

**THE EVOLUTION OF HUMANITY:
PAST, PRESENT, AND POSSIBLE FUTURE**
*A Review of Humanity's Taxonomic Classification
and Proposal to Classify Humanity as a Sixth Kingdom, Symbolia*

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John Allen, FLS
Global Ecotechnics Corporation
1 Bluebird Court
Santa Fe, NM 87508
Email: john@biospheres.com



A shorter version of this paper was first published as a philosophic essay in The Duversity Newsletter No.4 (2000) edited and published by the British thinker, AGE Blake. I am taking the step of publishing this expanded paper electronically with fuller scientific details and complete bibliography for the use of any scientist or other thinker or artist or citizen who finds it interesting and will make the proper acknowledgments if they use any part of the paper. I have reviewed the thrust of this full paper with several outstanding scientific thinkers and have been stimulated by their critical feedback. I especially acknowledge stimulating conversations with John Marsden, Sir Ghillean Prance, Tyler Volk, Niles Eldredge, and Abigail Alling, who of course bear no responsibility for any mistakes or any conclusions contained in the paper.

Abstract

The taxonomy of humans in the teeming world of life forms, has from the beginning of the Theory of Evolution presented one of the most difficult of problems for science. Darwin and Wallace themselves split over this. Darwin opted for a species of primate and Wallace for a difference amounting to a species of a new kingdom. However, a proper taxonomy was probably impossible in their time because the sciences of palaeontology, neurology, ecology, ethnology and archaeology were not available; Darwin was restricted to a choice between dogmatic Biblical and mechanistic world-views. The new science of biospherics together with advances in those sciences mentioned above and new world views made possible by quantum mechanics, relativity, and the mathematics of complex dynamic systems allow us today to produce a realistic taxonomy. Increasing definitive evidence confirms five to seven million years of fecund australopithecine and human evolution since the chimpanzee joined the gorilla and orang-utan in splitting off from our common ancestor into their specialized blind alleys. Building on the ideas of Wallace,

Julian Huxley, Konrad Lorenz, and Robert Rensch, I propose that humanity is best classified as a kingdom. I propose to call that kingdom *Symbolia*. Humanity, since escaping from dependency on a local ecology (where all species of *Animalia* remain) has radiated by making thousands of different intercommunicating cultures throughout the planet. Humanity operates on a biospheric scale similar to the species radiation of other kingdoms and in addition has created biomic scale ecologies for itself, such as agriculture and metropolises.

I further propose, from the perspective of strictly measuring and evaluating individual metabolism, cladistics, neotony, and nervous system as contrasted to ecological and geological roles that humanity of the last hundred thousand years, *Homo sapiens*, be classified also as the single remaining species in the phylum *Crania*, a status also held by *Ginkgo biloba* in its own phylum. While humanity has retained the spine of the *Vertebrata*, it has reversed the direction of its use. Human perception organizes learned action, rather than sensation setting into motion instinctive behavior. The Biospheric Uncertainty Principle, discussed in the text, states that depending on whether one's interest is in exact measurement of the genetic or memetic parameters, either *Crania* or *Symbolia* may be used, analogous to choosing for exact measurement either position or momentum in quantum mechanics depending on the purpose of the observer.

The prospect of human evolution eventually attaining the ontological status of domain, analogous to the bacteria being seen as kingdom or domain according to the perspective taken, is discussed.

Key Words: taxonomy, humanity, *Homo sapiens*, evolution, biosphere, *Symbolia*, kingdom, *crania*, phylum, culture, memes, domains, Biosphere 2.

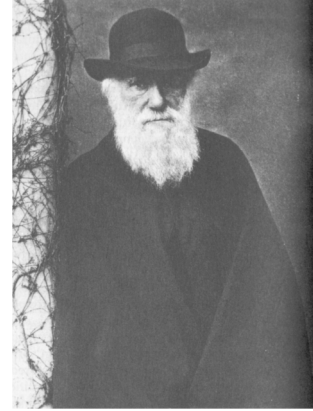
Introduction and Discussion

Section 1: Historical Development of Human Taxonomy

At present the two official Western theories of human taxonomy are the source of many insoluble problems in dealing with pressing practical and contemplative problems. These opposing taxonomic theories are: (1) humans are the eternal image of God (which God?) and (2) humans are a transient species in the order of primates. The establishment of humanity's true functional and historical location in the world would solve a number of serious scientific, artistic, philosophical, and, indeed, personal problems, clearing the decks for humanity to set forth on the furthest historical voyage, realisation of its creative futures, meanings, and transformations.

Human taxonomy alone of all the sciences is still stuck with consequences from the mind-matter dualism of the seventeenth century, a self-willed victim of an unsolvable fictitious contradiction. Unsolvable unless, of course, one looks at dualism's scientific genealogy, that is, a device created by Descartes to allow himself to operate in the

seventeenth century without being destroyed (Bruno) or put under confinement (Galileo) for being classed as a heretic by forces in organised religion allied with autocratic states. Unfortunately, Linnaeus had made his classification in 1758, some thirty-five years before Jefferson, et.al. had separated the Church from the State in over a million square miles. Even more unfortunately, in 1859, when Darwin published the Theory of Evolution, the Anglican Church in England still maintained a crushing power over intellectual independence in London.



Darwin

However, so long as scientists remained determinedly reductionist (that is, not thinking about total systems) and produced equations and theories useful for inventions and classifications of humanity useful for the powerful and the wealthy, they could study whatever they liked since society's rulers need never be disturbed by those scientific methods or thinking practised within the confines of The Royal Society. Those who didn't agree with the image of the ape classification could stay with religion or stay in the tropics, like Wallace. Neurology, culture, and ecology of humans do not appear in taxonomic texts as parameters in classifying humans.

Most thinkers in the sciences and liberal arts find these persisting mid-nineteenth century doctrinal disputes between biblical literalists and those who insist on their ape taxonomy for humans (a matter entirely different from accepting the facts of a common ancestry), to be the blind arguing with the blind. Most scientists outside the biological establishment and nearly all artists rightly prefer to leave such ideological fossils to archaeologies of history. For example, Layzer, (*Cosmogenesis*: p.230), an astrophysicist, writes succinctly "In humans, cultural diversification has taken over the evolutionary role normally played by speciation, accomplishing many of the same "ends" more rapidly, more efficiently, and without the price of irreversible genetic change that speciation exacts." However, the control and intrusive political use of these two opposed doctrines by theological and scientific institutions, each reinforcing the other, impel me to deconstruct the text that regards humans as a species in the order of primates. The fundamentalist interpretation of the image-of-God text (which only exists in Near East originated religions) has been sufficiently deconstructed as to the dubious psychological powers it serves. The image-of-ape text of the scientific dogma controlling the studies of human evolution, also can and does psychologically serve authoritarian powers since its taxonomic deficiencies consist of the same inadequate appraisal of human form and function. This destructive impasse of both dogmatic western classifications agreeing upon the transience and hence basic futility of human and biospheric life leads me to risk proposing publicly what I, and many silent others, regard as a realistic taxonomy of humans.

We *can* make an accurate taxonomy (location of humanity in the biosphere) by building upon Darwin and Wallace's Theory of Evolution including Julian Huxley's, et.al. neo-Darwinian synthesis, and particularly Ernst Mayr's, Stephen J. Gould's, and Niles Eldredge's refinements, and integrating the many findings of science about human origins, histories, ecologies, neotony, neurology, and cultures that have been made since



Wallace politically restricted criteria does not, in any way, threaten the Theory of Evolution and its discovery of the descent of humanity, but rather would greatly strengthen it and, indeed, science itself. As Lorenz (1997:134) comprehensively stated: “knowledge of this animal within the human being is an unconditional prerequisite for understanding – indeed even for the discovery of – the novel, higher laws that first appeared with the emergence of human beings.”

The battle, even war, for the acceptance of the facts of the origin of humanity from the same lineage as the apes, and indeed of all present life from a common source and over billions of years on this planet, is well and truly won. However, the battle to recognise the pattern of facts that will determine the proper classification of present day humanity on the ontological level has hardly begun. Most evolutionists assert that subspecies (like humans in their present classification, and chimpanzees) will disappear in a lifetime of half a million years or so. Lynn Margulis and a few others like to combine this theory with their Fundamentalist opponents’ apocalyptic scenario in a curious secular jeremiad that a self-made doomsday will destroy humanity even before its allotted (by these theoreticians) half a million or less years. No great matter, they say, this disappearance of a species of ape, since the kingdom of bacteria will remain for considerably longer, valiantly keeping Gaia, purified of humans, going in their fashion.

