



Churchland(s) critique Dualism

(Paul Churchland here.)

Paul Churchland

- Churchland is a materialist (= physicalist)
- Thought takes place in the brain, which is a purely physical object – particles in motion, or something like that.
- Note that there are various materialist theories of the mind. (The main ones are **functionalism** and the **identity theory**, but Churchland is an **eliminativist**.)

“Dualism” defined broadly ...

“The dualistic approach to mind encompasses several quite different theories, but they are all agreed that the essential nature of conscious intelligence resides in something nonphysical, in something forever beyond the scope of sciences like physics, neurophysiology, and computer science.” (Churchland p. 305)

I.e. ‘dualism’ here includes Tooley’s property dualism, Russellian monism etc..

Today, physical \neq geometrical

“It is now neither useful nor accurate to characterize ordinary matter as that-which-has-extension-in-space. Electrons, for example, are bits of matter, but our best current theories describe the electron as a point-particle with no extension whatever (it even lacks a determinate spatial position).” (p. 3)

(The “mechanical philosophy has been replaced by “physicalism”, the claim that everything is “physical” – whatever that means.)

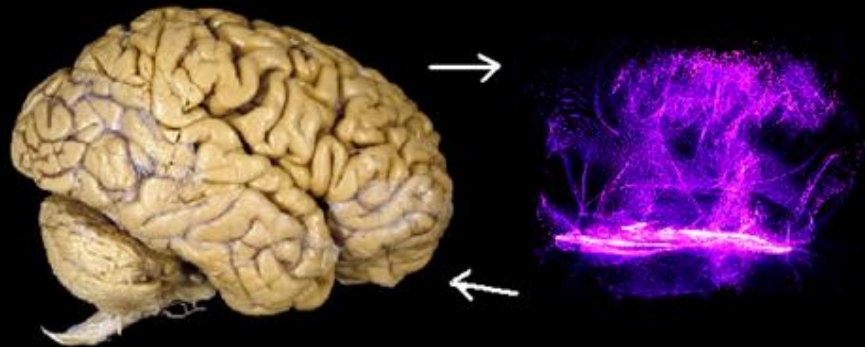
Varieties of “dualism”

- Substance dualism
 - Mind and body are different substances (e.g. Descartes, and the “ghost in the machine”)
- Property dualism/Russellian monism
 - The mind is the brain. But the brain has special mental properties that *don't reduce* to physical properties.

Varieties of Dualism



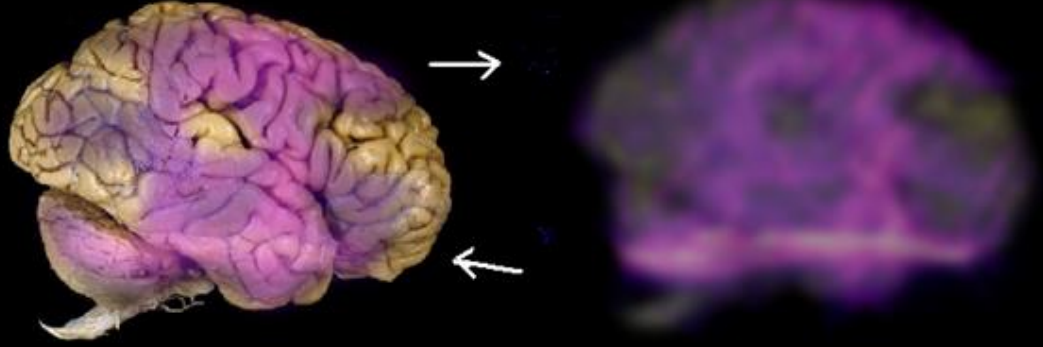
materialism



Cartesian substance dualism



property dualism
(Russellian monism)

