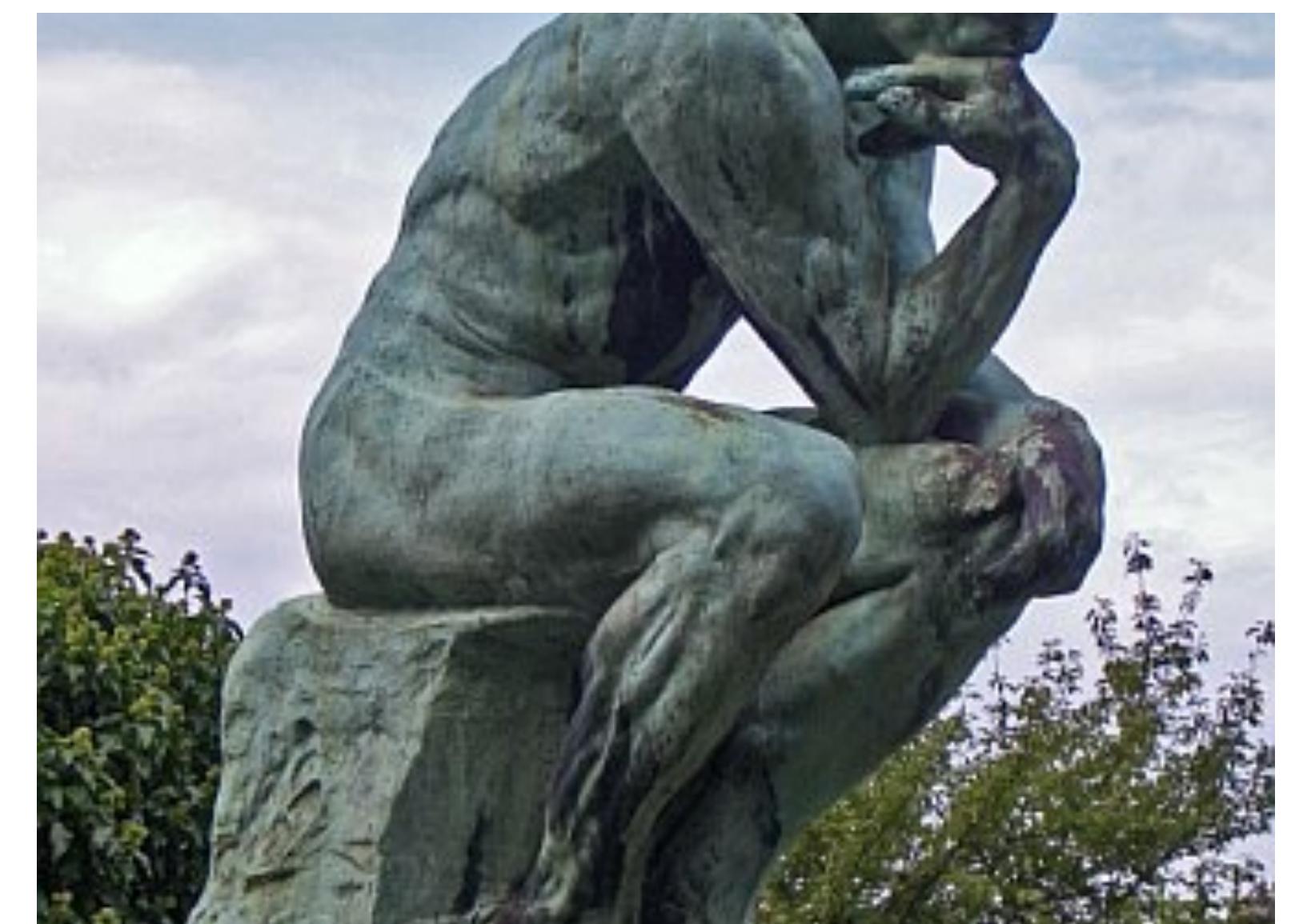


Summer Seminars in Neuroscience and Philosophy 2021

Jesse S. Summers, Duke University



Guy In Philosophy Class Needs To Shut The Fuck Up

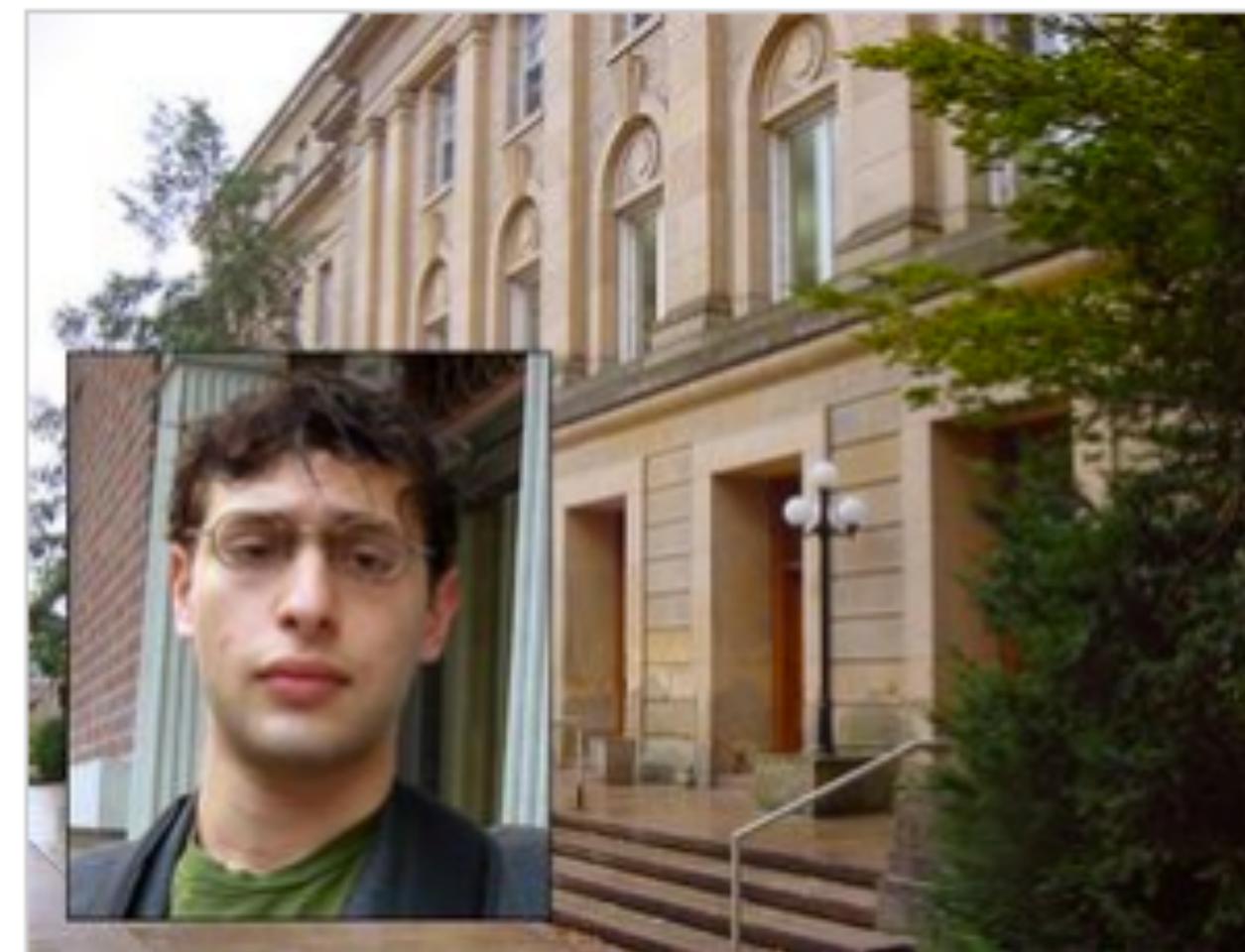
NEWS

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College · Education ·
Culture

