

Humanity's Rise to
Superdominance,
the Global Ecological
Crisis, and the Way
Forward for Education

Humanity's Rise to Superdominance, the Global Ecological Crisis, and the Way Forward for Education

By

Adam C. Scarfe

Cambridge
Scholars
Publishing



Humanity's Rise to Superdominance, the Global Ecological Crisis,
and the Way Forward for Education

By Adam C. Scarfe

This book first published 2023

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Copyright © 2023 by Adam C. Scarfe

All rights for this book reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright owner.

ISBN (10): 1-5275-9144-1

ISBN (13): 978-1-5275-9144-8

TABLE OF CONTENTS

Preface	vii
Acknowledgments	x
Chapter One.....	1
Introduction—Some Evolutionary Conditions for the Possibility of Humanity’s Rise to Planetary Superdominance	
Chapter Two	9
A Key Evolutionary-Existential Question Concerning Humanity’s “Psycho-Social Inheritance System,” Its Planetary Superdominance, and the Global Ecological Crisis	
Chapter Three	16
The <i>Anthropocentric Humanist</i> Response to the Evolutionary- Existential Question Pertaining to Humanity’s “Psycho-Social Inheritance System”: Comte’s Positivism, Huxley’s Evolutionary Humanism, and Bostrom’s Transhumanism	
Chapter Four	27
The <i>Biocentric Anti-Humanist</i> and/or Deconstructive Postmodernist Response to the Evolutionary-Existential Question Pertaining to Humanity’s “Psycho-Social Inheritance System”: Nietzsche, Foucault, and Derrida	
Chapter Five	40
The <i>Holistic Organicist</i> and/or Constructive Postmodernist Response to the Evolutionary-Existential Question Pertaining to Humanity’s “Psycho-Social Inheritance System”: Whitehead and Waddington on Educating <i>With</i> , and <i>For</i> , Biological Wisdom	
Chapter Six	64
Conclusion: The Role of Philosophy of Education in the <i>Holistic Organicist</i> Emphasis on the Cultivation of Biological Wisdom	

Notes.....	68
References	96
About the Author.....	106

PREFACE

In this volume, I trace a plausible set of connections relating to the emergence of aspects of humanity's psycho-social development, involving learning and education, in the evolutionary past. Specifically, according to evolutionary anthropologist Richard Wrangham, stemming from *Homo erectus*' control of fire some 1.8 million years ago, the behavior of cooking may have led (in a quasi-"Baldwinian" manner) to the improvement of the quality of its food, which, in turn, contributed to subsequent changes to its digestive system, bigger brains, and expanded the possibilities for social cohesion among members of groups. Combining Wrangham's aforementioned claims about the behavior of cooking with the controversial theses of linguist Daniel Everett pertaining the emergence of complex languages with *Homo erectus*, around a similar time frame, these developments, together, may have provided the conditions for the possibility of the further emergence of various "mind-tools"¹; heightened reasoning capacities; more complex social interactions, values, and culture; as well as more sophisticated capacities for learning, teaching, and strategic thinking.

In "Education and the Humanist Revolution" (1963) and elsewhere,² eminent twentieth century neo-Darwinian biologist Julian Huxley (1887-1975) described the cumulative transmission of the experience, skills, ideas, concepts, knowledge, attainments, and technological knowhow, enabled primarily through the development and use of complex languages, as humanity's "psycho-social inheritance system"³ beyond the genetic system of inheritance. Huxley argued that this anti-entropic "psycho-social inheritance" system is chiefly responsible for humankind's increasing control over its environment and for its rise to global, biological superdominance as the chief selective agent on this planet. However, today, it may be said that unwise wielding of its overarching selective power, whether consciously or unconsciously, has led to a situation of ecological crisis, in which human development is running up against environmental limits. Presently, humanity is (ecocidally) outstripping not only the life-support system of a vast diversity of other organismic species on the planet, but also its own. *As such, both today and in the foreseeable future, members of the human species both are, and will be, contributing to the evolutionary-existential determination of whether or not, going forward, humanity's future should consist in the authentic continuance of its evolutionary*

“having been”⁵ as regards to its “psycho-social inheritance system,” which is the chief cumulative, intergenerational means by which it perpetuates its “attack on the environment,”⁶ that is, the drive to gain increasing power and control over the natural world.

Regarding this evolutionary-existential choice at the species level, on the one hand, the general position supported by *anthropocentric humanist* ideology, which may be said to include Auguste Comte’s (1789-1857) positivism, Huxley’s evolutionary humanist ideology and eugenicism, directed evolutionism, and Nick Bostrom’s (1973-) transhumanism, entails a redoubling of humanity’s effort to maximize its selective power and control over the natural world, going forward into the future, by way of emphasizes scientific and technological progress, development and economic growth, education largely being rendered into a function of the unfolding of such ideas. On the other hand, the position emphasized by *biocentric antihumanist* ideology, which may be associated with radical ecologism, Michel Foucault’s (1926-1984) critique of the exercise of power by biopolitical regimes, and Jacques Derrida’s (1930-2004) deconstructive postmodernism, is to engage persistently in the *deconstruction* of modern educational systems, natural science and technology, and the pretense to unlimited development and economic growth. This deconstruction is to be carried out, for example, by thoroughly and continuously exposing the questionable metaphysical assumptions that undergird language, metanarratives, and knowledge claims, by way of a critique of the power structures giving credence to such claims, and through an emphasis on *difference* over universalistic and essentialistic thinking.

In this book, I argue that neither of these two standpoints provide sustainable approaches as regards to learning and education today and in the future. Rather, the more open-ended standpoint of *holistic organicism* represents a more mindful “way forward” than those offered by anthropocentric humanist and biocentric anti-humanist orientations. In general, the *holistic organicist* perspective is represented by the process-relational philosophy, the organismic philosophy of education, and the constructive postmodernism⁷ of Alfred North Whitehead (1861-1947) as well as by Conrad Hal Waddington’s (1905-1975) emphases on holistic reflection in scientific research and on educating the young both *with* and *for* “biological wisdom.”⁸ Waddington’s notion of “biological wisdom” may be said to include Arne Naess’ (1912-2009) “deep ecological wisdom” [*ecosophia*] and Walter B. Cannon’s (1871-1945) “wisdom of the body.”⁹

From a holistic organicist perspective, the cultivation of such wisdom is to be emphasized at least to the same extent as science, technology, engineering, mathematics, and economy / business are emphasized today

(e.g., as in the “STEM”-oriented curriculum). Rather than treating youths and members of subsequent generations as means only toward the fulfilment of strict, closed, ideological ends, and/or in a manner that is devoid of any recognition of their own intrinsic purposiveness and value, going forward, they ought to be provided with the tools of critical awareness in relation to the global ecological crisis as well as given the genuine opportunity to exert their own selective agency in order to make their own fully informed, educated, and wise choices in responding to this profound evolutionary-existential question. Consideration, on the parts of educators and of prospective teachers (e.g., in developing their own philosophies of education) to the main ideas underlying my evolutionary-environmental ethic of “critical pan-selectionism,” may assist in this regard. Finally, this book makes the case that in dealing with global ecological crisis that humanity faces today, the ultimate aims of institutions of higher education should not only entail knowledge-creation and knowledge-dissemination, but also the cultivation of wisdom, and especially, of biological and ecological wisdom (*ecosophia*).