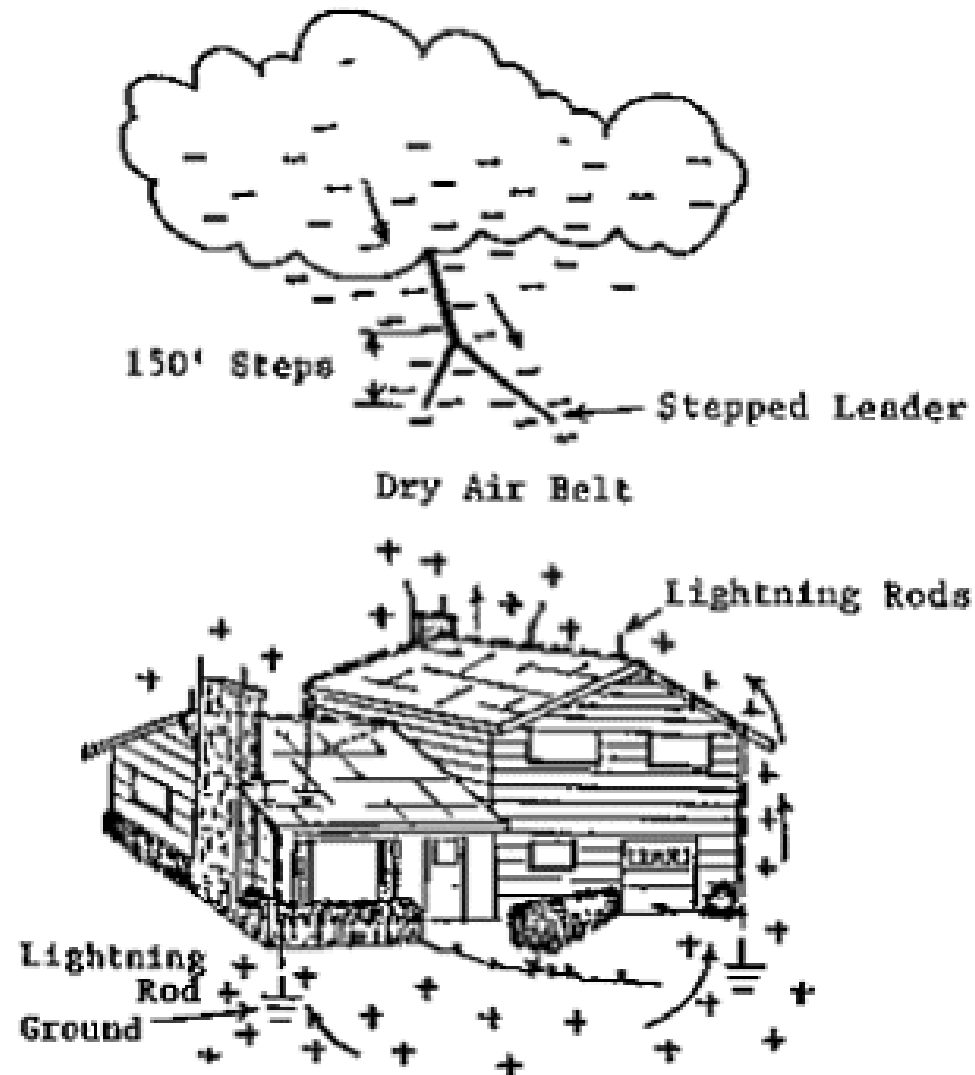


Conway's substance dualism

What does “reduce” mean?

- The notion of mental properties *reducing* to physical properties is crucial to this topic.
- It’s also very tricky to define!
- Examples of successful reduction to physics include
 - Water is H₂O
 - Lightning is a stream of electrons
 - Heat is molecular motion (kinetic energy)

A physical explanation of lightning



Varieties of Property Dualism

- The common ground of these views is that, while the mind is the brain, the brain itself isn't (entirely) physical. *No complete physical explanation of the brain is possible.*
- (In particular, *consciousness* is a feature of the brain that can't be understood physically.)

- Some of Churchland's arguments apply to just substance dualism, other arguments apply to property dualism (etc.) as well.

PC's Arguments against dualism

1. *Interaction problem* (How do such different things as mind and matter interact?)
2. *Ockham's Razor* (Dualism has no explanatory value, and makes things more complicated.)
3. *Neural dependence* of mental phenomena. (Why does messing with the brain affect thought, if thinking occurs elsewhere?)
4. *Evolutionary history* argument. (We can explain, in purely physical terms, the *origin* of the mind. Now how could we explain, in physical terms, the origin of something non-physical? That's absurd.)

1. Interaction problem (against Cartesian substance dualism)

If “mind-stuff” is so utterly different from “matter-stuff” in its nature—different to the point that it has no mass whatever, no shape whatever, and no position anywhere in space—then how is it possible for my mind to have any causal influence on my body at all?

As Descartes himself was aware (he was one of the first to formulate the law of the conservation of momentum), ordinary matter in space behaves according to rigid laws, and one cannot get bodily movement (= momentum) from nothing. How is this utterly insubstantial “thinking substance” to have any influence on ponderous matter? (p. 3)

“Popular dualism”

- “the ghost in the machine”
- Similar to Conway’s substance dualism
- Ghosts aren’t purely physical, but they *have some physical properties*, so that interaction with matter doesn’t seem impossible.
- However, even popular dualism faces a strong challenge from the other three arguments.

Ockham's Razor

- This is a methodological principle associated with medieval philosopher William of Ockham, although others said it much earlier.
- The principle says we should not propose more causes *than are needed* to account for the phenomena. Among explanations that adequately predict the data, simpler explanations are more likely to be true.
- Albert Einstein: “Everything should be made as simple as possible, but not simpler”.

2. Ockham's Razor argument (Against all kinds of dualism)

“The materialist postulates only one kind of substance (physical matter), and one class of properties (physical properties), whereas the dualist postulates two kinds of matter and/or two classes of properties. And to no explanatory advantage ...” (p. 13)

- N.B. physical and non-physical properties are *two* kinds? Compare to:
 - There are two nationalities: British and non-British (“foreign”)
 - There are two time periods: modern, and the olden days
 - (I.e. Don't assume non-physical = mental)

2. Ockham's Razor argument (Against all kinds of dualism)

“This is not yet a decisive point against dualism, since neither dualism nor materialism can yet explain all of the phenomena to be explained. But the objection does have some force, especially since **there is no doubt at all that physical matter exists**, while spiritual matter remains a tenuous hypothesis.”

