Preface

Ecological Bifurcations

Ethical and philosophical activism now confronts a multitude of ecological bifurcations—the sum total of current crisis points—the Anthropogenic, or Sixth Spasm of Extinctions in the annals of biology. What might have been characterized as a theoretical cusp has now brought to a converging panic a multitude of scientific and natural history disciplines all scrounging to wrap their minds around the accelerated truth of what the Anthropocene actually entails. The very planet is on the verge. Of what? Intuitively, many of us fear the answer, but also harbor enormous hopes for what may be possible in the days and nights to come.

In this treatise, the authors are proposing a veritable revolution in comparative sentience, sapience, qualia, and biosemiospheric studies that might lend insight into what will be required to help stave off the worst of biological calamities that have been predicted and, daily, are being tabulated.

It is our goal to merge interdisciplinary theoretical prospects with personal experience by offering a preliminary sketch for an overview of ethical anthrozoological studies that seeks to expand the boundaries of what is thought of as "consciousness," "intelligence," "interspecies communications," and the adaptive evolutionary boundlessness of "feelings in all species." We view this juxtaposition as a cornerstone, generally speaking, of what has been characterized by several authors as the *biosemiosphere*.[1]

[1] *See for example, **Comparative Literature—Sharing Knowledges for Preserving Cultural Diversity, Encyclopedia of Life Support Systems**, Volume II, Edited by Lisa Block de Behar, Paola Mildonian, Jean-Michel Dijian, Djelal Kadir, Alfons Knauth, Dolores Romero Lopez, Marcio Seligmann Silva, Published by UNESCO In partnership with EOLSS, Encyclopedia of Life Support Systems, Eolss Publishers Co. Ltd., Oxford, United Kingdom, 2009, p. 59; See also **Culture and Explosion** by Juri Lotman, Edited by Marina Grishakova, Translated by Wilma Clark, from the Foreword by Peeter Torop. xxxi, Walter de Gruyter Publishers, Berlin, 2009. See also: Susan Petrilli's recent book **Victoria Welby and the Science of Signs—Significs, Semiotics, Philosophy of Language**, Transaction Publishers, New Brunswick New Jersey, 2015; and her earlier **Sign Crossroads in Global Perspective—Semiotics and Responsibility**, by Susan Petrilli, Editor John Deely, Transaction Publishers, New Brunswick New Jersey 2010, p. 139.

Fig. P.1 "Critically Endangered Arabian Leopard, *Panthera pardus nimr*, Northwestern Saudi Arabia," Photo © M. C. Tobias



Fig. P.2 "Namibian Cheetah, *Acinonyx jubatus jubatus*," Photo © M. C. Tobias

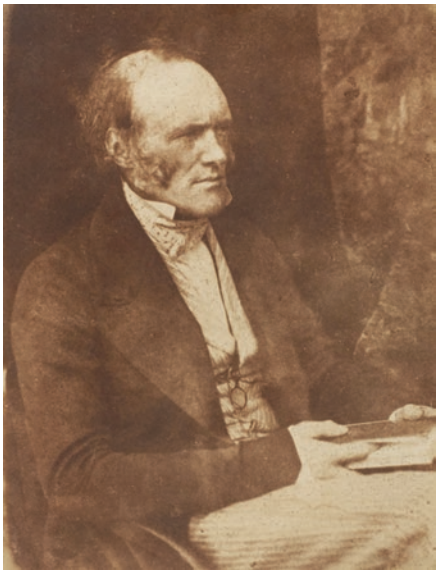


It is our view that, not evolution, but our noninvasive participation in the ongoing and primordial communication pathways between species, is what holds a sane and salubrious clue to our future.

By examining aspects of past and present currents in ecological anthropology, art history, animal protection and legislation towards that end, comparative ethics, literature, spirituality, ethology, and biocultural heritage contexts from every continent, as well as a deeply metaphysical set of perspectives, our aim is to set forth an argument that the human connection to nature is waning, self-destructive, and globally oppressive, but that our best intentions as a species—the celebration and reverence of nature—holds the only true promise for the survival of the biosphere, a word first employed by the Austrian geologist Eduard Suess in 1875 and later used as the title of a book by the Russian geochemist Vladimir Ivanövich Vernadsky (1863–1945) in 1926.