Keywords

The theory of organic selection (i.e., the “Baldwin Effect”); Julian Huxley (1887-1975); humanity’s “psycho-social inheritance system”; Richard Wrangham’s “cooking” thesis; Daniel Everett’s account of the emergence of complex language; anthropocentric humanism; evolutionary humanism; eugenics; transhumanism; Jean-Paul Sartre (1905-1980); existence precedes essence; *being in-itself-for-itself*; Martin Heidegger (1889-1976); *eksisistent* humanity; biocentric anti-humanism; Friedrich Nietzsche (1844-1900); the will-to-power; Michel Foucault (1926-1984); biopower; Jacques Derrida (1930-2004); deconstructive postmodernism; Alfred North Whitehead (1861-1947); constructive postmodernism; Conrad Hal Waddington (1905-1975); epigenetics; holistic organicism; biological wisdom; ecological wisdom; the evolutionary-environmental ethic of critical pan-selectionism; the creation of knowledge; the dissemination of knowledge; the cultivation of wisdom.

ACKNOWLEDGMENTS

This volume is dedicated to my mother, Susan, who lost her long battle with dementia in the months prior to the submission of this book's manuscript for publication. I would like to thank my wife, Larissa, for her support during the stressful period preceding the manuscript's submission. I also would like to acknowledge my gratitude to Howard Woodhouse and the other members of the *University of Saskatchewan Process Philosophy Research Unit* for their ongoing intellectual collaborations.

CHAPTER 1

INTRODUCTION: SOME EVOLUTIONARY CONDITIONS FOR THE POSSIBILITY OF HUMANITY'S RISE TO PLANETARY SUPERDOMINANCE

Julian Huxley (1887-1975) was one of the great biologists of the twentieth century and a chief architect of the neo-Darwinian Modern Synthesis of natural selection and Mendelian genetics of the 1930s-40s.¹⁰ It was his thesis in the essay, “Education and the Humanist Revolution” (1963),¹¹ and elsewhere, that transgenerational learning and education comprise humanity’s “novel” (from an evolutionary standpoint) “psycho-social,”¹² or alternatively, “socio-genetic”¹³ system of biological inheritance (as the father of epigenetics, Conrad Hal Waddington [1905-1975] described it in *The Nature of Life* [1961]). This system of biological inheritance, which, for Huxley, makes humanity distinct among organisms on the planet, was said to involve the *mechanisms* of “psycho-social selection” and of appropriative “psycho-metabolism” as regards to the passing down of the knowledge, knowhow, experience, skills, and ideas of one generation to the next, thereby providing “fuel,” in cumulative fashion over time, for the emergence of humanity’s “self-reproducing mind.”¹⁴ While being to some extent “beyond” the genetic mode of inheritance—Huxley describing it as an “epigenetic” mode of inheritance—this novel mode of inheritance was said to operate in a manner that is parallel to the physico-genetic one (i.e., which, in abstraction from environmental selection pressures, may be said to render species biologically “immortal”) and overlaps with it. Huxley further depicts humanity’s novel “psycho-social inheritance system,” involving transgenerational learning, simulates the Lamarckian theory of the inheritance of acquired characteristics whereby organisms can develop novel traits over the course of their lives and pass them on to their offspring.

According to Huxley, over eons of evolutionary time, the gradual, yet cumulative, transmission of the experience, skills, ideas, concepts, knowledge, attainments, the technological know-how, the “tradition,”¹⁵

and/or simulacra of the *Being* of one generation of members of our species down to the next through learning and education, which was made possible by the “invention” and use of complex languages, comprises the chief efficient cause of the human species’ contemporary status as the superdominant species and selective agent on the planet. As Huxley writes, once the “human type of mind” emerged in our evolutionary ancestors, armed, at first, with rudimentary “speech,” each generation was enabled to pass its “tradition” onto the next generation. For him, the process of passing on the learning, experience, and attainments of one generation to the next, through the medium of complex languages, ensures a continuous “amassing of more knowledge and more power through accumulated tradition,” thereby enabling “human progress.”¹⁶ In Huxley’s view, it is through this “new” (from an evolutionary standpoint) anti-entropic “psycho-social inheritance system” assisting each generation, progressively, to adapt to, and modify, its environment, that humankind has “come to differ fundamentally from all other organisms.”¹⁷ As he asserts, it is mostly in virtue this process that humankind has become “unique”¹⁸ and has attained to its present super-“dominant position”¹⁹ among living organisms on the planet, its mode of living being “beyond” the raw struggle for existence, namely, that encompassing the lives of non-human organisms which involves natural selection acting on genomes. In this light, learning and education not only has had profound significance for the intellectual development of the human species in the evolutionary past, but also has tremendous importance today and in the future, as humanity, in times of global ecological crisis, determines its own nature and destiny.