Dogmatic arguments are based on faith; facts are unimportant. As Tertullian famously, and ferociously, put it, “I believe it because it’s absurd.” The argument that humans should be classified as a species or subspecies in the order of primates, based as it was, and is, on Linnaeus’ mid-eighteenth and Darwin’s mid-nineteenth century limited knowledge and cultural worldview, may only be called scientifically open-ended and not a political dogma if it is able to stand up to and answer in open discussion continuing critique based on developments not only in taxonomy but in science as a whole. If this ape classification cannot pass continuous testing, then it must be discarded just as the physicists rejected ether and the chemists rejected phlogiston. And, indeed, this vigorous questioning and changing of classifications upon the introduction of new data and methodologies has been one of the glories of taxonomists themselves (except in the case of humans).

This practically unquestionable taxonomic text that humans *are* a species or even subspecies of primates goes against direct perception, common sense, and new scientific studies showing in great detail humanity's kingdom scale in umwelt (world sensorium), biospheric functioning, and cultural speciation. Direct perception through the new instrument of the telescope was all Galileo needed to see through Aristotle's belief in the perfection of the moon's surface. Direct perception through the new instrument of biospherics or global ecology will allow anyone to see the gulf between the roles of humans and any primate or other species, namely escape from a local ecology and the purposeful creation of a range of cultures able not only to survive in all ecologies but to create new ecologies for itself "We see that we are divorced from local ecosystems. We are not like all those other species that are broken into small units, each integrated into a local system... We are the only species that *as a cohesive whole* plays a concerted role within a natural economic system. Parts of other species play roles in local ecosystems. As a cohesive species, we play a direct role in the global ecosystem. (Eldredge: 1995, pp. 103-123).

Insistence on this species of ape taxonomy, claiming its acceptance to be essential to the "Theory of Evolution," has led in America to extraordinary attempts to banish the Theory of Evolution from being taught in the public schools. Such reactions are not caused by difficulty in understanding the importance of complex scientific theory, since there is no equivalent resistance to the teaching of quantum mechanics, relativity, genetics, or computer sciences. Those image-of-ape taxonomists who claim to represent biological and biospheric science do not understand, for example, that humanity's quantitative ecological role in the biosphere, the creation of new biomes, agricultural, urban, and multi-use, as well as the creation of a powerful evolving symbolic universe, and its probable future in continuing its cultural radiation into ever new econiches, makes humanity as removed in their biospheric role from ape species as ape species are from bacteria or, indeed, from the vast functions and complex histories of any other kingdom, monera, protoctista, fungi, animalia, or plantae.

Just as facts eventually forced taxonomists to recognise bacteria, fungi, and protoctista as ontological entities functioning at the level of kingdoms and not as bizarre species of plants and animals although neither Linnaeus nor Darwin did so recognise them with the knowledge available to them, so facts force such a recognition in the classification of humans.

As to the thesis of those who classify humans as a species of the primate order that evolution theory itself would be threatened if this peculiar taxonomy were not accepted, their argument ignores the fact that the Theory of Evolution does not classify humans. Evolution theory, now called neo-Darwinian since Darwin also knew nothing about genes, shows how changes in heritable living forms can, together with natural, sexual, memetic (cultural), and catastrophic selections, lead to irreversible differential changes in form, in behaviour, in life-history strategy and in ecological role in any given lineage and its descendants, including the evolution of higher taxa than species. (Gould, 1977:397-404).

Linnean taxonomy existed before the Theory of Evolution and, in fact, it was the union of the findings of this taxonomy and the new geology that led Darwin on to his momentous discovery. Darwin used entities recognized by taxonomic scientists to guide him in working out the Theory of Evolution. For example, on the basis of his detailed naturalist observations, Darwin first thought that the variety of small birds he saw on the Galapagos Islands meant they were of different higher taxa groups, but later learned from a taxonomist in London that they were all members of the same family (Gould, 2000:170). This knowledge permitted him to realise that these species had relatively recently originated from a common source and had differentiated because of the differences in the flora in the various Galapagos Islands. Linnaeus himself had doubts as to his classification of humanity as revealed by his notation of another alternative (John Marsden, personal communication).

Darwin and Wallace's Theory of Evolution has no vested interest in any particular taxonomic classification, other than that it be as accurate as possible in reflecting the descent of a given life form. All life forms descended from a common ancestor, but as they evolve, they don't all remain classified as further speciation of bacteria. Changes of form and function founding taxa higher than species occur. Taxonomy deals with *what*; the Theory of Evolution with *how*. The evolutionist Stephen Gould (2000:223), past president of the AAAS, writes, "Taxonomies are theories of knowledge, not objective pigeonholes, hat-racks, or stamp albums with places preassigned. A false taxonomy based on a bogus theory of knowledge can lead us badly astray." That cladistics or genetics or both together provide all the information necessary to classify properly forms of life is a



Julian Huxley

bogus theory of knowledge. Bogus because it neglects ecology and geology, especially their history (Eldredge, 1999:26). I add that it also neglects humanity's Umwelt which besides its own extraordinary expansion (Hubble telescope and cat scans) can integrate the umwelts of clovers, bees, bats, and dogs. Bogus because it neglects to publish and debate dissent from scientists such as Wallace, "who has an innate genius for solving difficulties" (Darwin, 1871:403), Huxley, and Lorenz, among others.

Now Darwin and Wallace, after they had discovered the processes called Natural Selection operating upon heritable variations in life forms (Darwin, 1859; Wallace, 1855) did not neglect to grapple long and hard with the place or taxonomy of humanity in the evolutionary history of the planet. They both realised that this would be a difficult endeavour because clearly humanity is (in the most innocuous phrasing) unique as recently authoritatively stated by E. S. Jones (2000) in *Almost a Whale*. Jones presented his viewpoint to peers in a December 14, 2000, meeting at the Linnean Society of London. However, "unique" today often plays the role of a code word which allows a nuanced distancing from the species of ape classification for many life scientists who can't stomach the present classification but don't wish to pay the price for challenging the

orthodoxy. Having experienced the power and their eagerness to use it of the orthodoxy, I can't blame them. Wallace himself (who was independent of the 1859 imperial London club system) thought that the difference between animals and humans was a chasm so broad as to imply a classificatory level of a kingdom.

Living close to nature in non-western cultures, Wallace saw thought and symbols as the source of this chasm, and carried out some rather non-rigorous studies in the world of thought-forms; these studies' lack of controls, perhaps mainly because the concept of meme as "a bit of information" had not yet entered science, provided the excuse needed for his near permanent disappearance from being officially recognized as co-discoverer with Darwin of the Theory of Evolution. Doubtless his strong anti-militarism and anti-destruction of the environment positions did not help him. Only four years ago was Wallace's portrait mounted next to Darwin's in the Linnean auditorium. Darwin, living in the new industrial jungle with all its open brutalities, minimized the extent of the chasm, and classified humans as a species of primate. His efforts to prove his taxonomic hypothesis bore fruit in his perceptive, beautiful studies in the great similarity in expression of emotions between humans and mammals. This classification proved immensely popular with his imperialist and industrial revolution contemporaries. Communist leaders found it no less appealing in their empire and mass industries. Killing or exploiting less fit 'apes' when deemed necessary was thought scientifically justifiable and emotions, after all, could seldom compete with rulers considering the "logic of a situation".