Vernadsky's use of the term is at great variance with our beliefs and propositions throughout this book, a general orientation that is mostly a product of our era versus that of the early Soviet reality, which deemed humanity's role in evolution to be

Fig. P.3 "Charles Lyell," Photo © https://goo.gl/images/HZ6u5X



some monumental and unique journey. An adventure that was teleological, a melding of mind and matter into an ontological noösphere. By that juxtaposition of ego into superego, the entire history of our species has advocated for its own superiority, writ as large as some ongoing, planetary geological machination, as first hinted in the early extinction-related insights of the Frenchman Georges Cuvier (1769–1832) and meditations on stratigraphy by the tenacious Scottish geologist, Charles Lyell (1797–1871); our destiny in essence managed by the stars, preordained by atoms, and ceaselessly working, like some Communist 5 year plan in perpetuity to achieve a massive harnessing of Earth.[2]

The Vernadsky Presumption

The strange conceptual implications for other species, our imagination presuming to out-compete their own, were most apparent, not in Cuvier, who acknowledged the vulnerability to extinction from certain catastrophes, as with such creatures as the mastodon at his speech to the French Institute in 1796,[3] or Lyell, who simply believed that the entire past could be gleaned from observations upon a present

[2] Stafford, Robert A. **Scientist of Empire**. Cambridge, UK. Cambridge University Press, 1989.

[3] Academy of Natural Sciences, "Fossils and Extinction" http://www.ansp.org/museum/jefferson/otherPages/extinction.php, Accessed April 22, 2016.

moment in time—Charles Darwin (1809–1882) mediating in the center of these two giants of biology and Earth sciences. But in Vernadsky's essay, "The Transition from the Biosphere to the Noösphere,"[4] there is no proximate reality that would delimit a belief in extreme human exceptionalism, the notion that we are superior and destined to mentally become one with the Cosmos.

Our deep-seated concerns with such belief systems suggesting that humans are superior to other species will become increasingly meaningful as we endeavor to enquire into their minds and feelings. We believe that that multitude of Others experience an endless array of unique circumstances, harboring their own myriad of thoughts, intentions and sensory signals we humans do not remotely understand, except by our focusing upon a crude biological relativity, and an even more reckless presumptuousness.

In Sections 115 and 116 of his "Biosphere to the Noösphere" essay, Vernadsky wrote, "There is a growing understanding that this increase has no insurmountable limits, that it is an elemental geological process… The question of a planned unified activity for the mastery of nature and a just distribution of wealth associated with a consciousness of the unity and equality of all peoples, the unity of the noösphere, became the order of the day. It is not possible to reverse this process, but it bears the character of a ruthless struggle, which, however, is grounded on the deep roots of an elemental geological process…" Color images from October 2009 of phytoplankton growth off the coast of New Zealand, nuclear reactors in Cattenom France, as well as NASA images from 1987, 1991, 2000, and 2012 entitled "The energy of human culture. The greening of the desert near the city of Tubarjal in Saudi Arabia," all added to William Jones' fascinating introduction to his translation of Vladimir Vernadsky and might, at first glance, lend vigor to the Russian's embrace of Einstein's relativity, atomic energy, and a conception of our species "taking a tremendous leap forward in the development of the noösphere, putting him on the verge of extending his reach into the surrounding universe."[5]

We mention Vernadsky because of the fact he is largely credited with titling the first book to use the work biosphere: **The Biosphere (1926)**[6] written during a Soviet context that clearly elicits all of the Marxist obsession with human toil working towards some collective achievement that merits an infatuation with our species over all others, as enshrined in Marx's **Economic and Philosophical Manuscripts of 1844** (also known as the "**Paris Manuscripts**")[7]. In that volatile and contentious work, Marx argued that the environment must be subverted into the body of man himself through human labor. In other words, he did not distinguish between nature and human nature, but replaced what we would, in today's terms think of as natural

[4] Excerpts from "Scientific Thought as a Planetary Phenomenon, Chapter VII," 1938. Translated by William Jones, 21st Century, Spring/Summer, 2012, pp. 29–30, https://www.21stcenturysciencetech.com/Articles_2012/Spring-Summer_2012/04_Biospere_Noosphere.pdf, Accessed March 5, 2016.

[5] ibid., p. 14.

[6] **Biosfera**, by V. I. Vernadskiĭ Leningrad: Nauch. khimiko-tekhn. izd-vo Nauch. tekhn. otdel V.S.N. Kh., 1926.

