6389

Value and Valuation of Health Technologies
'Developing a Swiss Consensus'
5-6 November 2010, Zurich

How do we translate individual preferences into social preferences?

Professor Jeff Richardson

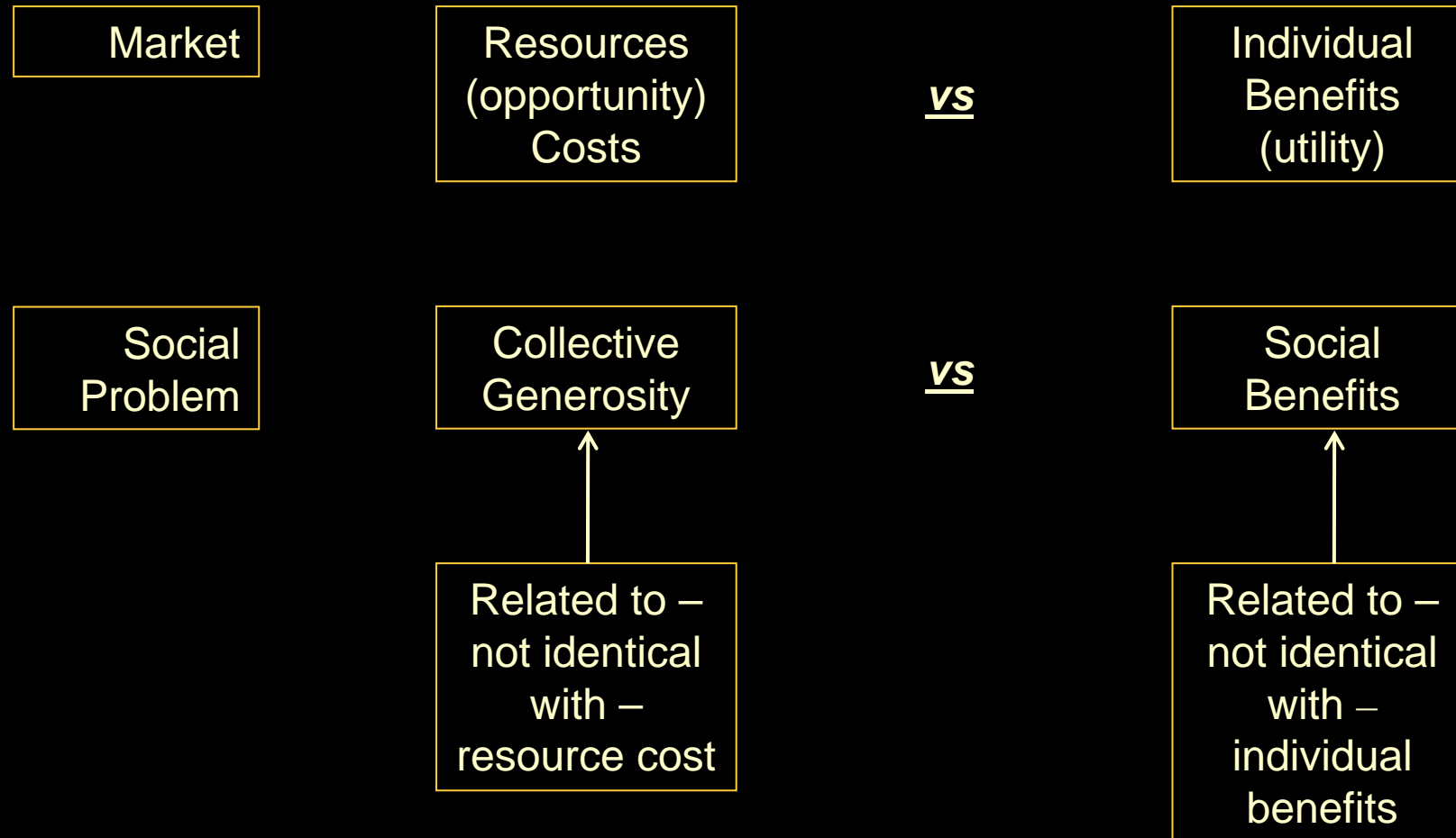Foundation Director, Centre for Health Economics

Monash University

http://www.buseco.monash.edu.au/centres/che/

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Content

A. The problem: Individual _vs_ social preferences
B. Theory: Aggregation
C. Redefining the task: What is achievable
D. Policy: What we should do

