Human Morality

Features and Bugs

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Features:

What problem does morality solve?
How does it do it?

Bugs: How does morality go wrong?

Governing philosophies for AI

What moral thinking should we put into AI?

What moral thinking should we use to govern AI?

Features

The Tragedy of the Commons

Hardin, *Science,* 1968

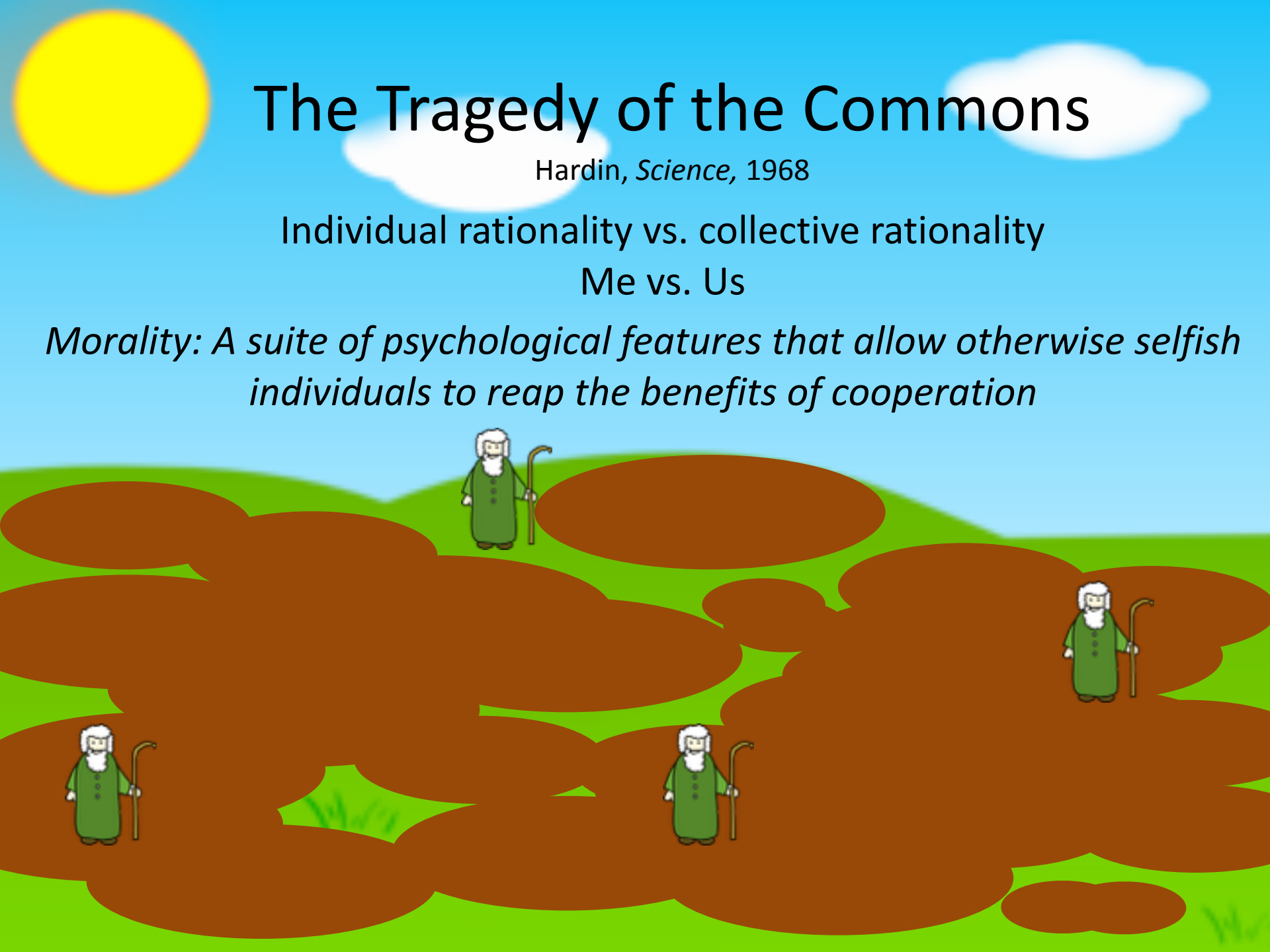
The Tragedy of the Commons

Hardin, *Science,* 1968

Individual rationality vs. collective rationality

Me vs. Us

Morality: A suite of psychological features that allow otherwise selfish individuals to reap the benefits of cooperation



