Part B: The Book of Life

Unit Six: Evolution vs. Creationism

Chapter eighteen: Two Conflicting Views

The mysteries of life's existence are perhaps more engaging than the inorganic mysteries, simply because we can more intimately relate to them. Once the shroud of glorification that is laid over these mysteries is removed, it becomes obvious that life is just an integral component of existence, itself. Many questions, such as "What is the definition of life?" and "Why do we exist within this inorganic existence?" have already been answered by modern science.

In this part of the book, we will learn the key concepts of biological evolution and apply them to the origin of life and its evolution throughout time, from the formation of the first cell to the assembly of the first multi-cellular organisms. This tour of the history of life on Earth will be brief, as we only intend to look back at some of the highlights of evolutionary past and appreciate the beautiful organization of existence itself which allowed life to flourish across our planet. Afterwards, to gain an understanding of who we truly are as humans, we focus on our own species' evolutionary history. But first, we will retrogress to the origins of the theory of biological evolution and watch how even the theory of evolution evolved over time, reflecting on the debates that it has stirred, particularly with Creationists.

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The theory of biological evolution, like most other key components of the theory of everything, is relatively new when compared to our long-held Creationistic views of reality, emerging into public popularity at the beginning of the Nineteenth Century. Scientists and historians don't know of any one person responsible for its creation, as some of its concepts are ancient and shared among many peoples. It, however, was thrown into the eyes of the masses as the result of new discoveries, such as the uncovering of the first dinosaur fossils in the Eighteenth Century. Simply finding the bones of pre-existing gargantuan beings challenges the monotheistic principle of Creation: that the world was created solely for our sake; not to mention its conflicts with the suggested time of Creation and the view of this inordinate, unaccounted for past that the bones tell us about. This challenge alone converted many Creationists into atheists who accept evolution as a fact of nature, especially in the Western world. We will now consider these two viewpoints while simultaneously looking back at the development of the theory of biological evolution.

It is commonly believed that Charles Darwin created the theory of evolution. He was just a key player in its progression -- the theory was already popular during his childhood. Perhaps

Darwin's most popular forebear is the Scottish autodidact and publisher Robert Chambers, who anonymously released The Vestiges of Creation in fear of direct criticism from overly defensive Creationists … but, sure enough, criticism is what he eventually received. His case for evolution -- based on the ascension of the complexity of the anatomy of fossilized life over time, rudimentary and vestigial (no longer useful) organs, and mutations of embryos -- was just too ahead of its time to receive the respect that it deserved.

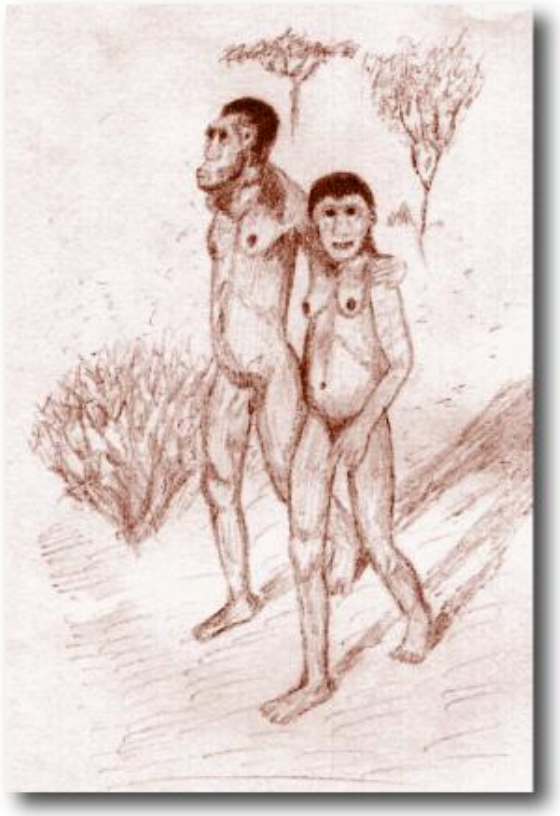
Beyond being a new, radical viewpoint regarding the origins of life, potentially overturning previously cherished beliefs about God and our place in the world, Chambers' case for evolution (and that of scientists today) questioned the concept of morality and other concepts entailed within Creationism. This was accurately portrayed by Adam Sedgewick, the late Professor of geology at Oxford, when he declared, "If the book be true, the labours of sober induction are in vain; religion is a lie; human law is a mass of folly, and a base injustice; morality is moonshine; our labours for the black people of Africa were works of madness; and man and woman are better beasts." (Darwin p.29) Chambers' book subjected this unsettling, new conclusion regarding life to harsh criticism, creating a rocky road for any subsequent evolutionists like Charles Darwin.

