

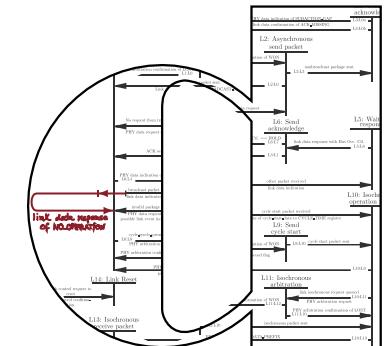


Ethics for Nerds

An Advanced Course in Computer Science
Summer Semester 2020

Ethics 1.1
Intro to Philosophy, Morals, Ethics

Moral Dimensions of Computer Science



Prof. Holger Hermanns,
Kevin Baum, Sarah Sterz

What is this course about?



It's about *your* future work and its impact.

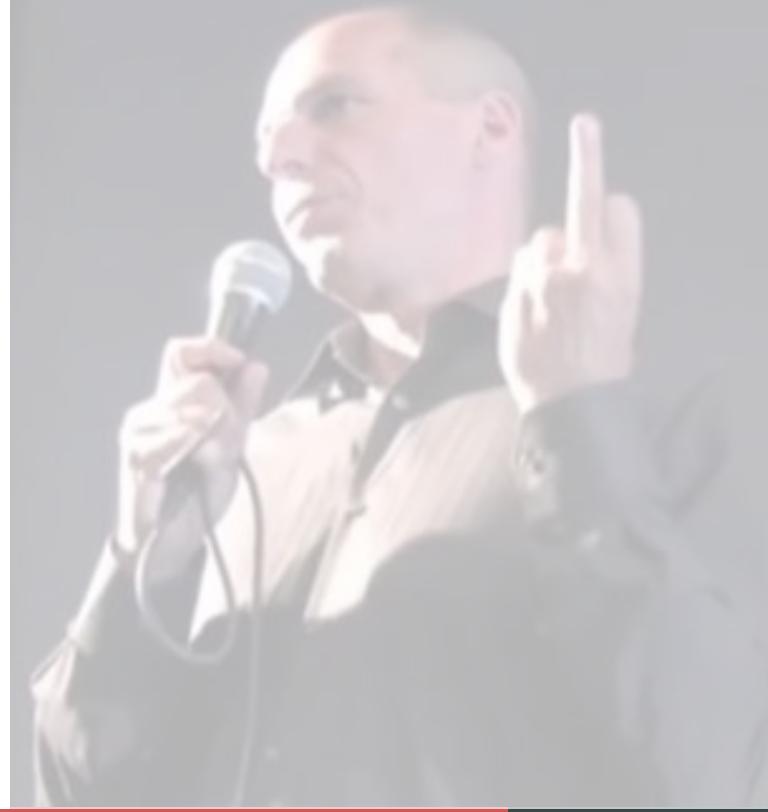
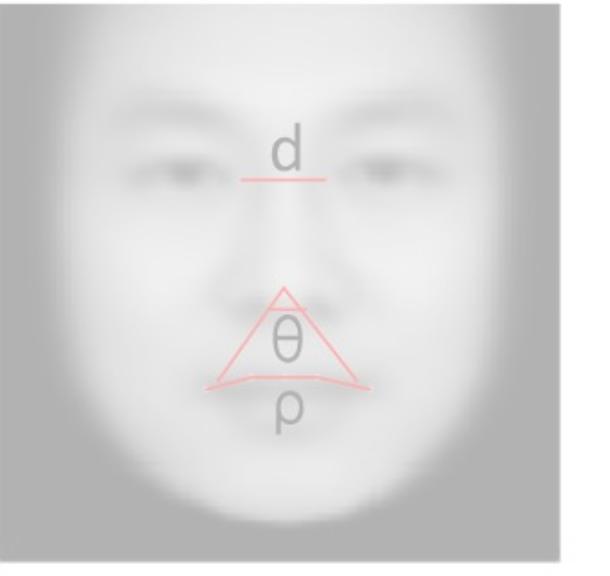
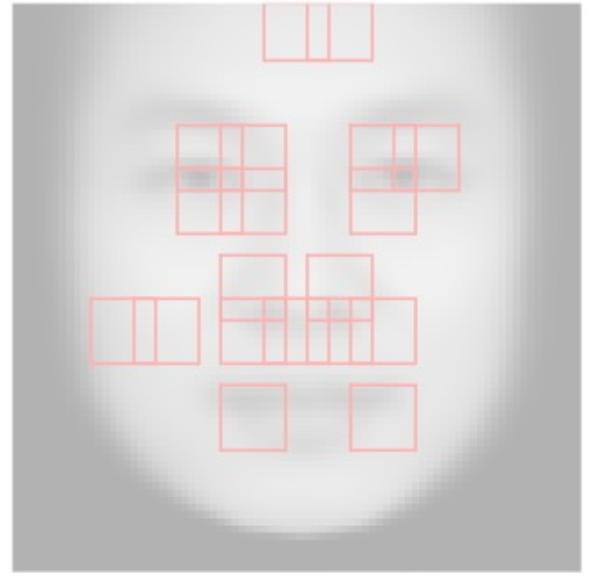


Figure 8. (a) FGM results; (b) Three discriminative features ρ , d and θ .

AT LEAST FOUR CASES TO DISTINGUISH

Bugs, Errors,
Flaw, and
their effects

Overlooked
Side Effects

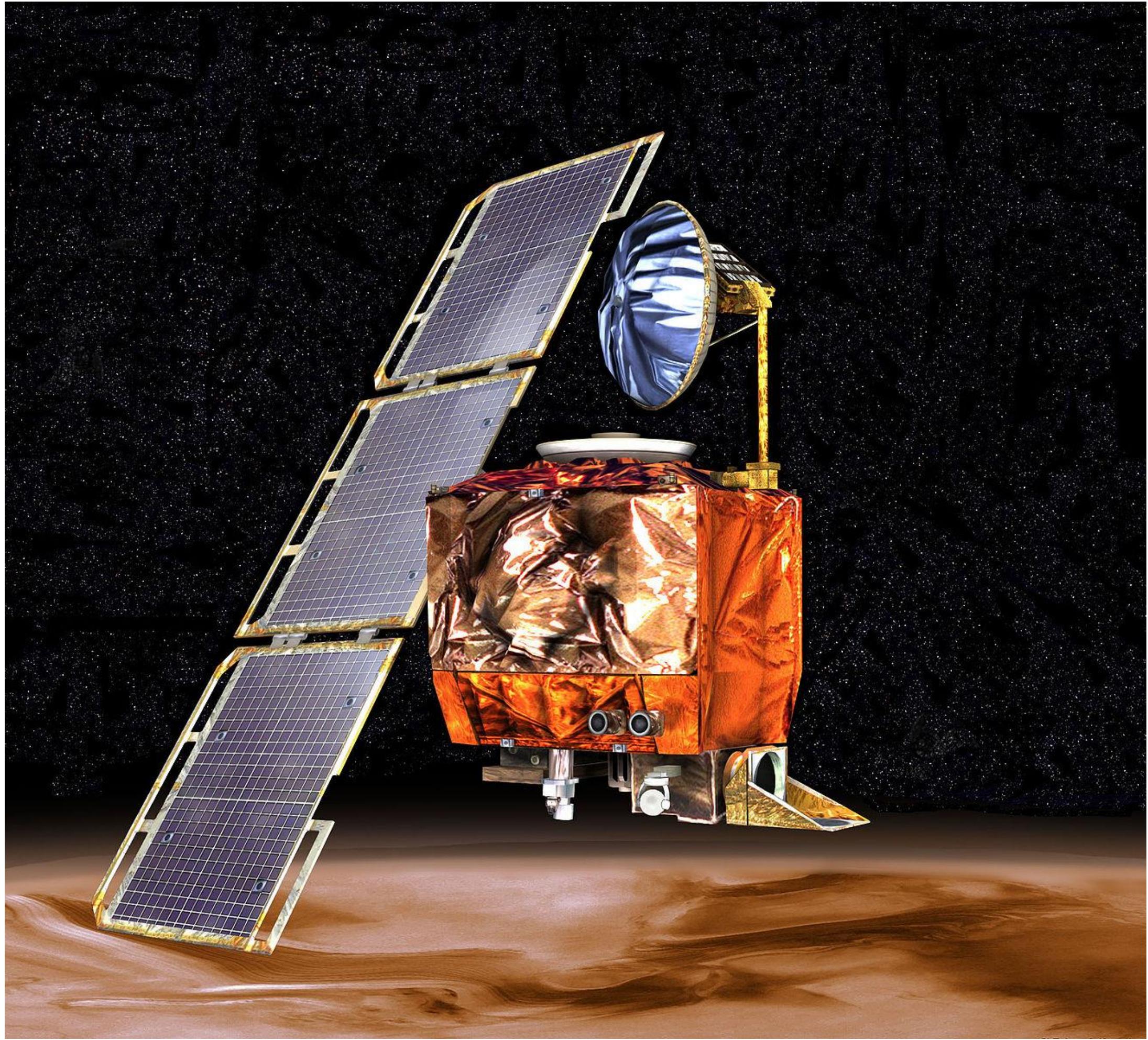
Dual Use &
Misuse

Inherently
Problematic
Technologies
and Products

...

SPACE INCIDENTS (BUGS)

https://en.wikipedia.org/wiki/File:Mars_Climate_Orbiter_2.jpg



https://commons.wikimedia.org/wiki/File:Ariane_5_Le_Bourget_FRA_001.jpg

THERAC-25 (BUGS)



<https://interestingengineering.com/when-bad-programming-turns-deadly> Source: Left, [Cold Fusion Guy](#) | Right, [Hackaday](#)

```
if mode/energy specified then
  begin
    calculate table index
    repeat
      fetch parameter
      output parameter
      point to next parameter
    until all parameters set
    call Magnet
    if mode/energy changed then return
  end
if data entry is complete then set Tphase to 3
if data entry is not complete then
  if reset command entered then set Tphase to 0
return
```

Magnet:

```
Set bending magnet flag
repeat
  Set next magnet
  call Ptime
  if mode/energy has changed, then exit
until all magnets are set
return
```

Ptime:

```
repeat
  if bending magnet flag is set then
    if editing taking place then
      if mode/energy has changed then exit
  until hysteresis delay has expired
  Clear bending magnet flag
return
```

RACISTIC SOAP DISPENSER (BUGS/SIDE EFFECTS)



[https://mic.com/articles/124899/the-reason-this-racist-soap-dispenser-doesn't-work-on-black-skin](https://mic.com/articles/124899/the-reason-this-racist-soap-dispenser-doesn-t-work-on-black-skin)

[https://www.mic.com/articles/124899/the-reason-this-racist-soap-dispenser-doesn't-work-on-black-skin](https://www.mic.com/articles/124899/the-reason-this-racist-soap-dispenser-doesn-t-work-on-black-skin)

The Reason This "Racist Soap Dispenser" Doesn't Work on Black Skin

By Max Plenke | Sept. 9, 2015 f t m e

At a Marriott hotel in Atlanta, the soap dispensers have a little bit of a race problem.

Fitzpatrick made it, and it's clear this is a joke to him. But it introduces the more pervasive problem of technology being constructed without paying mind to the diversity of bodies it is built to serve.

STRAVA GATE (SIDE EFFECTS)



<https://www.theverge.com/2018/1/28/16942626/strava-fitness-tracker-heat-map-military-base-internet-of-things-geolocation>

PROPAGANDA AND FAKE NEWS ON SOCIAL MEDIA (SIDE EFFECTS)



<https://www.nytimes.com/interactive/2018/02/16/us/politics/russia-propaganda-election-2016.html>

<https://www.nytimes.com/2018/02/17/technology/indictment-russian-tech-facebook.html>

The Guardian website screenshot showing an article by Oliver Burkeman. The headline reads: "'The attention economy is in hyperdrive': how tech shaped the 2010s". The article discusses how technology has changed society, particularly in terms of politics and relationships. It features a photo of a city at night with a network overlay, representing connectivity. The author's profile picture and bio are also visible.

<https://www.theguardian.com/culture/2019/nov/22/attention-economy-in-hyperdrive-how-tech-shaped-2010s-oliver-burkeman>

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The Guardian

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So long, 2010s: the decade in review Technology

'The attention economy is in hyperdrive': how tech shaped the 2010s

We thought tech would bring us closer together. Instead it has scrambled our minds, our politics and our relationships. Can we burst our filter bubbles?

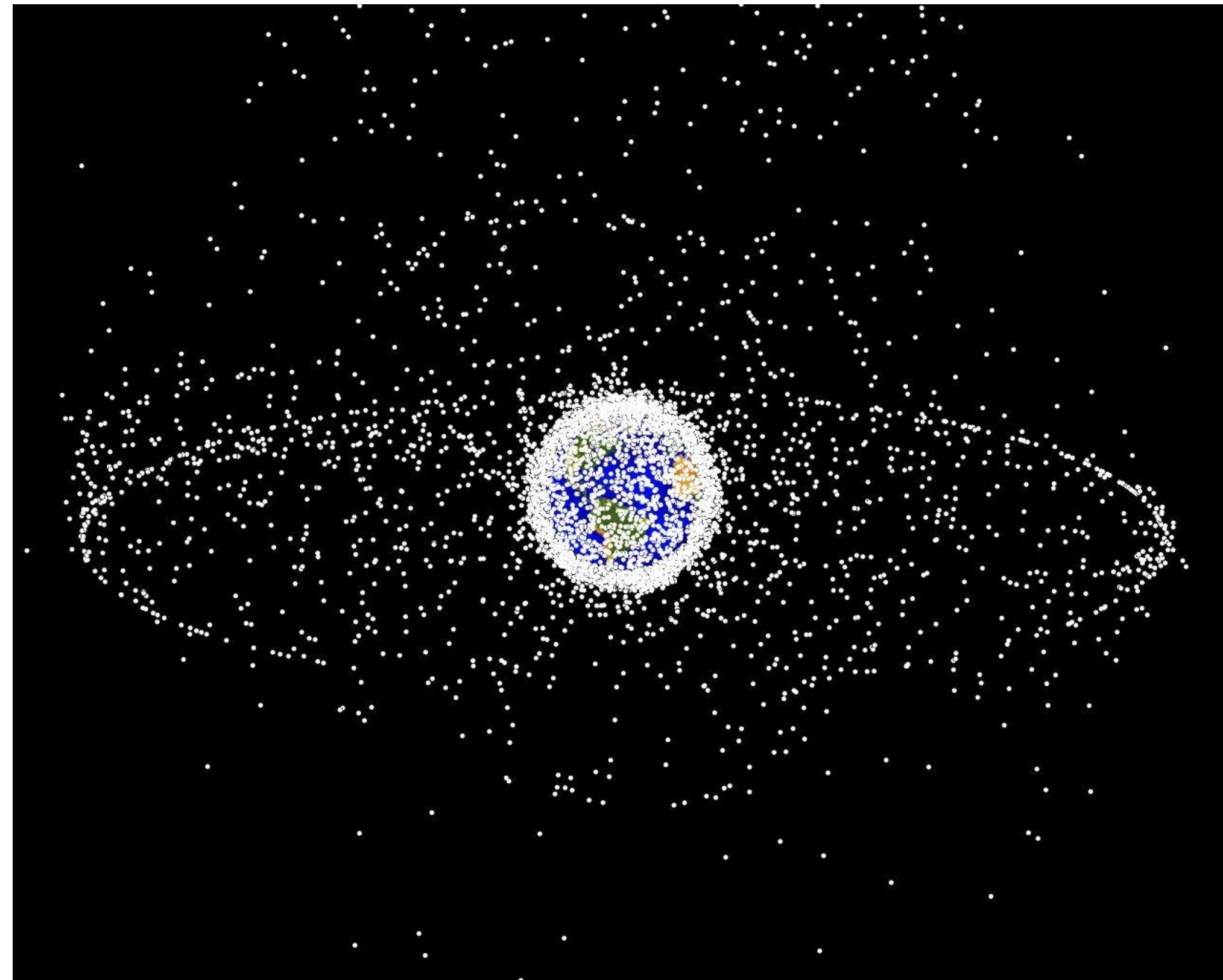
Oliver Burkeman

@oliverburkeman

Fri 22 Nov 2019 15.00 GMT

104 79

ELIMINATION OF NON-COOPERATIVE SPACE OBJECTS (DUAL USE)