Market *vs* Social Allocation
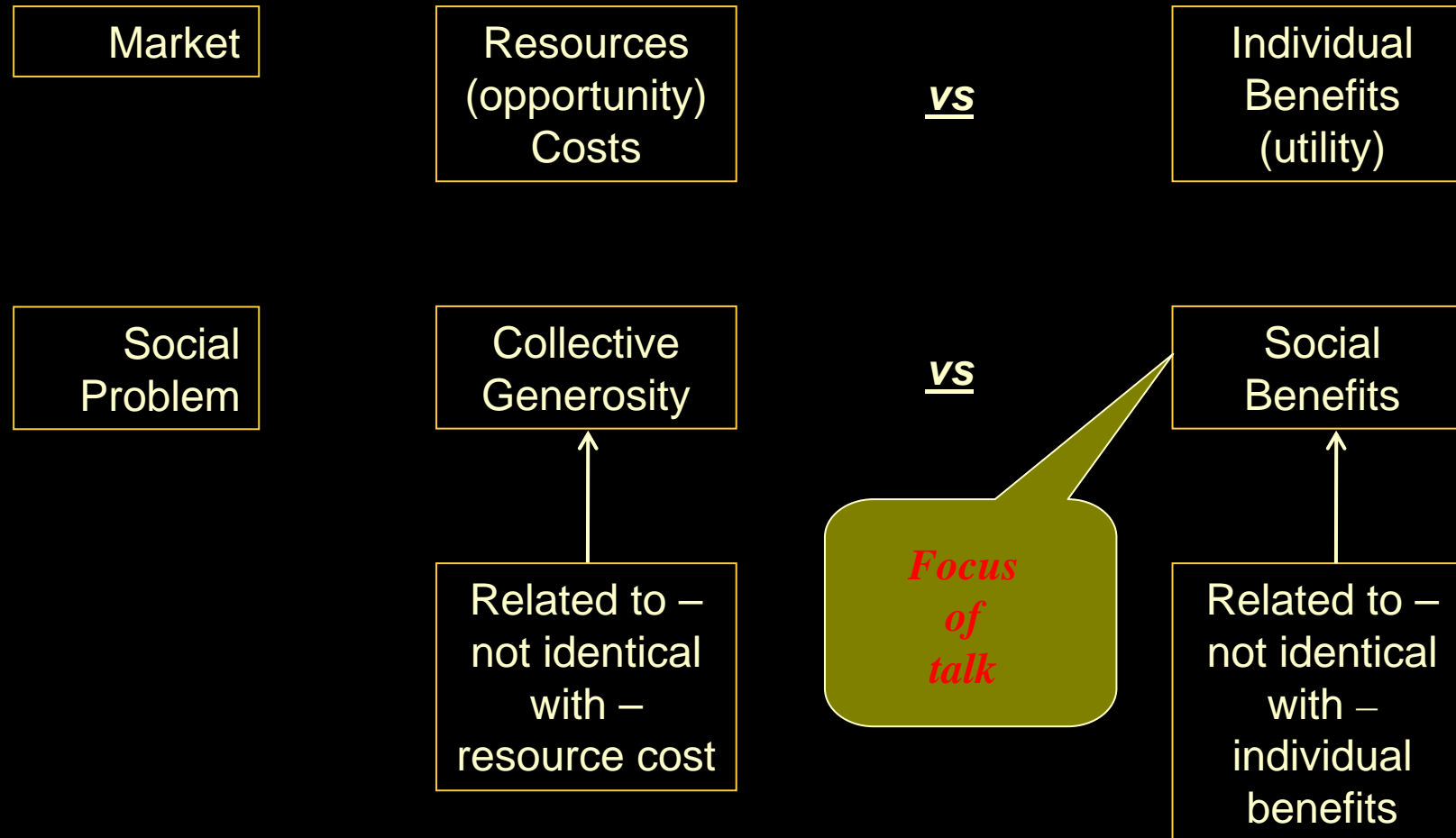
Market	Resources (opportunity) Costs	*vs*	Individual Benefits (utility)

Social Problem	Collective Generosity	*vs*	Social Benefits

Related to – not identical with – resource cost

Related to – not identical with – individual benefits

Market *vs* Social Allocation

| Market | Resources (opportunity) Costs | *vs* | Individual Benefits (utility) |

| Social Problem | Collective Generosity | *vs* | Social Benefits |

Related to – not identical with – resource cost

Focus of talk

Related to – not identical with – individual benefits

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B. Theory

Problems measuring social benefits

Focus of Section D Policy

a) Measurement – benefits of sharing, solidarity, etc

b) Combining individual benefits: winners and losers

Focus of Section B, C Theory

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Winners, Losers

Criterion	Distributive effects	
	Relatively Advantaged group	Relatively Disadvantaged group
Equal access for equal need	Poor access	Good access
Severity (need)	High CE	Low CE
Cost/Life	Short life expectancy	Long life expectancy
Cost/Life Year	Low QoL	High QoL
Cost/QALY	Low cost Responsive illness	High cost Unresponsive illness
Cost/(QALY, severity)	Severe Low CE illness	Less severe High CE illness
Cost/QALY*age weight	Young	Old
Cost (unit of capabilities)	Capabilities responsive High CE	Capabilities unresponsive Low CE
Cost/unit happiness	High CE High Happiness	Low CE High Happiness
Willingness to Pay	Wealthy	Less wealthy
Universal Sharing per se	High CE	Low CE

Combining Winners, Losers

Orthodox Economics

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First Approach

Social welfare function

$$W = W[U_1 \ldots U_n, \text{Other}]$$

... Adds gravitas to:

'We don't know the answer'

