

WE HUMANS ARE THE WORST AND THE BEST AND ...

by Holmes Rolston III

Abstract. We humans have extended culture amplifying our powers. Our genotypes are differentially expressed in phenotypes, increasing our preferring us over them, escalating our worst and best. Our groups are more ruthless than individuals. Our brain/minds are hyperimmense, neuroplastic in advancing our powers in collective technology. We fear reaching a tipping point, a point of no return, pending doom for humans and jeopardizing the planet forever. We humans are the best and the worst and ... we have blundered into doubly compounded wickedness. We struggle to gain truth, and live with our biases, religious and secular. We are capable of the highest good, exemplified in individuals in their spiritual communities. We can also fall into enormous evil, made worse by our community allegiances. We are well into the greatest experiment ever, an Anthropocene Epoch in which the dangerous outcome cannot be undone, nor the experiment repeated.

Keywords: Anthropocene Epoch; artificial intelligence; communities; greater evil; greater good; human excellence; hyperimmense brain/minds; massacres; nations; neuroplasticity; one earth; religious; secular; truth; us versus them

We humans are the worst and the best and everything in between, considering that we are the only species on Earth with capacities for moral consideration and action. So, conclude an increasing number of analysts, alike scientists, philosophers, and theologians. For example, Robert M. Sapolsky, biologist and neurologist at Stanford, titles his recent and huge book: *Behave: The Biology of Humans at Our Best and Worst* (Sapolsky 2017). Richard Wrangham, Harvard biological anthropologist, concludes, “We are not merely the most intelligent of animals. We also have a rare and perplexing combination of moral tendencies. We can be the nastiest of species and also the nicest” (Wrangham 2019, 3).

Noël Coward, British dramatist, lived through World War II: “It is hard to imagine, considering the inherent silliness, cruelty and superstition of the human race, how it has contrived to last as long as it has.

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The witch-hunting, the torturing, the gullibility, the massacres, the intolerance, the wild futility of human behavior over the centuries is hardly credible” (Coward 1982, entry on May 1). Pascal had lamented centuries before: “What sort of freak then is man! How novel, how monstrous, how chaotic, how paradoxical, how prodigious! Judge of all things, feeble earthworm, repository of truth, sink of doubt and error, glory and refuse of the universe! ... Know then, proud man, what a paradox you are to yourself” (Pascal 1966, 64). The Apostle Paul agonizes, “For I know that nothing good dwells within me, that is, in my flesh. I can will what is right, but I cannot do it. For I do not do the good I want, but the evil I do not want is what I do” (Romans 7.18).

So, there is worrisome puzzling in our past, but the novelty we address here is that our current super-powered behavior escalates fears of our reaching a tipping point, a point of no return, pending doom for humans and jeopardizing the planet forever. We humans are the best and the worst and ... we have blundered into doubly compounded wickedness. The argument here progresses toward the best and the worst illustrated in the Vietnam War, a young woman fire-bombed by American pilots, who as an individual became a Christian and, inspired by that faith community, forgave those who tortured her. That leaves us in fear, love, and hope.

SUPER-IMMENSE MINDS IN AN ANTHROPOCENE EPOCH

Our super-immense minds need a sense of scenic scope. Analysis of past, present, and future takes “one long argument,” as Ernst Mayr (1991) said of Darwin. What follows is not a straightforward logical argument, premises to conclusion, not the links of a chain, but rather like the legs of a table, where support comes from multiple considerations, or where table legs break, and no longer support what they earlier did. In interpretive seeing, one must join earlier and later significances in ways more qualitative than quantitative, more dramatic than linear. We look around for support in the checkered past and present; we try to dismiss or argue around what seems like contrary evidence. We consider lots of cases, whether and how they fit in. One narrates the world as storied history, reaching both hoped for and surprising events. Our values are framed by our evolutionary embodiment in the world, but enlarged, endangered by our immense minds. We face Gestalt-switches, deep questions.

Humans have a hyperimmense brain, of such complexity that descriptive numbers are astronomical and difficult to fathom. A typical estimate is 10^{12} neurons, each with several thousand synapses (possibly tens of thousands). Each neuron can “talk” to many others. The postsynaptic membrane contains over a thousand different proteins in the signal receiving surface. “The most molecularly complex structure known is the postsynaptic side of the synapse,” according to Seth Grant, a neuroscientist (Grant,

quoted in Pennisi 2006). Over a hundred of these proteins were co-opted from previous, nonneural uses; but far the most of them evolved during brain evolution. This is nature's nanotechnology.

The result is a mental combinatorial explosion. The human brain is capable of forming thoughts numbering something in the range of $10^{70,000,000,000}$ thoughts, a number that dwarfs the number of atoms in the visible universe (10^{80}) (Flanagan 1992, 37; Holderness 2001). In our 150 pounds of protoplasm, our 3-pound brain is more operational organization than in the whole of the Andromeda galaxy. Michael Merzenich, a neuroscientist, reports his increasing appreciation of "what is the most remarkable quality of our brain: its capacity to develop and to specialize its own processing machinery, to shape its own abilities, and to enable, through hard brainwork, its own achievements" (Merzenich, box essay in Bear, Connors, and Paradiso 2001, 418). In the vocabulary of neuroscience, we have "mutable maps" in our cortical representations, formed and re-formed by our deliberated changes in thinking and resulting behaviors. This neuroplasticity, embedded in our behavioral genomics, has made possible our cumulative transmissible cultures over millennia and today makes possible our advancing and now exploding technological power, resulting in unprecedented human capacity to do both the greatest good and the greatest evil.