Especially on the basis of what modern biology had discovered about the nature of life, it was Huxley’s vision that, going forward, education should become a function of evolutionary humanist and transhumanist ideologies.²⁰ For Huxley, education should be geared toward (1) the betterment and improvement of the species, namely, its reaching of “new levels of achievement and experience”²¹; (2) the enhancement of the human species and/or the potential overcoming of its present capacities, humankind “transcending”²² itself (with reference to his emphasis on implementing eugenics policies²³); and (3) “the impersonal guidance and the efficient control provided by science”²⁴ (e.g., by genetic engineering) in further bringing the biological processes of the natural world under human control such that humanity would be the chief determiner of “the future direction of evolution on this earth.”²⁵ In this context, Huxley defines that education is “an organ of man in society, whose basic function is to ensure the continuity and further advancement of the evolutionary process on earth by way of the transmission and transformation of tradition.” He further proclaims that

education ought to further “become an instrument of [humankind’s] evolution.”²⁶ In so doing, for Huxley, education is to be “reorganized as an integral part of the psycho-social process and [is to become] pre-eminent among all the agencies concerned with human destiny.”²⁷

Turning to inquire into the emergence of the evolutionary conditions for the possibility of humankind’s “psycho-social inheritance system,” in a previous publication,²⁸ I examined the thesis of Harvard anthropologist Richard Wrangham (from the article “Out of the Pan, Into the Fire: How Our Ancestors’ Evolution Depended on What They Ate” [2001]²⁹ and the book, *Catching Fire: How Cooking Made Us Human* [2009]³⁰) that the novel activity and/or behavior of cooking in *Homo erectus* some 1.8 million years ago—it’s becoming learned and habitual—was a chief evolutionary factor leading to the evolutionary emergence of the human species, with, for example, bigger brains and smaller guts. In that analysis, I concluded that the behavior of cooking, which helped to improve the quality of food and the length of time it could be eaten before spoilage, and which Wrangham argues, must have led to a plethora of anatomical changes, was a non-stereotypical example³¹ of the theory of organic selection (aka “the Baldwin Effect”) in the evolutionary lineage of *Homo sapiens*.

In a nutshell, the theory of organic selection, discovered “independently,” yet simultaneously, by evolutionary psychologist James Mark Baldwin (1861-1934),³² paleontologist Henry Fairfield Osborn (1857-1935),³³ and ethologist Conway Lloyd Morgan (1852-1936)³⁴ in the late nineteenth century, points to the phenomenon of behaviorally-instigated physiological evolution which is fully consistent with Darwin’s theory of natural selection. Specifically, the theory of organic selection entails the notion that reliance by organisms upon newly learned or developed behavioral habits (i.e., upon “Good Tricks,”³⁵ as Daniel Dennett [1942-] calls them) for survival, can be a chief causal factor in evolution that channels out the physiological trajectories of the organisms in question and those of their progenies. For if a novel behavior becomes requisite for survival, natural selection will tend to favor those members of a species or variety having the physiological characteristics that enhance their ability to perform the new “Good Trick.” While the organisms that are in possession of the physiological characteristics that enhance their ability to perform it will tend to be selected for, and will tend to pass down their advantageous phenotypic traits to their offspring, those that do not will tend to be eliminated in the struggle for existence. The Baldwinian theory of organic selection can be treated as but one of several ways in which to consider behavior as a key factor in evolutionary processes. It demonstrates that behavior (i.e., the “ethotype” of the organism in question) plays a key role in evolutionary

processes and is a factor that cannot simply be relegated to a subordinate status in terms of the meaning of biological evolution, as compared with physiological change over time. Today, there has been a notable reconsideration of, and resurgence of interest in, the theory of organic selection.³⁶ Gone are the days when the “Baldwin Effect” was merely thought of, by mechanistic neo-Darwinian biologists, as a Lamarckian theory and relegated to the “discard pile.”

Relating to the emergence of humanity’s “psycho-social inheritance system,” a key insight that I would like to present here involves the potential for bringing together Wrangham’s “Baldwinian” thesis that the novel behavior of cooking “made us human” with the controversial claim of contemporary linguist, Daniel L. Everett (1951-), in *How Language Began: The Story of Humanity’s Greatest Invention* (2017)³⁷ that complex languages emerged with *Homo erectus*. I do this in order to provide a plausible tracing of the logical sequence of evolutionary conditions for the possibility of humanity’s rise to planetary superdominance as the chief selective agent on this planet. Before I begin, I must provide the disclaimer that while “something like” this account must have transpired in the evolutionary past, it is still a speculative account and one that is overly simplistic. Moreover, further archaeological data would need to be uncovered to be able to confirm it.³⁸ At the very least, however, the account presented here would definitely satisfy Dennett’s criteria for adaptationist theories needing to provide “crane” explanations rather than explanations of the “skyhook” variety.³⁹

Richard Wrangham’s creative thesis is that the behavior of cooking, and especially the habitual consuming of cooked meat, was, as he says, “the transformative moment that gave rise to the genus *Homo*.”⁴⁰ Specifically, his thesis is that the advent and habitualization of the behavior of cooking assisted greatly in the transition from the habilines to *Homo erectus* some 1.8 million years ago. Wrangham speculates that “one of the great transitions in the history of life, stemmed from the control of fire and the advent of cooked meals,”⁴¹ especially cooked meats, with all of their evolutionary benefits and advantages. For instance, cooking food prevents immediate spoilage, destroys toxins and bacteria, gelatinizes starches, and denatures protein, thereby making it easier to digest food, including taking less energy to do so. Cooking also increased the range of high-quality foods that could be eaten. Wrangham suggests that

cooking increased the value of our food. It changed our bodies, our brains, our use of time, and our social lives. It made us into consumers of external energy and thereby created an organism with a new relationship to nature, dependent on fuel.⁴²

According to Wrangham, the novel behavioral habit of cooking improved the quality of the diets of human ancestors, and, over time, it directed anatomical changes. It caused a reduction in the size of the teeth, jaw, and guts of our ancestors, and it increased female body mass. Also, by changing the chemistry of our food, our digestive system was changed. The increase of energy that it afforded, in turn, helped to increase brain size, thereby enabling greater cognitive ability and intelligence. Wrangham further argues that the habit of cooking helped to shape social relations among men and women as well as the division of labor between them. Moreover, teaching and learning how to cook might have been an key avenue for psycho-social development along Huxleyan lines.

In summarizing his overall thesis and his account of how the behavioral “Good Trick” of cooking “originated” and how it spurred on anatomical changes, Wrangham writes,

once they kept fire alive at night, a group of habilines in a particular place occasionally dropped food morsels by accident, ate them after they had been heated, and learned that they tasted better. Repeating their habit, this group would have swiftly evolved into the first *Homo erectus*. The newly delicious cooked diet led to their evolving smaller guts, bigger brains, bigger bodies, and reduced body hair; more running; more hunting; longer lives; calmer temperaments; and a new emphasis on bonding between females and males. The softness of their cooked plant foods selected for smaller teeth, the protection of fire provided at night enabled them to sleep on the ground and lose their climbing ability, and females likely began cooking for males, whose time was increasingly free to search for more meat and honey. While other habilines elsewhere in Africa continued for several hundred thousand years to eat their food raw, one lucky group became *Homo erectus* and humanity began.⁴³