[7] Ökonomisch-philosophische Manuskripte aus dem Jahre 1844 or **Pariser Manuskripte**.

history, with human history. In light of our species' rapaciousness, it is a disingenuous, indeed ill-informed commentary. The Vernadsky-Marx connection is logical within the Russia of the 1920s, where human survival and economic class warfare would effect one of the worst genocidal sprees in human history, namely, the Stalinist regime, replete with its species-supremacist fantasies and the Gulag. But in the geochemist/geologist that was Vernadsky, this species self-importance is an intellectual conceit striving to apotheosize the Greek *noos*, or "mind."

Vernadsky was a product of his times, his well-meaning intellectual goals merged within a brief outline of our materialist endeavors over thousands of years; all those struggles to invent fire, machines, efficient agriculture and the subordination of domesticized animals for traction and food, and so on. Moreover, this line of linear thinking (so symptomatic of much of Western history) is spiced with a quasi-spiritualism. It echoes the wide-ranging Jesuit, Teilhard de Chardin (1881–1955) who studied from Vernadsky early on in his own career and clearly drew upon Vernadsky's noösphere to advance the cause of his own Omega Point, comparable to that imagined zenith of human consciousness not undifferentiated from the Logos of Christ, or of God himself, and all of this essentially Platonic metaphysics (as translated by Origen and then Plotinus)[8] underlying the physical sciences, and a predestination delusionally inherent to humanity's assiduous reach out into the Cosmos. Terraforming Mars is only decades away, should our species determine that that is a worthy goal; at the very moment we are virtually destroying every vertebrate and an unknown number of invertebrates on Earth.

Such contradictions are only too familiar, akin to philosophical tyranny that sprouts from every disguised self-interest devoted to advancing the sole cause of that agent of the Anthropocene we tragically know only too well. By holding in esteem our dominion over the rest of nature, naming it a transitional phase towards some God-like omniscience that is the very throne of an emulated and incipient consciousness amid celestial spheres, such philosophy and neo-science undermines its modest claims even to the purest forms of introspection. By doing so, such narcissism in the name of science helps lay the groundwork for further biological ruination and surreal indifference to the realities of life on Earth. We see its consequences in the myriad abnegations of ethical research and goodness in general, across the stage of today's political rhetoric, as well as throughout the rising statistics indicating widespread ecological illiteracy, indifference and callousness towards other humans, not to mention those other species, and the rise of violence inflicted across the planet by *Homo sapiens sapiens*.

[8] See "Towards the Noosphere Futures Singular and Plural," John M Dillon, Stephen RL Clarke, The Prometheus Trust, London, 2013; http://www.drb.ie/new-books/towards-the-noosphere#sthash.w0Lmvabb.dpuf. Accessed March 6, 2016; See also Vernadsky's diaries in the "Works" section, summarized in Sergei Glebov. "Russian and East European Books and Manuscripts in the United States" in **Russian and East European Books and Manuscripts in the United States: Proceedings of a Conference in Honor of the Fiftieth Anniversary of the Bakhmeteff Archive of Russian and East European History and Culture (Slavic and East European Information Resources**, Volume 4, Number 4 2003), eds. Jared S. Ingersoll and Tanya Chebotarev, The Haworth Press, 2003.

Fig. P.4 "One of the last remaining tigers killed in Old Singapore," Photo © M. C. Tobias



It is wonderful to see Democrats have a strike in the House of Representatives regarding gun violence in America (June 21, 2016, Washington DC—"No Bill, No Break"). Now let's see them strike over the violence towards animals, towards the entire planet. Let us see them become vegans, shut down all slaughterhouses. Stop killing animals. That would be a truly memorable strike on the House Floor. That is more than civil disobedience. That is true rationality. "No Kill, No Break."

This syndrome of denials is a hindrance of such proportions as to draw into doubt the ability of our kind to rise above so massive a shadow that, by many different names and abiding characteristics, we denominate the syndrome as the Anthropocene.

