

THE FIVE KINGDOMS of LIFE

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I am completely fascinated every time I read Evolutionary Biology. What could be more thoroughly profound than to gain insight into the origins of Life? For me, the study provides evidence confirming the claim of the mystics: All Life is One!

It was interesting enough to investigate my own family tree and discover ancestors from Scotland, Wales, and Germany. That's just the surface: these Anglo-Saxon-Celtic people had as origin the proto-Indo-Aryan people. How many humans were alive then? How many descendants did they produce? How many millions and millions of distant but very real relatives does that make for me? Are you my cousin? Probably, somewhere down the line.

Of course we can further trace these *Homo sapiens* ancestors back through *Homo neanderthalensis*. How many 'Homos' were alive then? Of course, this line is further traced back through *Homo erectus* and *Australopithecus*, etc. Doesn't that make all humans alive today relatives of mine, considering we all have a common ancestor at Olduvai Gorge? Is it too extreme yet to use the word 'brother?'

That's where the understanding coming from the Five Kingdoms really starts to get interesting, because we're still relatively close to the surface in this examination of the Family Tree. *Australopithecus*, the proto-human, is just one form of primate; but all primates have, as an ancestor, some form of proto-mammal. That makes me ultimately related to the entire world of mammals as well. Maybe I'll start calling all humans 'brother' and all cats and dogs 'cousin.' It is interesting to note that, until the seventh stage of zygote mitosis, all embryonic mammals are absolutely identical; they cannot be distinguished from one another; they have the exact same cellular components, and the cells have the exact same geometric cluster arrangement!

That's getting a little deeper but it goes much, much further than that. The mammals branched out as one form of *Chordata*, the vertebrates, but there are others as well. This means that all mammals have a common ancestor with all other chordates: birds, amphibians, fishes, and reptiles. Suddenly I am related to the eagle, the frog, the trout, and the lizard; that is, a direct line of ancestry can be traced from me back to some proto-chordate. This really captures my attention! I'm feeling a little awe and reverence. This means that I and that earthworm over yonder *are closely related* because we're both in the Animal Kingdom. It is amazing how similar in composition and arrangement the internal organs of the earthworm are to those of a human being.

And that's just the Animal Kingdom. Ultimately, I am related to all the plants around me and to all the fungi in the ground because we all have in common multicellular 'proctist' ancestors. All of these living organisms can be traced back to the first 'eukaryote' that was able to symbio-genetically fuse bacteria into itself to form a cellular nucleus. Can there be anything more profound than this realization?

This may be as far back as I can trace my family tree. There were multitudes of other aerobic bacteria present at this juncture, but it seems only a select few were able to form the symbiotic arrangements necessary to further evolution by increasing complexity and successfully adapting to an oxygenated atmosphere.

The implications are enormous! Not only are the wolf, the dolphin, the spider and snake my brothers and sisters, but the trees and the ferns and the flowers are my cousins; they are all my relations. This was Native American wisdom before microbiology. Each and every one of these creatures is involved in the same play: fit male releases sperm that seeks out healthy female to further evolution by increasing complexity, diversity, and adaptability to an ever-changing environment. (The fern sperm actually has a much more strenuous time of it than our human sperm.) All the living creatures on Earth are ultimately associated with every other one, and it is only through the contra-Darwinian practice of symbiotic cooperation that we help ensure each other's survival and self-realization. As the Deep Ecologists would say, "All Life has intrinsic value."

The way I see it, The Five Kingdoms of Evolutionary Biology give ample confirmation to the Mystic's claim that All Life is One. Further, it seems apparent that *Homo sapiens* is completely expendable; in fact, Earthlife as a whole would greatly benefit by their removal. The often-heard claim that humans have the capability to destroy Life on Earth is completely unfounded; their actions could possibly regress complexity and abundance by several million years (this is already happening), but Life will still continue, at the microbial level at least.

One other implication: It is informative to realize that Life has been present on Earth since shortly after its birth. It seems that once standing water was present, Life was virtually inevitable. Among the billions and billions of stars, any planet that holds water will surely have organic, biological, carbon-based Life.

Also, the early cyanobacteria expelling oxygen created the conditions for Life to take an evolutionary leap to the eukaryotic stage, thus reinforcing the Gaia hypothesis.

This study can provide many, many insights....