



Health Technology Assessment (HTA): The Rationale for Multi-Criteria Decision Analysis (MCDA) as a Tool of HTA

[An Economist's View on
The Need for Extensions of, or Alternatives to,
the Conventional Logic of Cost Effectiveness]

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Learning from International Experience

“Wer am Wege baut,
hat viele Meister“

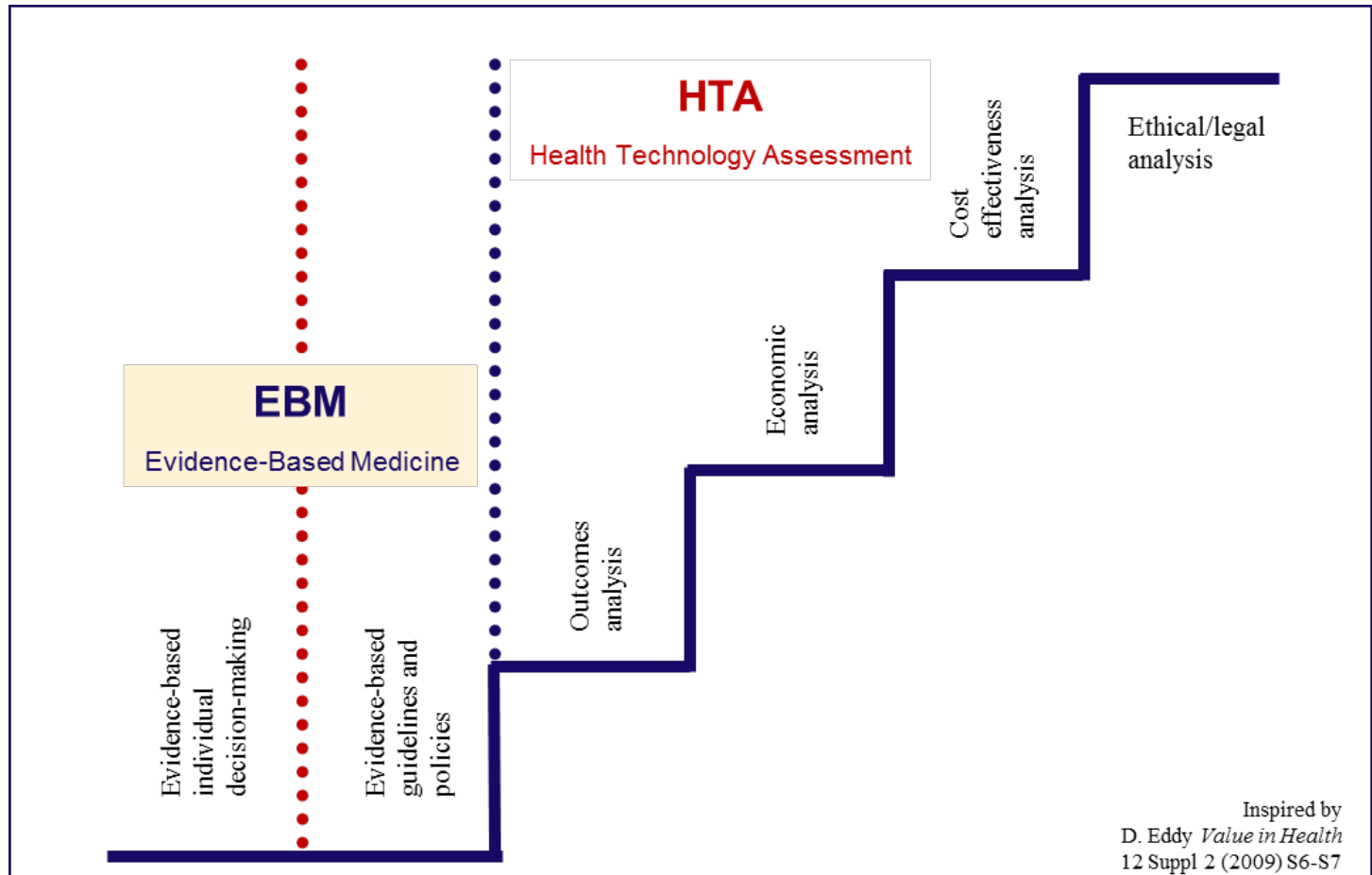
“A house built by
the wayside
is either too high
or too low.”