We now congratulate ourselves on entering the Anthropocene Epoch. Humans are now the most important geomorphic agent on the planet's surface (Wilkinson and McElroy 2007). We *Homo sapiens* think so highly of ourselves that we have named a transition to a new geological epoch for ourselves. We are entering "the Great Acceleration" (Steffen, Broadgate, and Deutsch 2015) Great expectations!

US VERSUS THEM: INDIVIDUALS IN ESCALATING COLLECTIVES

Reinhold Niebuhr noted, during World War II, "The group is more arrogant, hypocritical, self-centered and more ruthless in pursuit of its ends than the individual" (Niebuhr 1949, v. 1, 208). That has led to the greatest atrocities in history, found around the world.

Social scientists have documented rapid and automatic xenophobia, confirmed in neuroscience (Sapolsky 2017, Chapter 11), extensively in humans, from childhood to seniors. We treat members of other races as less trustworthy, less reciprocating, whether or not we have had such experiences with them. If you do not know, that is the safest default position. Be suspicious of anybody you do not know. We are biased toward better behavior us and us, and worse behavior us confronting them (Greene 2013; Krautheim et al. 2019).

There are collectivist and individualist cultures (Sosik and Jung 2002). In China, for 10,000 years, raising their staple food, rice, has required

continuing collective labor, maintaining, flooding, draining their paddies. The United States has a legacy of single family farmers, frontier individualism. Maybe some of this even gets genetically encoded, but much is culturally enhanced. Since anciently in wild nature, groups form for protection and safety, fish in a school, birds in flocks, wolves in packs. Humans are born into cultures, whether more collectivist or individualist, but everywhere groups are required to propagate and to prosper, us to outcompete them. East and West, it takes a village to raise a child. Humans always and never survive as individuals.

Next, we recollect past histories, our worst, punctuated with our best, wondering whether such rage will escalate damning patriotism as we reach this tipping point of no return, pending doom. Maybe we can learn to live in a global village.

Us and Them can be demandingly powerful. In The Nazi Holocaust, 1941–1945, Germany and its collaborators systematically murdered 6 million Jews, around two-thirds of Europe's Jewish population. Jews were demeaned as inferior, tattooed with an identifying number. Thousands of camps and other detention sites were established across German-occupied Europe. Germans were superior Aryans. The murders were carried out in pogroms and mass shootings; by a policy of extermination through work in concentration camps; and in gas chambers and gas vans. Many Jews fled to safety in other nations. Changing his perspective on us and them, Oskar Schindler, Austrian industrialist, though a Nazi, saved 1,200 Jews from World War II concentration camps (Bauer 2002; Landau 2016). Germans today view the Holocaust as their greatest national shame, and struggle with this legacy. The German Wehrmacht lost 4.3 million men, and thousands of civilians were killed in the war.

Joseph Stalin ruthlessly transformed Soviet society collectivizing agriculture and developing state-owned heavy industry. He mass-mobilized the Communist Party, used extensive secret police, party purges, political repression of the general population, and forced collectivization. This led to millions of deaths in Gulag labor camps and during famine.

World War II, known as “the Great Patriotic War” by Soviet historians, devastated much of the USSR, with about one out of every three World War II deaths representing a citizen of the Soviet Union. In the course of World War II, the Soviet Union's armies occupied Eastern Europe, where they established Communist puppet governments. Estimates of the number of deaths attributable to Stalin vary widely. Assessing twenty years of historical research in Eastern European archives, Timothy Snyder concludes that Stalin deliberately killed about 6 million persons, which rises to 9 million if foreseeable deaths arising from policies are taken into account (Snyder 2010, 384). By 1949, the Cold War had started between the Western Bloc and the Eastern Soviet Bloc, with the Warsaw Pact (created 1955) pitched against NATO (created 1949) in Europe.

Turning from Germans and Russians, to Americans, we continue to face collective guilt and struggling group conscience. In the My Lai Massacre, March 16, 1968, soldiers of Charlie Company, a unit of the American Division's 11th Infantry Brigade, attacked the Vietnam hamlet of My Lai and "under orders" killed about 400 unarmed Vietnam civilians, including infants, children, and elderly citizens. Bodies were mutilated and dumped into wells. Numerous women were gang-raped before being killed. A few of the American soldiers refused to carry out these orders, under threats of court-martial and themselves being shot.

An American helicopter pilot, thinking Charlie company might need help, circled and realized what was going on. He landed his helicopter between the villagers and the soldiers, trained his machine guns on his fellow Americans, and ordered his gunners to shoot them if they did not stop (Allison 2012). That is switching between in-group and out-group instantly in battle. Faced with this atrocity, Americans realized that America was as much a source of horrible evil as of promoting good. They were thankful that at least some Americans had learned better caring on the battlefield.

