

Locke's Empiricism

Getting to Know the External World

Knowing the External World

It's not as straight-forward as it sounds.

Rationalism and Empiricism

Epistemology as the study of...

- The nature of knowledge (especially: how propositions are justified).

Foundationalism vs Coherentism

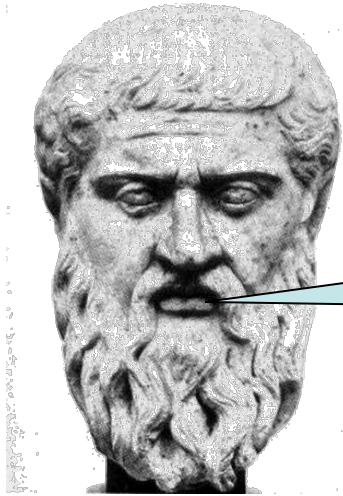
- The **source** of our knowledge.

Empiricism vs Rationalism

- The limits of our knowledge.

For any proposition that I can think, can I *know* whether it is true or false?

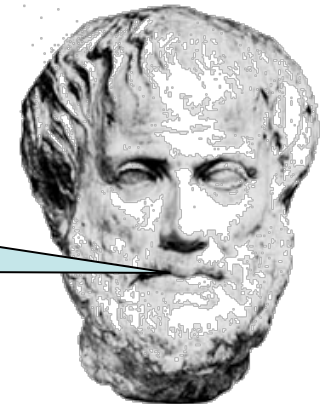
What is the Source of Knowledge?



Plato
427-347 BCE

Reason!

The Senses!



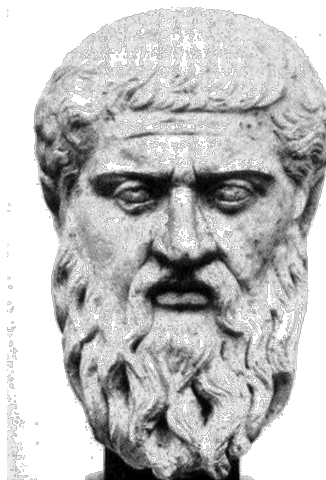
Aristotle
384-322 BCE

Continental Rationalists

Knowledge is innate in
the soul.



Rene Descartes
1596-1650



“There is no teaching
but recollection.”
(*Meno*)

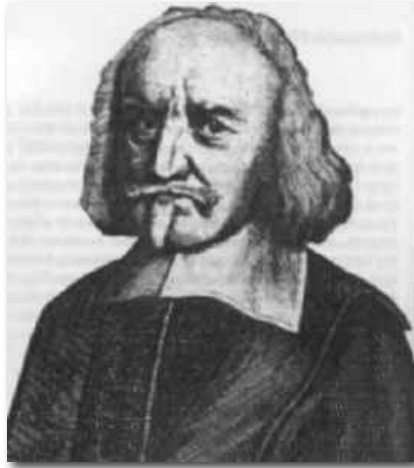
Baruch Spinoza
1632-1677



Gottfried Leibniz
1646-1716

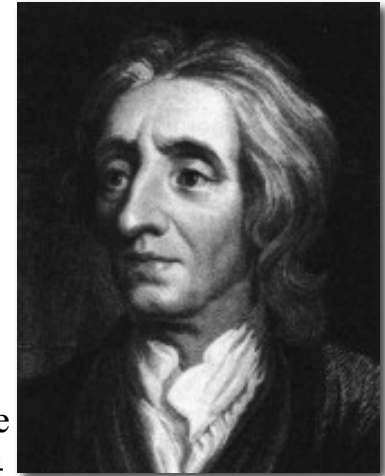


British Empiricists

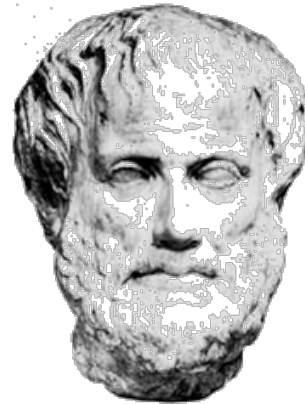


Thomas Hobbes
1588-1679

There is nothing in the
mind that is not first in
the senses.



John Locke
1632-1704



*Nihil in intellectu quod
non prius fuerit in sensu.*



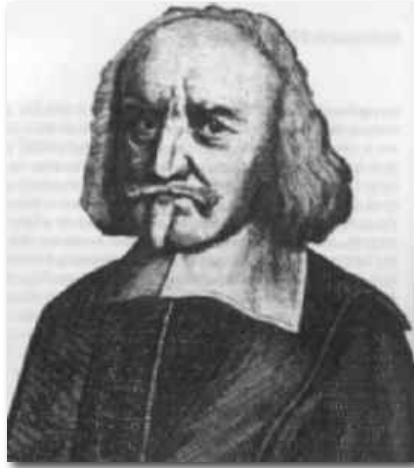
George Berkeley
1685-1753



David Hume
1711-1776

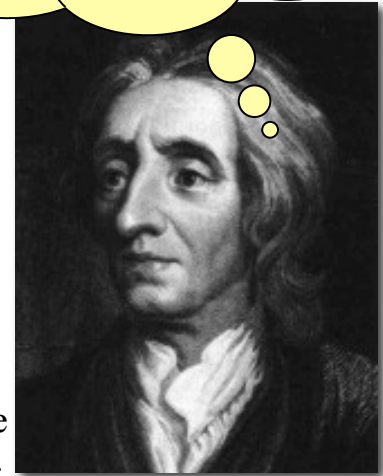
British Empiricism

The mind, at birth, is a blank slate.

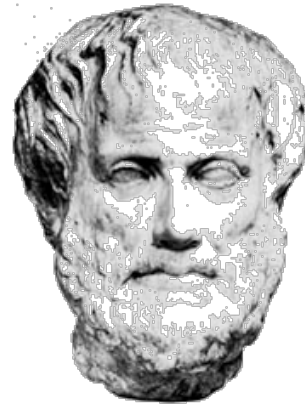


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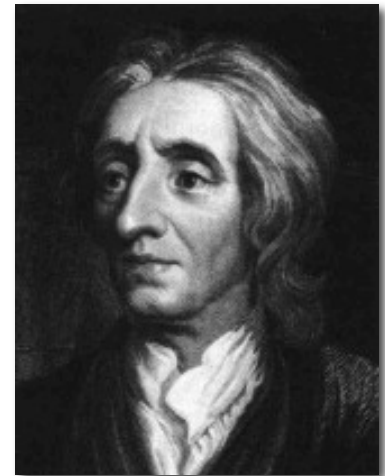
For / Against Innate Ideas

- (1) Necessary “general truths” (e.g., mathematical truths) cannot stem from experience.
- (2) It is incoherent how ideas from the physical world enter the soul (“matter cannot think”).
- (3) We have good reasons for believing in “subconscious ideas.”



Gottfried Leibniz

- (1) No idea enjoys universal consent.
- (2) An idea of which we are unaware is nonsensical.
- (3) Empiricist accounts can be given of all our ideas.



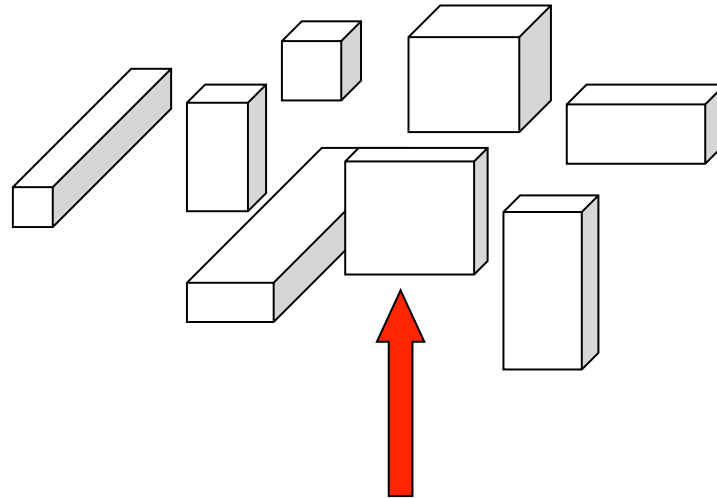
John Locke

Atomism

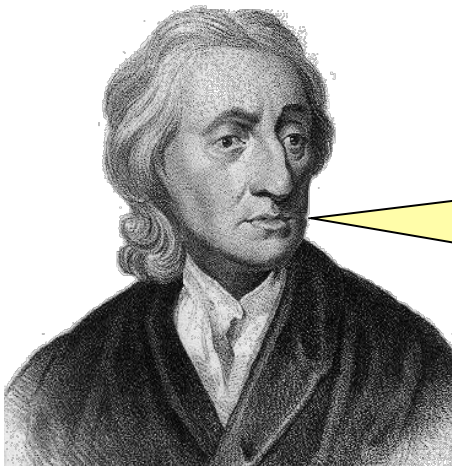
Atomism

Greek
a-: not
temnein: to cut

Distinguishable
only by their size
and shape!



Too small to see!
(not drawn to scale!)



The world consists of atoms.
They are very small.
And uncuttable.

