

# CONSCIOUS

Why are “customers always right” yet rarely know what they want?

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You will need your devices...

# Map of the Term

## TACTICAL

### Process Optimization

Decisions are based on **how** to make improvements

1

### Creativity, Noticing

Decisions are based on **what** insights you can come up with

3

RISK

### Forecasting

Decisions are based on **what** you're trying to optimize

PHILOSOPHICAL

### Fail Fast; Gain Experience

Decisions are based on **why** something should be done

2

4

INNOVATION

# How people make decisions (usually, and unfortunately)

- Solutions usually comes first → informs the problem definition
- Problem definition → based on facts
- Facts → A strict interpretation of numbers will get us to the “best” answer.

# Are these equivalent?

Assume a person live 1-mile away from work.

Get to work by driving a Hummer.  
Buy carbon offsets (for car and fuel) to achieve net-zero impact.



Walk to work every day

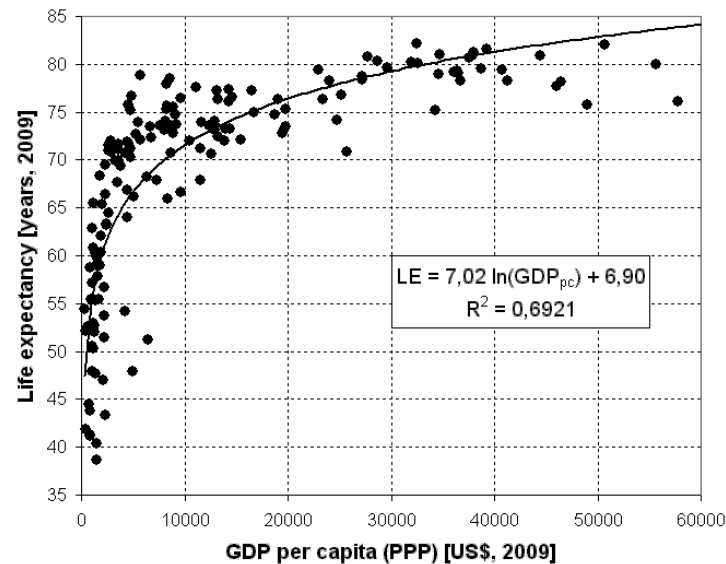


In this scenario, assume both carbon outputs are net-zero.

# The problem with facts is that they are true...and irrelevant!

World Bank: 1.2 billion people live in poverty (2014)

WHO: estimates 7 million die each year from pollution (2014)



What if numbers and facts not enough when making a “logical” decision?

# *Frame-of-References* frequently supersede facts...

## Anti - Coal



<http://coalminingkentucky.wordpress.com/anti-coal/>

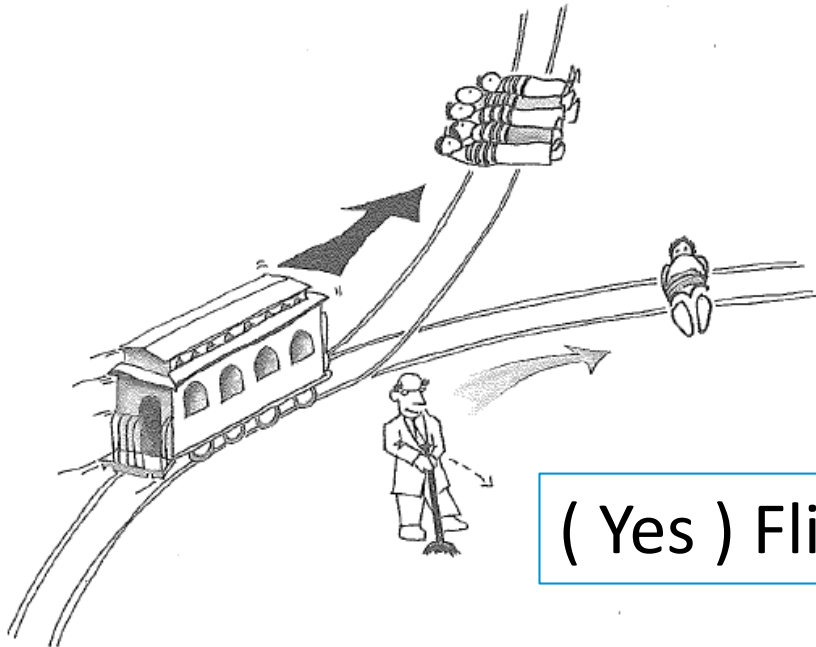
## Anti - Wind



<https://www.wind-watch.org/news/2013/06/04/protests-as-uks-biggest-ever-wind-farm-inquiry-gets-underway/>