(p. 13)

“there is no doubt at all that physical matter exists”

- Is this true? What does it mean?
 - That substances with *some* physical properties exist?
 - Or that substances with *only* physical properties exist?
- (N.B. many philosophers, such as Lady Anne Conway, property dualists, Russellian monists, deny the latter.)
 - Churchland is slipping in a contentious premise.

Explanatory impotence of dualism

“Compare now what the neuroscientist can tell us about the brain, and what he can do with that knowledge, with what the dualist can tell us about spiritual substance ...

... Can the dualist tell us anything about the internal constitution of mind-stuff?...

...dualism is less a theory of mind than it is an empty space waiting for a genuine theory of mind to be put in it” (p. 15)

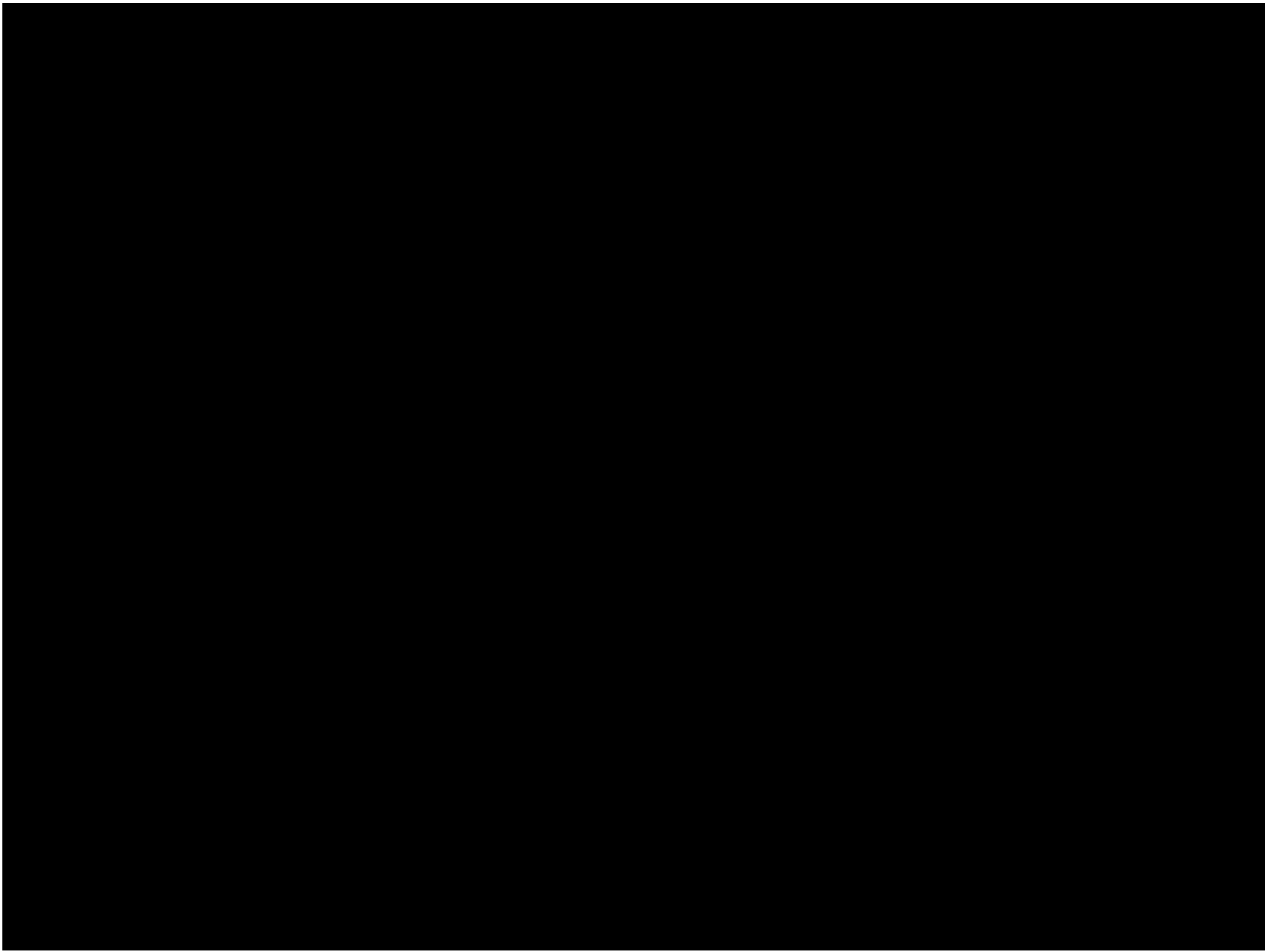
“In sum, the neuroscientist can tell us a great deal about the brain, about its constitution and the physical laws that govern it; he can already explain much of our behavior in terms of the physical, chemical, and electrical properties of the brain; and he has the theoretical resources available to explain a good deal more as our explorations continue. . . .”

- What kind of explanatory resources (by contrast) does dualism have?
- Ha! (There are no explanations of mental phenomena in terms of “ectoplasm” or any spiritual substance.) Why is this?
- Since non-physical properties are *inscrutable* (opaque to the intellect) then we can't use hypotheses about it to explain things.
 - So believing in them is anti-scientific, in a sense.