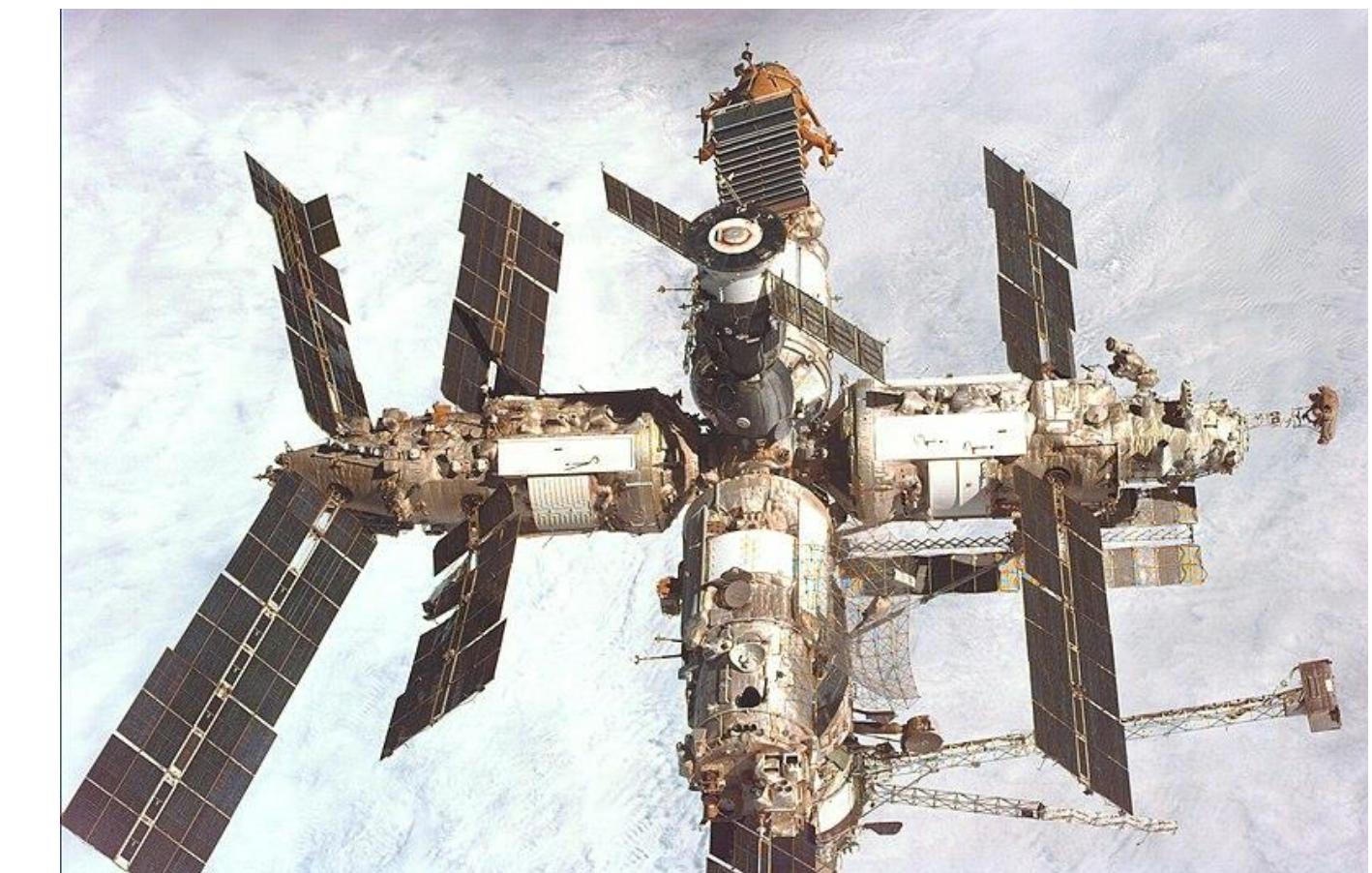
<https://upload.wikimedia.org/wikipedia/commons/a/a1/Debris-GEO1280.jpg>



http://img.timeinc.net/time/magazine/archive/covers/1983/101830404_400.jpg



https://de.wikipedia.org/wiki/Strategic_Defense_Initiative#/media/File:SDI_Logo.svg



https://de.wikipedia.org/wiki/Datei:Mir_sts89_big.jpg

TRACING APP (DUAL USE)

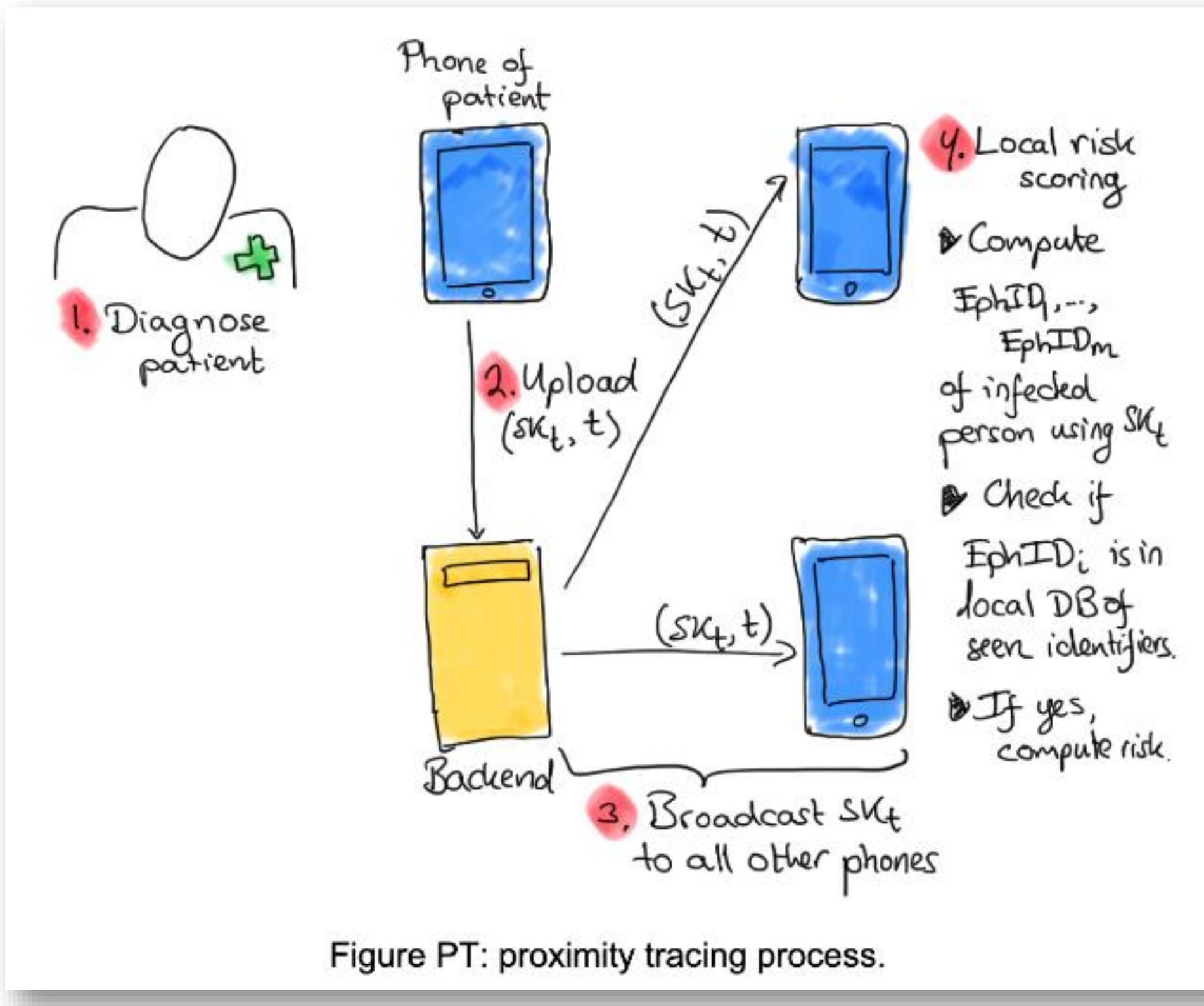


Figure PT: proximity tracing process.

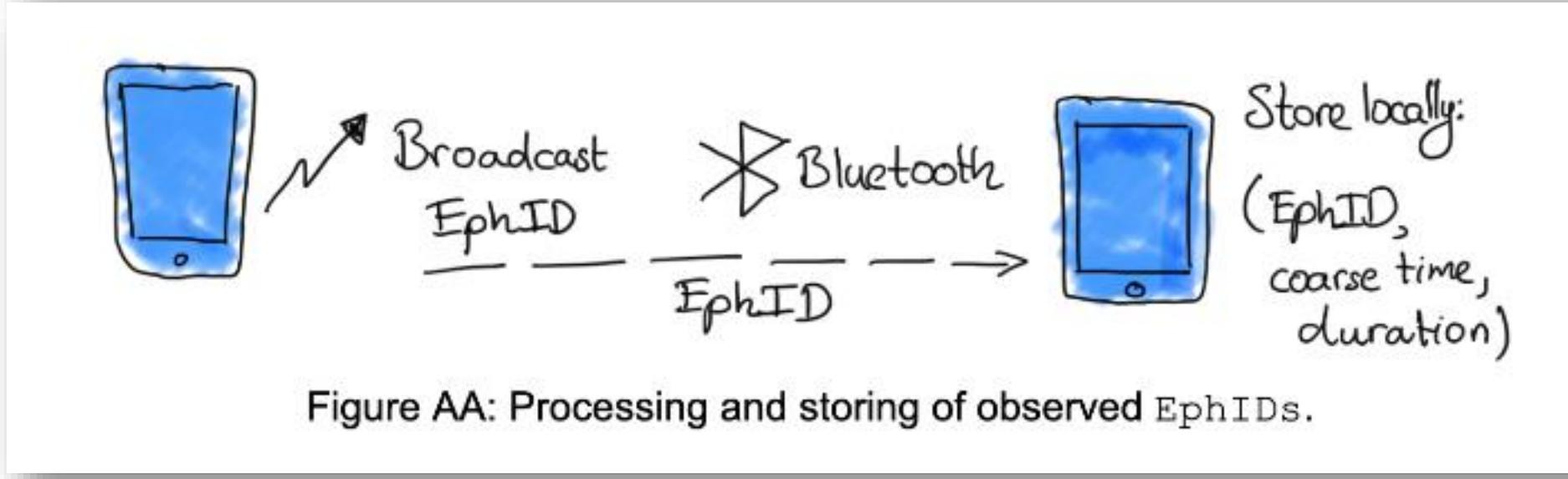


Figure AA: Processing and storing of observed EphIDs.

Troncoso, Carmela, et al. "Decentralized Privacy-Preserving Proximity Tracing." *Github DP-3T documents 12* (2020). <https://github.com/DP-3T/documents/blob/master/DP3T%20White%20Paper.pdf>

<https://www.vox.com/recode/2020/4/16/21221458/apple-google-contact-tracing-app-coronavirus-covid-privacy>

Vox **recode**

Apple and Google look like problematic heroes in the pandemic

New contact-tracing technology is supposed to go away after the pandemic. Privacy experts aren't so sure it will.

By Sara Morrison | Apr 16, 2020, 3:10pm EDT

We also don't yet know which countries, states, or cities will be participating in the Apple-Google contact-tracing effort. We do know that the API will be made available only to those governments' public health authorities, though it's unclear if the companies will take measures to prevent authoritarian governments from using the technology in unintended ways.

CLEARVIEW (INHERENTLY PROBLEMATIC)



The New York Times

<https://www.nytimes.com/2020/01/18/technology/clearview-privacy-facial-recognition.html>

The Secretive Company That Might End Privacy as We Know It

A little-known start-up helps law enforcement match photos of unknown people to their online images — and “might lead to a dystopian future or something,” a backer says.

POKEMON GO (INHERENTLY PROBLEMATIC)

<https://www.wired.co.uk/article/the-age-of-surveillance-capitalism-facebook-shoshana-zuboff>

WIRED Technology | Science | Culture | Gear | Business | Politics | Privacy

Pokémon Go was a warning about the rise of surveillance capitalism

Shoshanna Zuboff's new book *The Age of Surveillance Capitalism* is a wake-up call about how tech companies monetize every moment of our lives – and threaten our free will in the process

By SANJANA VARGHESE — Sunday 3 February 2019



Credit Tomohiro Ohsumi/Getty Images

<https://www.theguardian.com/books/2019/feb/02/age-of-surveillance-capitalism-shoshana-zuboff-review>

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Book of the day Society books

The Age of Surveillance Capitalism by Shoshanna Zuboff review – we are the pawns

Tech companies want to control every aspect of what we do, for profit. A bold, important book identifies our new era of capitalism

James Bridle
Sat 2 Feb 2019 07.30 GMT

Players think they are playing one game - collecting Pokémons - while they are in fact pawns in an entirely different one

Consider the apparently benign game *Pokémon Go*, both a ridiculous and a transparent example of the link between behavioural surplus and physical control. While its initial players lauded the game for its incitement to head outside into the “real world”, they in fact stumbled straight into an entirely fabricated reality, one based on years of conditioning human motivation through reward systems, and designed to herd its users towards commercial opportunities. Within days of the game’s launch in 2016, its creators revealed that attractive virtual locations were for sale to the highest bidder, inking profitable deals with McDonald’s, Starbucks and others to direct Pokémon hunters to their front doors. The players think they are playing one game - collecting Pokémons - while they are in fact playing an entirely different one, in which the board is invisible but they are the pawns. And *Pokémon Go* is but one tiny probe extending out from Google and others’ vast capabilities to tune and manipulate human action at scale: a global means of behaviour modification entirely owned and operated by private enterprise.



It's about *your* future work and its impact.

