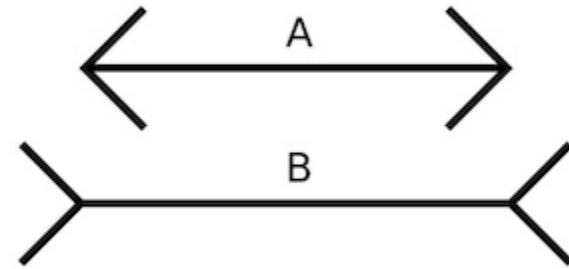
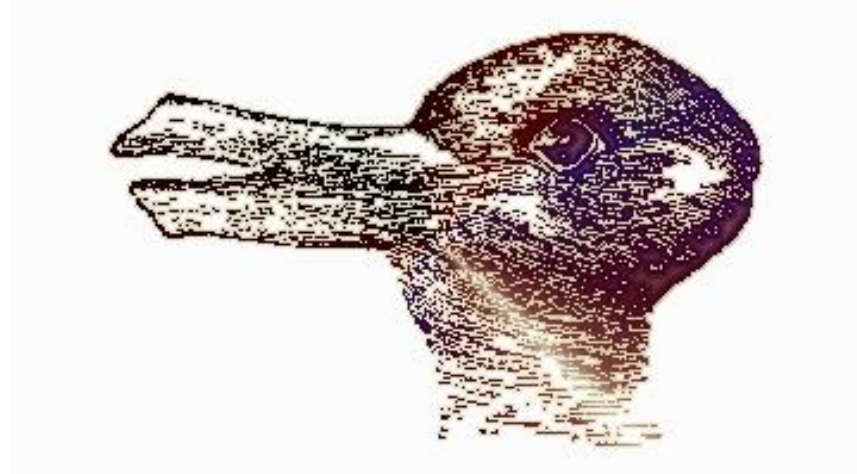


# The basics of knowledge

Perception, Reasoning and Scepticism

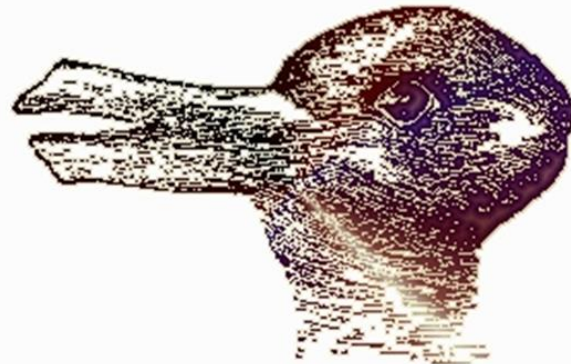
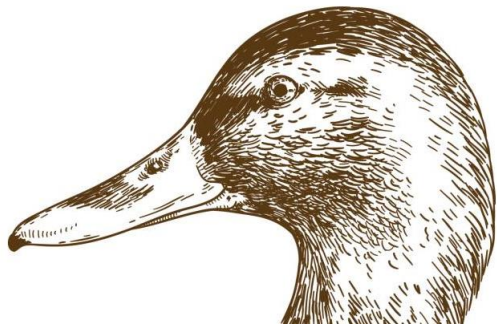


# 1. Perception

Illusions show that perception is *inference*

# Perception and *Belief*

- Perception is a belief-forming process
  - (sometimes belief = “judgment”)
- E.g. when you see a duck, you don't just see a blob. You see it *as* a duck. You see *that* there is a duck in the field.



# Is Perception direct? Or an *inference*?

- An “inference” is forming a belief on the basis of old beliefs, by means of logical reasoning, math calculations, etc.
- E.g. you may **see** a chair next to the kitchen counter, the cookie jar on the counter open, and cookie crumbs on the floor nearby.
- You **infer**:



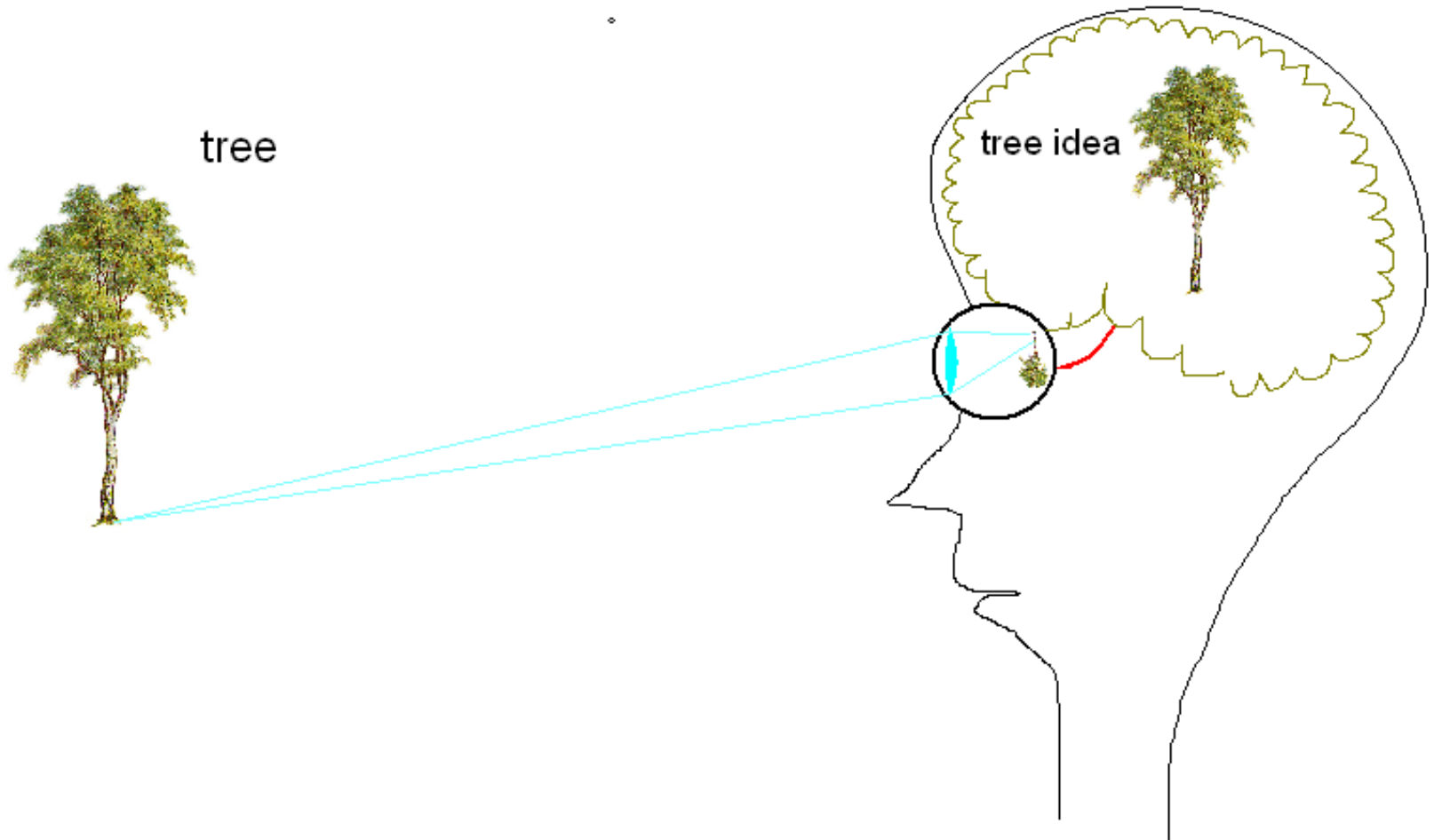
# Is Perception direct? Or an *inference*?