Collective Us against hated Them can as well be East as West. The Nanking Massacre or the Rape of Nanking was an episode of mass murder and rape committed by Imperial Japanese troops against the residents of Nanking, at that time the capital of China, during the Second Sino-Japanese War. The massacre occurred starting December 13, 1937, the day that the Japanese captured Nanking. During this period, soldiers of the Imperial Japanese Army murdered disarmed combatants and Chinese civilians numbering an estimated 40,000 to over 300,000, and perpetrated widespread rape and looting. There were regular live burials, castration, the carving of organs, and burning people to death. Diabolical tortures were practiced, such as hanging people by their tongues on iron hooks or burying people to their waists and watching them get torn apart by dogs. Since most Japanese military records on the killings were kept secret or destroyed shortly after the surrender of Japan in 1945, historians have been unable to accurately estimate the death toll of the massacre (Honda 1998).

From 1958 to 1962, Mao Zedong's Great Leap Forward policy in China led to the deaths of up to 45 million people, the biggest episode of mass murder ever recorded.

Social scientists study reciprocity, both observing cultures and setting up experiments. There is almost universally something like a Golden Rule. Societies maintain in-group loyalty, by rewards and by punishing defectors. Famously, there can be a "tragedy of the commons," modeled on how shepherds graze sheep in a common pasture (Hardin 1968). In "public good" economic games, players venture contributions of various amounts. Across all cultures people are more social than sheer economic rationality would predict, within limits (Heinrich et al. 2005; Herrmann, Thöni, and Gächter 2008). In one such game, called prisoner's dilemma, two

participants decide whether to cooperate or compete, guessing whether each will inform on the other, or cheat, with differing levels of benefit and loss. If the game is continued an indefinite number of rounds, strategies change toward cooperation.

Where there is memory and a capacity to discriminate between individuals, remembering who reciprocates, a strategy can evolve (dubbed Tit for Tat), which involves cooperating initially, never thereafter refusing to cooperate if the other does, refusing to cooperate when and so long as the other refuses to cooperate, and restoring cooperation at once if the other ventures it (Axelrod and Hamilton 1981; Axelrod 1984). At least such a strategy can appear on computer simulations (Nowak, May, and Sigmund 1995). There are similar strategies that also work, sometimes allowing for mistakes and ignorance, sometimes with more focus on natural communities, ecosystems, less on computers. In an ongoing small community, such strategies resist invasion by noncooperation. In larger communities, a monotheistic God may promise the rewards and do the needed policing.

A much debated issue is what biologists call group selection. This arises when asking whether animals behave for the good of the species. The short answer has usually been no; selection operates on individuals, who live and die and pass on their genes. But animals do defend their kin; they have some behaviors, such as warning calls, that benefit non kin as well, they avoid inbreeding. Unrelated animals may reciprocate when grooming, hunting, sharing the kill. They need their groups.

Humans need their groups, dramatically more so, and also have developed elaborate cumulative transmissible cultures to maintain them. Over the centuries, nations have come and gone, and this must have something to do with whether they have been better organized in ways that were effective: chiefs, kings, queens, governments, taxes, producing food, markets, roads, medicine, military forces, obedience to authority, in ways that we now might think better and worse morally, more or less just. Can we increasingly educate patriots who are neither loveless critics nor uncritical lovers of their nation as the nations of Earth seek a transforming and just global sustainability? (Shriver 2005).

The conclusion so far seems to be that people both individually and in their group solidarity can be remarkably good and terribly bad, and more often than not somewhere in between—and this may be statistically inevitable. That leaves us still wondering about any probable outcomes of our great experiment in the novel Anthropocene millennium.

DISCOVERIES: NEURONS AND UNPRECEDENTED ADAPTED FIT

We humans are animals, though animals with a difference. But our evolutionary predecessors were wild animals for a thousand and more millennia, and one can worry that we inherit legacies from our animal past.

Evolution favors those whose behavior leaves offspring well-positioned to have offspring in the next generation, over ongoing generations. In that sense, perhaps we humans continue to favor our offspring and kin. We can therefore say that, at least in this familial sense, we are animals programmed to be selfish, continuing the ancient animal behavior.

Further, surely we humans will use, in so doing, the novel capacities that we have evolved, which include moral sensitivities, the capacity for reasoning about our gene-based behaviors, with some sense, for instance, of justice and fairness that tempers our reproductive behavior. Humans have marriage ceremonies, governments with laws about marriage, as wild animals do not. They have cultural ideals that shape, more and less, the actual reals of their societies.

Culture results in “extended heredity” (Bonduriansky and Day 2018). A child inherits wealth and status, position and power, knowledge and technology, which may be used for good or evil, for self-satisfaction or for patriotism, making war or peace.

There is an explosive state change when humans cross a divide gaining their self-reflexive, ideational, linguistic, symbolic capacities. The key threshold is the capacity to pass ideas from mind to mind. There is no clear evidence that chimpanzees attribute mental states to others. Chimps have little or no “theory of mind”; they do not know other minds are there with whom they might communicate. Or, if you prefer to say that one chimp can know what another knows, chimps have a theory of immediate mind (one chimp sees that another chimp knows where those bananas are); humans have a theory of the ideational mind (one human teaches another the Pythagorean theorem).