# Q1 - The 'Classical' Trolley Problem: The Spur

( No ) Not flip the switch

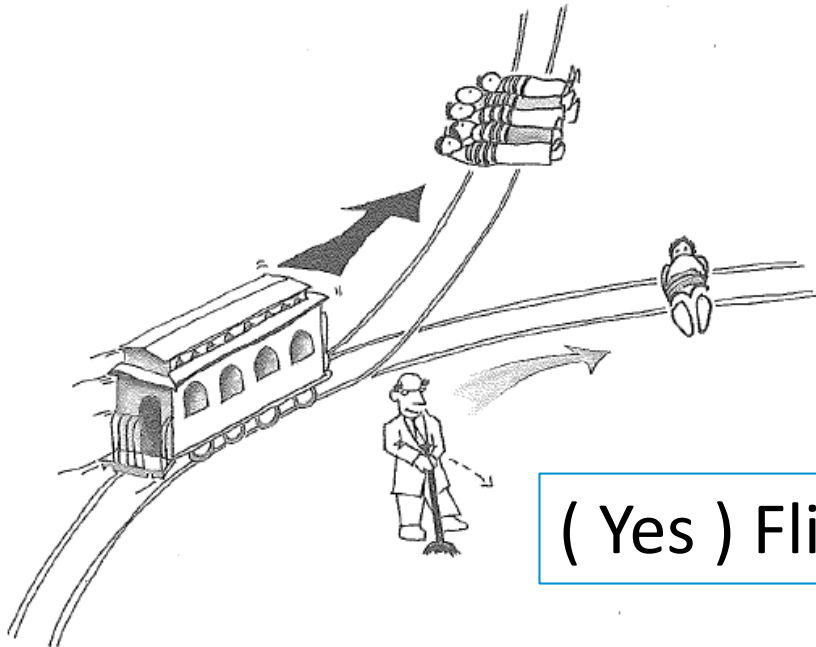


( Yes ) Flip the switch



# Q1 - The 'Classical' Trolley Problem: The Spur

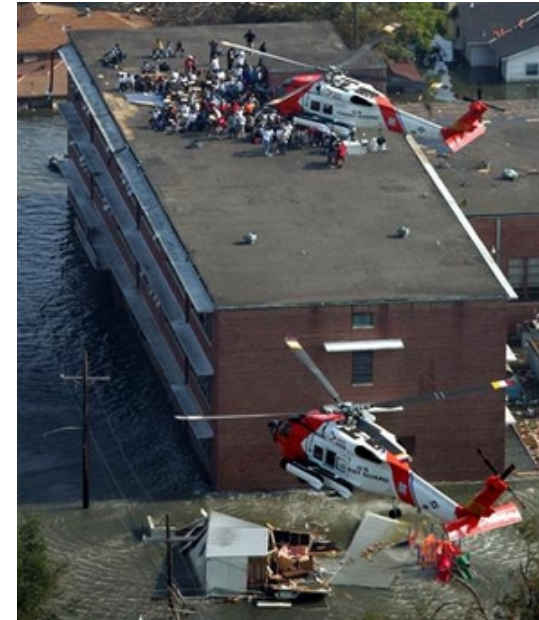
( No ) Not flip the switch



( Yes ) Flip the switch

NYT Sept 7, 2005

*Navy Pilots Who Rescued Victims  
Are Reprimanded (post-Katrina)*



*How does one minimize harm?*

## Q2 – A similar problem...?: The Hospital

( Yes ) Harvest  
the organs



( No ) Not harvest  
the organs



## Q2 – A similar problem...?: The Hospital

NYT: Dec 18, 2008

*Doctor Cleared of Harming  
Man to Obtain Organs*



( Yes ) Harvest  
the organs



( No ) Not harvest  
the organs



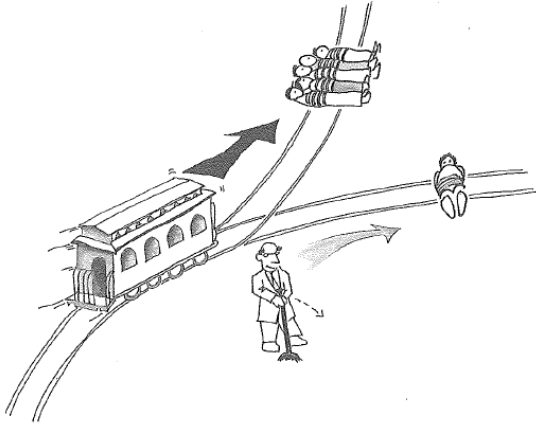
*How does one maximize good?*

# Is the Spur and the Hospital different?

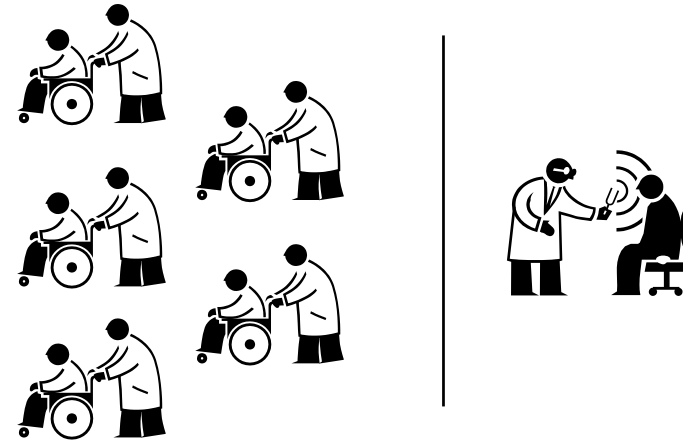
Numerically, in both scenarios, ***5 dies or 1 dies.***

Clearly these are the same decision.

## The Spur



## The Hospital



# Doctrine of Double Effect (DDE)

- The action must be either morally good or indifferent
- The bad effect must not be the means by which one achieves the good effect
- The intention must be the achieving of only the good effect, with the bad effect being only an unintended side effect
- The good effect must be at least equivalent in importance to the bad effect