Darwin's most famous book, On the Origin of Species, was forced into having a far more conservative take on evolution, but, even in the face of this handicap, managed to achieve the title of "the most important book of the Nineteenth Century", opening up both a new era in biology and in areas of knowledge that people previously thought couldn't be understood beyond believing that they are "God's will." Others later twisted Darwin's theory into other, completely unrelated theories regarding Sociology. The product of the most prevalent of the many was the concept of social Darwinism (Imperialism), which was incorrectly used as a justification for the corrupt acts of Capitalists, Communists and Socialists. But it was purely his ability to overturn the people's long cherished beliefs that earned Darwin the title of "the most dangerous man in England." (Darwin p.14)

Naturally, traditionalists battled against this revolution. To them, the theory of biological evolution is inhumane, and, therefore, must be incorrect. Sadly, like politics, whichever side can more successfully bash the other in the public's eye tends to retain or gain the most popularity; and the Creationists came with lock, stock and barrel. Their main criticism is that the theory of evolution is incomplete as of yet and therefore can't ever be anything more than a theory. They fail to realize that Creationism is also just a theory; and it is one with absolutely *no* direct evidence. Their viewpoints feed off of humanity's natural inclination to search for an egotistic, romantic outlook on life, which is used to suppress fears, and the theory of biological evolution is all but pleasing to those who depend on grandiosity to feel "whole."

As for this war attrition, Creationism still reigns in the public mind, but the theory of evolution has taken huge strides. Darwin himself had a large effect on the minds of the mid-Nineteenth Century, helping to effectively destroy the doctrine of "Natural Rights" by showing that individual species aren't necessarily fixed. The theory of evolution showed people that obvious racial differences need not lead us to assume total unrelation, which went on to aid the abolition of slavery in the United States. Not everyone wished to throw Darwin's contributions out the window. For example, Thomas H. Huxley, a famous British biologist stated in response to On the Origin of Species, "How extremely stupid [I was] not to have thought of that." (Darwin p.14) One of the most famous debates in the battle between Creationism and Evolution occurred in 1860 between Huxley and Bishop Wilberforce at the Oxford meeting of the British Association. When Wilberforce sarcastically asked Huxley if he claimed descent from ape on

his mother's or father's side, Huxley replied that he would rather have an ape for a grandfather than a man who misused his gifts to obscure important scientific discussion by rhetoric and religious prejudice! (Darwin p.41)



As Huxley suggested, we must raise the question -- what exactly is the theory of biological evolution? The "theory" is the explanation of the natural progression of complexity in organisms throughout time, as seen from both carbon dating (and other measures of radioactive decay) and the particular stratographic depth that the fossilized remains of an organism is discovered at. Adding to the conflict, the theory of evolution tells us that, in order for life to arrive at its present state, it required a time span of over 3 billion years. Geologists are insouciant when discussing these figures. Creation "scientists" simply choose not to believe in them. Darwin coined his major contribution to the theory of evolution "*natural selection*." He found that in nature's struggle to preserve life, it will tend to favor the most fitted life forms. "Owing to this struggle for life, any variation, however slight and from whatever cause proceeding if it be in any way profitable to an individual of any species, in its infinitely complex relations to the organic beings and to external nature, will tend to the preservation of that individual, and will generally be inherited by its offspring." (Darwin p.115) He suggested that only the life forms that are the best fitted to handle a particular environment, whatever they and it may be, will have the ability to preserve themselves over time. At the very least, Darwin helped to unite our ideas regarding the Earth and its organisms into one, mutual system.