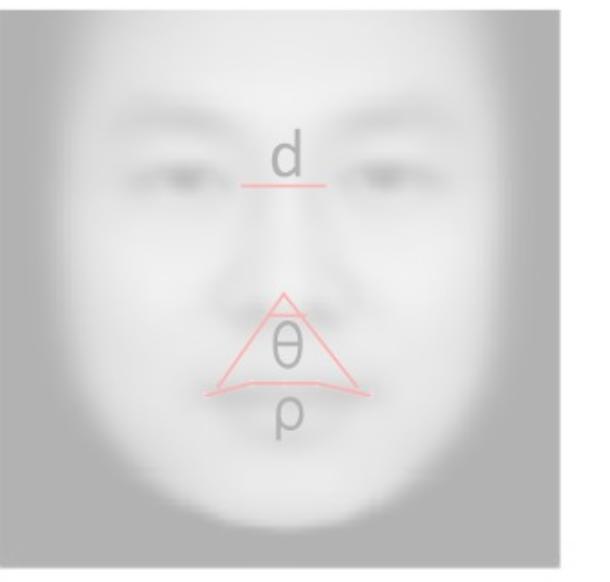
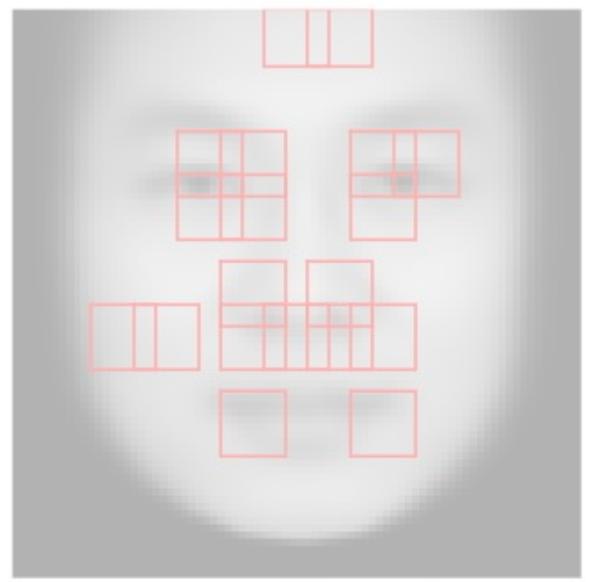


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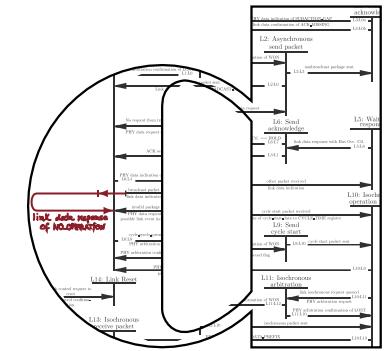


Ethics for Nerds

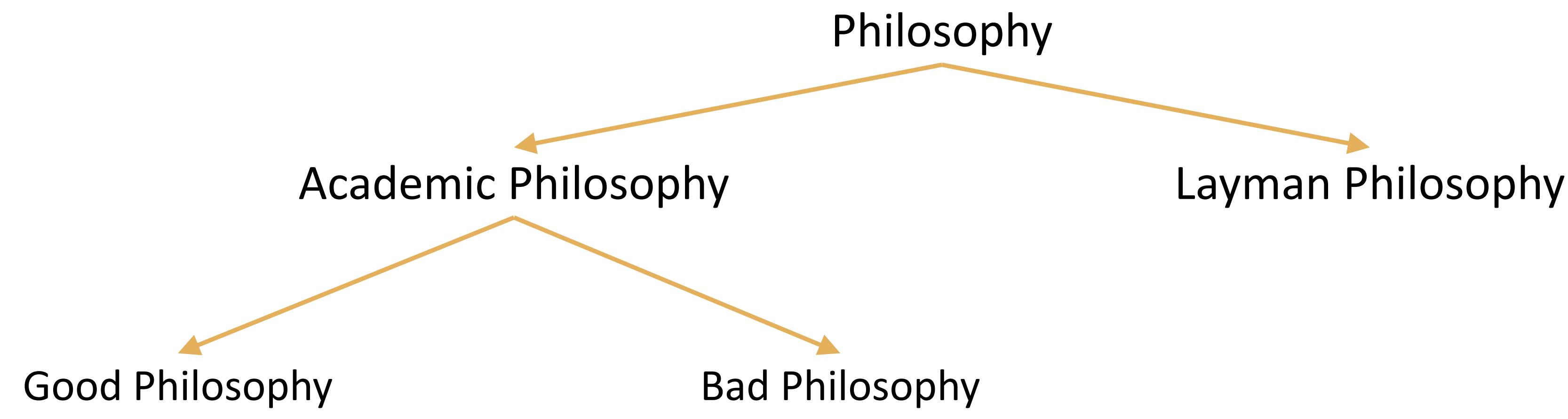
An Advanced Course in Computer Science
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Ethics 1.2
Intro to Philosophy, Morals, Ethics

Mapping the Stage



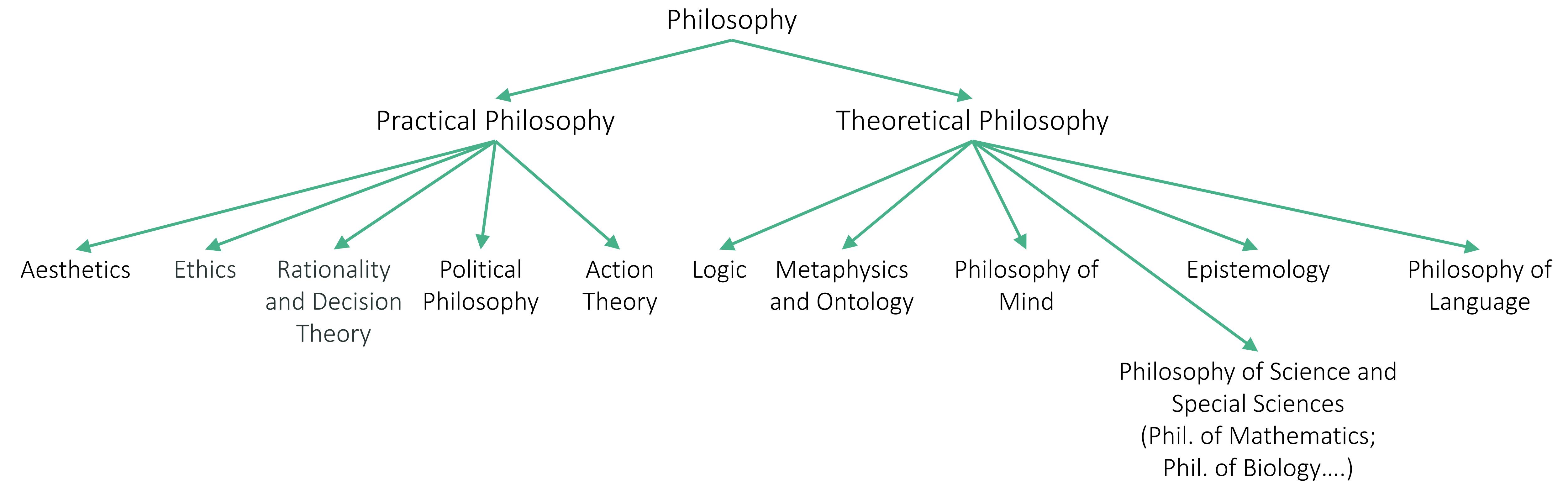
Prof. Holger Hermanns,
Kevin Baum, Sarah Sterz



- puts philosophical questions precisely (surprisingly hard!)
- makes an extensive use of arguments and logic
- asks for the meaning of words and whole sentences
- everything that is not good philosophy

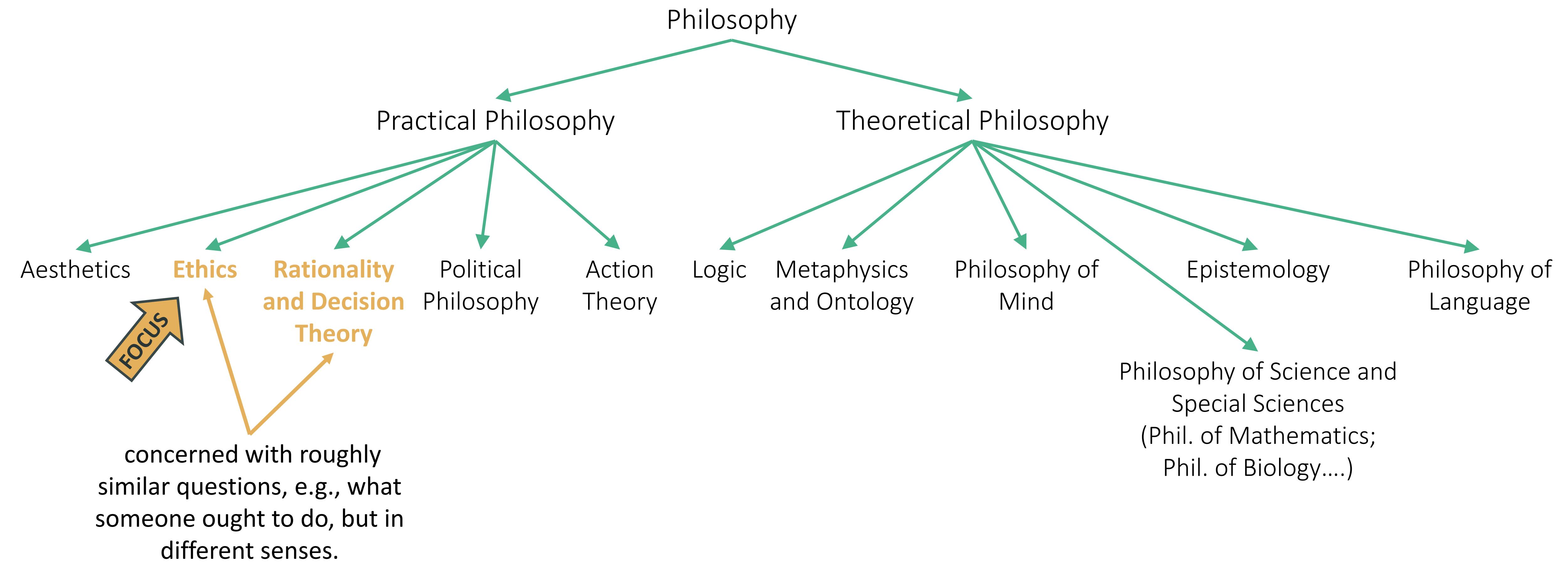
FIELDS OF PHILOSOPHY

Traditional categorization, first branching goes back to Aristotle. Somehow artificial, but useful:

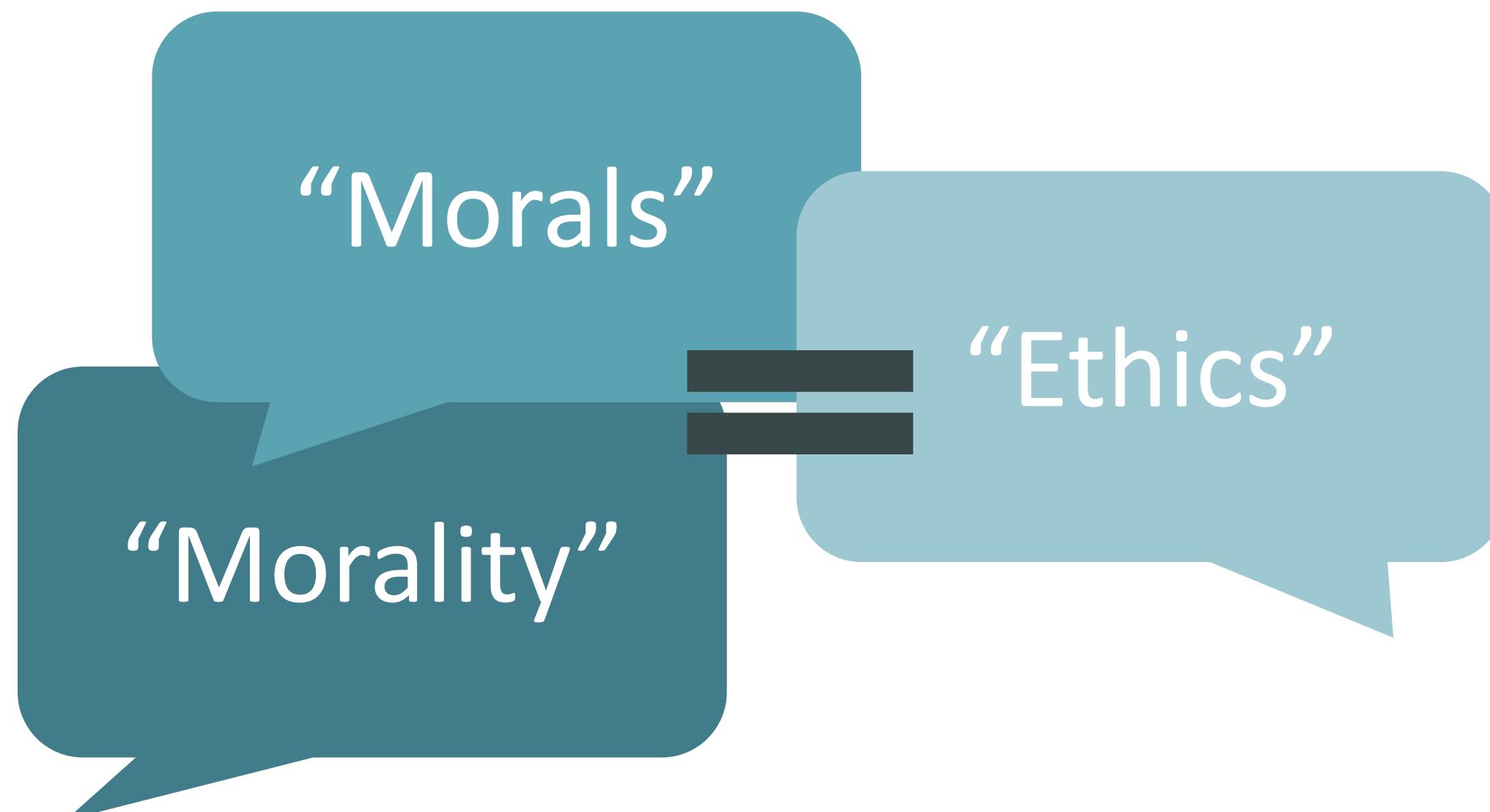


FIELDS OF PHILOSOPHY

Traditional categorization, first branching goes back to Aristotle. Somehow artificial, but useful:

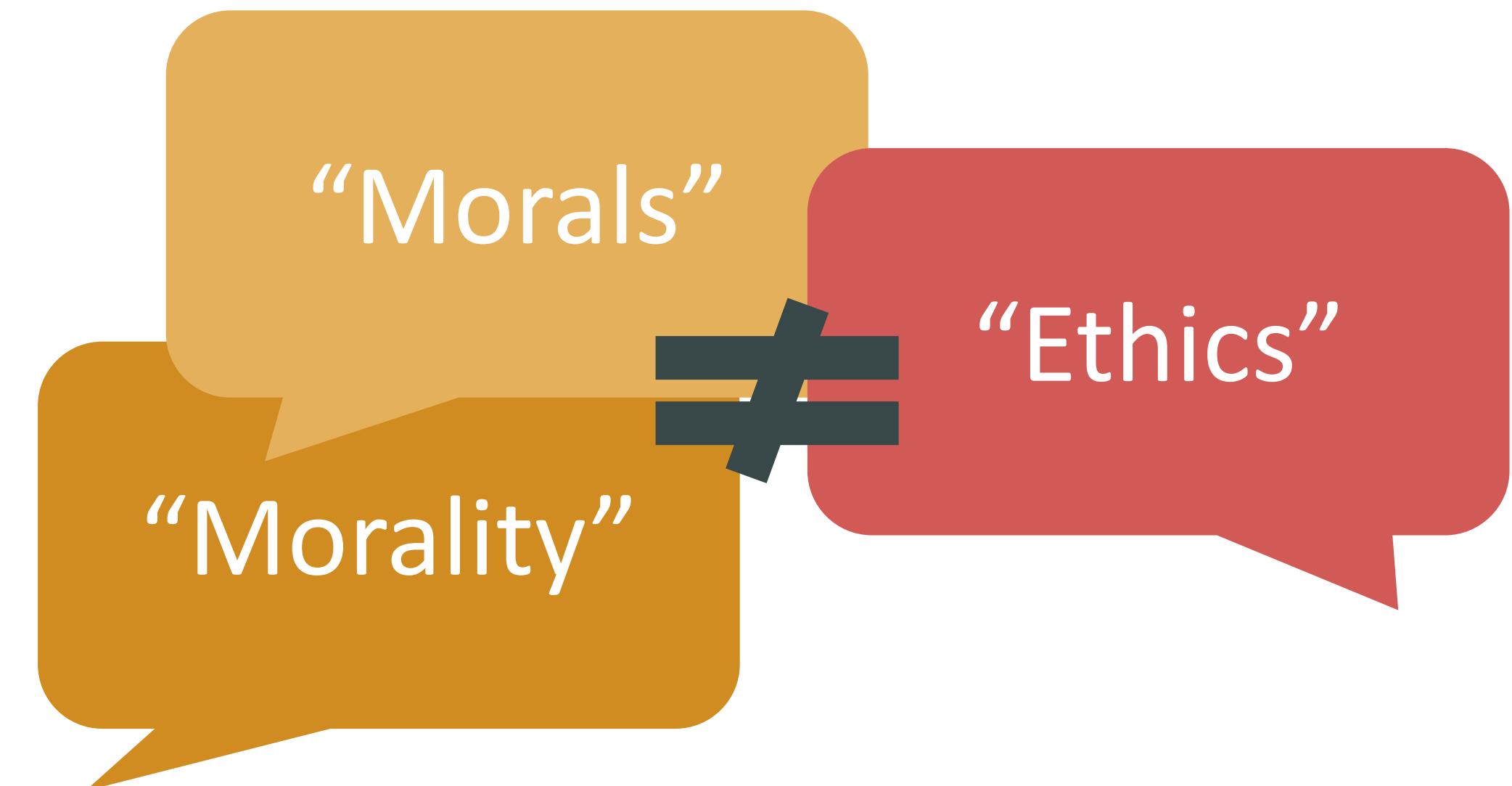


In everyday life



In everyday life, “morals”, “morality” and ethics are often used interchangeably.