- Samuelson Bergson

Social welfare function

$$W = W(U_1 \ldots U_n)$$
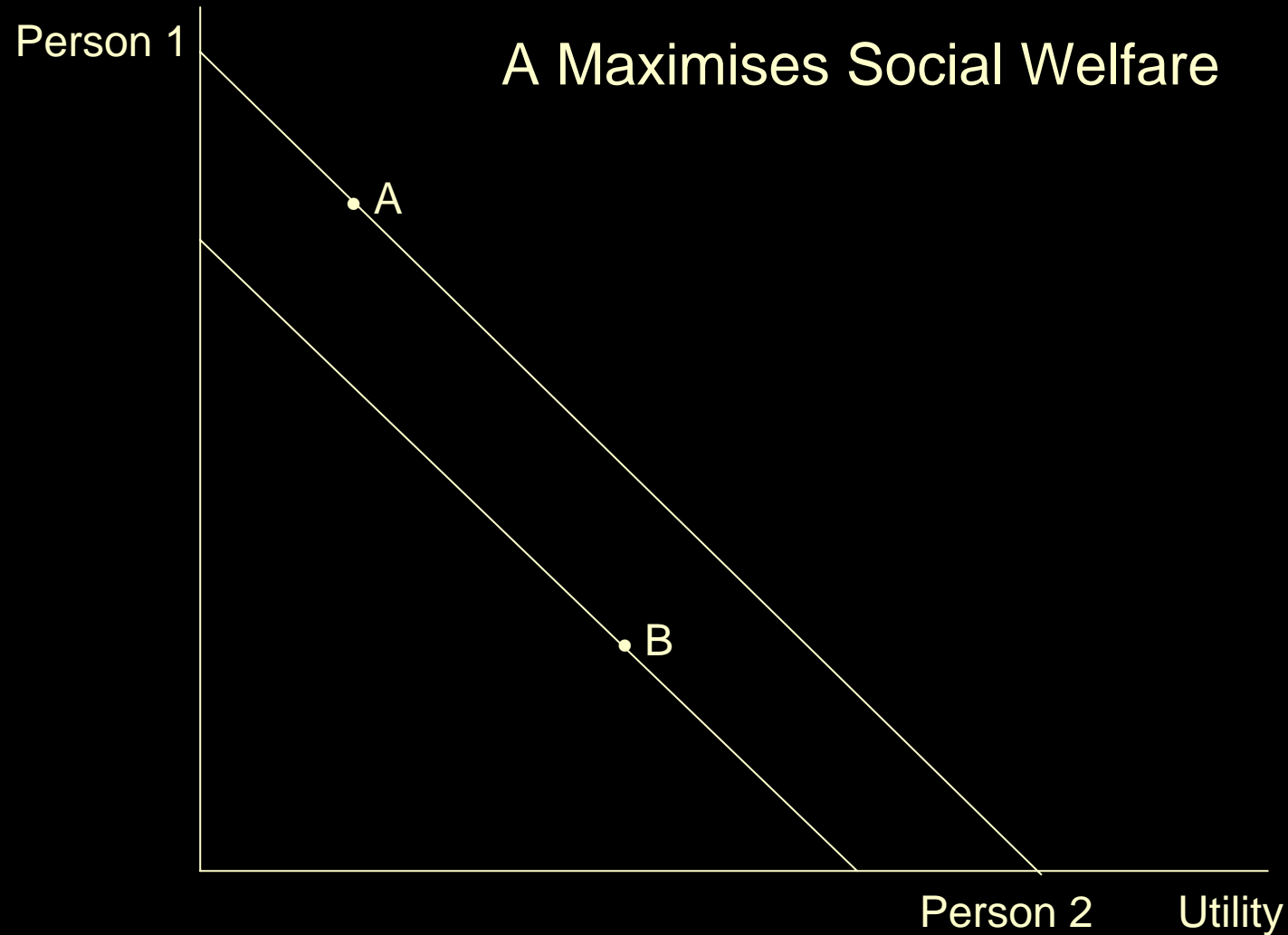
... Welfarism

... wrong

Second Approach

Potential Pareto efficiency

(Kaldor Hicks)

Situation 'X' is better if there is the potential to compensate the loser and 1+ person is better off.
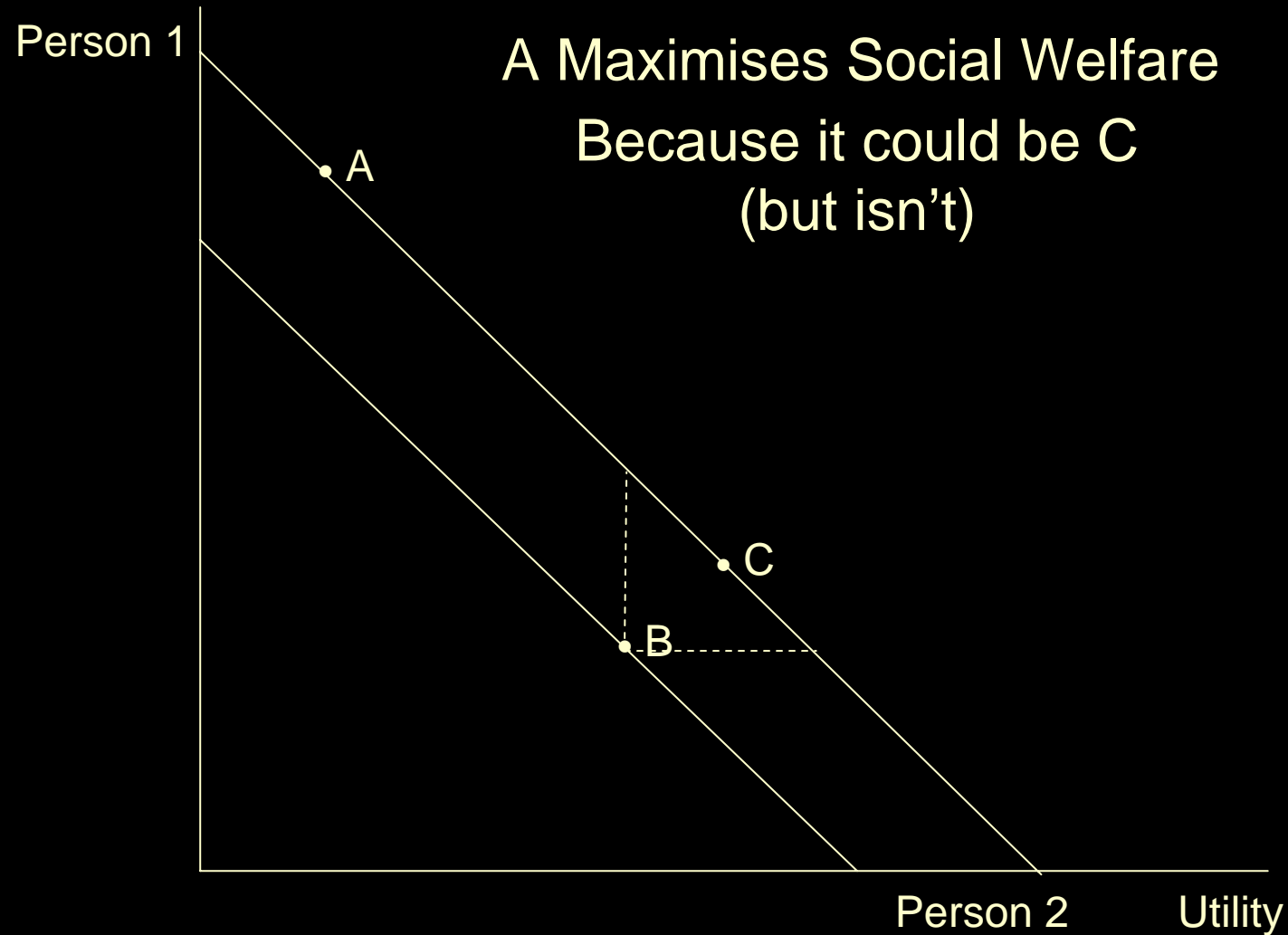
Life is simple
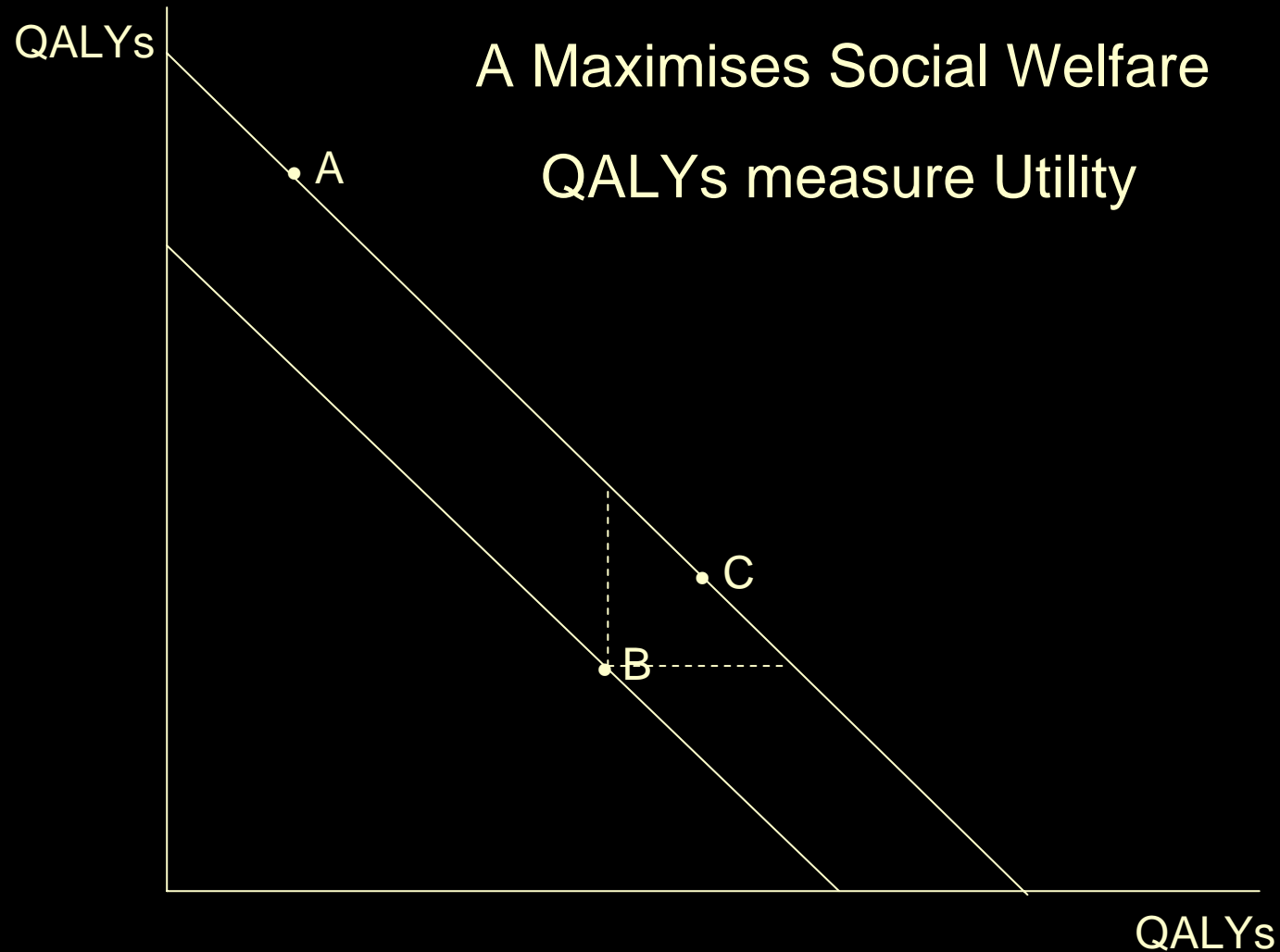
Conclusion