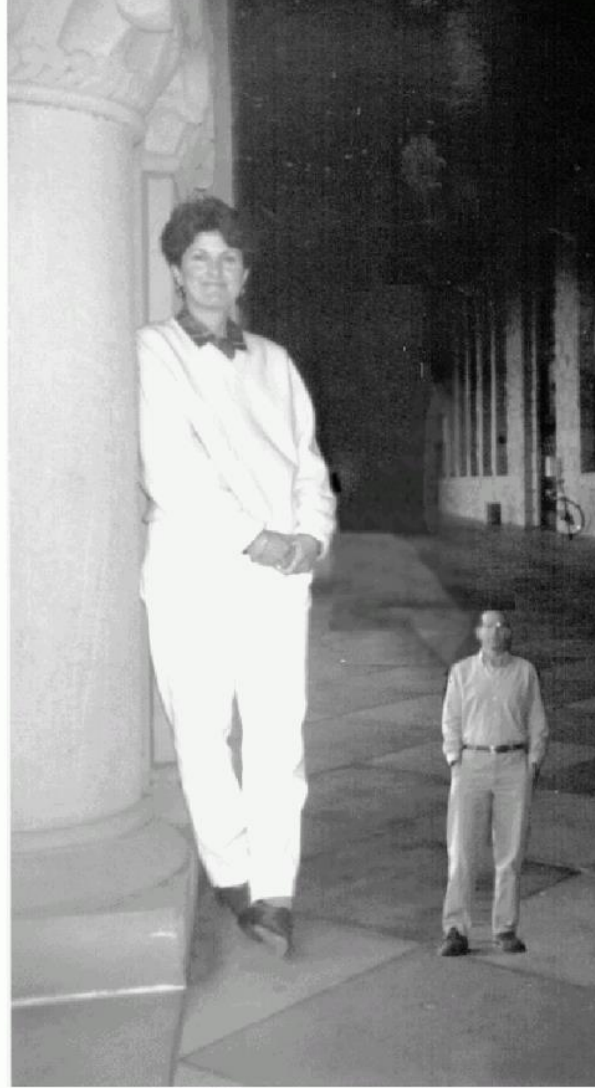
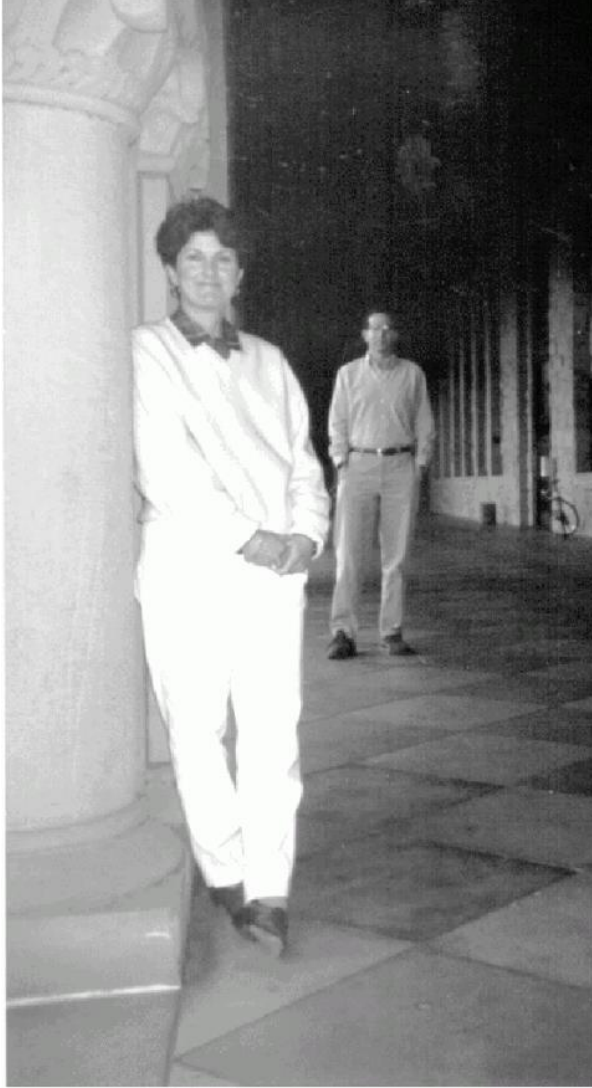
- So we commonly distinguish between what is actually *seen*, and what is *inferred* (from what is seen).
- But perhaps even what we actually see is *also* an inference? (An unconscious one, carried out by mechanisms we're unaware of.)
  - That's what I'll be arguing for here.

# Is Perception direct? Or an *inference*?

- When we see something, we are *aware* of it. There is a certain “object”, e.g. a duck, that is “present in our consciousness”.
- Is the physical duck *itself* present in our consciousness?
  - Or are we aware of some “construction” of our own minds, which has been *inferred* from the raw data (optic nerve signals)?

# Indirect awareness?





- How big is the man?



# 3D movies



With “3D glasses” on, we see things coming out of the screen. Why?

# The T-rex doesn't move!

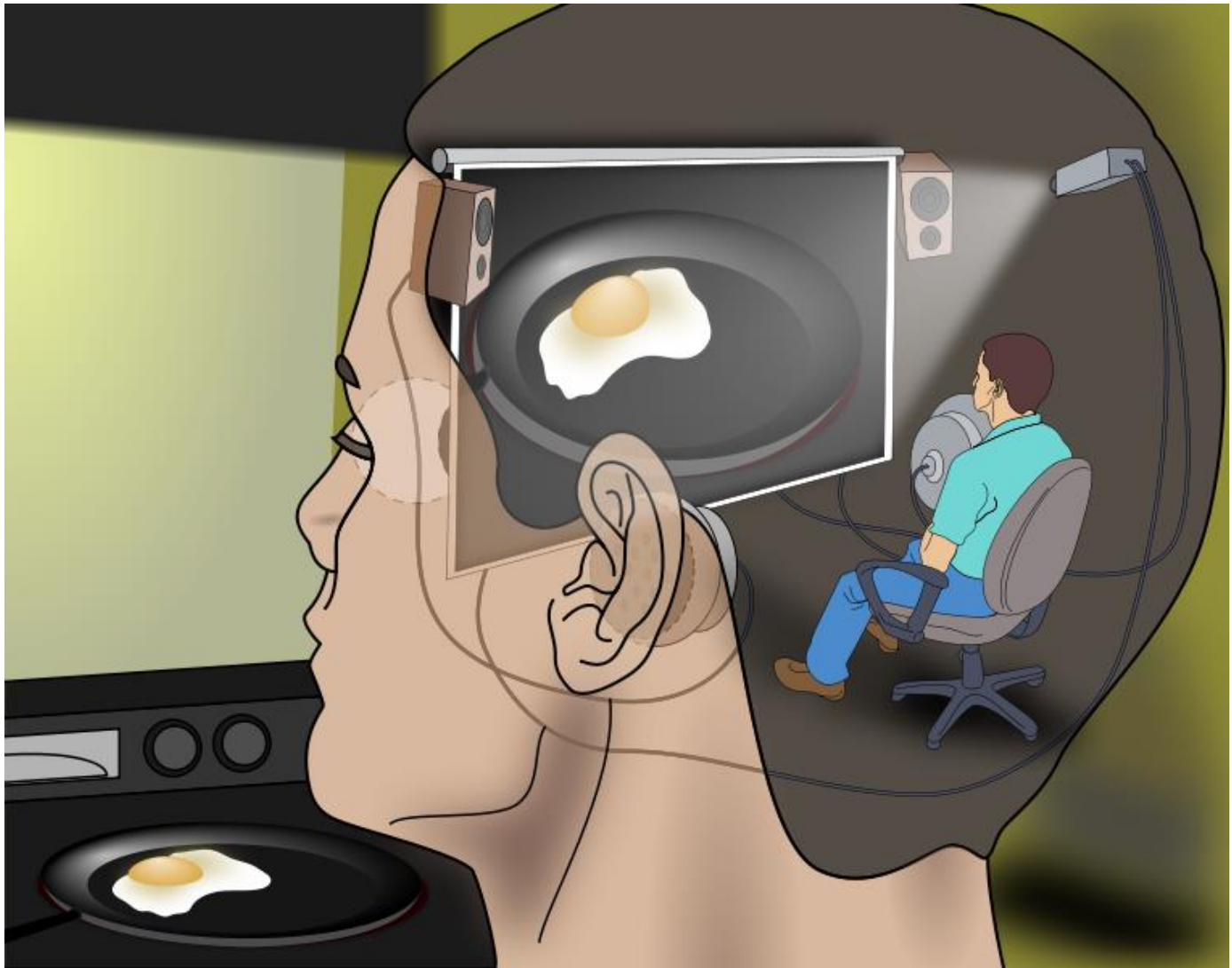


# Perception is inference

- These optical illusions are generally taken by philosophers to show that *perception is inference*.
  - (This view is called *indirect realism*, or *representative realism*.)
- Our brains analyse the signals from the optic nerves, and try to figure out what could be “out there” that would cause such signals. The brain “draws” its *best guess*, in our conscious awareness.
  - Seeing cannot occur without this automated guesswork.

# The visual field

- The “visual field” is the spatial array of visual sensation.
- It consists of 3D objects, which are coloured, in a 3D space.
- The visual field seems to be a logical construction, based on the optic nerve signals. It requires very complex calculations, performed in real time. (Fortunately we are not aware of these!)
- E.g. the brain constructs a 3D T-Rex that best explains the data it’s getting.