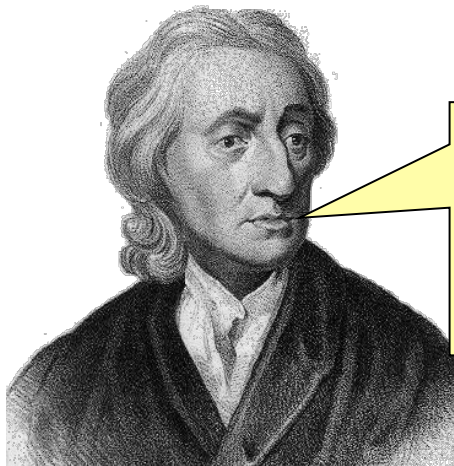
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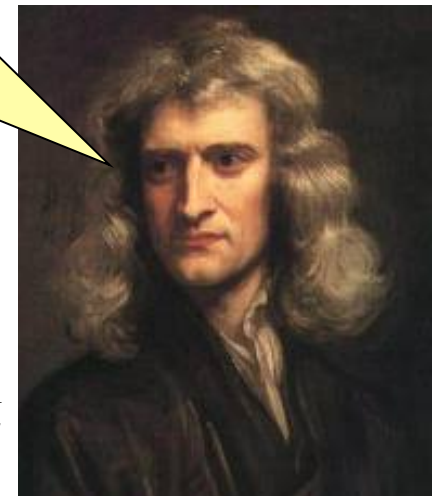
Atoms are solid, massy, hard,
impenetrable movable Particles
... so very hard, as never to
wear or break in pieces.

Too s... e!
(not drawn to

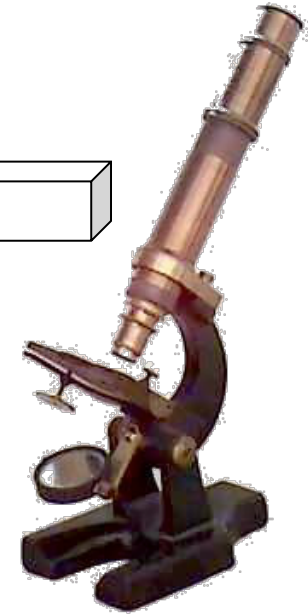
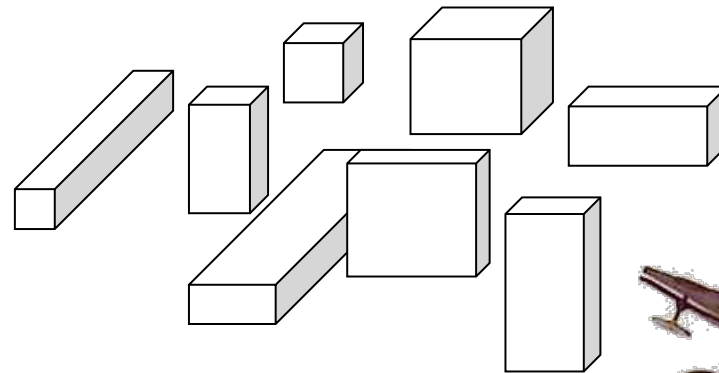
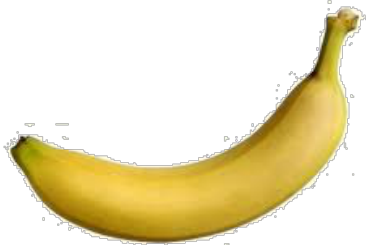


As my friend Newton
wrote in his *Optics*...

Isaac Newton
1642-1727

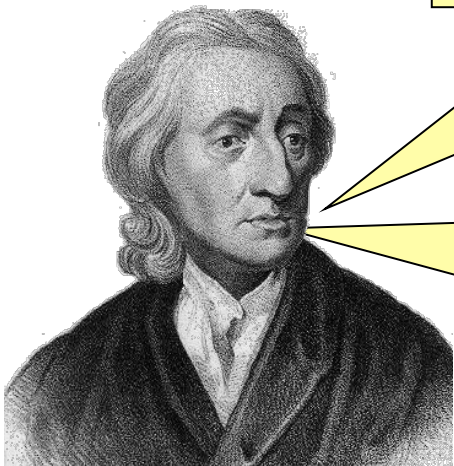


Atomism and Perception



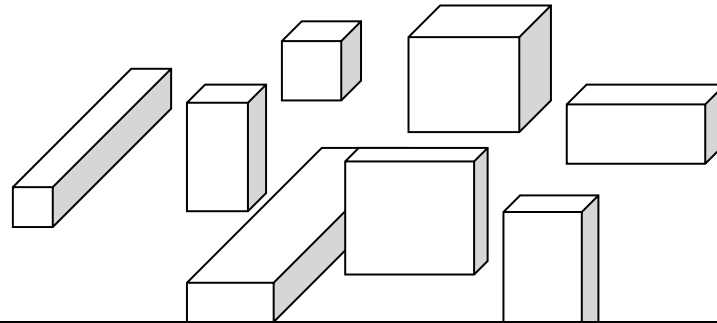
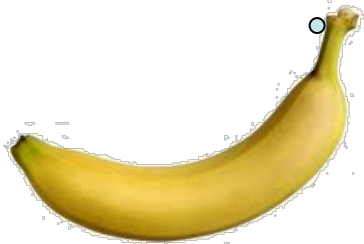
You could see atoms, if you had a strong enough microscope, ...

... and what you would see would be color-less solids of various sizes and shapes, moving or at rest.



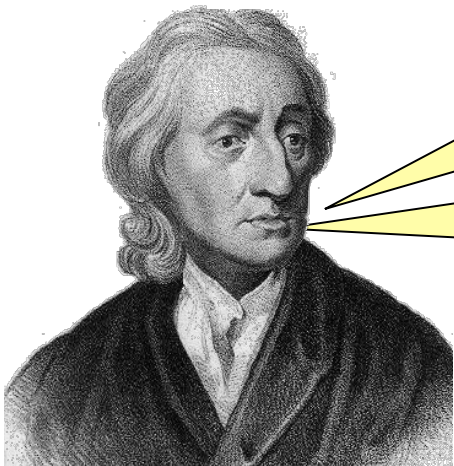
Atomism and Perception

So what causes my
great banana flavor, and
my lovely yellow
appearance?



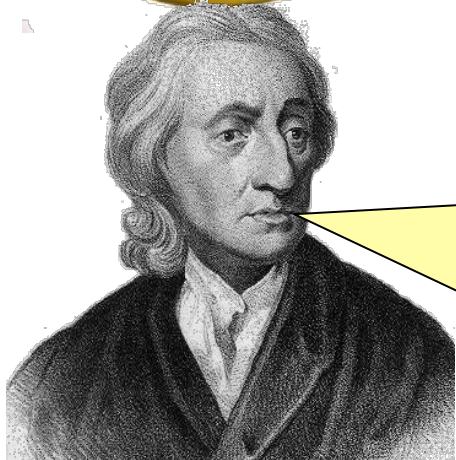
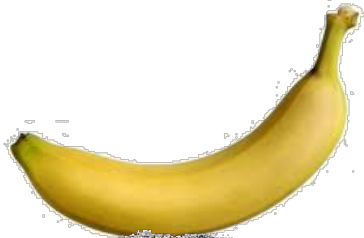
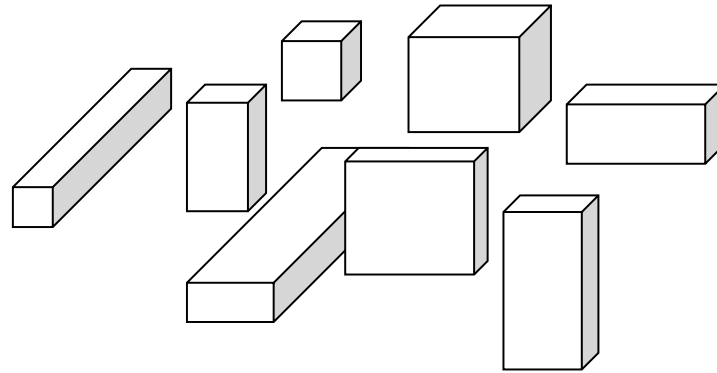
Everything in the physical universe is made up
of various combinations of these tiny atoms.
Even this banana floating above my head.

But unlike that banana, the atoms making it
up have neither color, taste, nor scent.



Atomism and Perception

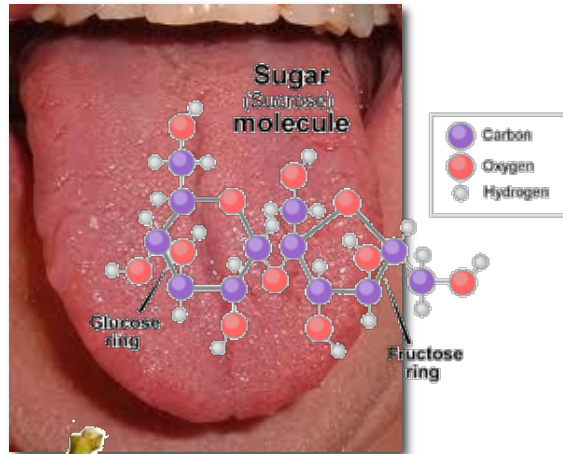
My color, taste, and
smell exist only in your
mind?



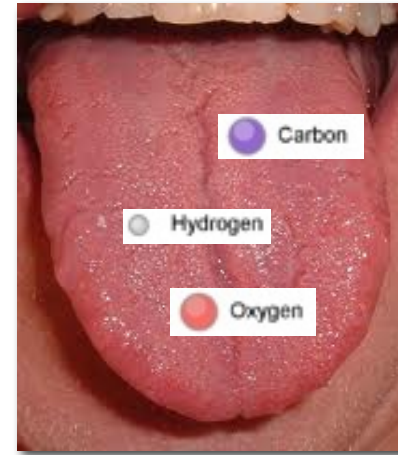
If you disassembled that pesky banana into its
separate atoms, you would no longer see
yellow, nor experience that familiar banana
scent and flavor.

(Nor would the pile of atoms look much like a banana.)