Vernadsky

Eibl-Eibesfeldt in the 1960's proved, in a series of exquisite cross-cultural studies, that emotional expressions *were* invariant across cultural differences, demonstrating that human motor patterns of expressing emotion were indeed highly determined by their animal descent (Lorenz, 1981:11). In addition, Darwin noted that sexual selection, as well as natural selection, had made great contributions to the human form (Darwin, 1987). But inclusion of emotions and the artistic splendors of sexual display in the 'inventions' of animal species do not begin to cover the emergent facts of the human phenomenon. Of course, the fame of the discoverers of natural selection does not rest on their achievements in the realm of scientific taxonomy. The rest of us are responsible to continue the critique of their

taxonomy. We students of life must integrate the results and implications of human functions such as cognition, history, neononous life stages, vast *umwelt*, and planetary creation of new biomes by cultural selection rather than local ecology adaptation with natural selection, just as Simpson, Huxley and Mayr, et.al., integrated genetics, and Vernadsky, Eldredge, Biosphere 2 integrated ecosystems and geology, especially its discovery of tectonics; and as physicists and cosmologists have integrated cosmic catastrophic selection such as ice age cycles and meteor impacts with natural selection as major factors in evolution in order to appraise properly the place of humanity.

Wallace lived in the rainforest biome of Southeast Asia and Darwin in the developing center of the industrial world, in an agricultural biome ploughed out of cut-down temperate-zone forest. While Wallace had no great connections with the imperial establishment, Darwin forged intimate links with the London power centers, especially the Linnean and Royal Societies and the Athenaeum Club (Gardiner, 1998). When Wallace first sent his formal discovery of the theory to the Linnean Society of London, Darwin contacted his powerful friends who made sure that both papers were presented at the same meeting of the Linnean Society, which though perhaps technically questionable, was certainly ethically, aesthetically, scientifically and humanly appropriate. Darwin himself had held his Theory back from publication for twenty years, mainly because of his unmatched scrupulosity in searching for perfection of presentation (Darwin & Wallace, 1858).

In the mid-nineteenth century, we must remember, not only did no one know about genes, but also the biosphere had still to be discovered as an observable entity; ecological science had not yet been invented. Only two kingdoms, the plant and animal, had been recognised by taxonomy. The human *umwelt* although considerably greater than other life forms remained to be expanded to a decisive superiority in the next century by the exploitation of the electromagnetic fields (the definitive equations of which were published in 1865, six years after the Darwin-Wallace papers were presented at the Linnean Society by Maxwell (who is buried near Darwin and Newton in Westminster Abbey, properly enough). The potent kingdoms of the *monera* (non-nucleated cells), *protocista* (nucleated cells), and of the fungi were also, like humans, dispatched by the procustean classifiers and taxonomists of the time into various species of plants or animals (Margulis, 1982). As a result, the science of the extraordinary roles of cellular, fungal, and human life forms in the biosphere, equivalent to or greater than the plant and animal kingdoms, languished under this arbitrary temporary dictum, much as the role of humanity in the biosphere is clouded today for the same reason of misclassification. Margulis' great discoveries in the roles of cellular organisms owe much to this reclassification of lower taxa into three kingdoms which forces one to take a planetary view of the entities.

Yet another science, that of culturology or ethnology had also not been founded in 1859, and the extraordinary properties of the big double-lobed brain, together with the relation of that brain to the power of making, synthesizing, testing, and morphing of perceptions and symbols in creating the biosphere- changing ecology that allowed planetary and even space adaptability of humans, had hardly begun to be explored, though the properties and powers of symbolic culture equal those of the bacteria, including the skills to transfer needed genes without sexuality. Vernadsky's theory of the biosphere, Biosphere 2, landing on the Moon, studies of a Mission to Mars, the Hubble Telescope, radio and X-Ray astronomy, global warming, and genetic engineering, each of which demonstrates a planetary role for humanity, even a solar system role, were far beyond even the dreams of that Darwinian scientific world in which the process of getting to California from Massachusetts to mine gold cost months of time and thousands of casualties. The average lifetime space of an English villager was estimated to be within a five-mile radius from his or her village center.

Both Darwin and Wallace also suffered in their taxonomic efforts from a deficient epistemology, and certainly from an incomplete knowledge of paleontology. Epistemologically speaking, they both accepted a hard and fast dichotomy of subject and object. Wallace haltingly experimented with spiritualists in the former to learn about humanity and its different destiny from animals, and Darwin studied facial expressions of mammalia to learn objectively about humanity and its common emotions with animals.

Whitehead's (1925) discovery of process as a unifying epistemological approach which led to the discovery of properties of adaptive complex systems and then of dynamic systems including near-chaos order (Abraham 1994, and Kauffman 2000), was unavailable to them. Paleontologically, the work of Dart, Broom, the Leakeys, and Johanson, and their discovery of the line of direct ancestors of modern humans was a century away. Analyses of the role of symbols (Deacon 1997), possessing their own rules for transformation and evolution, which led Deacon to suggest that a phylum was the proper classification for humanity, were just being started by an avant-garde poet, Baudelaire, in Paris and greeted with opprobrium. Knowledge was lacking of the powerful on going cultural evolutionary role of memes competing and cooperating with each other (Dennett 1995; Blackmore, 2000).

Paleontologists in mid-nineteenth century did not know what forms, if any, had evolved in the time between when the apes existed with no humans and when the apes existed with humans, or what was the exact line of descent of humans and how long that might have been (Leakey & Lewin, 1992; Johansen, 1996). The apes are indeed humanity's closest living related forms, but five or six million years of evolution and at least six intermediate forms (two *Australopithecines*, *Homo habilis*, *Homo ergaster*, *Homo erectus*, and *Homo heidelbergensis*) directly separate them from humans. In addition, there is the fact that the chimpanzees and gorillas have themselves also considerably evolved away in their own manner from the common ancestor, for example, the increase of the relative length of their arms to their legs by taking up brachiation, and, in the case of the gorilla then abandoning swinging through the boughs (Eldredge, 1995, Leakey & Lewin, 1992; Johanson & Maitland, 1981; Howells, 1959). Indeed, the Victorian lady was correct that humans are not descended from the modern apes. They are cousins several times removed totally dependent on their diminishing local ecology (diminishing both from climatic and human originated causes) except when under human control as part of a cultural situation. Our futures are entirely different. Hopefully, some cultures will decide to increase the longevity of all our animal cousins and their ecosystems.

Darwin and Wallace's sound biological knowledge, predicated upon the exhaustive studies of life forms and functions and geological periods known in their time that eventually led them to discover the Theory of Evolution, was based on their wide and deep field-work and, in Darwin's case, also laboratory work, especially with beetles, as well as consultations with breeding specialists, especially of pigeons. Moreover, they both worked closely with taxonomists. Even then, however, questions as to the nature of and the extent of difference in a "missing link" between primates and humans were raised. Today, even after three other kingdoms have been recognised, humans are

curiously, most curiously, even more uncompromisingly categorised as, at most, a species of, at most, a family in the primates by textbook writers and a small regiment of computerized logicians who insist that their assumption of a “selfish gene” (a sort of apotheosis of the twin powers of hypostatization and anthropomorphism) together with their version of Natural Selection drastically ideologically modified to mean selection for only reproductive success (Eldredge, 1999) explains most everything, not only about beetles, but also humans and their cultures (sociobiology). Their favorite metaphor is “investing”.

Darwin himself specifically stated that selection for reproductive success alone was to be called sexual as contrasted to natural selection, and that sexual selection was less rigorous (Darwin, 1871:249–269). The ‘Genie in the Machine’ endeavors mightily to replace the ‘Ghost in the Machine’ but new evolutionist “is but old Priest writ large.” Instead of anthropomorphism, genomorphism. When this type of argument displaces discussion of different points of view by claiming to be indisputable fact rather than (highly) disputable hypothesis, experience warns us that an ideology is in the process of constructing and informing the text in the interests of those who fund and control that ideology. And calling an ideology a paradigm is only a commercial writer’s trick. The consequences of ideology always include the introduction of controls, sometimes of refined subtlety, on expression and education leading to the establishment of an entrenched “elite” who then join with other similarly fashioned “elites” to produce a consensual power structure joined to protect their existential interests: funding, offices, status, control of published information, and self-interested mutual back-scratching accreditation.

Terrible examples of institutionalized control of science by ideology include a vast range from the Japanese and German scientists’ deadly experiments on humans; to the killing of Vavilov and promotion of Lysenko by communists; to the fact that Darwin’s *Origin of the Species* has never been followed by any book endeavoring to explain the origin of the higher taxa, not even of the families, much less of the kingdoms by any evolutionist or member of the taxonomic societies. In my own experience when working in the uranium field, such examples of institutionalised scientific controls include the casualty rates of Navajo miners that were kept secret by scientists involved with the Atomic Energy Commission and the disposal locations of plutonium at Los Alamos.