Quite conversely, our perspective on the biosemiosphere presupposes that life in all her infinite diversity has both subjective and objective Will-Power and Intentionality that is altogether separate from, and probably well beyond, our own severely limited physical and mental grasps; that these innate Qualities of Being, of Soul and Psyche, of Mind and Feeling, are communicated to both Observers, Non-observers, as well as to all Others, whether there is an overt awareness of a message or messages being conveyed or not. Direct objects, so to speak, in terms of communication minutia, do not impress us. We are but one idea, morphed over time into matter, amid a dizzying numerical concept, in our minds, of the numbers representative of wildly varied life forms: Greater in extant, for example, than Planck's volumes, which connote subatomic scale constants that involve Planck's length cubed, and many other factors, and might collectively be as vast as 10-to-the-185th. Even that inconceivable magnitude evidently falls short of what is known as Graham's number, and other mathematical obscurities like "Kruskal's tree theorem," or the "Robertson-Seymour" and "Paris-Harrington" theorems. These are alleged to

Fig. P.5 "Chandni Chowk, Old Delhi, India," Photo © M. C. Tobias



be the biggest numbers thus far conceived in the abstruse, vastly esoteric realms of a field comprising post-googolplexes: Skewes' and Moser's numbers. When equated with biological organisms, our faint conceptualization of a life form takes on the invisibility of what the Jains have called nigoda, subatomic life particles, or jiva—souls, as remote as a single molecule of moisture in a hurricane encompassing the entire planet, or smaller still, an unknown portion of the smallest subatomic corner of an atom within that unknowable molecule.[9]

Think of all this as the scientific grasping after straws beneath and within the purity of an ideal: The substance of that which we call convictions, beliefs, ethics, and faith. We can't see it or prove it (or not in everyday life sitting around a coffee shop), but we know it is there. On a stele from what is today Dhiban, Jordan, dating to 840 BC, the Moabite Mesha stone, recovered in 1868, bears witness to one of the earliest references to Yahweh, God. The inscribed basalt, with its 34 lines, sits by itself in the Louvre, a source of fascination to those hulking figures, all of us, who go about our lives wondering: are we alone?

[9] See Friedman, Harvey M. (2002), "Internal finite tree embeddings." Reflections on the foundations of mathematics (Stanford, CA, 1998), Lect. Notes Log. 15, Urbana, IL: Assoc. Symbol. Logic, pp. 60–91, MR 1943303; Gallier, Jean H. (1991), "What's So Special About Kruskal's Theorem and the Ordinal Γ0? A Survey of Some Results in Proof Theory," Annals of Pure and Applied Logic 53(3): 199–260, doi:10.1016/0168-0072(91)90022-E, MR 1129778; and Kruskal, J. B. (May 1960), "Well-quasi-ordering, the tree theorem, and Vazsonyi's conjecture," Transactions of the American Mathematical Society (American Mathematical Society) 95(2):210–225, doi:10.2307/1993287, JSTOR 1993287, MR 0111704.

Biological Proliferations

Homo sapiens may lack, at a fundamentally practical level, the evolutionary self-confidence, or, stated in terms of basic physics and chemistry, the very coherence that is abundantly demonstrated by the Others, as the authors refer to them. By that spectrum of Beings we include all other biomes, micro-climes, Domains, Kingdoms, Phyla, Classes, Orders, Families, Genera, Species, Sub-Species (trimonina), and all of the so-called hyponyms, from subphylum, infraphylum, and superclass; to suborder, infraorder, subclass, infraclass, supercohort, cohort, magnorder, and superorder; to tribes, clades, nonclades, the unknown number of individuals, novel beings, biomes, ecosystems, habitat links both linear and nonlinear, breeds, cultivated plants, hybrids, cells, genes, molecules, atoms, as well as an abundance of other habitat and organism-related designations—known and/or inferred under various Code proposals (e.g., that of the International Committee on Bionomenclature, and other phylogenetic characterizations regarding populations) everywhere around us. We reject "race" as a biological category.

All of these concentrations of the life force accumulate into a challenge for human beings: a purpose, if in no other realm than ethics, then self-preservation as a direct function of our inseparability from, and interdependency upon, all of the above biochemical quanta that is Earth. It's all we know, and we scarcely know what we don't know. This is a tautological and practical dilemma. A biological double bind, as Gregory Bateson and colleagues first conceived of it.[10] And as the great Greek littérateur Kimon Friar (1911–1993)—best remembered by the public for his translation into English of Nikos Kazantzakis' indescribably abundant ***The Odyssey: A Modern Sequel***[11]**—**declared, humanity must aspire to view the human condition "from the vantage of an eagle."[12]

In the exhilarating work **Totalité et Infini: essai sur l'extériorité**[13] by the Lithuanian/French existentialist, Emmanuel Levinas (1906–1995), this biological proliferation, in which we are so awkwardly lodged, helps us to recognize not only the Other, by signs and by traces, but also to acknowledge the essence of ethics, as a precondition of all philosophy, science, and information. Imagine our finest predilections translating into action, restraint inhibiting our ungainliness and cruelties. Hope winning out, in evolutionary terms, over destruction.