HANOVER, NH—According to students enrolled in professor Michael Rosenthal's Philosophy 101 course at Dartmouth College, that guy, Darrin Floen, the one who sits at the back of the class and acts like he's Aristotle, seriously needs to shut the fuck up.



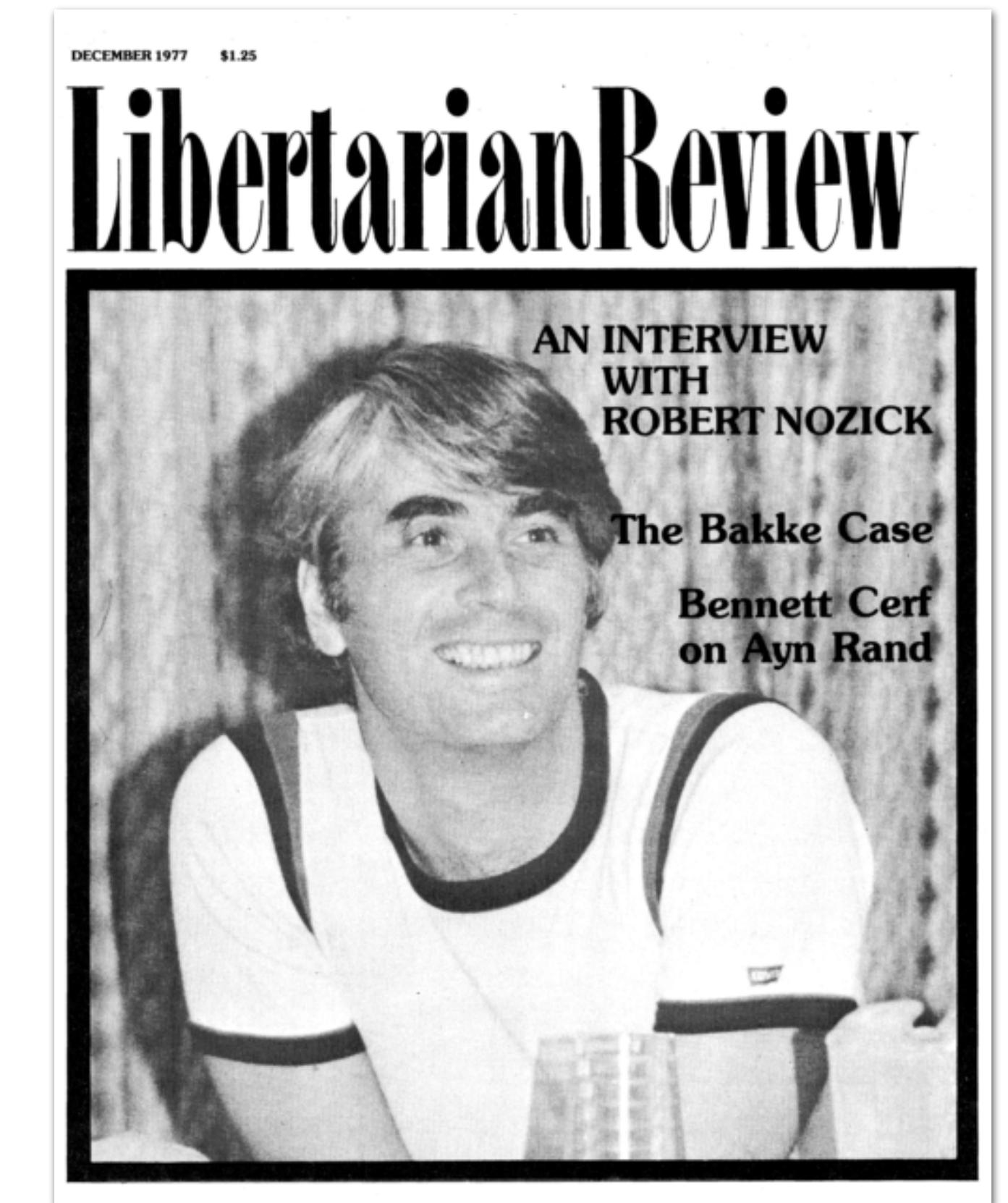
Floen (inset) is known to make his insufferable comments during class at Thornton Hall.