What can science explain about the mind?

C.f. neuroscientist Raymond Tallis, talking about understanding criminal behaviour in terms of neuroscience. (Battle of Ideas Festival, October 2007, London)

“This conclusion is (to put it charitably) premature. Observations of brain activity in the laboratory can explain very few things about us ... Actually we have no neural explanation for very basic things ... [meaning, consciousness, etc.] How much can science tell us about behaviour? Not much.”



Neuroscientist David Eagleman

“I have no doubt that we will continue to add to the pier of knowledge, appending several new slats in each generation. But we have no guarantee how far we’ll get. *There may be some domains beyond the tools of science – perhaps temporarily, perhaps always.*”

(New Scientist, September 27, 2010)

- Note that a Russellian monist is quite happy with *some* progress in neuroscience. E.g. they might say:

“I agree that understanding the brain in physical terms can take us quite a long way. But not *all* the way, and we don’t know exactly where the limit is.”

Limits of Physical explanation

- Russellian monism *sets a limit* to the extent of a scientific understanding of the mind.
 - Like King Knut, ordering the tide not to come in?

Poor old Knut ...



Is continued scientific progress *inevitable*?

“Chalmers claimed that consciousness would forever resist rational explanation ... On the contrary, [neuroscientist Christof] Koch argues that scientific and technological developments have allowed humanity to understand phenomena previously resistant to rational explanation and that this will *undoubtedly* also be the case for the problem of how a physical system can give rise to subjective experience.” [my emphasis -- RJ]

Ueli Rutishauser, *eSkeptic*, May 2, 2012.

- N.B. Beware the “argument to the future” (a fallacy).

-- arguing that evidence will *someday* be discovered which will (then) support your point.

“Dualists will look pretty silly when the inevitable progress of science yields a full physical understanding of consciousness.”

Just as bad: “As neuroscience continues to flounder in its futile attempt to understand the mind in material terms, people will come to accept dualism”

Part 2

Two more arguments against dualism

3. Neural dependence of mental phenomena (against substance dualism)

“If there really is a distinct entity in which reasoning, emotion, and consciousness take place, and if that entity is dependent on the brain for nothing more than sensory experiences as input and volitional executions as output, *then one would expect reason, emotion, and consciousness to be relatively invulnerable to direct control or pathology by manipulation or damage to the brain.* But in fact the exact opposite is true.” (Churchland, p. 16)

“Alcohol, narcotics, or senile degeneration of nerve tissue will impair, cripple, or even destroy one's capacity for rational thought. Psychiatry knows of hundreds of emotion-controlling chemicals (lithium, chlorpromazine, amphetamine, cocaine, and so on) that do their work when vectored into the brain. And the vulnerability of consciousness to the anesthetics, to caffeine, and to something as simple as a sharp blow to the head, shows its very close dependence on neural activity in the brain.”

- If you put the wrong kind of gas in your car, does it give you (the driver) a stomach ache?
 - No, since the driver is a *separate substance* from the car.
- So, for a substance dualist, why does eating the wrong chemicals affect your thought?

(Even Descartes sees the problem. *Meditation 6.*)

“Nature teaches me by the sensations of pain, hunger, thirst, etc. that I am not merely lodged in my body as a pilot in a ship, but that I am so closely united to it that I seem to compose with it one whole. For if that were not the case, when my body is hurt, I, the thinking thing, should not feel pain, but would perceive the wound just as the sailor perceives something damaged in his vessel. For all these sensations of hunger, thirst, pain, etc. are in truth just confused modes of thought produced by the **apparent** intermingling of mind and body”

- Descartes is forced to admit an “apparent intermingling” of mind and body, even though (on his view) they are in reality separate substances.
- How can a substance dualist explain this “apparent intermingling”?

Only by “extremely *ad hoc* explanations”, says Michael Tooley. Can we think of some?

What is an *ad hoc* explanation?