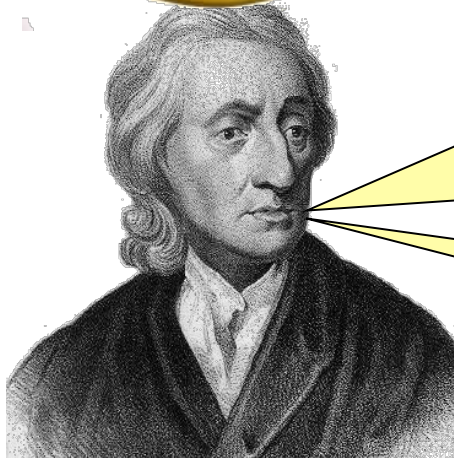
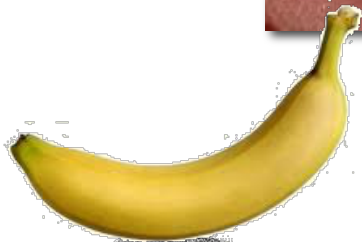
Atomism and Perception



sweet



not-sweet



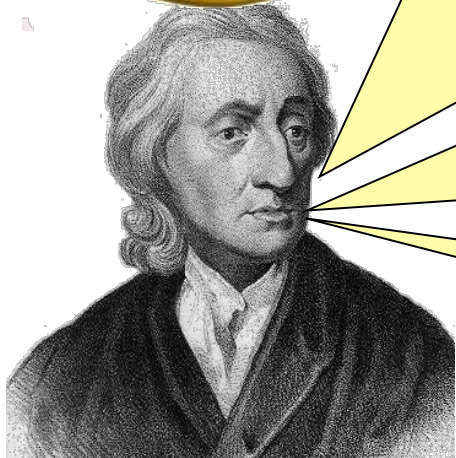
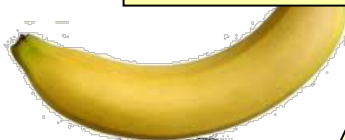
That shouldn't surprise you 21st century folks. Decompose a sugar molecule into its atoms of carbon, hydrogen, and oxygen, and the sweetness disappears altogether.

We had the same idea in the 17th century; we just didn't know as much chemistry.

Atomism and Perception



But my point is more serious than that. I am arguing that the sugar molecules themselves — even if there are enough to fill a teaspoon — lack sweetness. Sugar has the power to cause within a mind an idea of sweetness (assuming that the tongue is not scalded, and so on), but it is not itself sweet.



Shouldn't surprise you 21st century folks. Decompose a sugar molecule into its atoms of carbon, hydrogen, and oxygen, and the sweetness disappears altogether.

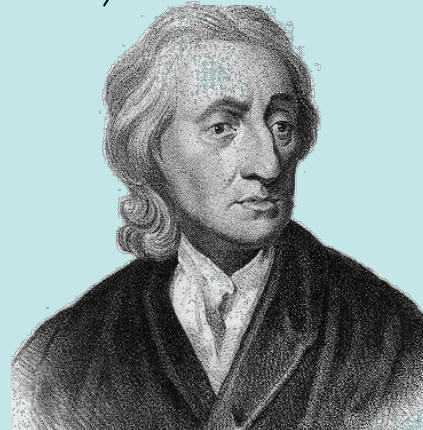
We had the same idea in the 17th century; we just didn't know as much chemistry.

Discuss with your Neighbor

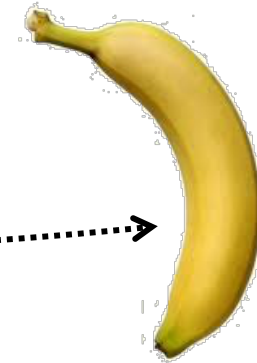
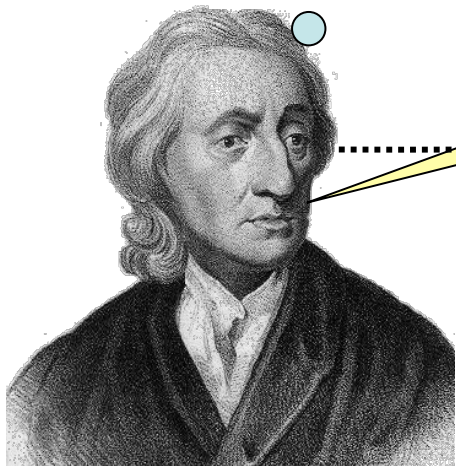
Is the folder that appears yellow to us actually yellow? Why or why not?

Ideas and their Causes

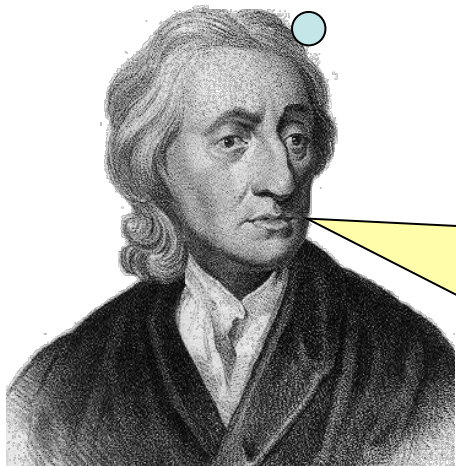
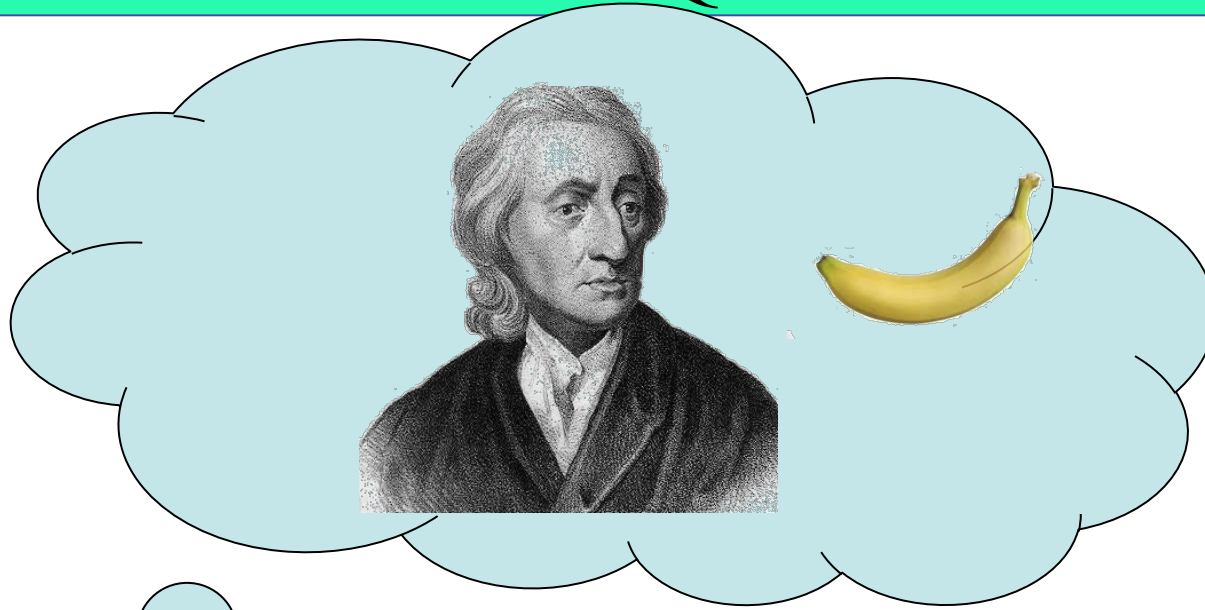
Ideas and Qualities



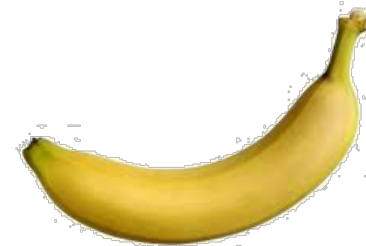
An **idea** is “the object of thinking.” (II.2.1)
It is “the immediate object of perception.” (II.8.8)



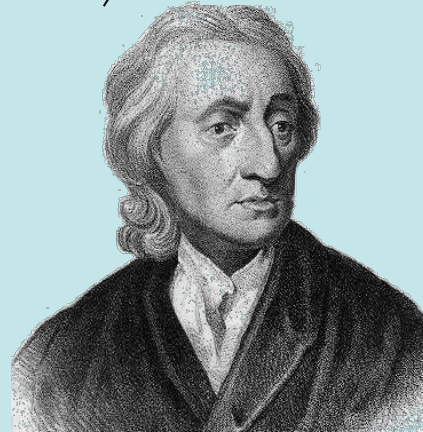
Ideas and Qualities



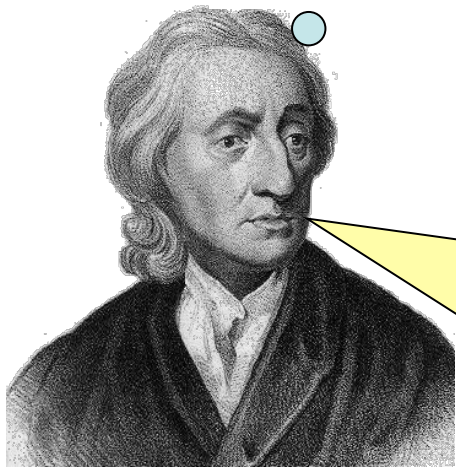
And the **cause** of the idea is
some *quality* in the bodies
making up the physical
world (II.8.7)