Before Darwin, the sudden appearance of new species within our environment was thought to have been the result of a process called "spontaneous generation", one of Aristotle's cherished theories. He believed that new species spontaneously arise from inert matter; and described cases where insects, crustaceans, mollusks, fish, and mice, which appear to be new species, (although not actually witnessed to do so) *grew out of the clay of the land*! This belief is a distortion of the Bible's telling that life came from the dust of the Earth. People went on to believe that new species just come out of nowhere as God's newest creations. "It was Aristotle's great intellectual authority that contributed to the concept of spontaneous generation being accepted without question until the middle of the Seventeenth Century. In fact, it was supported by some of the great thinkers of the [Catholic] Church, like Saint Basil (329-379), Saint Augustine [354-430] and Saint Thomas of Aquinas [1225-1274]." "In their day, highly prestigious personalities in the world of science -- such as the English physician William Harvey (1578-1657), the French surgeon Ambroise Paré (1510-1590), or the Belgian physician Jean-Baptiste Van Helmont (1577-1644) -- all supported the existence of the phenomenon. Van Helmont even proposed a method for producing mice, in three week's time, by placing grains of

wheat together with a soiled shirt in a vessel, causing a reaction that would transform the wheat into mice." (Martínez p.129) Even Isaac Newton accepted spontaneous generation as fact. This all unwavering acceptance screeched to an uneasy halt when Louis Pasteur (1822-1895) discovered a method for preventing life from "spontaneously generating" by sealing sterilized food from external contaminates (as it was also believed that organisms, over time, spontaneously appear in food.) There has since been no new proposal by the Church or any of Aristotle's followers that doesn't involve in some way, shape or form the theory of biological evolution. Yet it is *Darwin's* theory that gets the criticism!

After some of the heat of controversy stirred by Chambers' book had fizzled and the public had sufficient time to digest On the Origin of Species, Darwin introduced another book to the world: The Descent of Man (1871.) His previous hesitation to incorporate the origin of humanity into the theory of evolution was compensated for in this contribution. Darwin suggested what many people, including many African tribes, had already believed: that humanity descended from ape-like forms. He also inferred the key events in our evolution utilizing his theory of natural selection:

> "If it be an advantageous to man to have his hands and arms free and to stand firmly on his feet, … then I see no reason why it should not have been more advantageous to the progenitors of man to have become more and more erect or bipedal. The hands and arms could hardly have been perfect enough to have manufactured weapons, or to have hurled stones and spears with true aim, as long as they were habitually used for supporting the whole weight of the body … or as long as they were especially fitted for climbing trees." (Darwin (2))

Since Darwin, many other scientists and great thinkers added to the theory of human evolution, and are continuing to do so to this day, revising it in accordance with what archaeological evidence tells us about our history.

No scientific discovery to this day has negated the theory of biological evolution; new discoveries just continually support it and refine it. This theory, so compelling, has drastically changed the traditional beliefs of many over its years of existence, aiding the current peak of atheism in the Western world. These converts simply choose reason over fantasy.

… "[A]s Milne Edwards had well expressed it, nature is prodigal in variety, but niggard in innovation. Why on the theory of Creation, should this be so? Why should all the parts and organs of many independent beings, each supposed to have separately created for its proper place in nature, be so invariably linked together by gradual steps? Why should not have nature taken a leap from structure to structure?" (Darwin p.223) As Charles Darwin's grandfather and main source of inspiration, Erasmus Darwin, hinted, why should organisms have vestigial organs or become extinct if wanted by God? Many different types of vestigial organs appear throughout nature, and the theory of Creation simply can't provide a logical explanation for them. Fetal whales have useless teeth very early in life, losing them to develop filters. Many birds also have teeth early, but later develop beaks (while retaining the gizzards necessary for digestion throughout their whole lives.) Almost all snakes possess an inoperable lobe in their lung. Penguins, ostriches, and other large birds with wings can't use them. Some insects have grown membranes over their wings as a result of disuse. There exist mongrel monstrosities like the duck-billed, beaver-tailed, reptilian shoulder-boned, lateral-footed (with webbed front feet that have barbs which inject the poison of a snake) platypus. Vestigial organs even exist in us