- The 'veil of perception'. (Though there is no homunculus.)

- Anil Seth, “Your brain hallucinates your conscious reality”, Ted talk (at 4 min 19 sec):

“Imagine being a brain. You’re locked inside a bony skull, trying to figure what’s out there in the world. There’s no lights inside the skull. There’s no sound either. **All you’ve got to go on is streams of electrical impulses** which are only indirectly related to things in the world, whatever they may be. **So perception—figuring out what’s there—has to be a process of informed guesswork in which the brain combines these sensory signals with its prior expectations or beliefs about the way the world is to form its best guess of what caused those signals.** The brain doesn’t hear sound or see light. What we perceive is its best guess of what’s out there in the world.

# Similar to Tesla's FSD software



# “Direct Realism”

- This is the “naïve” view that we are directly aware of external objects (e.g. trees) so that perception involves no ideas obtained by inference.

“...when we see something, the very thing we see is there, before our eyes, available for inspection...” (Landesman, p. 21)



# Hume on direct realism

- “It also seems clear that when men follow this blind and powerful instinct of nature they always suppose that the very images that their senses present to them are the external objects that they perceive; it never crosses their minds that sensory images are merely representations of external objects.”
- Hume, *Enquiry*, Section 12, Part 1

# Analogy: watching TV

- When we watch something (e.g. soccer game) on TV, we can get “immersed” in the game, to the extent that **our conscious thoughts are focused on the movements of the actual players and ball**, rather than the figures on the screen.
- Imagine a person who went even further, and was watching the game on a virtual reality headset. They might even *forget that they’re looking at pixels*, and think they’re watching the game directly.
- That’s similar to what happens during ordinary vision, Hume says.

# Representative Realism

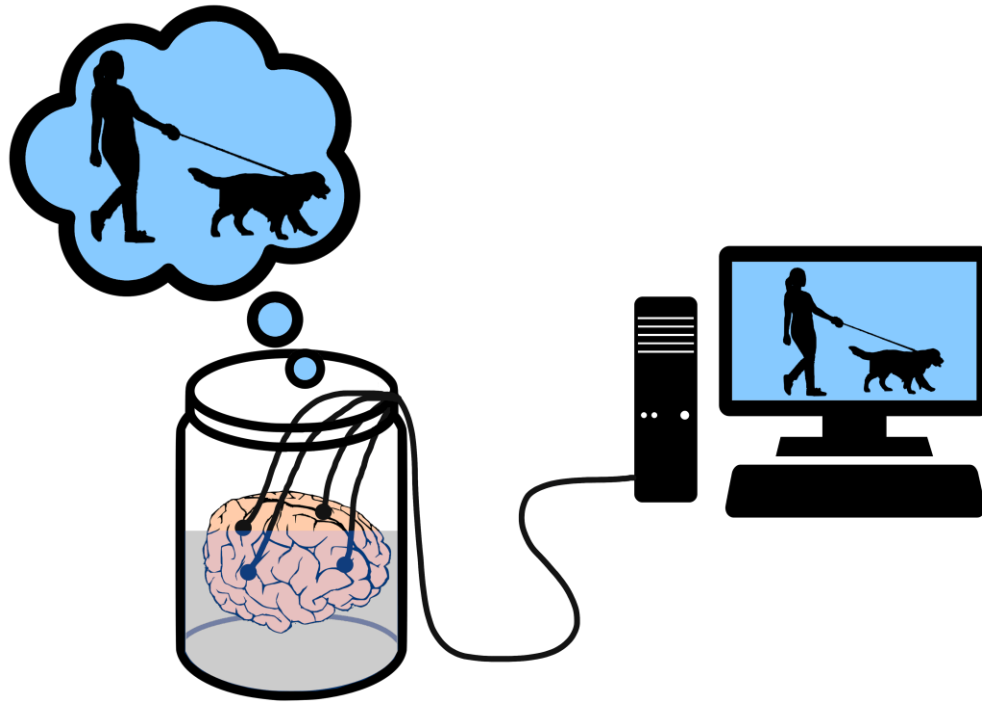
- This is what most philosophers (e.g. Descartes, Locke) believe.
- Perception involves the construction (or inference) of ideas which *represent* external objects.
- (The “Sense Perception” reading has more information about representative realism.)

# The Argument from Illusion

1. When viewing the cardboard T-rex, one is conscious of its head turning.
2. The external T-rex is not turning its head.
3. What one is directly aware of in such cases of illusion is *the same kind of thing* that one is directly aware of in normal, non-illusory perception.

-----

- ∴ 4. In cases of illusion (and hallucination), one is directly aware of something internal. (from 1 and 2)
- ∴ 5. In normal perception, one is directly aware of internal things. (from 3 and 4)



## 2. Scepticism and Anti-realism

How do we know that our experiences match reality?

# Scepticism

- Scepticism means doubt, or **suspending judgment**, keeping an open mind.
- A sceptic demands evidence for a claim before believing it.
- Scepticism is good!
  - unless perhaps it threatens to destroy all of our (supposed) knowledge!

# Anti-realism

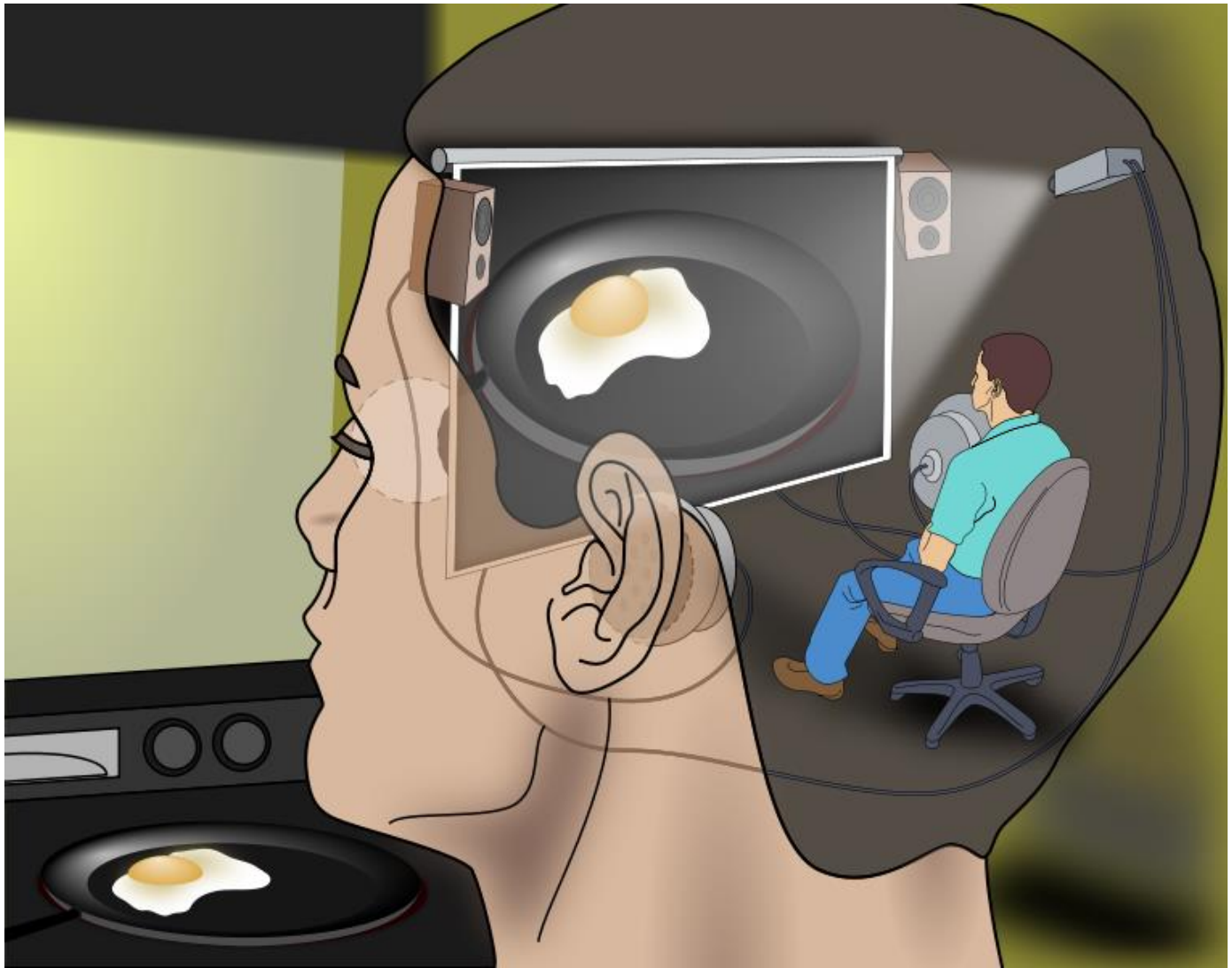
- Anti-realism says that we have knowledge *only* of our own ideas, not external objects.
- External objects either do not exist, or are likely very different from how we perceive them. (Who can say?)
  - (Who can get outside his own mind to see the “things in themselves”?)