Ideas and Qualities

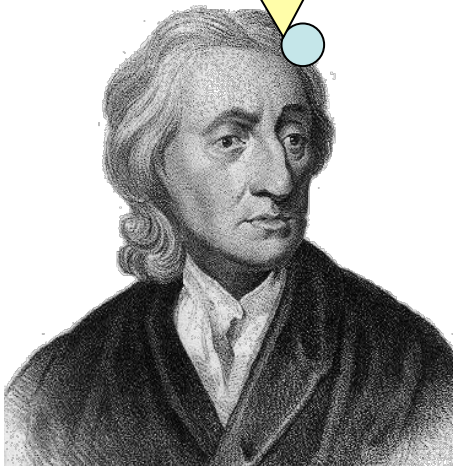


The **idea** might not resemble its **cause**. The cause of my idea of yellow, for instance, is not itself yellow. (II.8.10)

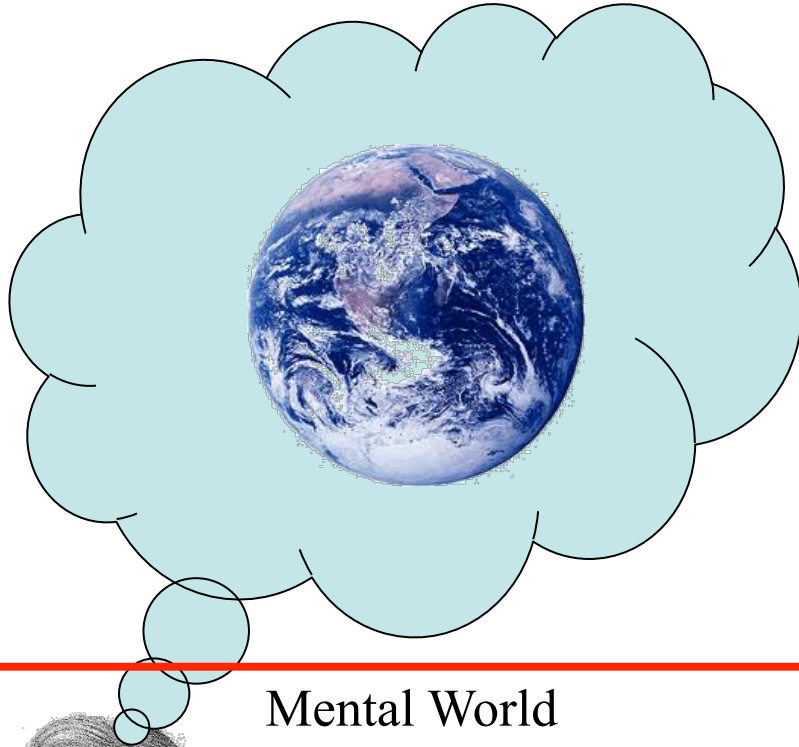


Ideas and Qualities

“A **violet**, by the impulse of such insensible particles of matter, of peculiar figures and bulks, and in different degrees and modifications of their motions, **causes the ideas** of the blue color, and sweet scent of that flower to be produced in our minds.” (II.8.13)



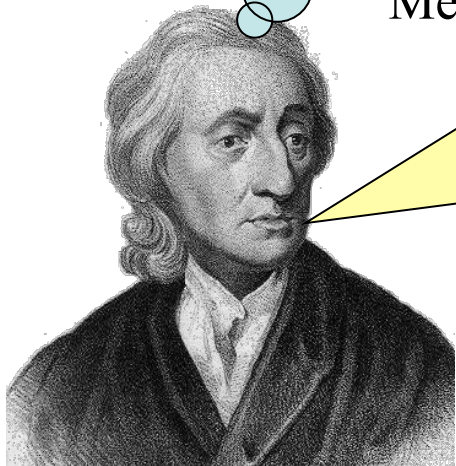
Ideas and Qualities



Mental World

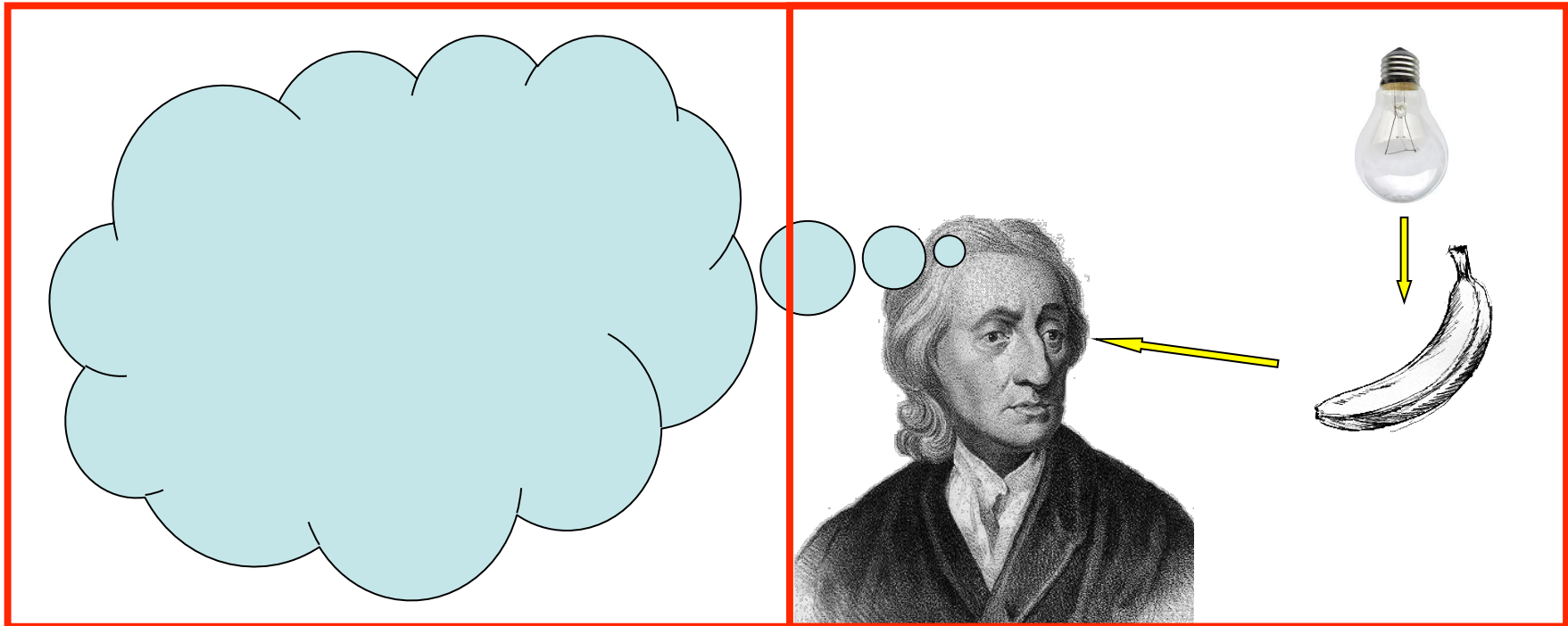


Material World



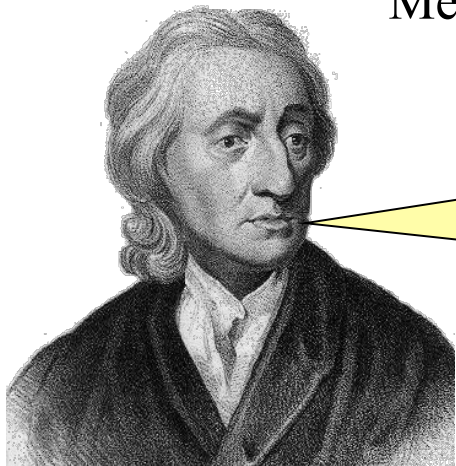
This is called the **representational theory of ideas**. Nearly everyone believes this theory, although it involves a doubling of the world into the **internal world of ideas** and the **external world of material bodies**.