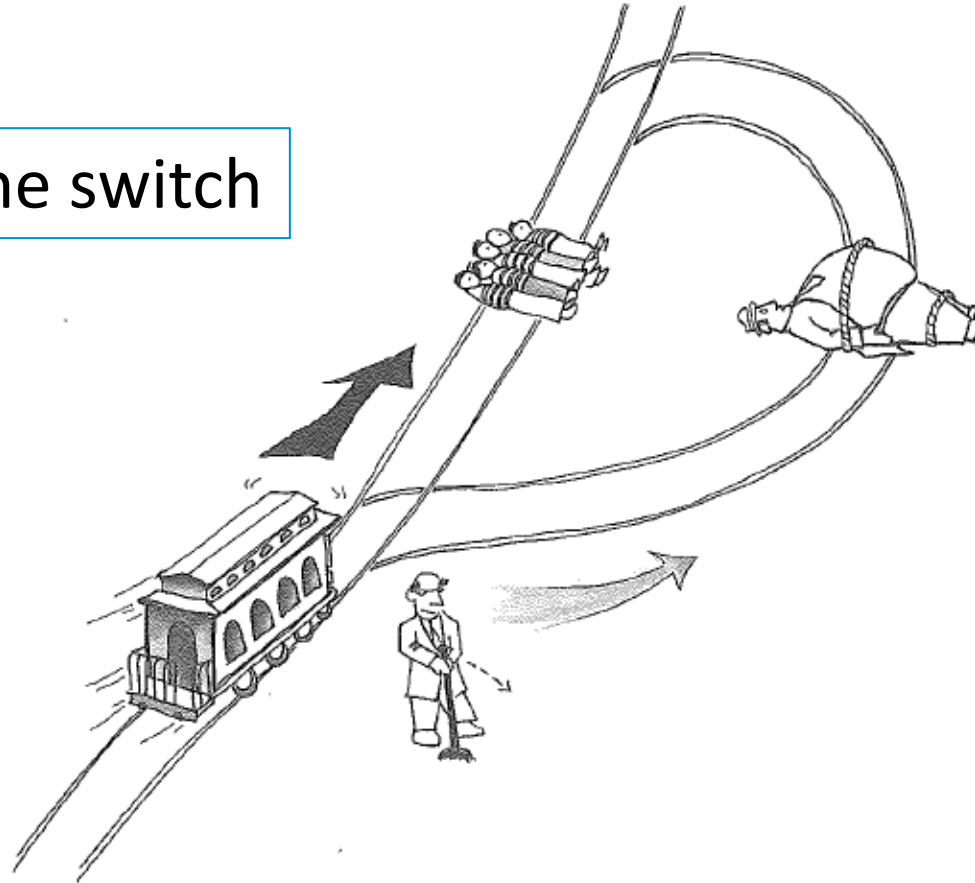


**St. Thomas Aquinas**  
1225 – 1274

*The underlying principle that justifies killing in self-defense*

## Q3 – Variation: The Loop

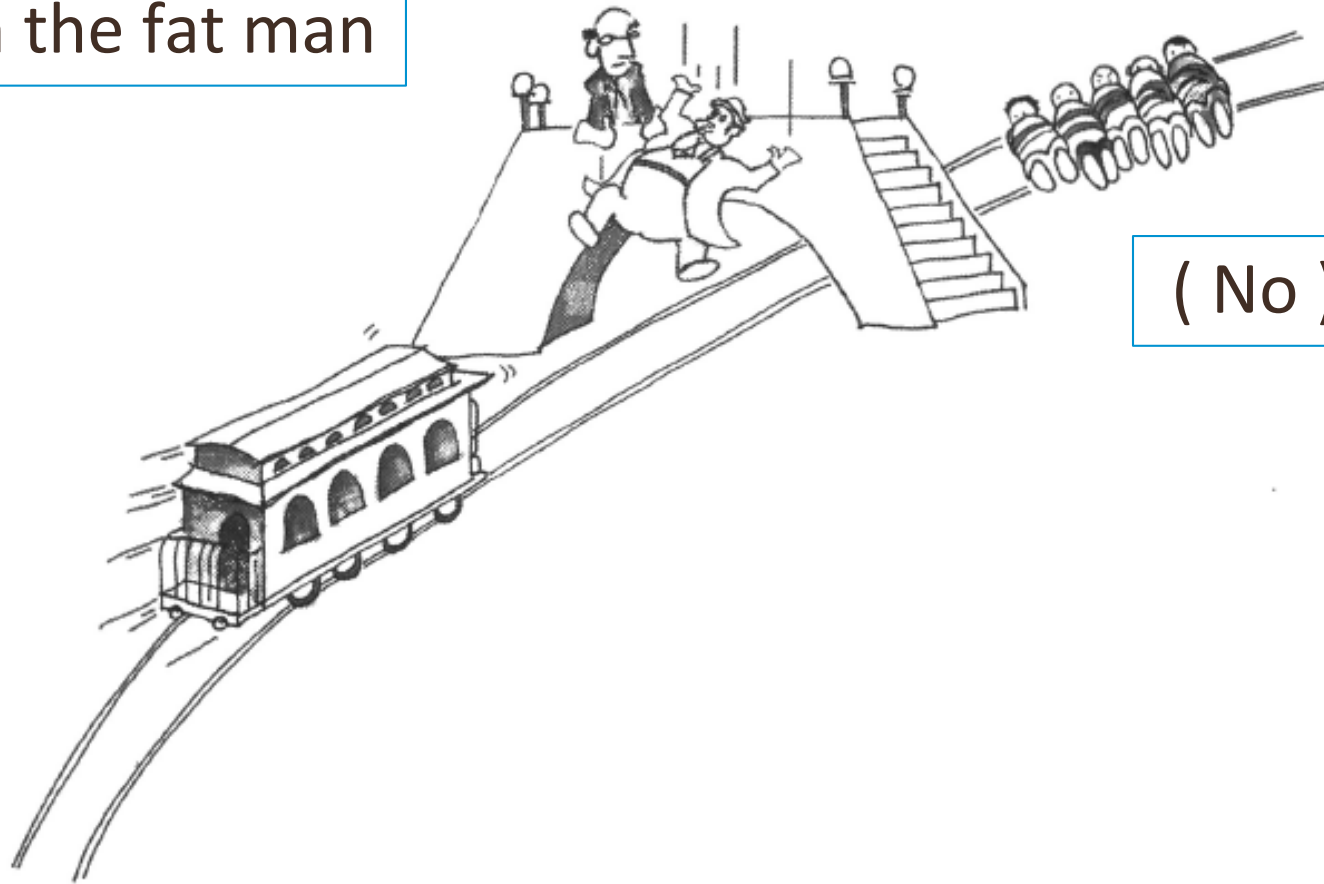
( No ) Not flip the switch



( Yes ) Flip the switch

## Q4 – Variation: The Fat Man on the Bridge

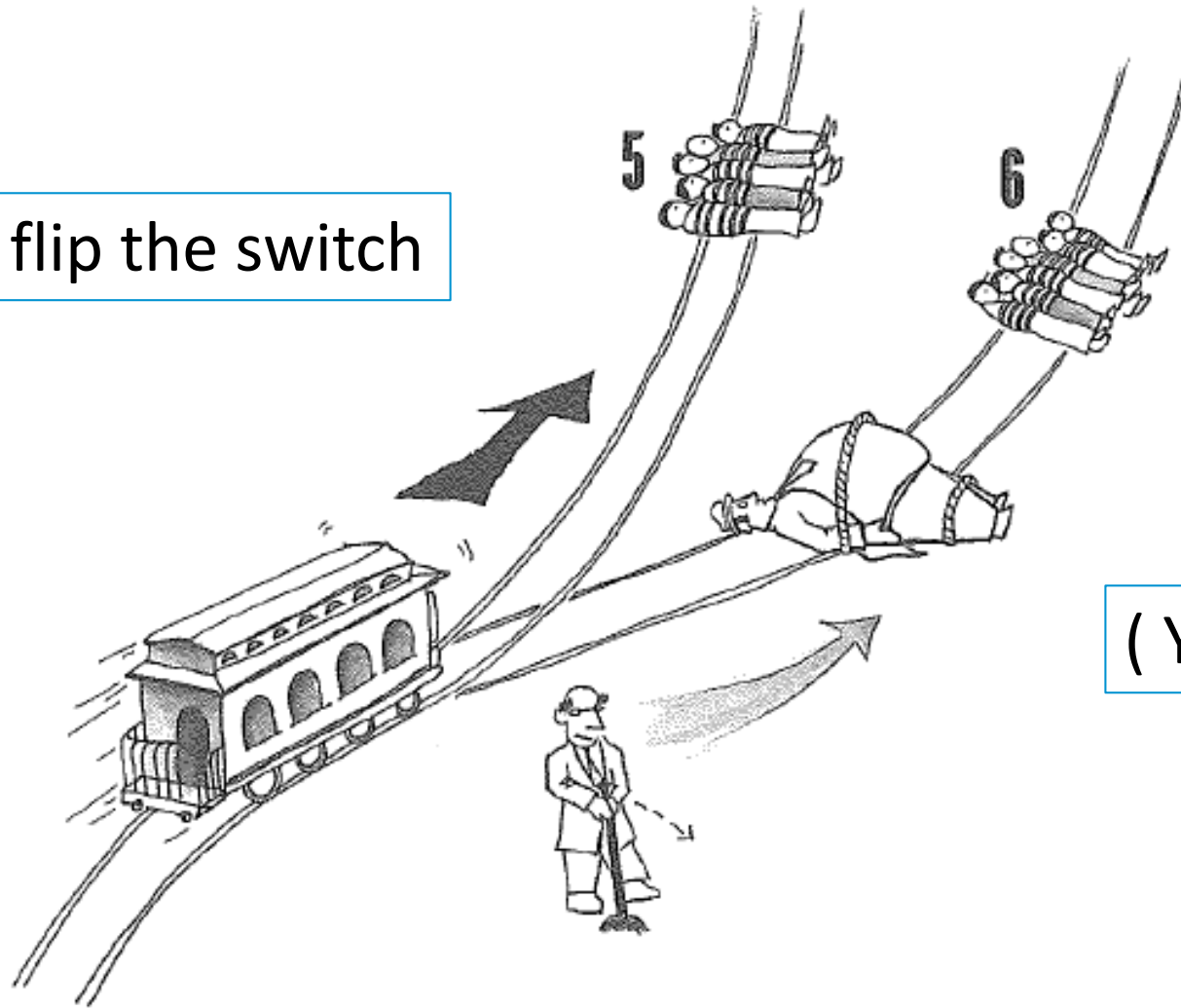
( Yes ) Push the fat man



( No ) Not push the fat man

## Q5 – Variation: Six-Behind-One

( No ) Not flip the switch



( Yes ) Flip the switch



## Q6 – Variation: Fast Rising Wave

( Yes ) Warn the 1 person



( No ) Warn the 5 people



# Calculated example / (lots of data and logical)

**Churchill** – fed false information to the Germans that the Blitz hit dense, central London, instead of a poor, southern suburb.



**Thai Floods of 2011** – Installed barricades that protected the economic vitality of cities over the needs of rural farmers.



