

The Value of Longevity: Life Extension versus Replacement



Gustaf Arrhenius

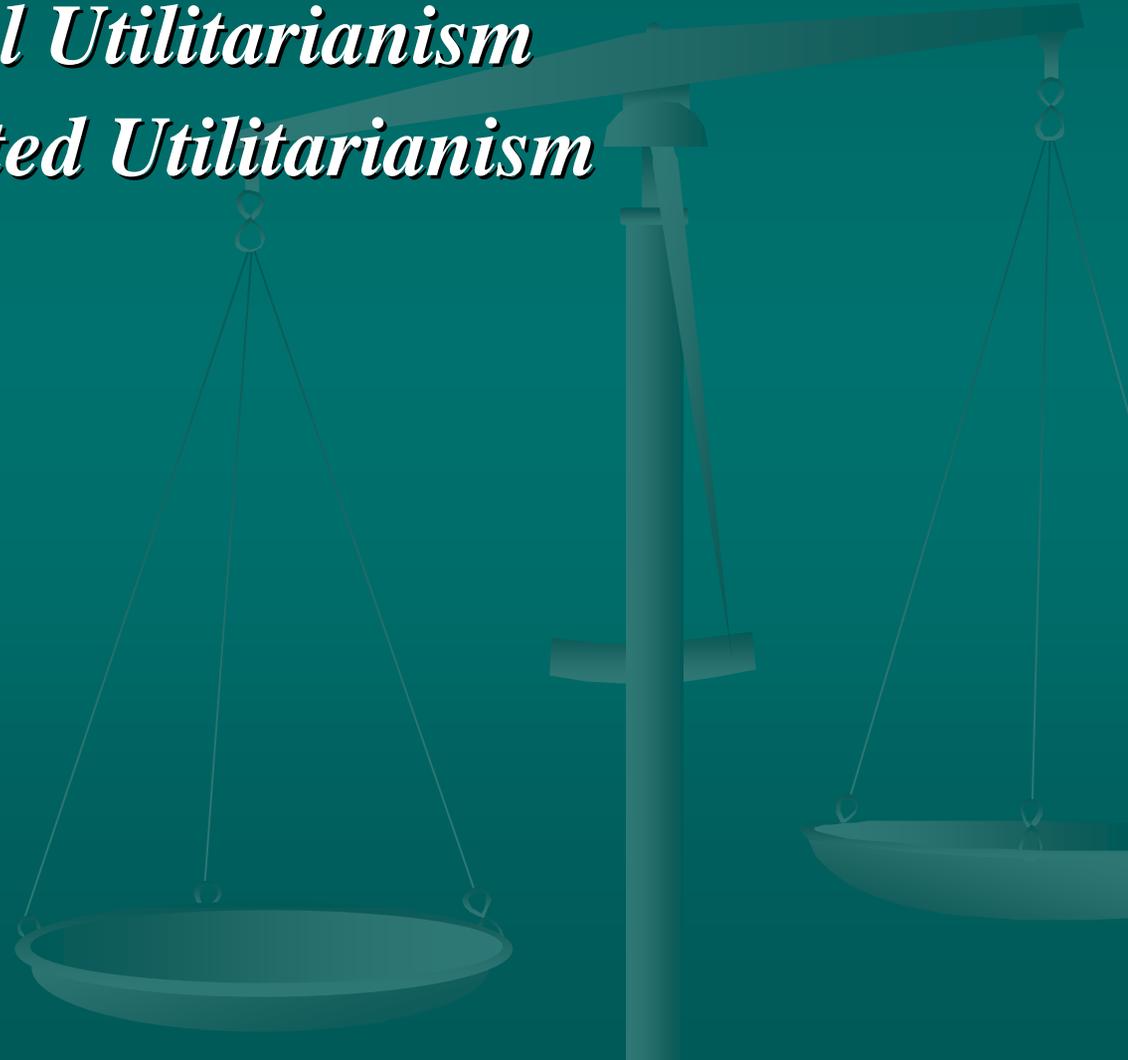
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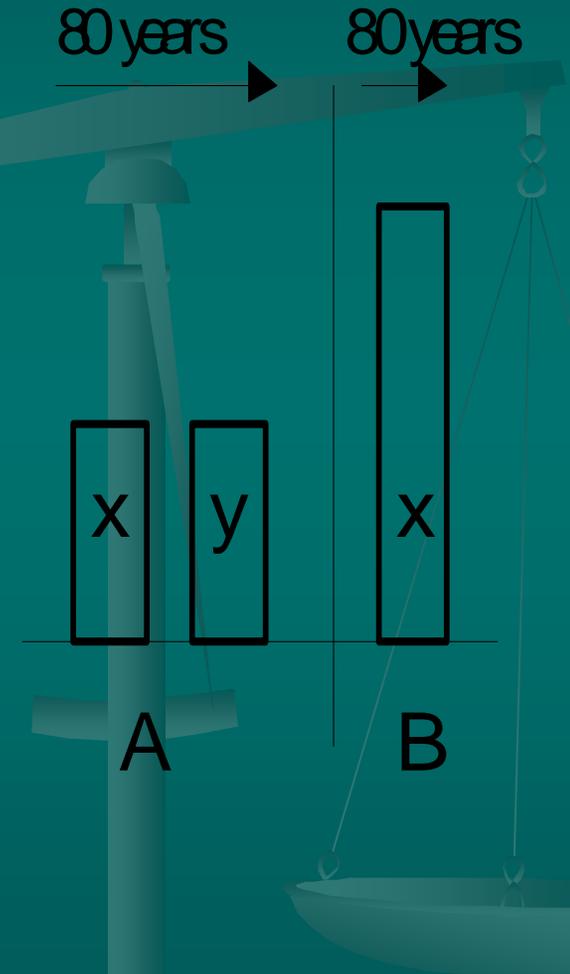
Outline

- *The Longevity Intuition*
- *Critical Level Utilitarianism*
- *Harm Adjusted Utilitarianism*



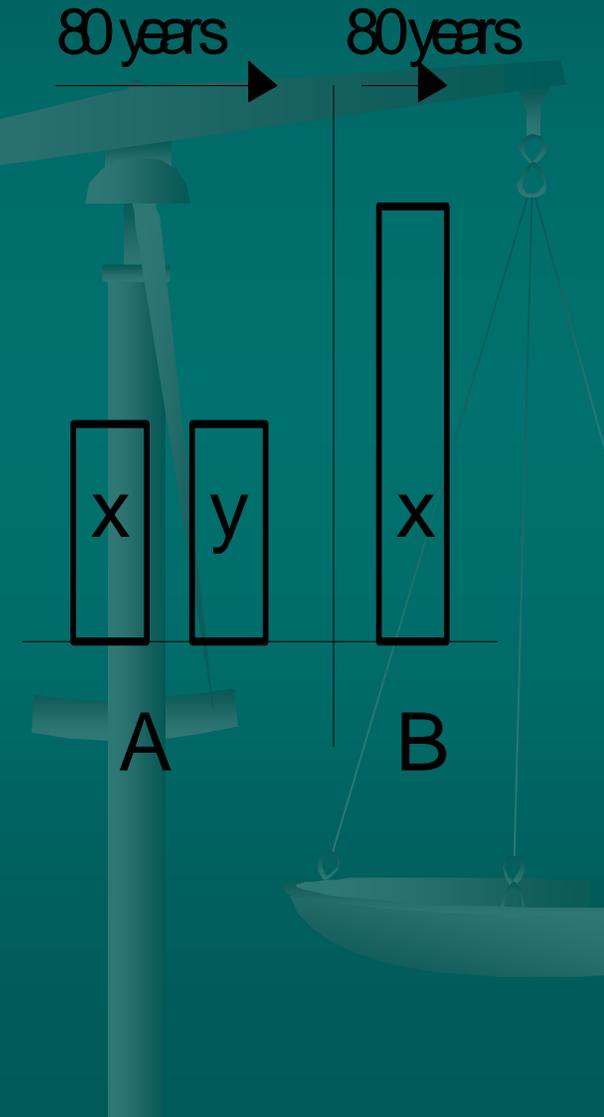
A Simple Case

- *A: First 5 million people, the x-people, live for 40 years, then another 5 million people, the y-people, live for 40 years.*
- *B: 5 million people, the x-people, live for 80 years.*
- *Same welfare (quality of life) per year for everybody, thus the same total temporal welfare in both outcomes.*
- *Outcome A is replacement, outcome B is life extension.*



Which Outcome is the Best One? (1)

- *Hedonistic Utilitarianism: A and B are equally good.*
- *All theories that satisfy Neutrality ranks A and B as equally good.*
- *Neutrality: If there is the same total temporal welfare in two outcomes A and B, and there is perfect equality in A and B, then A and B are equally good, other things being equal.*
- *According to such theories, whether we should choose life extension or replacement depends only on empirical considerations.*