In the example of cooking, the phenotypic changes that were selected for occurred as a result of reliance on a key behavioral modification, but cannot be said to have served to accentuate the “Good Trick” or the innovation of cooking, unless, for example, one considers the larger brains to have helped, reciprocally, in the perfection of the ability to cook and in its habitualization, in teaching and learning cooking skills, and in bringing males and females together. Regardless of whether there was any “Baldwinian reversion loop” in which certain phenotypic traits helped to enhance the behavior, it is probable that bigger brains, bringing higher interoceptive ability⁴⁴ and intelligence would have spurred many other behaviors that would provide survival advantages, such as increasing social, strategic, and technical-rational thinking, which enable human beings to set Nature up in advance in order to procure resources from it. As Wrangham states, “the control of

fire and the emergence of cooking had numerous effects on human biology and behavior, including cognition and cooperation.”⁴⁵

In this way, if Wrangham’s “cooking thesis” is correct (although he does raise and attempts to deal with some criticisms of, and problems with, it in a 2017 article, “Control of Fire in the Paleolithic: Evaluating the Cooking Hypothesis”⁴⁶), one might arrive at the conclusion that the advent and adoption of cooking as a behavioral habit spurred on domino effects in a multiplicity of directions, contributing to the emergence of a vast plethora of other behavioral “Good Tricks,” complex “mind-tools,”⁴⁷ and physiological transformations which enabled subsequent members of the *Homo* lineage to acquire many other survival advantages. As regards to the emergence of complex “mind-tools,” the gradual emergence and refinement of the initial kernels of the Lorenzian evolutionary neo-Kantian (metaphysical) *a priori* concepts of the understanding belonging to rational beings (e.g., space, time, substance, necessity, causality, teleology, mechanism, the principle of sufficient reason, etc...) comes to mind.⁴⁸ As regards to Dennett’s “multiple drafts” theory of the evolution of mind and his rudimentary distinctions of *Darwinian*, *Skinnerian*, *Popperian*, and *Gregorian* creatures, *Homo erectus* both consolidated the status of the human lineage as a *Popperian creature* and evolved into (presumably) the first *Gregorian creature* on the planet.⁴⁹

One curiosity here is that Wrangham places the advent and habitualization of cooking in proto-humans with early *Homo erectus*, starting around 1.8 million years ago. Although we are dealing with great swaths of evolutionary time, Wrangham’s thesis can be said to coincide with a current estimate that is presented by Daniel Everett (in his book *How Language Began*) as regards the emergence of complex languages in the evolutionary past. Presumably, diverse and complex language systems emerged in conjunction with indexicality, gesturing, and voice intonations among diverse groups in diverse environments. According to Everett, complex

language began with *Homo erectus* more than one million years ago, and has existed for 60,000 generations. As such the hero of this story is *Homo erectus*, upright man, the most intelligent creature that had ever existed until that time. *Erectus* was the pioneer of language, culture, human migration and adventure. Around three-quarters of a million years before *Homo erectus* transmogrified into *Homo sapiens*, their communities sailed almost two hundred miles (320 kilometres) across open ocean and walked nearly the entire world. *Erectus* communities invented symbols and language, the sort that wouldn’t seem out of place today. Although their languages differed from modern languages in the quantity of their grammatical tools, they were human languages. Of course, as generations came and went, *Homo sapiens* unsurprisingly improved on what *erectus* had done, but there are languages still spoken today that are reminiscent of the first ever spoken, and they are

not inferior to other modern languages. [...] *Homo sapiens* means “wise man,” and suggests, erroneously as we see, that modern humans (we are all *Homo sapiens*) are the only wise or intelligent humans. We are almost certainly the smartest. But we are not the only smart humans who ever lived. *Erectus* also invented the other pillar of human cognition: culture. Who we are today was partially forged by the intelligence, travels, trials and strength of *Homo erectus*. This is worth stating because too many *sapiens* fail to reflect on the importance of earlier humans to who we are today [...] language—not communication—is the dividing line between humans and other animals.⁵⁰

Everett further points to the Baldwin Effect as a key aspect in the evolution of language with *Homo erectus*.⁵¹ Providing that complex languages did emerge in this way, one might speculate that another Baldwinian “reversion loop” here would be the selection of those individuals having the physiological characteristics for learning and speaking such languages effectively, leading to the channeling out of the anatomical specifics in terms of tongues, lips, vocal cords. For example, being born with a cleft palate might prevent one from communicating effectively with members of one’s tribe, leading to misunderstanding. Given that living in a socially cohesive group or tribe provides a boost to one’s inclusive fitness (as in the Darwinian notion of group / community / social / kin selection) and that language is a social cohesion enhancer,⁵² such individuals would surely have a disadvantage in the struggle for existence. Of course, proficiency in the use of language is not just something that is (genetically) innate, as in the classic Chomskyan thesis, but it is also something that is learned in the contexts of the appropriative imitation of this behavior in others and the triggering events in the context of life-experience. As well, within this process of learning complex languages, how to use them, and in the habitualization of their use, there is the potential for the generation of novelty in terms of modes of expression.

At any rate, one might speculate as to the potential for these three stories (i.e., those of Huxley, Wrangham, and Everett, respectively) to be interconnected. To be sure, did the “bigger brains” that were afforded through cooking (as in the picture Wrangham paints) accompany or spur on the “invention,” evolution, and refinement of complex languages in *Homo erectus*? Did the development and use of complex language by *Homo erectus* (as Everett suggests) in turn, help to spur on more complex cognitive pathways, higher cognitive capacity, and the derivation of more complex “mind-tools” in the brain, in yet another Baldwinian reversion loop? Further, given Huxley’s suggestion that the emergence of humankind’s “psycho-social inheritance system,” involving learning and education by which the experience of one generation is passed down cumulatively to the

next—leading to humankind’s superdominance on the planet, depended upon complex or symbolic language, is this how Huxley’s “psycho-social” phase of evolution in humankind emerged?

If the answer to each the last three questions is “yes,” respectively, then from these musings, here, what presents itself is a phylogenetic sketch of the logical evolutionary sequence of overlapping phases leading from *Homo erectus*’ struggle for survival to humanity’s superdominance over the course of eons of evolutionary time. First, *Homo erectus* gains control of fire. Second, the behavioral habit of cooking develops in *Homo erectus*, resulting in the improvement of food and nutrition, supporting anatomical changes in the gut and body as well as the building of our brains, in Baldwinian-like fashion, as Wrangham has speculated. Third, there is the development and use of complex languages by *Homo erectus*, as Everett has hypothesized. Fourth, there is the emergence of more cohesive social organization, culture, tool-making and use, complex “mind-tools,” and heightened powers of complex language use, reasoning, consciousness, self-consciousness, strategic thinking. Fifth, humanity’s “psycho-social inheritance system,” comprised by learning, teaching, researching, and education emerges, leading through the generations and across cultures in diverse regions on the planet, all the way through *Homo heidelbergensis* and *Homo neanderthalis*, to *Homo sapiens*’ superdominance as the natural world’s chief selective agent in the geological epoch that is, today, labeled the Anthropocene.