“It is true, there could be a metaphysical world; the absolute possibility of it is hardly to be disputed. **We behold all things through the human head and cannot cut off this head;** while the question nonetheless remains what of the world would still be there if one had cut it off. ...

... Accordingly, **nothing could be predicated of the metaphysical world** beyond the fact that it is an elsewhere, another sphere, **inaccessible and incomprehensible to us:** it would become a thing of negative properties. Even were the existence of such a world absolutely established, it would nevertheless remain incontrovertible that of all kinds of knowledge, **knowledge of such a world would be of least consequence**—of even less consequence than knowledge of the chemical analysis of water would be to a storm tossed mariner.”

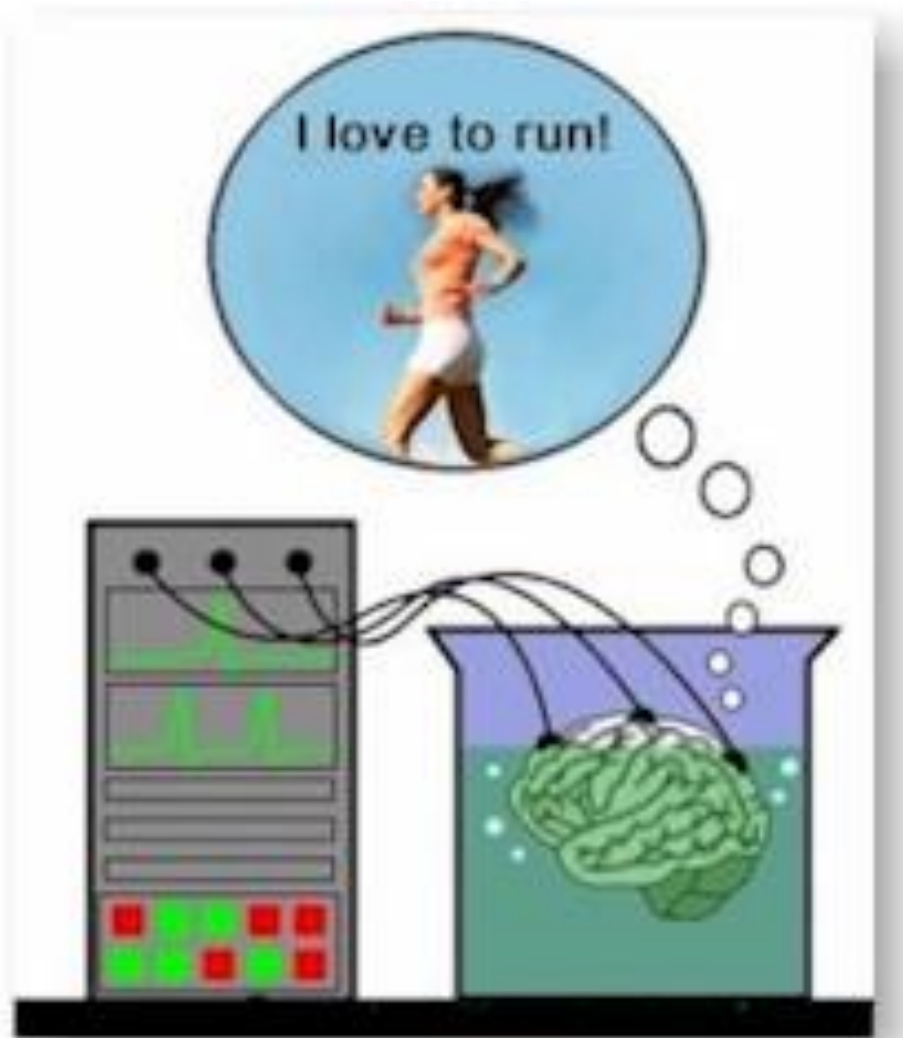
- Friedrich Nietzsche, *Human, All Too Human*, (1878), Chapter 1, Section 9.





- The 'veil of perception'.

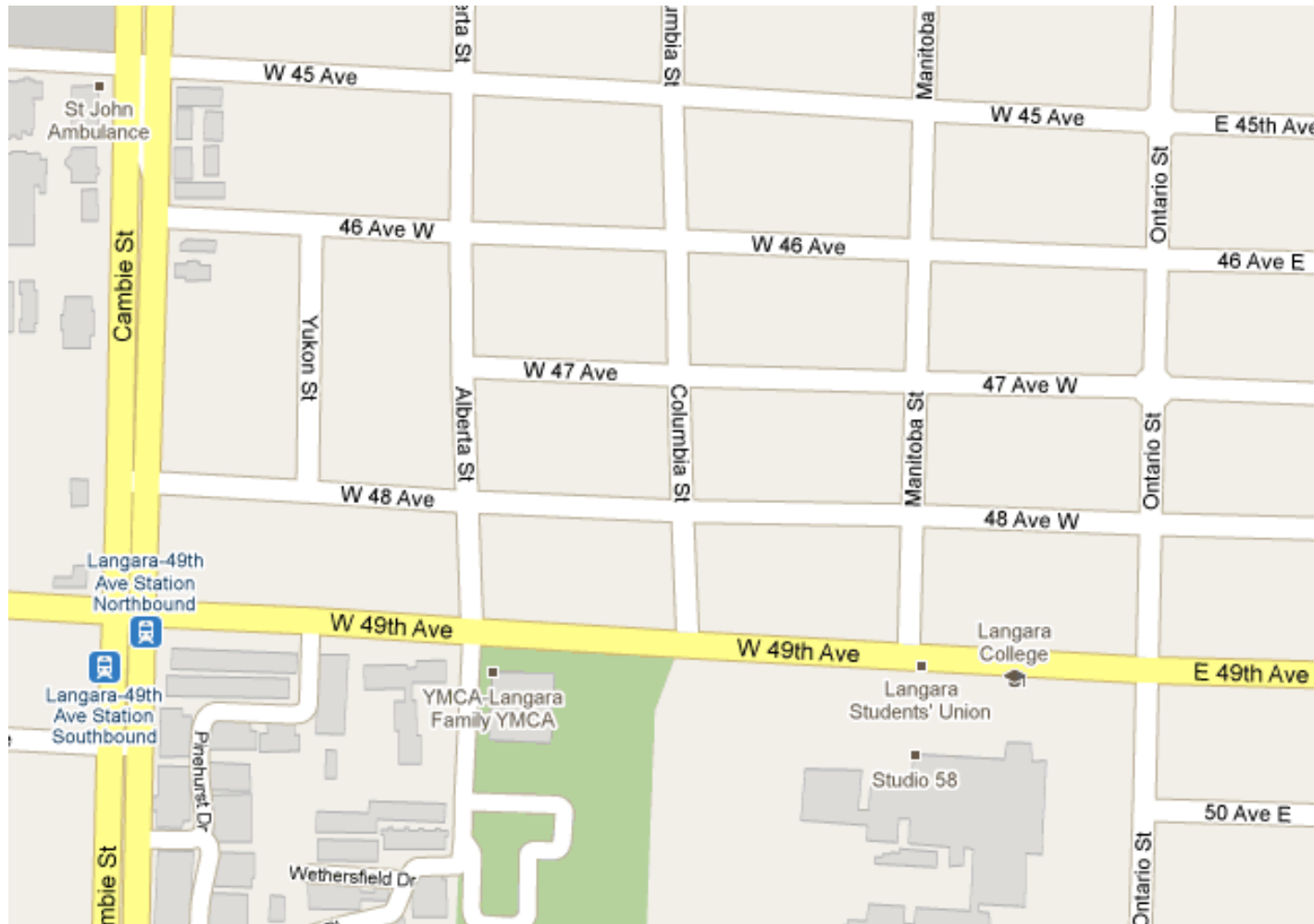
# Hilary Putnam's "brain in a vat"