- Welfare theory provides no satisfactory method for combining winners/losers

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Arrow's voting paradox

'There is no technically correct way of combining preferences given reasonable rules'

Condorcet 1785

Preferences

Person A   X > Y > Z
Person B   Y > Z > X
Person C   Z > X > Y

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Condorcet 1875

Preferences

  Person A   X > Y > Z
  Person B   Y > Z > X
  Person C   Z > X > Y

Voting

  X vs Y   X > Y
  Y vs Z   Y > Z implies X > Z

But   X vs Z Z > X deeply profound in
                      world of intellectual
                      games

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Daily decision making
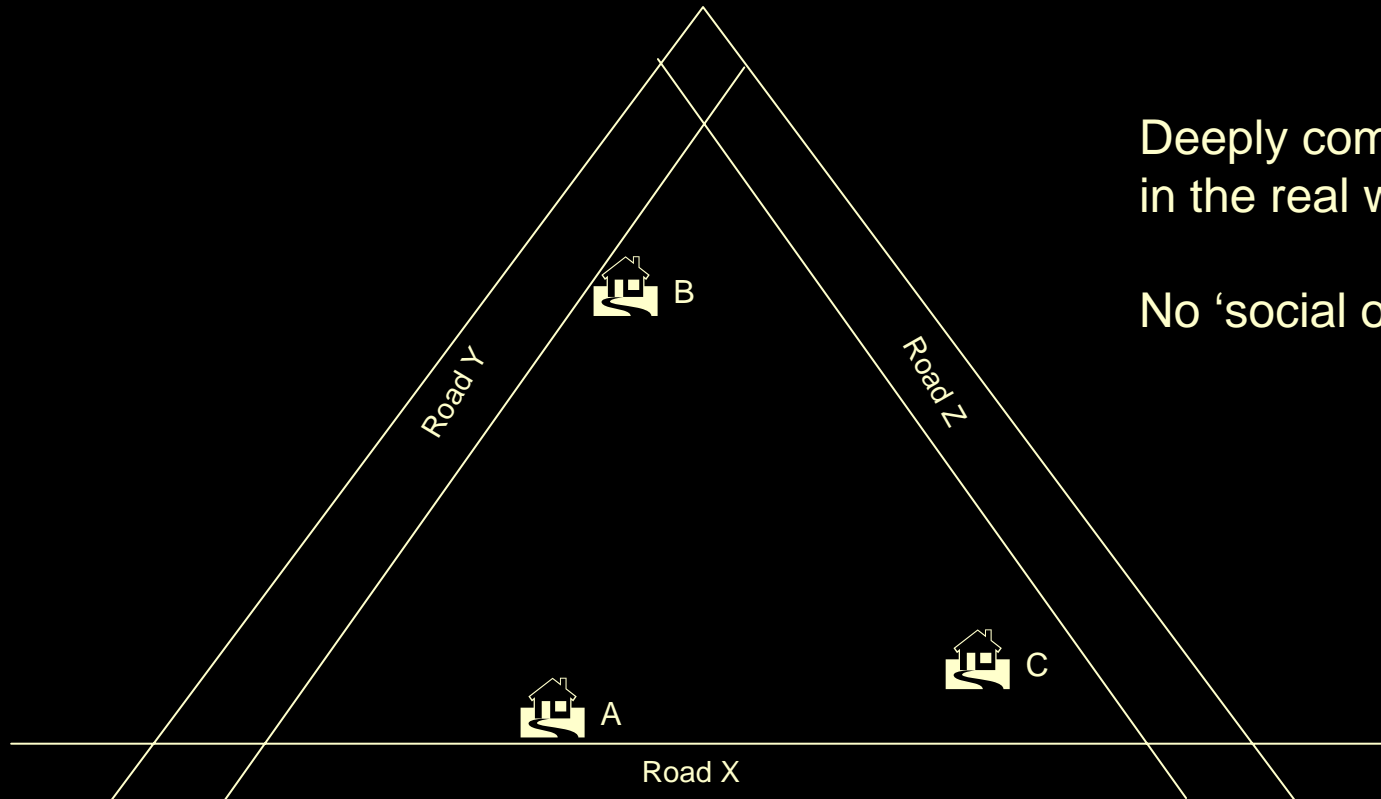
Deeply commonplace
in the real world