Animals clearly intend to change the behavior of other animals, first-order intentionality. Second-order intentionality would involve intent to change the mind, as distinguished from the behavior of another animal. Third-order intentionality would involve one’s knowledge that another mind is intending to change one’s mind. In this higher order sense of communication, conclude Dorothy Cheney and Robert Seyfarth, “signaler and recipient take into account each other’s states of mind. By this criterion, it is highly doubtful that any animal signals could ever be described as truly communicative. ... It is far from clear whether any nonhuman primates ever communicate with the intent to inform in the sense that they recognize that they have information that others do not possess. ... There is as yet little evidence of any higher-order intentionality among nonhuman species” (Cheney and Seyfarth 1990, 209).

Although chimpanzees collaborate to hunt or get food, Michael Tomasello and his colleagues conclude “it may be said with confidence that chimpanzees do not engage in collaborative learning. ... They do not conceive of others as reflective agents—they do not mentally simulate the perspective of another person or chimpanzee simulating their perspective.

... There is no known evidence that chimpanzees, whatever their background and training, are capable of thinking of other interactants reflectively” (Tomasello, Kruger, and Ratner 1993, 504–05).

Daniel Povinelli maintains: “Humans have a whole system that we call theory of mind that chimps don’t have” (Povinelli, quoted in Pennisi 1999). Carl Zimmer concludes: “Of all the species on Earth, only humans possess what researchers call a ‘theory of mind’—the ability to infer what others are thinking. ... After decades of studies, no one has found indisputable signs that chimps or other nonhuman primates have a theory of mind.” “Understanding that others think is a human exclusive” (Zimmer 2003).

Joquín Fuster, a neuroscientist, finds that in human brains there is an “emergent property” that is “most difficult to define.” “As networks fan outward and upward in associative neocortex, they become capable of generating novel representations that are not reducible to their inputs or to their individual neuronal components. ... Then, top-down network building predominates. Imagination, creativity, and intuition are some of the cognitive attributes of those emergent high-level representations” (Fuster 2003, 53).

So, we accept these discoveries about emergent properties most difficult to define as an alert that intensifying human cultural abilities may indeed dramatically alter the character of the world in an Anthropocene Epoch.

FREE AND DETERMINED: HUMAN WISDOM AND ARTIFICIAL INTELLIGENCE

We seem to make decisions, and we may be held responsible for the consequences, perhaps by our friends (or enemies), perhaps in law courts. We cease to hold responsible certain persons who are injured, sick, mentally demented. We call ourselves, *Homo sapiens*, the wise species (at least aspirationally); we are the only species that can deliberate rationally, using our theory of mind to interact with other minds, considering how far and in what senses we might be free, how to extend our freedom, and whether and how far we are determined in our behaviors, for better or for worse.

Michael Gazzaniga, often called “the father of neuroscience,” concludes: “Free will is an illusion, but you’re still responsible for your action” (Gazzaniga 2012). Human actions are caused by irreducible, complex actions in the brain. “Mind is a somewhat independent property of brain while simultaneously being wholly dependent upon it.” Mind/brain is a “layered system,” something like software and hardware in a computer, and the mind/brain is interactive with a social system. We humans are a special kind of machine, one with a moral agency that comes from living in social groups. We can set up rules and practices for our societies. We have a social mind. But we no longer need the concept of free will for such

interactive living (Gazzaniga 2009, Chapter 5). Individuals still need to be free enough to choose among options in how they set up these social rules and practices. They need to consider liabilities. A unique emergence is true enough. Indeed, with our hyperimmense brains, the problem may be too complex for neuroscience.

We become more free with our escalating technological powers to do good and evil. We can kill at great distances with drones. The 9/11 (1993) World Trade Center attack was a long-planned, secretly schemed attack that killed 977 persons in a single hour. The United States searched for years to find Osama Bin Laden, sent Navy seals secretly by helicopter, and assassinated him, congratulating ourselves on “bringing to justice” such an evil man. Some humans can launch transcontinental missiles with nuclear warheads, although such freedom is limited by fears of retaliation. A cold war between the United States and the Soviet Union with mutually assured destruction resulted in a cold peace in the 1947–1991 period. In coming centuries, there is considerable doubt whether we can keep nuclear bombs out of the hands of terrorists and rogue nations.

Although we have high-tech powers, we still think that we humans, who build and control the computers and machinery of destruction, are the responsible agents. We do not think that computers have an emotional life. They cannot be blamed. In a memorable conversation, a person was asking questions to a computer. The computer was doing well. The person then asked the computer a question but made a mistake. He said, “I’m sorry, I meant to ask about something else.” The computer replied: “Sorry, I don’t know the meaning of ‘sorry’.” This shows how computers may only be appearing to think, but not really understanding the human words they use.