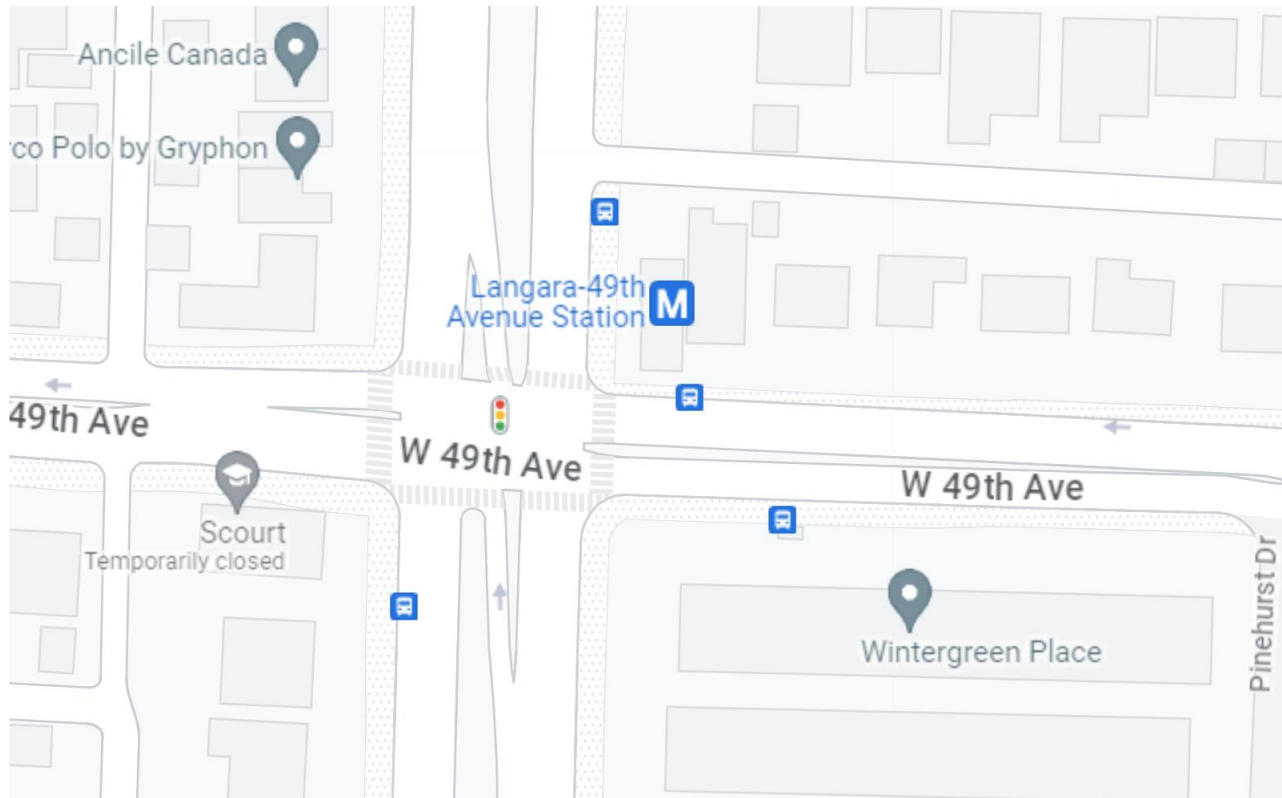
# *Do* ideas represent the world?

- (Some ideas apparently *don't*.)
- The relation of *representation* is very familiar to us.
- For example, a map represents a territory, i.e. a portion of the earth's surface.

Does this represent reality? *Literally?*



# Fixed!



# Non-literal aspects

- Aspects of the map that are literal:
  - Shapes
  - Most relative sizes
  
- Aspects of the maps that are *not* literal:
  - Absolute size
  - Most colours
  - Contour lines, labels, road widths, etc.



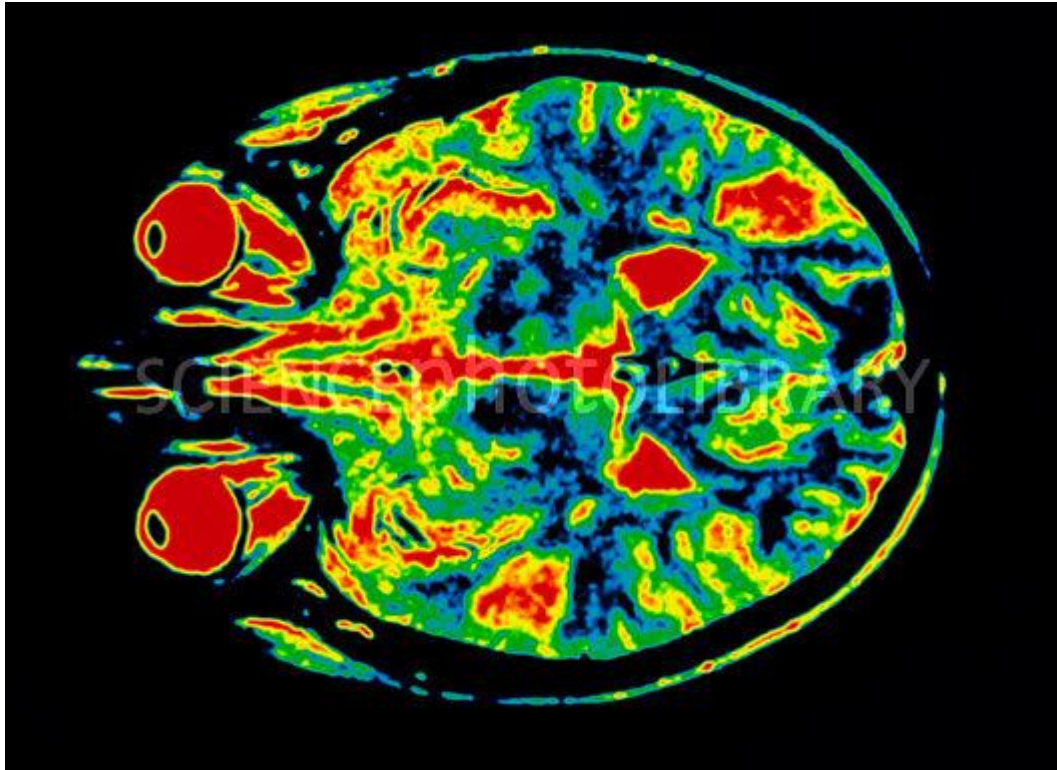
- Derek Zoolander on literal representation

# Do *ideas* have non-literal aspects?

- Perceptual ideas (of material objects) are solid (i.e. filled in, no gaps), coloured, have geometrical form, and size.
- Contemporary physics describes material objects in terms of shape and (relative) size, but says that objects are mostly empty space.
  - Also, *physics seems to have no place for colour!*