His fellow students describe Floen's frequent comments as eager, interested, and incredibly annoying.

"He thinks he knows about philosophy," freshman Duane Herring said. "But I hate his voice, and I hate the way he only half raises his hand, like he's so laid back. We're discussing ethics

“The word ‘philosophy’ means the love of wisdom, but what philosophers really love is reasoning. They formulate theories and marshal reasons to support them, they consider objections and try to meet these, they construct arguments against other views. Even philosophers who proclaim the limitations of reason adduce reasons for their views and present difficulties for opposing ones.”

Robert Nozick (1994)



logic and critical thinking

greatly abridged

arguments

1. All men are mortal.
2. Socrates is a man.
3. Therefore, Socrates is mortal.



arguments

argument types, structures, and strategies:

deductive and inductive

modus ponens, modus tollens, etc.

dilemmas, proof by contradiction, etc.

$$1. \text{If } p \rightarrow q \\ 2. pq$$

justification or explanation

1. All men are mortal.
2. Socrates is a man.
3. Therefore, Socrates is mortal.



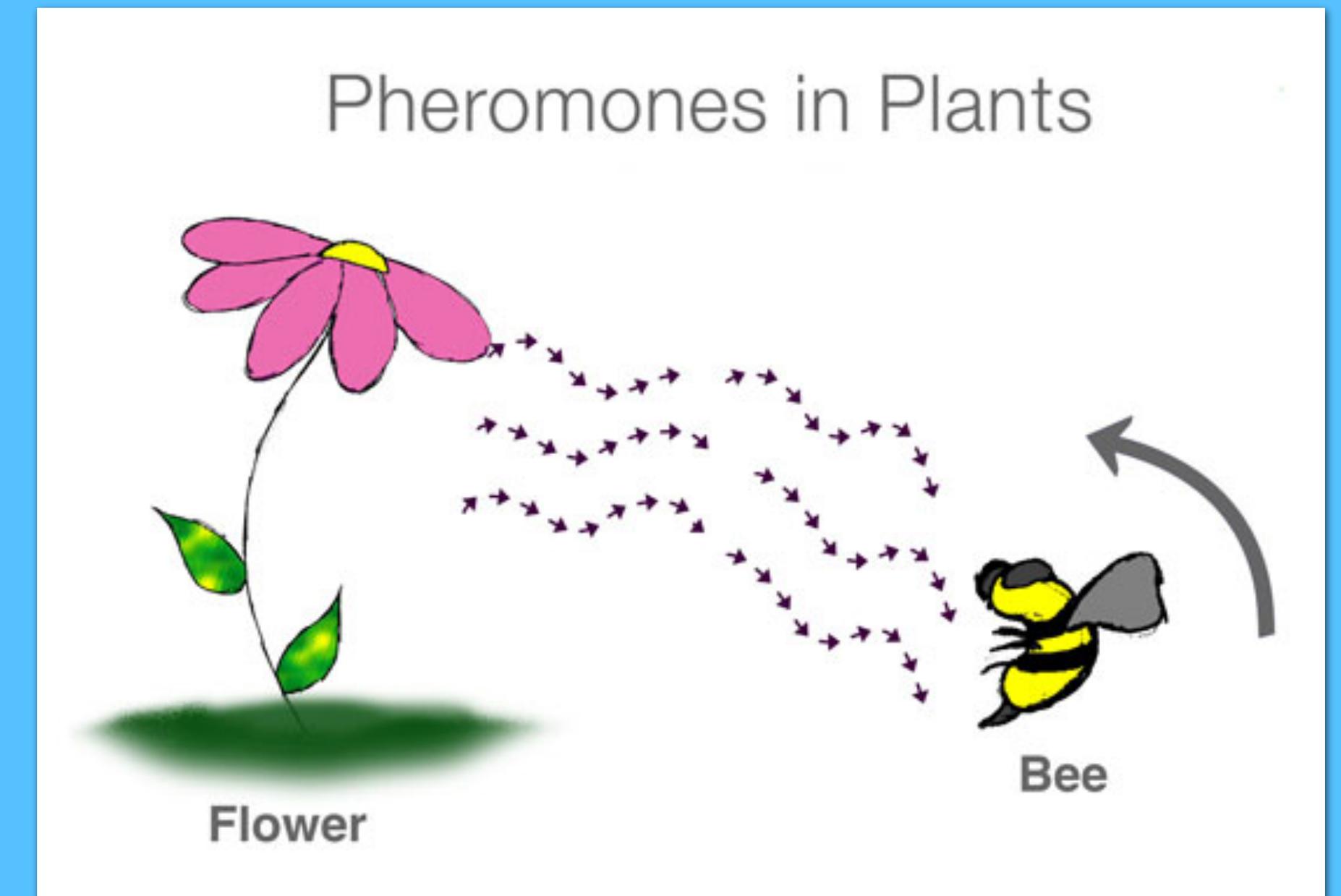
arguments

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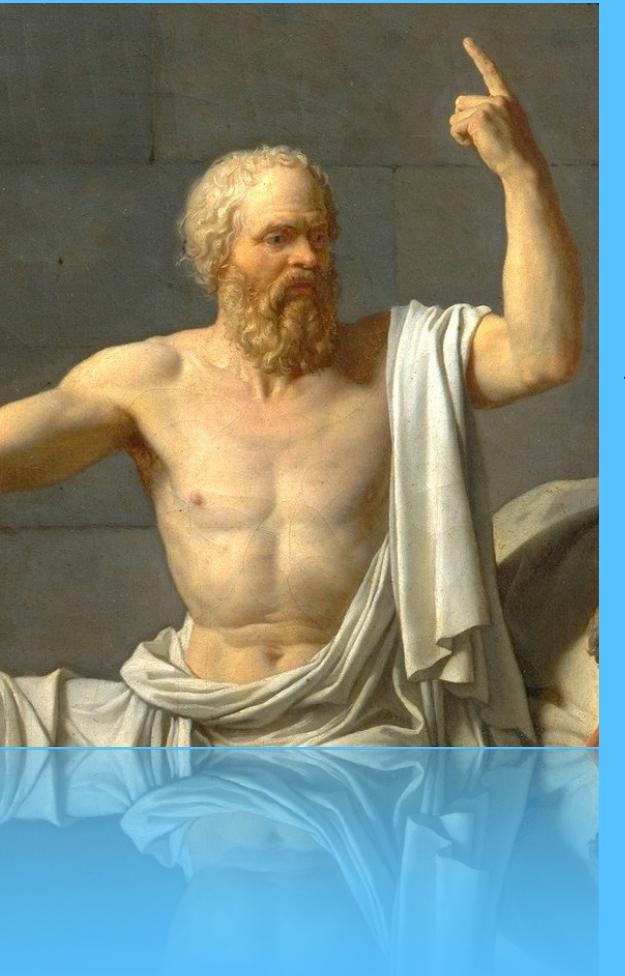


arguments

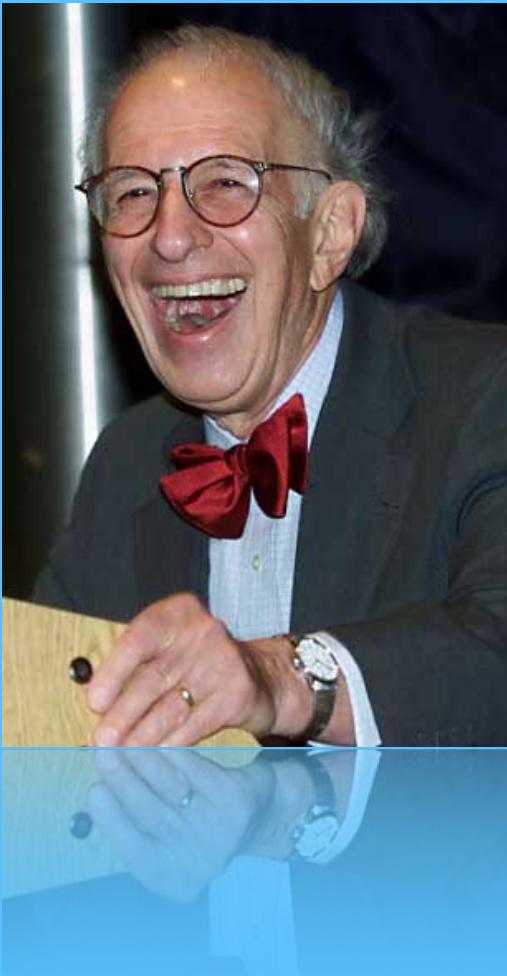
1. Love is blind.
2. Blind things depend on their sense of smell.
3. Therefore, love depends on smell.



arguments

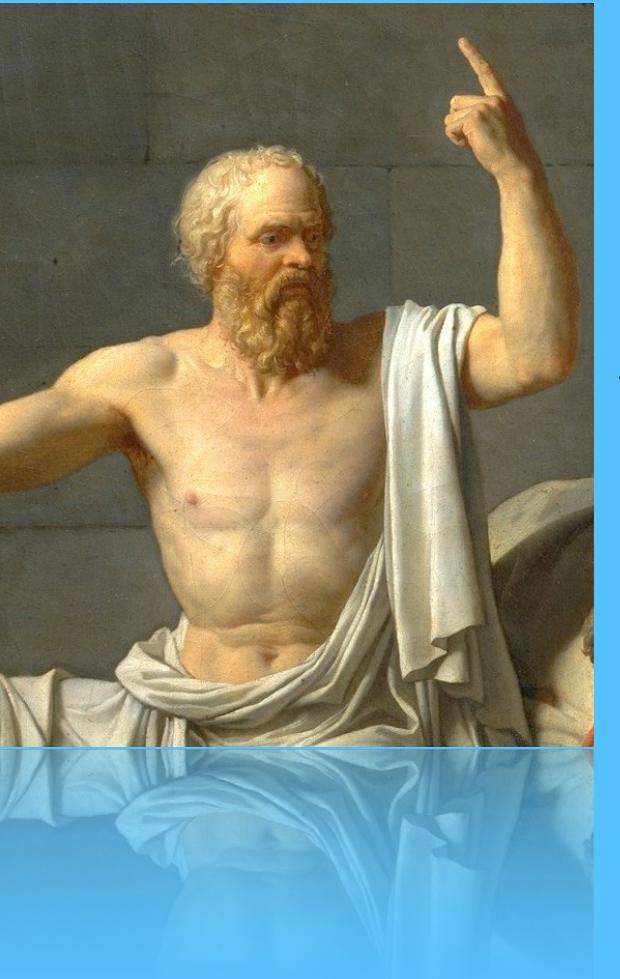


objection!!!