Ideas and Qualities



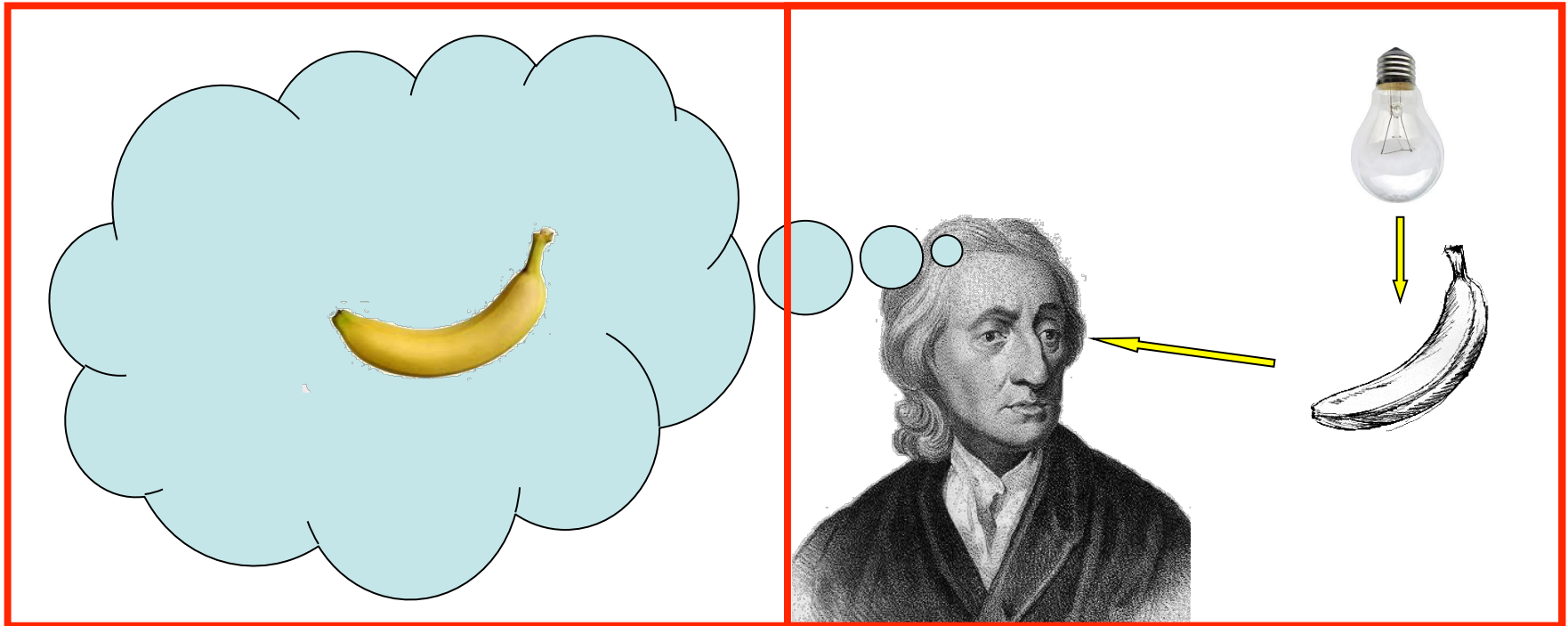
Mental World

Material World



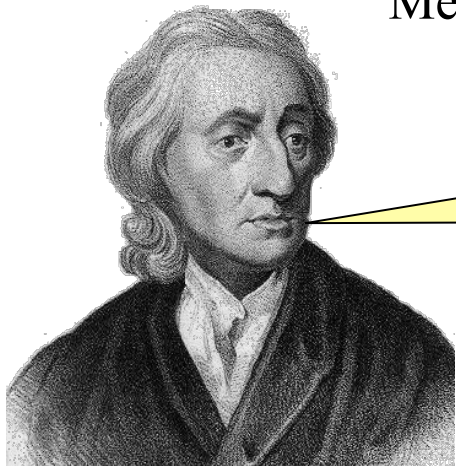
Light bounces off the banana, some of that light is reflected into my eye, absorbed by pigments in the cones of my retina, which send nervous impulses down the optic nerve to the optic lobe of my brain, and ...

Ideas and Qualities



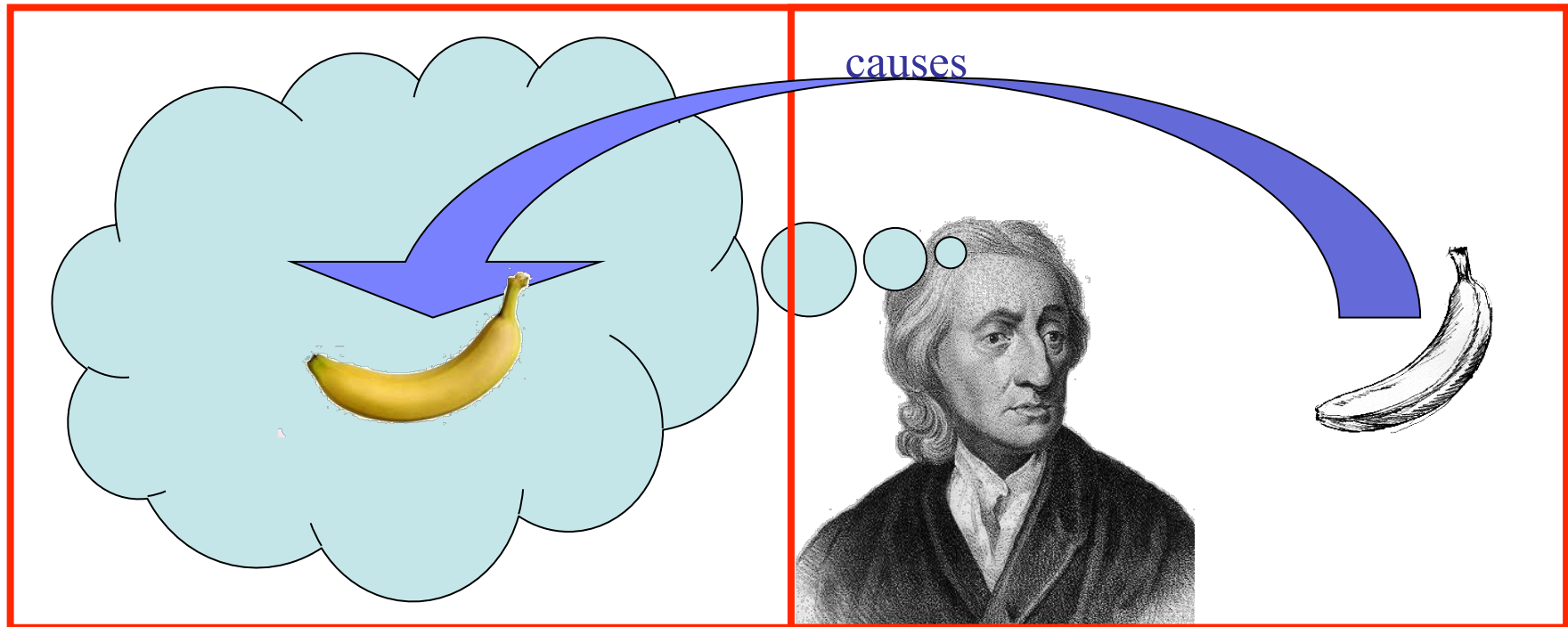
Mental World

Material World



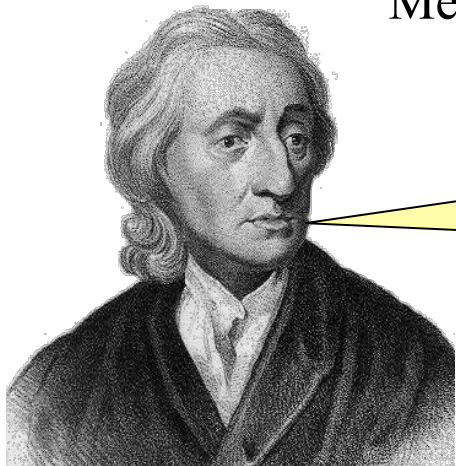
... Poof! A representation of the banana appears in my mind.

Ideas and Qualities



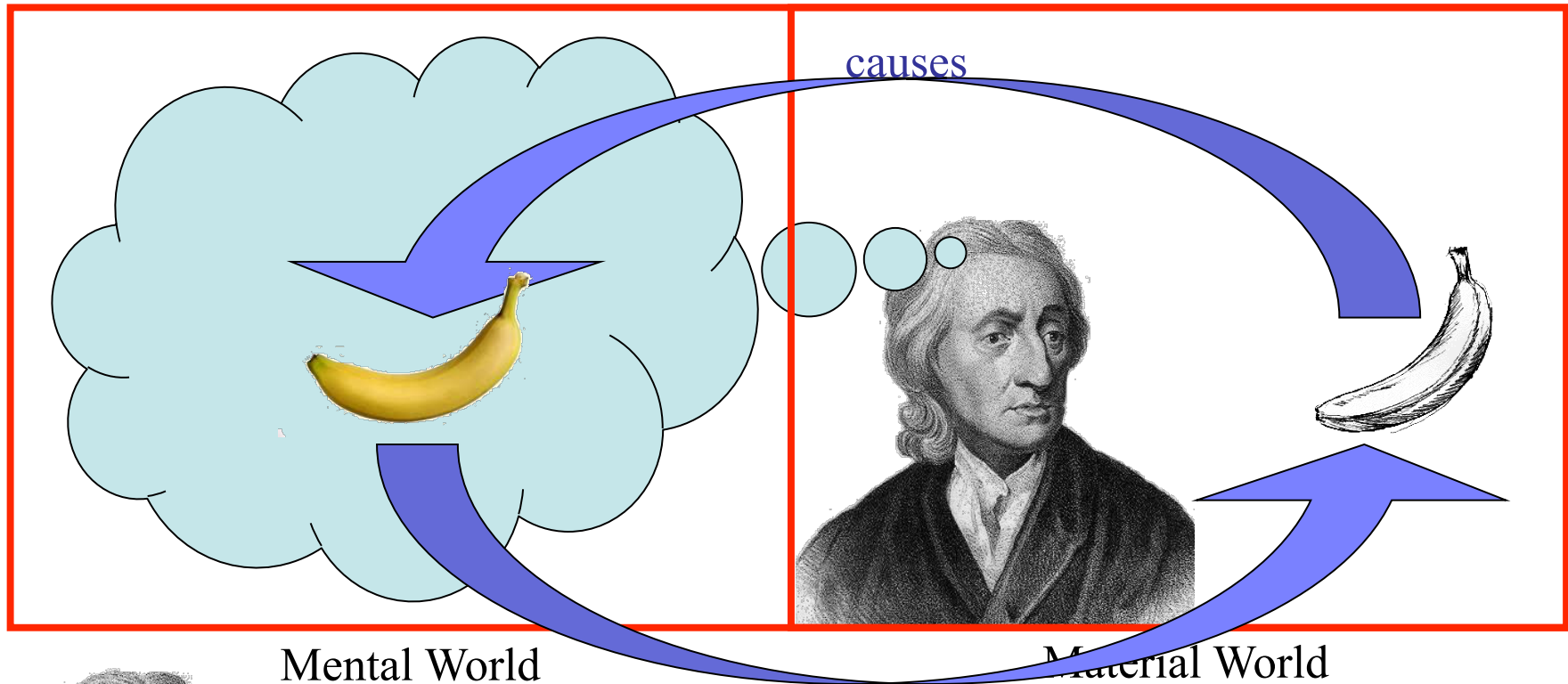
Mental World

Material World



The material (or “real”) banana is the **cause** of the perceived banana (the “ideal banana”) in my mind.