The computer’s reply may mean much more: that computers are not capable of feeling sorry. Or feeling pain. Or being glad or sad. Or happy or sexually excited. Computers do not feel regret. They do not bully, or show racial prejudice. Computers are unable to apologize. Human thinking involves feeling and experience. Nothing in any computers yet made suggests that they are self-aware. No computer has self-esteem. No computer can understand and put into practice the parable of the Good Samaritan. Computers do not repent and seek forgiveness for their sins. No computer hates or loves, even if one could be programmed to mimic this. Humans are free to do great good and horrible evil; computers and machines are not.

Yet the future holds autonomous weapons, launched by artificial intelligence. This forebodes tragedy and demands intuitive human wisdom and judgment. Such super wars invite the worst and the best that humans can do. In the Cold War, Stanislav Petrov was a Lieutenant Colonel of the Soviet Air Defense Forces who became “the man who saved the world from nuclear war” for his role in a 1983 Soviet nuclear false alarm

incident. On September 26, 1983, just three weeks after the Soviet military had shot down Korean Air Lines Flight 007, Petrov was the duty officer at the command center for the Oko nuclear early-warning system when the system reported that five missiles had been launched from the United States. Petrov judged the reports to be a false alarm, and his decision is credited with having prevented an erroneous retaliatory nuclear attack on the United States and its NATO allies that could have resulted in large-scale nuclear war. But his decision had brought to light problems in the Soviet early warning system and embarrassed his superiors. He was denied promotions, reassigned, and took early retirement. The story was not even known outside the secretive world of the Soviet military until the late 1990s (Aksenov 2013). He saved the world and ruined his career.

ANTHROPOCENE ARROGANCE

The biosphere has become a technosphere. Richard Alley provides us with: *Earth: The Operator's Manual* (Alley 2011). The Anthropocene enthusiasts are gung-ho for change. The editors of a *Scientific American* special issue, *Managing Planet Earth*, speaking with some global “we,” claim that the two central questions today are: “What kind of planet do we want? What kind of planet can we get?” (Clark 1989). We have entered the first century in the 45 million centuries of life on Earth in which one species can aspire to manage the planet’s future.

Beyond the geology, “Anthropocene” has become an “elevator word,” and put to use philosophically. *The Economist* has a cover story: “Welcome to the Anthropocene.” “A Man-Made World.” “The challenge of the Anthropocene is to use human ingenuity to set things up so that the planet can accomplish its 21st century task.” They foresee “10 billion reasonably rich people” on a geoengineered, genetically synthetic Earth, re-built with humans in center focus (*The Economist* 2011, 11, 81). Capitalist markets and the media feature increased fulfilling and expanding of human wants. The Anthropocene is “humanity’s defining moment,” according to the American Geosciences Institute (Seielstad 2012). We are now at our best so far and rapidly getting better.

What we must push for, according to the Royal Society of London, is “sustainable intensification” of reaping the benefits of exploiting the Earth (Royal Society 2009). Would not the world’s oldest scientific society be as well advised to ask about protecting ancient and ongoing biodiversity, about how we might shrink our footprint, whether treading softly is wiser than ever intensifying our imperial exploitation? If we are to fix the problem in the right place, we must learn to manage ourselves as much as the planet. Hold on. Maybe our hubris is worse than we think.

“Humans are the ultimate ecosystem engineers” (Ellis and Ramankutty 2009). Geoengineering is “the intentional large-scale manipulation of the

environment” (Keith 2000, 245). We can find ways to improve the planet, re-distribute rainfall, stop hurricanes and tsunamis, prevent earthquakes, re-direct ocean currents, fertilize marine fisheries, manage sea levels, alter landscapes for better food production, sustainably intensify the benefits we can gain from Earth, and generally make nature more hospitable, more user-friendly.

David Biello, *Scientific American's* energy and environment editor, exclaims: “The stakes could not be higher. ... What we stand to gain is nothing less than an enduring civilization and a firmer understanding of our planet and ourselves. We have arrived at a new geologic epoch of our own making. ... I argue the goal must be to make an enduring Anthropocene, an epoch that, in geologic and civilizational terms, stretches into an era. ... This is not the end of the world. This is just the end of the world as we have known it” (Biello 2016, 7–8). This is just the beginning of our accelerating privilege of platform.

Anthropocentric enthusiasts make the claim is that such power is to be welcomed ethically. For all of human history, we have been pushing back limits. Especially in the West, we have lived with a deep-seated belief that life will get better, that one should hope for abundance and work toward obtaining it. Economists call such behavior “rational.” Ethicists can agree: We ought to maximize human satisfactions, the abundant life, with more and more of the goods and services that people want. We have a right to self-development, to self-realization. Such growth, always desirable, is now increasingly possible. Is not that our best?

Critics worry that, though the intentions sound high, they have an immoral trailer. “Forward for me and my kind!” “Save nature for people, not from people.” That could be as much the problem as the answer. The subtext seems to be the previous belief that wild life or ecosystems or biodiversity or evolutionary creative genesis have goods of their own, intrinsic value worth protecting. Essentially this puts us as the first, if not the only, location of moral relevance. Justice is just-us. This is the Anthropocene, and too bad for the nonanthropic. Anthropocene proponents are concerned to get people fed, even if doing so drives tigers and butterflies into extinction.

