

24.09 Minds and Machines

Fall 11 HASS-D CI

free will

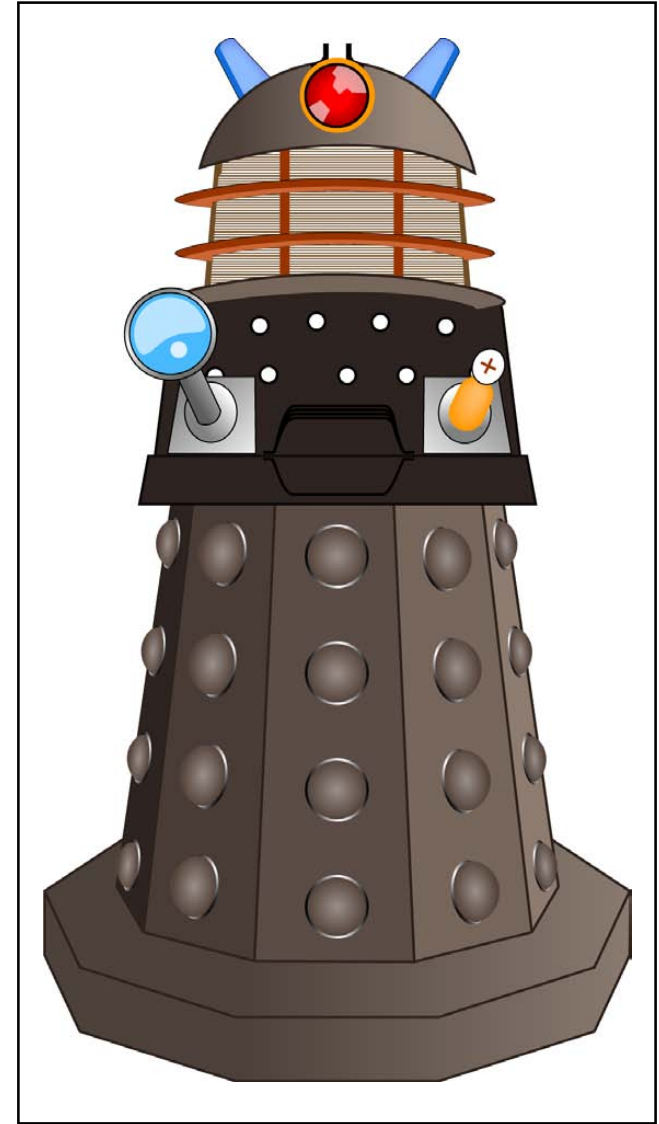


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free will

when we act

take 24.09, eat a donut, go for a walk, help in a soup kitchen, rob a bank,...

we typically do so voluntarily, of our own free will

and if we do, we are responsible for our actions

we deserve praise or blame

question

when do we act without free will?

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acting without free will

sometimes our actions are coerced, the result of drugs, obsessive-compulsive disorder, Tourette syndrome, alien hand syndrome...

here we do not act freely

so we are not responsible

but: do we have free will at all?

Benjamin Libet's experiments in the 1980s*

Libet observed a 'readiness potential' approx. 350 ms before the subjects reported the decision to act

Image removed due to copyright restrictions. To view the sequence for a self-initiated act, go to page 51 of "Do We Have Free Will?" by Benjamin Libet, at <http://www.centenary.edu/attachments/philosophy/aizawa/courses/intros2009/libetjcs1999.pdf>.

Image removed due to copyright restrictions. A book cover for *My Brain Made Me Do It: The Rise of Neuroscience and the Threat to Moral Responsibility* by Eliezer J. Sternberg.

Image removed due to copyright restrictions. To view the article "Neuroscience Challenges Old Ideas About Free Will" by Gareth Cook, go to <http://www.scientificamerican.com/article.cfm?id=free-will-and-the-brain-michael-gazzaniga-interview>.

Image removed due to copyright restrictions. To view the article "Neuroscience vs Philosophy: Taking Aim At Free Will" by Kerri Smith, go to <http://www.nature.com/news/2011/110831/full/477023a.html>.

