



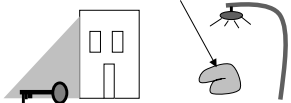
Ask Steve for a quick overview!

# Can there be a scientific explanation of consciousness without qualia?

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## Science and Observers

The scientific study of consciousness characterizes this subject as an evolved adaptive function of brains, or at least of nervous systems with a nominal level of complexity. Hence *science would search for the correlates of consciousness in this biophysical neural substrate upon which consciousness supervenes.*



The methods of science classically require a theoretical hypothesis (a sort of trial generalization suggested from past observations) a critical experiment requiring another round of observation that is interpreted to confirm or disconfirm the hypothesis, and so on in an iterative cycle as diagrammed here.



The expected result is ever better understanding through prediction and control of phenomena using 'successive approximations' to the ultimate theoretical generalizations sought.

**Without observations there is nothing to explain or hypothesize about. Therefore the above diagram is backwards.** Let us fix that and look more closely at what is involved in an observation. The naïve answer is that it requires carefully and attentively taking data and interpreting it.



However, what ultimately constitutes data? In many cases it comes in the form of a meter reading, or a computer display, or a printout that has to be examined visually.

Consider reading a meter. This is a far more complex act than at first meets the philosophically untrained eye.

**Reading a meter (taking data) first involves seeing it in the case of direct observation.** If the meter is not directly observed, something else is observed in its place, perhaps a pixelated CRT display or a camera view, or a 7-segment readout of a remote meter, or just some pixelated numbers on a printout.

## The Chicken, the Egg, and the Quale

A typical meter has a dial, some tick marks that are labeled, and perhaps some help interpreting the reading (eg., the words 'good' or 'bad' on a battery tester).



**To take a reading, one must distinguish the dial, the tick marks and the labeling from whatever contrasting background there is for each. If there is no contrast, there is no way to get a reading. These contrasts inform us and delineate the qualities of the observation – the qualia. The 'redness of red' is useless except in contrast to some other color(s) – no matter 'what it is like.'**

To interpret the meter reading requires a lot of assumptions. One assumes that it is hooked up to the battery right with good contact, that it is in fact a battery tester (not a mock-up), that readings on one side of a line are good and bad on the other, and that the manufacturer did not swap them by mistake. It is presumptions and implications drawn from a look at the meter that comprise the interpretation of its meaning. It is all this theoretical knowledge about meters and batteries and manufacturers that enables us to do the interpretation and get an actionable reading.

**The observer must have his or her memory on line to take the reading and interpret it.** Even if the whole process is automated with a computer, the output of the computer has to be observed in similar manner to the meter itself to get the result and use it for action.

In neuroscience we use sophisticated 'meters,' including EEG, MRI, fMRI, DTI, PET, SPECT, embedded electrode arrays and so on. Each of these requires a conscious observer to read and interpret the results.

**This is the chicken and egg problem for the scientific study of consciousness. To do this study scientists must be conscious.** One has to validate their interpretation of their senses or else find consensus with others through peer review, experiment duplication, and publication. But finding consensus also requires listening and interpreting. **In the end every observer acts alone and in complete isolation** to reach his or her conclusion – even if it is as simple as "I agree with everyone else."

**The scientific study of consciousness supervenes on consciousness.**

As a result science is exposed to some of the same criticisms as was introspection at the beginning of the 20<sup>th</sup> century. If one cannot trust consciousness, one cannot do science. The difference in science today is the formal consensual method. But it is not infallible as past scientific revolutions have shown. Local 'theoretical traditions' bias scientific research in ways that have to be overcome or at least put in competition with one another.

## Defining Consciousness

In order to see the meter as a meter and take a reading, it was necessary to take in the sensory qualities (qualia) of the meter and interpret them.

**This is the essence of consciousness: it is the process of detecting qualitative contrasts and interpreting their meaning based upon past experiences (bootstrap iteration), and using that meaning for ongoing action and/or recording it in memory state for future action.**

**Consciousness, like scientific method, is an iterative theory construction process. The meter itself, when perceived as such, is an interpretation of qualia.** It is a theoretical object made of associative expectations about future observations and implications for action – no matter how concrete it may feel to us when we perceive it.

**When science takes data and interprets it at a high level of abstraction (conception) it is much like perception itself.** It is subject to all the familiar foibles of perception including filling in with theoretical biases, attentional blind spots, emotional coloring, and a host of illusions at a conceptual level that are like biases of perception when interpreting sensory contrasts.

**Science compensates with a group process that depends upon consensus of individual conscious observers.** In a manner analogous to how individual neurons come up with a coherent consensus that they can reverberate on and record in memory to produce a conscious state, different scientific camps can cooperate and compete until they reach a consensus in the published record.

**What about these individual neurons and their constituents all the way down. Are they conscious in some crude way analogous to individual scientists are in the larger arena of scientific group awareness? Or are they senselessly executing algorithms or embodying a physical dynamic without any sensation nor interpretation for action the way human conscious observers do?**

**It all depends on how one looks at 'mechanisms.'**

In the traditional view **mechanisms are 'governed by laws'** that determine their behavior without sensation, feeling, choice, nor awareness. They are just mindless zombie automata. The laws reside in a platonic realm or the mind of 'God.' This view is very naïve. **'Laws' are human generalizations.**

I cannot feel your feelings nor see what you see. Likewise, I could never feel what an amoeba or a hydrogen atom felt if they had any feeling or sensation.

**We have no problem assuming we each have our own feelings and on that basis we can have compassion and theories of mind for each other. We assume that simple automata in nature have no sensations, do not interpret them, and are zombies devoid of consciousness.**

**I challenge that as the biggest blunder in all of science as practiced today.** Simple systems should have simple sensations too.

## Hard Problem or Panpsychism

**We do have a choice.** The so-called 'hard problem' arises because we insist on assuming that nothing but a brain in a body can have sensations or conscious awareness. We thereby banish all other systems in nature to zombie land. This is a huge unjustified assumption.

**Consider how the picture changes if we instead assume that all systems in nature have sensation when they detect their environment, choose actions (resolve conflicts), and update their state (memory).**

This does not require believing that systems have self experience like we do which is based upon a large associative memory and personal history stored in it. It just requires that they sense contrasts of certain types and resolve any response ambiguities to reach a consensus for behavior going into the future and update their state to represent that consensus. This is what brains do. Why should it be any different in lower level systems?

Taking this panpsychism stance eliminates the hard problem, and removes the need for an explanation from emergence. **Consciousness is a process pervasive in nature, self similar at all levels.**

This view does not solve everything. It is a first step. There are questions about how complex experience is constituted from simpler experience. There are questions about how we can ever get a grip on what those simpler experiences might be like.

One clue comes from fundamental physics. In order for anything to happen, i.e., change and move forward in time, the Schrodinger wave equation must 'collapse' to one of many possibilities. This is a poorly understood process and an active area in the philosophy of physical science. It is suggestive of a kind of elementary decision making in nature. It involves resolution of inconsistent alternatives and synchronization of the system to move as a unit into one future state. There is such an equation for every system from particles to brains (at least in principle).

**In conclusion** a science of consciousness depends on consensus among observers who individually must observe their world by sensing the qualitative contrasts in their experiments and interpret them as objects of measurement and measuring devices (i.e., must be conscious). More importantly, there is great theoretical parsimony in assuming that nature involves this conscious process at all levels. A radical revision of assumptions about dead senseless mechanisms is therefore overdue.

### Bibliography

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