Certainly, the sequence of phases listed above cannot be seen as merely involving a “linear progression,” especially given the fact that we are dealing with vast swaths of evolutionary time as well as a great diversity of populations living in disparate environments and geographical regions on the planet. Furthermore, it would be all-too-simplistic and inaccurate to say that each of the developments in the phases listed above took place in the evolutionary past in universal and linear temporal fashion. Moreover, as mentioned above, the sequence of emergences listed above can be said to overlap, for example, it is certain that the “mind-tools” and complex languages that arose in the evolutionary past are internally related phenomena, such that the emergence of structures pertaining to one would causally affect the other in reciprocal fashion.⁵³ Nevertheless, the account that has been presented above remains a compelling hypothetical “crane-type” explanation of human evolution bringing together Wrangham’s cooking hypothesis, Everett’s account of the emergence of complex languages with *Homo erectus*, and Huxley’s emphasis on the importance of the humanity’s “psycho-social inheritance system” in the course of its evolution.

CHAPTER 2

A KEY EVOLUTIONARY-EXISTENTIAL QUESTION CONCERNING HUMANITY’S “PSYCHO-SOCIAL INHERITANCE SYSTEM,” ITS PLANETARY SUPERDOMINANCE, AND THE GLOBAL ECOLOGICAL CRISIS

It is no secret that humanity presently finds itself at a major crossroads as regards to the global ecological problems that it has created for itself and for other living beings on the planet in the context of its superdominance. Some of the “dysfunctions” in the biosphere that have been caused, in whole or in part, by human activity, include global warming / climate change (which has largely come as a result of greenhouse gas emissions stemming from human fossil fuel overuse and has been exacerbated by human overpopulation); the mass extinction of organisms and species (which is greatly the result of human encroachment on wild habitats); and the prevalence of waste, pollution, and toxicity of all types throughout all regions of the planet (as a result of resource extraction and modern-industrial production methods, including factory farms and biotechnology). It is in light of the ongoing multiplication of such ecological problems, caused mostly by humanity’s expression of its superdominance, that members of the human species must critically reflect on, and reconsider their ownmost commitments, purposes, and the trajectory of its development going forward into the future. In short, the global ecological crisis that humanity faces today calls not only for moral deliberation, but also for deep evolutionary-existential reflection.

As was alluded to in the previous chapter of this volume, as Huxley hypothesized, the efficient cause of humankind’s rise to superdominance and its perpetuation of its position as the chief selective agent of the natural world has been made possible by its keen ability to transmit the experience, knowledge, skills, and experience of one generation to the next through learning and education through the medium of complex languages. It is largely by way of this Huxleyan “psycho-social inheritance system” that

humankind has stored up vast quantities of knowledge, skills, ideas, concepts, and technological knowhow, assisting each generation to adapt to, and to modify, its environment in continual and progressive fashion over eons of evolutionary time. Armed especially with its knowledge in the domains of evolutionary biology and ecology, today, humanity understands better the history of its own emergence as well as its own limits within the context of the natural environment, namely, its life-support system. However, humanity's persistent unwise exertion of its overarching selective power, either consciously or unknowingly, has greatly contributed to the present situation of global ecological crisis which reciprocally threatens not only humanity's privileged position but its very existence. Jablonka and Lamb (2005) have described the situation as follows:

without doubt, humans are the major *selective agents* on our planet, and have carried out the most dramatic reconstruction [usually destruction] of environments. Today, in addition to changing plants and animals by artificial selection, humans (whether consciously or unconsciously) can alter the genetic, epigenetic, and behavioral state of organisms by direct genetic, physiological, and behavioral manipulation.⁵⁴

Given this situation of ecological and existential crisis, from the standpoint of existential phenomenology, it may be suggested that, going forward into the future, there is an evolutionary-existential choice to be made at the individual, societal, species, and civilizational levels. Here, in the present chapter of this book, I draw upon the existential philosophies of Jean-Paul Sartre (1905-1980) and Martin Heidegger (1889-1976) in order to briefly outline some of the main contours of the evolutionary-existential choice that humanity may be said to face today. It should be noted here that while evolutionary biology does not seem to be a primary focus of the existentialist philosophers, their thinking is not to be viewed as disconnected from it. After all, existentialism grew in the wake of Darwin's decisive unleashing of the "universal acid"⁵⁵ of natural selection, in its subsequent application to human evolution, and in its "corrosion" of humanity's most cherished concepts and basic aspects.⁵⁶ And, as I have argued in previous publications, the findings of domains of biology that may be labeled "the New Frontiers of Biology" (e.g., the theory of organic selection, epigenetics, emergence theory, biosemiotics, niche construction, homeostasis, chronobiology, and autopoiesis research, etc...) have paved the way for the realization that living organisms are intrinsically purposive, valuative-selective agents in the evolutionary process. The behavioral selections and the selective activities of organisms play a causal role in the eliminations and preservations that belong to the total process that is natural selection as well as in the

channeling out of the evolutionary trajectories of both their own and other species.⁵⁷ Such realizations contrast sharply with the traditional twentieth-century neo-Darwinian account of living organisms as mere mechanical objects upon which natural selection acts.

In the seminal essay, “Existentialism is a Humanism” (1945 / 1946), Jean-Paul Sartre asserts the thesis that “existence precedes essence.”⁵⁸ For him, each person is thrown into a world that is not of his or her choosing. There is no pre-existing definition of one’s essence, or of who one *is*, that exists prior to one’s life and experience (e.g., in the mind of God or society), to which one must measure up or that determines what a person should do or be. Hence, he or she is responsible for defining his or her own individual essence over the course of his or her life through the actions that he or she takes and the choices / decisions that he or she makes. One’s Being is finalized only afterward, namely, when one’s life is over—in death—as no further action or decision is able to be added to one’s life and nothing is able to be subtracted from it at that point. Of course, in part, one’s essence is defined by the judgments that those who succeed us may make of the actions we carried out and the decisions we made as individuals in the course of our lives. In this, for Sartre, living authentically entails acting and making decisions that are consistent with who one intends oneself to be, whereas Sartre’s notion of “bad faith” typifies situations wherein individuals carry out actions that are not consistent with their ownmost existential choices and/or they make excuses for their inauthentic behavior, deeming themselves not to have been responsible for who they have become.