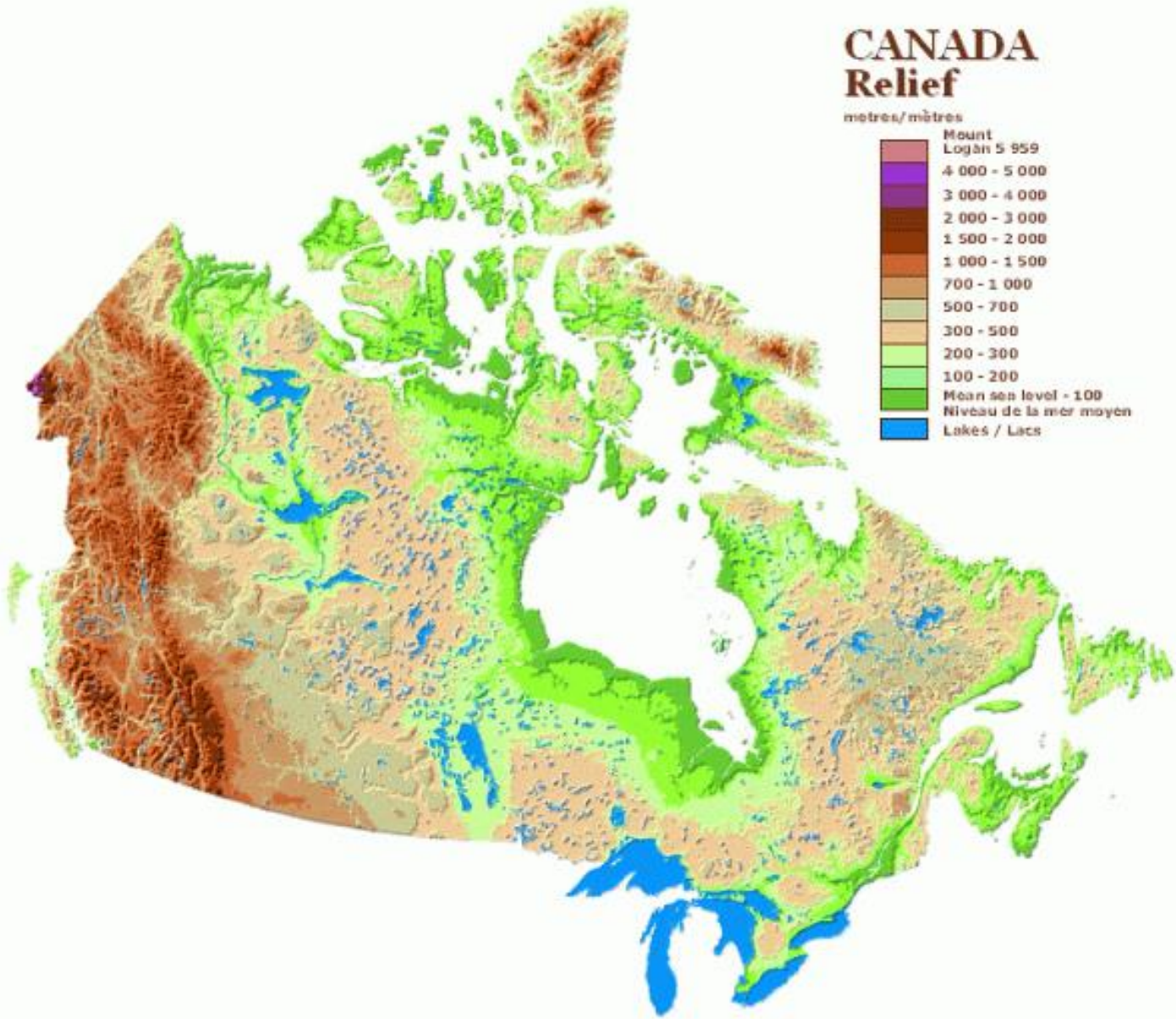
# MRI scan of a brain



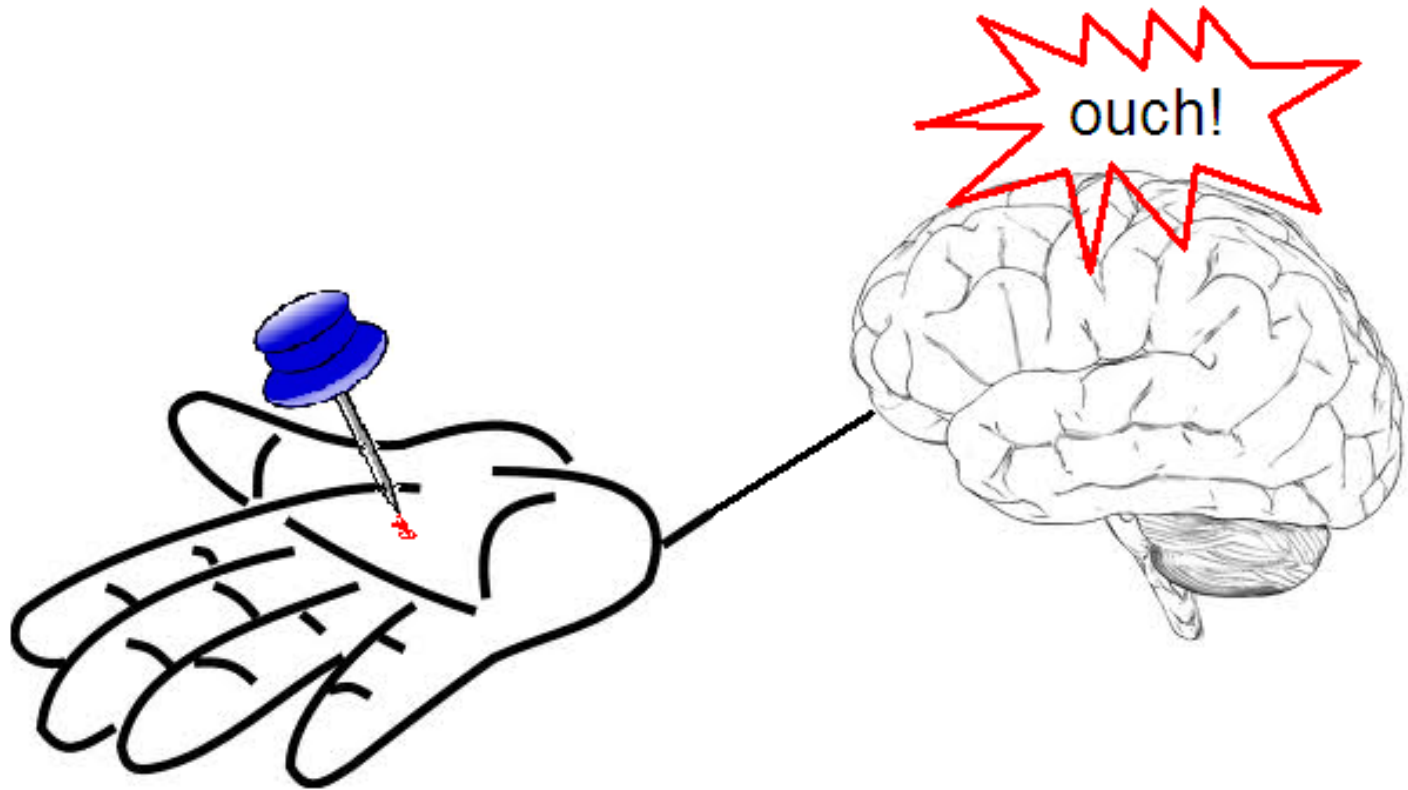
- Are those colours real?

# CANADA Relief

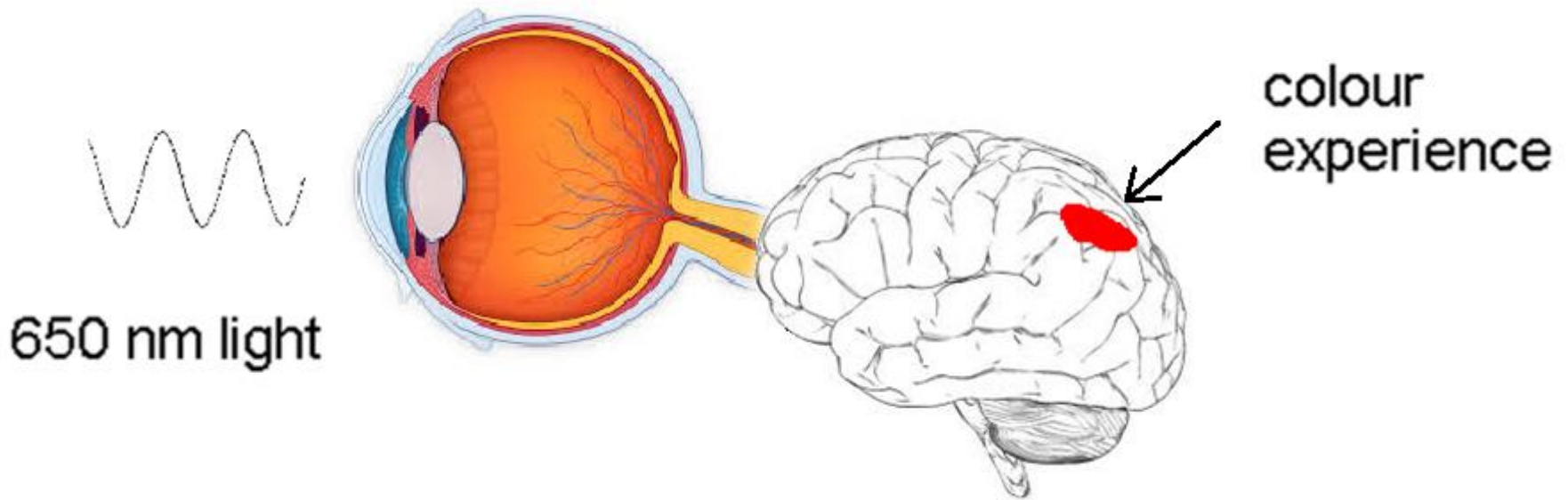
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Does a pin have pain in it?