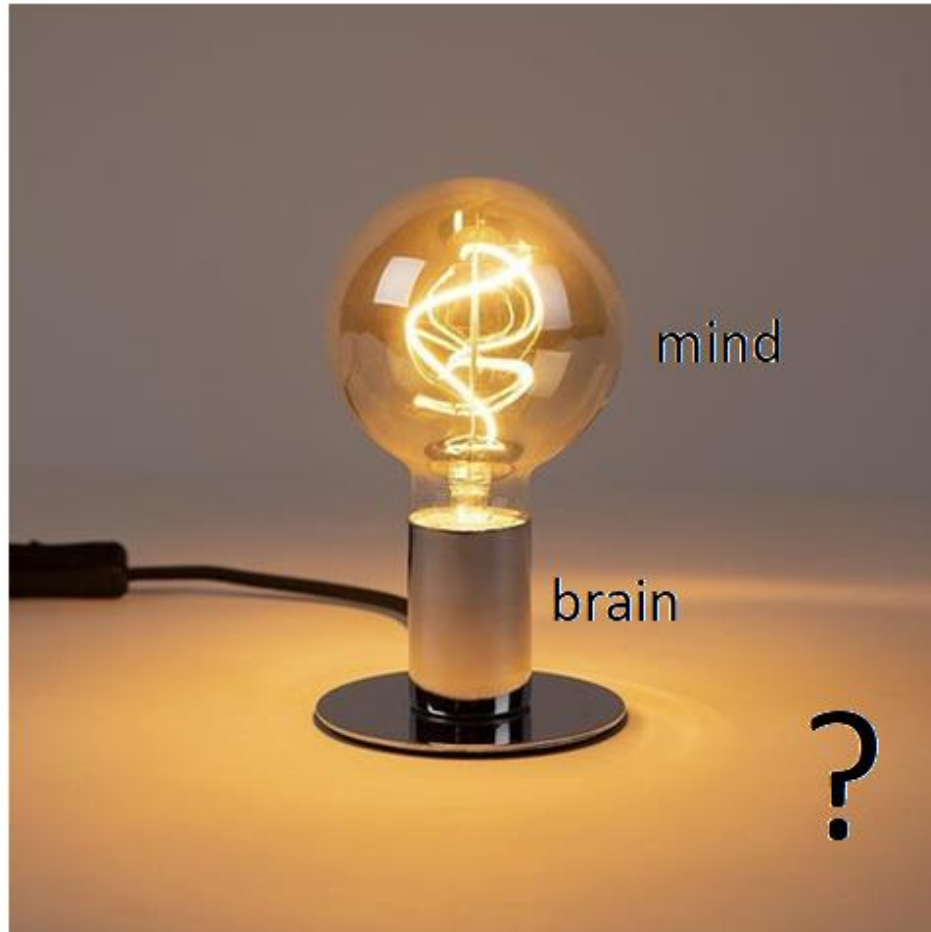
- An *ad hoc* explanation is an addition to a theory that has no theoretical motivation, but is proposed simply to save the theory from being falsified by the empirical evidence.

“You claim that Smith can read minds, but in careful scientific tests his answers were no better than random guesses”

-- “Well, I guess the presence of sceptical scientists disrupts his telepathic ability”

Extremely Ad hoc?

- Due to the interaction between mind and body, damage to the body can cause damage to the mind as well.
(E.g. suppose that, to stop people driving so fast, they hooked up the car to the driver in such a way that driving fast makes you feel tired!)
- Or maybe the mind “outsources” certain menial work to the brain. In that case, when the brain goes wrong it will affect thought as well. (E.g. using an abacus, or pencil and paper, to do arithmetic.)



4. Evolutionary history argument

We can explain, in purely physical terms, the *origin* of the mind. Now, how could we explain, in physical terms, the origin of something non-physical? That's absurd.

(E.g. how could a machine create something non-mechanical?)

“What is the origin of a complex and sophisticated species such as ours? ... Thanks to the fossil record, comparative anatomy, and the biochemistry of proteins and nucleic acids, there is no longer any significant doubt on this matter. Each existing species is a surviving type from a number of variations on an earlier type of organism; each earlier type is in turn a surviving type from a number of variations on a still earlier type of organism; and so on down the branches of the evolutionary tree ...” (p. 16)

“The mechanism of development that has structured this tree has two main elements:

- (1) the occasional blind variation in types of reproducing creatures, and
- (2) the selective survival of some of these types due to the relative reproductive advantage enjoyed by individuals of those types.

Over periods of geological time, such a process can produce an enormous variety of organisms, some of them very complex indeed.”

“... the important point about the standard evolutionary story is that the human species and all of its features are the wholly physical outcome of a purely physical process. ...

If this is the correct account of our origins, then there seems neither need, nor room, to fit any nonphysical substances or properties into our theoretical account of ourselves. We are creatures of matter. And we should learn to live with that fact.” (p. 17)

- The problem with this argument (in my view) is that while the *fact* of evolution is well understood, its *causes* are not.
- The fossil record and molecular biology enable us to construct a “family tree” for all living organisms, and to estimate dates for when new species appeared.

- But Churchland goes on to say that the mechanisms of random variation and natural selection *are sufficient to cause all of evolution.*

“Over periods of geological time, such a process can produce an enormous variety of organisms, some of them very complex indeed.”

- There is practically no empirical evidence for this, however, and no convincing theoretical argument either. (To some it seems absurd.)

E.g. philosopher Thomas Nagel

(Mind and Cosmos, p. 6, OUP, 2012.)

“It is *prima facie* highly implausible that life as we know it is the result of a sequence of physical accidents together with the mechanism of natural selection. We are expected to abandon this naïve response, not in favor of a fully worked out physical/chemical explanation but in favor of an alternative that is really a schema for explanation, supported by some examples. What is lacking, to my knowledge, is a credible argument that the story has a nonnegligible probability of being true....

“Natural selection has always been the most contested part of evolutionary theory. Many people who have no problem with evolution bridle at the thought that it’s all driven by a mindless and unguided natural process. Indeed, while most scientists accepted the notions of evolution and common ancestry soon after Darwin proposed them in 1859, natural selection wasn’t widely accepted by biologists until about 1930. ...

... Dawkins [observes] that natural selection is on wobblier legs than the other tenets of evolutionary theory, such as evolutionary change and the branching pattern of life.