A core aspect of Sartre’s existentialism that I would like to emphasize here is that in the process of defining him- or herself over the course of his or her life, he or she also contributes to the definition of humanity.⁵⁹ That is to say, the essence of humanity as a whole is also being defined on the basis of individual human beings living, choosing, and defining themselves. While judgments may be made as to the essence of humanity at any point as long as human beings exist, such that the essence of humanity can be said to evolve over the generations, ultimately, the full and final definition of the essence of the humanity would hypothetically entail the summing up of the collective totality of the choices and actions of every human being who ever lived, up until the extinction of the human species (or the point at which the human species has been transcended, as in transhumanism).

Even though Sartre repudiates the notion of *a priori* conceptions of the essence of persons and of humanity through his chief principle that “existence precedes essence,” which suggests that human beings choose who they are both individually and collectively (*qua* “humankind”), Sartre comes very close to providing two *a priori* definitions of the nature of

humanity. In the first place, in “Existentialism is a Humanism,” Sartre had already defined humankind in terms of *action* (over e.g., thinking), something that he is criticized for by Heidegger in *Letter on Humanism* (1946 / 1947).⁶⁰ In the second place, in *Being and Nothingness* (1943)⁶¹ and in the written work, “The Desire to Be God,”⁶² Sartre asserts that the best way to conceive of the nature of humankind is by way of the notion of “the desire to be God,”⁶³ by which he can be said to mean the attempt to emulate the traditional theological and Spinozist conception of God as the “self-caused entity” (*ens causa sui*) as represented by the project for-itself of human beings to will and determine their own Being, i.e., to attain to the synthetic unity of *being in-itself-for-itself*.⁶⁴ Accordingly, for Sartre, in the project of willing oneself to become what one desires to be, whereby one must overcome the conditioning and determining forces of the environment that act on us from outside of us, to be human “means to reach toward being God [...] or if you prefer, man fundamentally is the desire to be God.”⁶⁵ Of course, later, in the essay “The Ends of Man” (1968 / 1969), Jacques Derrida (1930-2004) suggests critically that Sartre’s humanistic, atheistic, existentialist philosophy does not find anything problematic with this project. Rather, for Derrida, it affirms “the desire to be God” and does nothing to truly challenge it.⁶⁶ To be fair to Sartre here, however, it should be noted that he downplays any pretense to a totalizing authenticity and commitment to the project of attaining (and maintaining) the *in-itself-for-itself*, and in at least one passage in his *Notebooks for an Ethics* Sartre questions the drive that he labels “the desire to be God.”⁶⁷ In any case, in suggesting that human beings not only define themselves as individuals but also contribute to the definition of humanity, for our purposes here in this volume, it would suffice to say that Sartre’s philosophy expresses the notion that the existential choices of individual human beings reverberate at the species level. Furthermore, whatever persons will themselves to become in the context of defining themselves, however they act and strive toward their own images of themselves, and regardless of how humankind as a whole comports itself as a result of its selections and determinations, the definition of the essence of humanity, for Sartre, is largely reducible to “the desire to be God.”

Turning to Heidegger, as pertains to the gravity of existential choices in general, in the process of trying to formulate the question of the meaning of Being, at the climax of *Being and Time* (1927),⁶⁸ Heidegger provides (in very dense, but suggestive, language) a phenomenological description of the process by which Dasein’s ownmost potentialities for Being that “have been there” in its past are disclosed (*aletheia*)⁶⁹ to it and how Dasein may become resolute in relation to them going forward into the future. In one very

striking passage (i.e., one of the few bolded sections in the text), Heidegger writes that “only an entity which, as futural, is equiprimordially in the process of having-been, can, by handing down to itself the possibility it has *inherited*, take over its own thrownness and be in the moment of vision for ‘its time’.”⁷⁰ Accordingly, Heidegger insinuates that historically authentic Dasein is one which has made a resolute and “reciprocative rejoinder to [a selected] possibility of [...] existence which has-been-there”⁷¹ and that it has been “handed down”⁷² to it and “inherited.”⁷³ Willing to repeat the possibility of its past that has been disclosed to it in its orientation toward the future, authentic Dasein resolutely affirms this possibility that “has-been-there,” doing so in an anticipatory manner, thereby rendering itself “self-constant”⁷⁴ through past, present, and future.

Applying Heidegger’s examination, in *Being and Time*, of the way that Dasein may become authentic as pertains to its Being, “loyal to itself,”⁷⁵ and/or resolute in the “very depths of its existence”⁷⁶ to the species-level evolutionary-existential choice that humanity can be said to face today in light of the global ecological crisis, the possibility that modern biology has disclosed in relation to humankind’s collective evolutionary “having been” may be characterized as entailing a drive for ever-increasing power and control over, and self-determination in the face of, the natural environment that confronts it. Noting Heidegger’s own, very “biological,” language of “inheritance,” it is plausible to suggest that, in general, the Being that has today been inherited from our ancestors through the continual transmission and accumulation of the means of dominance over the natural world, generation after generation, as in humanity’s “psycho-social selection and inheritance system,” is akin to Sartre’s “desire to be God,” involving the emulation and deeply rooted endeavour to take on the self-caused (*causa sui*) nature of God, including divine properties, such as omniscience and omnipotence, which, in traditional theology, are attributed to the Prime Mover. That said, it should be noted that Heidegger himself would probably have rejected any such linkage to Sartre’s ontotheological musings.⁷⁷ Also, Heidegger’s analysis of Dasein’s movement toward authentic existence in *Being and Time*, is not the “end point” of his existential and phenomenological thinking. For there is a marked difference between Heidegger’s philosophical thought in *Being and Time* and that of the later Heidegger of the 1930s and beyond. Many scholars suggest that Heidegger’s thought took a “turn” (*Kehre*) in the 1930s and after both the war and German de-nazification process, shifting from a focus on phenomenology and Dasein’s pursuit and appropriation of, and/or its “seizing upon”⁷⁸ Being, including an emphasis on themes such as Dasein’s self-constancy, resoluteness, and authenticity, to a more holistic (and perhaps wiser and more mature) orientation toward

thinking and Being's approachment of *eksistent* humanity,⁷⁹ including a criticism of scientific reductionism and modern technology with their all-encompassing fixation on beings over Being.⁸⁰ Moreover, for Heidegger, *eksistent* humanity can "step outside" of any finite determination of its essence (i.e., made by various humanisms), including that of Sartre's existentialist humanism which characterizes humanity as having its identity in the notion of "the desire to be God."