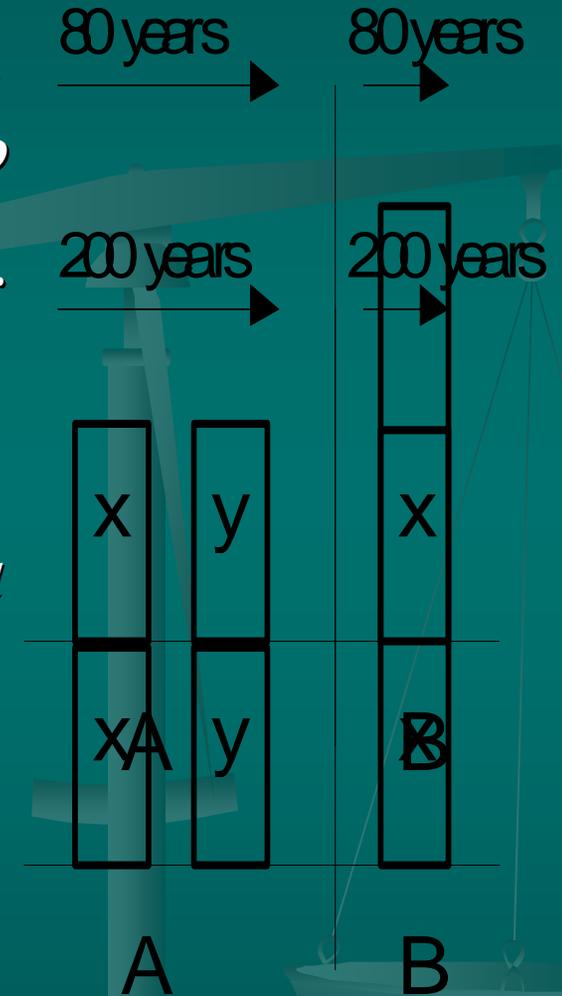
Which Outcome is the Best One? (2)

- *“Longevity certainly has value... If [B] were no better than [A], we would have gained no benefit from the historical lengthening of people’s lives... One eighty-year life is better than two forty-year lives.” (Broome)*

- *Transhumanists: A positive right to carry on living.*

- *“Human rights do not get any more fundamental than the right to carry on living”. (A de Grey 2003)*

- *“There may well be some sort of population explosion [from eliminating all deaths caused by ageing] ... but the first priority is to end the slaughter. Everything else is detail.” (A de Grey 2006)*



Critical Level Utilitarianism (CLU)

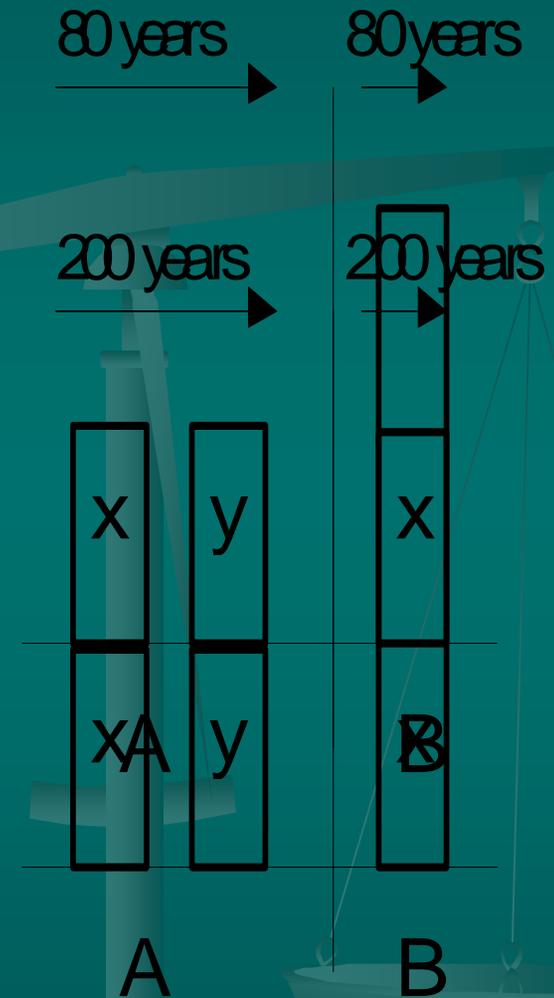
- *The contributive value of a person's life is her lifetime welfare minus a positive critical level.*
- *The value of a population is calculated by summing these differences for all individuals in the population.*

$$CLU(X) = \sum_{i=1}^n (u_i - k) \quad n > 0$$

- *n is the population size of X.*
- *u_i is the numerical representation of the welfare of the i:th life in population X.*
- *k is the critical level.*
- *The critical level k is the level at which it is axiologically neutral whether a life is created or not, what Broome calls 'the neutral level for existence'.*
- *"...the neutral level for existence is positive, once the zero of lifetime well-being is normalized at the level of a constantly neutral life" (Broome (2004), p. 259).*

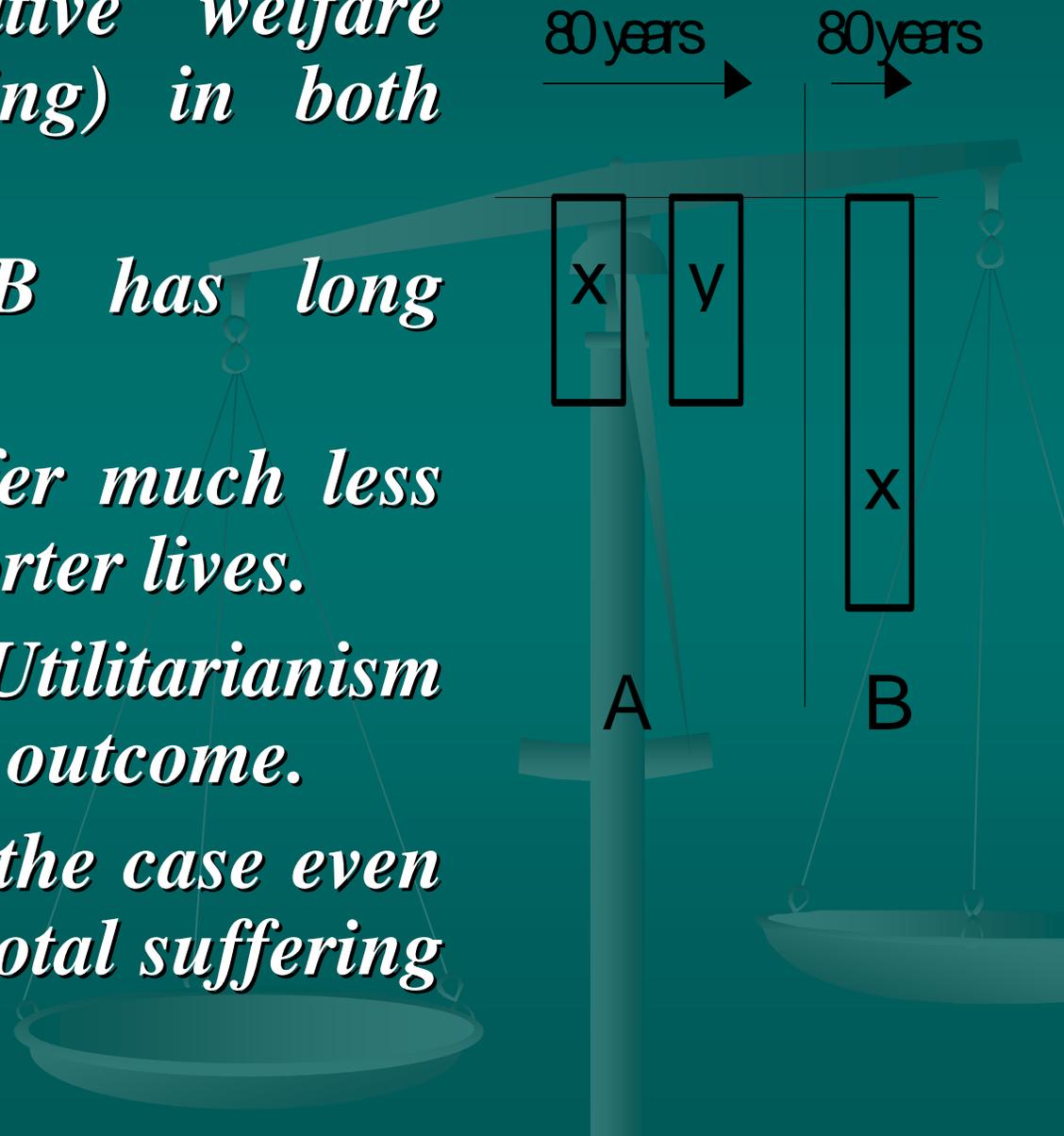
CLU and Life Extension versus Replacement

- *Let w and $2w$ represent the lifetime welfare of the people in A and B respectively.*
- *Let $2n$ and n be the population size of A and B respectively.*
- *$CLU(A) - CLU(B) =$*
- *$2n(w - k) - n(2w - k) = -nk.$*
- *Hence, Critical Level Utilitarianism ranks B as better than A and thus supports life extension.*
- *Too much support for life extension?*