"Nowadays it is no longer possible to dispute the fact of evolution itself ... but **it could (just) be doubted that natural selection is its major driving force.**"

Jerry A. Coyne, “The Improbability Pump”, *The Nation*, April 22, 2010

Part 3

Formulating property dualism

How can property dualism be formulated?

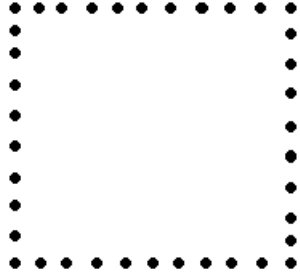
- One challenge of property dualism (and Russellian monism.) is to formulate it precisely in a way that makes sense.
- Churchland argues that there seems to be no way to do this.

Qu: Do *atoms* have mental properties?

- The brain, says the property dualist, has mental properties in addition to physical properties.
- But *the brain is made of atoms*. So do atoms have mental properties as well? (Just as some atoms are magnetic, for example.)
- The claim that individual atoms have mental properties is called *panpsychism*, and seems a little crazy.

Mental properties are “emergent”?

- So let’s suppose that atoms *don’t* have any mental properties.
- In that case, Churchland says, the mental properties of the brain are “emergent”. (p. 7)
- An emergent property of a whole system is (basically) one that is not also a property of the *parts* of the system. Emergent properties depend on the parts being structured in some suitable way.



(Weak) Emergence

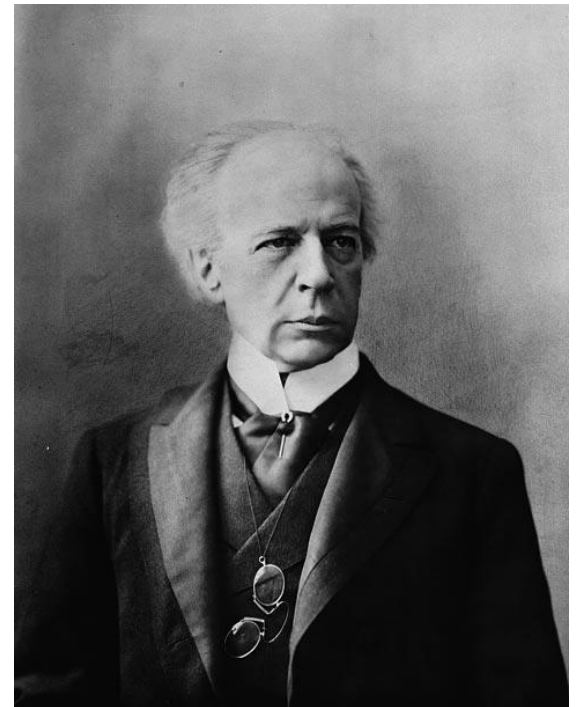
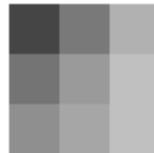
Consider a collection of dots (small circles). The shape of the *whole collection* might not be a circle. It could, for example, be a square (as shown).

A whole can have properties that the individual parts do not.

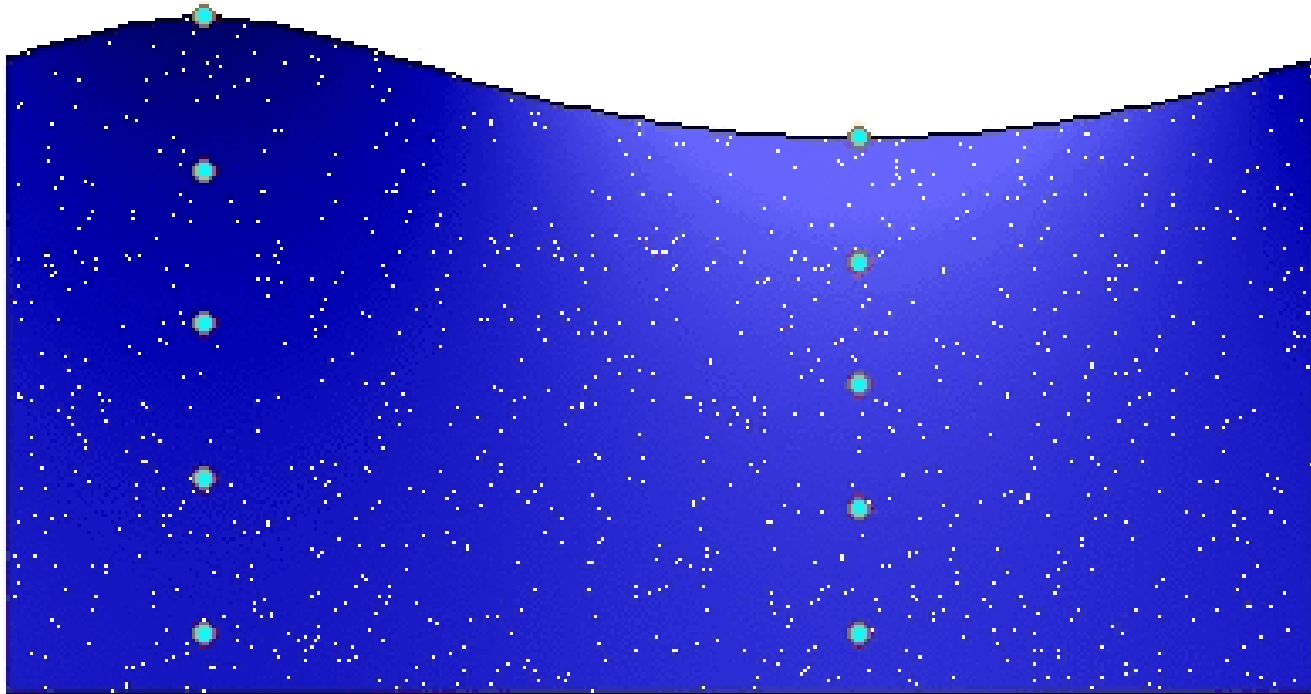
(Yet this example shows only “weak” emergence, since the properties of the whole can be *inferred* from the properties of the parts.)