In philosophy

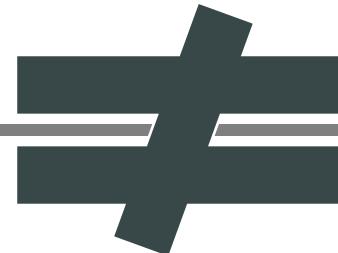


In philosophy, “morals” and “morality” are often used interchangeably, but are different to “ethics”.

! Don't trust random internet sources on the meaning of “morals” and “ethics”!
Rather look at the SEP (<https://plato.stanford.edu/entries/morality-definition/>).

“Morals”

“Morality”



“Ethics”

Morality (Descriptive Use)

“Morality” (used descriptively) refers to certain codes of conduct, set of rules etc. that is put forward by society, by certain groups or embraced on individual level.

vs

Morality (Normative Use)

“Morality” (used normatively) refers to certain codes of conduct, set of rules etc. that, given specified conditions, would be put forward by *all rational persons*.

Ethics

“Ethics” is the critical reflection and science of morality, the endeavor of finding truths about morality and, possibly finding a correct/right/adequate moral, plausibly implied by/grounded in some moral theory.



Don’t trust random internet sources on the meaning of “morals” and “ethics”!

Rather look at the SEP (<https://plato.stanford.edu/archives/fall2017/entries/morality-definition/>).

WHAT IS ETHICS ABOUT?

The most basic questions of ethics

What is a good decision? And why?



What is bad decision? And why?

What is the right thing to do? And why?



What is the wrong thing to do? And why?

What am I obligated to do? And why?



What am I allowed to do? And why?

What am I forbidden to do? And why?

WHAT IS ETHICS ABOUT?

Other questions related to ethics

Is face recognition bad?

Is there such thing as a just war?



Am I allowed to eat meat?

Is it always forbidden to lie?



What do people mean/refer to when they use terms like “right”, “wrong”, “impermissible”...?



When engaging in moral thought or language, are people expressing beliefs about the world or do they rather express how they want the world to be?



Can moral statements (and thoughts) be true or false?
And even if so: are there any true moral statements?

WHAT IS ETHICS ABOUT?

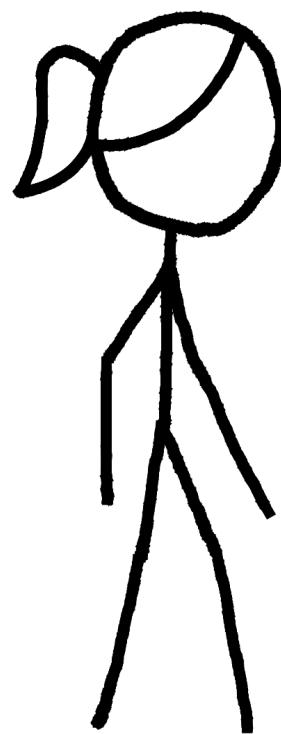
Vocabulary

Word	Comparison	Intuition	Comment
Obligatory	-	If an action is obligatory, you must perform it.	denote deontic prescriptive status (What ought you to do?)
Allowed/ Permitted	-	If an action is allowed, you can perform it.	
Forbidden/ Impermissible	-	If an action is forbidden, you must not perform it.	
Wrong	-	If something is forbidden , it is wrong.	Denote deontic descriptive status (What to do is right and wrong?)
Right	-	If something is right, then it is not wrong .	
Good	better/best	If something is good, it has a certain value .	evaluative (How valuable is something?)
Bad	worse/worst	If something is bad, it has a certain disvalue .	

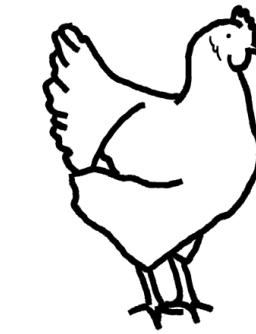
WHAT IS ETHICS ABOUT?

Example Case:

Sarah has a chicken called Henriette. Sarah is planning to slaughter Henriette and make her the highlight of a delicious meal. She got Henriette by lying to the people at the local animal sanctuary: instead of revealing her true intentions, she told them that she will take good care of Henriette and make sure that she is safe.



Sarah



Henriette



Timo

Utterances with (potential) ethical character...

"Sarah, that was wrong!"

"Lying is better than not having meat on the table today evening."

"It was your duty to bring Henriette home."

"We should have exploited the sanctuary earlier."

... and utterances without.

"I never liked the people at the sanctuary."

"That was clever, but I am afraid they will check for Henriette in the next few days."

"'Henriette' is a pretty cool name for a chicken!"

"Now I am hungry."



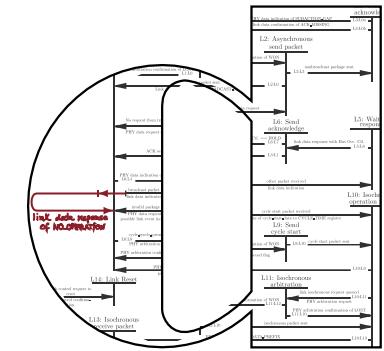


Ethics for Nerds

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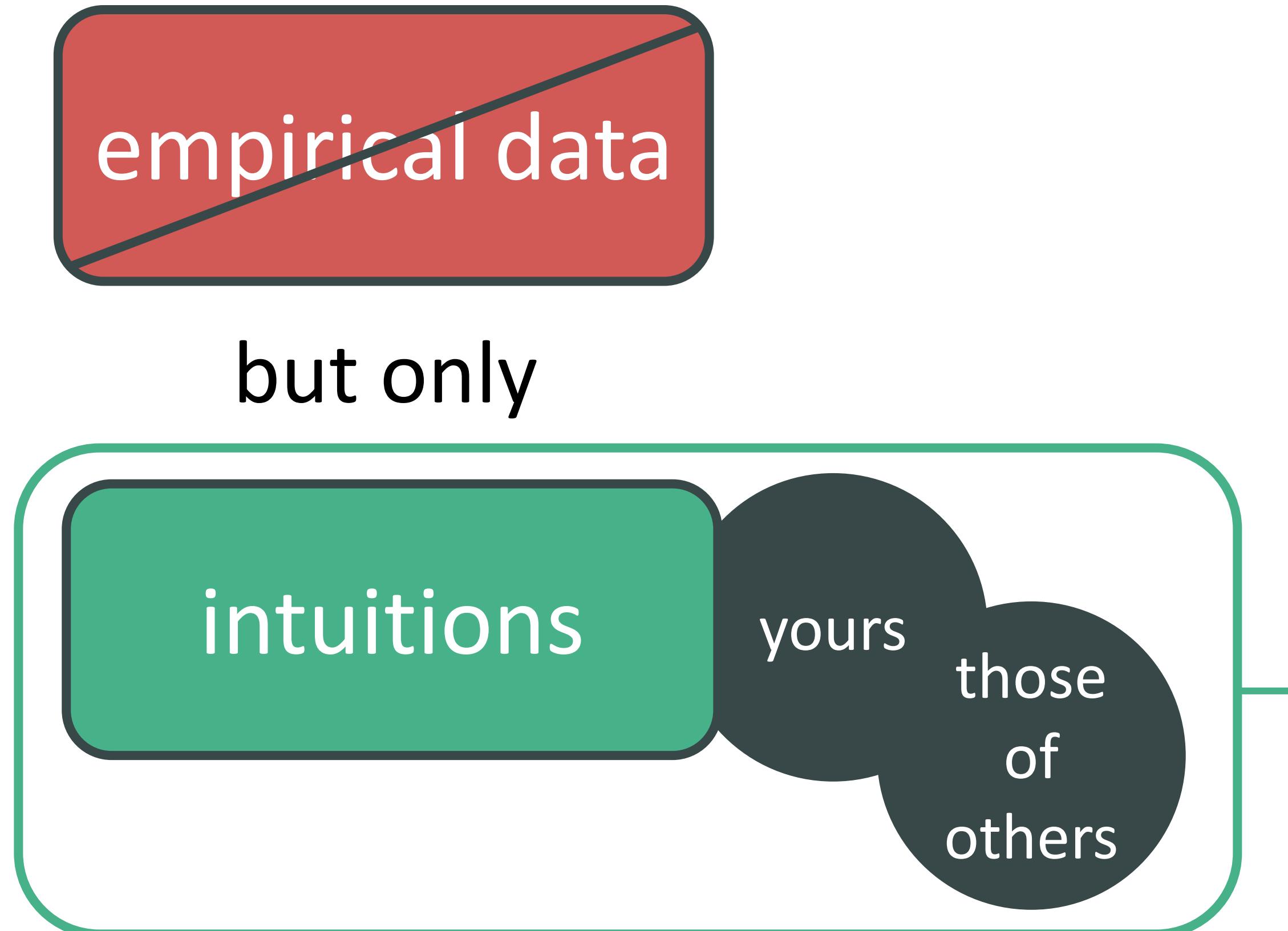
Ethics 1.3
Intro to Philosophy, Morals, Ethics

Theory-Building in Ethics and the Role of Moral Intuition



Prof. Holger Hermanns,
Kevin Baum, Sarah Sterz

How to Arrive at Ethical Theories? And How to Assess them?



→ systematize them

not all of our intuition are pairwise compatible
and thus they cannot be all adequate

the better a theory matches your systematized
intuitions, the higher you should rank it

there are a lot of quality measures for theories
– explanatory power, simplicity, parsimony,
extensional adequacy...

here we focus only on the last.

WHAT IS ETHICS ABOUT?



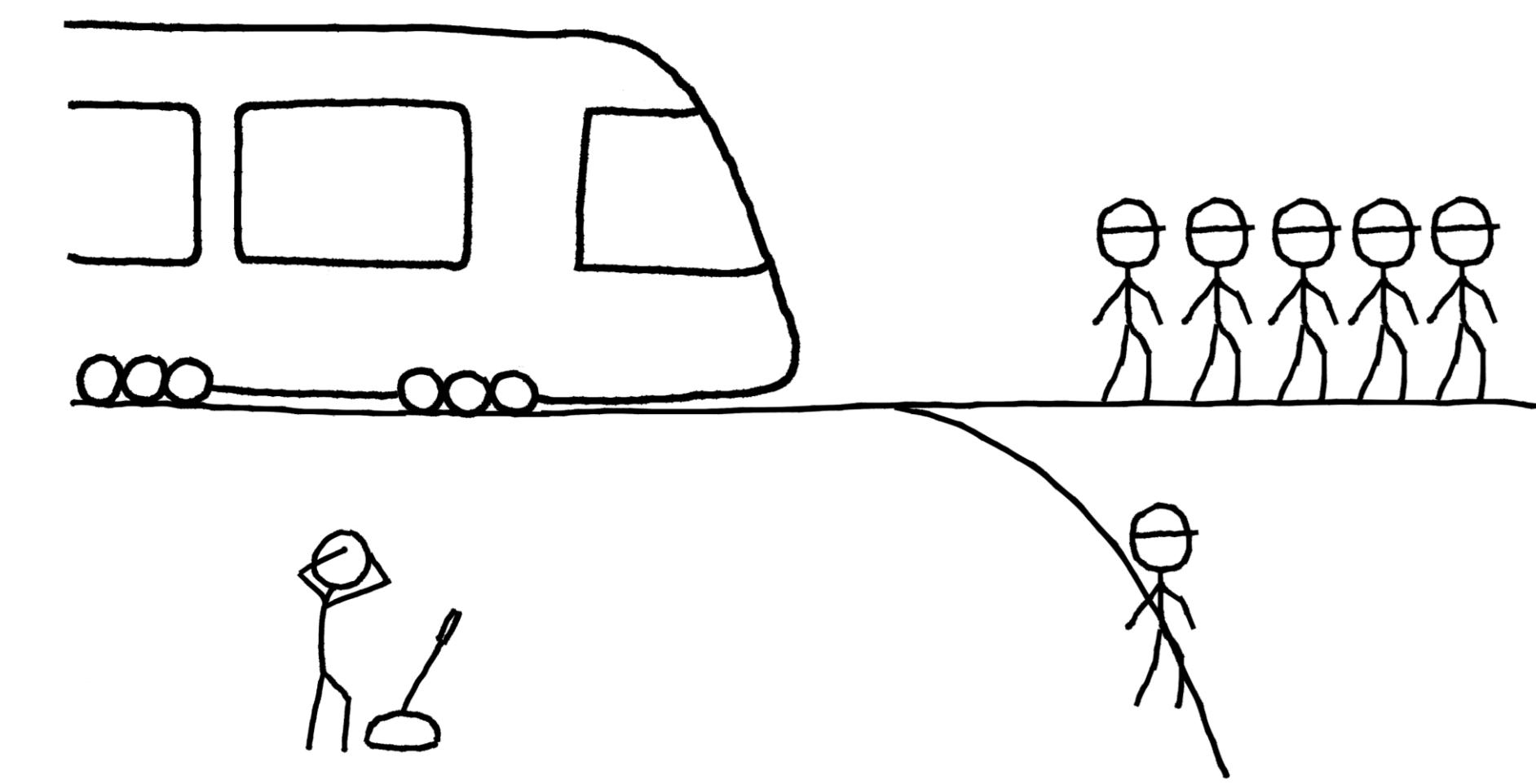
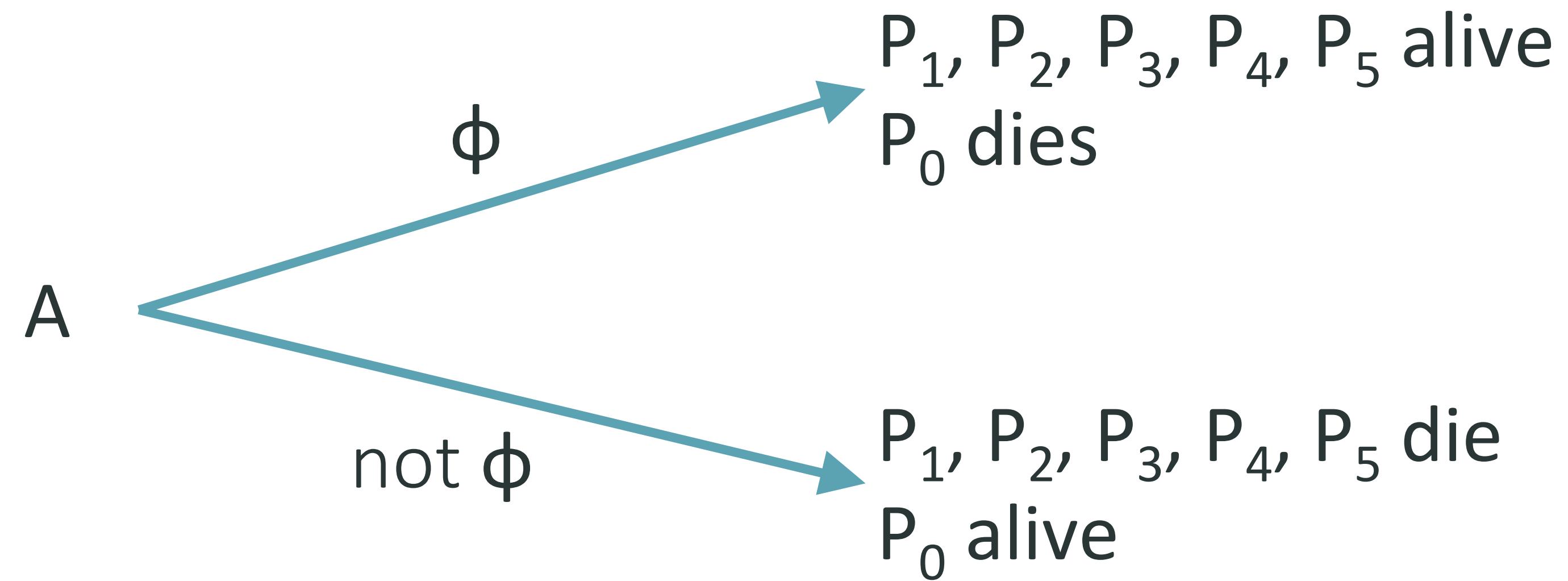
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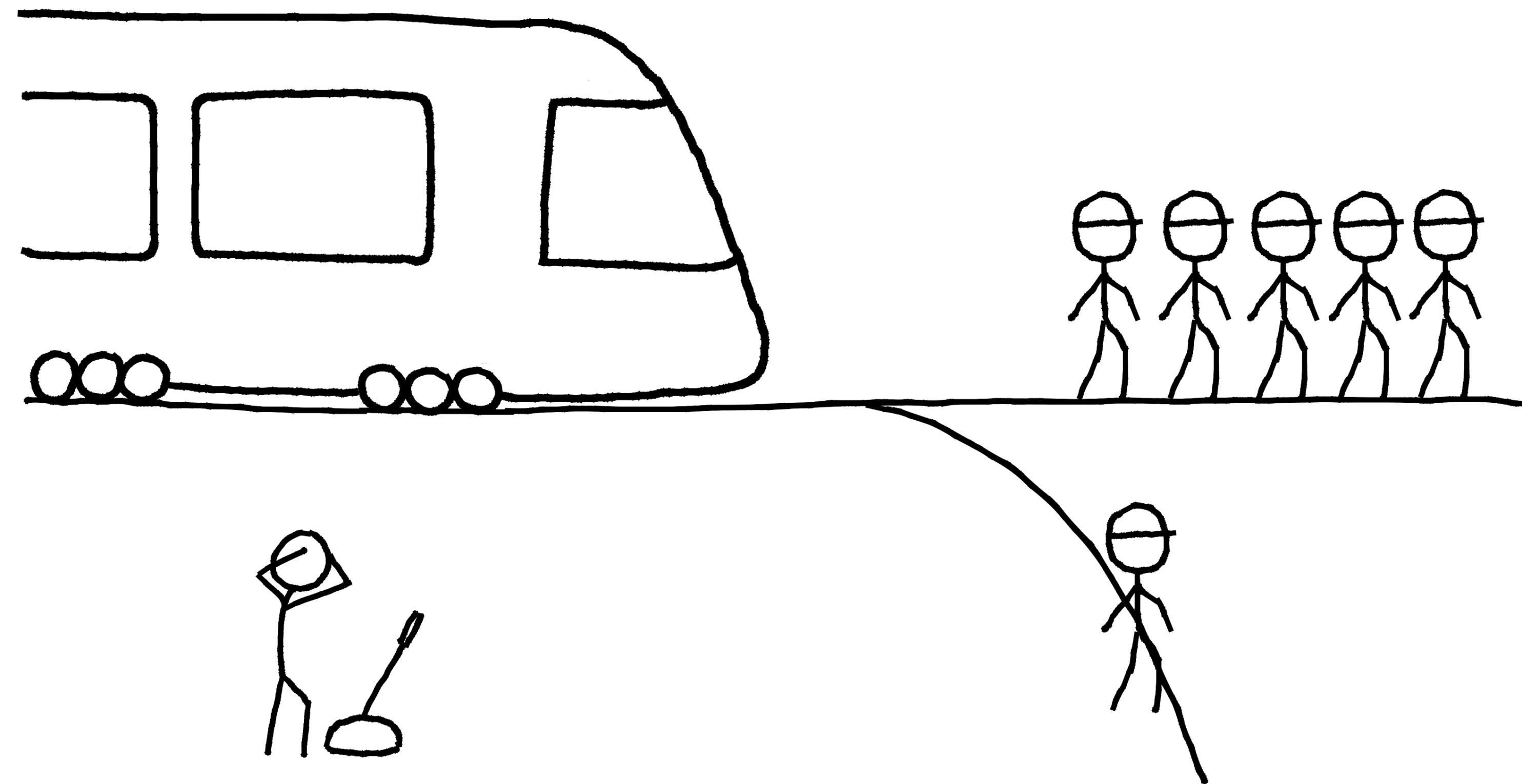
you