efficiency vs. *flexibility*

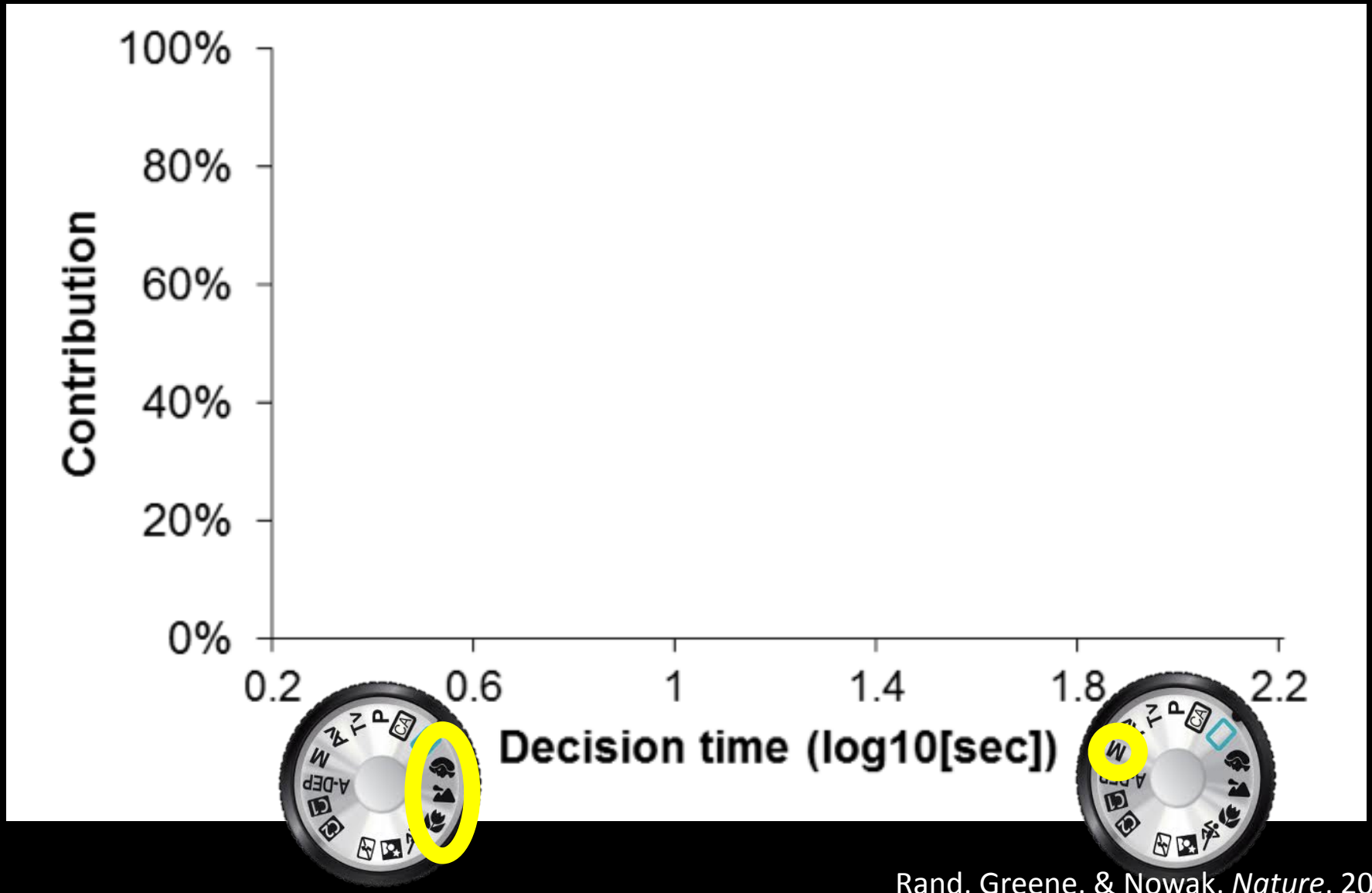
Cf. Kahneman, 2003, 2011

Fast Moral Machinery

	Positive	Negative
Self-motivating	Compassion Love, friendship Goodwill awe	shame guilt Embarrassment fear
Other-motivating	gratitude	anger contempt social disgust

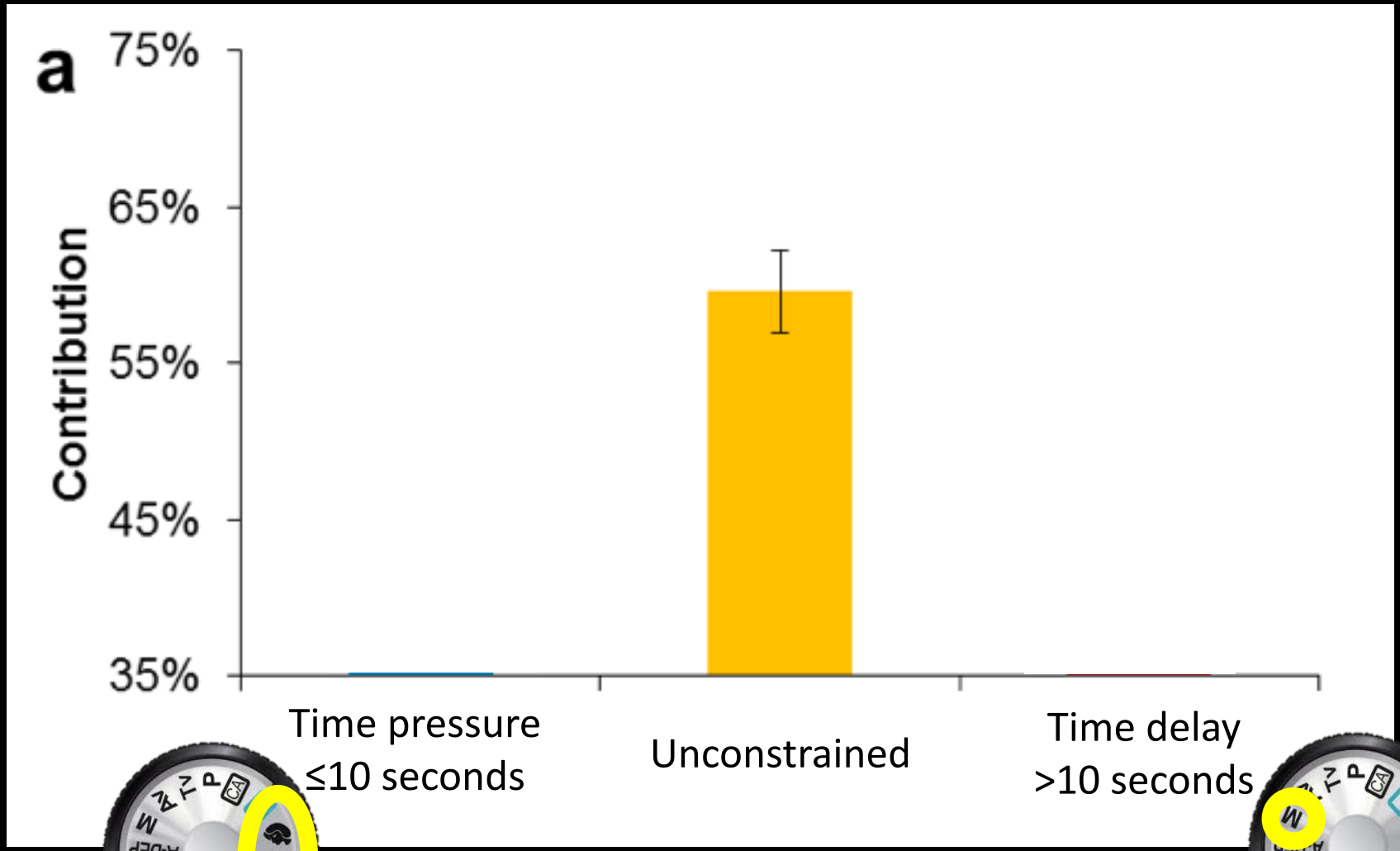
Cf. Darwin, 1871; Frank, 1988; Haidt, 1993, 2001, 2012; Gintis et al., 2005

Fast Cooperation



Rand, Greene, & Nowak, *Nature*, 2012
Rand et al, *Nature Comm.*, 2014

Fast Cooperation

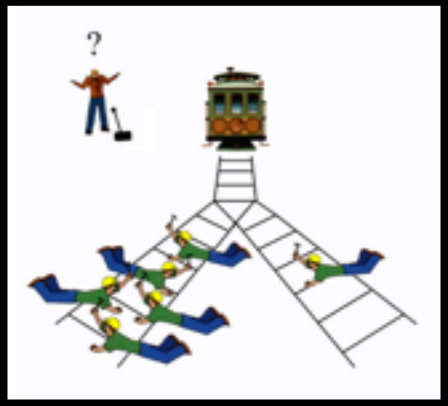


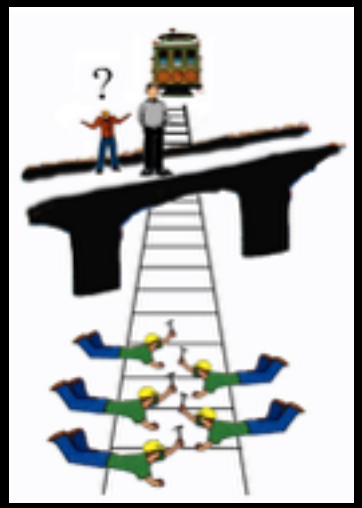
Rand, Greene, & Nowak, *Nature*, 2012
Rand et al, *Nature Comm.*, 2014