Examples of emergent properties

- The ocean has waves on it, moving SE at 20 km/h.
- The engine has 160 horsepower.
- The computer is running *Minecraft*.
- This is a picture of Wilfred Laurier.



wave phase : $t / T = 0.000$



- Do any water drops share the wave's motion?

Mental properties are “emergent”?

“mental properties are here said to be *emergent* properties, properties that do not appear at all until ordinary physical matter has managed to organize itself, through the evolutionary process, into a system of sufficient complexity. Examples of properties that are emergent in this sense would be the property of being solid, the property of being colored, and the property of being alive. All of these require matter to be suitably organized before they can be displayed. With this much, any materialist will agree.” (p. 7)

- Note that Churchland conflates (mixes) two ideas here:
 1. Mental properties are emergent
 2. Mental properties are the result of matter organising itself, through the evolutionary process.
- (Recall that property dualists are likely to *reject* the claim that biological evolution is simply matter organising itself.)

Emergent and *irreducible*

“But any property dualist makes the further claim that mental states and properties are **irreducible**, in the sense that they are not just organizational features of physical matter, as are the examples cited. They are said to be novel properties beyond prediction or explanation by physical science.”

- Churchland, p. 7

- This is right. The property dualist (and Russellian monist) will surely say that that mental properties are both *emergent*, and *not reducible* to physical properties.
 - David Chalmers calls such properties *Strongly Emergent*.
 - Emergent properties that *do* reduce to physical properties are “weakly emergent”.

David Chalmers



Chalmers on 'strong emergence'

Why is Emergence Significant?

David Chalmers
Professor of Philosophy;
Director, Centre for Consciousness,
Australian National University.
Author, *The Conscious Mind*

What is Laplace's demon?

An intellect which at a certain moment would know all forces that set nature in motion, and all positions of all items of which nature is composed, if this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom; for such an intellect nothing would be uncertain and the future just like the past would be present before its eyes.



Pierre Simon Laplace, A Philosophical Essay on Probabilities

What does 'reducible' mean?

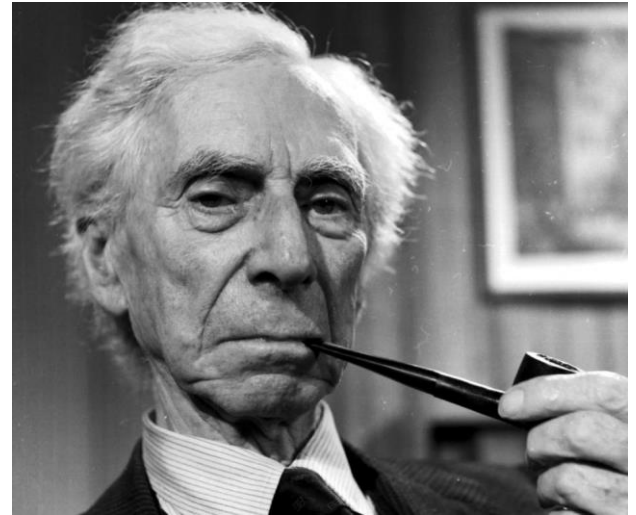
- If mental states reduce to physical descriptions, then Laplace's demon could predict (infer) the mental state of a person at some time from a sufficiently detailed physical description of their brain at that time. (Weak emergence)
- If mental states don't reduce to physical properties, then **even Laplace's demon couldn't figure out what a person is thinking**, from *any* physical description of their brain state. (Strong emergence)

Are atoms *purely* physical?

- A property dualist had better say ‘no’, I think.
 - A Russellian monist certainly says that.
- A non-physicalist should deny that even atoms have *complete* descriptions in physical terms.
- (There is a long-running debate within physics itself, as well as philosophy, about whether the best models are complete.)

Are mathematical models of reality ever complete?

“Physics is mathematical, not because we know so much about the ‘physical world’ but because we know so little: *it is only its mathematical properties that we can discover*. For the rest, our knowledge is negative ... The physical world is only known as regards certain abstract features of its space-time structure ...”