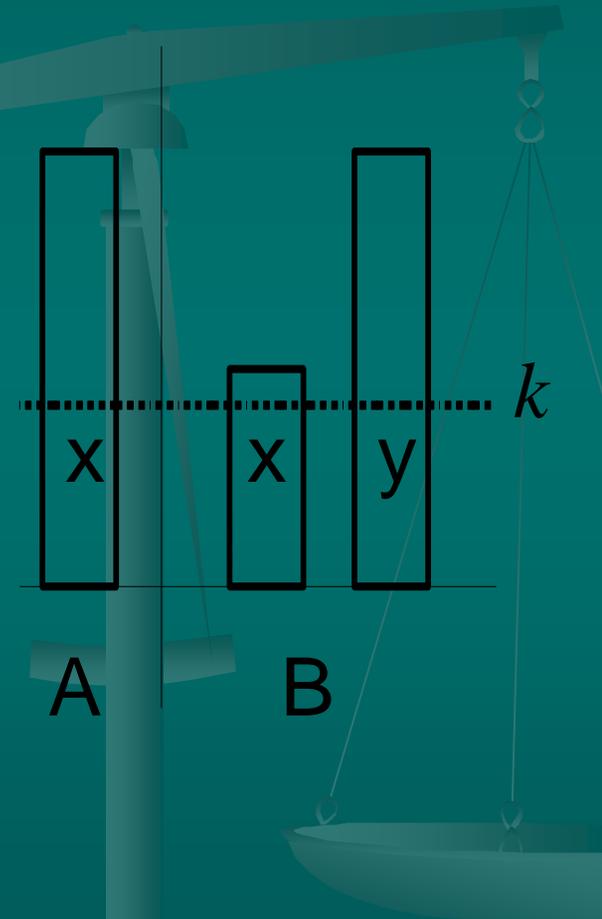
Extending Bad Lives

- *Same total negative welfare (pain and suffering) in both outcomes.*
- *The people in B has long suffering lives.*
- *The people A suffer much less since they have shorter lives.*
- *Critical Level Utilitarianism ranks B as the best outcome.*
- *This could still be the case even if there was more total suffering in B.*



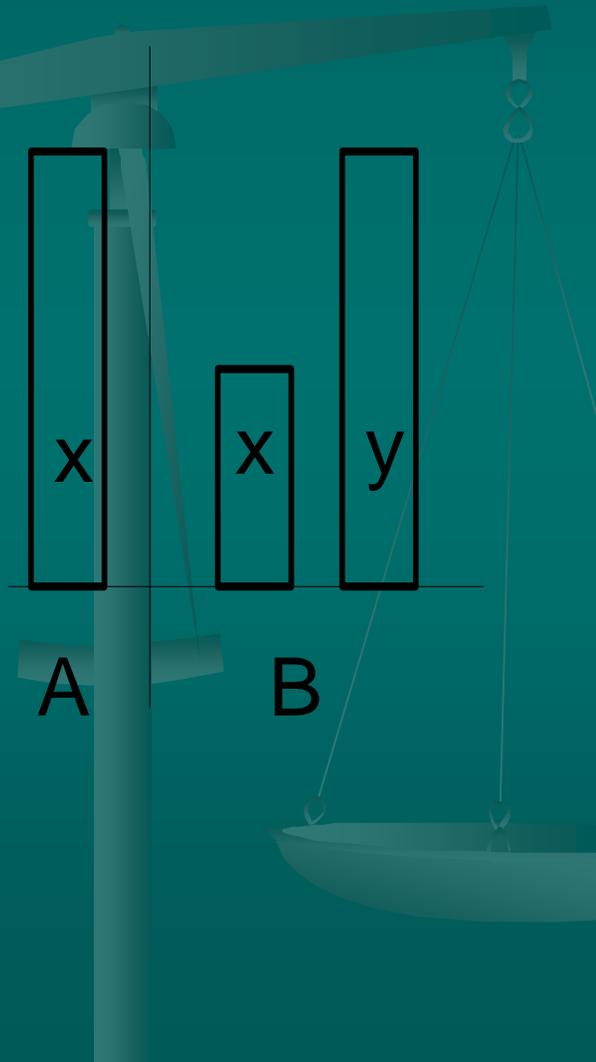
The Couple's Choice

- Suppose a couple already have one child (x) that is expected to have a long life (alt. A).
- If the couple have another child (y), then the first child's life will be shortened because of scarcity of resources (alt. B).
- "The answer given by ... [CLU] is that [B] ... is better if the second child's lifetime wellbeing is sufficiently above the neutral level. The difference between it and the neutral level must be greater than the loss of wellbeing suffered by the existing child. ---
- The effect of a positive neutral level is to make it more beneficial to extend the life of an existing person than to bring a new person into existence.
- This confirms most people's strong intuitions." (p. 259)
- The Very Sadistic Conclusion: For any population of lives with very negative welfare, there is a population of lives with positive welfare which is worse, other things being equal.



The Pointless Harm Intuition

- *The Pointless Harm Intuition: It is wrong (or bad) to make people significantly worse off when no one else would benefit from it.*
- *In the case of the couple's choice, if the parents don't extend their existing child's life, she would be worse off.*
- *According to a commonly shared intuition, however, the new child doesn't benefit from being brought into existence.*
- *...[I]t cannot ever be true that it is better for a person that she lives than that she should never have lived at all. If it were better for a person that she lives than that she should never have lived at all, then if she had never lived at all, that would have been worse for her than if she had lived. But if she had never lived at all, there would have been no her for it to be worse for, so it could not have been worse for her. (Broome 1999, p. 168, emphasis in original)*
- *Hence, A is the right choice.*



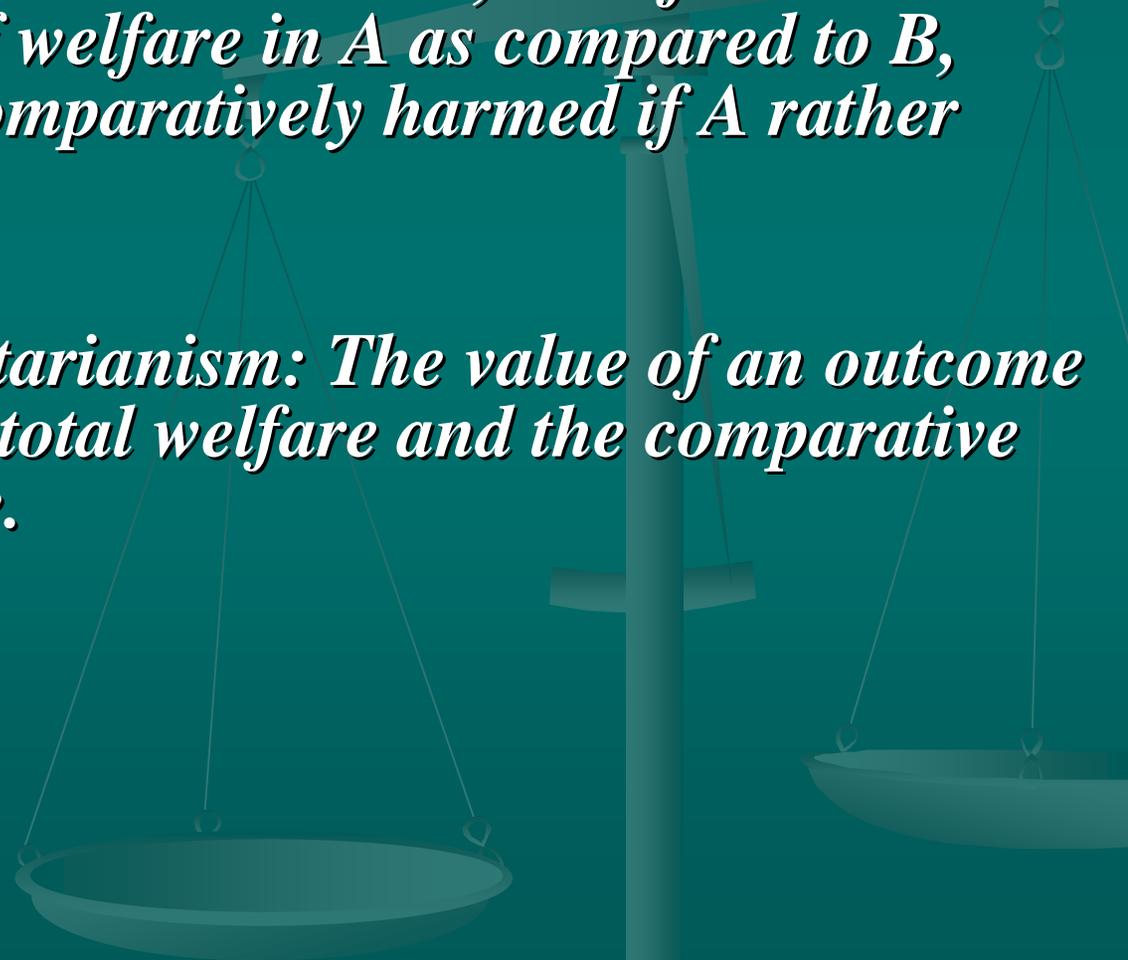
Harm Adjusted Utilitarianism (1)

- *It makes an outcome worse if people are worse off than they otherwise could have been.*
- *People who are worse off than they otherwise could have been are harmed in a morally relevant way.*
- *We could also say that such people have a legitimate complaint or grievance and this makes an outcome worse.*
- *In addition to the wellbeing of everybody, we should take the badness of such harms or legitimate complaints into account.*
- *Moreover, a person is not harmed by not coming into existence since one have to exist at some point in time to be harmed or to have a legitimate complaint.*

Harm Adjusted Utilitarianism (2)

- *The Principle of Comparative Harm: If a person exists in two alternative outcomes A and B, and if she would be worse off in terms of welfare in A as compared to B, then she would be comparatively harmed if A rather than B came about.*

- *Harm Adjusted Utilitarianism: The value of an outcome is determined by the total welfare and the comparative harm in the outcome.*



HAU and Life Extension versus Replacement

- *Harm Adjusted Utilitarianism: The value of an outcome is determined by the total welfare and the comparative harm in the outcome.*

- *If we choose A, then the x-people are going to be harmed since they will have half of the welfare they would have had, had we picked outcome B.*