## Emotional example / (beyond data)



**Tribal Languages** – Should we spend money to maintain fading cultures?

*How do we quantify the value of purpose?*



**Climate Change** – Some places are hurt (Oceania) while other places prosper (Siberia)

*How do we manage uneven distribution of harm and benefit?*

# Long-term vs. Short term

Generally speaking,

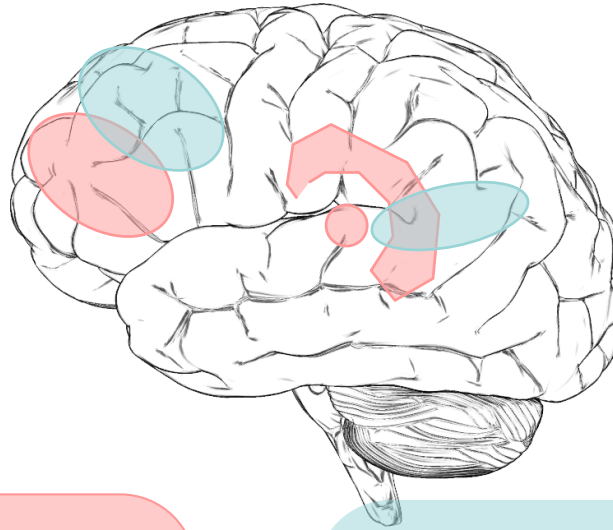
***Long-term solutions*** tend to be more calculated

***Short-term solutions*** tended to be more emotional.



# MRI Results – Joshua Greene

Scanned people's brains while they considered the Trolley problem and variations



## ***Compassion regions:***

Amygdala  
Posterior Cingulate Cortex  
Medial Prefrontal Cortex

## ***Calculating regions:***

Dorsolateral Prefrontal Cortex  
Inferior Parietal Lobe



# Codify morality?

Noam Chomsky identified a common grammar of language that babies seem to be born with.