No 'social optima'

Preference for road improvement		Voting
Person A	X > Y > Z	X vs Y → x
Person B	Y > Z > X	Y vs Z → Y
Person C	Z > X > Y	X vs Z → Z

Allocation of medical resources

No 'maximum social welfare'

B

Cancer Services

Mental Health Services

C

A
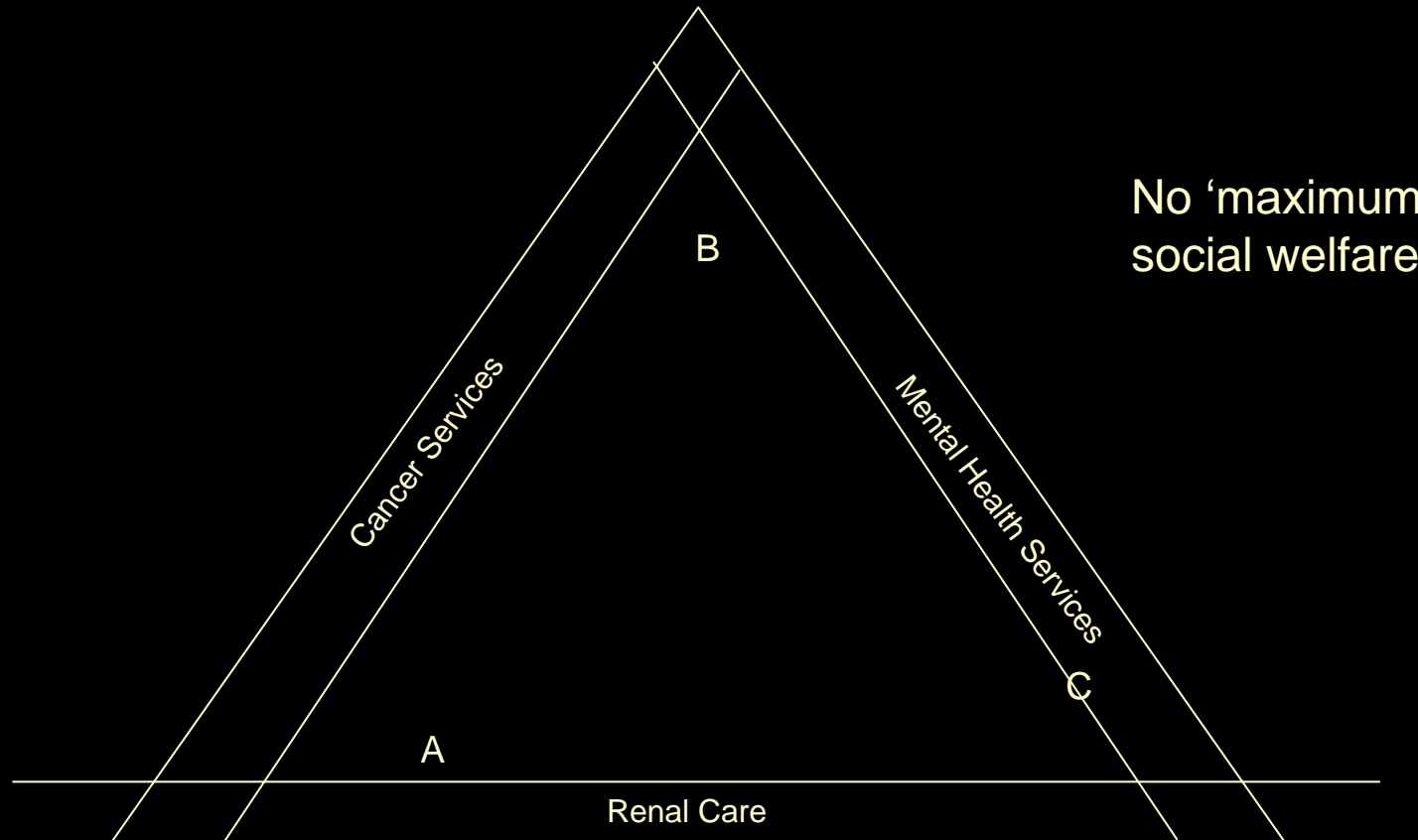
Renal Care

Need		Voting
Person A	Renal > Cancer > Mental Health	Renal vs Cancer → Renal
Person B	Cancer > Mental Health > Renal	Cancer vs Mental Health → Cancer
Person C	Mental Health > Renal > Cancer	Mental Health vs Renal → Mental Health

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Key Conclusion

- 'Social Optima' may not exist

- Decisions require additional non technical judgements

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Reason for the 'Paradox'

- It isn't a paradox

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- With 1 criterion ... Concept of transivity OK ...
      eg Maximise income

- Unambiguous ranking possible

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- **With 2+ criteria ... Concept of transivity unhelpful ...
Criteria may clash**

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    eg Majority voting and transivity
    eg Sen 'Impossibility of a Pareto Liberal'
    eg Food ... healthy, tasty, cheap
        Government ... intelligent, moral, courageous

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- Health : Multiple criteria

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Meaning of 'Social Value'

Multiple criteria means

- 'Social Optima'

  Potentially non existent

- 'Social Value' vague

  Like 'beauty', 'justice', etc

Vagueness $\neq$ meaninglessness

  This is beautiful ...