Morality Fast
and Slow

Trolleyology

Foot, 1978; Thomson, 1985





5 > 1

5 > 1

Dual-Process Morality

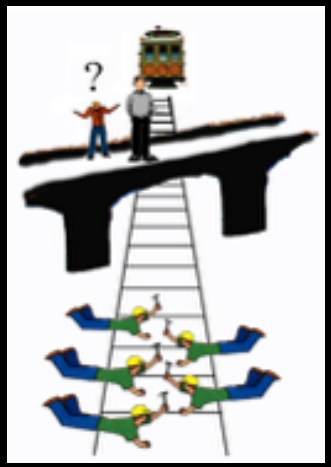
fMRI, EEG

Cog Load

Time manipulation

Reflective mindset

High Cog Traits



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fMRI, EEG

Psychophysiology

Psychopharmacology

Intuitive mindset

Emotional traits

Koenigs et al. *Nature*, 2007, Ciaramelli et al. *SCAN*, 2007, Thomas et al., *JOCN*, 2010

Integrative Moral Judgment

5 > 1

DLPFC

"model based"?

Cushman, 2013
Crockett, 2013

"model free"?

Amygdala

Utilitarian Assessment

Which action will produce better results?

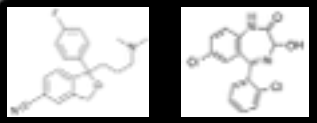
Integrative Judgment

VMPFC

Which action do you find more morally acceptable?

Emotional Assessment

Which action do you feel worse about doing?



Citalopram (Crockett et al., 2010)

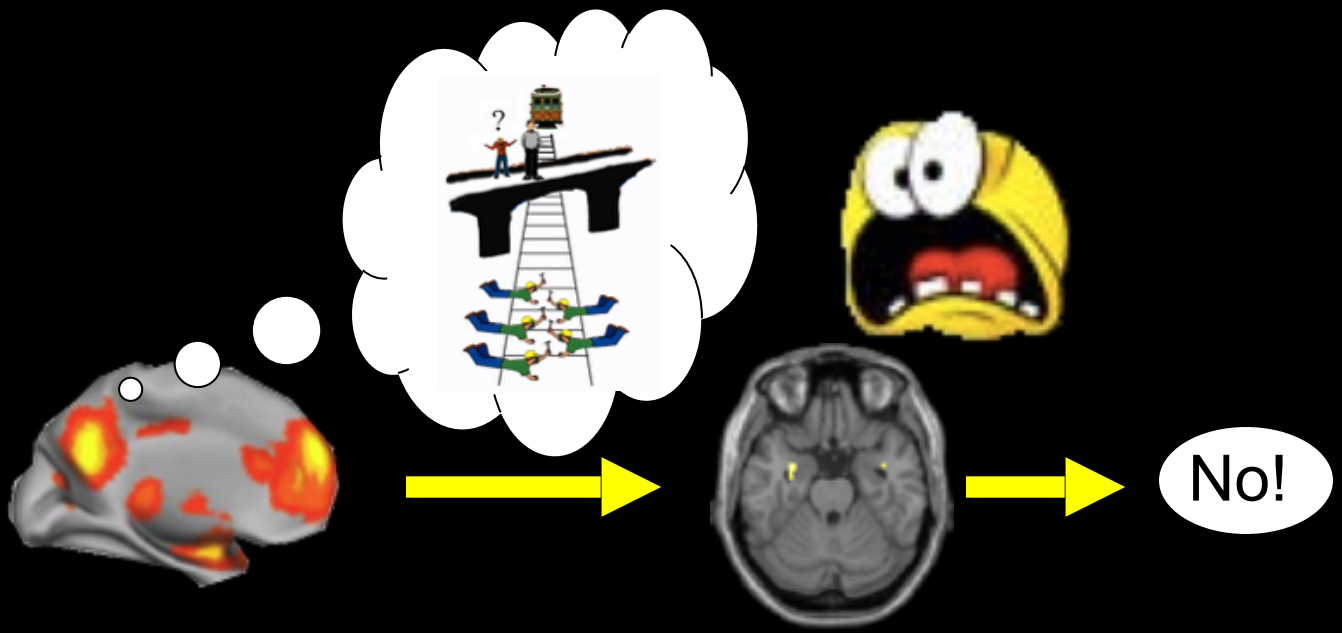
Lorazepam (Perkins et al., 2012)

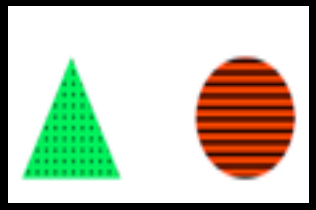
Shenhav & Greene, *Journal of Neuroscience*, 2014

Moral vision

Cf. “Scene Construction”