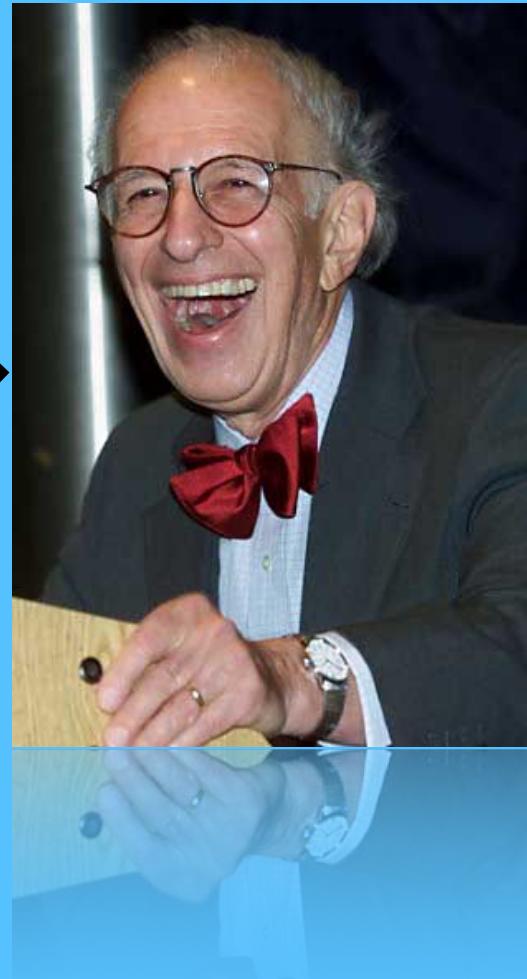


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arguments



What does it mean?
How do we evaluate it?



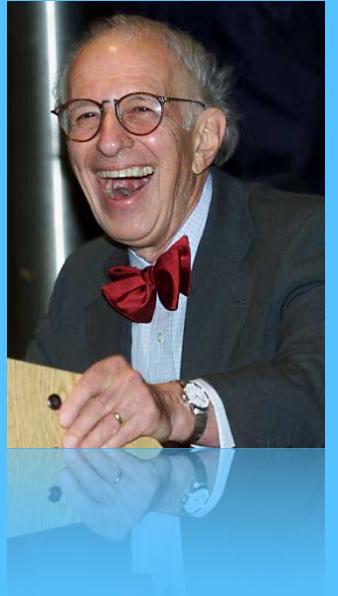
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arguments



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arguments

What does it mean?

How do we evaluate it?

1. Love is blind.
2. Blind things depend on their sense of smell.
3. Therefore, love depends on smell.
 1. operationalization
 2. conceptual analysis
 3. evaluative/normative?

arguments

What does it mean?

How do we evaluate it?

1. Love is blind.
2. Blind things depend on their sense of smell.
3. Therefore, love depends on smell.
 1. validity & soundness
 2. evidence and counterexamples
 3. hidden “ought”?

arguments

What does it mean?

1. operationalization
2. conceptual analysis
3. evaluative/normative?

How do we evaluate it?

1. validity & soundness
2. evidence and counterexamples
3. hidden “ought”?

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1. operationalization
2. conceptual analysis
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How do we evaluate it?

1. validity & soundness
 2. evidence and counterexamples
 3. hidden “ought”?
-
1. reading for the argument
 2. formulating an argument
 3. dealing with philosophers

reading for the argument

“I’ll tell you how I know people are selfish, deep down. People only do nice things when they’re thinking about it or when other people are watching. But, if you want to know what a person really wants, you have to see what they do when they’re not thinking about it. It’s the impulsive actions that show you the real person. And when people are impulsive, they don’t care so much about what anyone else needs, only what they want for themselves.”

reading for the argument

“I’ll tell you how I know people are selfish, deep down. People only do nice things when they’re thinking about it or when other people are watching. But, if you want to know what a person really wants, you have to see what they do when they’re not thinking about it. It’s the impulsive actions that show you the real person. And when people are impulsive, they don’t care so much about what anyone else needs, only what they want for themselves.”

1. impulsive actions reveal a person’s preferences
2. impulsive people often minimize others’ needs
3. therefore, “deep down” we are selfish

reading for the argument

filling in the gaps

1. impulsive actions reveal a person's preferences

“impulsive actions” are actions that...

“preferences” are...

2. impulsive people often minimize others' needs

“impulsive people” are those who...

“minimizing needs” means that...

3. therefore, “deep down” we are selfish

“deep”?

“selfish,” or self-centered, or self-interested ...

reading for the argument

filling in the gaps

“impulsive actions” are actions that...

What does it mean?

1. operationalize
2. conceptual analysis
3. evaluative/normative?

reading for the argument

filling in the gaps

“impulsive actions” are actions that...

operationalize

experimental task
social criteria
self-reports

conceptual analysis

paradigm cases
no (unexplainable) counterexamples
necessary conditions
sufficient conditions

Not necessary

Phrase ‘necessary and sufficient’ blamed for flawed neuroscience.