humans: scientists have found no existent use for the appendix, but it likely once stored food (the vermiform appendix, part of the cecum, is used (in the animals that still use it) as a fermentation chamber, filled with bacteria which break down the cellulose in vegetation.) According to our understanding of our species' evolution, humans once chewed on heavy vegetation, creating the need for wisdom teeth, but we no longer have this need; and, frequently, these teeth and the appendix need be removed because they are no longer coping with the rest of the body. We even have a tailbone (coccyx), but no longer possess a tail!

If we humans truly are unique, why are our most prized, "humane" traits, such as maternal love and self-sacrifice, seen in other mammals? Why are other traits once thought to be unique to humans, such as jealousy, the conscious ability to imitate, our love of praise, our craving for attention, and our possession of a consciously accessible memory, also seen in other life forms? We are forced to rethink this separation. Scientists commonly attribute humans to possess only two main separations from other mammals: our more organized brain and our advanced utilization of communication. Our brains are third to dolphins' and elephants' in overall size, and almost all animals, even some of the lowliest forms, communicate. The true test of our separation is our continued study of interspecies communication, which is currently being done with apes, monkeys, horses, dogs, dolphins, birds, crocodiles, and even a species of Australian jumping spider, among many others, conducted manually, verbally, or via computer images. What *does* separate man from beast?

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The main line of evidence used by evolutionary theories is fossilized organisms, preserved to a certain degree in limestone (a common sedimentary rock mostly composed of calcium carbonate), among other substances. Marked by very significant fossil discoveries, the Eighteenth Century witnessed the dinosaur craze and the explosion in popularity of paleontology. Charles Lylle's 1830s "Principle of Uniformitarianism" revolutionized this growing field, showing that geology is just a combination of chemistry and physics, and therefore, we can deduce the Earth's past through the study of it. The fossilized organisms found in certain layers of the Earth, or *strata* -- designated characteristics of the soil that highlight distinct time periods -- display to us the Earth's organic and inorganic history.

Creationists met this paleontological revolution with fear, skepticism and hatred, explaining this direct fossil evidence of a pre-biblical history of life as being planted by the devil to elude us of the truth of a Biblical Creation! As bones and other fossils are found, being indisputable evidence of past life, any argument against these finds *has* to be a supernatural one. In a similar attempt to disprove evolution, the delineation of the Earth's crust into strata was later explained by the French comparative anatomist and Father of paleontology (in more than one way) Georges Cuvier as evidence of Great, Biblical flooding, numerous times rather than just the one described in the Bible. Each "flood" was witnessed by the sudden mass extinctions of many types of organisms and the repopulation of new ones shortly afterwards. Scientists now know that these layers are the result of new layers of sediment being added to the crust through expulsions out of volcanoes and other porous areas of the Earth's crust as the mantle churns. So, theoretically, the first life is in the first layer of the crust, which is also the deepest layer of strata. The lowest layer is then subjected to the rock cycle again. The crust is too thick to have reached the first layer of life, with the exclusion of some abnormally highly active areas, so, to some

degree, the history of life on Earth is still intact.

But there are some difficulties in accessing this record. Only the remnants of life that are preserved in specific substances, such as coal or limestone, are available for us to discover. Usually only solid remnants, like bones or shells, are preserved; soft tissue forms are much, much more difficult to preserve. Then we have to dig in the right place at the right depth at the right time. It's no wonder why the people of the past hadn't popularized archaeology sooner than they had an incentive to dig -- in this case, being the increasing demand of the Industrial Revolution for the mining of resources from considerably deep depths.