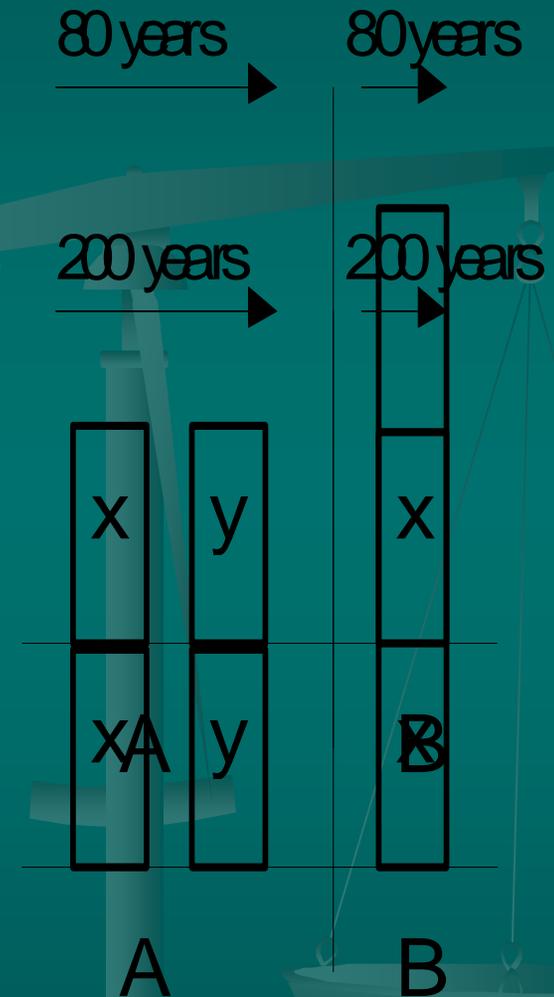
- *The y-people will not be harmed if we choice B since in that case they will not exist.*

- *A and B are equally good in respect to welfare.*

- *A is worse in respect to harms.*

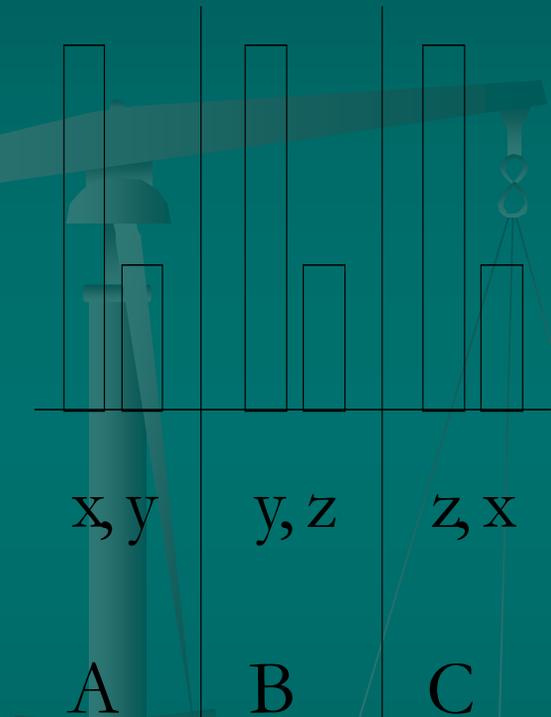
- *Hence, B is better than A all things considered.*

- *In other words, life extension is better than replacement.*



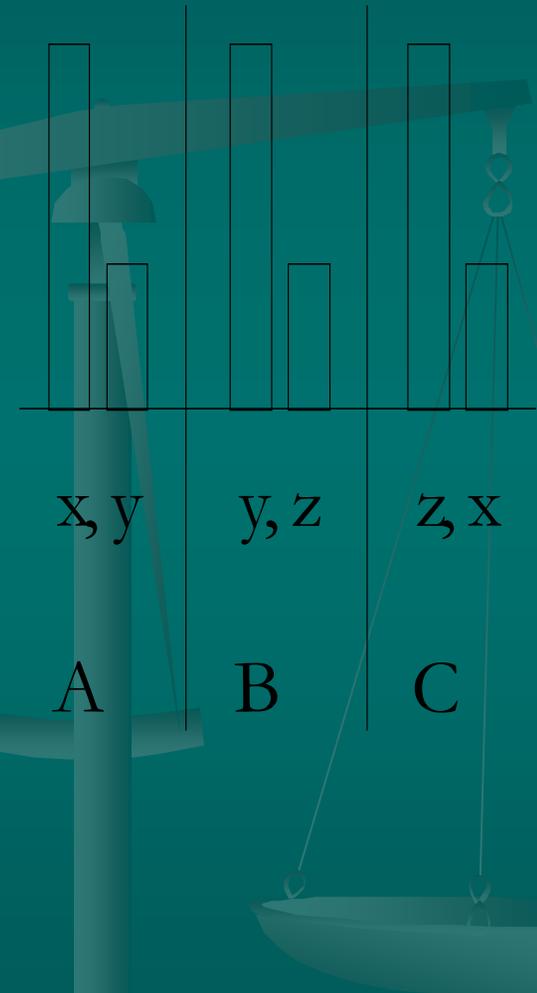
2nd Problem: Non-transitivity

- *All the outcomes are equally good in respect to total welfare.*
- *Since the y-people are worse off in A as compared to B, the y-people would be harmed if we choose A.*
- *Thus, all things considered, A is worse than B.*
- *The same reasoning yields that B is worse than C, and C is worse than A.*
- *If A is worse than B, and B is worse than C, then transitivity yields that A is worse than C.*
- *Thus, A is both better and worse than C.*



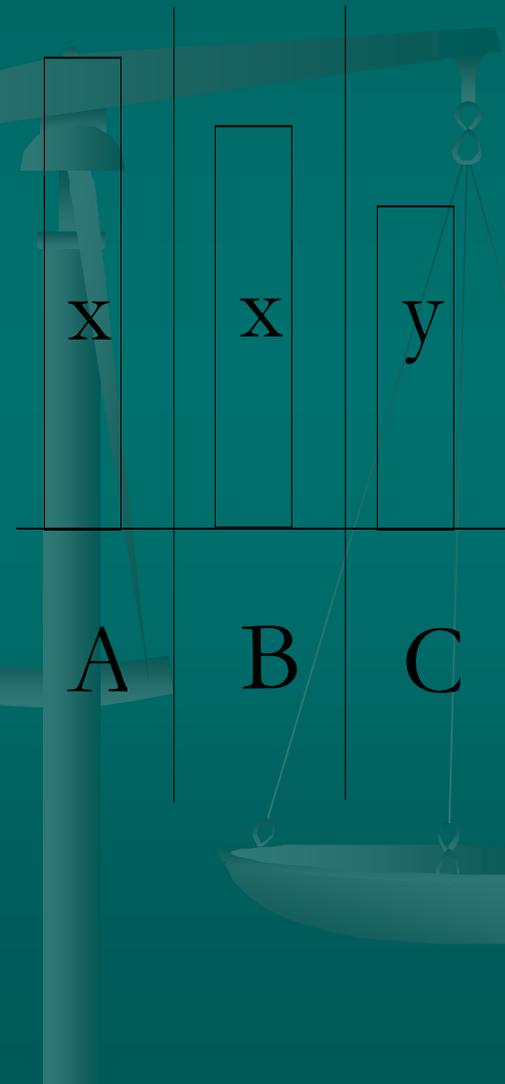
Harm Adjusted Utilitarianism Reformulated

- *The value of an outcome is determined by the value of the total welfare in the outcome reduced by a factor that reflects whether people are harmed in the sense of being worse off than they could have been.*
- *Assume that the total welfare of the best-off is 10 units whereas the total welfare of the worst-off people is 5 units.*
- *The value of outcome A would then be 15 minus some factor h that represent the fact that the y -people are worse off than they could have been.*
- *Similarly, the value of outcome B and C would be 15 minus h .*
- *Hence, on this view all the outcomes are ranked as equally good.*

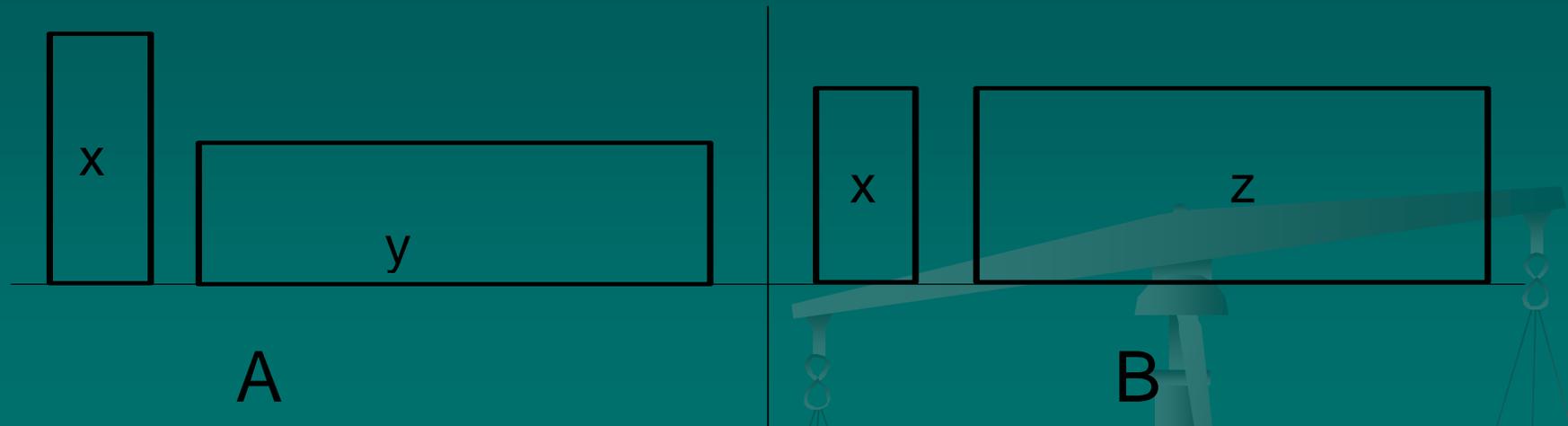


3d Problem: Dominated Outcomes

- *There is the same number of people in all three outcomes.*
- *Everyone is better off in A as compared to B, in virtue of their longer lives, and everyone is better off in B as compared to C.*
- *The x-people would be harmed if we choose outcome B since they would be worse off than they otherwise could have been.*
- *Let h represents the total value of the harm done to the x-people if we were to choose outcome B.*
- *Let d represent the total difference in well-being between the x-people in B and the y-people in C.*
- *The difference in value between outcome B and C will then be d minus h .*
- *Consequently, if h is greater than d , then Harm Adjusted Utilitarianism will rank C as better than B although everyone has longer lives and thus is better off in B.*



