**THE STRUCTURE OF WATER**

**and**

**HOW PSYCHE ENTERS MATTER**

**Part 5: The Rainbow and the Worm**

**The Physics of Organisms, by Mae-Wan Ho**

***by***

***Dr. Richard Alan Miller, c2015***

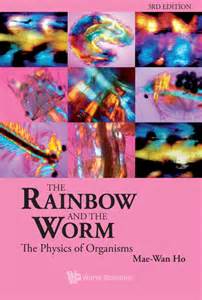
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**Part 5: The Rainbow and the Worm**

**by Mae-Wan Ho**

The importance of alkalinity and your body’s negative charge being “normal” originates from Mae-Wan Ho’s important work, *The Rainbow and the Worm: The Physics of Organisms*. She is a scientist known for her work discussing GMOs and biotechnology, especially attacking “neo-Darwinism” and the modern theory of evolution.



**Figure 1:** *The Rainbow and the Worm: The Physics of Organisms* is a very original survey of how biology may be linked to physics through the concepts of coherence and coupled processes.

Mae-Wan Ho is also the director of the Institute of Science in Society (ISIS), an interest group that campaigns against what it sees as unethical use of biotechnology. The group has published works about climate change, GMOs, homeopathy, traditional Chinese medicine, and the memory systems found in water.

**Epigenetics:** Epigenetics is the study, in the field of [genetics](https://en.wikipedia.org/wiki/Genetics), of [cellular](https://en.wikipedia.org/wiki/Cell_(biology)) and [physiological](https://en.wikipedia.org/wiki/Physiology) [phenotypic trait](https://en.wikipedia.org/wiki/Phenotypic_trait) variations that are caused by external or [environmental](https://en.wikipedia.org/wiki/Environment_(biophysical)) factors that switch [genes](https://en.wikipedia.org/wiki/Gene) on and off, which in turn affects how cells *read* genes, rather than the changes being caused by changes in the [DNA](https://en.wikipedia.org/wiki/DNA) sequence.



**Figure 2:** Epigenetics is the study on how environmental factors influence our DNA and health

In modern parlance, “epigenetics” refers to the modification of some DNA bases, usually by the attachment of methyl groups to them (*methylation*). Such modification can be important in evolution: modified DNA can act differently from unmodified DNA, for example in determining whether it produces proteins at all, or when and where that DNA is transcribed.

All of the important epigenetic modification that we know about in evolution, however, is coded for by the DNA itself; that is, there are bits of the DNA code that say “allow other parts of the DNA to be methylated.” In that sense, epigenetics is not something that radically revises our view of genetics and evolution, for it’s something that some parts of DNA do to other parts of DNA, and those instructions have presumably evolved by natural selection.

However, some epigenetic modification of DNA comes not from instructions by other DNA, but from the environment itself. Starvation or stress can themselves act to *methylate* DNA. In some cases, environmentally-induced *methylation* can be passed on to the next generation, or even a few further generations.

That observation has led people to speculate that epigenetics can allow a kind of “Lamarckian inheritance,” whereby the environment itself induces an adaptive change in the DNA that can then be passed on to future generations—an acquired characteristic that can be inherited. If this happened often, it would seriously revise our notion of how evolution works.

Epigenetics throws into question just how vertical the transfer of information might become in the process. We know, for instance, that when we eat food, nucleic acids can get into our cells. Also, there is a theory that our cells continue to send out nucleic acids, and one theory suggests that these nucleic acids correct the mistakes that mutated cells have made.

This is why the whole genome is a more radical concept than just epigenetics because **there is really no boundary between the genetic and epigenetic**.

Her model described in her book *The Third Way of Evolution* replaces Lamarckian (Altenberg) and pre-Darwinian models of the universe with a new holographic model that includes epigenetics and microtubules. Mae-Wan Ho and Peter Saunders wrote a paper [*Beyond neo-Darwinism: The Epigenetic Approach to Evolution*](http://www.researchgate.net/publication/22628078_Beyond_neo-Darwinism--an_epigenetic_approach_to_evolution) (1979). It brought a lot of controversy, and Ho was then branded neo-Lamarckian.