John Mikhail, who studied with him tried to formalize a 'common grammar' of morality.



Can we create a set of rules (or computer algorithms) of how morality works?

# Should ALL decisions be made based on statistics?



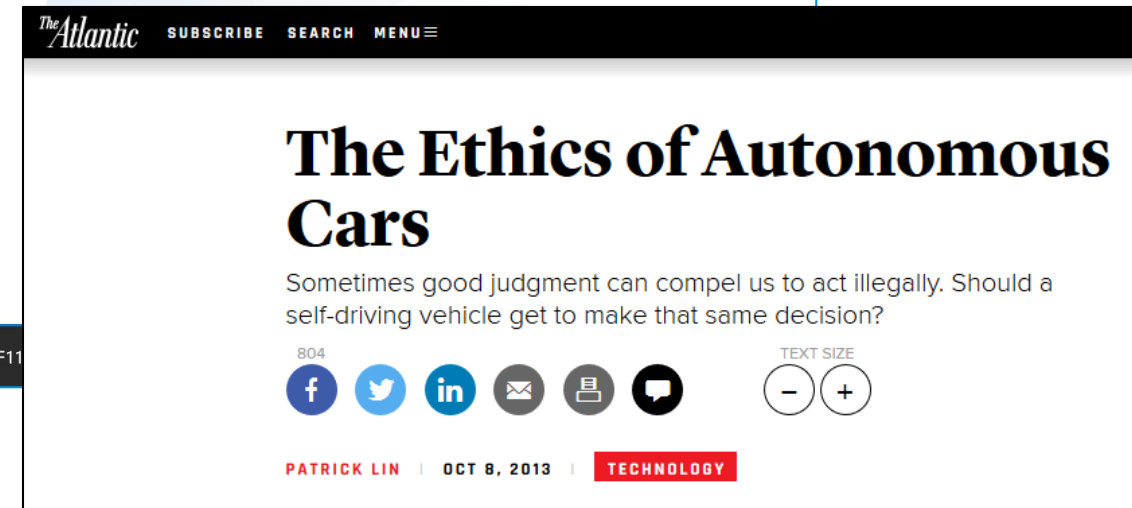
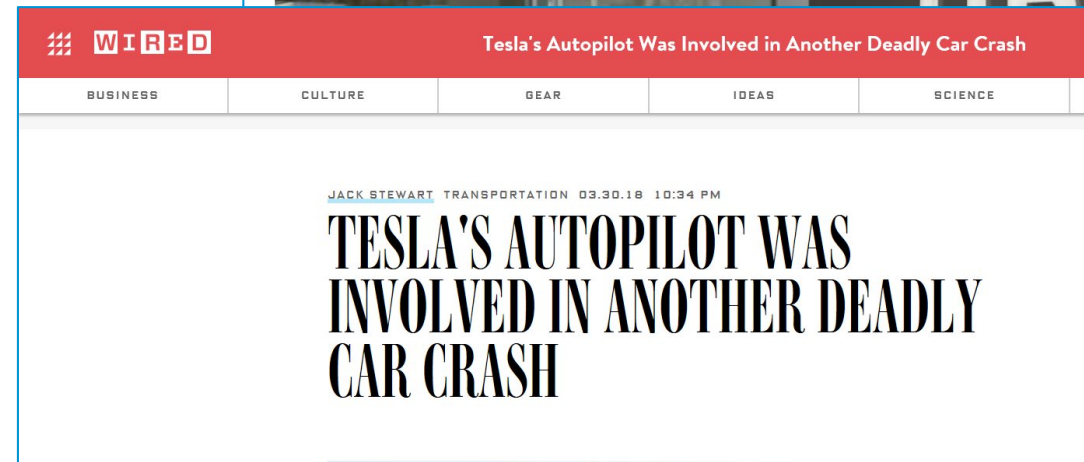
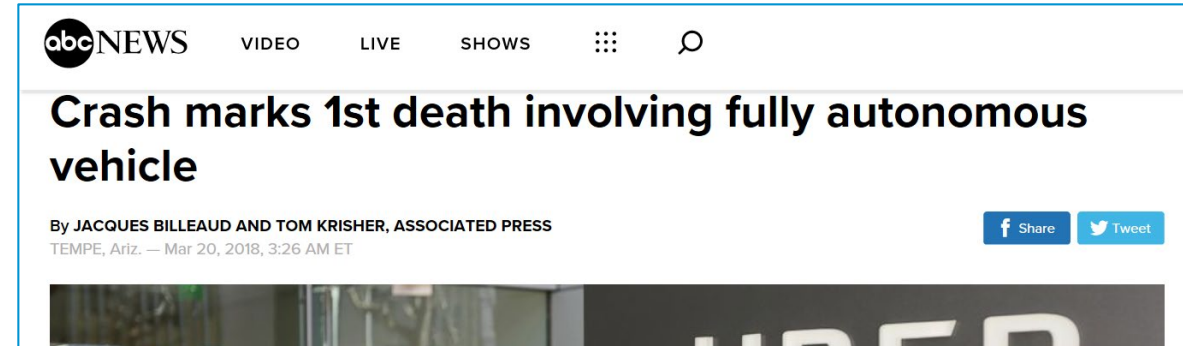
- Hey Bill Nye, 'Does Science Have All the Answers or Should We Do Philosophy Too?
- Stephen Hawking: 'philosophy is dead'
- Neil DeGrasse Tyson has claimed philosophy is not “a productive contributor to our understanding of the natural world”

# Perhaps we need philosophy?



Driverless car debuts on U.K. roads  
(CNN Money 2.11.2015)

*Should the vehicles have the  
Trolley Problem programmed into  
their safety logic?*