Hassabis et al., 2007 Hassabis & MagGuire, 2007





circle	dots
plaid	green
orange	square

Amit & Greene, *Psychological Science*, 2012

Valuing Life

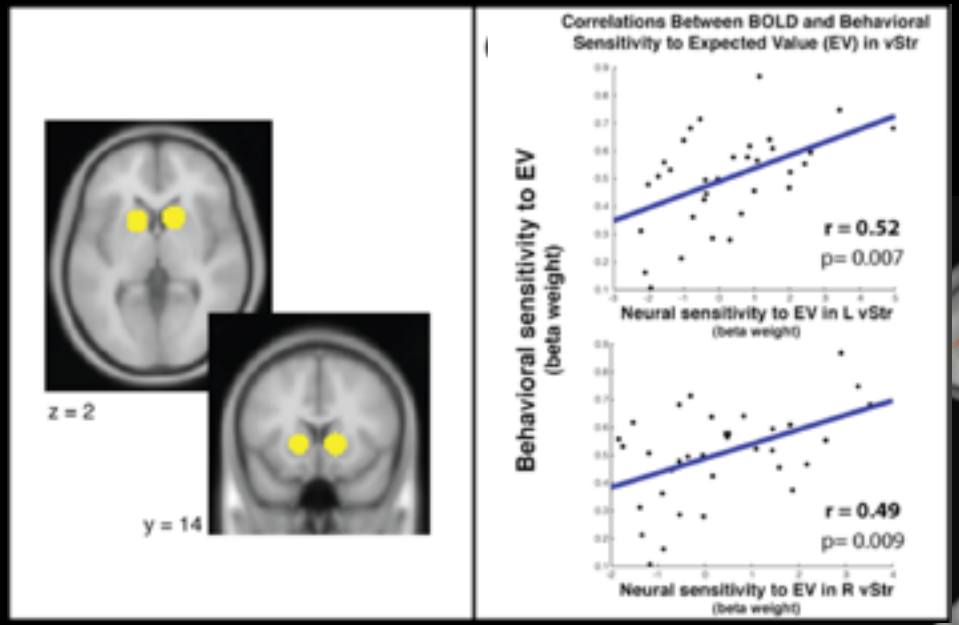
Number
of lives

Probability you
can save them

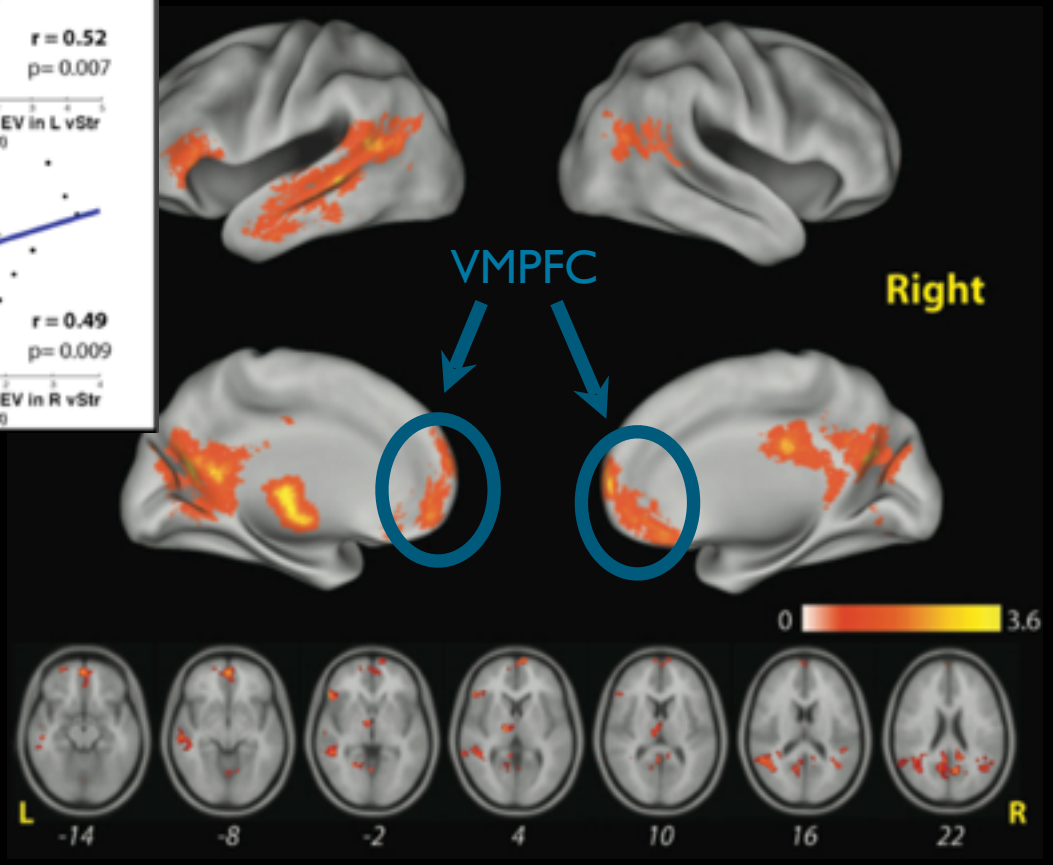
You

Shenhav & Greene, *Neuron*, 2010

Reward system Tracks "expected moral value"



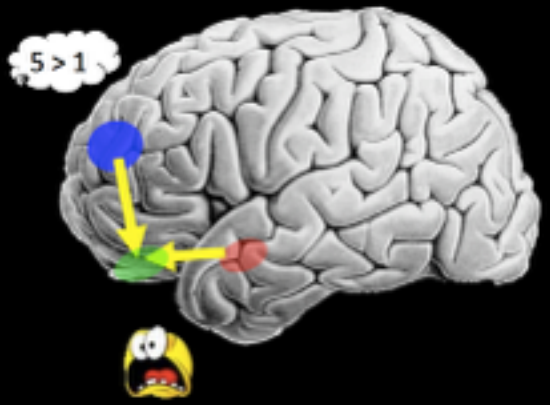
Cf. Schultz, Dayan, & Montague, *Science,* 1997
"Neural substrate of prediction and reward"

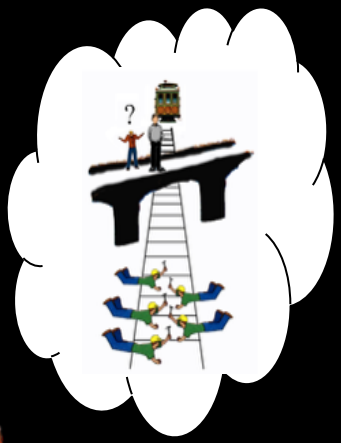


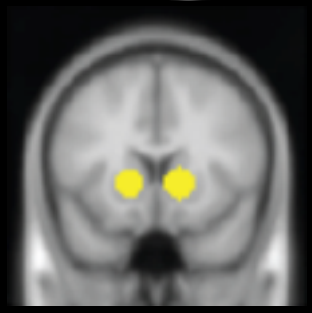
Shenhav & Greene, *Neuron*, 2010

Lessons of the “Moral Brain”

No distinctive “moral faculty”
No “ethical subroutine”







Morality unified at the functional level,
not at the mechanical level

Bugs

1. Harming and Helping:

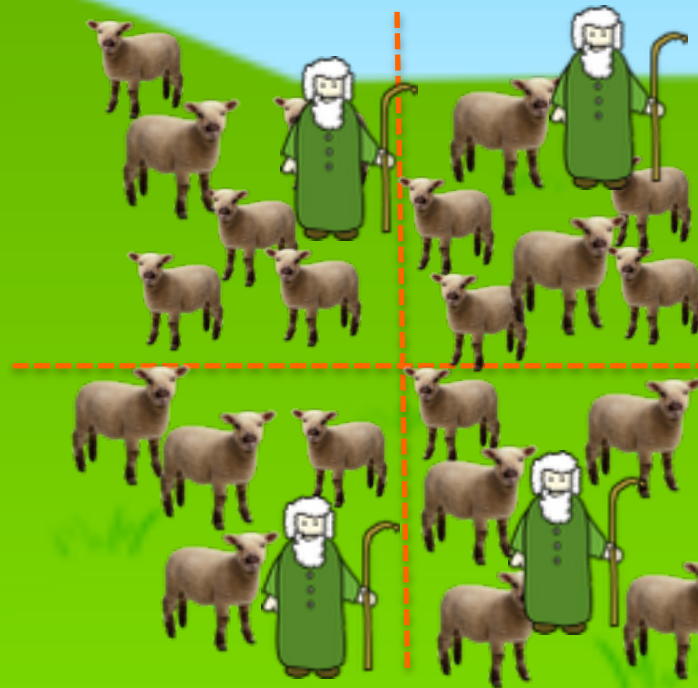
   "A robot may not injure a human being or, through inaction, allow a human being to come to harm."