  This is unjust ...

'Social value' = something potentially broader than individual values

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Relevance for health

1   Criterion – cost/QALY – unambiguous ranking possible

2+ Criteria – cost/QALY + distributive + procedural fairness –
unambiguous ranking not possible

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Conclusion for health

- Multiple criteria
  implies no technical solution

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Ethics as a Solution

(Use of logical argument)

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'Straw ethics'

- Principle X should be adopted ...
- Utilitarianism: because ...
- Capabilities: because ...

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Plato's critique (the 'Parmenides')

- Judgement requires a criterion
    why this criterion
            requires a meta criterion
                why this meta criterion

- Oh dear, what can the meta be?
    There is an infinite regress

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Hume's critique

"is" $\nrightarrow$ ought

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C. Re-defining the task

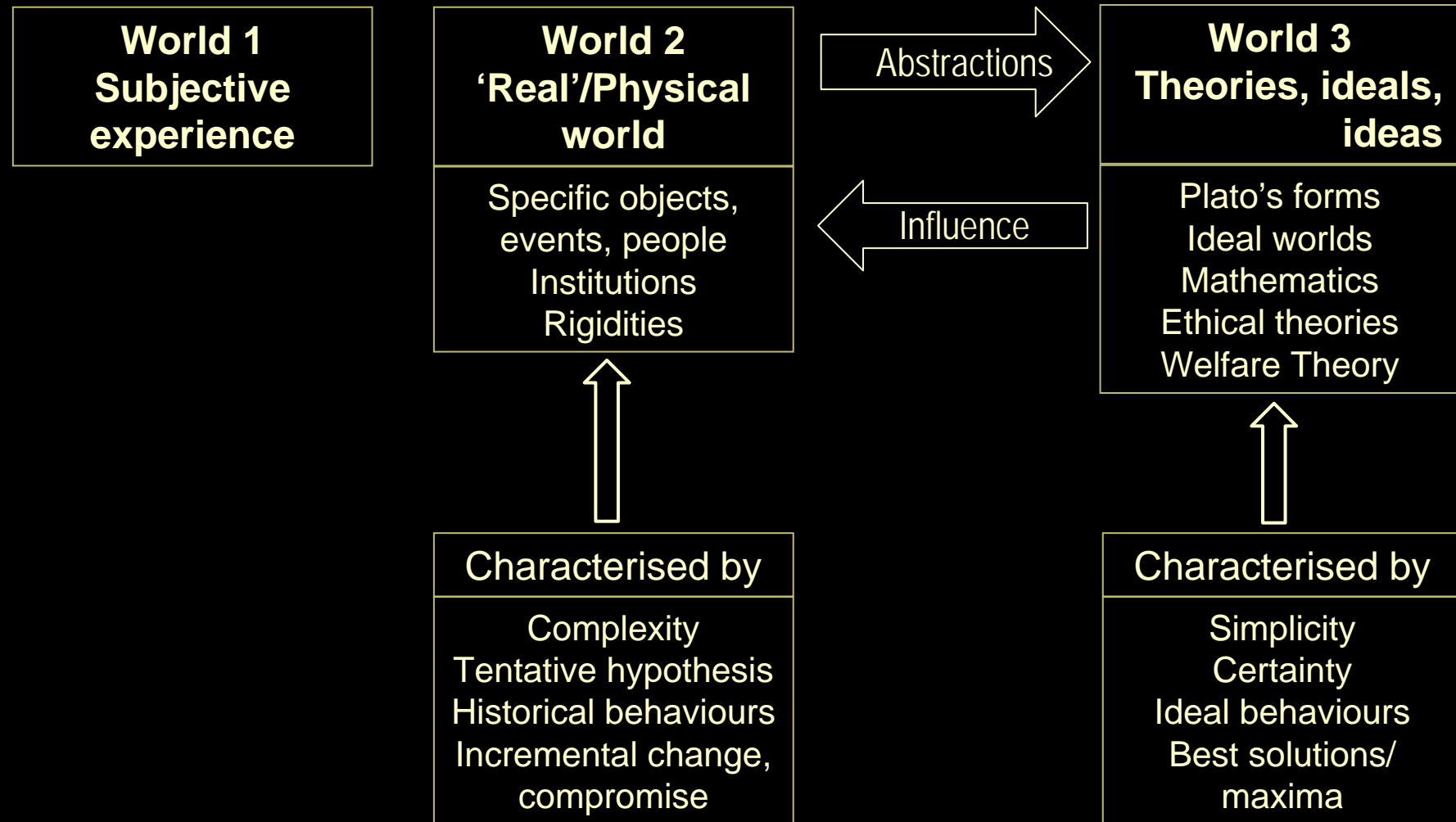# Progress to date

- Social welfare function   ...   ?
- Potential Pareto improvement   ➔   ?
- Ethics   ➔   ?
- Arrow ➔ Rational choice Impossible
  but choice is commonplace

WHY

Karl Popper's Three Worlds

**World 1
Subjective
experience**

**World 2
'Real'/Physical
world**

Specific objects,
events, people
Institutions
Rigidities

Abstractions →

← Influence

**World 3
Theories, ideals,
ideas**

Plato's forms
Ideal worlds
Mathematics
Ethical theories
Welfare Theory

Characterised by

Complexity
Tentative hypothesis
Historical behaviours
Incremental change,
compromise

Characterised by

Simplicity
Certainty
Ideal behaviours
Best solutions/
maxima

'Connecting' World 3

Physical sciences ... Unexpected Prediction

anti matter/particle entanglement

→ (tentative) best theory:

it works in World 2

Welfare economics

→ testable prediction

← assumptions

Assumptions ← World 3

- oversimplified

never proven

some wrong

- connection World 2 never

satisfactorily made

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Conjecture

- Health economics has not satisfactorily connected World 2, World 3

- This is not recognised by those advocating 'theoretically correct solutions'