very noisy and
unreliable measuring
device for moral status
(but the best you/we have)

Question: What is the right thing to do in the following abstract scenario?



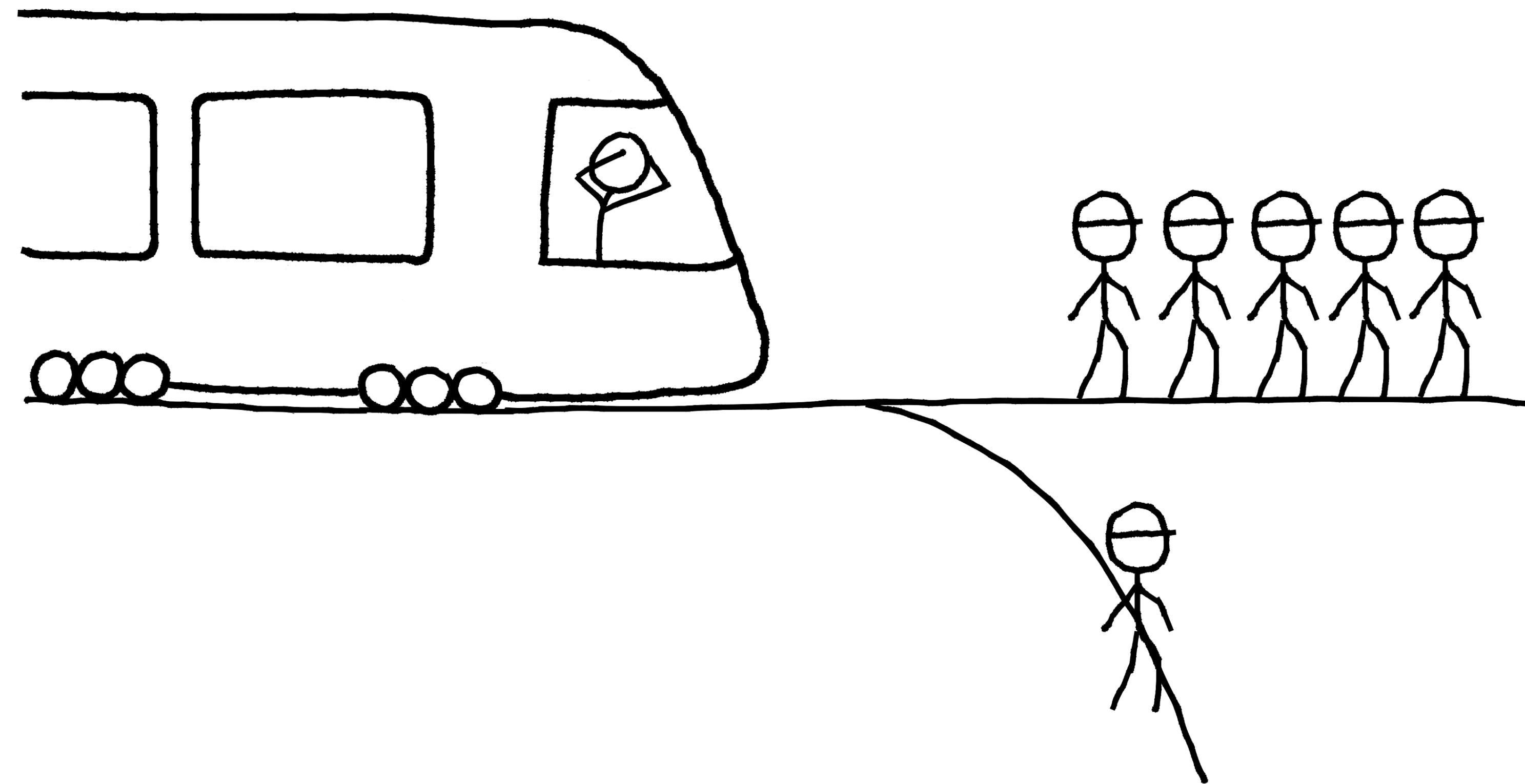
TROLLEY CASE I



What would you do?

What do you think is the right thing to do?

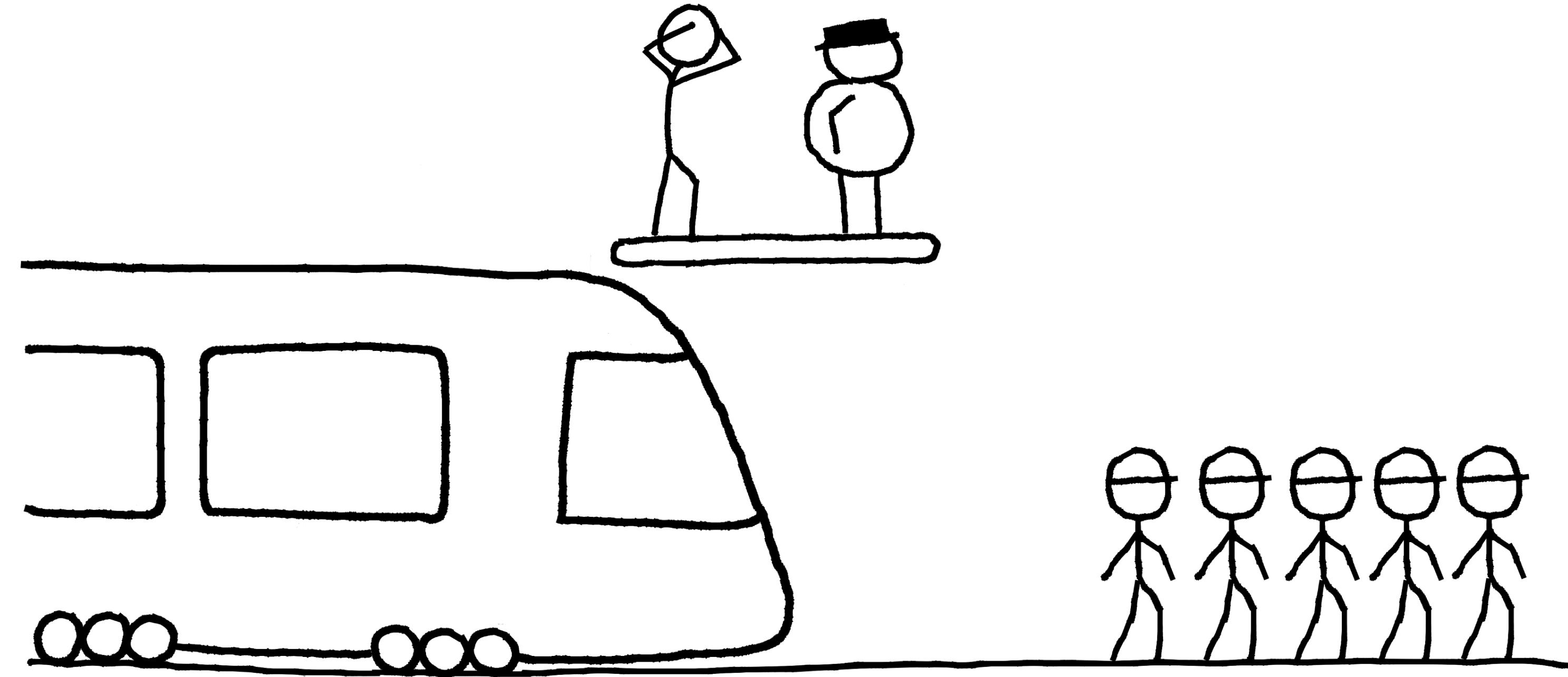
TROLLEY CASE II



What would you do?

What do you think is the right thing to do?

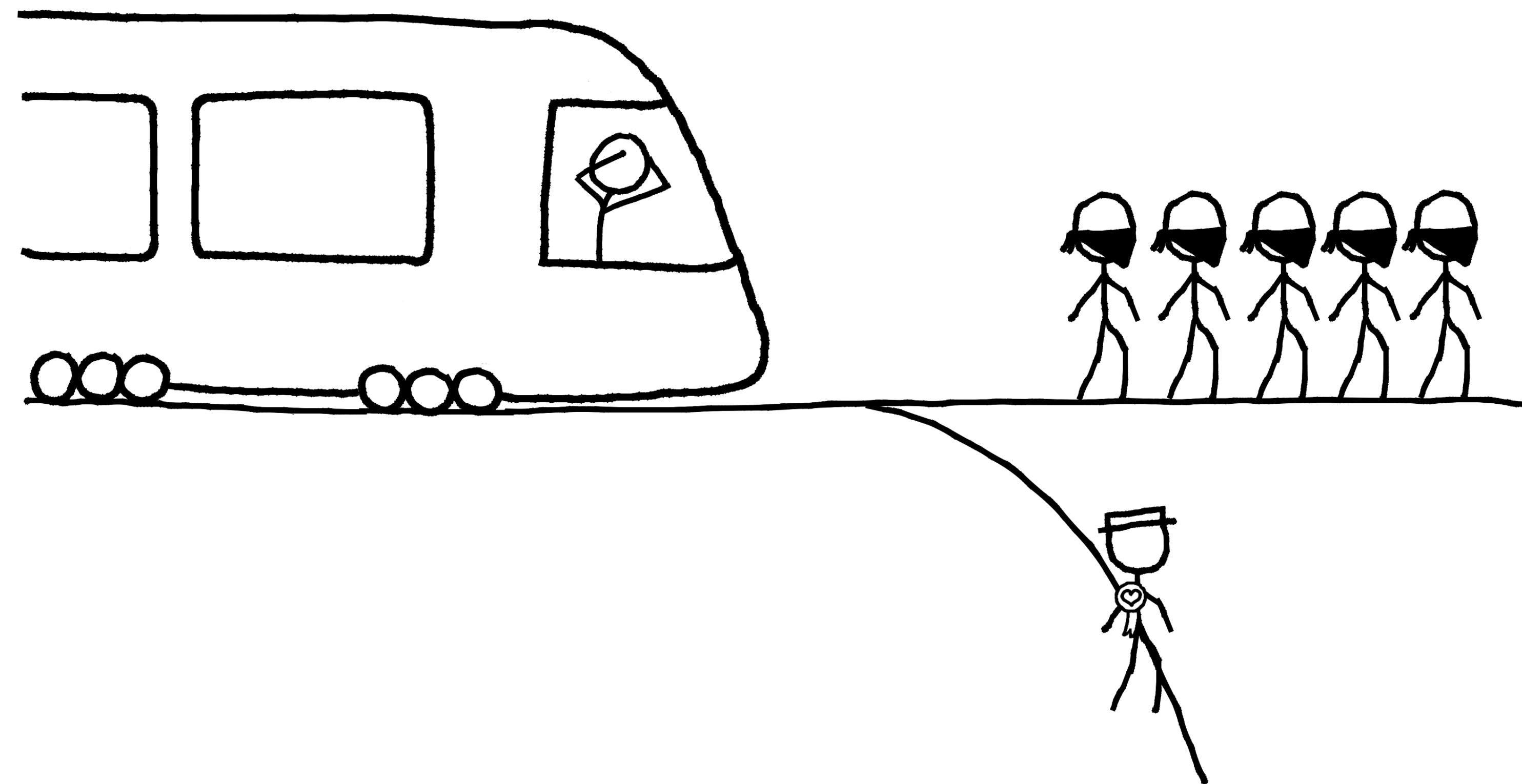
TROLLEY CASE III



What would you do?