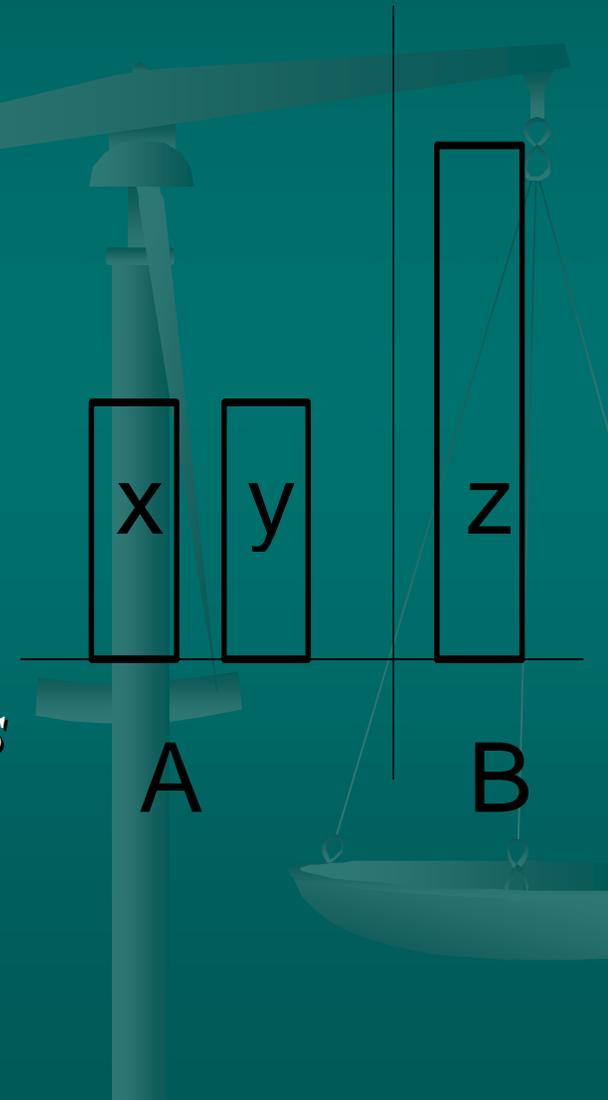
4th Problem: The Energy Policy Case



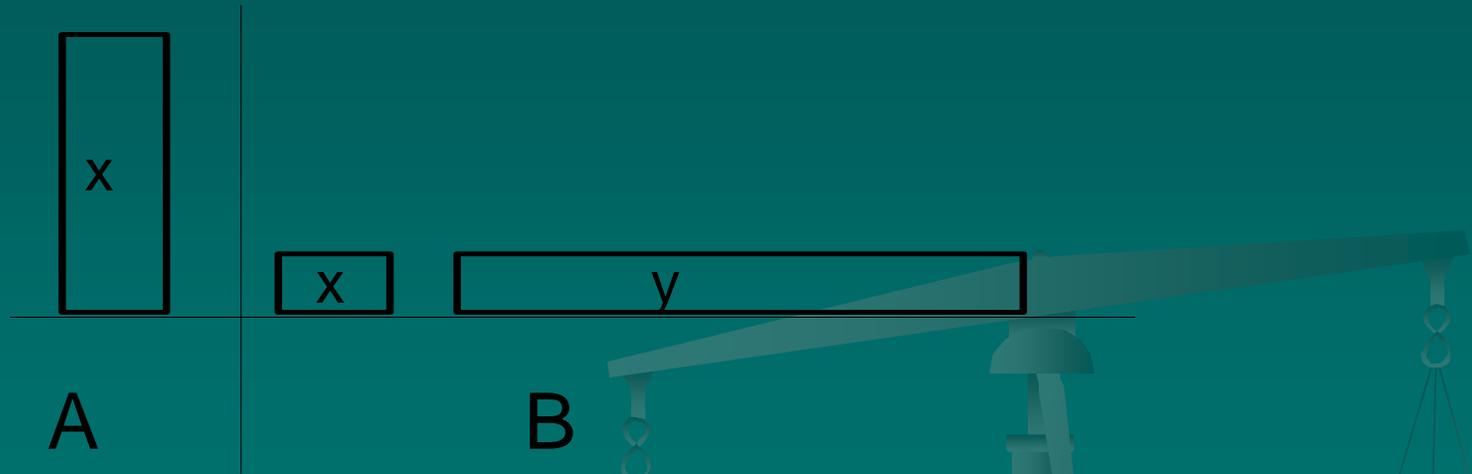
- Assume that the total difference in welfare for the x -people in the two outcomes equals the difference in welfare for the y - and z -people.
- Thus, A and B involve the same number of people and the same total sum of welfare.
- A modest egalitarian consideration implies that B is better than A since they are equally good in regards to the total welfare but there is perfect equality in B whereas there is inequality in A.
- Harm Adjusted Utilitarianism implies that A is better than B because the x -people would be harmed if we were to choose outcome B rather than A whereas the y - and z -people would not be harmed were we to choose outcome B rather than A.

6th Problem: Won't Deliver the Goods?

- *In all cases involving different people in the alternative outcomes, Harm Adjusted Utilitarianism determines the ranking by the total sum of welfare since such cases don't involve any harm.*
- *Recall that one cannot be harmed, according to Harm Adjusted Utilitarianism, by not being born.*
- *Thus, in respect to future populations where there is no overlap of individuals in the compared populations, it implies that replacement is as good as life extension.*