As to the origin of higher taxa Eldredge remarks (Science, 2000) that “(George Gaylord) Simpson noted that the evolution of many taxa of relatively higher rank — for example, orders of mammals such as chiroptera (bats) and cetacea (whales) — typically entails relatively abrupt appearances ... Most populations go extinct in the valley of inadaptive death as they abandon one adaptive peak for another, but the few that survive become the founding members of new taxa of higher categorical rank.” However, despite Simpson’s promising beginnings, no book on origin of classes, or orders, or kingdoms, or phyla has been written as yet. I propose that the *Origin of Kingdoms* is the most urgent unwritten book in the life sciences. The evolution of differences that generate the biospheric-wide expansion of a kingdom would be a study of perhaps the most significant of all biological information, of the differences that make the greatest difference. The *Origin of Kingdoms* might even generate the knowledge to proceed to the *Origin of Domains*.

There are many dangerous consequences that can logically and psychologically be deduced from acceptance of the “humans are a species of ape” classification beyond its stopping of the progress of biological and ecological sciences. Many of these putative consequences, those leading to a diminution or even early extinction of humanity, are ardently extrapolated by admirers of the ecological power of bacteria and of the conscious emotional power and clever game-playing of more complex animals, as if realistic classification of humans could in some way downplay the marvellous ineluctable realities of other kingdoms. If humanity is ontologically only a species, then it is properly comparable to chimpanzees and other high mammalian species in that all these are expected, geologically speaking, to be extinct in a relatively short time. But we are not going to learn much more by comparing humans to chimpanzees than we would learn by comparing fungi to a species of protocista that had diverged six million years before from the lineage that produced the fungi.

Lynn Margulis (1986: 261) writes in her classic, *Microcosmos*, that studying “the very short-term geological future, we can say that mammalian extinctions and replacements, *including our own*, (italics mine) will continue.” Margulis is one of those who classify present humans as members of a subspecies, brothers to Neanderthal, who only lasted about 100,000 years, a very short geological time indeed. Following those who classify humans as a subspecies in a family, *Hominidae*, equal to the ape family, *Pongidae*, in the primate order, Margulis enjoys debating her belief with equally ideological Creationist opponents, perhaps without realising that it is her own taxonomic assertions, and not evolution as such, that most stoke the adversarial fires with audiences. Even Stephen Gould (2000:267) astonishingly sums up his vast evolutionary and paleontological knowledge by calling humanity “a tiny and accidental twig on the ... tree of life.” Twigs, of course, come and go with the seasons (for which read environmental changes). Jared Diamond (1992: 25) caricatures reductionist classification by calling humans as the “third species of chimpanzee,” and speculates on its imminent possible destruction. One hopes that the admirable anthropologist Diamond is wielding tongue in cheek Swiftian irony and is not caricaturing himself.

Not only has no kingdom once evolved gone extinct, but there is no reason to suppose that any will except by an extraordinary cosmic impact on the biosphere. The ontological status of kingdom level means that the life form under observation has generated an adaptive, branching radiation of forms into every region of the biosphere under a myriad of strenuous and changing natural selection demands of cooperation and competition to adapt. A biological entity of the level of kingdom implies not a twig but a sturdy branch with thousands of twigs upon the tree of life, with definite potentialities that could easily live as long as the entire tree, or at least, until a solar eruption, planetary cooling or warming, or giant meteor impact should drastically change Earth’s conditions. Those scientists who are connoisseurs of human meaninglessness are nearly always devoted to the species of primate classification and curiously greet every scientific discovery of the greatness of the Cosmos as further evidence justifying their opinion of the smallness, insignificance and ephemerality of humans.

To the contrary, every such human discovery of galaxies, genes, biospheres, quarks, evolution, kingdoms and so on magnifies human contemplations, multiplies human powers and increases human significance, beauty, magnitude and probable duration and eventual solar distribution by any criterion, especially in contrast to that quaint theology that placed humans at the center of a minute universe with a few thousand year life span that contained no Australia, Americas, Antarctica, Pacific Ocean, evolution, galaxies, science, democracy, freedom of speech and thought, etc. etc. Those who assert the meaninglessness of humans provide a remarkably useful teleological justification for their funders who believe in profit maximization and cultural hegemony without the bother of any Human Protection Acts. Their theme of the meaninglessness of human life is underscored by their assignment of the lowest possible classification to humans that can be achieved without violating the minimum standard professional requirements of their fields of specialist knowledge. In these remarks I am not implying in any way that these admirable logicians and field scientists who have otherwise contributed so much to my own and general human knowledge are making these statements because they are being paid to do so, only that they are being supported so well in power and fame as well as pelf because they strongly hold these opinions and conclusions so amenable to the interests of the present *economium*.

This mode of thought actually pretends to see, for example, humans' magnificent discovery of the earth revolving around the sun, and the sun around the galaxy, and the galaxy moving in and with some larger unit, as diminishing humanity! This "nothing but a meaningless epiphenomenon" way of thinking about humanity probably denotes the unconscious reflex of an unacknowledged nihilist philosophy reacting (understandably enough) to well-known physical and psychological repressions by powerful cults claiming image-of-god status for humanity.

These astonishing new facts that humans acting as scientists are discovering about the cosmos *and about humans* could be used to show how the human world of values and meanings has advanced by millions of light years in space and billions of galaxies in time and forty thousand years of history beyond the insipid space-time and history limitations of ancient Near Eastern coercive theo-and state-sponsored moralities some of which still write punitive legislation on victimless personal behaviour in the United States. For example, Richard Feynman, the great quantum mechanistic wrote: "Nothing is 'mere'... The vastness of the heavens stretches my imagination — my little eye can catch one-million-year-old light ... Or see them (the stars) with the greater eye of Palomar, rushing all apart from some common starting point ... What is the pattern, or the meaning, or the why? It does no harm to the mystery to know a little about it. Far more marvellous is the truth than any artists of the past have imagined!" (Hey and Walters, 1987, p.1.)

Many biological scientists are now trying to write such a cosmic evolutionary epic under the leadership of E.O. Wilson, but it has had little success because of Wilson's acceptance of the subspecies of primates classification of humanity. Not much of an epic there except in the glorious stage setting. An Odyssey without Odysseus. A chimpanzee may stick the occasional twig into the occasional termite mound, or pick up and remember the odd rock to pound open an inviting nut, but it was the biophilic Wilson operating complex symbol and technical systems braving jungles in which no ape exists

who discovered and read the way ants communicate with each other. However, such scientific advances in astronomy, planetology, and physical chemistry also demonstrate that humans now could well develop the option of settling in many different centers of this expanded cosmos and attain an asymptotic-to-cosmic immortality in companionship with the other kingdoms in other space biospheres (Allen & Nelson, 1986). Renowned thinkers such as Vernadsky and Sagan, familiar with the work of physicists, astronomers and planetologists, often use the example of advances such as these to demonstrate the creation of new meanings and possibilities, which, simultaneously, imply a long lifetime for humanity and its companions in artificial biospheres descended from Earth's biosphere – an epic with true heroes and heroines grounded in science, symbol, vision, and, most of all, reality. Even the horseshoe crabs have lasted two hundred and thirty million years.

In the actual dynamic world of the life sciences, away from the dogma of certain taxonomists who are always well-funded and well-positioned by the scientific establishment of the *imperium*, now masquerading as an *economium*, new discoveries directly connected with evolution theory oblige more real-time life scientists to treat humanity as at least an order, a class, a phylum, or, indeed, as a kingdom. Julian Huxley, one of the creators of the neo-Darwinian synthesis of genetics and the Theory of Evolution treated humanity as a kingdom. Huxley (1953: 14) wrote in his masterpiece, *Evolution in Action*, that “a new method of transformation has become available ... in the human sector of evolution...the method of cumulative experience combined with conscious purpose ... has produced a new kind of result, in the shape of transmissible cultures; the main unit of evolution in the human phase is not the biological species, but the stream of culture and genetic advance has taken a back seat as compared to changes in the transmissible techniques of cultural advance ... not only a more rapid tempo (of evolution), but a new kind of tempo — an acceleration instead of a more or less steady average rate over long periods.”