Martin Luther (1530)

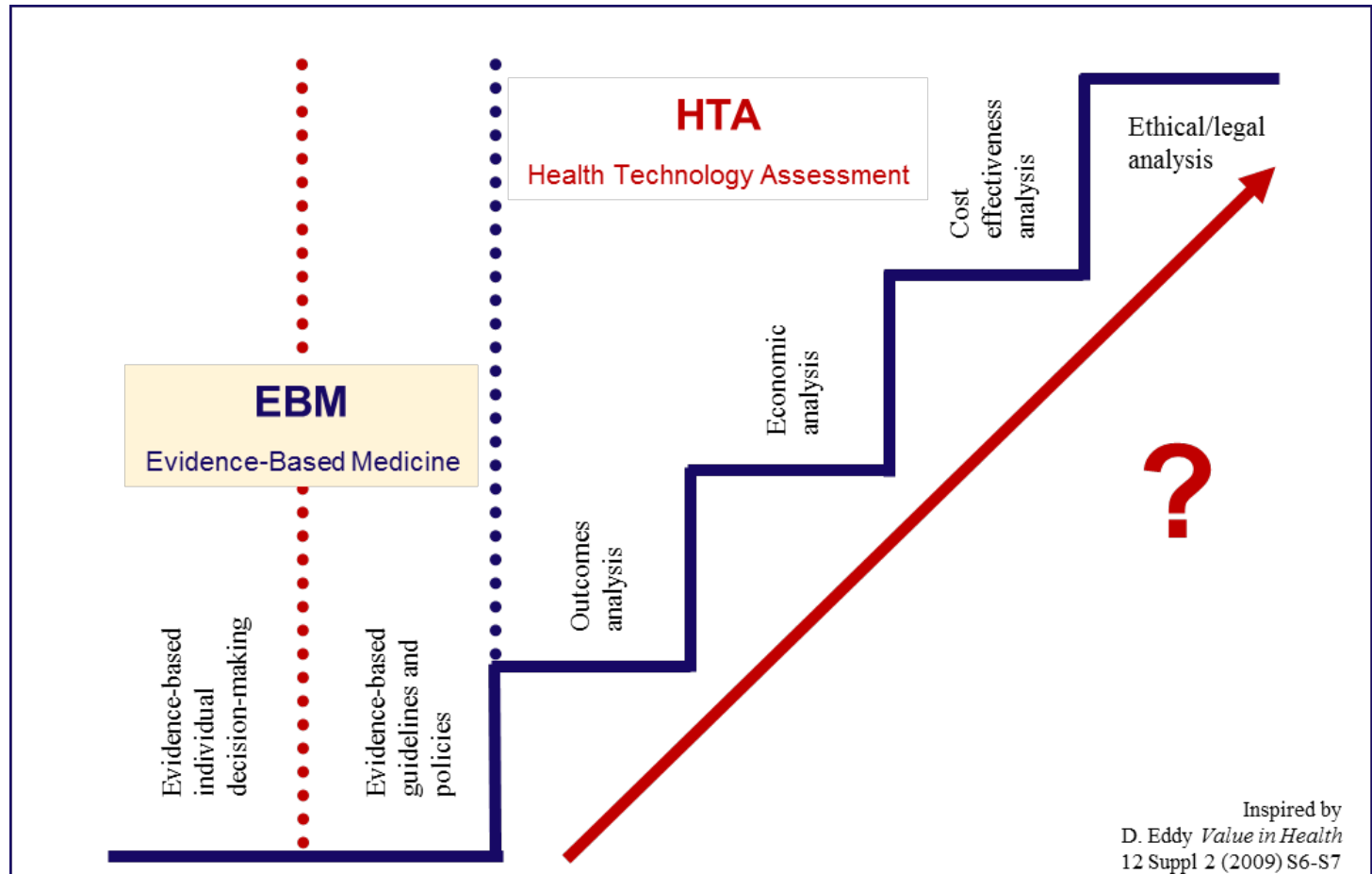


Conventional Wisdom



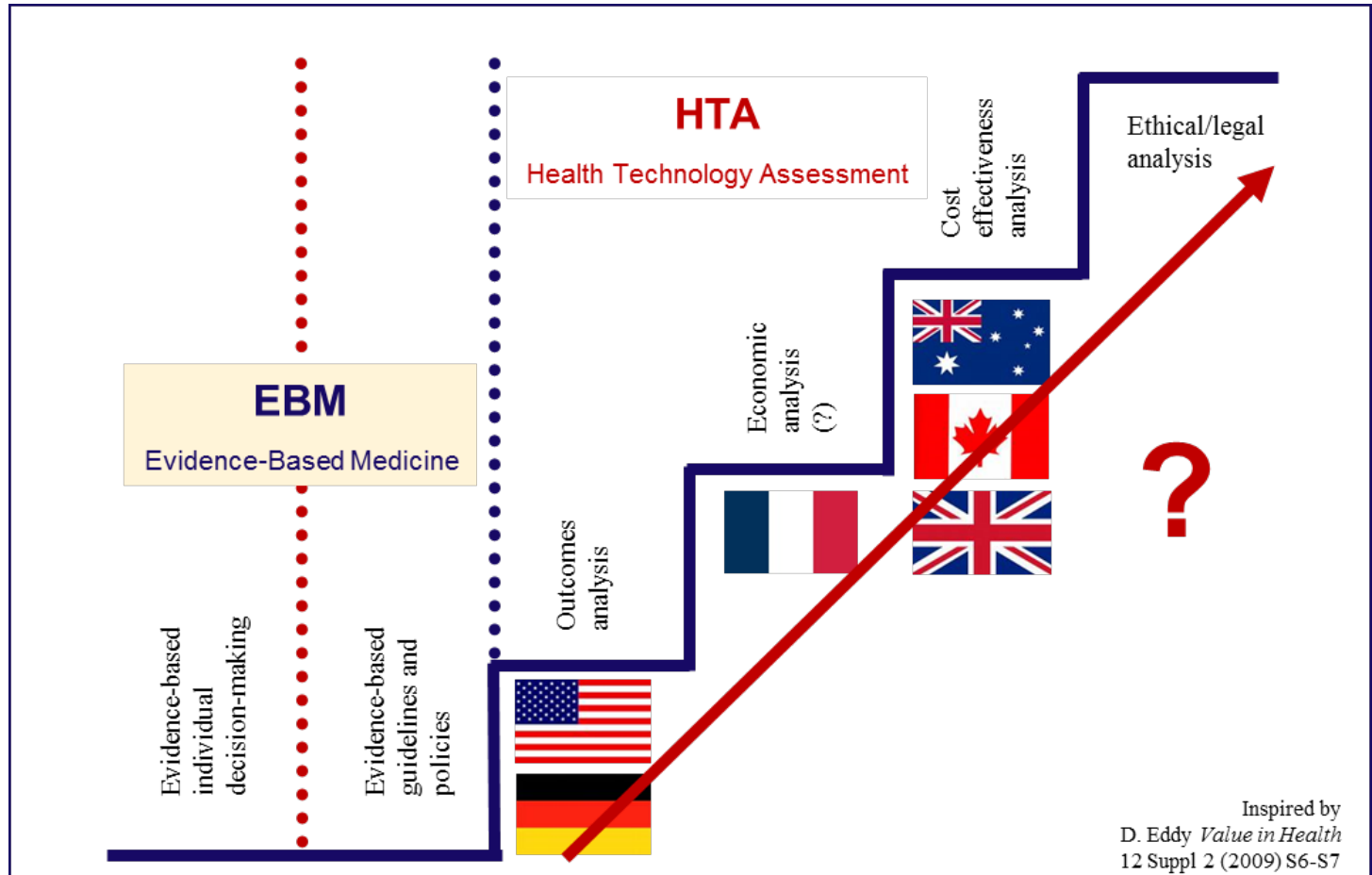


Conventional Wisdom





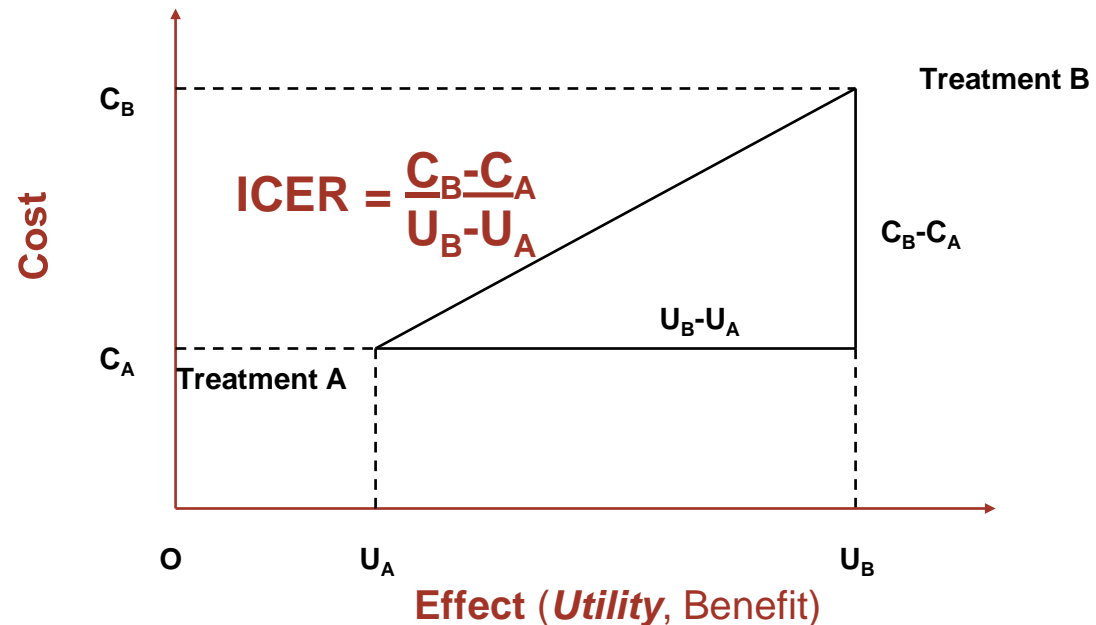
Conventional Wisdom





The Logic of Cost-Effectiveness

Incremental Analysis