Alternative frameworks for Welfare/Evaluation Analysis

1. Map 'World 3' → World 2
   - no test
   - theoretically impossible
     if multiple criteria (AIT)

2. Examine relationships in World 2
   - **positive** not normative analysis

3. Suggest World 3 Ethical Theories
   - **normative**/rhetorical
   - no authority, only a suggestion

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D. Policy

Empirical Ethics as a suggestion

a) Positive analysis of welfare related questions

- Data for decision making: See Lecture 1

b) Normative suggestion:

- Subject to caveats
  accept majority decision making

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(a) Positive Empirical Ethics

1. Iterative elicitation of values
       hypothesis generation, clarification
2. Quantification of social (value) preferences
       deliberation
3. Ethics critique, ie testing
4. Resubmit for reconsideration, reformulation

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(b) Normative Empirical Ethics

- Key suggestion for debate/modification
  - Accept population values subject to caveats
    - Launder abhorrent values
    - Protect minority rights
    - Consideration for exceptions

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Likely allocation principles

1. Sharing across patients
   ...every category of patient treated
2. Minimum services mandatory
   ...incremental services optional
3. Principles governing incrementalism
   - outline specific
   $$= f(\text{Strength of sharing, cost, prioritising principles})$$

Sharing ≠ arbitrary allocation
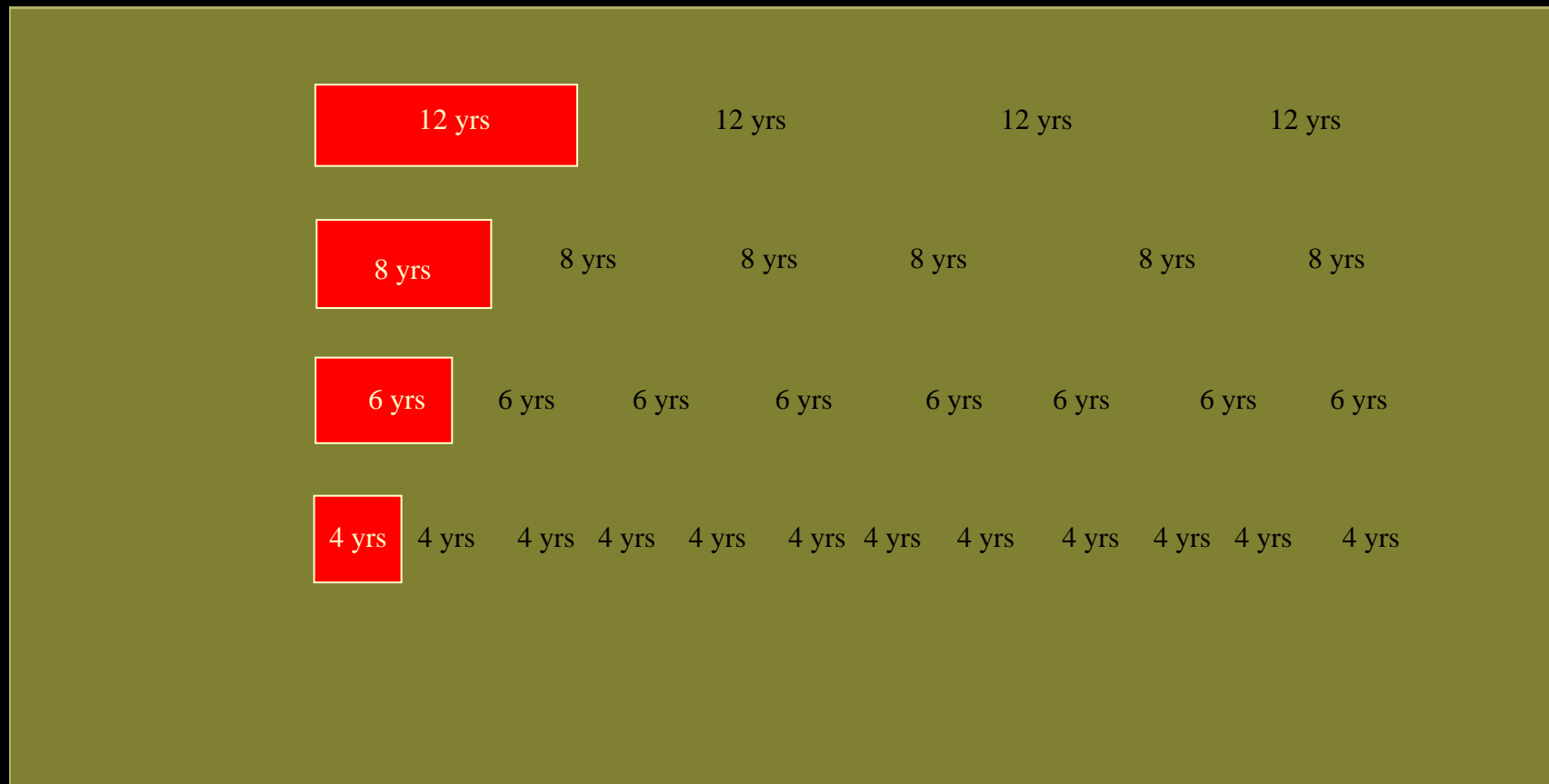
- Algorithms outperform full discretion

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Policy example 1: A flexible threshold

Focus: The Procedure

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Web based allocation exercise

The diagram below represents 4 patients and the age when they will die which is shown in red

Click on the box where you think Medicare should spend $10,000

| 12 yrs | 12 yrs | 12 yrs | 12 yrs |

| 8 yrs | 8 yrs | 8 yrs | 8 yrs | 8 yrs | 8 yrs |

| 6 yrs | 6 yrs | 6 yrs | 6 yrs | 6 yrs | 6 yrs | 6 yrs | 6 yrs |

| 4 yrs | 4 yrs | 4 yrs | 4 yrs | 4 yrs | 4 yrs | 4 yrs | 4 yrs | 4 yrs | 4 yrs | 4 yrs | 4 yrs |

Policy example 1: A flexible threshold

Focus: The Procedure

$\ln \rho/(1-p) = a - b_1 \text{ cost/QALY} + b_2 \text{ Severity} + b_3 \text{ Character} + b_4 \text{ Share} + b_5 \text{ budget}$

if $\rho = \frac{1}{2}$

$0 = a - b_1 \text{ cost} + b_2 \text{ Severity} + b_3 \text{ Character} + b_4 \text{ Share} + b_5 \text{ budget}$