Once they are found, they can tell us how past organisms were distributed throughout the world (their biogeography), their individual structures, their biological development, and their function in the organic realm. Plant, animal or bacterium, their individual longevity tells us what the climate was like at the time of their wealth. Thus, much of the history of the planet was taught to us by the fossils that we've found.

Extinct plants and animals' histories aren't the only things that digging up the Earth has taught us. Shortly after the paleontological revolution, and shortly after Darwin challenged the world to find the so called "missing link" between apes and humans, indisputable proof of an extinct human species, the Neanderthal, emerged. The first find occurred in 1886 at the "Spy" cave site in Belgium in the form of two separate, complete sets of bones, shocking the world and the paleontological community, defying Creationists' belief that we were always the only human-like species to walk the Earth.

Along with this find were stone tools, strongly suggesting that the species was also intelligent like us. Eoliths (geologically created, potential tools, ready for use) and paleoliths (intentionally made tools bearing obvious wear, such as a chipped edge for sharpness and obvious shaping) are generally also categorized by the strata that they are discovered in. Archaeologists, however, ignore the possibility of the long-term, potential density shift of the rock cycle moving these remains, and also the possibility that man may have simply placed them in the strata. *Archaeology is not an exact science*. It is better described as a quest to piece together puzzles. If most of the pieces of any particular puzzle (the cryptic details of a species' past) can be put together and form a distinguishable picture, the archaeological community usually assumes this picture to be a reality.

Chronological history is recorded through the measuring of radioactive decay in finds. Geological strata are generally dated using the potassium-argon decay method. Contamination during these methods is highly possible. The composition of the soil where the discovery is made may conflict with the chemistry involved in the dating method before the object is even discovered. After removal, many contaminants are introduced -- the most common of which is air, which can speed up the decay. Like the utilization of geological strata for chronology, the measurement of radioactive decay should be confirmed only by the picture created after several common discoveries and attempts at dating them. This jeopardizes the significance of individual discoveries, but rightly so. Human error involved in finds, like false reports, is also fairly successfully filtered out by generalization. Utilizing this method, scientists have formed modern evolutionary theory, which will forever be further filled in and will warp in accordance with the ever-forming puzzle that is archaeology.

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Perhaps to the surprise of some, the public's introduction to the theory of biological evolution is not the first time that the entire structure of Christian/Creationist religious beliefs has been strongly challenged: it is the third. The first major conflict occurred in the Twelfth and Thirteenth Centuries when Aristotlean philosophy was rediscovered, bringing with it intellectual techniques and knowledge more coherent, imposing, and systematic than the existing traditions of the time. Also, his philosophy dismissed the Revelation of Christ. The second was the Seventeenth Century Renaissance and the downpour of new knowledge and logic that it presented to the world. Both revolutions resulted in consolidations and attempts to synthesize themselves with Creationism: the first being St. Thomas Aquinas' "Summae" and the second being Eighteenth Century *Deism* (Christianity minus the revelation) and "Rational Christianity." None of these three were comprehensive nor stable and fell apart with time. (Darwin pp.16-8) The third revolution, the Nineteenth Century's introduction to evolution, has yet to produce a synthesis, mainly because evolution brings with it an unavoidable grind against the foundation of Creationism, which is just too much for monotheistic religion in general to bear. An existing effort to synthesize them, declaring that the path of evolution *is* the path of Creation, is intriguing, but the monotheistic religions simply can't accommodate such a necessary shift without completely pulling apart and rebuilding what is purported to be the "Word" of God. As the theory of evolution slowly transforms in the public mind into a fact of nature, eventually either a complete reconstruction of, or a complete failure of Creationism must and will occur.