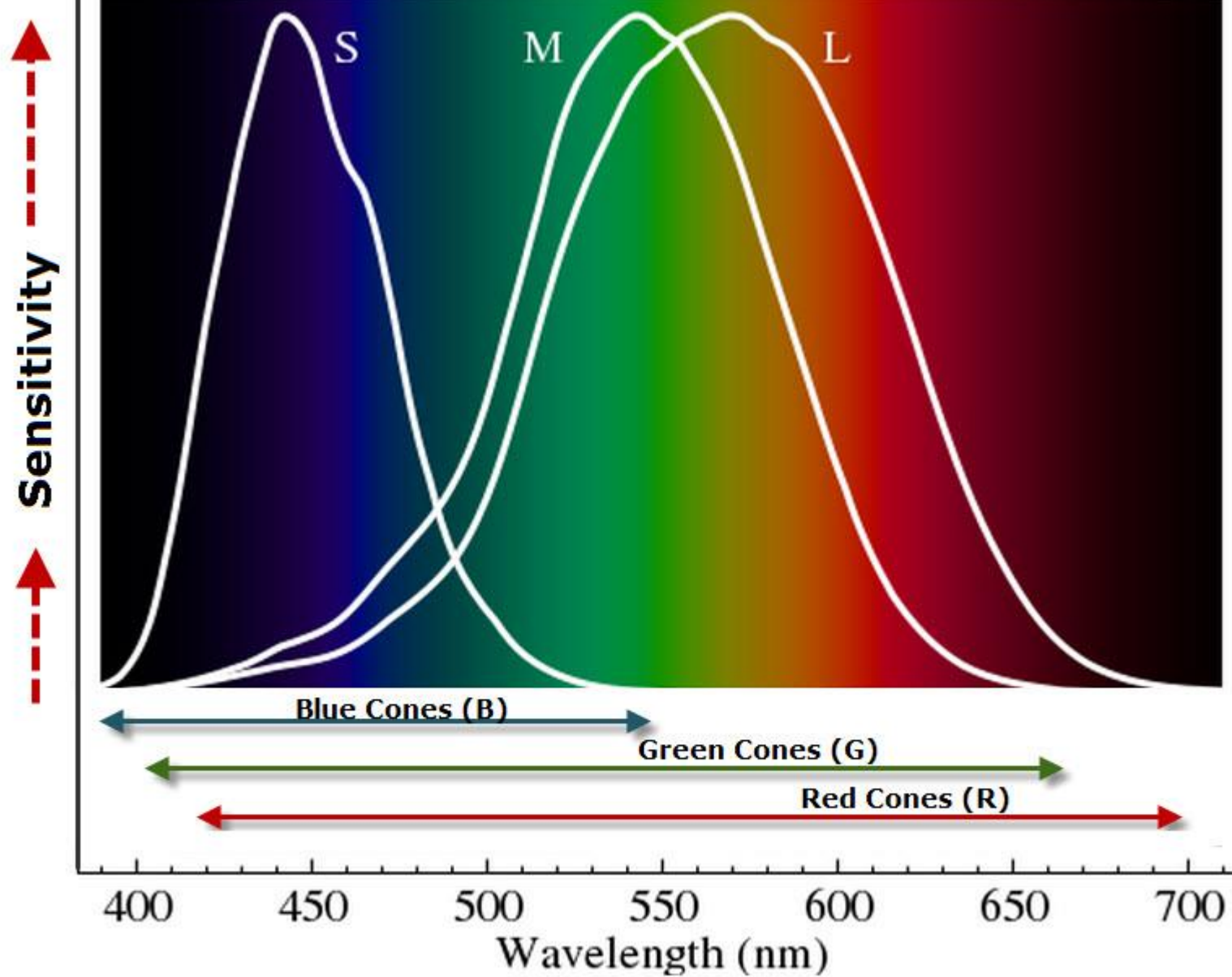


# Is 'red' light actually red?



- The red quality of a visual percept doesn't resemble a wavelength of 650 nanometers (at all!)

# Light Response Spectra for Human Light Receptors (Cones)







“It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts”

Sherlock Holmes

### 3. Conscious reasoning

What is the role of reasoning in knowledge production?

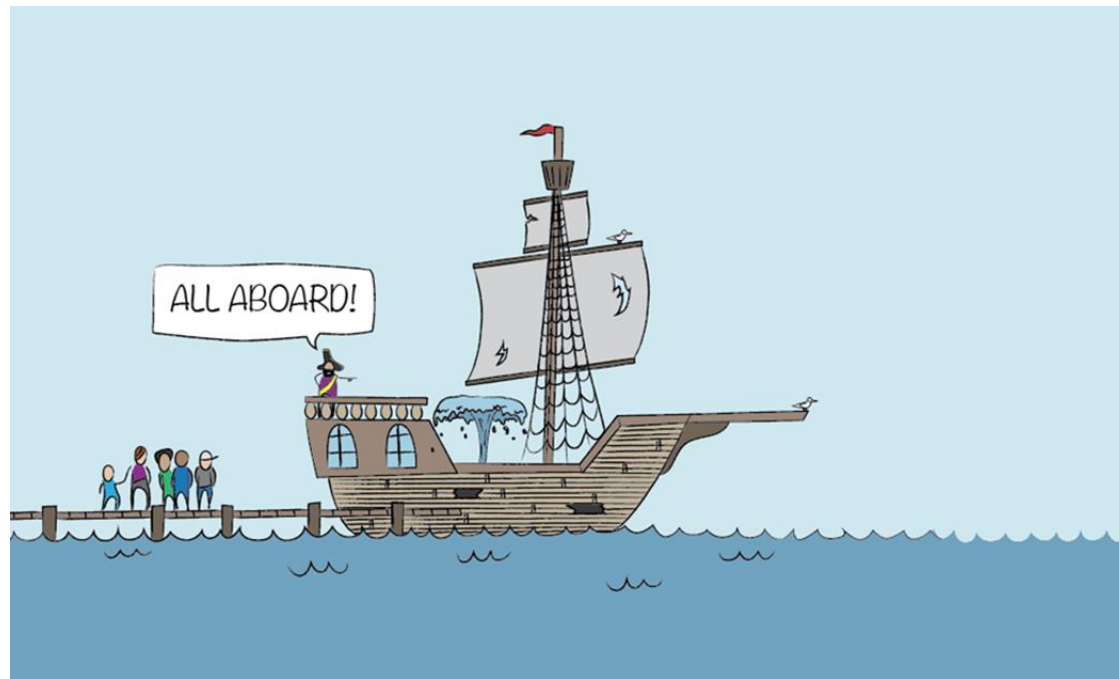
# We are “users” of our cognitive systems

- Our cognitive (= belief-producing) systems (e.g. perception, memory and inference) largely run automatically.
  - Similar to breathing, walking etc.
- But we can also exert *some* control over our belief formation!
  - We can consciously check whether the beliefs that form automatically are based on data and good reasoning.
- We can think of ourselves as “users”, or perhaps managers, of our cognitive hardware.

# Control freak or *laissez faire*?

- Some managers are control freaks.
  - They don't trust their workers to do anything properly, and so check up on everything. (“micro-managers”)
- Other managers are “hands off”, or *laissez faire*.
  - They really trust their workers, to the extent of not really knowing what's going on.
- As managers of our own cognitive hardware:
  - Should we sit back and let those mechanisms do their job?
  - Should we oversee and overrule these processes?





- Suppose Clifford's ship owner was innately optimistic, and instinctively believed that the ship would be fine.
- And suppose that the ship did arrive safely.
  - Did the owner *know* it would?

# What are the user's *duties*?

## Deadly Autopilot Crash

COMPANY RESPONDS



"The driver had received several visual and one audible hands-on warning earlier in the drive and the driver's hands were not detected on the wheel for six seconds prior to the collision."

Tesla

"Every driver is **responsible** for remaining alert and active when using Autopilot, and must be prepared to take action at any time."

# Knowledge Internalism

- No, the ship owner lacked knowledge here.
  - The belief, while true, was not *justified*.
- A justified belief requires that the person actively and **consciously manages** their belief formation, and doesn't let it "run on autopilot".
  - You can't just trust that your brain will get it right.
  - You have to gather all the available evidence, check the reasoning carefully, look for counter-examples, consider alternative perspectives, seek expert advice, be aware of cognitive biases, etc.

# JTB conditions

- Internalism says that a person *knows* that A iff:
  - they *believe* that A
  - A is *true*
  - their belief that A is *justified*

(These are called the 'JTB conditions', standing for *Justified True Belief*.)

- A person's belief is justified only if they were *epistemically responsible* in forming that belief
  - I.e. they fulfilled all their *epistemic duties*.