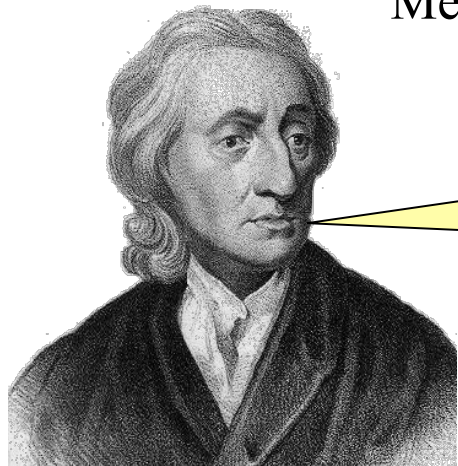
Ideas and Qualities



Mental World

Material World

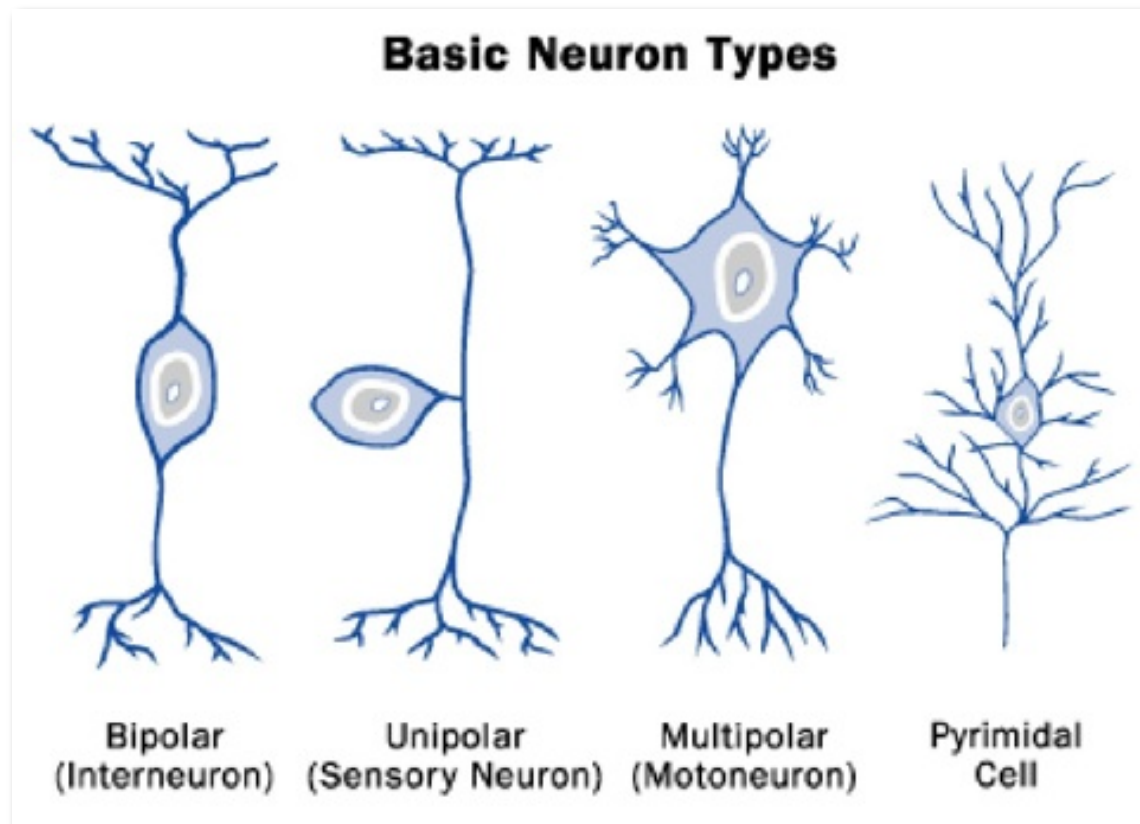
represents



And the ideal banana **represents** the real banana.
Thus the name “representational theory of ideas.”
It seems like it should work.

Physiology of Perception

Where Self and World Meet (1/3)



Where Self and World Meet (2/3)

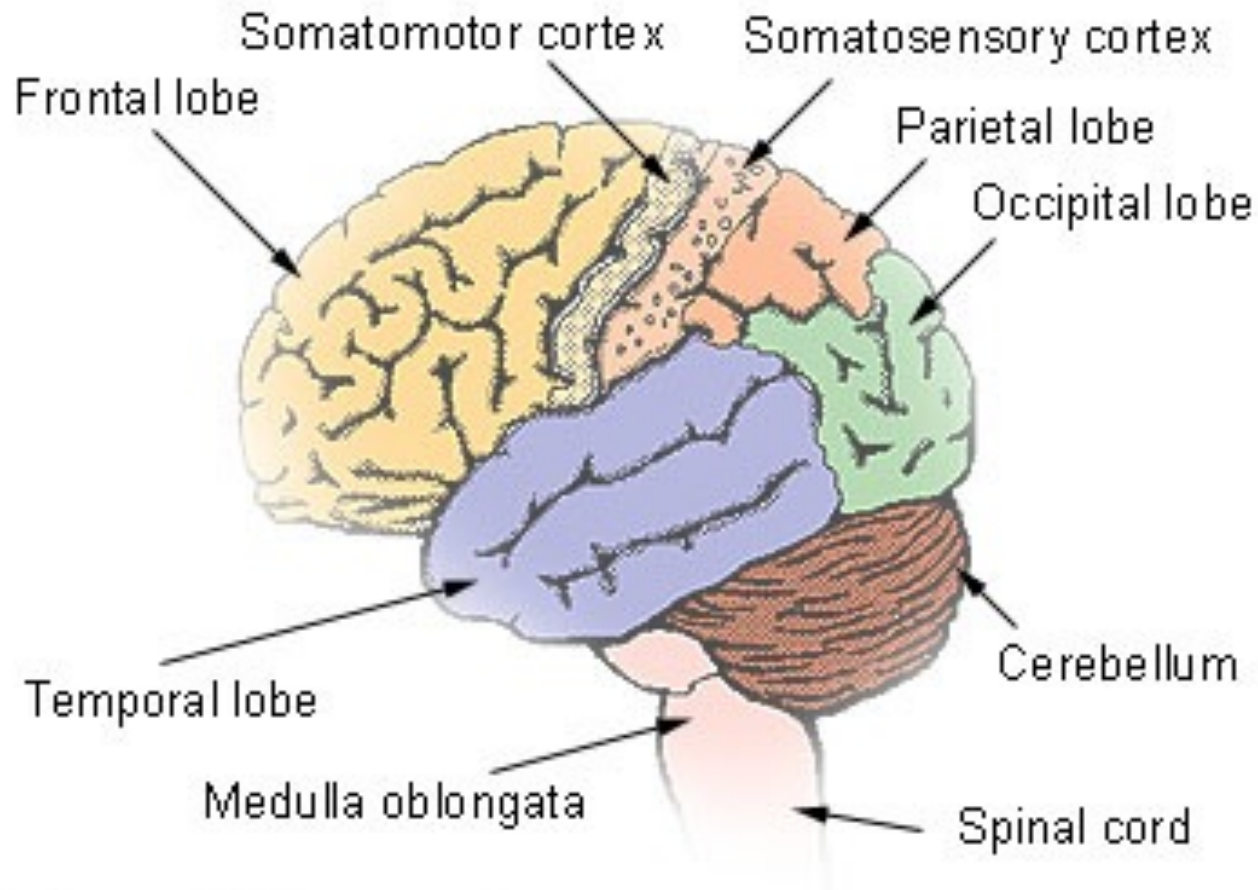
Three routes for sensory information:

Proprioception — body position and motion

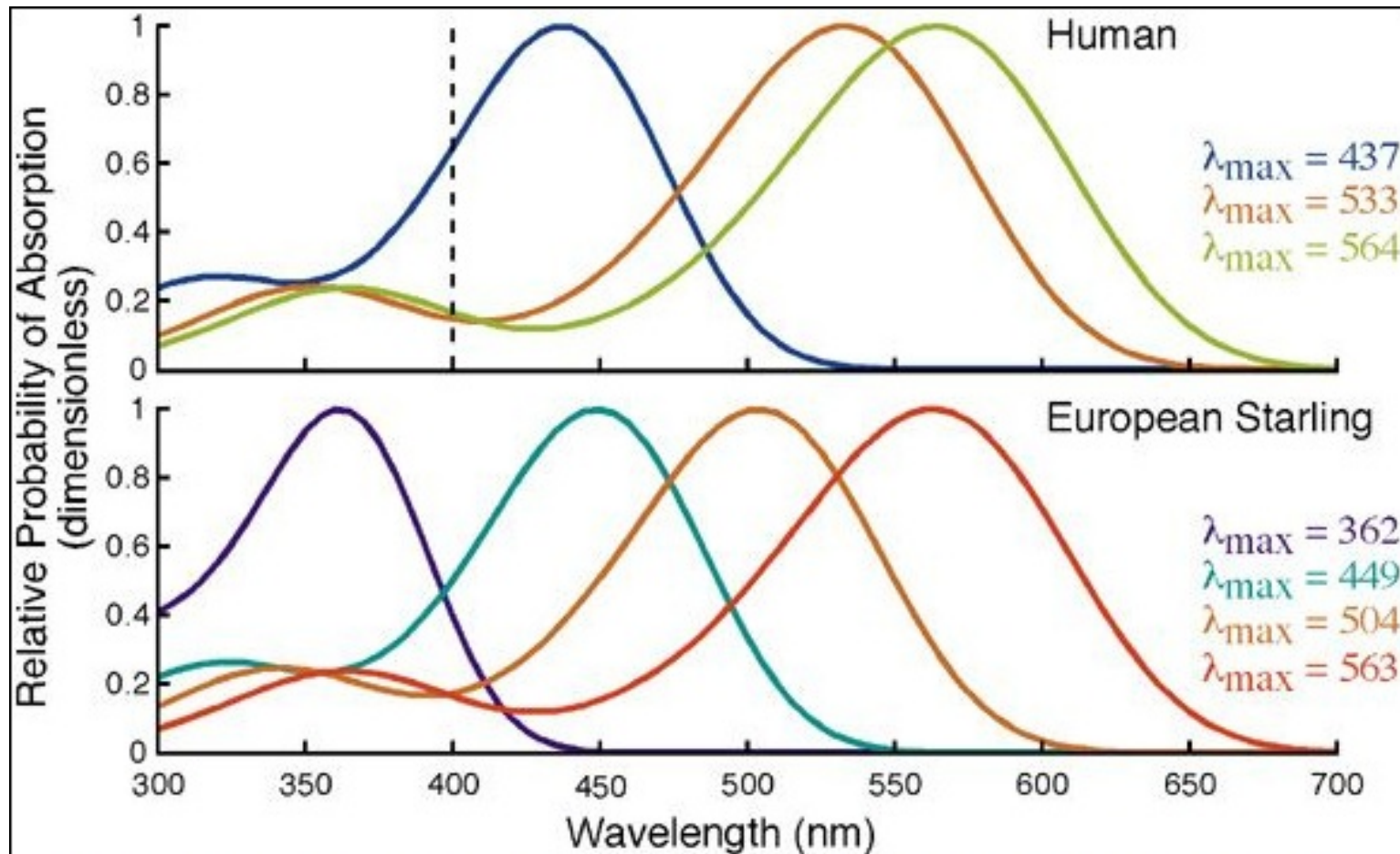
Interoception — internal organs

Exteroception — events outside the body

Where Self and World Meet (3/3)



Other Animals, Other Worlds



Four types of photo-pigment have been identified in the European starling; these have peak sensitivities over a much broader range than those of humans.

Other Animals, Other Worlds



The Dog's View

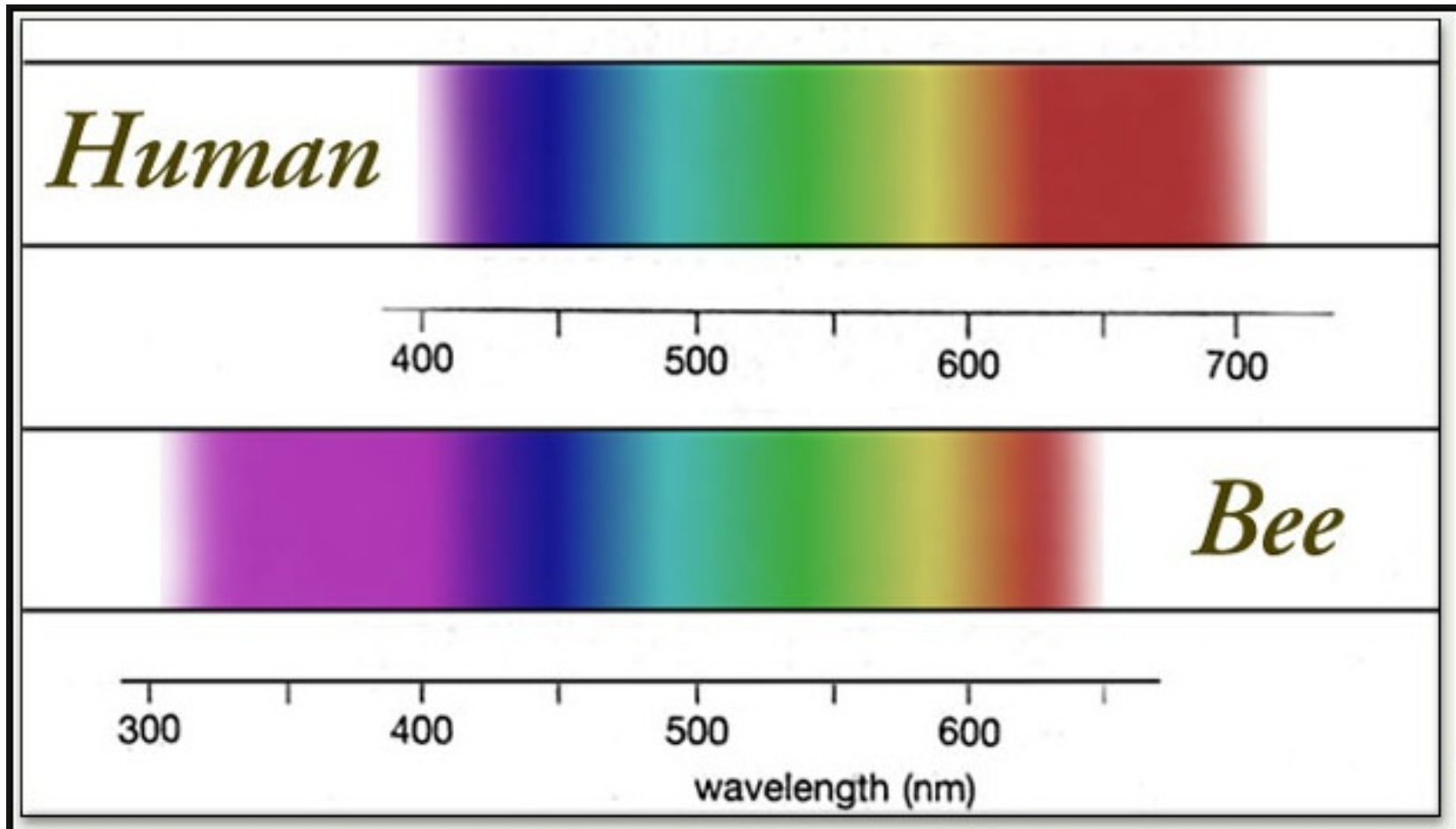


The Human's View





Other Animals, Other Worlds

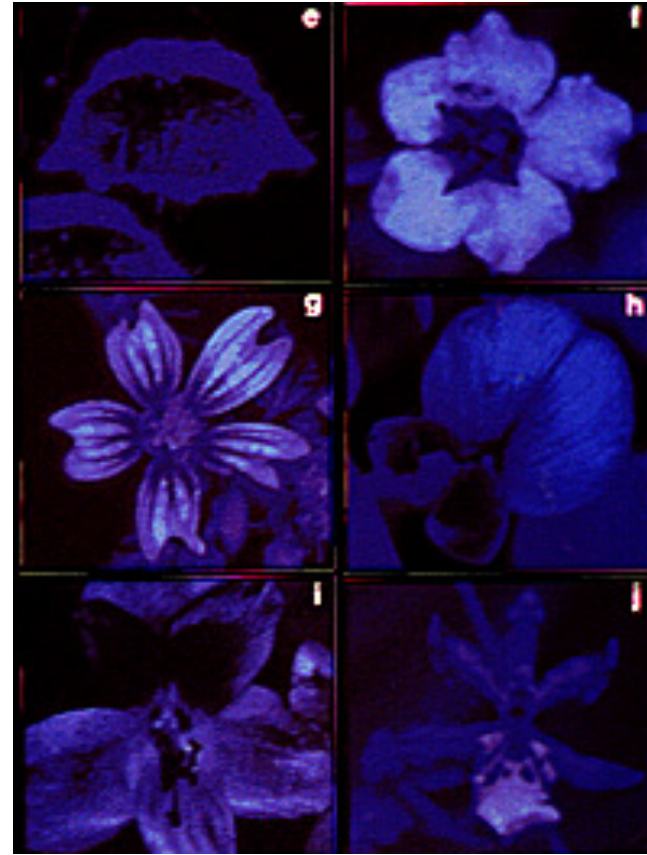


Comparison of wavelengths visible to humans and bees. Four of the visual cells in each ommatidium respond best to yellow-green light (530 nm); two respond maximally to blue light (430 nm); and the remaining two respond best to ultraviolet light (340 nm), allowing the honeybee to distinguish colors (except red).