Rebuilding the planet with humans at the center, or even protecting ecosystem services so long as these benefit us, no longer sounds like the high moral ground. Nature is of value only if and so far, as it supports human enterprises. This puts the whole planet in the service of only one species—an unnatural, immodest condition. If our concern is for the poor in this new humanist excellence, then why not emphasize environmental justice, more equitable distribution of wealth between rich and poor on developed lands, rather than diminishing wild nature to benefit the poor (*Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* [IPBES] 2019).

On future Earth, it is hard to imagine a world without ongoing development—without engines and gears, without electricity, without cars, cell phones, computers. We expect ever escalating high technology in our service. Self-fulfilling desires intoxicate us; we grow addicted to them. In the Anthropocene, we might indeed get more and more of what we want. But this might lead us to accept an environment increasingly toxic and degraded by global warming. This might lead our children not to notice their hotter, less diverse, less stable environment. We, our children, our children's children will never know our highest flourishing, dumbed down by our ever more assertive self-interests. "Quite possibly, then, this era, which so congratulates itself on its self-awareness, will come to be known as the time of the Great Derangement" (Ghosh 2016, 11).

Here is what Anthropocene proponents need first to confront. The most recent *Millennium Ecosystem Report* (2019), produced over three years with inputs from more than 400 scientists and based on 15,000 sources, finds that human activities have severely damaged the food, water, energy, and material resources required for human life, an accelerating trend and making sustainable development less and less achievable. Encouraging a new Anthropocene Epoch with ever increasing human desires seems a deranged policy, far more likely to increase this strain than to reduce it. Anthropocene managers are unlikely to address harmful results, possible or probable, distant from themselves in time and space.

The geoengineers will find that their engineering is not just a technical problem; they have to consider the social contexts in which they launch their gigantic projects, the welfare and risks of those they seek to save, the (in)justice of geoengineering that spreads benefits and costs inequitably, the governance of geoengineering (Parson and Keith 2013). Engineers are no better equipped to deal with transdisciplinary systems problems than are the politicians. Or with the ethical problems. They may find a majority of Earth's residents wondering: Is our only relationship to nature one of engineering it for the better?

"Human activities have become so pervasive and profound that they rival the great forces of Nature and are pushing the Earth into planetary terra incognita" (Steffen, Crutzen, and Mitchell 2007, 614). In the great Unknown, the planet is not likely to be well-managed by human arrogance. Already, humans are responsible for degrading some basic life support systems, three of nine according to one study. We have dangerously degraded climate, biodiversity, and nitrogen cycles (Rockström 2009).

The distribution of advancing wealth raises complex issues of merit, luck, justice, charity, natural resources, national boundaries, global commons. The Earth is richly, but unevenly endowed with natural resources. Nations have diverse but uneven powers of extracting their resources, diverse and uneven powers of allocating and manufacturing these natural resources. Nations well-endowed with natural resources may be noticeably

worse off economically than many resource-poor jurisdictions—through exploitation, corruption, lack of development. Vice versa, nations with poor endowments in natural resources may be developed and wealthy—through trade, industry, technology, colonial powers (Morriss 2009, no. 2). Income inequality within the United States has increased to the highest recorded levels. The top fifth of wage earners get 49% of the pay; the bottom fifth get 3.4%. The United States has the greatest income disparity among Western industrialized nations.

Even if there were a more equitable distribution of resources, enforced by legislation, the citizens in such nations still press their politicians to develop unsustainably. People always want more. The inevitable result stresses people on their landscapes, forcing environmental degradation, with instability and collapse (Homer-Dixon 1999). The rich and powerful are equally ready to exploit people and nature—animals, plants, species, ecosystems, and Earth itself. The overconsumption problem with the rich in the developed nations is linked with the underconsumption problem among the poor in the developing nations, and this results in increasing environmental degradation in both sets of nations.

Even in developing nations, the newly rich exploit the poor. Sustainable development must close the gap between the rich and the poor, between and also within nations (Gaspar 2004). Even if there were an equitable distribution of wealth, the human population cannot go on escalating without people becoming more and more poor, because the pie has to be constantly divided into smaller pieces. And even if there were no future population growth, consumption patterns cannot go on escalating on a finite Earth (Speth 2008; Sachs 2008). There are three problems: overpopulation, overconsumption, and underdistribution, all compounded by human arrogance. The Great Acceleration seems more likely to prove the Great Derangement.

ENTERING A DOUBLY COMPOUNDING WICKED WORLD

We began with paradox and we are now reached wicked paradox, but using “wicked” now in a recently novel sense. A wicked problem is difficult or impossible to solve because of incomplete, contradictory, interacting, mutually conflicting and changing requirements that are often difficult to recognize or manage. Trying to fix it here shifts what is going on over there, displeases them, and further yonder, in dozens of other places people are upset or helped, often unpredictably. The tragedy is that the good is close-coupled with the bad, and the trade-offs get amplified with what we usually think of as progress. Automobiles are an excellent invention, those who own them can travel with new freedoms. Everybody wants one. But manufacturing automobiles requires resources, stripped from landscapes at home and abroad, and labor paid minimum wages to keep the car prices

cheap enough to buy and sell, with petroleum mining sufficient for oil and gas to run them. As soon as most everybody gets one, in industrial countries, we discover that the exhaust is changing the climate and putting the planet in peril. It is catch-22, a wicked dilemma from which there is no escape because of mutually conflicting inter-dependent conditions.