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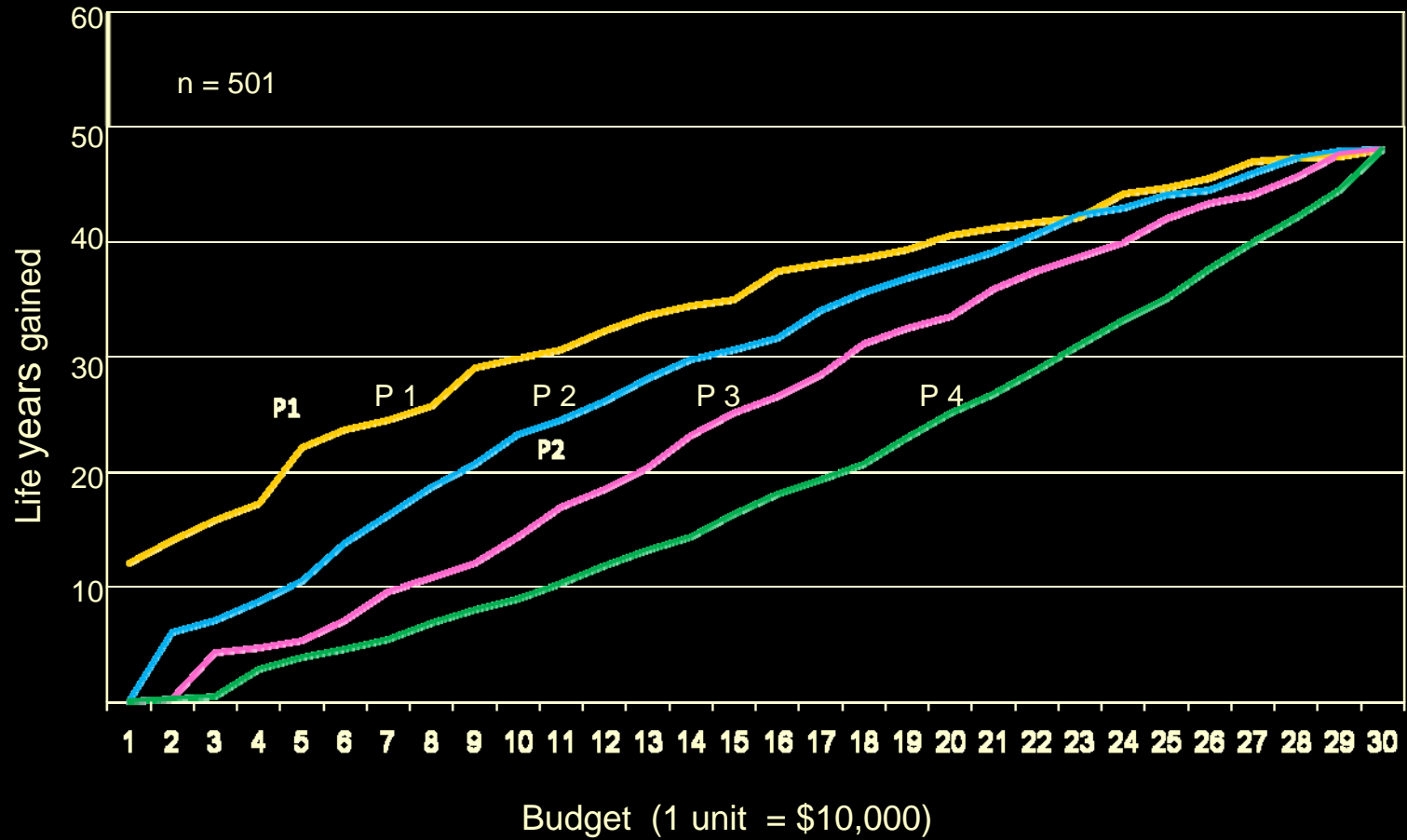
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$\qquad 0 = a - b_1 \text{ cost} + b_2 \text{ Severity} + b_3 \text{ Character} + b_4 \text{ Share} + b_5 \text{ budget}$

Threshold

$\qquad \text{cost/QALY} = f(\text{Budget, Sharing, Severity, Characteristics})$

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Policy Example 2: Sharing the Budget by Group

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Policy Example 2: Sharing the budget
Individual Groups

Diagnostic Group 1 = b_{11} Budget + b_{12} Cost/LY + b_{13} Other

Diagnostic Group 2 "   "   "

  Diagnostic Group 3   "   "   "

Diagnostic Group n = b_{n1} Budget + b_{n2} Cost/LY + b_{n3} Other

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Unanswered health sector questions for empirical investigation

1. What are the public's broad goals

   - Individual preference maximisation – utility in part
   - Individual happiness in part
   - Capabilities ... ??
   - Health maximisation no
   - Health sharing ... Yes
   - Priority for severity ... Yes

2. **How do we trade-off these goals***

3. Who should make social decisions: parliament; statutory authority

   - Services to include – therapies/diagnostic groups: budget share
   - Who is trusted (not politicians, not economists)

4. Should individuals or expert opinion count

   - mix = primarily expert

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Conclusion

- Huge scope for empirical analysis of public values

Implementation

- Whatever voting process exists should be used

WHY?

- There is no alternative in World 2

Suggestions for reform of governance

- **Semi autonomous authority (federal or sub federal level)**
  - Determines broad principle (eg Sharing; role of cost ...)
  - Establishes boards for specific decisions eg services/drugs on NHS
    - Membership =   doctors, administrators, economists, consumer representatives (seek)

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Role of social scientist

Quantification of population values - advisor
  NOT

Philosopher King

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Institutional Implication

- 'Optimal' decisions
  - reflect social values,
  - $\neq$ technical solutions
- Governance
  - reflects desired level of local autonomy

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Conclusions

- 'Social Welfare'
  - = shorthand label
  - = not (only) individual preferences
  - $\neq$ uni-dimensional clear construct

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- Health sector

  NHS - created for social reasons

  　　　- requires social decision making by (modified) institutions

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    - Min cost/QALY not 'technically correct'

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  - Overwhelming importance ... sharing, fairness

  - Underwhelming importance ... Efficiency

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- Empirical Ethics indicates

  - Overwhelming importance ... sharing, fairness

  - Underwhelming importance ... efficiency

- Decision making should vary with social values

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