Image removed due to copyright restrictions. To view the figure measuring the onset time of conscious motor intentions, go to Figure 1 in "[Unconscious Determinants of Free Decisions in the Human Brain](#)" by Marcel Brass, John-Dylan Haynes, Hans-Jochen Heinze, and Chun Siong Soon. In *Nature Neuroscience* 11, no. 5.

choice of L or R, remember
letter when decision made
(usually < 1s before)

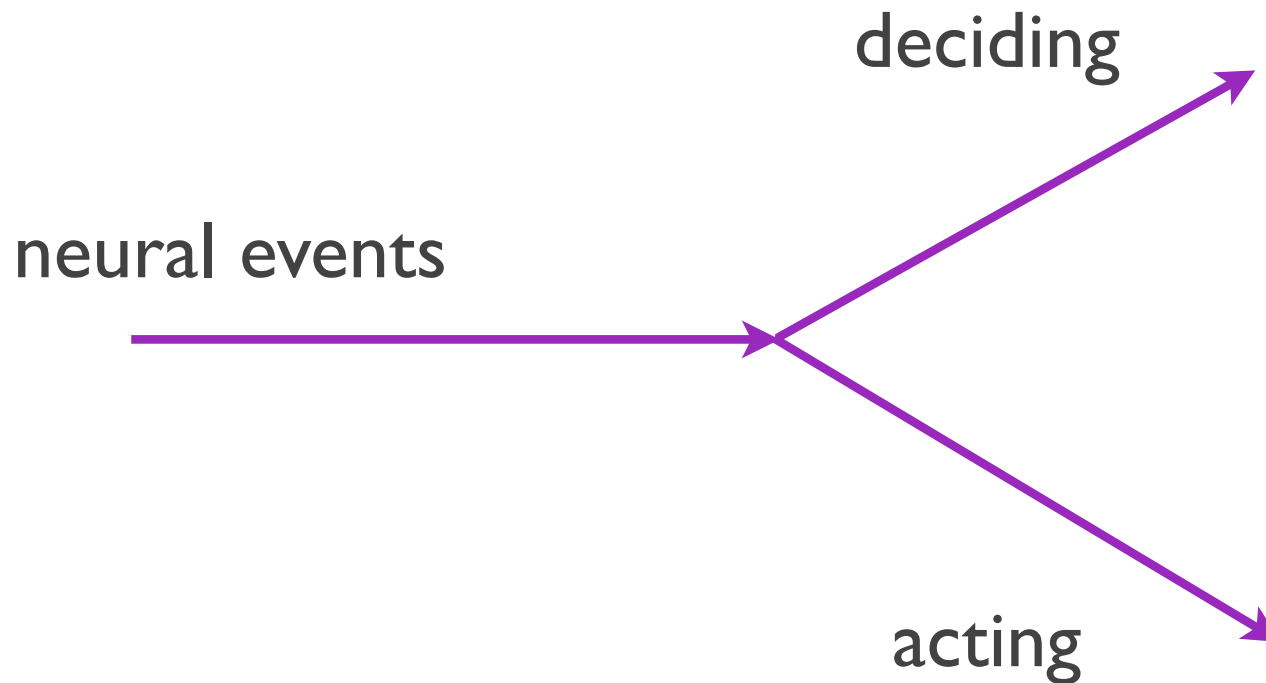
results

Image removed due to copyright restrictions. To view the figure decoding the outcome of decisions before and after they reached awareness, go to Figure 2 in "[Unconscious Determinants of Free Decisions in the Human Brain](#)" by Marcel Brass, John-Dylan Haynes, Hans-Jochen Heinze, and Chun Siong Soon. In *Nature Neuroscience* 11, no. 5.

60% predictive signal present (adding in delay of BOLD* response) up to 10s before reported time of decision!

*Blood Oxygen Level Dependence, measured by fMRI

the will as an epiphenomenon?



on this picture, our decisions do not cause our actions: both are effects of a common cause

Mr Puppet on trial (Greene and Cohen, 1780)

I designed him. I carefully selected every gene in his body and carefully scripted every significant event in his life so that he would become precisely what he is today...my plans for him succeeded, as they have for 95% of the people I've designed. I assure you that the accused deserves none of the credit.

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What to do with Mr Puppet?