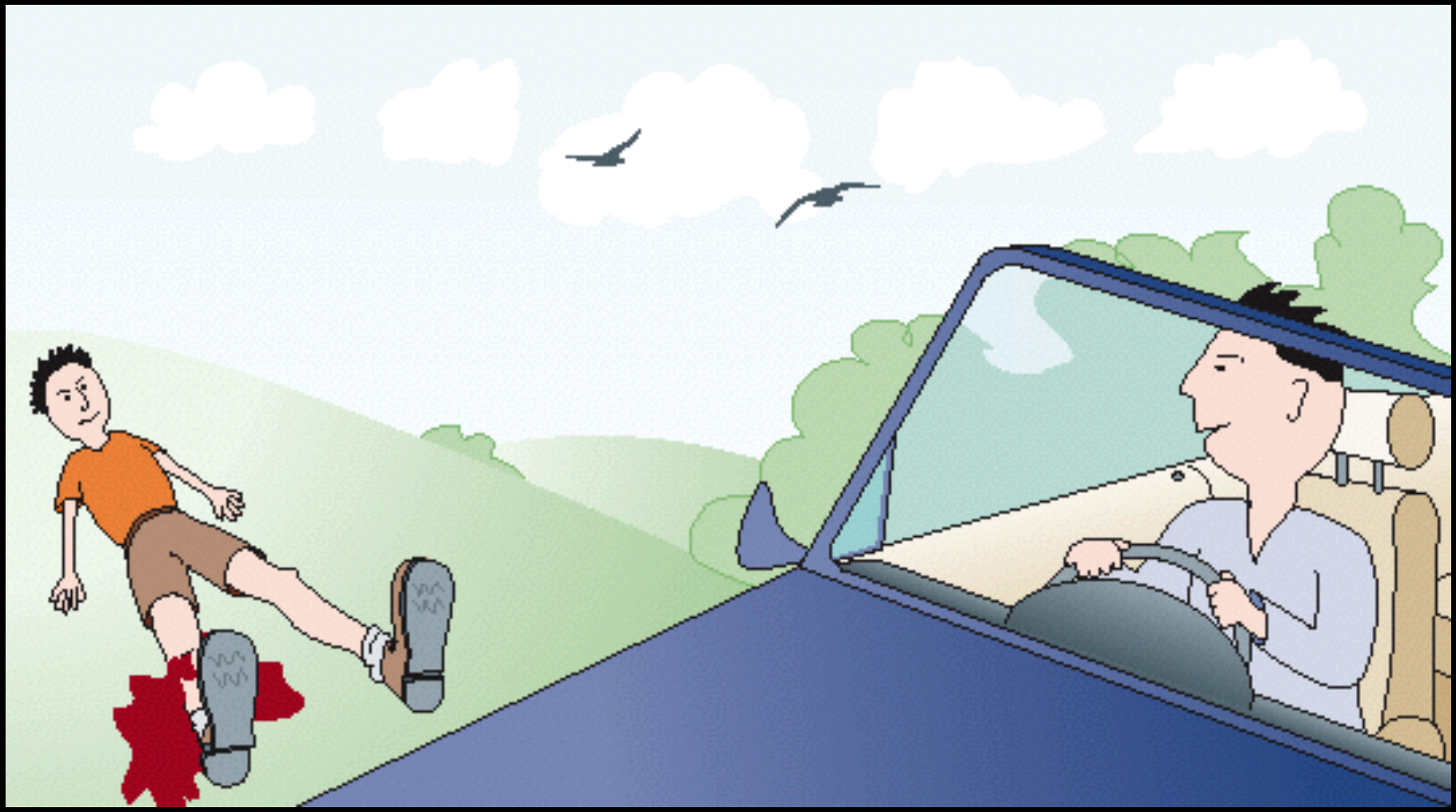
2. Obedience

3. Self-Preservation

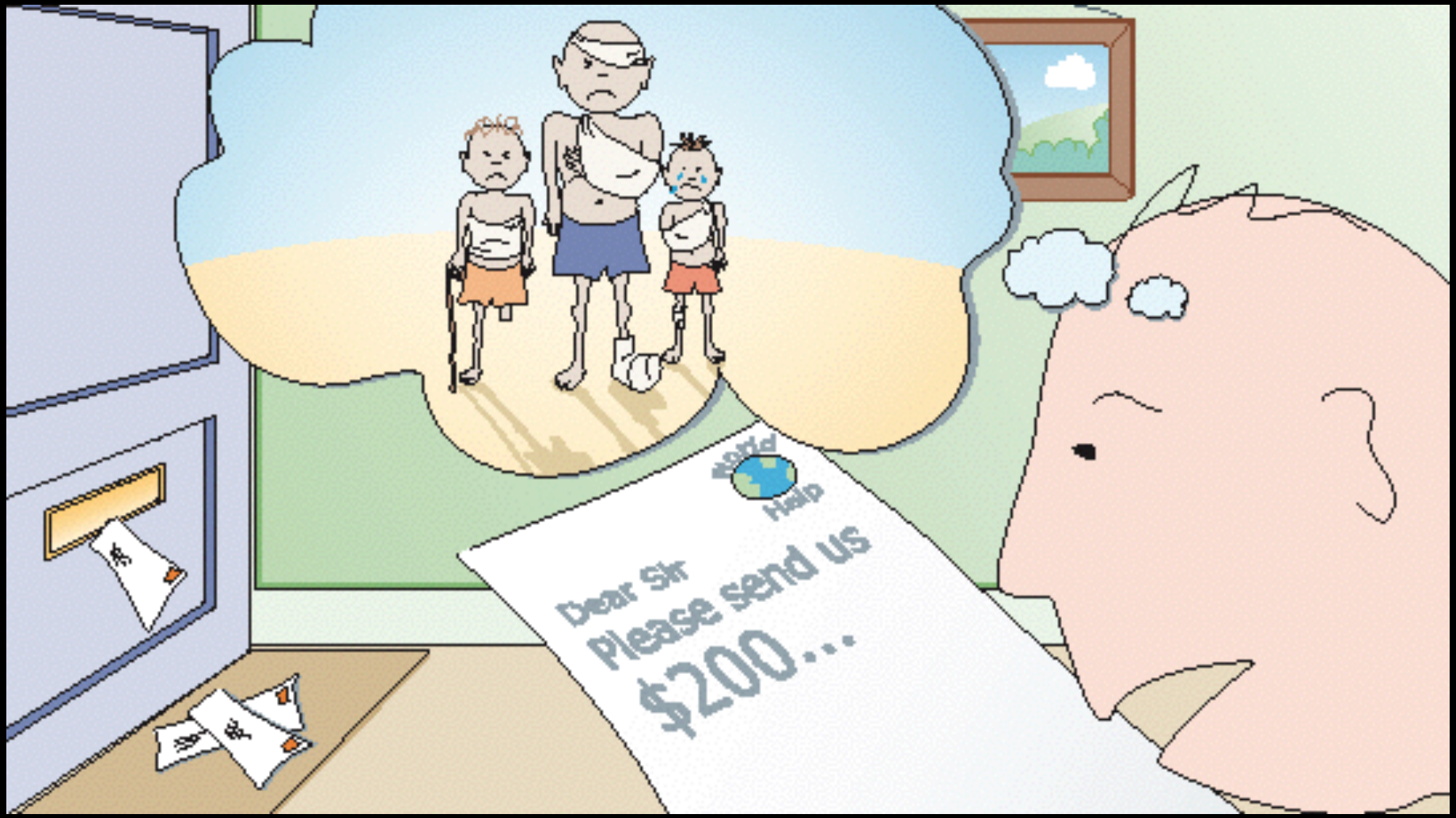