Note: Quality-Adjusted Life Years (QALYs)
are not a measure of [health-related] utility!

ICER: Incremental Cost-Effectiveness Ratio

or: “Information Created to Evade Reality”?¹

¹S. Birch, A. Gafni: Information created to evade reality (ICER): things we should not look to for answers. *PharmacoEconomics* 2006; 24: 1121-1131



The Logic of Cost-Effectiveness

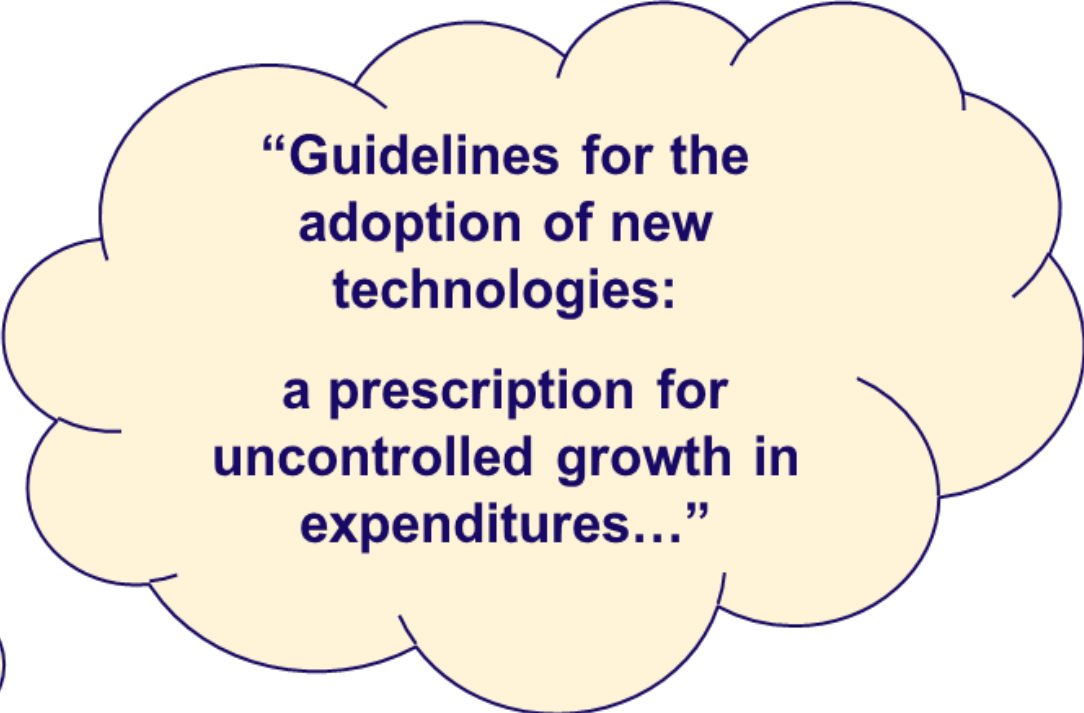
The Cost-Effectiveness Decision Rule:

$$ICER = \frac{\Delta C}{\Delta E} = \frac{\Delta C}{\Delta QALY} < \lambda$$

Note that the size of numerator and denominator will cancel out.