In a book many years ago, we examined the concept of "traces" (***A Vision of Nature: Traces of the Original World***)[14], in which we suggested that our love of nature is the secret to our success as a species, if indeed we are to survive. Writes Levinas, "To approach the other in conversation is to welcome his expression, in

[10] Bateson, G., Jackson, D. D., Haley, J. & Weakland, J. (1956), Towards a Theory of Schizophrenia. in Behavioral Science, Vol 1, 251–264, Accessed April 23, 2016.

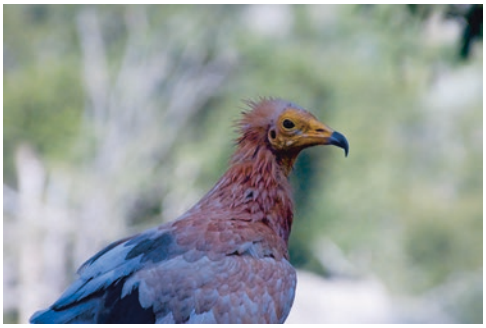
[11] Simon & Schuster, New York, 1958, London: Secker and Warburg, 1958.

[12] See Kimon Friar's appearances in the PBS film, "Kazantzakis," by M. C. Tobias, 1984.

[13] **Totality and Infinity: An Essay on Exteriority**, Published by Martinus Nijhoff, The Hague, Netherlands, 1961.

[14] Kent State University Press, 1995, http://www.kentstateuniversitypress.com/2011/a-vision-of-nature/

Fig. P.6 "Endangered Egyptian Vulture, *Neophron percnopterus*, Socotra, Yemen," Photo © M. C. Tobias



which at each instant he overflows the idea a thought would carry away from it. It is therefore to receive from the Other beyond the capacity of the I, which means exactly: to have the idea of infinity."[15]

By the sheer enigmatic scope of this evocation we mean as well to imply an essence which is the very codex of our hearts, a subjectivity that confers an ethical obligation on each of us to embrace fellowship at every conceivable level. And it is fundamental to that fantastic recognition, and then embrace, however unnamable or vague, of a God, a god in whatever utterance, far-flung intimation, or softly communing prayer, fairly and equally distributed, if you will, throughout all of Nature.[16]

The prayer is a simile, of course, that we tend inordinately to outweigh with our species' own concerns; preoccupations that have piled up in one vast edifice of self-importance within the conventionally perceived "Great Tree of Life," as Darwin thought of it, and which more recently has, by some, been renamed the "universal tree of life," based upon a research renaissance in heretofore unknown microbial studies.[17] But humanity has persistently placed itself atop this tree and that cultural artifact now works perilously against life. This near universally human belief system constitutes nothing less than a deeply flawed and pernicious bias predicated on the brink of our species' self-destruction. The continuing insistence upon ourselves as the ultimate agents of knowledge has only given escalating pall to a most devious, indeed ruinous proposition. We either recognize the miracle of sentient, sapient, self-reflective, and intentional morality all around us—an infinity of feelings, sophistication, and genius in Others (all other species and individuals of those species)—or risk enshrining the shortest-lived epitaph of most likely any known vertebrate species in Earth's history.

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[15] op.cit., **Totalité et Infini**, p. 51.

[16] See, French: "Aborder Autrui […] c'est donc recevoir d'Autrui au-delà de la capacité du Moi: ce qui signifie exactement: avoir l'idée de l'infini." in Totalité et Infini, Martinus Nijhoff, La Haye, 1991, p. 22; See also, Alan D. Schrift (2006), **Twentieth-Century French Philosophy: Key Themes And Thinkers**, Blackwell Publishing, p. 159.

[17] "A new view of the tree of life," by Laura A. Hug, Brett J. Baker, et al., Nature Microbiology Article number: 16048 (2016) doi:10.1038/microbial.2016.48, published online 11 April 2016, Accessed April 13, 2016.