**Figure 3**: Dr. Mae-Wan Ho

***People found us too radical. They retreated because we were already saying in that paper — well, look, you might as well forget about natural selection because what does it mean “selection” when the organism keeps changing according to environmental conditions?***

***We now know that at the molecular level that is precisely what happens. There are these epigenetic changes that respond to the environment.***

**Mae-Wan Ho**

Many now think things have moved on to such an extent in evolutionary science, and that the world beyond neo-Darwinism is so creative and beautiful, that we now don’t really care about trying to convince the Neo-Darwinists.



**Figure 4:** Dr. Mae-Wan Ho

**The Studies of Mae-Wan Ho**

An important highlight in the studies of Mae-Wan Ho is the ideas around propagation speeds of electrical signals through water in microtubules. Many massage therapists and acupuncturist will tell you that there are communication channels in the body that are not nerve, and which have a speed that seems sometimes faster than any accepted communication channel.

Also, within individual cells, almost every macromolecular response happens far too fast for thermodynamics (diffusion) to be the cause. In fact, ***all*** of the many multi-step pathways, such as a cell absorbing a single light photon and causing a nerve cell to fire, occur at rates that cannot be explained by diffusion.

A microtubule has a large enough opening inside for essentially one water molecule. So the tube can be filled with a line of water molecules. Then, like those desk toys with the swinging stainless steel balls, when an electron contacts the water molecule at one end, very quickly the water molecule all the way at the other end of the tube shoots out an electron.

The propagation of that signal seems substantially faster than nerve signals. The fascia system of the body is now finally getting some attention. It is an integrated system, like the circulatory, immune, endocrine, and other systems. Biological sciences, however, still have a long way to go to understand this concept.



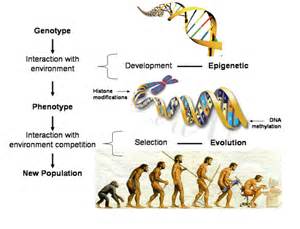
**Figure 5:** The Rainbows found in Worms (metaphor)

A whole class of physical therapists and chiropractors may eventually be vindicated as the sciences begin to explore the physical mechanism for how doing something to a person's feet can instantly trigger a release all the way up to their neck. This has been considered (by some) to be pseudo-science.

Another highlight of Mae-Wan Ho’s research is the attempt to bring levels, or scales, into the scientific discussion. Contemporary western science has heretofore been cursed by an inability to recognize higher and lower levels of the resolution of information. These levels of resolution are the foundation of a holographic model of the universe, which physics is now using.

A Shakespeare scholar said that during the reign of Elizabeth this "horizontalization" took place very notably in the trashing and anathematizing of John Dee. So, this is concept is found not only in the physical sciences, but also in both philosophy and theater. Mae-Wan Ho introduces various ways to consider higher and lower levels, especially while trying valiantly to keep thermodynamics relevant.

**A Definition of Life:** One can life define life as a quantum coherent system. It is a circular thermodynamic system that can reproduce. If you look at water, which has been the subject of research for a number of years, the physics of life depends on water in a very fundamental way.



**Figure 6:** Epigenetics influences the Nature of life.

It was [Alfred North Whitehead](http://plato.stanford.edu/entries/whitehead/)'s idea that electrons had consciousness. Whitehead was a very important philosopher. He was also a mathematician. He had the idea that you cannot really understand nature except as an organism, and with the sensitivity of the organism. To Whitehead, everything in nature was an organism to varying degrees, from electrons and fundamental particles to galaxies.

***Water has all the characteristics of consciousness. It is very sensitive, and it is flexible, as it responds to light (EM fields)***



**Figure 7:** Epigenetics, as a higher resolution of the Hologram

**Coming Next:**

**Part 6: Microtubules,**

**another Resolution in the Hologram**

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11-19-15

Words: 1,244