An Early Warning



**“Guidelines for the
adoption of new
technologies:
a prescription for
uncontrolled growth in
expenditures...”**

A large, light-yellow thought bubble with a dark blue outline, containing the text. Three smaller, identical thought bubbles trail off to the bottom-left from the main bubble.

Amiram Gafni and Stephen Birch (1993)



“Departures from a strict utilitarian perspective would have to justified...”¹

Utilitarian Thought

→ John Stuart Mill (1806-1873):

“What is best brings the greatest good for the greatest number”

→ Jeremy Bentham (1748-1832):

“The greatest happiness of all those whose interest is in question is the right and proper, and the only right and proper and universally desirable, end of human action.”

Medical Utilitarianism

- A variant of act utilitarian thought, **exclusively focusing on individual health outcomes** (usually QALYs)

¹M. Drummond, A. Towse, *European Journal of Health Economics* 2014, 15: 335-340



Key Assumptions of the Conventional Logic:

Quality-Adjusted Life Years (QALYs)

- (fully) capture the value of health care interventions;
- are all created equal (“A QALY is a QALY is a QALY...”).

Maximizing the number of QALYs “produced”

- ought to be the primary objective of collectively financed health schemes,
- leading to the concept of thresholds (or benchmarks) for the maximum allowed cost per QALY gained.

Decreasing cost per QALY

- implies increasing social desirability of an intervention.



A Fundamental Premise

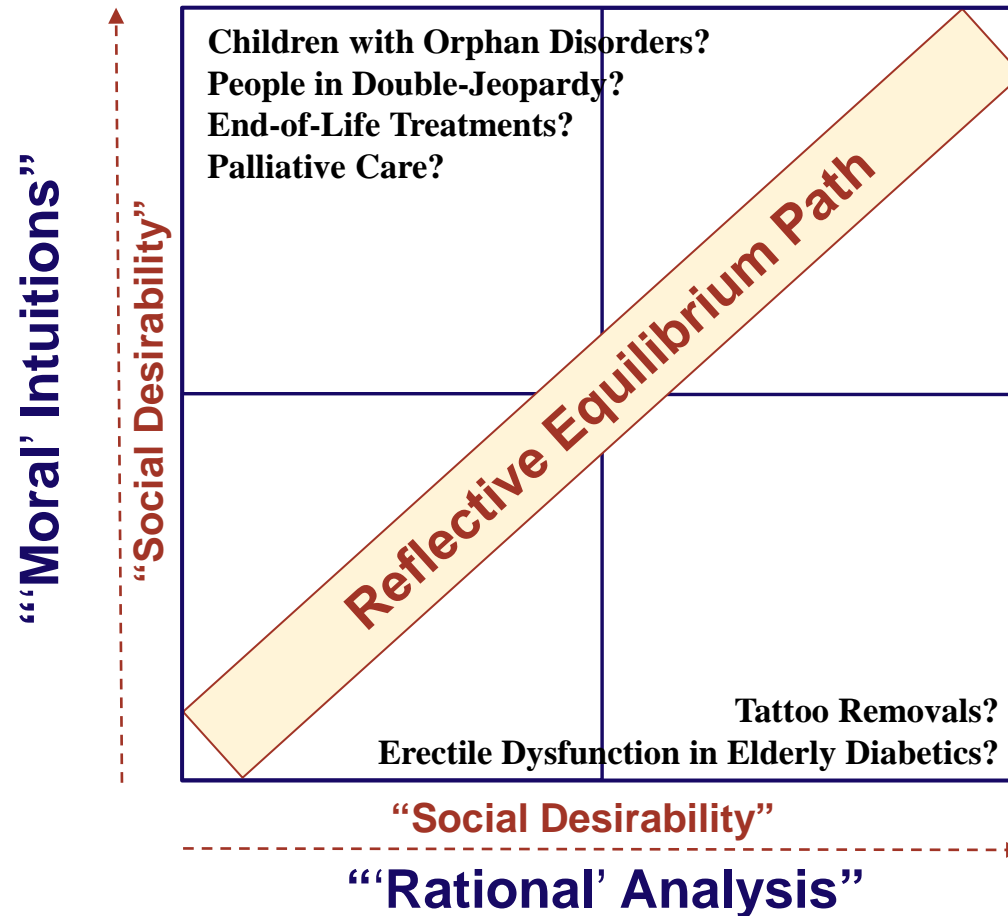
“Social Desirability of an Intervention is Inversely Related to its Incremental Cost per QALY Gained”

but this assumption may create **Reflective Equilibrium** issues:

- Sildenafil for elderly diabetics with erectile dysfunction
 - Removal of Tattoos
- compared to*
- Palliative Care,
 - Interventions for people with comorbid conditions (in “Double Jeopardy”, like the chronically disabled)
 - Orphan Medicinal Products (OMPs) for (very) rare disorders



Reflective Equilibrium





Economic “Efficiency”

Effectiveness

Realized Output

Intended Output

(Value[s], Objective[s])

Efficiency

[Realized] Output

[Realized] Input

(By definition, efficiency
is a secondary objective)



Vertical versus Horizontal Equity

Rights as Goals:

- “To fail to satisfy people’s basic **needs** and provide **essential skills and opportunities** is to leave people without recourse, and people without recourse are not free.”
(A. Sen, 1984; C. Korsgaard, 1993)
- **Vertical equity** as “positive discrimination” (G. Mooney, 2000)

Relevant Legal Provisions:

- Human Rights Legislation
- Constitutional Provisions (...)
- Nondiscrimination and Rights of Persons with Disabilities
- EU Disability Legislation
- UK Equality Act
- ...



“Social Preferences” – Non-Selfish Motives

A person exhibits social preferences if the person not only cares about the material resources allocated to her but also cares about the material resources allocated to relevant reference agents.¹

In addition to material self-interest, these are

- **Reciprocity or Reciprocal Fairness**
with fairness being determined by the equitability of the payoff distribution (relative to the set of feasible payoff distributions)
- **Inequity Aversion**
resulting in altruism or envy towards other people
- **Pure Altruism**
a form of unconditional kindness
- **Spiteful or Envious Preferences**
always valuing a payoff of relevant reference agents negatively

Note heterogeneity of motives at the individual level.

¹cf. E. Fehr and U. Fischbacher (2002)



Sources of Social Value

How should we address

- **Prior Normative Commitments**, in particular
 - with regard to Moral Theory
 - with regard to Economic Theory
- **Empirical “Social” Preferences** related to
 - Priorities related to Attributes of the Health Condition
 - Priorities related to Attributes of the Persons Afflicted
- **Pragmatic Aspects / Practical Experience** regarding
 - Feasibility
 - Implementation



What are the [Economic] Alternatives?

1: “Efficiency-Only” Framework ?

- currently predominant “extrawelfarist” paradigm?

2: “Efficiency-First” Framework ?

- extended by incorporating “social value judgments”
 - e.g., by multiple adjustments of cost per QALY thresholds by (disorder- and/or patient-related) contextual variables?

3: “Fairness-First” Framework ?

- adopting a “sharing perspective” driven by “empirical ethics”
 - (relative) social willingness-to-pay as a proxy for social value?
 - budget impact reflecting social opportunity cost?

4: Outright Rejection of Health Economic Analysis ?

- then, what about opportunity costs?
- appropriate role for multi-criteria-decision analysis (MCDA)?



Perspectives on Value

A Broad Range of Empirical “Non-Selfish” Preferences
indicating objectives apart from simple QALY maximization:

Prioritization criteria supported by empirical evidence include

- ↪ **severity** of the initial health state,
- ↪ **urgency** of the initial health problem,
- ↪ **capacity to benefit** of relatively lower importance,
- ↪ certain **patient attributes**,
- ↪ a strong dislike for “**all-or-nothing**” resource allocation decisions,
- ↪ a “**sharing**” perspective (with less emphasis on cost per patient),
- ↪ and **rights**-based considerations.



Perspectives on Cost

→ A **decision-makers’** perspective:

overall **budgetary impact** (*transfer cost*)

→ A **social value** perspective:

(instead of an almost exclusive narrow focus on individual utility):

social **opportunity cost** (or [social] value foregone)

better reflected by net budgetary impact (*transfer cost*)?