In his 1946 classic essay ‘Politics and the English language’, George Orwell argued that “if thought corrupts language, language can also corrupt thought”. Can the same be said for science — that the misuse and misapplication of language could corrupt research? Two neuroscientists believe that it can. In an intriguing paper published in the *Journal of Neurogenetics*, the duo claims that muddled phrasing in biology leads to muddled thought and, worse, flawed conclusions (M. Yoshihara and M. Yoshihara *J. Neurogenet.* **32**, 53–64; 2018).

The phrase in the crosshairs is “necessary and sufficient”. It’s a popular one: figures suggest the wording pops up in some 3,500 scientific papers each year across genetics, cell biology and neuroscience alone. It’s not a new fad: *Nature’s* archives show consistent use since the nineteenth century.

Used properly, the phrase indicates a specific relationship between two events. For example, the statement, “I’ll pay for lunch if, and only if, you pay for breakfast,” can be written as, “You paying for breakfast is necessary and sufficient for me paying for lunch.”

But, argue Motojiro Yoshihara and Motoyuki Yoshihara, use of the phrase in research reports is problematic, and should be curtailed.

The logic of the term is at the heart of the dispute. It’s too often used

as shorthand to mean ‘linked to’ or ‘important for’, the authors say. And this sloppy use, they argue, can lead scientists in the wrong direction, especially in genetics.

If a gene is necessary and sufficient for something (as often claimed), strict logic demands that that gene alone can do the job. For example, the gene *eyeless* is certainly necessary for a retina to develop. But it is not sufficient — if it were, then logic would demand that ‘if *eyeless* exists, then a retina will develop’. This is false; other genes and factors are needed as well. Yet *eyeless* is often described as being necessary and sufficient for retinal development.

The duo argues that its objection to such incorrect use is more than pedantry. The combination of necessary and sufficient is excessively strict, and its widespread use has meant, for example, that some ‘command’ neurons have failed to be identified as such because they don’t satisfy the required criteria. (The agreed definition of a command neuron is one that is necessary and sufficient to initiate a behaviour.)

One such missed neuron is the Mauthner cell, responsible for a fast-escape reflex in fishes and amphibians. In fact, so few command neurons satisfy the logic of the phrase that the concept that they exist at all has been undermined, the authors say.

In most cases, they propose, a better phrase than ‘necessary and sufficient’ would be “indispensable and inducing”. (Number of uses so far: one, in their paper.)

Will it catch on? Biologists will no doubt counter that they use the ‘necessary and sufficient’ phrase in a mutually understood way that is separate from its logical roots. Perhaps, but then Orwell had that covered, too: “A bad usage can spread by tradition and imitation even among people who should and do know better.” ■

reading for the argument

filling in the gaps

1. impulsive actions reveal a person's preferences

“impulsive actions” are actions that...

“preferences” are...

operationalize

conceptual analysis

we're confident to degree d that actions elicited under experimental conditions C1 are n% more likely to correspond to self-reports of preferences given independently on test T1 under conditions C2 than...

reading for the argument

filling in the gaps

1. impulsive actions reveal a person's preferences

“impulsive actions” are actions that...

“preferences” are...

operationalize

conceptual analysis

what is an impulsive action (i.e., “really”)?

is this just playing with words? mere stipulation?

forms of argument

what is an impulsive action (i.e., “really”)?

1. appeal to “clear” intuitions

defense by examples, to what “we” mean

goal: making a position plausible

advanced strategy: conditional reasoning

empirical version: x-phi

forms of argument

what is an impulsive action (i.e., “really”)?

2. proposal and counterexample

goal: greater clarity

often: necessary and sufficient conditions

less often: definition or characterization

1. appeal to “clear” intuitions

forms of argument

what is an impulsive action (i.e., “really”)?

3. stipulated for practical or theoretical reasons

goal: theoretical progress

strategy: establish coherence

1. appeal to “clear” intuitions
2. proposal and counterexample

forms of argument

what is an impulsive action (i.e., “really”)?

“Rational Reconstruction”

1. appeal to “clear” intuitions
2. proposal and counterexample
3. stipulated for practical or theoretical reasons

forms of argument

1. impulsive actions reveal a person's preferences

“impulsive actions” are actions that...

1. appeal to “clear” intuitions

2. proposal and counterexample

3. stipulated for practical or theoretical reasons

4. others: reductio ad absurdum, fallacies, etc.

filling in the gaps

1. impulsive actions reveal a person's preferences

“impulsive actions” are actions that...

“preferences” are...

2. impulsive people often minimize others' needs

“impulsive people” are those who...

“minimizing needs” means that...

3. therefore, “deep down” we are selfish

“deep”?

“selfish,” or self-centered, or self-interested ...

What does it mean?

1. operationalization
2. conceptual analysis
3. evaluative/normative?

How do we evaluate it?

