated
Diffuse
Earthquake
Tornado
Flood
Transport Accident
Industrial Explosion
Water Pollution
Air Pollution
Radiation Exposure
Food Additives
Pesticide Exposure
Smoking
Rock Climbing

People seem to have their own “mathematics” when it comes to risk.

Reliability

- Reliability = the probability that something that is in operation at time 0 (t_0) will still be operating until the designed life (time t = (t_t)).



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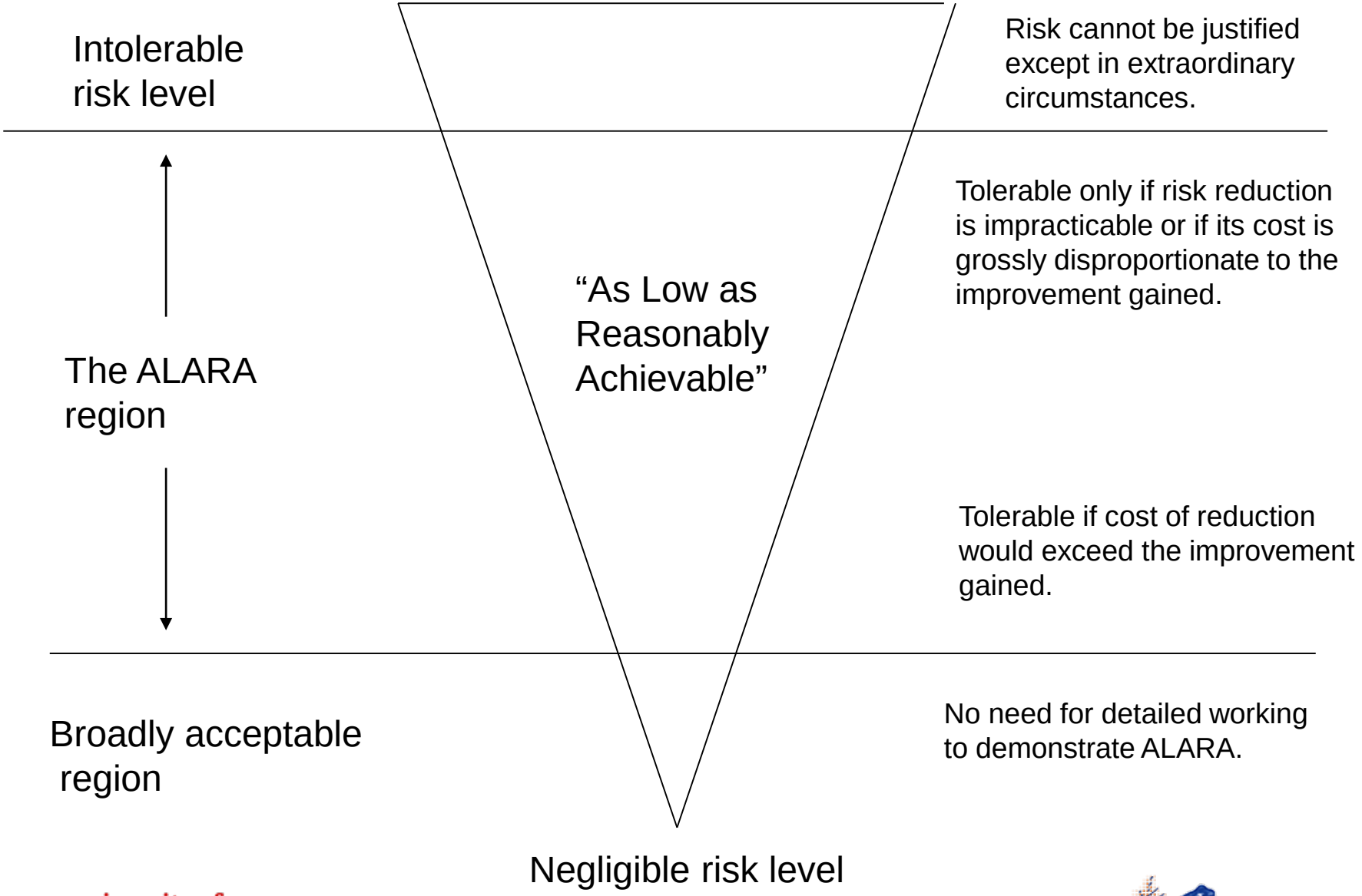

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Analytical phase	Risk assessment processes	Risk perception processes
Identifying risk	Physical, chemical, and biological monitoring a… measuring the ev… Deductive re… Statistic…	Personal awareness …ition
Estimating risk	M… …d …sment …c cost	Personal experience Intangible losses and nonmonetized valuation
Evaluating risk	…st-benefit analysis Community policy analysis	Personality factors Individual action

Morele afwegingen: Doel? Principes?

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