Move focus from cost per patient to cost on the program level?

→ A **pragmatic** perspective

should reflect the commercial realities of the research-based biopharmaceutical industry, which is showing signs of a shift from price maximization to **life cycle revenue management**.



Elements of a Roadmap

towards **Social Cost Value Analysis (SCVA)**,
better approximating the public's expectations

Multi-Criteria Decision Analysis (MCDA)

- including a more prominent role for budgetary impact

Social Preferences Measurement Project

- generating more robust empirical evidence on “social preferences”
- in an inclusive effort, inviting multiple stakeholders to participate (cf. the example of www.SwissHTA.ch)



Multi-Criteria Decision Analysis (MCDA)

There are many definitions of Health Technology Assessment (HTA).

Some Commonalities:

- A Multidisciplinary Endeavor:
Clinical Medicine, Epidemiology, [Health] Economics, „*Policy Makers*“
- Systematic Evaluation of **Evidence of Clinical Benefit**
of medical interventions and clinical strategies

Some Differences:

- Systematic Inclusion of Costs (...)
of medical interventions and clinical strategies
- Types and Roles of **Economic Evaluation**

All definitions have in common that

- HTA represents **a variant of multi-criteria decision making.**



Multi-Criteria Decision Analysis (MCDA)

There are many methods for Multi-Criteria Decision-Making.

Some Strengths:

- Integration of multiple (sometimes conflicting) objectives
- Decomposing complex decision problems
- Comprising a broad set of methodological approaches
- Building on many disciplines
(incl. operations research, decision sciences, economics, psychology, ...)

Some Problems:

- It is doubtful if any identification of the “best” MCDA method can be performed
- **Appropriate treatment of opportunity cost?**

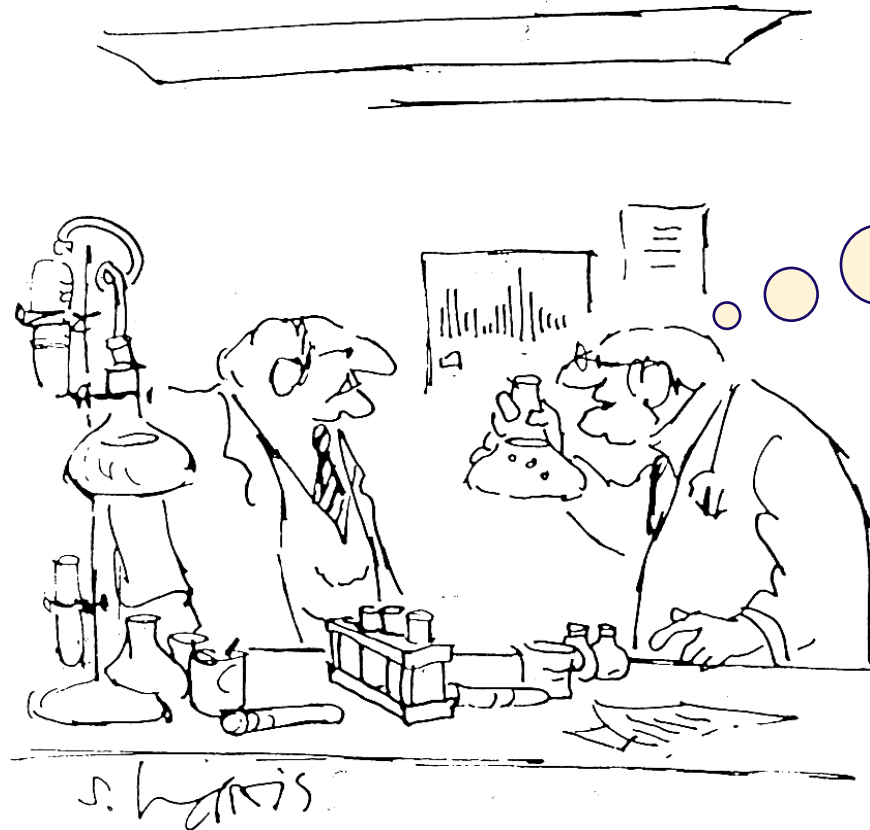
Some Commonalities:

All need to be informed by

- criteria,
- weights,
- and ranking principles.



Uncertainty and Value Judgments



**“It may well
bring about
immortality
—
but it will
take forever
to test it.”**



Thank You for Your Attention!

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