Our fate is psychological and twisted. We call the Egyptian vulture (*Neophron percnopterus ginginianus*)—with whom we have wonderfully communed at their important breeding sites on the Island of Socotra in that portion of the northern Indian Ocean proprietary to Yemen, and who might number between 20,000 and 61,000 individuals worldwide[18]—officially endangered, according to the IUCN. The reasons for their extreme peril are multiple: ingestion of secondary toxins in the form of nonsteroidal anti-inflammatory drugs fed to cattle, particularly in India, where the Egyptian vulture populations have plummeted (most raptors—including owls—as well as storks and cranes are equally at risk to these drugs); poaching; and habitat destruction. But there are countless other species who number in the few thousands, in some cases fewer than a thousand, yet we still debate whether they should be categorized as endangered. Politics, economics, and primordial reflexes easily obscure our natural history lenses, which must be why the majority of our kind collectively think nothing of slaughtering trillions of animals each year. We are diabolically at odds with our definitions, sensibilities, and mindsets yet somehow or other manage to recognize at least rudimentary interdependencies in nature when it comes to one of our oldest pastimes, talking about the weather. We have since 1884 classified weather patterns and zones according to the elegant system worked out by Russian climatologist and botanist Wladimir Peter Köppen (1846–1940), a system that defines specific climate types by the indigenous vegetation it nurtures. Because the fluctuations in weather can be sustained or short-lived, it has never been uncommon for plant specialists to rediscover species growing right in front of them. Every gardener in early spring knows something of this sensation.

But it is a vastly less frequent occurrence amongst animals, particularly vertebrates. When it does rarely happen, our worst fears put to rest, we call those creatures "Lazarus Species," organisms that have managed to defy the odds of humanity wiping them out.

Two cases of such Lazarus Species come to mind: the enchanting Oliguino (*Bassaricyon neblina*) of the raccoon family, rediscovered in surprisingly higher numbers than ever imagined by Smithsonian scientists led by mammalogist Kris Helgen in expeditions throughout the highlands of Ecuador and Columbia in 2013[19]; and the presidential Takahe (*Porphyrio hochstetteri*) rediscovered in November 1948 by Geoffrey Orbell, "tramper" and MD, in the bush behind a remote shore of Lake Te Anau on the South Island of New Zealand. This gloriously large purple/blue ground-dwelling member of the Rallidae family, today hovering around 300 individuals, had been thought extinct since 1898 and had even been depicted in Lord Walter Baron Rothschild's (1868–1937) momentous work,

[18] See http://www.birdlife.org/datazone/speciesfactsheet.php?id=3371#http://www.aerc.eu/DOCS/Bird_taxa_of%20_the_WP15.xls#, Accessed July 11, 2016.

[19] See "Olinguito: 'Overlooked' mammal carnivore is major discovery," by Jane O'Brien BBC News, Washington DC, August 15, 2013, http://www.bbc.com/news/science-environment-23701151; See also, http://www.smithsonianmag.com/science-nature/for-the-first-time-in-35-years-a-new-carnivorous-mammal-species-is-discovered-in-the-americas-48047/?no-ist, Accessed April 23, 2016.

Fig. P.7 "Critically Endangered Takahe, *Porphyrio hochstetteri*, South Island, New Zealand," Photo © M. C. Tobias



Extinct Birds, in 1907[20] as painted by the illustrious Dutch born British ornithological illustrator, John Gerrard Keulemans (1842–1912).

But such rediscoveries (the former predicated upon an examination of dead specimens—from the more than 600,000 such mammalian specimens at the Smithsonian, as of April 2016, 601,512[21] and to which genetic research was applied) are rare. Most urgently, it must be recognized that the destructive human catalysts by nearly all accounts are undeniably underway in a ferocious and seemingly unstoppable manner.

Is there time to halt this seemingly run-away train of destructiveness? We think there are two important antidotes. They include (1) a combination of vastly expanded protected corridors and animal liberation/conservation biology convergences and (2) active engagement by individuals in ethically informed interspecies contacts and communications, the immediate (but patient) goal of which is to lead, by any number of curious and relational intimacies, towards a much deeper acquaintance with the Others, and subsequently, to a far more sincere appreciation and outright love of our fellow co-habitants on Earth than our species has ever collectively demonstrated.