# Yet...Ethics from the Engineering Community

ETHICS+IN+ACTION >

The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems

CHARACTER

MORALITY

ETHOS

CONVENTION

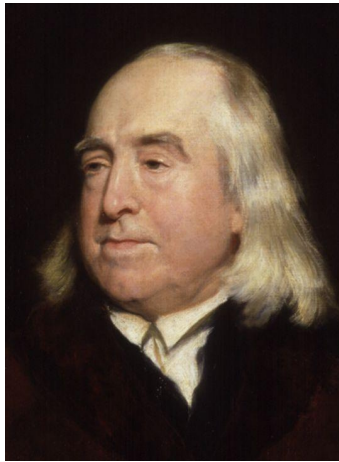
GOODNESS

VALUE

READ *Ethically Aligned Design*,  
The most comprehensive, crowd-sourced  
global treatise regarding the Ethics of Autonomous  
and Intelligent Systems available today.

IEEE

## At the end of the day...



Jeremy Bentham: Father of utilitarianism.

*it is the greatest happiness of the greatest number  
that is the measure of right and wrong*

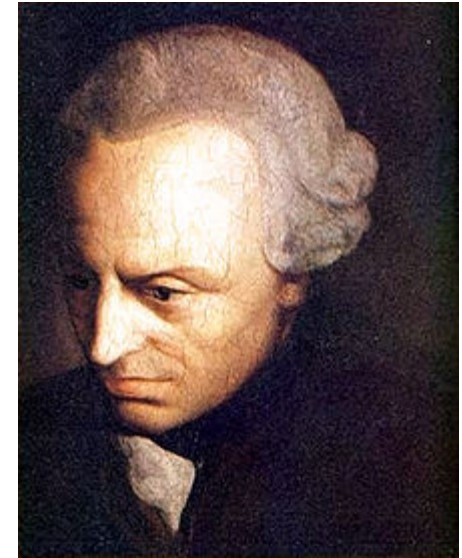
ie, exclusively by the numbers!

Scenario	Yes (one man dies)	No (5 men dies)	Yes means:
Spur			A permissive result
Hospital			Intentional death
Loop			The means to an end
The Fat Man on a Bridge			The direct action
The Six-Behind-One			Cheering the Death of 1
Rising Wave			Distributing Benefits

## Let's look to the philosophers

**Absolutism** – an unconditional reality which transcends limited everyday existence

***Kant*** – morality is based on a priori principles.



**Relativism** – point of view having subjective value according to differences in perception and consideration

***Hume*** – morality is based on empirical observations.



# Maximizing Good vs. Minimizing Harm

**Beneficence** - “We have an obligation to bring about good in all our actions”

## BMW I3



<b>MSRP:</b>	\$ 44,450
Federal Tax Credit:	- \$ 7,500
CA Tax Credit:	- \$ 2,500
<hr/>	
Expected Cost:	\$ 34,450

# Maximizing Good vs. Minimizing Harm

**Beneficence** - “We have an obligation to bring about good in all our actions”

**Nonmaleficence** – “We have an obligation not to harm others”

## Low Income Home Energy Assistance Program

- A federal program administered by states
- Helps low-income households pay for their energy bills.
- Income level determines size of subsidy (Income ranges up to \$80,000/yr for families of 8).
- Average Annual Subsidy 2014 was \$303 per household.



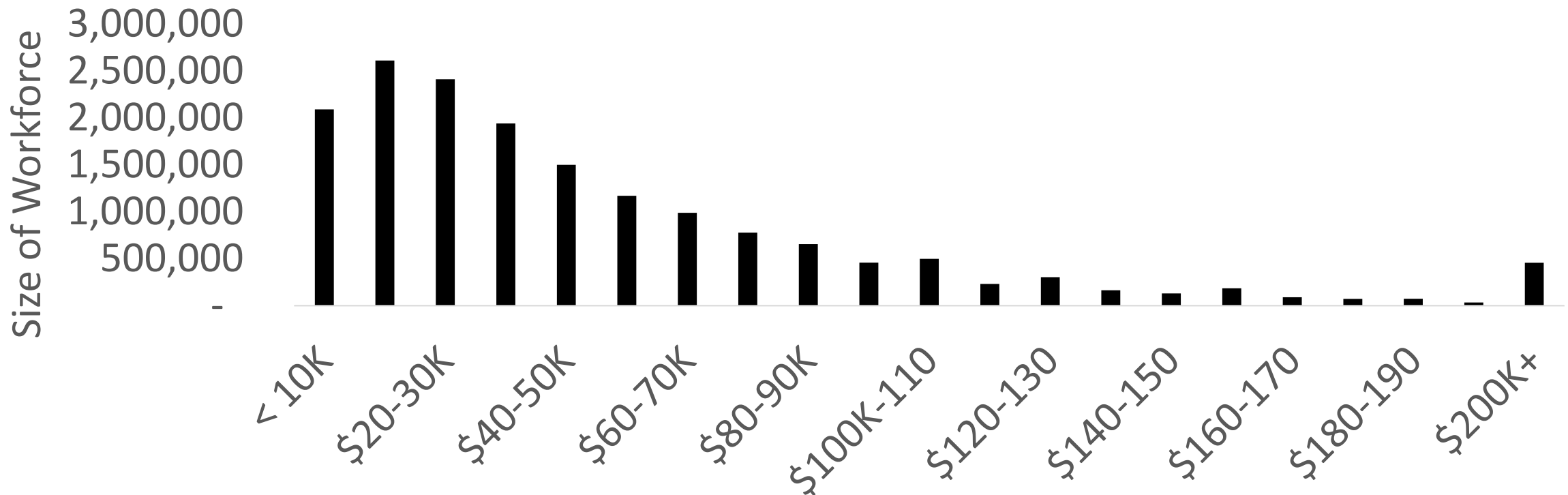
# Are some harms allowable?