Konrad Lorenz, the co-founder of ethology (animal behavior), and certainly a deep friend and admirer of that kingdom for its profound passions, beautiful (sexually selected) forms, and fantastic adaptive functions, likewise viewed humanity as a kingdom. Lorenz considered a human culture, as defined in the science of ethnology or culturology, to be the ‘species’ exemplifying the new kingdom (Lorenz, 1981) and that the accelerating rate of evolution noted by Huxley (1953) was explained by the ‘Lamarckian’ nature of this “new kind of result,” namely that the learned inheritance of acquired characteristics became possible in the world of memes. The human kingdom, which I propose be called Symbolia (Allen, 2000; Allen, 1998), since this is the main way cultural elements, called memes by Richard Dawkins (1978: 206), can be transmitted, now contains probably 10,000 cultural species and there are perhaps another 10,000 ‘fossils’ (archaeological remains) of previous cultural species discovered both by archaeologists and historians. The scientific study of cultures would obviously be extraordinarily increased in breadth and depth by the impetus of this classification (Deacon, 1998). And what study would be of more practical and contemplative use to humans of any culture today, when ethnic battles, oppressions and even attempted cultural exterminations are the major source of wars and disturbances? *The Origins of Cultures* also remains unwritten.

Both of these great evolutionary scientists, Huxley and his student Lorenz in this matter, viewed the creation of culture as the distinguishing mark of the biosphere's youngest kingdom. Functional, regulatory, and management genes evolved and together with phenotypic experimentation and geologic challenges led to an upright-running, big-brained, long-living, neotonous, modified k strategy, year-round sexual, speaking, linguistically gifted, biome-making, culture and technics creating, adaptively radiating life-form. This new life form would combine the powers of both genetic and memetic mutation with internal value-driven selection added to natural, sexual, ecological, and catastrophic physical selection to produce the extremely adaptive and biome creative patterns of cultural goal-driven activity. Thus humanity becomes a co-evolutionary partner with those parts of the biosphere following the non-purposeful Darwinian-Wallace theory of mutation and natural selection, that is to say, with the previously evolved five kingdoms. In addition, the new kingdom, by introducing cultural value-driven selection as well as the various non-purposive selections, soon began drastically changing in preferred directions the subspecies and even species compositions of many animal and plant genera and even families: the canines and *Rosaceae* being only two examples of a rapidly increasing number.

Darwin himself used his observations of pigeon breeding to underscore his conclusions in the *Origin of the Species* because of the rapid change rate produced by the goal-driven breeders. To say value or purpose-driven is not to say that these values are absolute, that is a cosmic teleology. Certain values of culture A may be considered factually disastrous or even anti-value by culture B. Purpose-driven or influenced is not to say that some of the driving values are not bizarre in the extreme, such as the selection of mutations for survival in order to produce the brainless but sleek-muzzled collie. 'Go forth and multiply,' 'get rich quick,' headhunting, and prohibitions of pleasurable activities have all met tremendous oppositions from cultures with different purposes. The full Theory of Evolution must now include both the neo-Darwin-Wallace two step theory of heritable variation and Natural Selection (which Darwin later labeled as Survival of the Fittest for this theory to more fitly survive in the Spencerian ideology of Empire), and the three step evolutionary process introduced, as Huxley (1953) pointed out, by humanity's invention of culture, namely: purposeful (value driven) meme mutations or discovery (invention), and genetic mutations, selected by various combinations of natural, sexual, ecological, cultural, and catastrophic events. "Oh where are the Hittites of yesteryear!" Villon might have written. "And when will the Martians of tomorrow arrive?" a new Walt Whitman might write.

Eldredge (1999) makes the point that since "Scientists working at lower levels seldom encounter higher level entities; for the most part, therefore, they may (professionally) safely ignore them." However, kingdoms are existent entities, measurable in function and mappable in history, bound together by common origins (evolutionary processes) and a biospheric field. And the kingdom *Symbolia*, homologous with all the other kingdoms in its planetary ecology, tremendous and increasing umwelt, distinct breeding strategy, and rapid radiation around the planet; can equally be mapped and measured functionally and historically. So, however professionally ignored by taxonomists who specialize in genera

or families or even classes, the realities of kingdoms do not go away any more for them than galaxies go away for planetologists or the universe disappears because a galactic specialist ignores it. Certainly we humans ignore the reality of our belonging to a kingdom, *Symbolia*, descended from a post-chimpanzee-split-off lineage including *Hominidae* and *Australopithecines* as higher taxa in *Animalia*, at our intellectual, personal, political and ecological peril.

Darwin's thought that sexual selection played a decisive role in human evolution brings into view the development of the brain and the apprehension of qualities (that is purposes or choices) as well as sensations. "He who admits the principle of sexual selection will be led to the remarkable conclusion that the nervous system not only regulates most of the existing functions of the body, but has indirectly influenced the progressive development of various bodily structures and of certain mental qualities — courage; pugnacity; perseverance; strength and size of body; weapons of all kinds; musical organs, both vocal and instrumental; bright colors, and ornamental appendages have all been indirectly gained by the one sex or the other through the exertion of choice; the influence of love and jealousy; and the appreciation of the beautiful in sound, color, or form; and these powers of the mind manifestly depend on the development of the brain" (Ornstein, 1991: 72). Sexual selection thus brought humanity to the point of inventing cultural speciation.

The discovery of the australopithecines, all seven or eight species, (Johansen, 1996), and of *Homo habilis* and *Homo erectus*, and four other human species (Johansen, 1996) unknown to Darwin, proved from whom the human kingdom has directly descended. The missing links, because they had gone extinct, had to await the discovery of their bones in a remote pit in South Africa, the Olduvai Gorge, Lake Turkana, and Hadar. One group order stood between the order of primates and the first order of proto-humans in the taxonomy proposed by Johanson & Maitland (1981), as did some five or more million years of evolution. The order that stood upright (australopithecines) came before the order of hominids began their big-brained evolutionary spurt. Corballis (1991: 311) proposed that humanity be classified as a class since our hominid-evolved vocabulary-based, generative assembling device (GAD) alone is of "the order of that which distinguishes animals that fly from those that do not." Certainly, the worldwide optional use of the bottle and exo-embryo has made classification under Class Mammalia obsolete from purely biological descriptive accuracy. The taxonomists of humanity, in this imperium based on military power and corresponding economium based on financial profit maximization, are seen to stand as anti-scientific in their "nothing but" a short-lived species claim, as certainly as are the literalist interpreters of that much revised antique Near Eastern text adopted as unquestionable by an earlier imperium some 1700 years ago to control the beliefs of their happiness-pursuing subjects.

The "missing links" have been found, but more research monies are still spent on studying chimpanzees (who split from our lineage five or six millions years and several forms ago) as our closest but not very near living relative than on Australopithecines (from whom we split two and a half million years ago), *Homo erectus* (from whom we split maybe five hundred thousand years ago) and *Neanderthalis* (who fatally split from our ancestors 100, 000 years ago and disappeared only 35,000 years ago). Virtuosos of

every minuscule logical deduction made from a taxonomy disputed from the beginning, supported by a metaphysics of meaninglessness, are ever better financed by those who now wish the world to adopt as universal the goal of a twenty per cent return on capital investments per year no matter if extinctions are required of human culture species or biologic species of the other five kingdoms or even disappearance of entire ecosystems. Richard Evans Schultes (1992) points out that extinction of knowledge based on different cultural adaptations is as certainly a loss to the human enterprise as the extinction of animal species. But much more effort goes to save the tiger than the Yanomami Indians who are under the present classification of humans a small part of a subspecies. An independent culture, as Lorenz emphasized, should be considered as equivalent to a complete species in itself like the tiger.

To be sure the tiger should flourish in conserved wildernesses within the limits of the selection processes affecting it, but that the western scientific cultural selection component should be weighted toward the tiger more than the Yanomami in part because the tiger is classified as a higher taxa is not acceptable on a factual basis, or, or course, any other basis. Try to imagine some medically untrained ethologist being allowed to administer an out-of-date vaccine with known severe side effects to the tiger population, but voluble justifications for such activity with the Yanomami made by an ethnologist labelling them “ferocious” are printed with solemnity by *Science*.