The Tragedy of Commonsense Morality

Us vs. Them





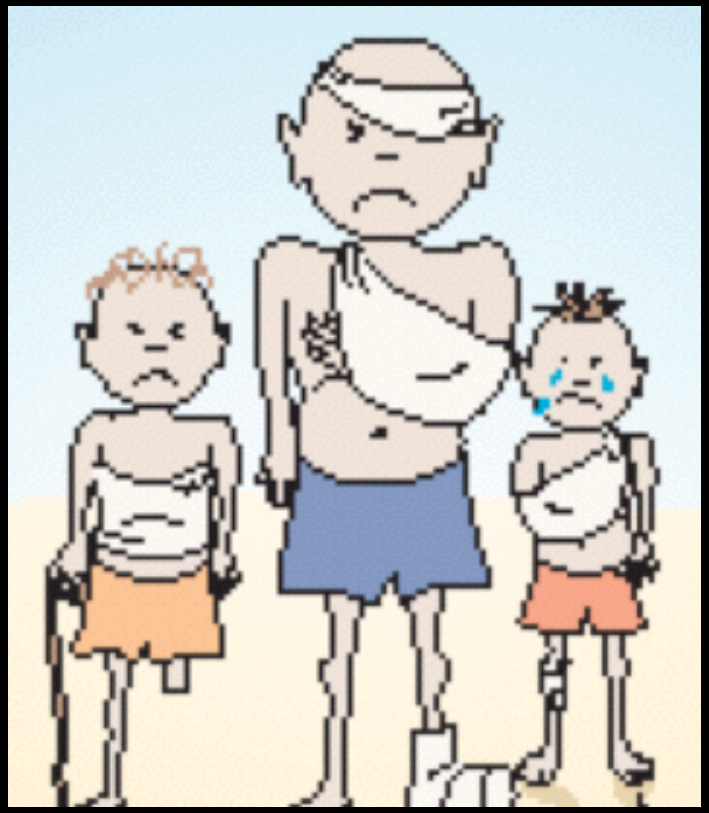
Singer (1972); Unger (1996)



Singer (1972); Unger (1996)

