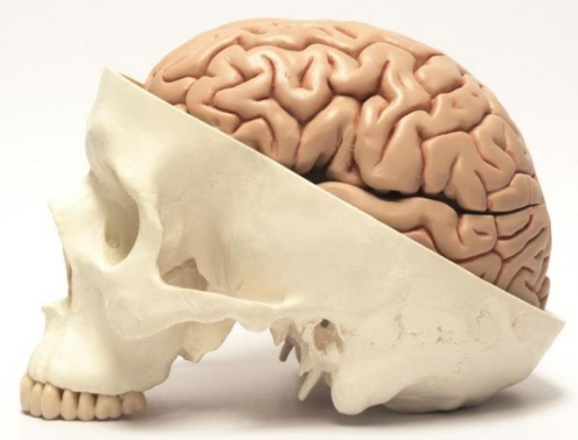
The Realities Generator



The brain has no access to the world outside. Sealed within the dark, silent chamber of the skull, the brain has never directly experienced the external world -- *and it never will*.[1] There is only one way the brain acquires information from out there -- *sensory organs*.[2] The *eyes, ears, skin, nose*, and *tongue* play the unique roles of collecting information from the environment and relaying it to the brain through the nervous system.

Is the world outside the body full of the rich colors, textures, sounds, tastes and scents that we experience every day?[3] The answer is "No." If we could perceive what's out there as it actually is we would be shocked by the *colorless, odorless, tasteless silence*. Outside the brain, there is just *energy* and *matter*[4] -- *and the slice of reality that humans are able to perceive is* ***limited by the biology*** *of their sense organs and brains*.[5]

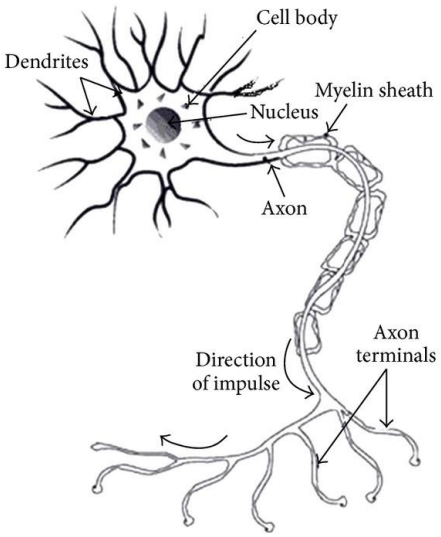
- **Eyes** aren't cameras that send pictures to the brain. They **convert or transduce the photons** they are able to perceive into electrochemical signals and send them to the brain. Human eyes only perceive "visible light," which constitutes *less than one ten-trillionth of the electromagnetic spectrum*.[6]

- **Ears** have mechanisms that **convert vibrations in the density of the air** they are able to perceive into electrochemical signals that are sent to the brain.

- Receptors on the **skin** **convert pressure, stretch, temperature, and noxious chemicals** they perceive into electrochemical signals that are sent to the brain.

- The **nose** **converts drifting odor molecules** it is able to perceive into electrochemical signals that the brain learns to interpret as smells that are sent to the brain.

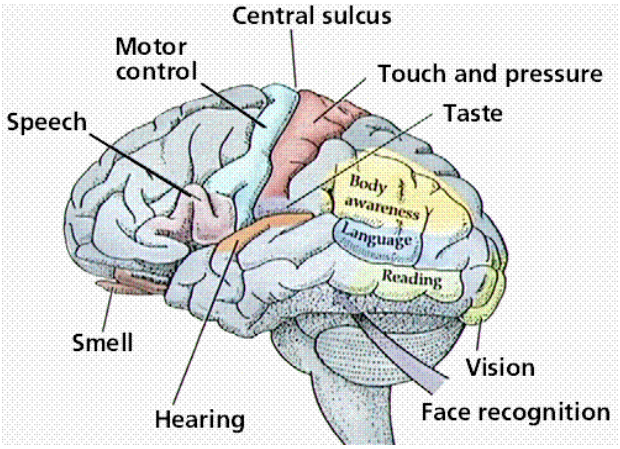
- The **tongue <u>converts taste molecules</u>** it is able to perceive into electrochemical signals that are sent to the brain.[7]



All of those electrochemical signals flow through the nervous system – *one neuron at a time*. The electrochemical information enters a cell through a dendrite at the same time other information enters through other dendrites. All of this information flows into the cell body.