"It seems whenever you pick up a popular article or read a piece in a newspaper about evolutionary theory, the topic is described as 'Darwin's theory of evolution.' This of course, is an incorrect attribution on various counts. Evolution is not a theory. It is a phenomenon." (Schwartz p.88) The next chapter explores this phenomenon, teaching the basics that we will need to learn in order to comprehend it. In addition, we will tap into teleology -- ascribing purpose to evolution -- using solely inorganic principles. With that knowledge, we can then explore some of the key events in the history of life's evolution on Earth.

Chapter nineteen: The Basics of Evolution

When delving into the daunting topic of biological evolution, is it best to split it into two parts: biology and evolution. Biology is the science of establishing the similarities and disparities between individual organisms -- comparing life forms. Broad comparisons that are consistent throughout the entire biological world, beyond dispute, become biological principles. These principles give the theory of evolution its structure. There are similarities between all life forms: they have structure, reproduce, develop, metabolize, adapt to their environment, and participate in an evolutionary process. According to the theory of evolution, these similarities suggest that life had a common origin. Evolution is the creation and adaptation of new species from less advanced predecessors. Over time, the most simplistic biological structures have evolved into the increasingly complex and varied ecosystems of today's world. *Evolution is biology plus time*, like Einstein's fourth spatial dimension and its resulting big bang, which, in evolution, is the spark of life.

The first major effort to categorize organisms by broad similarities occurred in the mid-1700s, courtesy of the Swedish *Naturalist* (naturalism is the idea that all phenomenon can be explained in terms of natural causes and laws) Carolus Linnaeus. Written in the universal language, Latin, he organized life into two *kingdoms* (plant and animal), each consisting of many *phylums* and *subphylums*, which contain many more *classes*, which are composed of *orders*, consisting of many *families* and *subfamilies*, which contain many more *genera*, composed of several *species*: a bunch of close *varieties* of genes that are capable of reproducing with each other. At the time, this organization was not associated with evolution; rather, the theory of evolution absorbed and modified this system in accordance with new scientific knowledge. Unknown to Linnaeus, this system's relevance is much deeper than solely being a description of life's broad similarities.

Shortly after 1800, Jean Baptiste Lamarck proposed a new theory regarding the inheritance of biological characteristics through reproduction that made waves in biology: *heredity*. His contribution consists of three hypotheses: because of its environment, an organism needs structure; it must attempt to meet this need; and this change is ultimately centered around its offspring. In 1858 Darwin molded this and his own hypothesis into his theory of *natural selection*: the idea that the many types of species and varieties composing the biosphere fight for limited resources within a population and only the best fitted to survive do. Natural selection acts as a sieve of genes, leaving only the most efficient forms to play their respected roles in their respected environments.

The complete theory of biological evolution is, one, the modification of gene frequency, or specific varieties (features) of organisms; and, two, that these genes are then subjected to the sieve called natural selection. New varieties arise via *mutation*: the scrambling of an existing gene into something new. These mutations are then at the mercy of their *adaptability*: how well they can coincide with their environment (natural selection.) Three types of biological adaptations can occur to an organism: morphological (a change in its structure), physiological (a change in its physical functioning) and behavioral (a change in its mental functioning.)

These basic principles of evolution are fully accepted among the scientific community.

Taking them one step further, trying to determine why these are the principles of life, moves us into the realm of *teleology*: ascribing purpose to evolution. Typically, anyone who ventures into this realm is criticized and discouraged by both scientists and theologians. This is because those who venture into this realm insert new principles that are either not accepted scientific principles or they in some way defy the common opinion shared by most theologians. But if an actual scientific principle of the inorganic realm can somehow *dictate* the occurrences of the organic realm, teleology would inevitably become centered on this principle.

In his 1906 publication Species and Varieties: Their Origin by Mutation (2nd ed.), Hugo de Vries gave the world some wisdom regarding what propels evolution. (de Vries) "Of course, with the single steps of evolution [natural selection] has nothing to do. Only after the step has been taken, the sieve acts, eliminating the unfit. The problem, as the manner in which individual steps are brought about, is quite another side of the equation."