Distance: Us and Them

Singer, 1972; Unger, 1996

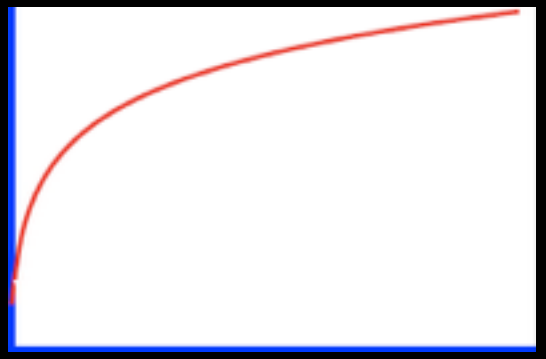


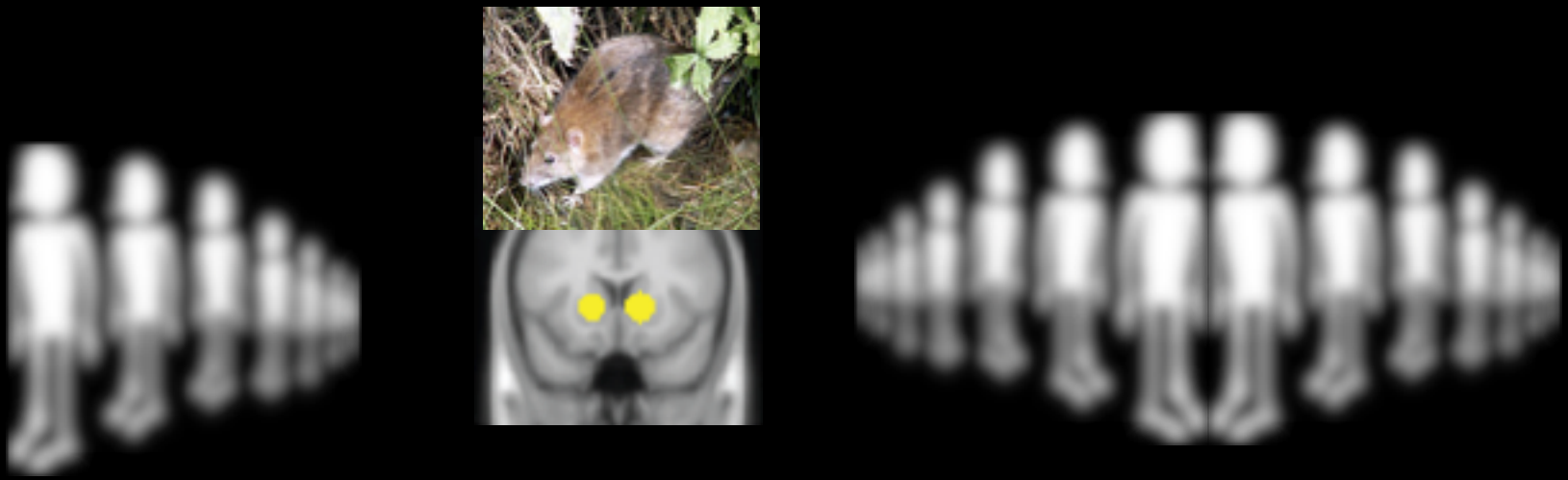
68%

34%

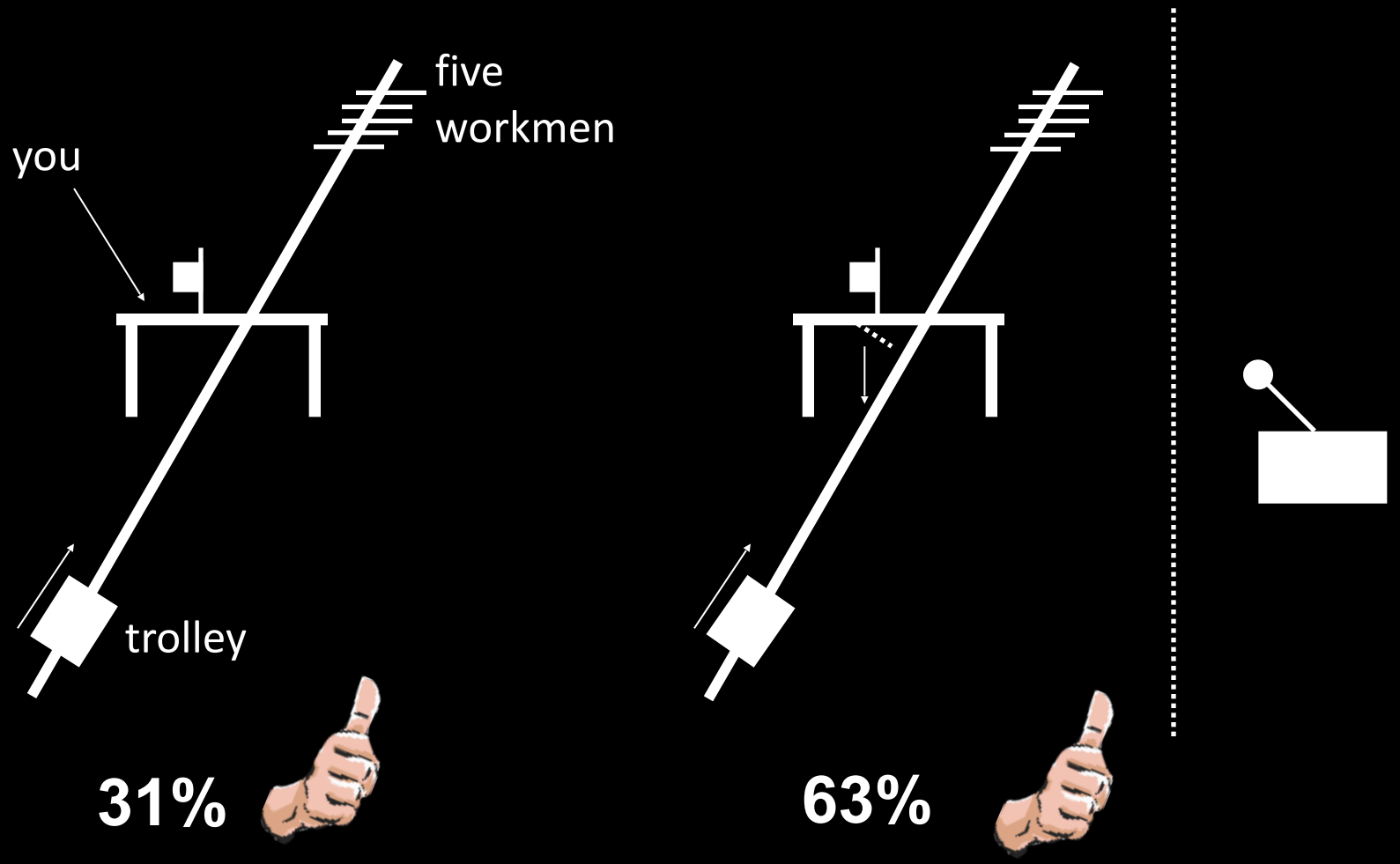
Musen & Greene, in prep

Numbers: Diminishing Moral Returns?