Ecological Failure or Amelioration

At this book's core is a singular proposition, not easily digested: *Homo sapiens* are a species that is failing, in contrast with nearly all those Others on Earth. But our biological redemption is still possible. It will require unstinting kindness, personal humility and sacrifice, and the awakening of the collective conscience in both ideal as well as pragmatic ways that can work to safeguard remaining biomes and individuals—the ultimate drivers of ecological success—in whatever near infinite time

[20] Hutchinson & Co., London.

[21] 19*http://collections.nmnh.si.edu/search/, Accessed April 23, 2016.

frames are plausible (recognizing that every species has its own unique temporal reality). The bioremediative impulses may well be preconscious, subconscious, but must be coaxed outward without fail to meet this unprecedented ecological Apocalypse we are collectively up against.

Much paleoecological data exists from Australia, New Guinea, Tonga, Cyprus, California and the southeastern United States, Western Europe, and the Caribbean, among numerous other locations to indicate that we have been reshaping the environment for our own ends, driving species to extinction, traveling between otherwise isolated islands with bioinvasives for at least 23,000 years, and that "altering the planet is something very close to fundamental to the human condition."[22] And for those who believe this argument only applies to vertebrates—the majority of species at least some *H. sapiens* seem more adept at relating to (the family dog, for example)—think again: with "invertebrate catches [that] have increased six-fold since the 1950s"[23] a first of its kind study has released shattering data indicating (not-counterintuitively) that the trophic cascade of damage resulting from such human predation is having enormous impacts on other marine creatures. "Twelve ecosystem models from different areas of the world that included 73 groups of invertebrates"[24] showed demonstrative "ecosystem effect[s]," a measurement that is calculated "as the percentage of other trophic groups that had a 40 % biomass change at a given level of large invertebrate depletion."[25]

If biological success connotes kindness, altruism, and gentle observation, all of which we take as the evolutionary and future prima facie preconditions for interspecies relations, then it is our belief that the antidote to a continuing epoch of human destruction is the apotheosis of those relations; conversations at some primeval but accessible level with all who we, for purposes of pellucid concision, call, the Others; the other individuals of other species within populations throughout the biosphere whose lives matter to them, from inside; and to us, with an equal share in, and hopes for, the greater moral community of life.

That is deep ethology: a rewilding of psycholinguistics at the heart of this biosemiosphere, this extraordinary world of communication going on at every conceivable level between each and every living organism. It is truly a symphony, and if we are to become musicians worthy of such music and co-creative participation, we need to be informed, observant, and loving. Wrote Albert Schweitzer, "A man [and woman] is ethical only when life, as such, is sacred to him, and that of plants and

[22] "The First Hints of the Anthropocene Appeared Far Earlier Than You Think," see Sarah DeWeerdt, Conservation Magazine, June 21, 2016, conservationmagazine.org, Accessed June 21, 2016, the Source for the essay, Bolvin N. L. et al. "Ecological consequences of human niche construction: Examining long-term anthropogenic shaping of global species destructions." Proceedings of the National Academy of Sciences. doi:10.1073/pnas.1525200113.

[23] See "The Ripple Effects of Shellfish Fisheries," by Catherine Elton, Sourced from Eddy, T.D., et al. (2016). Ecosystem effects of invertebrate fisheries. Fish and fisheries, doi:10.1111/afaf.12165 © John Wiley & Sons Ltd. Onlinelibrary.wiley.com, 30 June 2016, Findings republished, July 15, 2016, conservationmagazine.org, Accessed July 19, 2016.

[24] ibid.

[25] ibid.

Fig. P.8 "Marieta van der Merwe, Founder of Harnas Wildlife Foundation, Namibia, With Young Lion, *Panthera leo bleyenberghi*," Photo © M. C. Tobias



animals as that of his fellow men, and when he devotes himself helpfully to all life that is in need of help. Only the universal ethic of the feeling of responsibility in an ever-widening sphere for all that lives—only that ethic can be founded in thought. … The ethic of Reverence for Life, therefore, comprehends within itself everything that can be described as love, devotion, and sympathy whether in suffering, joy, or effort."[26]

Los Angeles, CA

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Jane Gray Morrison

[26] **Out of My Life and Thought: An Autobiography**, translated by C. T. Campion, Henry Holt & Company, New York, Chapter 13, p. 188, 1933.

http://www.springer.com/978-3-319-45963-9

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