What do you think is the right thing to do?

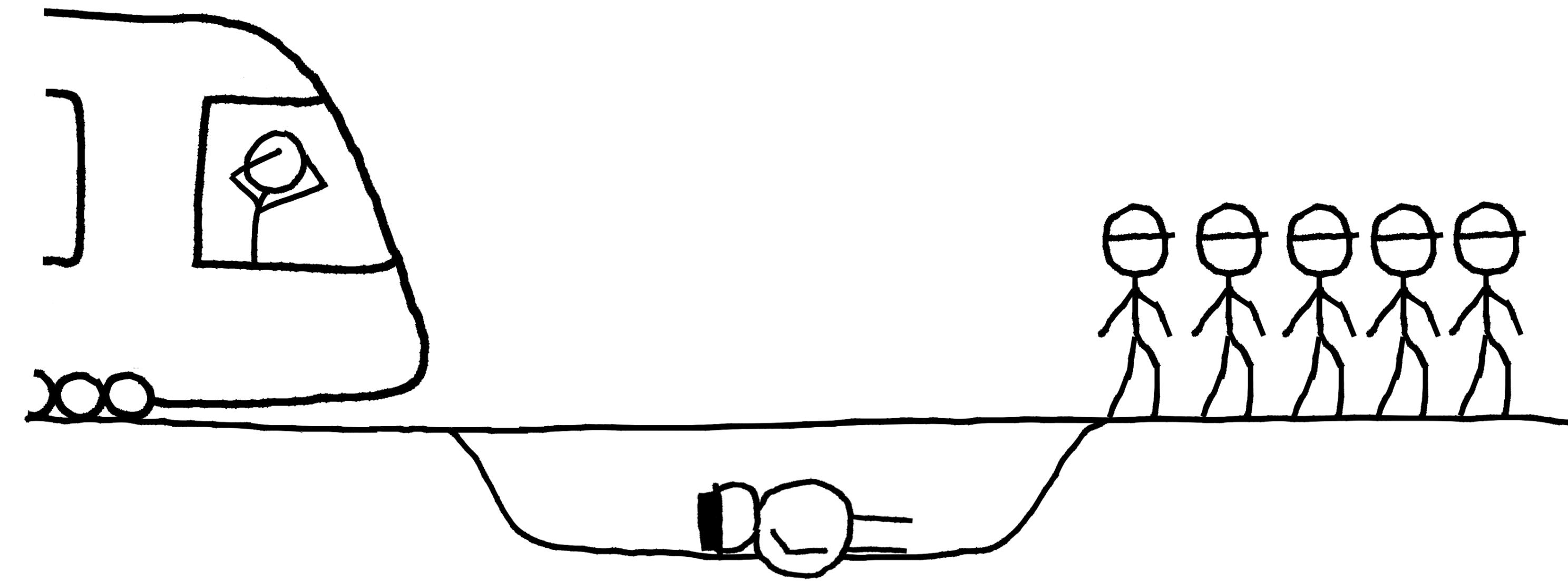
TROLLEY CASE IV



What would you do?

What do you think is the right thing to do?

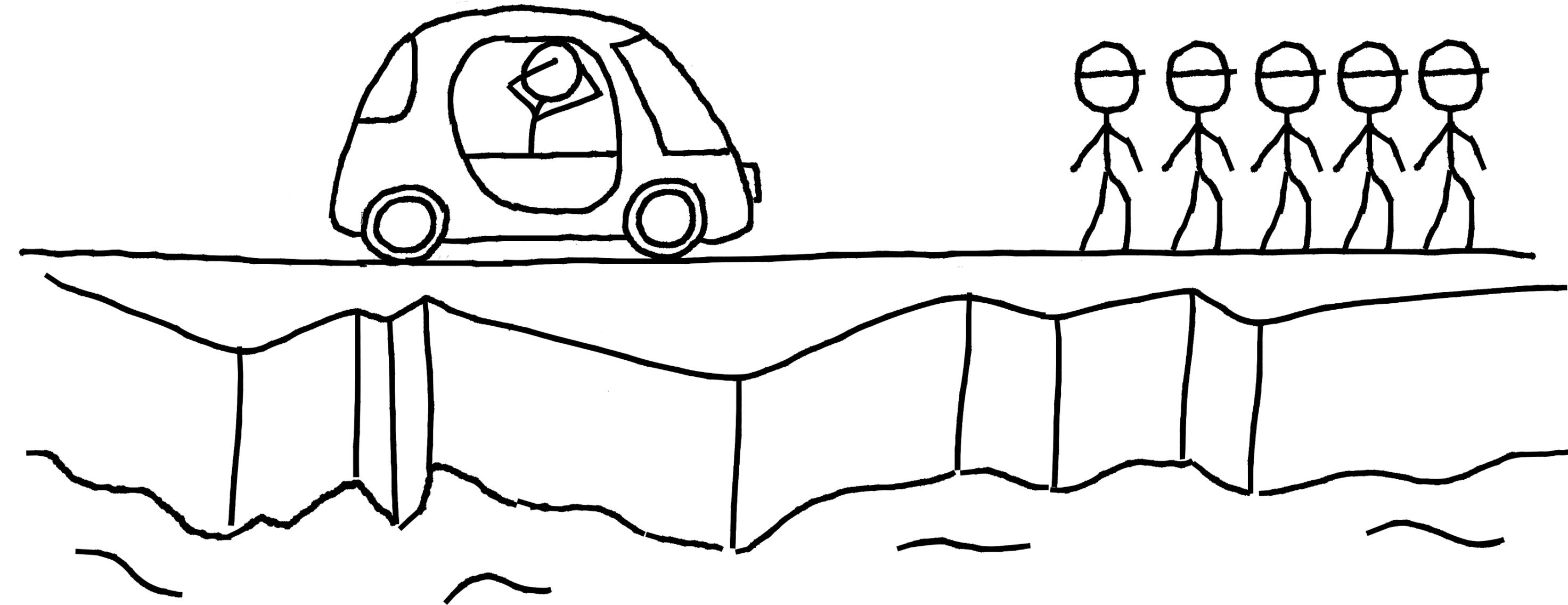
TROLLEY CASE V



What would you do?

What do you think is the right thing to do?

TROLLEY CASE VI



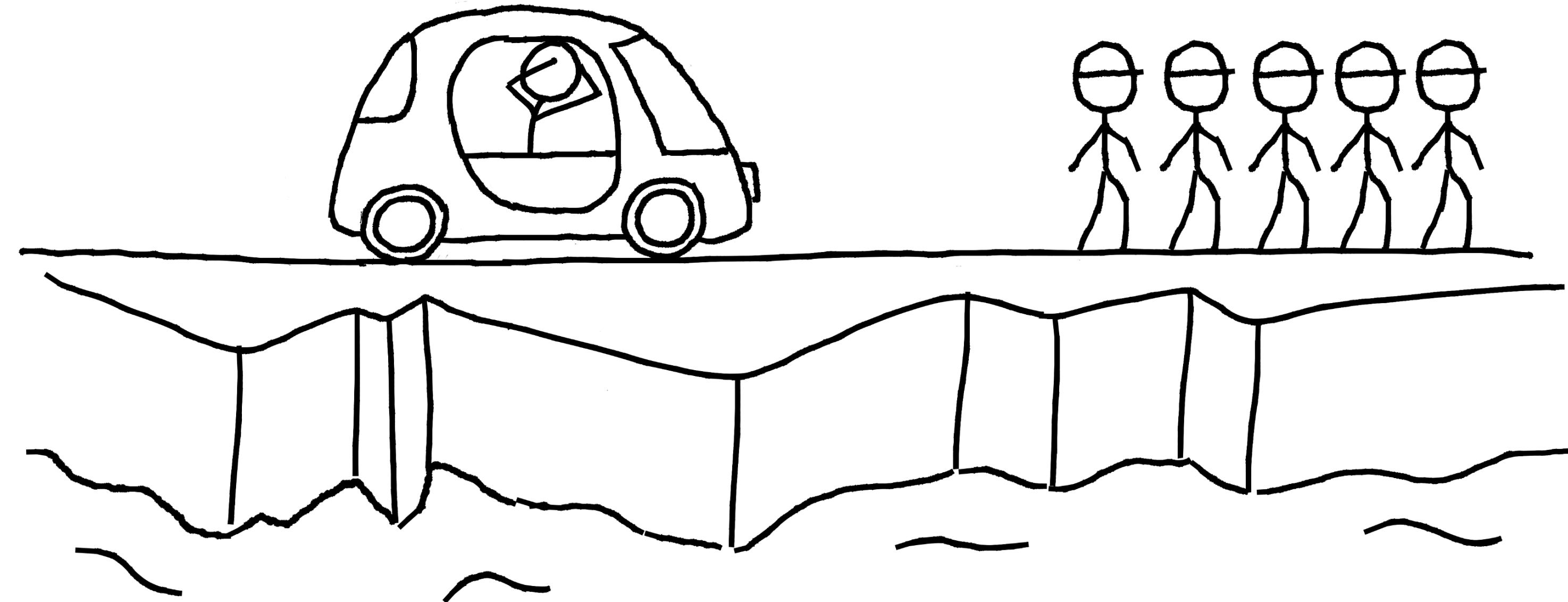
What do you think is the right thing for the car to do?

What would you want the autonomous vehicle to do...

...if you were one of the people on the road?

...if you were a passenger?

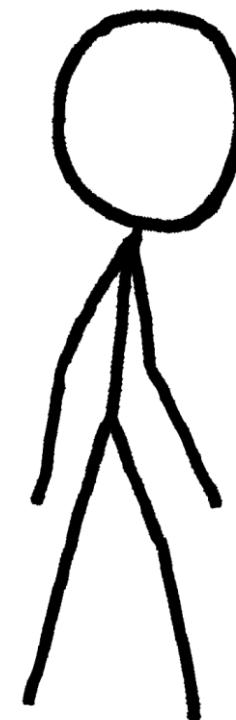
TROLLEY CASE VI



People approve of cars that would sacrifice a single passenger to save five others...

- ...but would not buy them themselves...
- ...but they would like others to buy them.

Bonnefon, J. F., Shariff, A., & Rahwan, I. (2016). The social dilemma of autonomous vehicles. *Science*, 352(6293), 1573-1576.



\approx



you

- Everyone is a noisy measuring device.
- Everyone basically has their own noise distribution.
- How to enhance the devices and how to interpolate from the noisy measuring?
→ Precise Thinking part of this course
- Where does interpolation lead us?
→ To different kinds of normative theories: see next video!



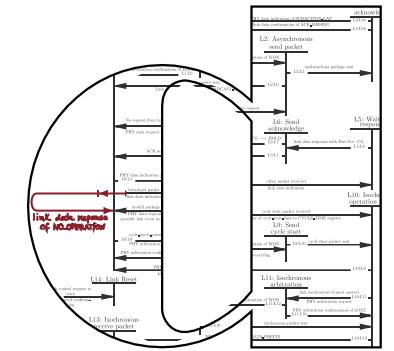


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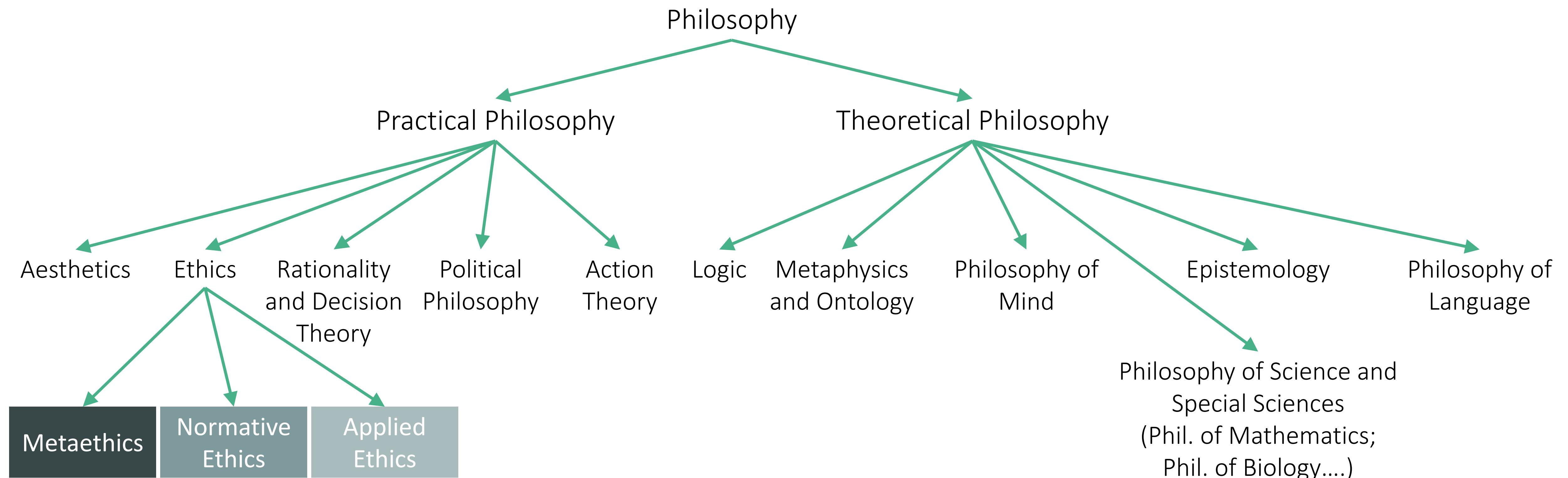
Meta Ethics



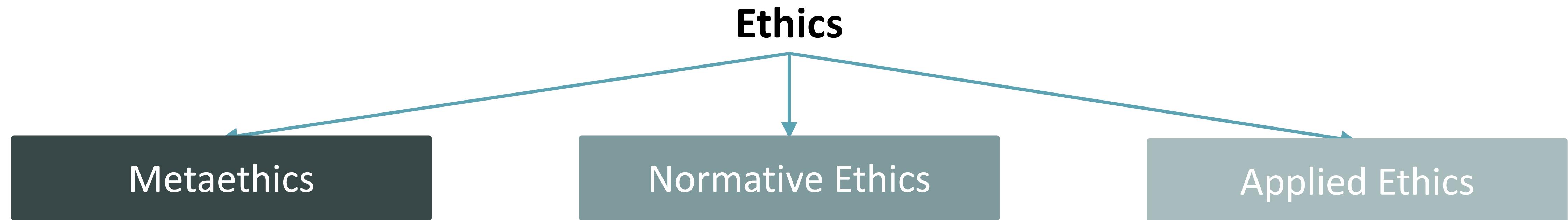
Prof. Holger Hermanns,
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FIELDS OF PHILOSOPHY

Traditional categorization, first branching goes back to Aristotle. Somehow artificial, but useful:

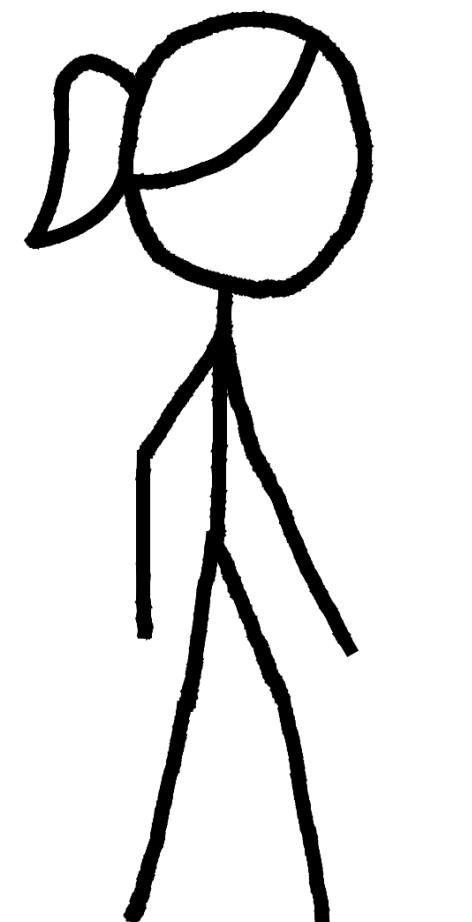


FIELDS OF ETHICS



Example Case:

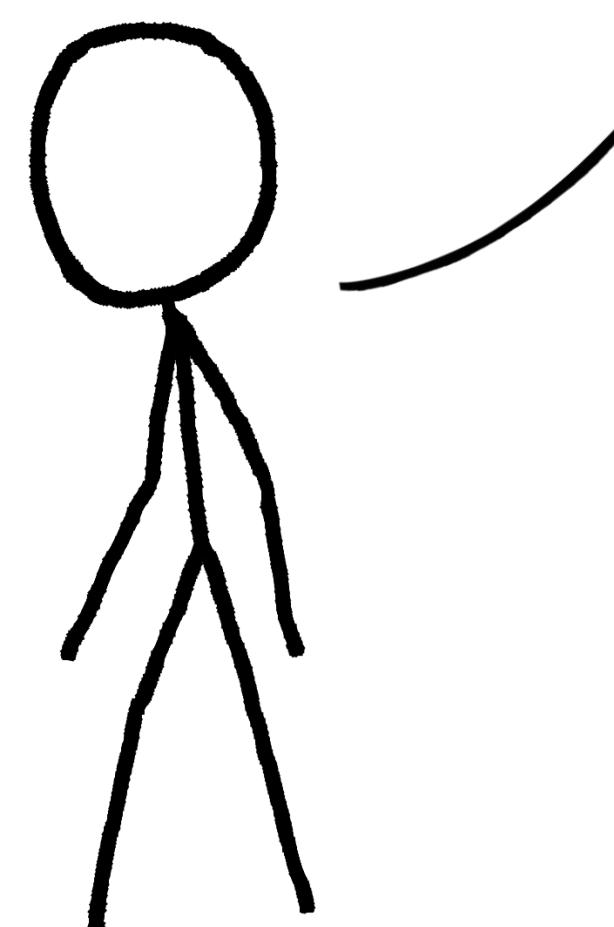
Sarah has a chicken called Henriette. Sarah is planning to slaughter Henriette and make her the highlight of a delicious meal. She got Henriette by lying to the people at the local animal sanctuary: instead of revealing her true intentions, she told them that she will take good care of Henriette and make sure that she is safe.



Sarah



Henriette

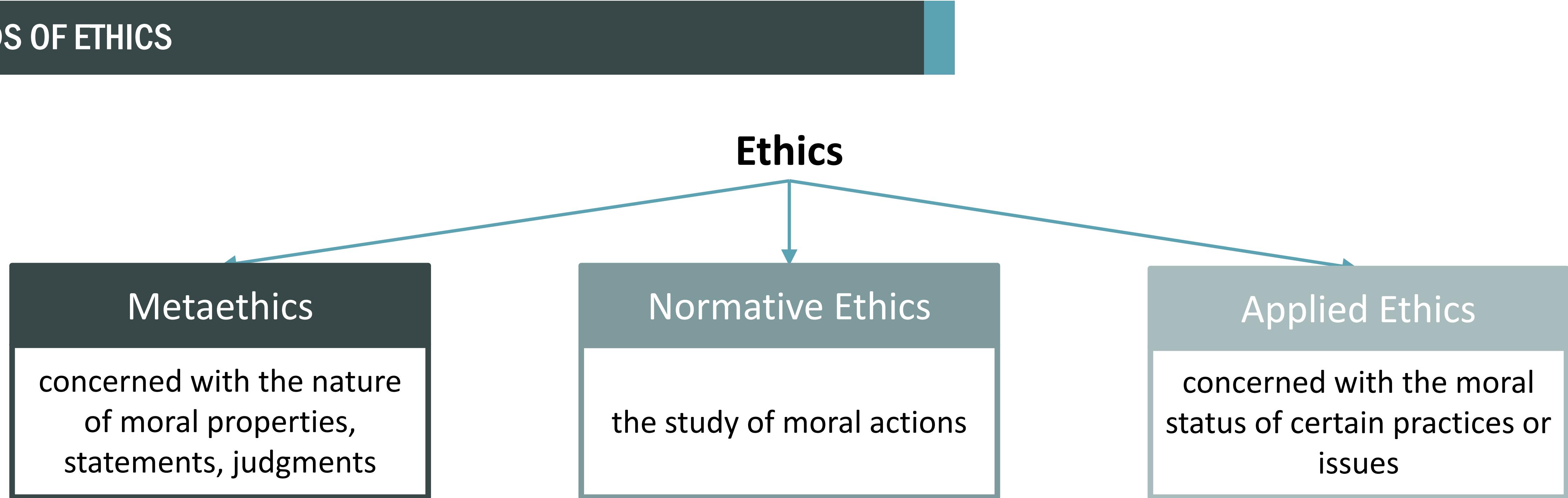


Timo

**It was wrong to lie.
Even though eating meat is permissible!**

FIELDS OF ETHICS

Example questions



Is morality objective?



What is the meaning of „right“
or „good“?



What is moral
evidence/justification?



What is it an agent ought to do
– and why?



What (kind of) properties
make actions morally right?



Is it wrong to eat meat from
intensive animal farming?



Has Snowden done the right
thing?



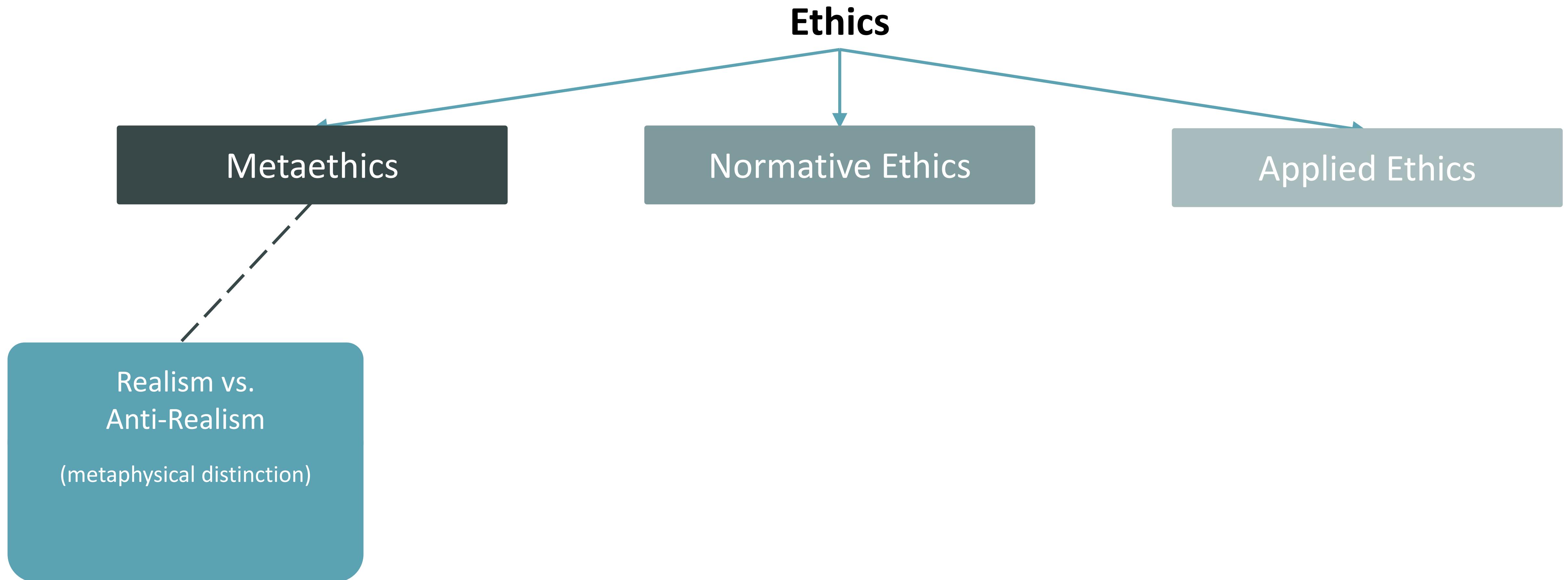
Are you morally permitted to
hack into your parents'
computer?

→ more on this: later in this module

→ more on this: later in the first block

→ more on this: in the second block

METAETHICS



Realism vs. Anti-Realism (metaphysical distinction)

Is there something like the *objective property* of being good or bad?

Is there something that makes Timo's utterance "It was wrong to lie." a claim about facts in the world?

Yes!

"is wrong" is like "**is a gas**"
– not relative at all

Realism

Kind of,
but not
really...

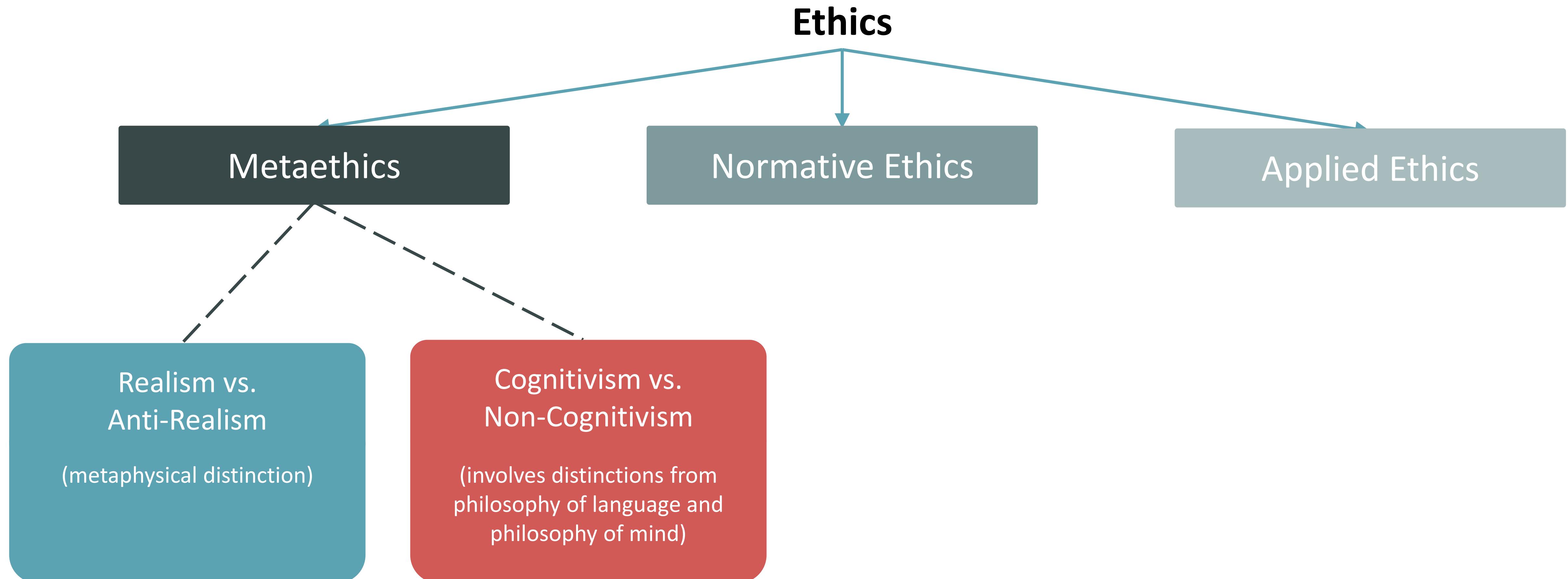
"is wrong" is like "**is green**"
– something we project onto the world

Quasi-Realism

No!

e.g., "is wrong" is like "**is left of**"
– very relative

Relativism



Cognitivism vs. Non-Cognitivism (involves distinctions from philosophy of language and philosophy of mind)

What does Timo express when he says “eating meat is permissible”?

a belief

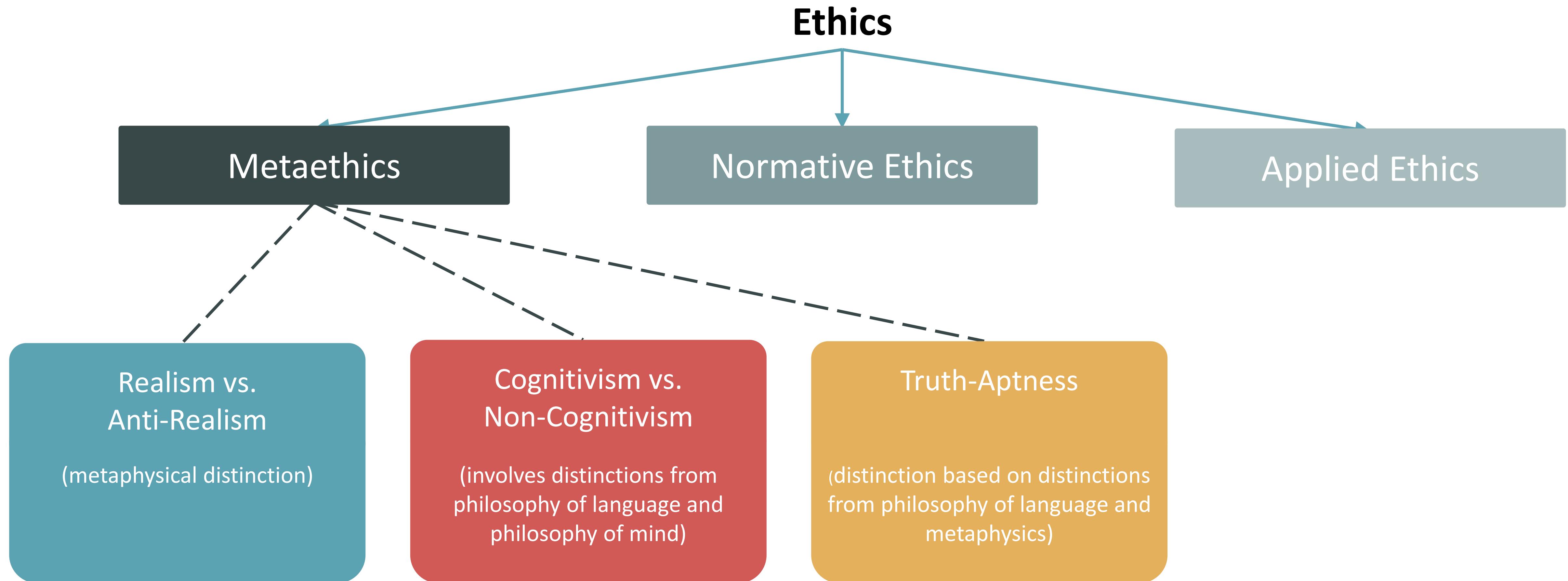
We have moral beliefs. In moral utterances we express what we believe about the world.

Cognitivism

something like
“Yeahy, eating chicken!”

In moral utterances what we express something like cheers, boos or commands, or how we want the world to be.

