

## A SOLUTION TO THE MIND BODY PROBLEM

The human brain has two important functions (overlooking for the moment the function of neuro secretory cells). One is to create an electrical signal that causes the voluntary muscles to move and the other is to create qualia e.g. our subjective emotions and raw feels, love, rage, pain, the redness of red, the sound of a flute, the taste of sugar and salt, the smell of hydrogen sulfide, etc. also caused by an electrical signal generated by the brain. Philosophers call how the brain causes the voluntary muscles to move, the body problem, and how the brain creates qualia, the mind problem.

The movement of the voluntary muscles is objective in that Human B can observe the muscle movement of Human A and the movement of the voluntary muscles is after all what we call human behavior. The hand and arm movements of a mathematician at the black board or the movements of lips, tongue, and larynx of a Professor of English at his lectern or Babe Ruth striking out are all examples of human behavior and all involve muscle movement.

Qualia on the other hand are subjective in that if B peers inside the brain of A, nowhere will he find qualia i.e. love or rage or the color red or pain, or the taste of sugar and salt or the smell of hydrogen sulfide etc.

The brain can be viewed as an electrical signal processor, again overlooking for the moment the function of neuro-secretory cells. The inputs to the brain are electrical, and the inputs are the electrical outputs of the sensory cells of the body i.e. retinal, auditory, olfactory, stretch receptors, pain cells etc. The outputs of the brain are electrical signals generated by the brain and cause the voluntary muscles to contract. The question is; How does the brain generate the output signal to the voluntary muscles so that our bodies are well oriented with respect to the external world and how does the brain's electrical signals generate qualia?

The electrical inputs generated by the sensory nerves of the head are routed by the hard wired cranial nerves to the upper brain stem and the electrical inputs from the fingers, hands, arms, torso, legs, feet, toes and stretch receptors are routed by the hard wired peripheral nerves to the spinal cord and from the spinal cord to the upper brain stem. Hence all the input signals generated by the sensory nerves are routed to and have a common meeting ground in the upper brain stem.

The electrical signals of the nervous system travel at ~100m/sec. are frequency modulated, have voltages of ~1/10V and are called action potentials. The brain modulates the action potentials from the upper brain stem and route those signals to the motor neurons in the cortex and the action potentials generated by the stimulated motor neurons travel by hard wired nerves to the voluntary muscles and directly cause the voluntary muscles to move?

In the modern telephone system it is the electrical characteristics of the dialed number electrically coupled to the hardware of the phone system that connect phone A with phone B. By hypothesis it is the electrical characteristics of the input signal to the upper brain stem that are electrical coupled to one's memory system and that coupling modulates the input signal and routes it to the motor neurons causing the voluntary muscles to contract causing human behavior.

There are several neurophysiological models for human memory. The neurophysiological correlate of memory is called the engram and there are several models for the engram. My hypothesis is that the engram of memory is a stored f.m. electrical signal of  $\sim 1/100V$ , stored in closed glial cell circuits and it is that stored electrical signal that modulates the input signal from the upper brain stem and routes it to the motor neurons which when fired cause voluntary muscle contraction that we call human behavior.

An expansion of this idea may be found in my paper entitled "A Neuronal Model for Memory and Learning" that can be found by scrolling down towards the bottom of the first page of my website, [www.jmkingsleyiii.info](http://www.jmkingsleyiii.info)

The second major problem is, how does the electrical signal in the upper brain stem cause qualia. This is a very, very deep question going back at least as far as Descartes. Qualia are caused by an electrical signal that can be measured and is therefore objective. The electrical signal can be measured in terms of volts and frequency (Hertz) but the effect, the qualia, are subjective and can not be observed by B peering into A's brain and cannot be measured with any instrument resulting in a meter reading with units. When one sees the color red, its intensity can be measured in watts/cm<sup>2</sup>, or its frequency can be measured in Hertz or its wavelength can be measured in cm. but watts/cm<sup>2</sup> or Hertz or cm are not the subjective experience of red. Or when one smells hydrogen sulfide, there is no hydrogen sulfide in the brain and yet one smells hydrogen sulfide but the smell has no measurable units that are the smell of hydrogen sulfide. All qualia have this "Property" i.e. they are not experimentally measurable resulting in a meter reading with measurable units. If qualia were measurable resulting in a meter reading with measurable units, then qualia would be objective, which they are not. Qualia are subjective.

Qualia are the sole instance of which I'm aware in that an objective cause, (the electrical signal in the upper brain stem) has a subjective effect i.e. qualia. That is what is so very odd about qualia.

So what are qualia?

Qualia are a "property" of the brain in that qualia do not exist independently of the brain. Electrodes placed in the brain and when stimulated, can evoke qualia that are similar to the qualia caused by the direct stimulation of the sensory nerve cells causing the quale in question. Not all of the brain is necessary to cause a given quale. Individuals with missing parts of the brain due to surgery or battle wounds can still feel a given quale but whatever part of the brain is responsible for the quale, there is no observable, measurable property of the brain that is the subjective quale. If there were, that measurable property would be objective, but qualia are subjective and not observable and measurable by B peering into the brain of A, hence there is no observable difference between a brain experiencing a quale and one not experiencing a quale that can be observed as that quale by B peering into the brain of A.

My hypothesis is that qualia are a subjective property of certain atoms in the upper brain stem, perhaps the atoms of DNA, that when properly stimulated by correct action potentials cause the subjective raw feels of qualia. Although the atoms may change their vibration frequency or bond strength or any other physically measurable

property under the influence of action potentials, no observable change in the measurable, physical properties of the atom is a quale. If it were, qualia would be objective not subjective. That is what is so strange about qualia.

Qualia are an intrinsic property of atoms. Gravity is also an intrinsic property of atoms but gravity is always a property of the atom and is carried by the parts of the atom when the atom is destroyed. Qualia are time dependent and are caused by an objective action potential but the effect, a quale, is subjective. I hypothesize that if the atoms causing a quale are destroyed, the quale from that time on would not be experienced.

As a thought experiment, the model could be tested by B destroying the atoms in A responsible for a given quale and if the model is correct, A could no longer experience that given quale and could so report. I in no way am suggesting that this experiment be carried out.

Sincerely,  
J.M. Kingsley III  
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P.S. Some believe that a gravitational field causes a curvature of empty space but that is to give something (curvature) to nothing (empty space) and the idea is absolute nonsense.