Earlier we might have said that the problem was “messy,” “unwieldy,” “amorphous,” “disorderly,” or that all we could do was to “muddle through.” But naming the problem “wicked” adds that the issue is serious, demanding, urgent, with moral dimensions, and gets worse, even malignant, if we procrastinate. We face a quagmire, a super catch-22. We muddle through an imminent messy super problem. The short-range and longer range effects of what humans are doing on natural or synthetic ecosystems is unknown and unpredictable. The consequences of mistakes are alarming, irreversible, often hidden and escalatingly cumulative.

Perhaps, we have to move with a pragmatic adaptive strategy. The best we can do is get together as many of the stakeholders as we can and see if the partisans, pushing and pulling, can agree on enough of the issues to test a five-year plan—featuring sustainability, or health, or respect for life, moral concerns, or acceptable ranges of variability, on a wonderland Earth. How did we get here and where do we want to go next? We plan to achieve the best immediate outcome based on current knowledge. We also agree to meet again and see if there are modifications on which we can agree for another five years. That is a more intelligent muddling through. We take some encouragement that the wicked paradox we face is less complex than the hyperimmense brain/minds we use to seek solutions.

The Americans dropped atomic bombs on Hiroshima and Nagasaki in 1945, killing between 129,000 and 226,000 people and maiming for life countless more. The atomic bomb had been developed for fear that the Germans might be making one, but World War II ended with the collapse of Germany from Allied invasion. The war with Japan continued with Japanese military leaders resolute. Americans were reluctant to use the bomb but argued that the two bombs (all we had) would frighten Japanese commanders into surrender, and prevent an American invasion of Japan and prevent the deaths of many American soldiers and Japanese soldiers and civilians. The Japanese had, of course, started the war with a sneak attack at Pearl Harbor.

Albert Einstein, on whose relativity theory the bomb had been built—building on the cumulative and transmissible discoveries of several thousand years—was a pacifist and objected to dropping the bomb. The devastation was so horrendous that the Japanese surrendered. Further, fears of its use brought the cold peace in the 1947–1991 period. Whether to drop the first atomic bomb was a wicked problem. The perplexing question brought agonizing between great good and great evil, and decision makers were caught in between.

The wicked paradox is one world or none, as Einstein has warned us. The greatest good and the greatest evil. Human genius has brought us to the edge of that terrifying precipice. In paradoxical wickedness, we muddle through in between. Dare we hope that human genius can rescue us? Dare we hope to be blessed with life-transforming power?

SPIRITUAL HOPE IN A SECULAR FUTURE

Escalating powers of technological development seems a great achievement. But we have now realized that the ambiguous result is also increasingly greater suffering caused by these discoveries of great human minds. We have reached Richard Wrangham's "goodness paradox: the strange relationship between virtue and violence."

Dave Grossman, a U.S. Army colonel and professor of military science, found that soldiers do not like to kill. After the Battle of Gettysburg 27,000 single-load muskets were recovered, and some 24,000 were loaded and unfired. Face to face with an individuated enemy, infantry soldiers hesitated to shoot. "Don't shoot until you see the whites of their eyes" gets flipped around: "Don't shoot because you see the whites of their eyes." Casualties were mostly from artillery. In World War II, only 15–20 percent of riflemen ever fired their guns. They did not hate even those who were trying to kill them. They dreaded fighting with bayonets. In machine gun operations, they might shoot to protect their buddies, or because their commanders ordered them to (Grossman 2009). In result, did we achieve more peace? No, the group dominant military ideology overwhelmed. Now militaries train soldiers to override these inhibitions. In the Vietnam War, 90 percent of riflemen fired their weapons.

Killing, even mass killing the faceless is easier. Drop a bomb on them. This innate psychological reluctance to kill is now recognized in posttraumatic stress disorder, a great contemporary evil. The soldiers were free to shoot, but limited in what they could willingly do, and most of them left agonizing somewhere in between.

There is a puzzle about which humans have been and are the worst and the best: the primitive peoples, indigenous peoples including any that remain anywhere on Earth (such as headhunters in New Guinea and Borneo, or aboriginal Australians), and us contemporary civilized peoples around the globe. This is compounded by the distinction between individual and collective cooperation and violence, such as alliances and wars between nations. This becomes still more complex considering proactive aggression and violence used defensively.

For the remote past there is fossil evidence, but it is challenging to interpret. Skulls and skeletons appear to be broken, but nearly all fossils are crushed. Arrow points, spearheads in skulls, maybe those are butcher marks on skeletons. Pieced back together, these skulls might have been

trophy heads and scalps, but then again the signs of violence might have been burials of loved ones with ornaments such as horns and arrow points or cutting tools for the next life. There are nearly 500 skeletons, presumed a massacre, at a Crow Creek site in South Dakota, 700 years old (Zimmerman and Bradley 1993).