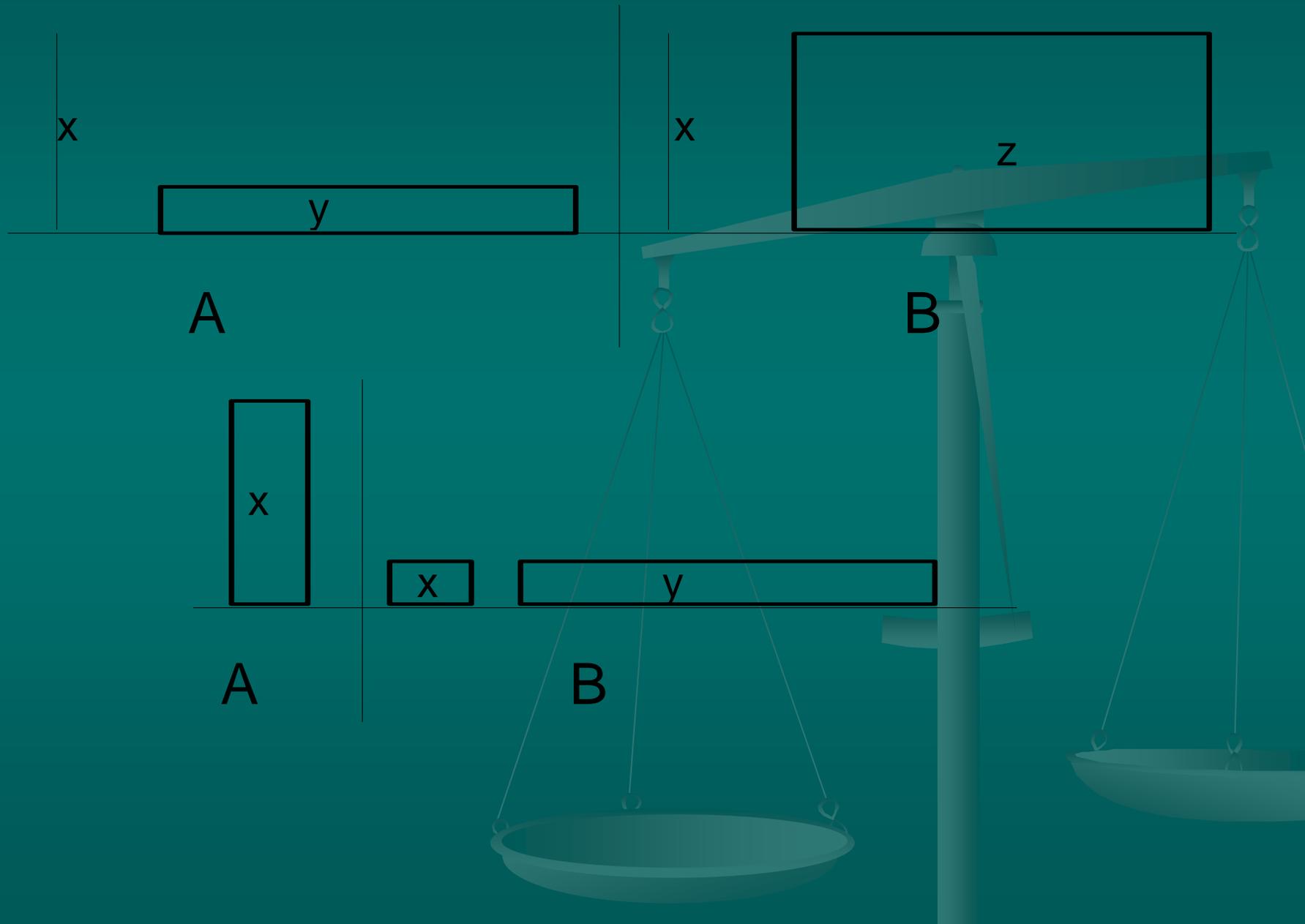


7th Problem: Trade-offs



- *Assume that the presently existing x -people have long lives with very high welfare in outcome A.*
- *In B, the x -people have short lives and thus very low lifetime welfare.*
- *There is also a great number of y -people in B, with low but positive welfare.*
- *As long as the harm factor is represented by a finite number (that is, as long as we don't give lexical priority to comparative harm), there is a number of y -people such that B is better than A according to Harm Adjusted Utilitarianism.*
- *In such cases, Harm Adjusted Utilitarianism opts for the outcome with short lives, outcome B, although it involves a great loss in welfare and longevity for the existing people.*

Trade-offs and the Energy Policy Case



That's all, folks!



Context: Number of Deaths in the World

- 55,000,000 lives per year
- 151,000 lives per day
- 6300 lives per hour
- 100 lives per minute
- 1.8 lives per second and rising

Context: The badness of death from ageing

- *I further conclude that all the major current reasons given for not curing ageing are mere crutches to help us cope with the immutability of ageing that we have been brought up to accept.*

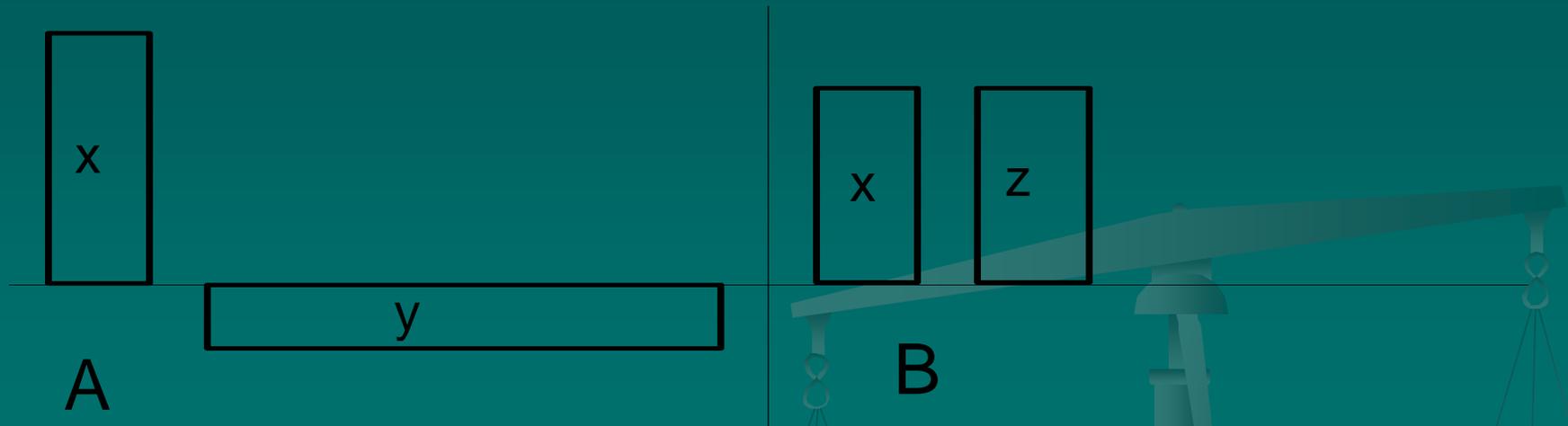
- *Our failure to set aside such irrationality (as it has become with recent advances in biomedical gerontology ...) is already shortening potential longevity ... to a staggering degree. Once we realise this, our determination to consign human ageing to history will be second only to our shame that we took so long to break out of our collective trance. (A de Grey 2003)*

- *There may well be some sort of population explosion [from eliminating all deaths caused by ageing] ... but the first priority is to end the slaughter. Everything else is detail.” (A de Grey 2006)*

Context: Overpopulation

- *If we want to radically extend the length of people's life and avoid overpopulation, then we have to reduce the number of people that are born.*
- *Hence we have a choice between having fewer people with very long life spans, say 200 years or more, or more people with normal life spans, say around 80 years.*
- *That is the choice between life extension and replacement.*

4th Problem: The Energy Policy Case (3)

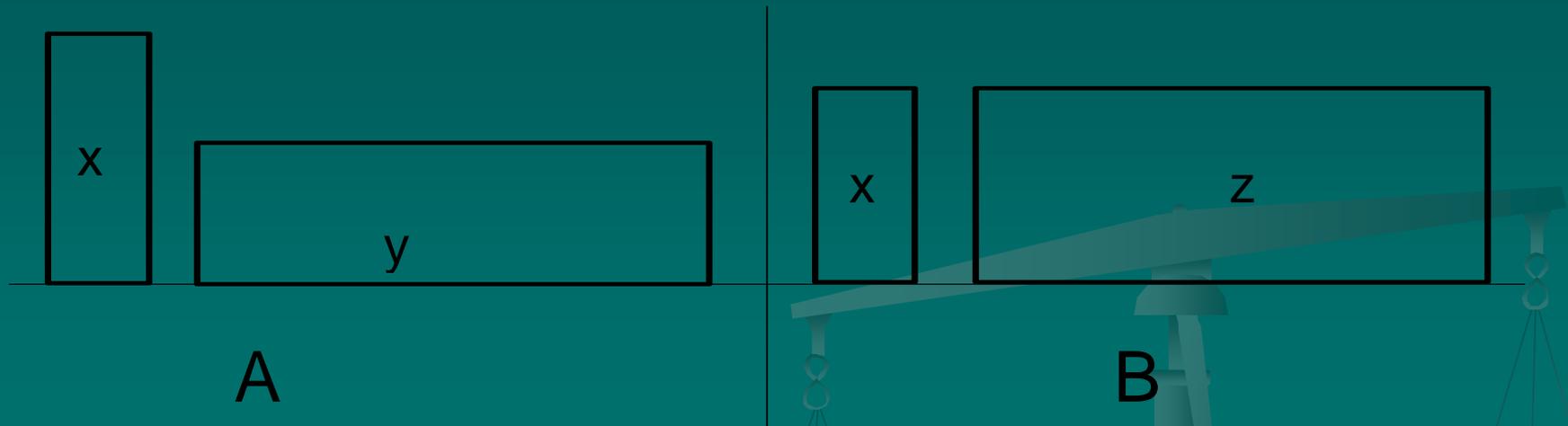


- *Assume that the y-people have lives not worth living.*
- *There are much more people in A, an unequal distribution of welfare and a lower total of welfare, as compared to B.*
- *“There may well be some sort of population explosion [from eliminating all deaths caused by ageing] ... but the first priority is to end the slaughter. Everything else is detail.” (A de Grey 2006)*
- *If we give a high moral weight to comparative harms, Comparativism still implies that A is better than B because the x-people would be harmed if we were to choose outcome B rather than A whereas the y- and z-people would not be harmed were we to choose outcome B rather than A.*

The Couple's Choice

- *“...[A] couple [is] wondering whether to have a second child. Suppose they already have one, and the arrival of a second will make life a little less good for the first than it would have been... Would it be better if the parents had the second child?” (p. 8-9)*
- *“The answer given by ... [CLU] is that it ... is better if the second child's lifetime wellbeing is sufficiently above the neutral level. The difference between it and the neutral level must be greater than the loss of wellbeing suffered by the existing child. ---*
- *The effect of a positive neutral level is to make it more beneficial to extend the life of an existing person than to bring a new person into existence.*
- *This confirms most people's strong intuitions.” (p. 259)*

4th Problem: The Energy Policy Case (1)



- *A country is facing a choice between implementing a certain energy policy (alternative A) or not (alternative B).*

- *Were this country to implement this policy, then there would be an increase in the welfare of the present people of this country (the x-people) since they will live for a longer time.*

- *On the other hand, this increase would be counterbalanced by the harm the waste from this energy system will cause in the lives of people in the future (the y-people) by shortening their lives.*

- *If the country doesn't implement this energy policy, other people will exist in the future (the z-people) with the same good quality of life as the x-people.*

- *The advantages and disadvantages of other effects of this policy balance out.*

Which Outcome is the Best One? (2)