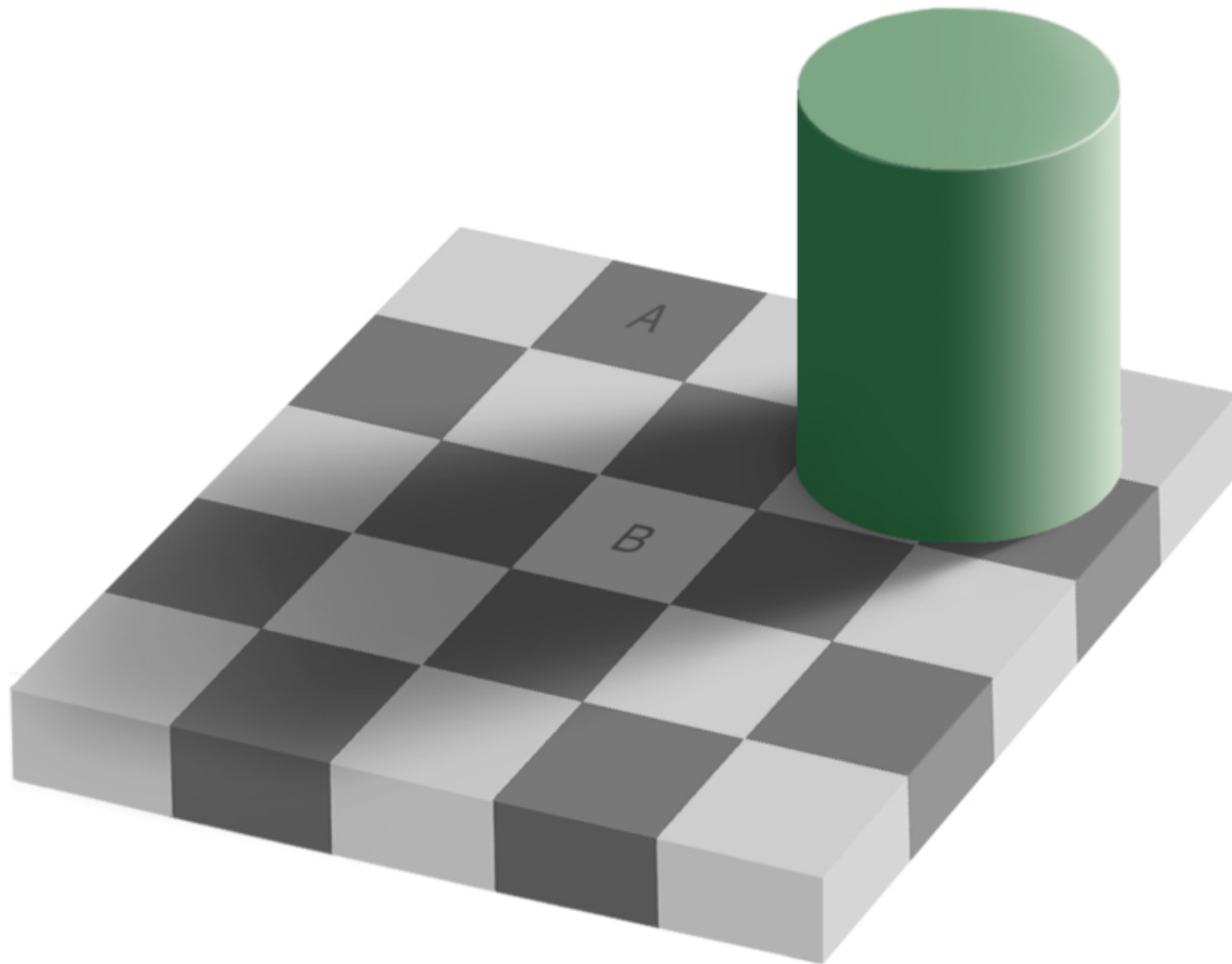
Some animals have evolved visual systems comparable in some species to those of birds. Some



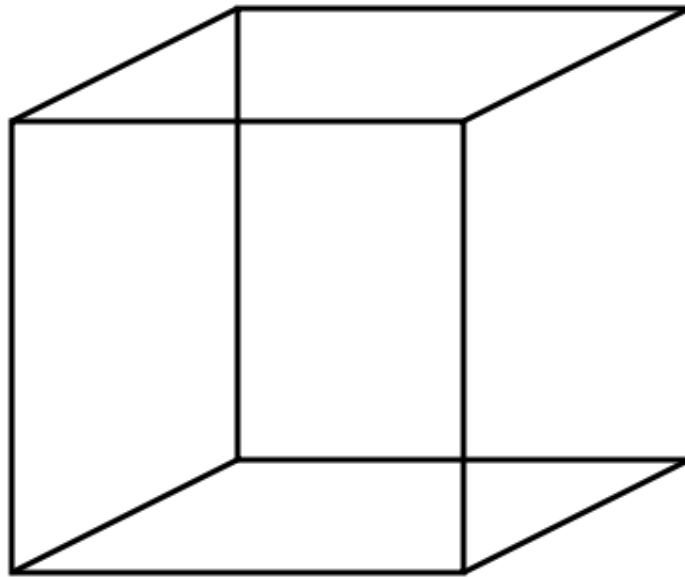
Other Animals, Other Worlds



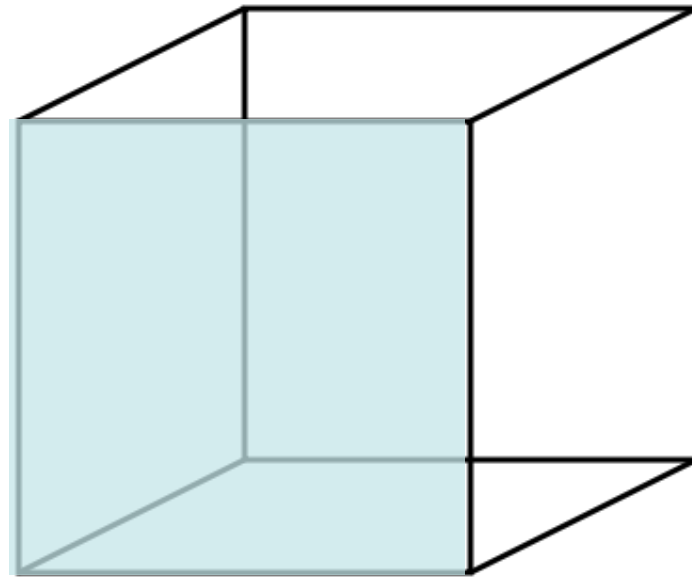
Sensation and Perception (1/4)



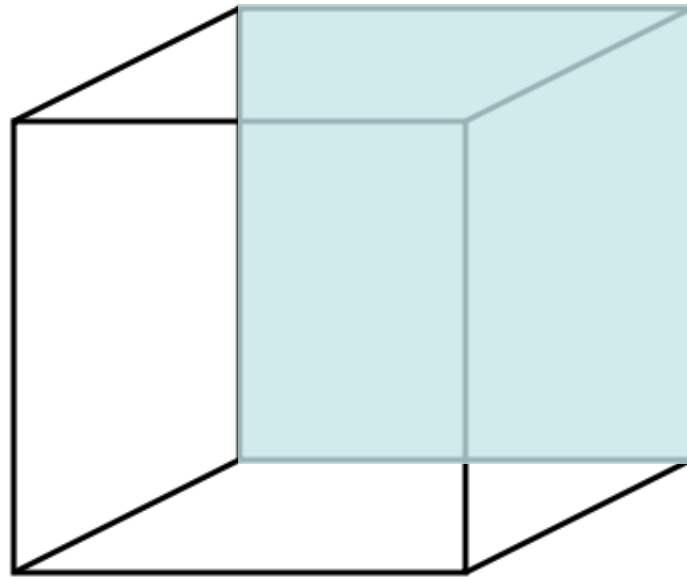
Sensation and Perception (2/4)



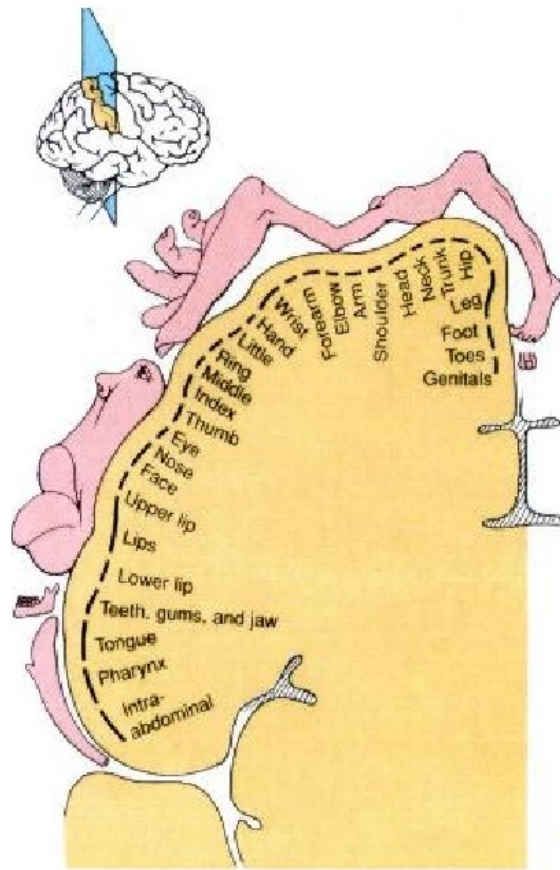
Sensation and Perception (3/4)



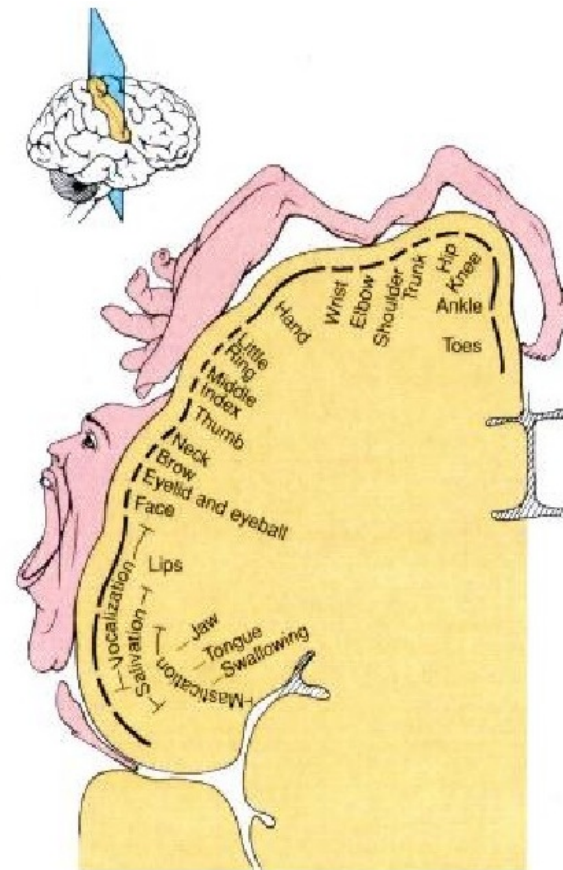
Sensation and Perception (4/4)



Penfield's Homunculi



(a) Somatosensory cortex in right cerebral hemisphere



(b) Motor cortex in right cerebral hemisphere