In any event, stemming from the brief analysis above of Sartre and Heidegger, the fundamental species-level evolutionary-existential question that humanity must ask itself today is *whether or not, in the face of the global ecological crisis, it will affirm or re-affirm, going forward, the drive that it has inherited toward the pursuit of power and control over the natural environment and/or of the "desire to be God," as Sartre puts it, which has (arguably) possessed it and its evolutionary ancestors at least since the dawning of the "psycho-social phase" of its evolution.* In other words, realizing that, on the basis what has been presented in this book thus far, learning and education are (as Huxley has emphasized) the efficient cause of human superdominance on the planet, but also, in turn, largely responsible for today's global ecological crisis, what should the ramifications be for formal education going forward? In light of the onset of the global ecological crisis, should formal education continue to promote the means of human superdominance, or should formal education be demolished so as to arrest the perpetuation of human superdominance? Can it be made to do both, as in some synthesis of the two positions? Are neither of these options sustainable? Are there other options to consider here?

In the next chapters of this volume, I intend to unpack the main contours of three main lines of thinking as regards to the response to this profound evolutionary-existential question. First, I shall take up the basic perspective that issues from *anthropocentric humanist* ideology, which may be said to include Auguste Comte's (1798-1857) positivism, Huxley's evolutionary humanism, and Nick Bostrom's (1973-) transhumanism. Second, I will outline the basic response that would stem from a *biocentric anti-humanist* outlook, which may be said to include aspects of Michel Foucault's (1926-1984) postmodern analyses of biopolitical regimes exercising their power and Jacques Derrida's (1930-2004) deconstructive post-modernism. Third, it will be imperative to unpack the response that issues from a *holistic organicist* orientation, as represented by Alfred North Whitehead's (1861-1947) "constructive" brand of postmodernism, as is exhibited in his organismic philosophy of education, and by Conrad Hal Waddington's

(1905-1975) emphasizes on the importance of holistic reflection in science and on “biological wisdom.”

CHAPTER 3

THE *ANTHROPOCENTRIC HUMANIST* RESPONSE TO THE EVOLUTIONARY-EXISTENTIAL QUESTION PERTAINING TO HUMANITY'S "PSYCHO-SOCIAL INHERITANCE SYSTEM": COMTE'S POSITIVISM, HUXLEY'S EVOLUTIONARY HUMANISM, AND BOSTROM'S TRANSHUMANISM

In the previous chapter of this book, I suggested that it is largely as a result of humanity's superdominance on the planet, which has been enabled largely due to the operation of its "psycho-social inheritance system," enabling the human species to transfer the knowledge of each subsequent generation to the next over eons of time, that the global ecological crisis affecting all life-forms on the planet has taken shape. Today, humanity stands at a crossroads, requiring it to reassess its current trajectory and to make an important evolutionary-existential choice going forward into the future. As a first ideological orientation that may supply a response to this question, *anthropocentric humanism* is an ideology or value system that is centered on the nobility, on the exceptional status, and on the dominance of humanity and of its potential evolutionary offshoots (e.g., posthumanity) over the natural world and the other creatures living in it. From the anthropocentric humanist perspective, humanity is at the center of the cosmic drama. Human beings and their ilk have intelligence, rationality, consciousness, and self-consciousness, and can uphold moral obligations toward others, representing capacities that make them superior to, and more important than, non-human animals. *Anthropocentric humanism resolutely affirms, or rather, re-affirms, the drive toward increased power and control over the natural environment and/or the Sartrean "desire to be God," that has been enabled by humanity's "psycho-social inheritance system."* For the human species has, throughout its evolution, been subjected to the

ravages of Nature: hurricanes, earthquakes, cold, heat, predators, etc.... But, according to anthropocentric humanism, through the exercise of its rational capacities, through upward scientific and technological progress, and through the pretense to unlimited economic growth, humanity can and should pursue increasing power and control over the natural world, including over all ecosystems, other organisms, including over their evolution, in order to (finally) become the capital-‘A’ Author of its own Destiny.

Anthropocentric humanism can be said to have a foundation in the scientific humanism that is found in the positivist philosophy of Auguste Comte (1798-1857). Positivism emphasizes the methods of the natural sciences, empirical fact, the discovery of the mechanical laws underlying natural phenomena, and the (technological) application of the findings of the natural sciences to the concrete resolution of human problems. For Comte, scientific knowledge has demonstrated that it is instrumental to the provision of solutions to human problems and to the improvement of the human condition. On the contrary, from a Comtean perspective, traditional theology’s belief in “supernatural fictions” and “imaginary hopes,”⁸¹ and metaphysics’ reliance on appeals to “abstract forces”⁸² and “conceptions,” such as “vitalistic” and “teleological purposiveness” and/or final causality, in the explanation of natural phenomena, are basically unproductive “dead ends.” While Comte admits that theology and metaphysics have belonged to the past foundations of modern science, he instructs nations to take up “the obligation of scientific study of the natural Order [so as] to enable us to direct all the forces of Man and of Society to its *improvement* by artificial effort.”⁸³ Today, one might take him to mean, for example, the application of the findings of evolutionary biology and ecology to society and life, given that these sciences are said to uncover the causal laws underlying them. Correspondingly, during his time, Comte envisioned an organization of education in civilized nations away from theology and metaphysics and toward a battery of a multiplicity of distinct natural and social scientific domains, unified in a scientific sociology or “social physics” that was to be dedicated to the uncovering of the “laws of human development.”⁸⁴ This was for the purpose of acting on society, namely, to order and structure it appropriately so as best to resolve human problems and crises.⁸⁵ As he writes, “the best minds are agreed that our European education, still essentially theological, metaphysical, and literary must be superseded by a Positive training, conformable to our time and needs.”⁸⁶ Positivist education, he says, is to “assume a more scientific character, with the object

of supplying systematic notions of the external world”⁸⁷ and is to become a “rational system” that aims to prepare human beings for “practical life.”⁸⁸