**Beneficence** - “We have an obligation to bring about good in all our actions”

**Nonmaleficence** – “We have an obligation not to harm others”

**Beneficence + nonmaleficence:** Each action must produce more good than harm.

CA Annual Salary Distribution

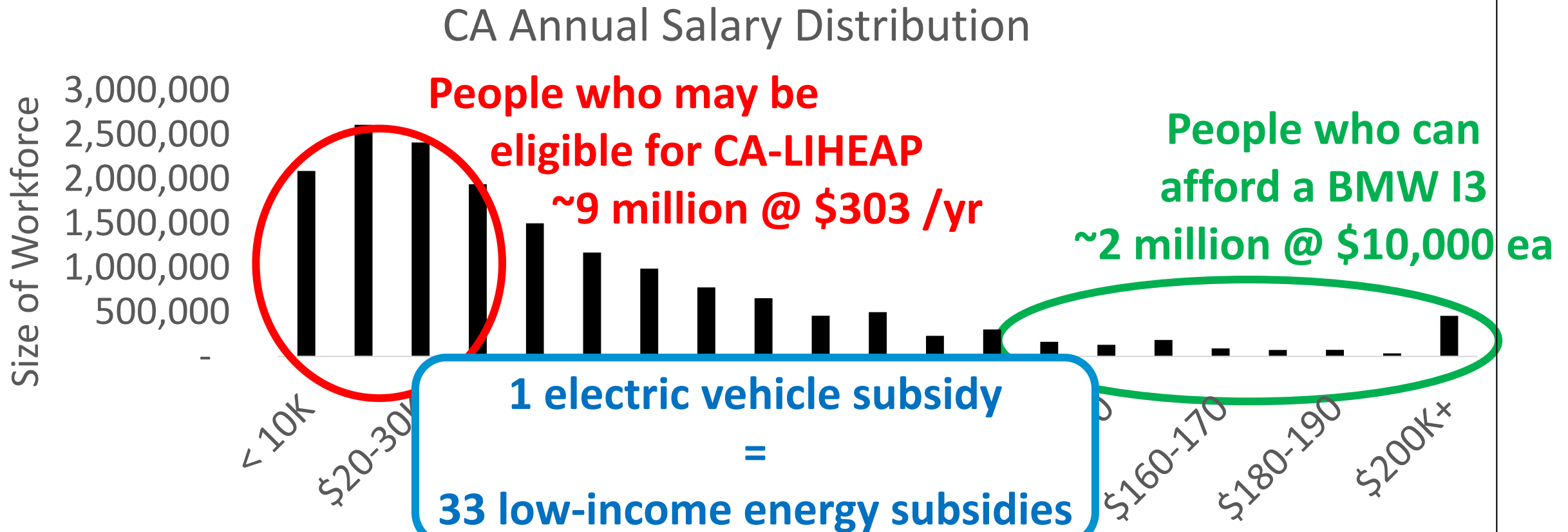


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# The “Boundary Conditions” of Carbon Values

**Purely Relative**

Am I better than some other option?

**Minimize Harm**

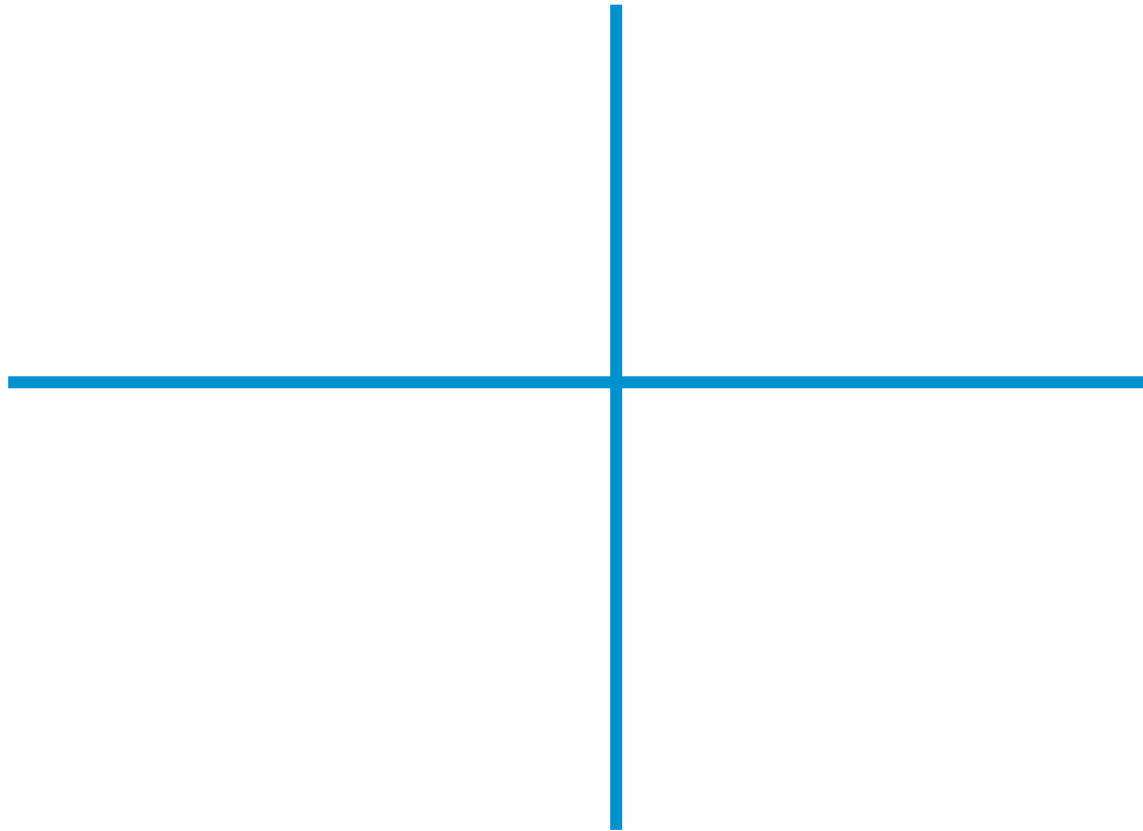
What am I avoiding?