1. validity & soundness
 2. evidence and counterexamples
 3. hidden “ought”? evaluative argument
-
1. impulsive actions reveal a person’s preferences
 2. impulsive people often minimize others’ needs
 3. therefore, “deep down” we are selfish

validity & soundness

1. impulsive actions reveal a person's preferences
2. impulsive people often minimize others' needs
3. therefore, “deep down” we are selfish

assumptions

1. impulsive actions reveal a person's preferences
2. impulsive people often minimize others' needs

revealed preferences tell us what we're like "deep down"
a selfish person is anyone who minimizes others' needs

3. therefore, "deep down" we are selfish

evaluative arguments

1. impulsive actions reveal a person's preferences
2. impulsive people often minimize others' needs

a selfish person is anyone who minimizes others' needs

3. therefore, “deep down” we are selfish

evaluative arguments

1. impulsive actions reveal a person's preferences
2. impulsive people often minimize others' needs

a selfish person is anyone who minimizes others' needs

3. therefore, “deep down” we are selfish

evaluative arguments

evaluative or normative conclusions

right/wrong, good/bad, should (not), ought (not)...

hidden “ought” (“should,” normative, etc.) claims:

“selfish”: focus more on ourselves than we should

“reasonable”/“rational”? “impulsive”? “compelled”?

quick test: is there anything praiseworthy or insulting about it?

evaluative arguments

evaluative or normative conclusions

1. impulsive actions reveal a person's preferences
2. impulsive people often minimize others' needs

a selfish person is anyone who minimizes others' needs

minimizing a person's needs means caring less about them than we should

3. therefore, “deep down” we are selfish
- = 3. therefore, “deep down” we care more about ourselves
than we should

evaluative arguments

evaluative or normative conclusions

normative-evaluative distinction
is-ought gap

"In every system of morality, ... the author proceeds for some time in the ordinary ways of reasoning, and establishes the being of a God, or makes observations concerning human affairs; when all of a sudden I am surprised to find... an ought, or an ought not. ... 'tis necessary that it should be observed and explained ... how this new relation can be a deduction from others, which are entirely different from it." - David Hume (1739)



evaluative arguments

normative-evaluative distinction
is-ought gap

1. Humans are happiest when we get enough sleep.
2. Therefore, we ought to get enough sleep.

evaluative arguments

normative-evaluative distinction
is-ought gap

1. Humans are happiest when we get enough sleep.
2. We want to be happy.
3. Therefore, we ought to get enough sleep.

evaluative arguments

normative-evaluative distinction
is-ought gap

1. Humans are happiest when we get enough sleep.
2. We want to be happy.
3. We are grumpy and don't think clearly when we don't get enough sleep.
4. We eat too much and make bad decisions when we're tired.
5. No one wants to hear you talk about how little sleep you're getting.
6. Therefore, we ought to get enough sleep.

evaluative arguments

normative-evaluative distinction
is-ought gap

1. Humans are happiest when we get enough sleep.
2. We ought to do what makes us happiest.
3. Therefore, we ought to get enough sleep.

evaluative arguments

normative-evaluative distinction
is-ought gap

1. When faced with two otherwise identical options, people choose the one that causes more pleasure.
2. People who have certain vmPFC lesions do not consistently choose the one that causes more pleasure.
3. Therefore, vmPFC lesions impair decision making.

evaluative arguments

normative-evaluative distinction
is-ought gap

valid?

1. When faced with two otherwise identical options, people choose the one that causes more pleasure.
2. People who have certain vmPFC lesions do not consistently choose the one that causes more pleasure.
3. Therefore, vmPFC lesions impair decision making.

empirical argument? what evidence shows “impairment”?

evaluative arguments

normative-evaluative distinction
is-ought gap

temporal discounting and cognitive control. These studies show that smokers, relative to nonsmokers, consistently choose smaller immediate outcomes over larger, but more delayed, outcomes across both hypothetical and actual rewards^{36–39}. We speculate that the steep delay discounting seen in smokers may be a specific manifestation of a more general deficit in using striatal learning signals derived from fictive outcomes to guide behavior. In controls, functional neuroimaging data

Smokers' brains compute, but ignore, a fictive error signal in a sequential investment task

Pearl H Chiu^{1–4}, Terry M Lohrenz^{1,2,4} & P Read Montague^{1–3}

Published online: 10 January 2013 | DOI: 10.1038/nature11740 | http://www.nature.com/nature/journal/vaopnolabsuppl/issuppl_2013_1/index.html

evaluative arguments

validity & soundness

Who cares about validity?

1. impulsive actions reveal a person's preferences
2. impulsive people often minimize others' needs
3. therefore, “deep down” we are selfish

validity & soundness

The plumbing

1. impulsive actions reveal a person's preferences
2. impulsive people often minimize others' needs
3. therefore, “deep down” we are selfish

fallacies

leaks in the plumbing

vagueness

ambiguity

relevance

false dichotomy

vacuity

reductios

empirical-conceptual

is-ought

fallacies

leaks in the plumbing

vagueness

1. if you're not drunk already, one sip of wine won't make you drunk
2. therefore, you can sip as much wine as you want without getting drunk

Where do you draw the line?

fallacies

leaks in the plumbing

ambiguity

Outside of a dog, a book is a man's best friend. Inside of a dog,
it's too dark to read.

fallacies

leaks in the plumbing

ambiguity

1. Love is blind.
2. Blind things depend on their sense of smell.
3. Therefore, love depends on smell.

fallacies

leaks in the plumbing

ambiguity

1. the memory is in my hippocampus
2. the hippocampus is in my skull
3. therefore, the memory is in my skull

parallel reasoning

1. the pain is in my finger
2. my finger is in my mouth
3. therefore, the pain is in my mouth

fallacies

leaks in the plumbing

relevance

ad hominem, appeals to authority...