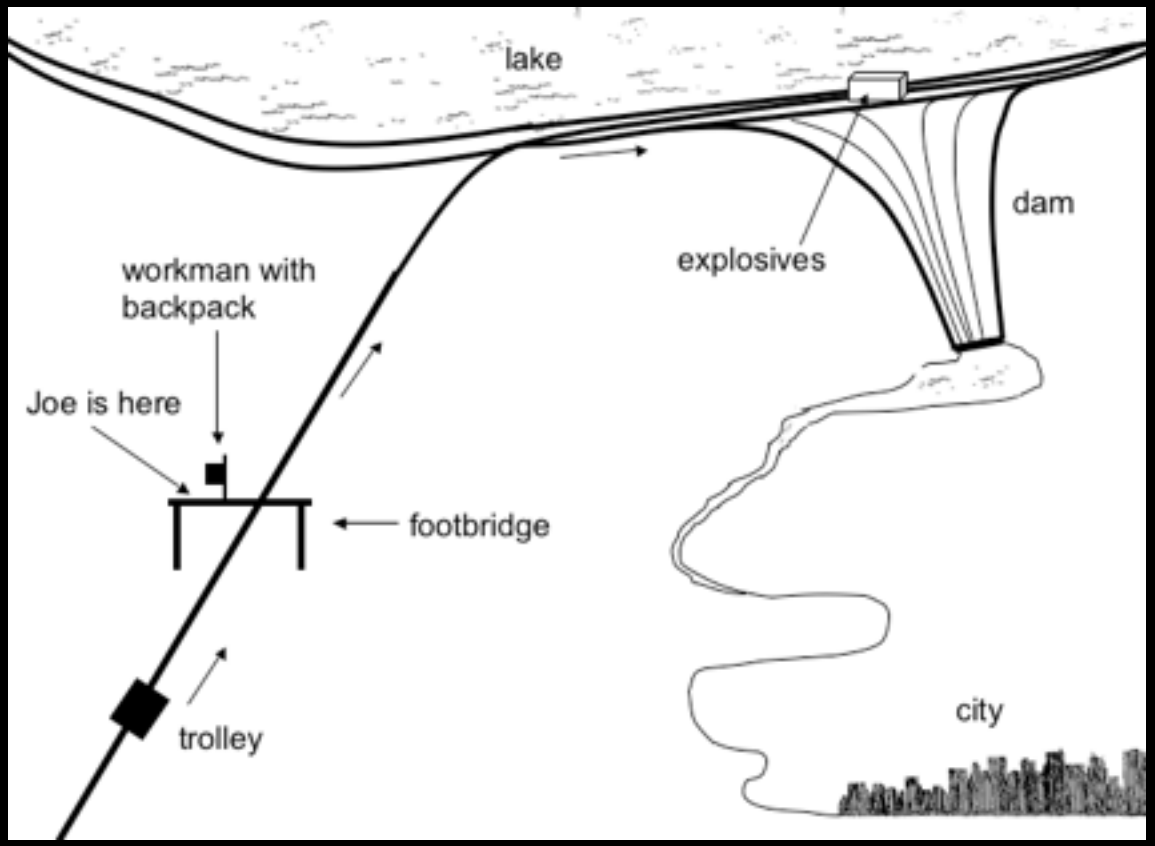


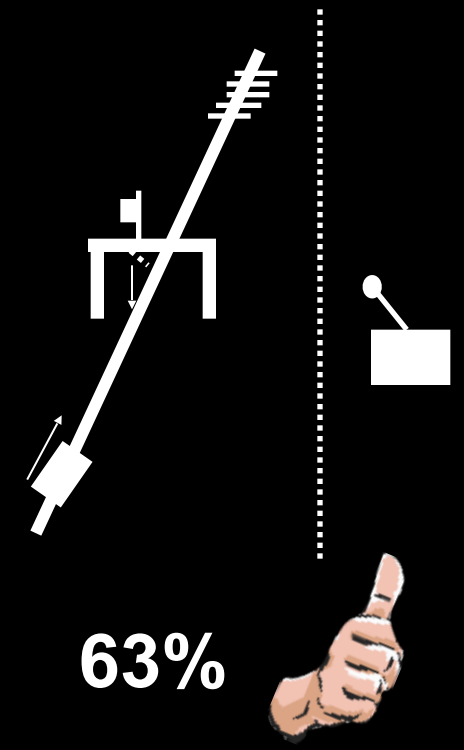
Directness



Cushman et al., *Psychological Science,* 2006; Greene et al., *Cognition,* 2009

Numbers vs. Directness





70%

Push vs. Switch
≈ 1,000,000 lives

Greene et al., 2009, Paxton et al., 2011

Governing Philosophies

Programming Ethics

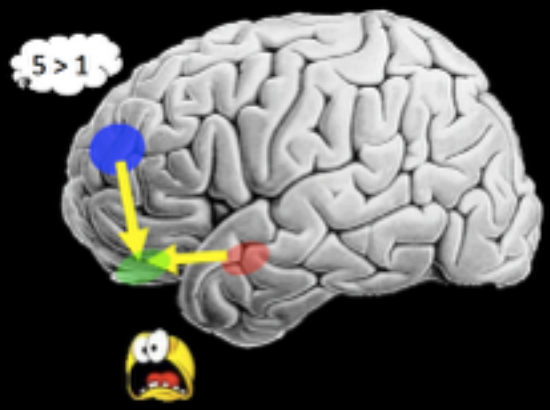
Cf. Moor, 1985; Wallach & Allen, 2008

Deontic rules

Utilitarian calculations

Virtue acquisition

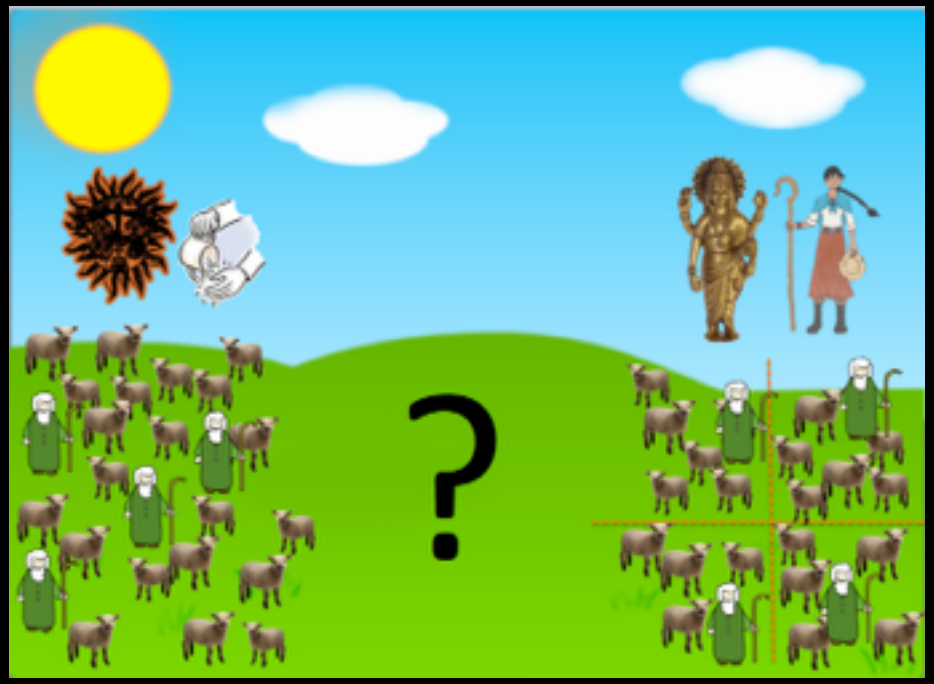
Humanoid Hybrids



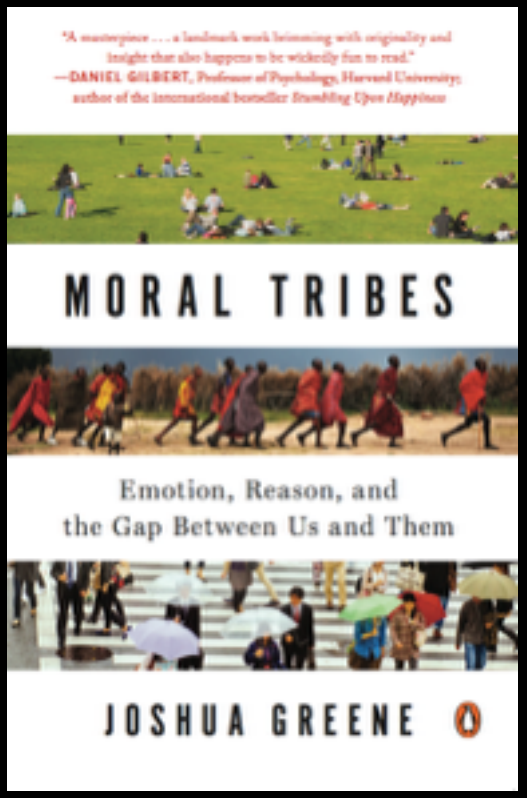
Governing AI

The Ethics of AI is *Ethics*

Social Justice, Freedom vs. Regulation, …



Metamorality: The original value alignment problem



Debugging morality with scientific self-knowledge

Debugging Morality Fast and Slow

If you trust people's moral intuitions, you'll get all of the bugs along with the features

If you reject people's moral intuitions, you'll get unhappy people

Need more sophisticated moral thinking, not just for leaders and engineers, but for everyone