**Maximize Good**

What am I improving?

**Purely Absolute**

Am I the best?





# The “Boundary Conditions” of Carbon Values

## Purely Relative

Am I better than some other option?

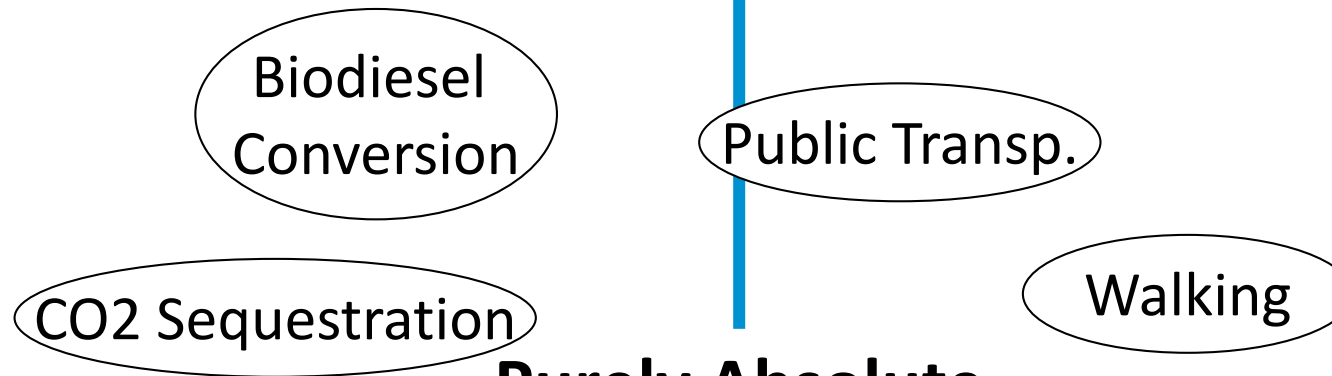


## Minimize Harm

What am I avoiding?

## Maximize Good

What am I improving?



## Purely Absolute

Am I the best?

# So installing solar using a solar subsidy...



...reduces need for fossil fuels



...removes budget for low-income households



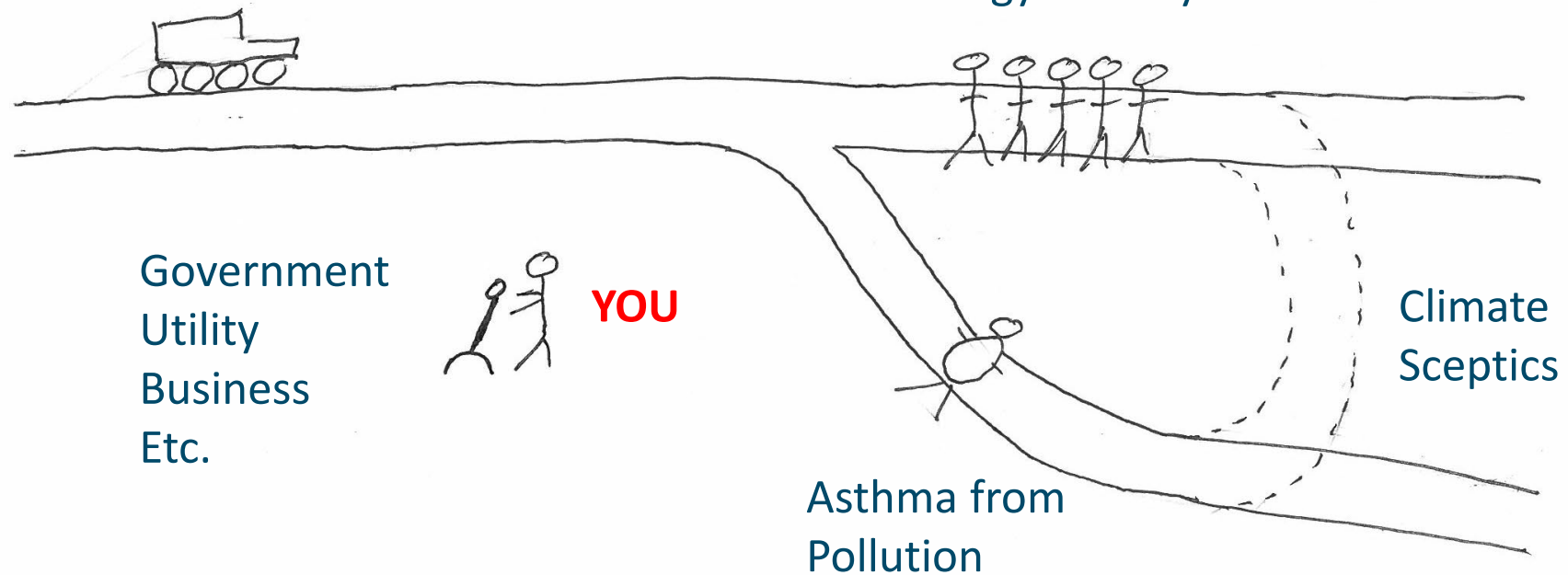
...leaves less money left to buy an EV



***Which are the***  
Intentions? Foreseen?  
Direct action? Permissive result?  
Means? Ends?

# A suggestion for the landscape

Coal Power Plants  
(Bullet Train or Tortoise?)



Are **YOU**:

- Protesting coal mining?
- Protesting bird deaths from wind farms?
- Working to alleviate global poverty?
- Health care professional for asthma?

For more information...



## In summary

- ***Context about the facts*** is more important than the ***facts***.
- The contexts we hold true may be based on ***biases we do not realize are there***.
- Understanding ***different value systems*** exposes the fault lines between contexts (and the facts we end up picking).
- Great people represent great values.

**Questions?**