William Bateson, one of the propellants of the theory of biological evolution, generalized the first part of this principle about a century ago. He suggested that if we study both the regulation and the timing of development in organisms, we can understand the steps of evolution. In the 1980s geneticists proved him right with the discovery of the *homeobox gene*. An organism's development is dictated by its *genes*: the hereditary material received from its parents. Homeobox genes are one of the hormonal genes received, which actually turn on and off the development of any particular feature that the specific homeobox gene represents, like a light switch governed by an electronic timer. They utilize *hormones* as their messengers: a type of protein that travels through the body to the particular feature that the homeobox gene is controlling. So, if the body is developing a brain or a skull, the assigned homeobox gene triggers one hormone to begin the development and sends another to stop it. Any learned biologist or geneticist knows that *structural genes* -- which dictate the composition of the structure and the components of an organism -- are remarkably similar between most organisms. For example, the kinds of and the positioning of the proteins that compose humans are almost identical to those that compose chimps. In the 1970s Mary Claire King and Allan Wilson of the University of Berkeley California discovered that chimps and humans share 99% of the same structural genes. (Science 188:107-116) Of our genes, it is the ones controlling our biological regulation (our times on the electronic timer, so to speak) that make us so different. If, let's say, the homeobox gene controlling the development of the largest bone in the leg -- the femur -- turned off its development earlier than biologically scheduled, it would create the difference between a 6^{ft} man and a 4^{ft} man, and the simultaneous mutation of the leg. Ergo, the main difference between chimps, us and most other organisms is the differences in the homeobox genes that control certain aspects of our structural development.

Gene alterations can occur in two ways: either the gene can be modified or it can be moved in relation to the other genes in a sequence. In Unit Seven and Eight we will further explore these types of genetic alterations when exploring the history of multi-cellular life.

Besides natural selection acting as a sieve and the mutations of homeobox genes yielding the small steps in evolution, there is still one, final, inorganic principle that scientists have thus far avoided. As we recall, Einstein showed us that the matter and the energy that compose us are intimately related. *I suggest that the same principle that dictates the laws and the path of the universe also dictates the path of evolution -- energy always traverses through time in the most simplistic manner possible*. We are just blinded by the vast complexity of life's current state to see how this principle also applies to biological evolution; that is we are blinded without a prior

knowledge of what we are observing (of which we will acquire after reading this book.) William Bateson seemed to be on the same wavelength when he wrote, in his 1891 letter to Anna Bateson, what he called his "undulatory hypothesis", or "vibration theory of repetition in parts." "It is the best idea I ever had or am likely to have…. Divisions between segments, petals etc. are *internodal* lines like those in sand figures made by sound, i.e. lines of maximum vibratory strain, while the mid-segmental lines and the petals, etc. are the *nodal* lines, or places of minimum movement. Hence all the *patterns* and *recurrence* of patterns in animals and plants -- hence the perfection of symmetry -- hence bilaterally symmetrical variation, and the *completeness* of repetition whether a part is repeated in a radial or linear series etc. etc." (Cambridge pp.42-3) In a quantum mechanical interpretation, this "maximum vibratory strain" is a leaf's (for example) base line of symmetry, and all of the nodal lines, its places of "minimum movement," are energy's easiest possible path. The symmetry of electrical resistance and the leaf's method of creation suggest that this type of symmetry is also applicable to the energy that composes an organism (more in the upcoming chapters.) Nature needs to be perfectly efficient. Any complications with this need are subsumed into the realm of biochemistry, discussed in the next chapter. As the result of life's need to adapt to its environment, its complexity inevitably must grow over time, which we shall see is the case as we tour its history on Earth.

The main idea that must be maintained in order to understand biological evolution is that it doesn't occur on the macroscopic, visible level that we are privy to. It occurs on the microscopic, molecular level. Once we understand that much, we can then begin to ask questions like "Why does life operate in the manner that it does?" and "Why is my physical being the way that it is?" "What is the meaning of life?" This and much more as we read further into the Book of Life.