1. Research has shown that smoking causes cancer.
2. Therefore, smoking causes cancer.

fallacies

leaks in the plumbing

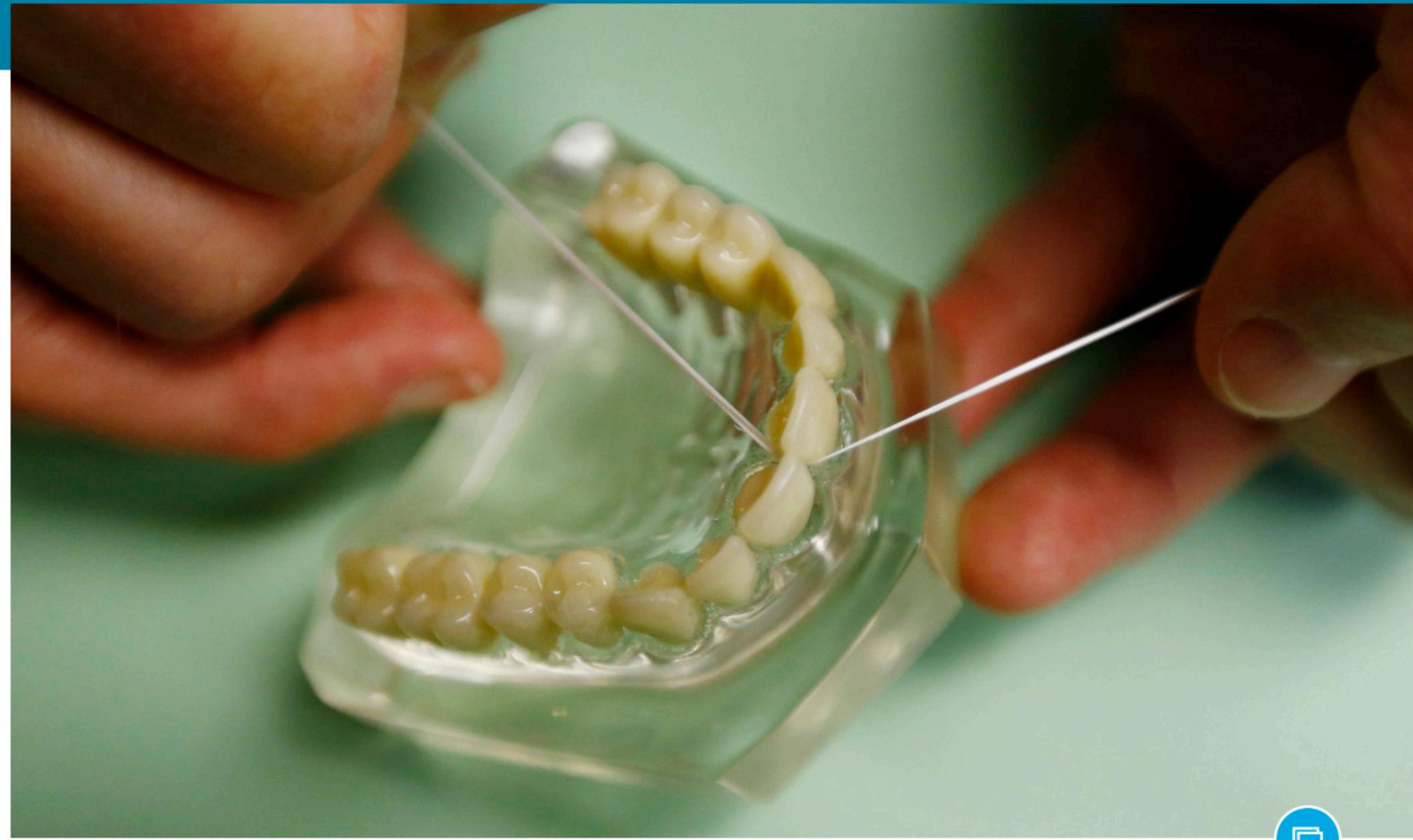
false dichotomy
argument from ignorance

1. No research has ever shown that one cigarette a day will hurt you
2. Therefore, a daily cigarette is fine.

fallacies

AP

Medical benefits of dental floss unproven



JEFF DONN
Aug. 02, 2016

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HOLMDEL, N.J. (AP) — It's one of the most universal recommendations in all of public health: Floss daily to prevent gum disease and cavities.

Except there's little proof that flossing works.

Still, the federal government, dental organizations and manufacturers of floss have pushed the practice for decades. Dentists provide samples to their patients; the American Dental Association insists on its website that, "Flossing is an essential part of taking care of your teeth and gums."

near-fallacies

decorative plumbing

vacuity

“begging the question”

1. One's actions reveal one's preferences.
2. Therefore, people always do what they most want to do.

near-fallacies

decorative plumbing

reductio ad absurdum

straw man

1. if addiction is a compulsion, it's because the addict's brain makes him use drugs.
2. but our brains make us do everything that we do.
3. therefore, all our action is compelled

fallacies

leaks in the plumbing

vagueness

is-ought

ambiguity

empirical-conceptual

relevance

false dichotomy

vacuity

reductio

However, these neurobiological data do not establish that addiction is a form of compulsion and that control is nil. From a philosophical perspective, we should immediately be skeptical of any such conclusion on conceptual grounds. We commonly hold that what makes a piece of behavior an action, as opposed to a mere bodily movement, like an automatic reflex, is that it is voluntary. This means that there is the capacity for genuine choice between courses of action. Minimally, there must be at least two choices: to act in a particular way at a particular time, or not to.⁶ There

is a particular way at a particular time to not to. There is a particular way at a particular time to act. There must be at least two choices: to act or not to act. There must be at least two choices: to act in a particular way at a particular time, or not to. There is a particular way at a particular time to not to. There is a particular way at a particular time to act.