That wonderful naturalist E. O. Wilson, realizing the gigantic problem that threatens the official doctrinal classification, has tried to construct a socio-biological text to preserve the animal species status of humans, even going so far as to announce the natural genetic evolution of a “moral instinct.” This conclusion reached with little support from the findings of ethnology, psychology, history, crime, or cross-cultural experiences of raising children contends, for one example from many, that there is a genetically based universal cultural prohibition of brother-sister incest because, Wilson states, biologically there is a human lack of sexual interest of brothers in sisters.

The stark contradiction between having to prohibit something (cultural) in which there is stated ex-officio as a scientist that no biological interest exists is not noted. In fact, the Incas and Pharaohs both proudly used just such an incestuous breeding program with as much success as any other royal breeding program. Even the most severe cultural conditioning and sanctions have not prevented many dramatic events stemming from this attraction even in cultures that maintain as driving purposes the widest possible definition of incest and enforce avoidance of it by the extremist of measures. A Navajo origin myth begins with sibling incest events. Abraham, accepted by three world religions as one of their founders, was married to his half-sister with no word of criticism found in the text. Wilson, to his credit, but to his argument’s demise, begins his paragraph with “universals of human behaviour” and ends with “usually proscribed” (Wilson, 1978:36). Such are some of the pronouncements into which the ideological following of the species of Ape taxonomy can lead even the greatest of our biological field scientists when trying to justify learned cultural beliefs as an evolved instinct in a subspecies of a primate

Indeed, if humanity were but a species of the animal kingdom it would be unique from all other animals in not acting mainly from instincts as ethology amply demonstrates is the case with animals, and therefore a phylum at minimum. The mistaken classification itself provokes Wilson's whole socio-biological range of fantasies. These fantasies are logically necessary, even though it means junking the science of human behaviour, culturology, once one accepts that humanity is a third chimpanzee, or a fourth great ape, in the service of a new would-be culture trying to write its own mythology of origins, as strange but less poetical than those of non-science based cultures.

Section 2: The Practical Necessity for a Kingdom Classification of Humanity

My own awakening to a necessary and then compelling interest in this area of taxonomy came about while designing Biosphere 2 (Allen & Nelson, 1999; Allen, 1997). I started out conventionally enough by using the (still relatively new) five kingdom approach on the biospheric part of the design also trying to obtain species of the ninety-two phyla as identified by Margulis (1982). It soon became obvious that on a purely biological survival basis humans required at least as many ecological resources as all the different phyla of *Animalia* and, of course, much more than any single species. When cultural as well as directly biological metabolic needs are included, James Lovelock (1988: 211) stated "we as a species now move a greater mass of some materials around the Earth than did all the biota of Gaia before we appeared." I soon understood that ecological data are not taken into much account by the taxonomic guild.

When calculating what a group of humans needed in order to survive and advance culturally, psychologically, and technically for long periods of time, I found that they required about the same scale of biospheric production as each of the five recognised kingdoms. Checking the use of Biosphere 1's (Earth Biosphere) production and resources, the same basic fact was found to be true. Humans and their cultural infrastructure use about 50% of the water and over 40% of the biomass production in Biosphere I. As noted evolutionist Ernst Mayr (2000: 82) recently wrote, "humanity has attained ... an unprecedented dominance over the entire globe." This is not a description of a species, but of a kingdom.

Humans with their cultures and technics are found as ubiquitously as are the recognised kingdoms of protocista, plants, fungi and animals, and are even tracking the bacteria down to thirty thousand feet in rock and in boiling hot springs and have taken the other five kingdoms into space where only the bacteria may previously have been, conveyed by meteors from as yet unknown origins (Lapo, 1987; Vernadsky, 1986).

The humans in the experiment, in order to survive, had also to have designed into Biosphere 2 a way of life (culture) that appealed to purpose (minimally to survive in, master, and discover the behaviour of a biosphere different in many respects, especially in the tempo of its cycles, from the biosphere in which they had developed), a technics, and a thorough communications system, (Alling, A. and Nelson, M., 1993), a cybersphere, which I called, analogically, a "nerve system" (Allen, 1997). In effect,

Biosphere 2 was also Vernadsky's *Noosphere 1*, as Josef Gitelson, the Russian biophysicist and biospheric scientist so aptly called it (personal communication). The necessity of finding a practical solution to building an operating model of Biosphere 1 forced me to recognize the truth of Huxley's and Lorenz's insistence that humanity is a kingdom profoundly intertwined and evolving with the entire biosphere just as were the other kingdoms. Humanity, like them, is also rapidly altering the nature of the biosphere with its panoply of needs and its abilities to satisfy them. The evolutionary mutation that allowed this new kingdom to survive and evolve further was the adaptive radiation of its highly adaptable cultures, each a transmissible and rapidly adaptable (partly because of necessary choice between increasing alternatives) set of behavioural units, or memes.

The genetic basis of humans probably is species-specific, in the sense that humans from any culture can commence the breeding process with a human from any other culture, certainly if the statement is slightly modified to assert that in the continuum of cultures there is no effective barrier to a two step completion of the breeding process between any two cultures of reproducing populations. However, the end of the breeding process, birth, can only take place if the baby is born by the procedures of one culture or the other if the two cultures differ. The baby cannot be born simultaneously by the two methods of the mother hanging by her arms from a tree and the mother lying anaesthetised in a hospital bed. Nor can individuals of many cultures breed except anonymously, generally with great danger, with a member of certain other cultures without being transformed out of the source culture species into the other one. Some cultures do not recognise this possibility, called apostasy, and sanction it with the death penalty to secure inbreeding. This to a degree limits cross-breeding.

The evolution of a new breeding pattern is the generator of new kingdoms. From the animal sperm-egg mutation to the human sperm-egg-culture mutation is just such a change. When a new breeding pattern generates enough adaptations to radiate throughout a biosphere this ecological *succeed* confirms the ontological reality of the taxonomic status of kingdom. Fungi, for example, developed the method of embryos developing from spores.

Section 3: Use of a New Human Taxonomy in Biosphere 2 Design

As the Biosphere 2 design process made progress following studies of the data from the Test Module experiments and from my own experiences inside, I was forced to consider the matter more deeply, and concluded that a Biospheric Uncertainty Principle operated at the biospheric scale, a scale too large for humans to see (our view from space can only encompass one half of the Earth's biosphere at any one time) just as the quantum level is too small for humans to measure without interfering with the accuracy either of the position or momentum measurements of the photon (Allen, 1997). *The Biospheric Uncertainty Principle*, simply stated, recognizes the biosphere is so large compared to humans, and humans so small compared to the biosphere, that exactly measuring humans' cultural requirements and influences interferes with the accuracy of measuring their metabolic needs and influences. Measuring exactly their metabolic needs and

influences interferes with the accuracy of measurements of their cultural requirements and influences. Therefore, just as in quantum mechanics, I had to devise a *quantum biospherics* in which the design included a way to measure humans exactly as to their metabolic needs and reciprocities (for example, water and oxygen which must be present in certain minimum quantities), and another way to measure humans as to their symbolic or cultural necessities (for example, books, kitchen, wastewater, laboratory, schedules, privacy, etc.).

I had to switch my studies back and forth between metabolics and metaphysics to arrive at what at last appeared to me to be a representation of the human group, my quantum, that satisfied all of the design necessities, and such studies have provided the master key for my projects and problems since 1987 when I first gave the go ahead for the Biosphere 2 CEO, Margaret Augustine, to stake out our site upon which she would build the apparatus that would house the biosphere experiment. Although thirteen years do not rank with Darwin's heroic thirty years of preparation before publishing his results, yet that much effort does mean that I am hardly rushing into print (actually, electrons thanks to the information evolution) with this first notice of my preparation of the book, *The Ascent of Humans*, concerning the natural, sexual, cultural, cosmic catastrophe and purpose-driven memetic selection of the sixth kingdom, *Symbolia*.