In chapter one of this book, I briefly outlined some of the main tenets of Julian Huxley’s evolutionary humanist and transhumanist vision concerning education and learning going forward into the future. Huxley’s vision can certainly be said to represent an anthropocentric humanist orientation as regards to the evolutionary-existential choice that faces humanity going forward into the future. For him, education and learning in the future ought to be oriented toward the goals of evolutionary humanism, eugenics, and transhumanism. Huxley stressed that humanity ought to employ its relatively new (in terms of evolutionary time) intellectual powers in order to control the biosphere as a whole, namely, the unfolding of most every biological process on the planet. To be sure, Huxley stated that the ultimate destiny of the human species is to become “responsible for the whole future of the evolutionary process on the planet,” humanity taking up the position of “the *sole [selective] agent* for the future evolution of life on the planet,” its duty being “to direct and steer” the evolutionary process “in the right direction and along the best possible course.”⁸⁹

In the essay, “Transhumanism” (1957), in which he coins the term “transhumanism,” Huxley asserts that, now superdominant via its “psychosocial inheritance system,”

it is as if man had been suddenly appointed managing director of the biggest business of all, the business of evolution—appointed without being asked if he wanted it, and without proper warning and preparation. *What is more, he can’t refuse the job. Whether he wants to or not, whether he is conscious of what he is doing or not, he is in point of fact determining the future direction of evolution on this earth.* That is his inescapable destiny, and the sooner he realizes it and starts believing in it, the better for all concerned.⁹⁰

So, for Huxley, humanity has no choice but to seek to “improve” and maximize its own “psycho-social,” intellectual, scientific, and cultural capacities, as well as its genetic fitness, so as to be able to exert directive control and “guidance,” not only over its own evolution, but also over the evolutionary trajectories of all other living creatures on the planet. This would entail that humanity becomes a determining, efficient cause of their development and evolution from outside of them (e.g., as in genetic engineering imposing its alterations, with all of their developmental and evolutionary consequences, onto living organisms, from without). In so doing, for Huxley, going forward, education was to become an instrument for the attainment of the goals of his evolutionary humanist ideology. Formal education, in his view, would steer the young, for example, toward

supporting eugenics policies, which would allegedly prevent overpopulation and reduce the proliferation of genetic diseases, and/or toward transhumanism, which would see to the enhancement of the human genome and the surpassing of the contemporary capabilities of our species.

On the one hand, Huxley played up the “new view of our relationship with our planetary habitat and its resources and with the other organized life-communities with which we share it”⁹² that modern evolutionary biology had brought to light, paying lip-service to the biological “strength” that a large degree of variety and diversity of human genetic make-ups, capacities, temperaments, and talents would bring. As well, Huxley downplayed “the arrogant idea of conquering and exploiting nature.”⁹³ However, on the other hand, Huxley believed that part of the solution to many problems, such as overpopulation, resource scarcity, and ecological crisis, was to implement eugenics programs so as to lessen the consumption of valuable resources by the “genetically defective,”⁹⁴ “the social problem group,”⁹⁵ and/or the “economically less favoured classes and groups,”⁹⁶ namely, those who deemed *a priori* not to be likely to be able to learn and/or adapt successfully and/or to contribute positively to humanity’s advancement. This was so as to prevent waste and future resource shortage for “exceptionally gifted individual[s]”⁹⁷ who would be able to do so. According to Huxley,

unless we quickly set about achieving some sort of balance between reproduction and production, we shall be dooming our grandchildren and all their descendants, ... to an extremely unpleasant and unsatisfactory existence, overworked and undernourished, overcrowded and unfulfilled.⁹⁸

The means of eugenic selection (or “eu-selection”) that Huxley envisioned ranged from: (1) the promotion of the use of contraceptives and planned parenthood strategies globally; to (2) the compulsory vaccination of individuals in order to increase human immunity to disease; to (3) the diminishment of social security assistance to those who presented “a social problem” and/or are “a burden on the community”; to (4) making it more expensive to raise children; to (5) diminishing foreign aid to overpopulated nations; to (6) the provision of counseling and education on the issue of overpopulation in order to persuade “genetically inferior” individuals not to marry or to reproduce, and/or to undergo voluntary sterilization; to (7) the isolation and/or confinement of “certified patients” in mental hospitals so that they cannot reproduce; to (8) voluntary, non-voluntary, and/or involuntary sterilization of “those with genetic abnormalities” from reproducing themselves; to (9) the artificial insemination of the wives of “genetically-defective” males by “genetically well-endowed” or “deliberately-preferred” donors as the source of children and/or adoption in the case of “defective

females”; to (10) the eugenic insemination of women by selectively-preferred donors (i.e., “genetically well-endowed” males); to (11) the employment of technology and biotechnology (including agricultural and gene editing or modification technologies) in order to increase the food supply and to enable human beings to increase their degree of control over the natural world (as in anthropocentric humanism), including the biologies and genetic make-up of non-human organisms; (12) the use of medical research and biotechnology (including gene editing and/or modification and perhaps epigenetic pharmaceuticals) to arrest diseases, including genetic diseases over the course of the person’s lifetime, as in negative gene therapy; to (13) the use of medical research and technology to ameliorate and enhance ourselves by way of genetic modification inter-generationally (i.e., down the germline, perhaps also including epigenetic pharmaceuticals), as in positive gene therapy; to (14) the further improvement of humanity through such means, even to the point at which it overcomes the limits of its present capacities and transcends itself, as in *transhumanism*. To clarify Huxley’s terminology, whereas negative eugenics “aims at preventing the spread and especially the increase of defective or undesirable human genes or gene-combinations,” positive eugenics is oriented toward “securing the reproduction and especially the increase of favourable or desirable ones.”⁹⁹

Coining the term *transhumanism*, Huxley stated that

the human species can, if it wishes, transcend itself—not just sporadically, an individual here in one way, an individual there in another way, but in its entirety, as humanity. We need a name for this new belief. Perhaps transhumanism will serve: man remaining man, but transcending himself, by realizing new possibilities of and for his human nature. ... “I believe in transhumanism”: once there are enough people who can truly say that, the human species will be on the threshold of a new kind of existence, as different from ours as ours is from that of Pekin(g) man. It will at last be consciously fulfilling its real destiny.¹⁰⁰

In recent years, the transhumanist movement has enjoyed an explosion of attention and research in dedication to it, considering the number of scholarly and scientific publications, but also science fiction books, television series, and movies, that have been released that have been directed toward it, although this has definitely not been without great controversy. Transhumanist thinkers typically embrace the improvement of the human species by way of genetic enhancement (e.g., by introducing a “viral vector” that carries gene-altering “cargo” into the chromosomal material as well as through biotechnologies such as CRISPR Cas-9 and Prime Editing), the interfacing of persons with computing and machine technology, cybernetics, as well as artificial intelligence, which will