- Being epistemically responsible means being *consciously aware* of reliable evidence that supports the truth of one's beliefs.
  - One has 'internal access' to evidence that supports the belief.
- One cannot simply trust the beliefs that form spontaneously in one's mind, saying:
  - “No doubt I have a good basis for believing this. My brain wouldn't have produced the belief otherwise. But what that basis is I can't tell you.”

# What about perception?

- Can beliefs that result from *perception* be justified?
  - Don't such beliefs just "pop into our heads"
  - Do most people know *anything at all* about how perception works?
- Does the user of a cognitive system have any duties regarding the formation of perceptual beliefs?
  - If a user forms a false perceptual belief are they ever *to blame*? Should they ever be *held responsible*?
  - Is there any internal 'indicator' telling us that a perceptual belief might be false?

# What about memory?

- In a similar way, beliefs produced by memory seem just to “pop into our heads”, when we try to access our past experiences.
- Does the user of a cognitive system have any duties regarding memory beliefs?
  - For example, do memory beliefs require independent verification (e.g. by other people, or video footage) before they can be trusted?

# *Assurance*

- Some perceptions and memories are, we might say, perfectly “clear”.
  - For example we have perfect eyesight, and we see a dog for several seconds, under good lighting, from a few feet away.
- In such a case we *feel very certain* that our perception (or memory) could not be wrong.
  - (Locke called this feeling *assurance*.)
- Perhaps assurance is a design feature of our cognitive apparatus? An internal ‘dial’ or ‘indicator’? The user has a duty to withhold belief when assurance is absent?



# Assurance and internal access

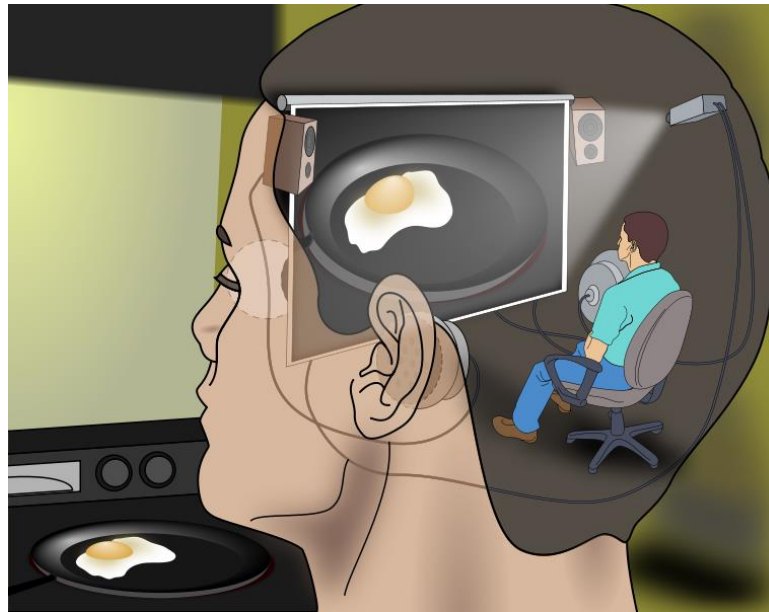
- (Even though perception is a subconscious process that we cannot supervise, we can at least check whether assurance is present. Assurance is something we *are* consciously aware of.)
- Assurance is often present when we see something, or remember something, and also when we form a conclusion by reasoning.

# Assurance in reasoning

- Descartes described having the strongest kind of assurance about *reasoning* rather than perception.
- For example Descartes claimed that he could “clearly and distinctly perceive” mathematical facts such as  $2+3=5$ .
  - Descartes also had *some* assurance from the senses, but thought that he had a duty *not* to form any perceptual beliefs until he had logical proof that the senses are reliable.

# The Problem of Radical Scepticism

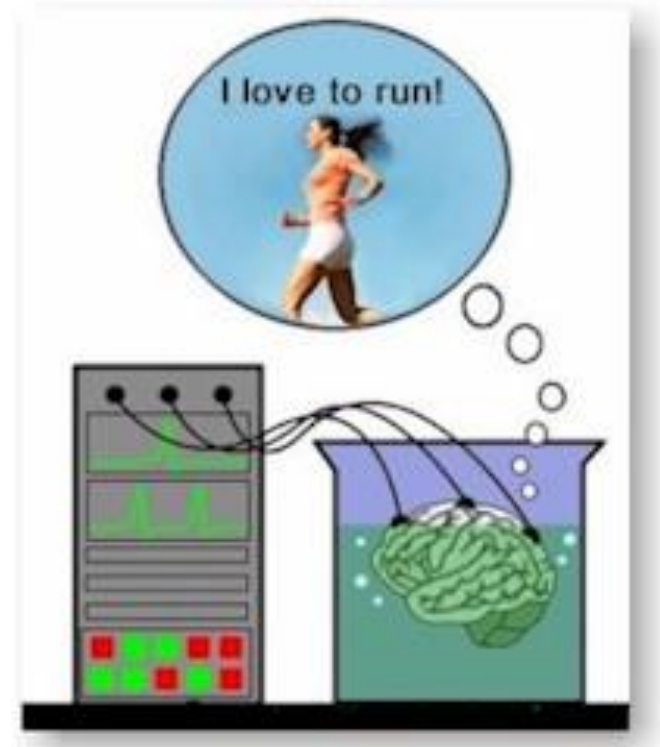
- “representative realism” involves the ‘veil of perception’, i.e. a gap between the world as it appears to us, and as it really is.



- This opens the door to scepticism (= doubt).

# Sceptical Scenarios

- Descartes' demon
- The Matrix
- Putnam's "brain in a vat"
- The world is 5 minutes old
- Solipsism (there are no other people)



# Sceptical Scenarios

- In these scenarios, most of what the people in them believe is false.
  - Yet “from the inside”, so to speak, everything seems normal and fine.
- These false perceptions are accompanied with strong feelings of assurance.
  - (Therefore, assurance is not, in principle, a guarantee of truth.)
- So, according to internalism, we have knowledge only if we can find proof (or at least good evidence) that the skeptical scenarios are all false.
  - (Can we do this?)

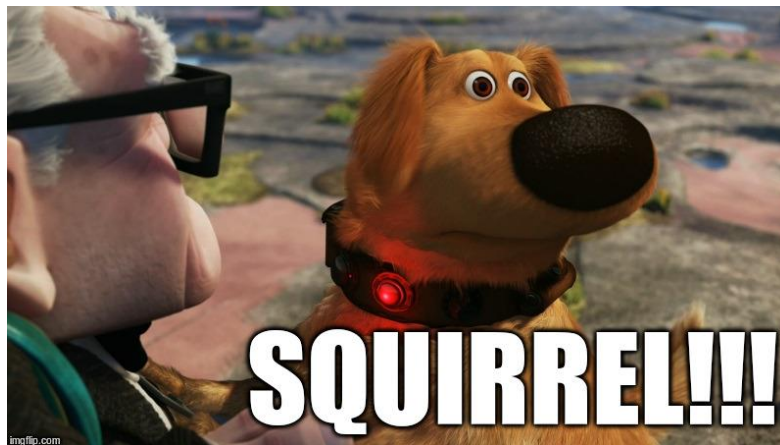
# Externalism

Externalists think that knowledge requires *warrant*, rather than justification. *Warrant is something that we don't have internal access to.* (Hence 'externalism'.) There are many theories of what warrant requires, e.g.:

1. The belief that p is caused by the fact that p.
2. The belief is formed by a *reliable* cognitive process.
3. The cognitive process that formed the belief was *working properly*.
4. The belief is authorized by God.

# Emma the dog

- Externalists say that Emma (a dog) has knowledge, even though she never checks or verifies the evidence and reasoning that her beliefs are based on.
  - (Emma has never even *considered*, let alone disproved, the possibility that she is a brain in a vat!)



“... it is doubtful whether Emma could have even understood the basic idea of having a reason for a belief, an understanding that seems to be required for her to have had fully explicit access to any reasons at all. Thus it is hard to avoid the conclusion that Emma had no justified beliefs ...” (BonJour)

- (The same goes for children and unsophisticated adults – in fact, almost everyone!)



# Externalism and Scepticism

- Externalism doesn't "answer the sceptic" in the sense of giving us evidence or proof that the sceptical scenarios are false.
- But, for externalists, the impossibility of answering the sceptic in *that* way doesn't mean that we have no knowledge.
- Knowledge, for an externalist, just requires (e.g.) that one's cognitive apparatus *is* working normally. There is no need to *show* that it is doing so.