Symbolia, I contend, can accurately and fruitfully be described as descended from a species of the order *Hominidae* of the phylum *Crania* (or *Neotonia*), which descended from a species of the order of Walking Apes of the phylum *Chordata* which descended from a species of the family of the *Pongidae* of the phylum *Chordata*. The future genetic-memetic evolutionary possibilities of kingdom *Symbolia* include purposefully (at least as a component) chosen memetic-genetic mutations into the domain, *Demiurgia*, by using the accelerated methods of evolution now available to itself (Huxley, 1953; Lorenz, 1981).

I found then that I needed three levels of taxonomy to classify humanity properly if I wished to include past, present, and possible future of humanity into the Biosphere 2 design. I had to consider the future owing to the fact that Biosphere 2 was not only designed to model Earth's biosphere of today but to be the first step in the design of biospheres on other worlds such as Moon and Mars. On the first level, that is, as a life form without culture participating metabolically and evolving in a reciprocal organic relationship with all other life forms, I used the classification of *Crania*, a phylum, with the notion that an upright running big-brained handy structural plan for humans identified them as a phylum, or basic structure of properties, since the operative initiating points in the structure had passed from the lower brains and vertebrae to the upper twin-lobed handed cerebrum which altered the human *umwelt* from a local sense-based ecology to an *umwelt* of projection-based ecology.

So much is this reversal of the initiating point in the nervous system true that even a paralyzed spine does not now in the kingdom *Symbolia* prevent an individual from being a major participant in the life of his cultural group, Stephen Hawkins being one of many examples. This attainment of phylum level probably took place with the mutation from *Homo habilis* to *Homo erectus* who with this new perspective proceeded to break out of

the few eco-niches in which *Homo habilis* could survive to radiate adaptively *during ice ages* throughout the continents and nearby islands of EurAsAfrica. They became able to deal successfully with any felines, canines, primates, bears, crocodiles, birds, fish, snakes or whatever class of its parent chordata that it encountered, and in whatever ecosystem, partially due to its new inner capacity to visualize, identify with, and then imitate almost to perfection aided by the use of skins for disguises key elements of the behavior of these classes of chordata to which their objects of chase, reverence, play, or companionship could only respond instinctively.

Perhaps most importantly, the growth of the initiating points in the upper lobes means that at birth the brain is only one-fifth its size at maturity. A human, “of all animals is born with the smallest fraction of the ultimate weight of the adult brain ... the most significant of all differences between man and other animals” (Feldenkrais, 1949). This means that each individual human participates in making his/her own higher brain connections, that is, incorporates his here/own learning about contemporary environment into his behavioural and structural repertoire, reducing the instinctive (reflex) components to a small role in his/her total life. This is a different, unique, life-strategy of learning, a new bauplan, from the *Chordata* from which *Crania* evolved. The *Chordata* themselves are recognized by present taxonomists (Maragulis, 1988) to be evolving in this direction. *Chordata* contains two brainless subphylum, called acraniata, and two craniata, one of which lacks jaws. It is a sardonically humorous commentary on the power of the image-of-ape ideology, that the possession of a jaw is rated at the level of a subphylum, while the possession of a big complex brain standing on two legs with a vertical spine and hands freed to coordinate actions with the new powers of perception is rated at the level of the change of a species or subspecies. It is, indeed, from the jaw itself that the extra bone needed to house the human brain was transferred to the head.

The second level, mutation from the phylum level, took place with the invention of complete symbolic cultures 40- 60,000 years ago. The inventions of these supple cultures led to oceanic travel, the settling of Australia and the conquest of the circumpolar Arctic, which in turn led to the settling of the Americas and placed the human kingdom in a position to radiate more rapidly than any kingdom since the first bacteria and to be found by the early twentieth century, with Shackleton’s expedition into the Antarctic interior, in every biome of the Biosphere. Within another sixty years the new kingdom had made an adaptive radiation into space and was gathering data to attempt radiating adaptively onto the Moon and Mars.

Designing and building Biosphere 2 soon brought me into even more intimate contact with those intrepid groups and courageous thinkers in Russia and the United States determined to start this adaptive radiation of the new kingdom onto the Moon and Mars and thence, maybe, to planets yet unknown around other stars, perhaps with stops along the way on some of the outer Moons. A well-known biologist, Thomas Lovejoy, once publicly interrupted me in a conference on biospherics to announce “You can’t talk about going to the stars.” This was just five years before NASA started its Astrobiology Center.

To build into Biosphere 2 elements that would be useful to this aim, and aims had been introduced into evolution by the selection of human cultures as part of Earth's biosphere, would require the beginning of designing a 'nerve system' that would be, so to speak, the 'missing third lobe' of the cerebellum, the cybersphere. The 'lobe' that, connected by computer with the same hands and brains and eyes of the human kingdom as the first two lobes, would provide memory, communication, feedback, and simulations of consequences of acting on complex systems on such a scale as to make this third lobe a collective lobe into which any group quantum could plug. In effect, memetic material could then be transmitted as quickly and as continuously throughout humanity as genetic material throughout the bacterial kingdom. A group quantum I defined as any set of Crania united with a common aim to create at least a sub-culture (transmissible by learning a set of behaviours, ideas, and symbols). All humans descended from the ancestral group(s) that invented culture are part of at least one group quantum, in other words, part of the human kingdom, which I called *Symbolia* for its primary method of transmitting memes although it could also be called for its life strategy of continuous learning of, and by, symbols.

Section Four: Future Evolution of Humanity

At this point I was struck by the proposal of a taxonomy that demanded a level beyond that of the kingdoms, just as ancient cultural kingdoms had a word for a higher level of similarity when such kingdoms existed in a more comprehensive civilization that they all recognised. In Greek, this level was called the *ecumene*. The taxonomic proposal was to use the word *domain* for those large aggregations of similarities in form, function and scale that played decisive roles in biospheric creation and maintenance. It proposed that archeobacteria, the bacteria that lived in anaerobic, non-oxygen, eco-niches, the bacteria, and the eukaryotes made up the three domains. Each of these three is associated with producing successive fundamental changes in the Biosphere's relation with the Geosphere, what the Russian, Lapo (1987), calls *Traces of Bygone Biospheres*. By the Biospheric Uncertainty Principle, these three domains may also appear as kingdoms when looking only at their role within the biosphere. The eukaryotes, from 600-800 million years ago, provided the nucleated cell springboard from which were launched the three great multicellular kingdoms of animals, plants, and fungi. Those animals in the form of phylum crania launched and continually relaunch with each new birth the kingdom of *Symbolia*, humanity.

However, the birth of a member of *Symbolia* requires both the endo-and exo-womb. It is not until the age of nearly three that a human's brain has grown to the size that it can say "I" and commence to speak, that is to enter the world of *Symbolia* as a self-conscious member. By the age of five, the human is about a quarter of its full grown size, but with ninety per cent of the brain size. The neotonous invention of a prolonged childhood required to master the complexities of any cultural symbolic system allows the acquisition of the powers of the kingdom. Any oral, anal, or uro-genitary blocks from the first three years toward enjoying cranial metabolic and functional efficiency tends to produce sets of the diseases peculiar to this kingdom, psychological disorders ranging

from obsessive iterations of habits to believing that symbols directly represent cranial actualities.

The archeobacteria formed the first biosphere in which small increases in oxygen from their byproducts allowed the bacterial mutation(s), cyanobacteria, to radiate adaptively and thus to change the composition of the atmosphere from low oxygen and high carbon dioxide to high oxygen and low carbon dioxide, aided perhaps by dissociation of hydrogen from a water saturated higher atmosphere.

It then occurred to me that if a true knowledge of earth's biosphere and mastery of artificial biospheres could be combined and, after that, if a successful adaptive radiation occurred of space biospheres on the Moon and/or Mars, then the ontological reality called humans would need to be classified both as a kingdom and as a domain like the other three domains because the combined efforts of humans at that level, archeobacteria, bacteria, and the eukaryotes would be required to make such an effort succeed.

Such a mutation of memes into organization of very complex *themes* to deal with different cosmic worlds would bring about the fullest development of the evolutionary potentialities contained in the human genetic-memetic pool, that is, the *ethnosphere* - or the range of memes embodying values, teleos, and choices, in human cultures; the *technosphere* - or the range of memes embodied in extra-biologic useful objects; and the *cybersphere* - or the "third lobe", as described above, including communication from vast distances up to and beyond interplanetary, including virtual realities; and finishing with the creation of the *noosphere* - a world of active and contemplative intelligence integrating scientific and artistic knowledge.