From the cell body one stream of information flows down the axon cable to axon terminals.[8] The axon terminals are the outputs where the information is passed to the next neuron through a gap called a synapse.[9] In the spinal cord, one neuron typically sends all the information it receives directly to the next neuron in line.

From the moment we awaken in the morning, we're surrounded with a rush of light and sounds and smells. Our senses are flooded.[10] From the spinal cord the information flows into the brain. Information from sensory organs flow into specific places of the brain. Each of those places had critical periods in which it learned how to interpret the electrochemical information arriving from its sense organs.



An average neuron in the brain has about ten thousand dendritic spines and about the same number of axon terminals. [11] The typical brain has about <u>eighty-six billion neurons, each making about ten thousand connections</u>.[12] In the infinitely dense tangle of billions of brain cells there are **<u>trillions of neural connections</u>**.[13] Everything we experience is a **<u>neural firing of the synapses</u>** between neurons – *creating a constellation of neural activity throughout the brain*. A memory is a *"re-firing of the same constellations that fired in the original life experience."*

Visualize those neural firings as constellations in the night sky. If you know how to link specific lights in the sky together you will be able to see constellations like these.

The building process churns across vast neural networks as we experience life and creates **Unique Signature Events**. When we remember, the brain actually re-fires the same neural constellations of past **Unique Signature Events**. *Instead of remembering we are actually "re-firing."* These events are created by models interpreted from patterns of past **Unique Signature Events.**

Some of those models become the color blue, the sound of a mother's voice, the taste of chocolate, the smell of a rose, or the feel of a loving touch. Other patterns become **names** of things with **strategies** and **expectations patterns** attached to them. We call these models and patterns of neural constellations -- **memes**. They combine to create "*meme structures*" which are like Legos that are assembled to create different things. *Meme structures* combine to create **Individual Realities** – *the ways individuals perceive their world and give meanings to what they perceive*.

We do not perceive objects as they are. We perceive them by the models in our neural networks. Each of us is on our own trajectory — *steered by our genes and memes of our life experiences*. Realities are as unique as snowflakes and our genetic make-up – *but they also share many meme-structures*. The experience of conscious awareness we are having now is unique to each of us, but because the physical stuff is constantly changing around us, our realities change too. We're not fixed unchangeable robots. From cradle to grave, we are all works in progress with the power to change our *realities*. *That is exactly what all humans do*.

What do you see?

Did you a young woman or an old woman? You saw the first model stored in your neural networks that your brain chose to attach to the incoming visual information. If you saw the old woman, look at her tip of her nose – *that is the chin of the young woman*. If you saw the young woman, look at her necklace – *that is the mouth of the old woman*.

We are able to see two different realities without anything outside our brains changing. What changed was the model our brain used to interpret the information – *and the brain did subconsciously without us being consciously aware of what it was doing*.

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[1] *The Brain: The Story of You*; p. 41.
[2] *The Brain: The Story of You*; p. 41.
[3] *The Brain: The Story of You*; p. 37.
[4] *The Brain: The Story of You*; p. 37.
[5] *The Brain: The Story of You*; p. 63.
[6] *The Brain: The Story of You*; p. 63.
[7] *The Brain: The Story of You*; p. 43.
[8] http://umdberg.pbworks.com/w/page/84111850/Capacitance%20in%20nerve%20cells
[9] *Behave: The Biology of Humans at Our Best and Worst*; p. 681-682.
[10] *The Brain: The Story of You;* p. 39.
[11] *Behave: The Biology of Humans at Our Best and Worst*; p. 686-687.
[12] *The Brain: The Story of You* by David Eagleman © 2015, Vintage Books, New York, NY; p. 75.
[13] *The Brain: The Story of You* by David Eagleman © 2015, Vintage Books, New York, NY; p. 2.