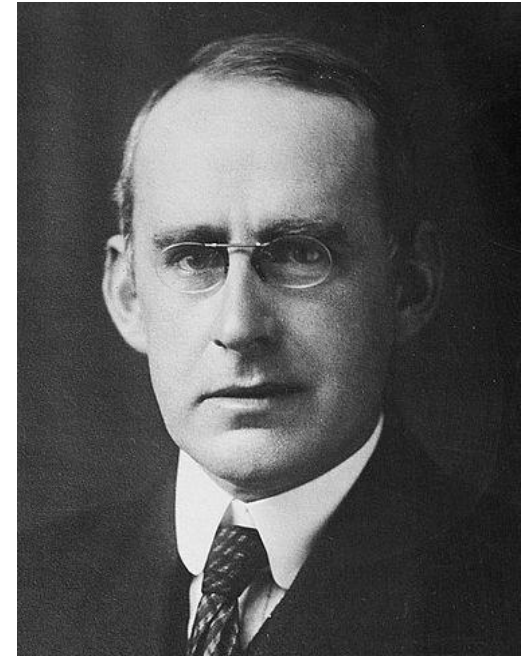


Bertrand Russell, *An Outline of Philosophy*, 1927, pp. 125-6.

“Let us suppose that an ichthyologist is exploring the life of the ocean. He casts a net into the water and brings up a fishy assortment. ... He arrives at two generalisations: (1) No sea-creature is less than two inches long. (2) All sea-creatures have gills. ...

... In applying this analogy, the catch stands for the body of knowledge which constitutes physical science, and the net for the sensory *and intellectual* equipment which we use in obtaining it.”

Arthur Eddington, *The Philosophy of Physical Science* (1939)

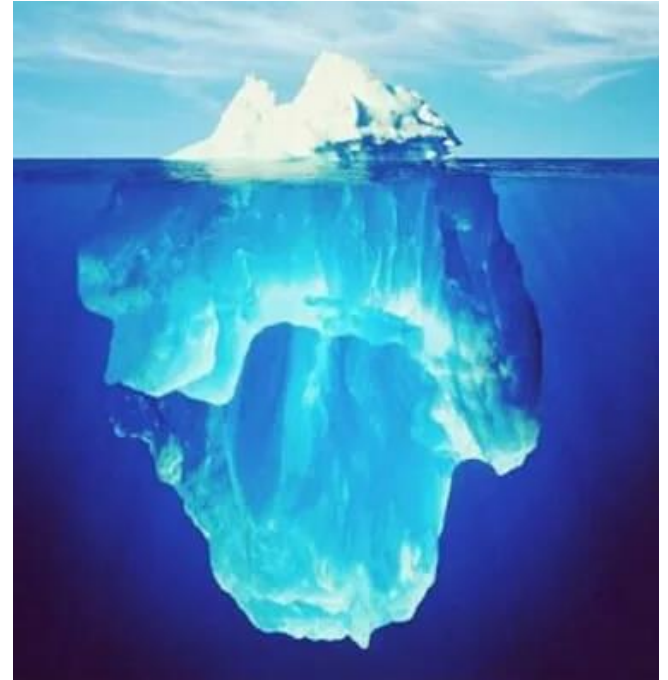


“Not only is the universe stranger than we imagine, it is stranger than we **can** imagine.”

- Russellian monists thus regard the mathematical descriptions of the world provided by physics to represent just *some aspects* of reality:
 - those aspects that are discoverable by such methods, just as using a drag net will only catch certain kinds of fish.
- Yet strong emergence (emergence with irreducibility) remains highly mysterious:
 - By its very nature, it is impossible to understand rationally how irreducible properties arise. (Like trying to predict unpredictable events.)
 - Why are some things conscious? We have no idea, according to Russellian monist, **and we never will.**

Russellian monism

- Russellian monism says that the best physical description of a system is like the tip of an iceberg: *it's just the part that we can describe abstractly.*
 - There's a lot more going on in the brain than what we can see on brain scans, describe in scientific terms, etc.



Thought and consciousness depend on the inscrutable properties of the brain.

[Russellian monism was] first proposed in 1927, by the great philosopher Bertrand Russell and independently by the great scientist Arthur Eddington. Later philosophers such as Dennett started from the idea that the physical sciences give us a complete picture of reality, which consciousness must somehow be squeezed into. But Russell and Eddington start from the observation that while physics may be great at telling us what matter *does*, it doesn't really tell us what it *is*. ... What do we know of what matter intrinsically is beyond how it affects our instruments? Only that some of it – i.e. the stuff in brains – involves consciousness.

Philip Goff, “A way forward to solve the hard problem of consciousness”,
The Guardian, January 28, 2015.

The “fallacy of misplaced concreteness”

- This is the “error of mistaking the abstract for the concrete”

“The enormous success of the scientific abstractions has foisted onto philosophy the task of accepting them as the most concrete rendering of fact ... Thereby, modern philosophy has been ruined.”

Alfred North Whitehead, *Science and the Modern World*, 1926.

Are physicalists like this?

- “The perfect flatness of the earth’s surface is a necessary assumption of all map making, since maps must be made of flat paper. The claim that mountains and valleys exist is mere philosophy, and of no use to a working scientist. In fact, such views create an unwarranted limit to the progress of cartography, saying: ‘You may model the territory to some extent, but not completely’.”

(An anonymous cartographer)

But ... biochemistry has no gaps?