To realize the noosphere, Vernadsky (1986), the founder of biospherics, called for the fullest integration of scientific knowledge and its several methods into human reason, without the loss of its artistic, romantic, and freedom-loving knowledge. The noosphere, sphere of intelligence, is the point where Buckminster Fuller (1981: 28) envisioned the micro-incisive and macro-comprehensive, anticipatory, synergetic design becoming a norm of human behavior. This point still lies in the potential future but the proper taxonomy of humans will help move that point closer to kinetic reality.

The successful design, building, and completion of a sustainable, co-evolutionary Mars settlement would prove conclusively the arrival of human development past a kingdom into a domain, an integral positive vector in the epic unfolding of biospheres in an implicate universe that can, through dramatic (possible and actual failures) stages develop into a quasi- if not actually immortal, ever-evolving-toward-complexity cosmos. A space biosphere evolving and flourishing (biomass and biodiversity and technomass and cultural diversity) on Mars can only get there by first establishing a noosphere on Earth because only a noosphere here will understand the necessity of checking all its Earth derived biodata on Mars to ensure its objectivity. Such a noosphere will probably only arrive on Earth by successfully completing a MARS ON EARTH[®] model to prove that such an approach can work on Earth and be allowed to radiate adaptively over the planet.

The major piece of non-scientific superstition holding back the accomplishment of this and related creative tasks is not in fact religion, as some imagine; it is the dogmatic assertion, based on misleading analogies to stenotypic (specialist) mammals, by the powerful scientific faction of present evolutionists and taxonomists that humanity is a short-lived type of ape. This head-in-the-(far)-past assertion still carouses at the table of science only because it has not been deconstructed as to the interests it serves and served will serve. This assertion denigrates by being foisted on and presented as indispensable to one of the most profound theories ever developed by human minds, Darwin and Wallace's Theory of Evolution. Bates, another great explorer, was a third member of that quantum group, but became head of the Royal Geographic Society and turned over his beetle collection of adaptive radiations to Darwin.

Apehood for humans is travesty taxonomy that through enshrining inadequate science, is well publicized because it serves those who treat other humans, not to speak of animals, as a means to their ends and helps minimize either bad conscience and bad press. Not only does the taxonomy of *Homo* as a species of ape deconstruct to an apologia for the devaluation of life by the imperiums, economiums and educatoriums, but it also flouts science itself. It ignores the discovery of the vast length of time, at least 5,000,000 years in which *Australopithecus* stood upright followed by *Homo erectus* growing its brain size and developing its structure and then by modern humans who perhaps 60,000 years ago created culture as a coherent, stimulating, rapidly adapting, complex body of behaviors that could be mutated, meme by meme, several times a generation, each time about equivalent to the time it takes a bacteria to ingest a new piece of DNA, while accumulating ever more information and at intervals discovering ever more powerful principles by which to organize that information. These groups of humans thus created the beginning strategy of a kingdom so recognized by some of the greatest of evolutionary scientists, Wallace, Huxley, and Lorenz. Above all, this short-lived species of ape hypothesis flouts the extraordinary long-lived futures probable to the kingdom *Symbolia* by simply asserting ex officio as 'accredited' scientists they don't exist.

It is not in the interests of humanity or science for the present masters of scientific funding and publication to ignore the fact that deep conflicts exist in science over the taxonomy of human beings. Neither *Science* nor *Nature* publishes any comments on these conflicts. The American Association for the Advancement of Science and its British parent remain silent and continue to publish the "nothingbuttery" texts as if all life scientists accepted them as facts and not statements of a highly disputed hypothesis. The Linnean Society Journals contain no notice of proposed re-classifications.

Darwin's position and the Theory of Evolution are not threatened by recognising the alternate taxonomy of humans as a kingdom. The Theory of Evolution and indeed the prestige and power of all science is, however, threatened by making Darwin's mistake about the ontological status of humans into a dogma. Corporations and/or states subsidise some science willingly only because the contributions of certain scientists can be turned, with or without their knowledge and consent, into technics for war and profits. Of course,

some, but not all sciences, such as pollutant toxicology, gain major funding through outraged public pressure.

Science as a whole is also much weakened by all within who have refused to raise publicly, in a sustained and thorough way, their legitimate questions as to the factual bases for the present “mainstream” acceptance of the several variants of the humans being only a short-lived subspecies of a family of the primate order taxonomy alternatives that include the new facts of paleontology and the contrasts between ethology, animal behaviour and ethnology, human behaviour, and the discoveries in neurology, linguistics and ecology. Putting this essay on The Net is my attempt to make this a sustained effort. I will add to it as seems useful.

The requirement for fruitfulness in scientific hypotheses must also be honoured. As Stephen Gould noted, taxonomy is not a pre-existing set of pigeonholes, but of hypotheses (Gould, 2000:223). It is no wonder that masses of humans and even key groups of intelligentsia around the world turn to fundamentalist interpretations of analogical memes of their ancient relic texts in preference to this fundamentalist taxonomic version of humanity. Certainly these textual fundamentalists distort interpretations of analogies and metaphors to fit their agendas little more than some reductionist ideologues in science distort Darwin’s guess to an ideology.

The Biospheric Uncertainty Principle states that observed as a metabolic member of the biosphere, humans (the species *Homo Sapiens* descended by several major steps including two of higher taxa from the common ancestor to themselves and apes), should be classified as a phylum, *Crania (or Neotonia)*; observed as a member of cultures performing technical operations transforming every element on the planet earth, indeed creating new elements appearing on earth, and having adaptively radiated throughout the biosphere with their unique breeding strategy humans should properly be classified as a kingdom, *Symbolia*. I propose this taxonomy for scientific and public use and I believe the consequences of that adoption will open up whole new lines of research for science, of artistic world views and styles, of new design criteria for technics and a general lifting of spirits and hopes for the future. Studies of cultures, languages, and symbolic systems and maintaining their diversity would, as a beginning, rank with studies of species, genetics, and patentable pharmaceuticals in the pages of *Science* and *Nature*.

However, the processes called evolution never stop as long as there’s life. If humans succeed in creating a sustainable co-evolutionary million-year or more biosphere on Mars or on the Moon they could then be properly classified as a domain, *Demiurgia*. I project that this is the direction a synergy of cultures will lead *Symbolia* into taking. World-making in association with the other three domains is our evolutionary potentiality. With the synergy of evolution by mutation and natural selection on the genetic level in all of the kingdoms, coupled with mutation and natural and cultural (directional) selection on the memetic level in kingdom *Symbolia* which descended from and continues to be partially subject to mutation and natural selection on the genetic level, humans could reach that destiny unless destroyed in a cosmic cataclysm. The destruction of humanity by its present ruling vectors in war and biospheric exploitation would itself be a cosmic

cataclysm as the impact of a giant meteor. It took seven generations of stars and four billion years of evolution and forty thousand years of history to make humanity.

Taxonomy, to remain scientific, must cease its denial of the kingdom-scale role of humans in the Biosphere. The truth is, humans are now intertwined with and one of the six central players in *The Ecological Theatre and the Evolutionary Play* as Hutchinson (1965) called it. We humans, *Symbolia*, are here to stay as long as the Biosphere or any of its successors that we participate with in creating alongside our three other collaborating playwrights – archeobacteria, bacteria, and eukaryotes.

As Charles Darwin said, “How can anyone not see that all observation must be for or against some view if it is to be of any service” (Gould, 2000:172)? I propose the following taxonomic view or hypothesis of humans which has already provided for me, and I think will for anyone using it whether for or against, extraordinary, plentiful and fruitful observations of much of reality concealed by the present almost sterile hypothesis.

Our direct ancestor was *Crania, Homo erectus*; our kingdom, the sixth, is *Symbolia, Homo sapiens*; our descendants will always be *Symbolia* and *Crania* depending upon the measurements taken, but upon reaching Mars they may also make the Biospheric Uncertainty Principle take account of the fourth domain, *Demiurgia*, at last well and truly *Homo Faber*, humanity – the maker of worlds.

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