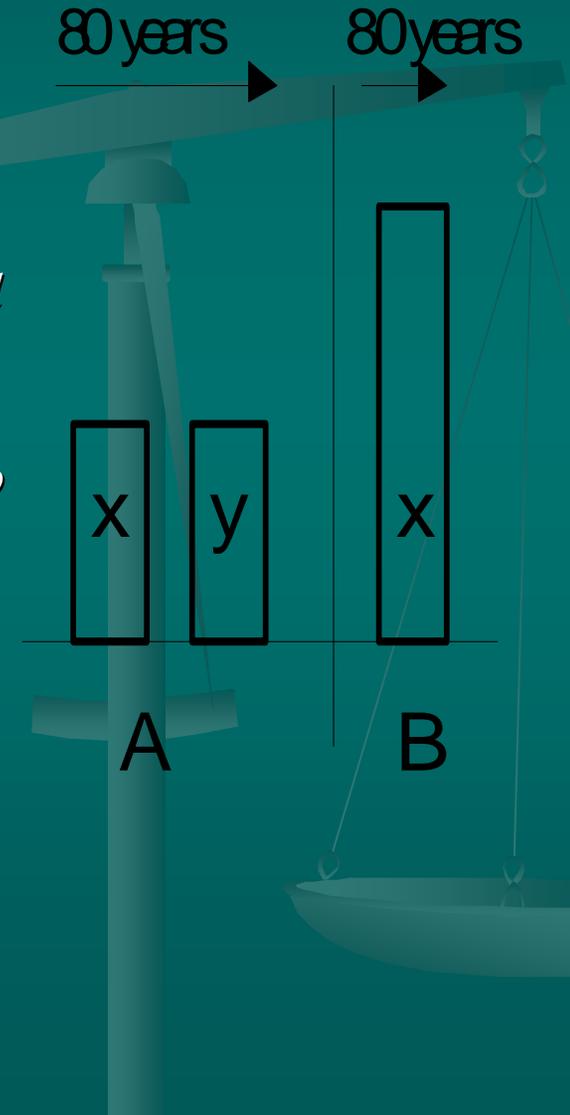
- *Average Utilitarianism: B is better than A since the average wellbeing per person is higher.*

- *A positive right to carry on living.*

- *“Human rights do not get any more fundamental than the right to carry on living”.*
- *“[T]here is no moral distinction between ... acting to shorten someone’s life and not acting to extend it”. (A de Grey 2003)*

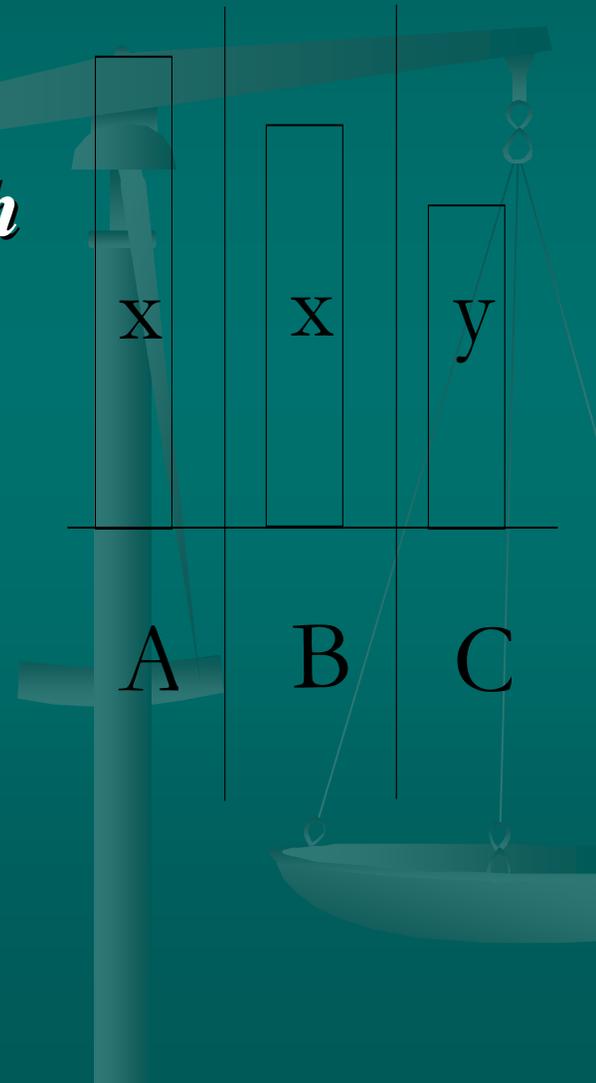
- *A too long life or a life without death is a non-human life.*

- *“For to argue that human life would be better without death is, I submit, to argue that human life would be better being something other than human.” (L Kass, Chairman of the US President’s Council on Bioethics, May 2000)*



3d Problem: Unlikely Outcomes

- *Assume that A is a very unlikely outcome.*
- *If we try to achieve A, we are most likely to fail and end up with C.*
- *If we aim at B or C, we will succeed.*
- *Still, Harm Adjusted Utilitarianism tells us that it would be wrong if we chose B, just because there is an unlikely outcome A in the choice set.*



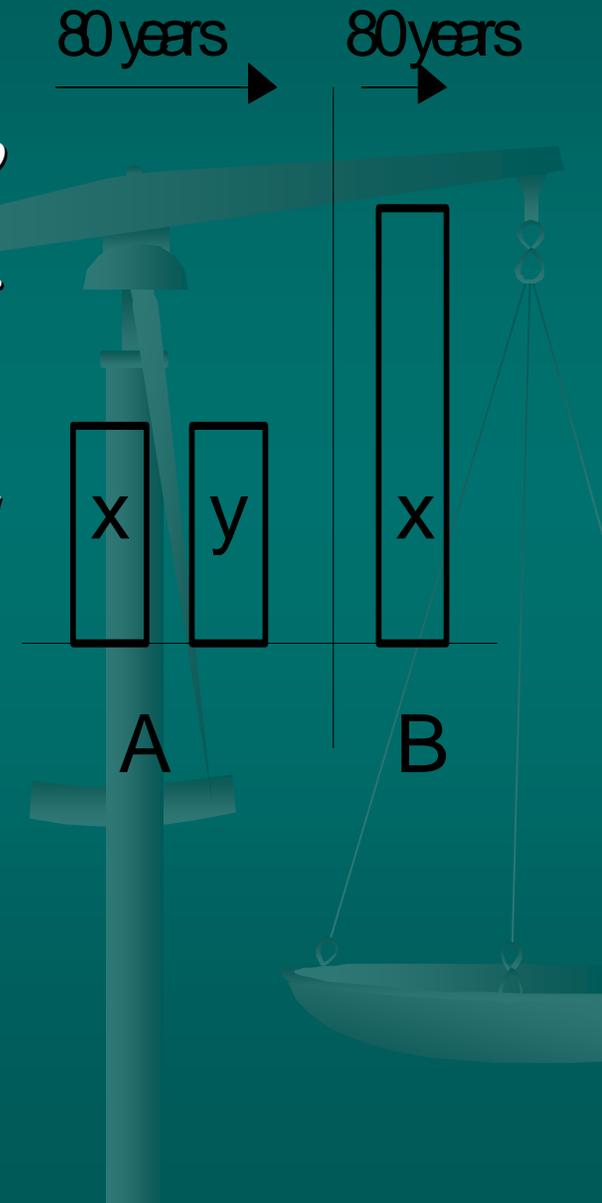
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- *A positive right to carry on living.*

- *“Human rights do not get any more fundamental than the right to carry on living”. (A de Grey 2003)*