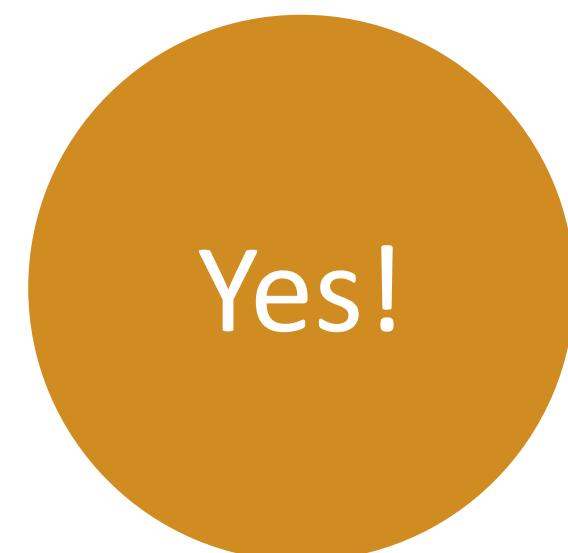
Non-Cognitivism



Truth-Aptness

(distinction based on distinctions from philosophy of language and metaphysics)

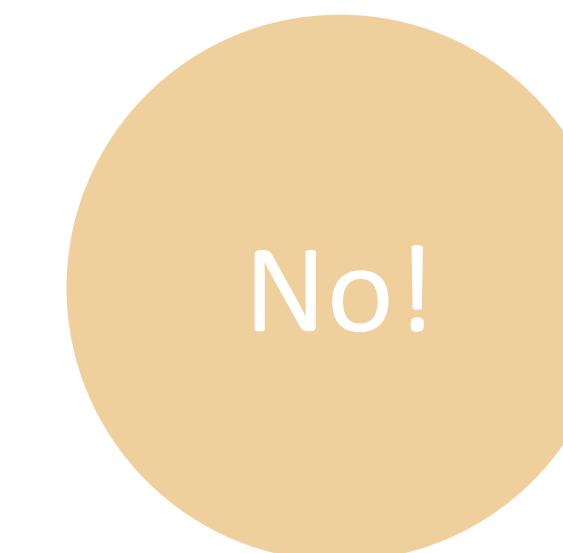
Is “it is wrong to eat meat” something that can have a truth-value?



A moral statement can be true or false.

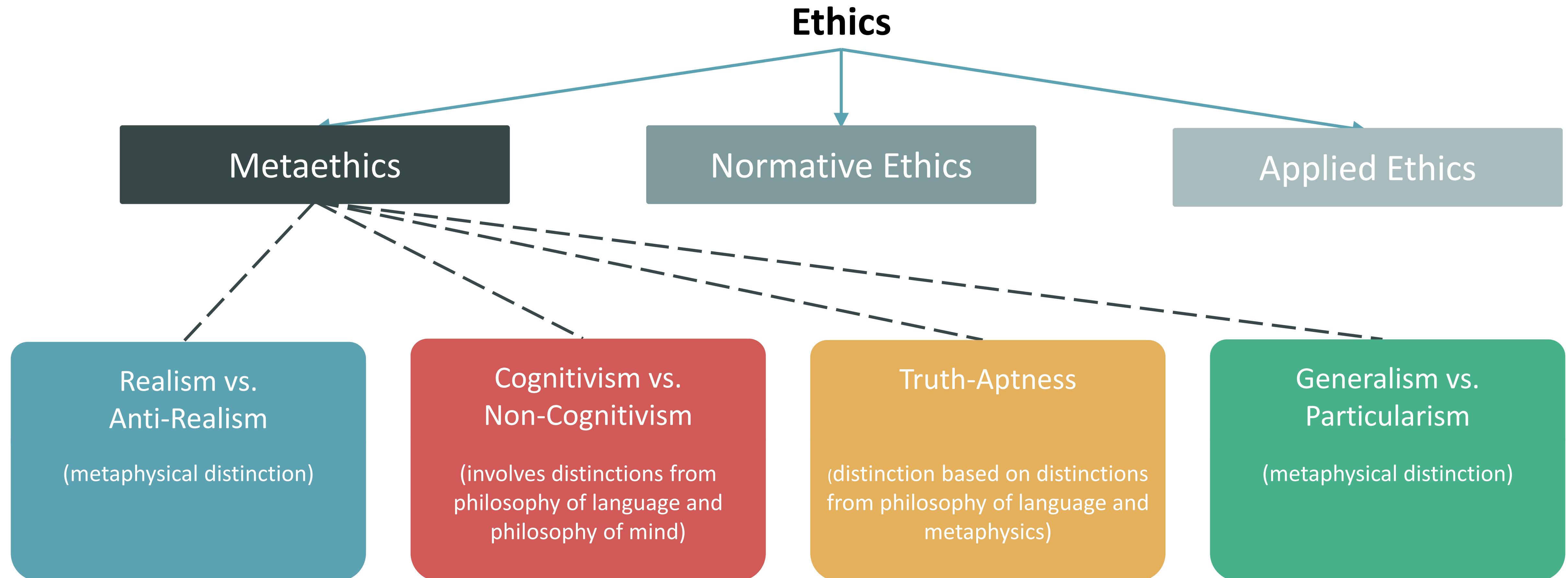


... all moral statements are false.



An expression with a moral content either is not of a type such that they can have a truth-value, or they are ill-posed.

Error-Theory



Generalism vs. Particularism (metaphysical distinction)

Are there defensible, general moral principles?
Even if there are some, can morality, moral thought and moral discourse be exhaustively explained, justified, and correctly described in terms of such principles?

Yes!

No!

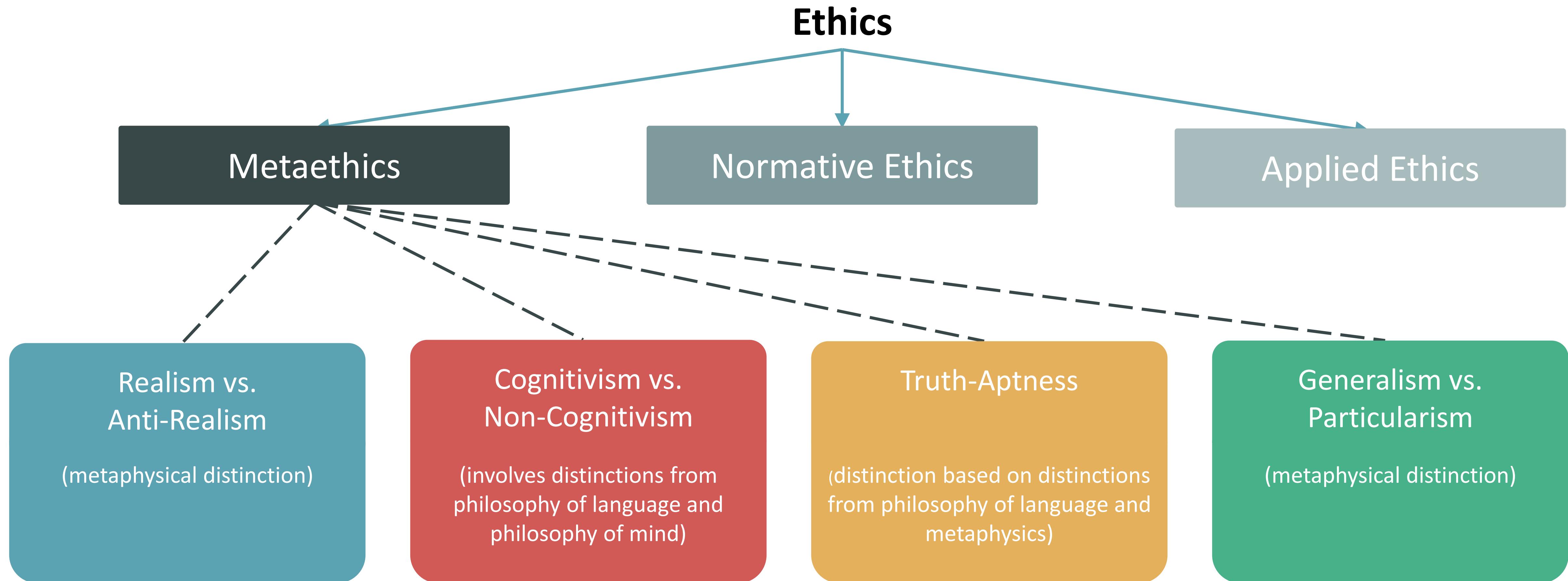
“What Sarah did was wrong” is true because of some more general moral principles.

“What Sarah did was wrong” is ‘just true’, but not because there are some general moral principles in the background.

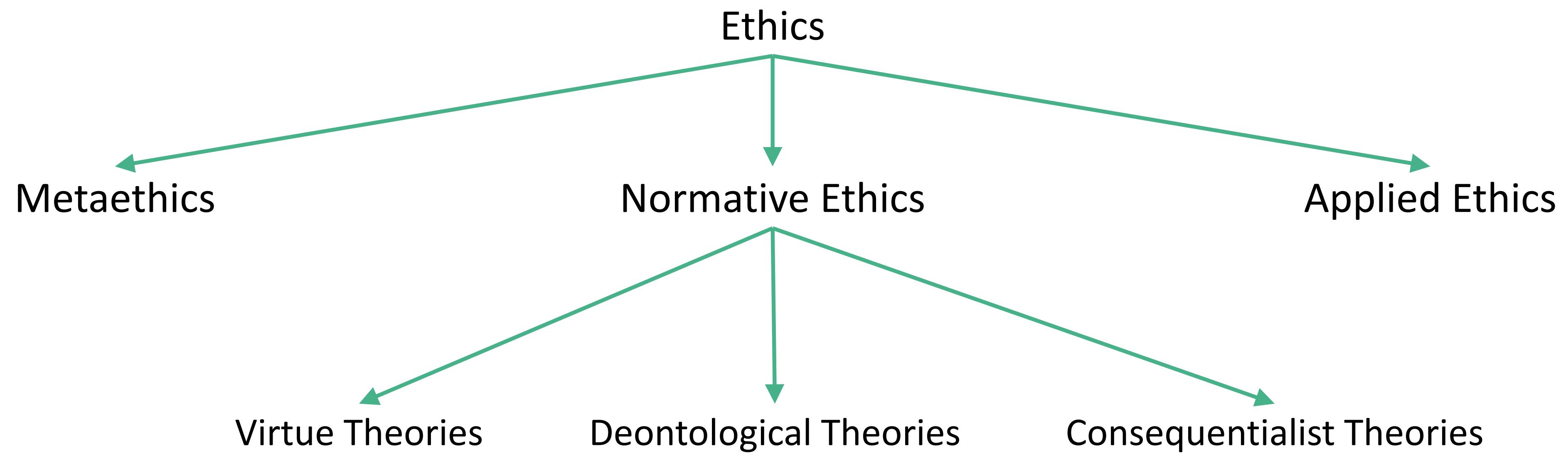
Generalism

Particularism

FIELDS OF ETHICS

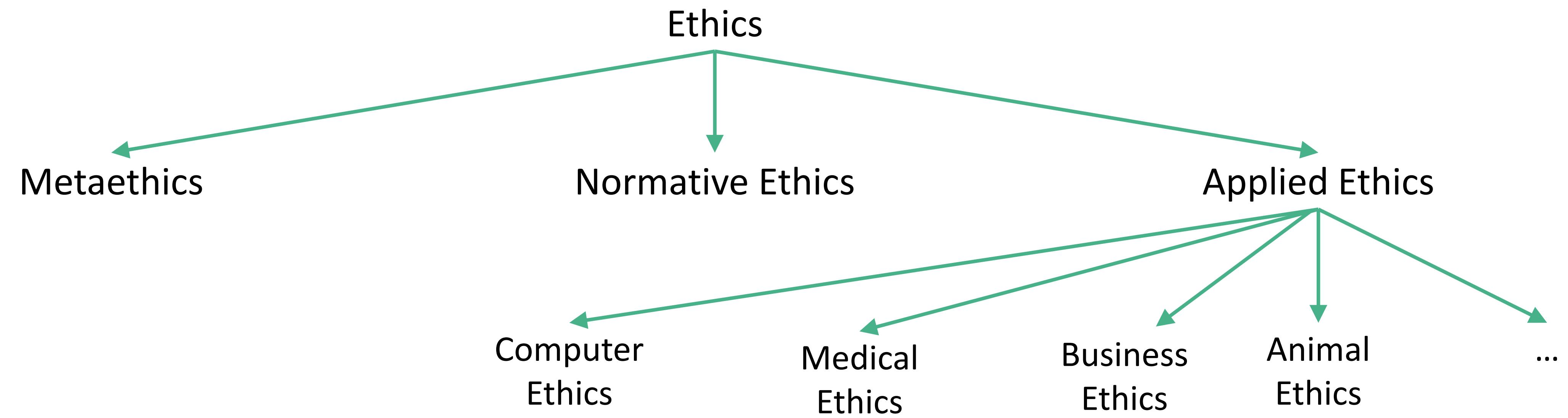


FIELDS OF ETHICS

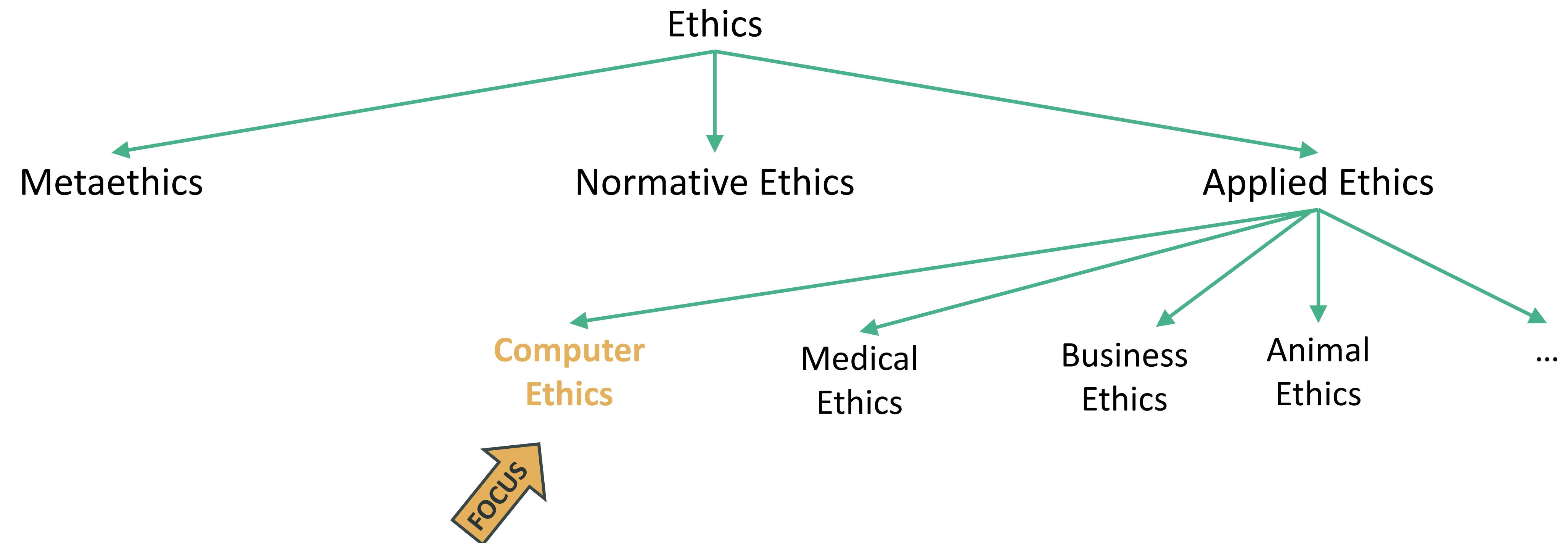


(More on these in the next few lectures)

FIELDS OF ETHICS



FIELDS OF ETHICS



META-ETHICAL DETERMINATIONS FOR THE CONTEXT OF THIS COURSE

For this lecture we assume:

Realism ("Naturalism")

There are moral properties; moral truths are objective and non-relative.

Cognitivism

Moral utterances and thoughts are judgements; they express beliefs about the world.

Truth-Aptness

Moral thought and statements can be true and, in fact, are either true or false.

Generalism

There are general moral principles and, thus, the endeavor of finding adequate moral theories is not principally misguided.