Insofar as we believe this testimony, we are inclined to think that Mr Puppet cannot be held fully responsible for his crimes, if he can be held responsible for them at all. He is, perhaps, a man to be feared, and we would not want to return him to the streets. But given the fact that forces beyond his control played a dominant role in causing him to commit these crimes, it is hard to think of him as anything more than a pawn.

determinism

determinism is the thesis that the state of the universe at any time t , together with the laws of nature, are compatible with only one history of the universe after t

so if determinism is true, given the initial conditions at the Big Bang and the laws of nature, it was guaranteed that you would come to class today

generalizing the case of Mr Puppet: I

let C be a true statement of the initial conditions, and let L be a true statement of the laws of nature

1. you never had any control over whether C is true
2. you never had any control over whether L is true, so:
3. you never had any control over whether $C\&L$ is true

generalizing the case of Mr Puppet: II

4. determinism is true, so:
5. C&L entails that 'you came to class today' is true
6. if you never had any control over whether P is true, and P entails Q, then you never had any control over whether Q is true, so:
7. you never had any control over whether you came to class today, in which case you did not come to class of your own free will

indeterminism to the rescue?

suppose that determinism is false, and that indeterminism is true

outcomes are not determined by the initial conditions and the laws; instead, only probabilities of those outcomes are determined

for example: the probability that this radium atom will decay in the next 1601 years is 1/2

does this help to save the claim that we have free will?

admittedly, if the initial conditions and the laws guaranteed that there was a 81.54% probability of your coming to class today, then you didn't have to come to class today

but that doesn't help to give you control over whether you came to class today—the radium atom has no control over when it decays!

options

free will compatible with determinism?

yes

compatibilism

no

incompatibilism

determinism?

yes

hard determinism

no

libertarianism

information about the
final exam

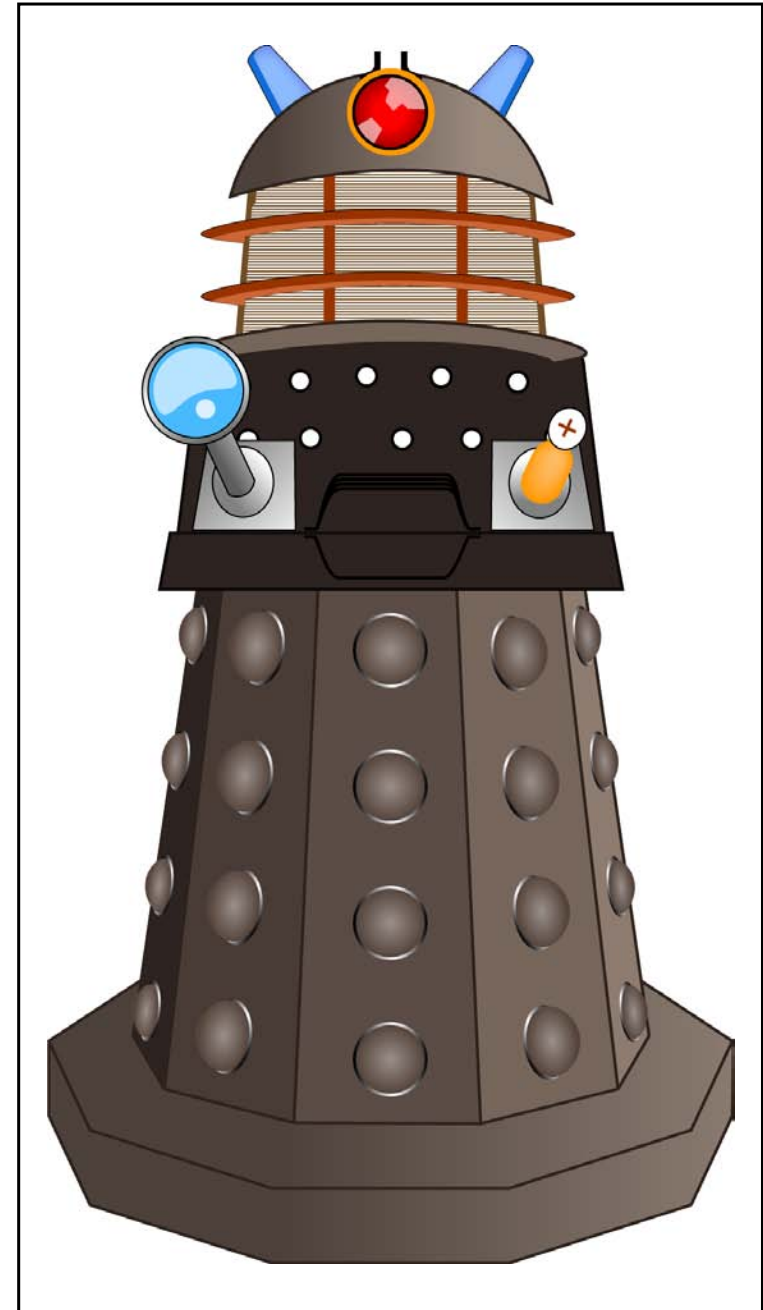


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