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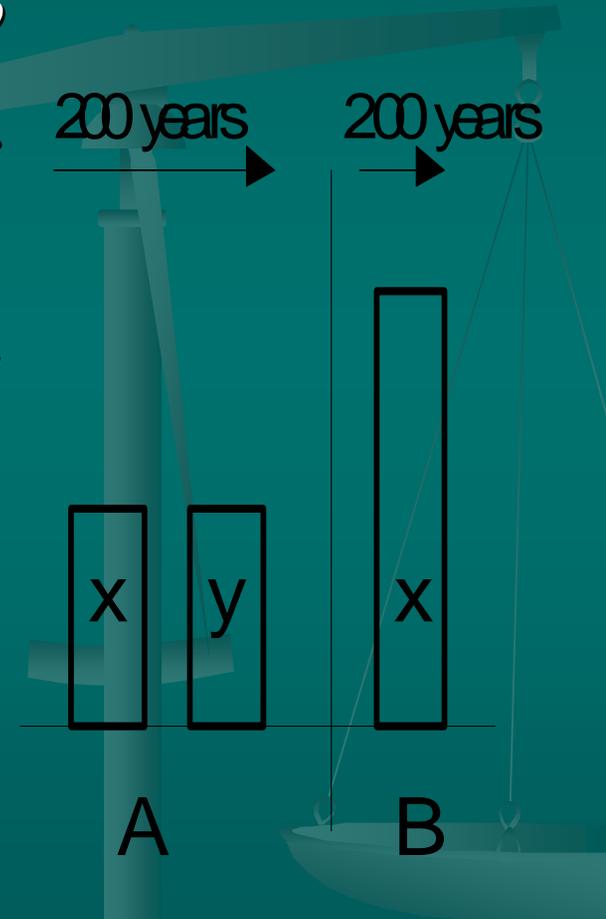
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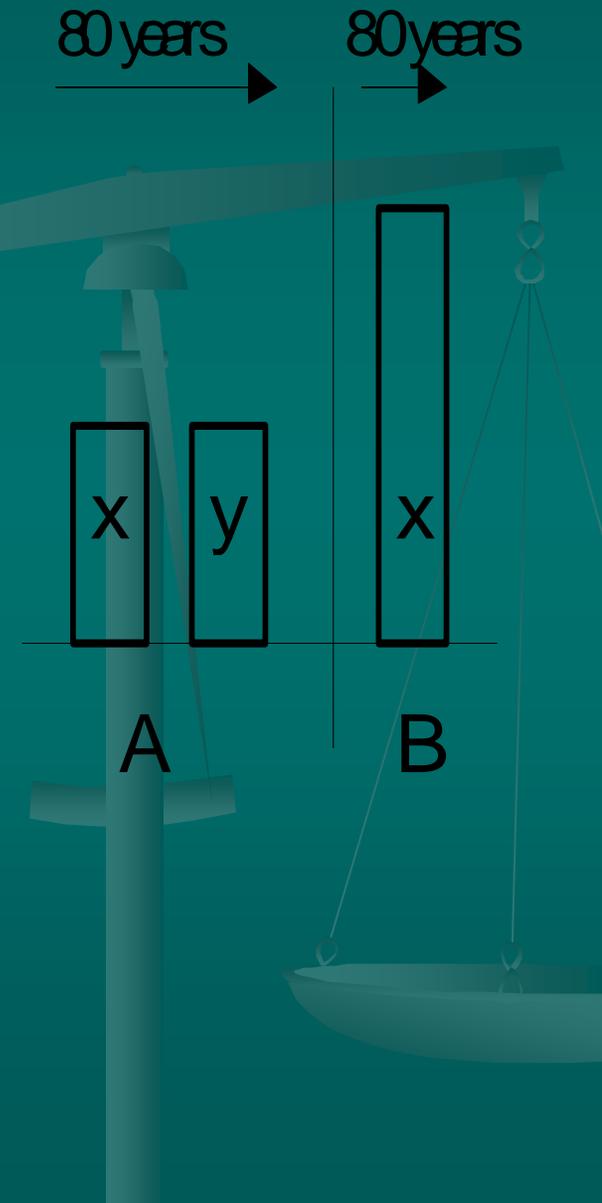
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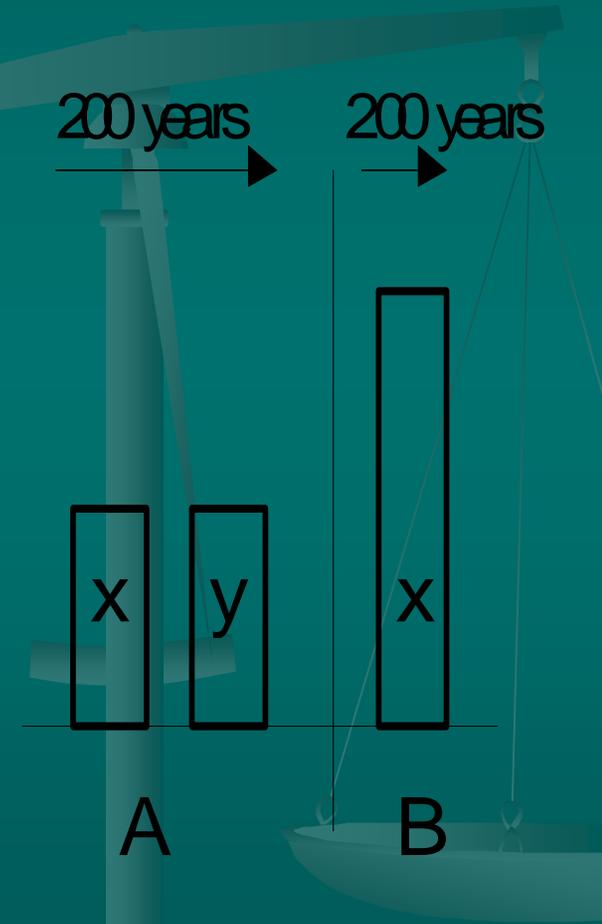
CLU and Life Extension versus Replacement

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- *Let $2n$ and n be the population size of A and B respectively.*
- *$CLU(A) - CLU(B) =$*
- *$2n(w - k) - n(2w - k) = -nk.$*
- *Hence, CLU ranks B as better than A and thus supports life extension.*
- *Too much support for life extension?*



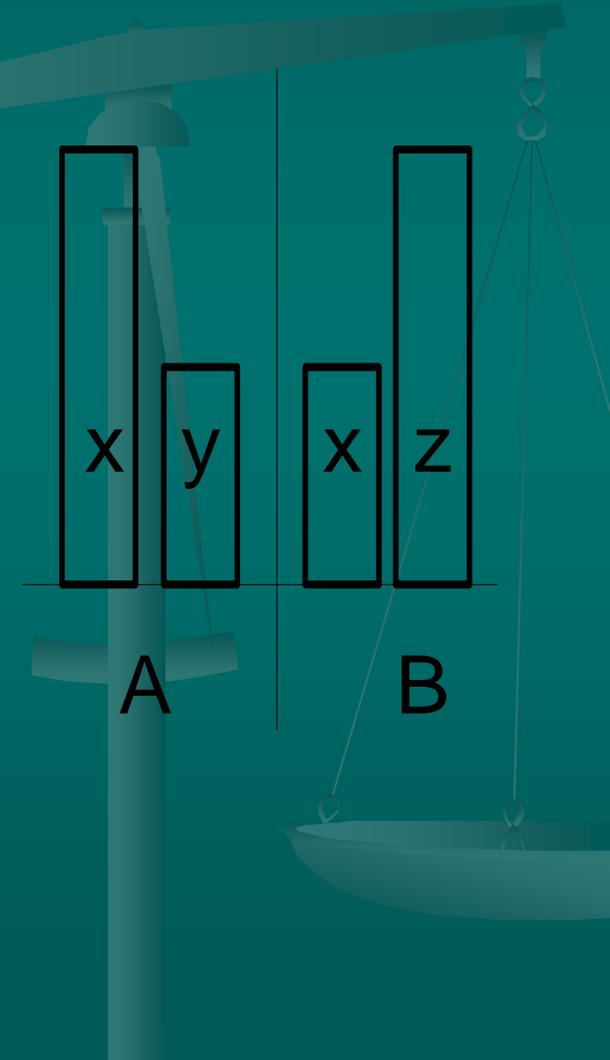
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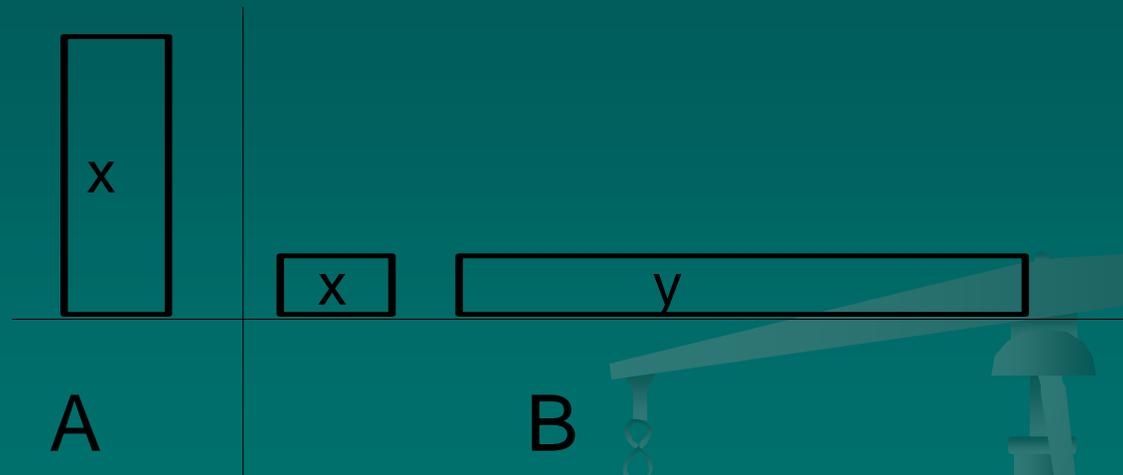


The Couple's Choice II

- *Assume a couple can choose between:*
- *A: Extending their already existing child's life (x) and having one more child with a short life (y), or*
- *B: Not extending their existing child's life (x) and having a different extra child with a long life (z).*
- *CLU is indifferent between these alternatives.*



7th Problem: Trade-offs



- *Number of x-people: 10. Number of y-people: 200*
- *Welfare of the x-people in A: 10 (very high welfare, long lives).*
- *The value of outcome A is $10 \times 10 = 100$.*
- *Welfare of the x- and y-people in B: 1 (very low positive welfare, short lives).*
- *Assume that the harm factor for each x-person corresponds to her difference in welfare between outcome A and B.*
- *The value of the harm to the x-people in B is $10 \times (-9) = -90$ whereas the value of their welfare is $10 \times 1 = 10$.*
- *The value of the x-people in outcome B is $10 - 90 = -80$.*
- *The value of y-people: 200×1*
- *The value of outcome B is $200 - 80 = 120$ which is greater than the value of A.*

HAU and Life Extension versus Replacement

- *Harm Adjusted Utilitarianism: The value of an outcome is determined by the total welfare and the comparative harm in the outcome.*

- *If we choose A, then the x-people are going to be harmed since they will have half of the welfare they would have had, had we picked outcome B.*

- *The y-people will not be harmed if we choice B since in that case they will not exist.*

- *A and B are equally good in respect to welfare.*

- *A is worse in respect to harms.*

- *Hence, B is better than A all things considered.*

- *In other words, life extension is better than replacement.*