The frequency of hunter-gatherer intergroup conflict has to be set in context. Such people may have had limited powers to carry on what we would call real “war,” armies marching to defeat other armies. With low population densities, a besieged group could just move on somewhere else. Nor did hunter-gatherers have much in the way of spoils for attackers to pillage. That came after more settled agriculture (Knauff 1991). Still, the archaeological evidence for war is ancient and widespread (Keeley 1996).

Steven Pinker argues that violence has declined in recent centuries (Pinker 2011). With the spread of democracy, the increase of wealth and the diffusion of enlightened values contemporary nation states preside over an era of improvement the likes of which has never been known. The number of those killed in violent conflicts has been steadily dropping. Human sacrifice and execution by torture have been abolished, while cruelty toward women, children, and animals is in steady decline. In ancient Rome, in their Colosseum, between gladiators, slaves, convicts, prisoners, and Christians, as many as 400,000 perished over the 350 years during which it was used for human bloodsports and savage spectacles, sometimes people eaten by lions, while watched by thousands of Romans for entertainment.

Slavery has been widely abolished—officially at least, though slave-like conditions remain. Child labor has declined. Polygamy is uncommon. Other causes of the decline in violence include the invention of printing, the empowerment of women, enhanced powers of reasoning and expanding capacities for empathy in modern populations, and the growing influence of Enlightenment ideals. The Internet connects us all, instantly. There is a United Nations and there are international peacekeeping teams. Yes, but there is still Joseph Stalin, Adolf Hitler and his Nazis, the My Lai Massacre, the Nanking Massacre, and record numbers of the poor dying by starvation. Dr. Jekyll is still here; so is Mr. Hyde.

Some see an opportunity for more lasting peace. Some have created a United Nations and international peacekeeping teams. Some have created and maintain NATO, an intergovernmental military alliance between 30 European and North American countries, effective in advancing democracy, individual liberty and the rule of law, collective defense, and providing a forum for dialogue and cooperation. Some have created Truth and Reconciliation Commissions. The Lutheran World Federation in Africa assists with agricultural development through small-scale irrigation schemes, water sustainability, livelihood development, hygiene projects, and support of refugees, upward of half a million persons a year.

One of the wealthiest men in the world, a brilliant computer scientist, is devoting much of his fortune to producing vaccines for diseases in poverty ridden countries. Pharmaceutical companies cannot afford to do this because there is no profit in it. Some envision a future Earth in which they have great expectations, and devote their lives to fostering caring in local and world communities. Hyperimmense minds always have reasons to hope.

The most ongoing reason for hope is religious. We are “the God species” (Lynas 2011), though said with insidious hybris. In the 1700s, John Newton is forced to serve in the British navy on a slave ship. He escapes, but is made himself a slave. He escapes again and on his return voyage to England there is a storm so fearful that Newton prays to be saved. The ship does not sink and Newton becomes a Christian. He becomes the captain of a slave ship, then studies theology. He recalls his own experience as a slave, and over some years, enlarges his sympathy for them (Aitken 2007). That is criss-crossing between us and them. If there had been a neurologist in those days, one might have followed his brain changes. A social scientist could have interpreted this as will power reshaping xenophobia.

Which worldviews, religious or secular, are more effective in generating such great goods, or, alas, in producing great evils? In Islam, Shiites and Sunnis have slaughtered each other for centuries. In medieval times, Christian crusaders at the Siege of Jerusalem (1099) slaughtered Muslims in mass. The Thirty Years’ War (1618–1648), starting as a battle among the Catholic and Protestant states that formed the Holy Roman Empire, remains one of the longest and most brutal wars in human history, with more than 8 million casualties. Fortunately, more ecumenical relations exist today. Buddhism forbids violence; ahimsa, “noninjury,” is their primary virtue. Nevertheless, violence in Sri Lanka pertaining to Buddhism has been present for decades. A recent civil war claimed the lives of roughly 40,000 people. Myanmar is a dominantly Buddhist country; its government has persecuted the Rohingya Muslims. Secular armies, demanding patriotism and threatening to punish treason, have killed with no less enthusiasm. Stephen Jay Gould finds “a stunning historical paradox”: “Organized religion has fostered, throughout Western history, both the most unspeakable horrors and the most heartrending examples of human goodness” (Gould 1999, 601).

But surely Christianity is a religion of love. “So faith, hope, love abide, these three; but the greatest of these is love” (1 Corinthians 13.13)—and agape love at that. One man died for the sins of the world. His death and resurrection became a transforming worldview, the greatest good, for billions of Christians over the centuries, early on for the Apostle Paul who found spiritual power to break the paralyzing hold of evil on his life. Those Buddhists do meditate and often report finding peace. This conviction is that human nature produces great evil, exceeding any good of which

secular humans are capable, and that only in religious redemption is there hope for greater good.

Secular critics may hold that such redemption is in self-interest—the promise of heaven to come. Good Samaritans do help victims of thieves on the Jericho road. But they also advertise their charity at the inn, when they pay the innkeeper to care for the victim, and promise to pay more when they return. There is always a different kind of bias, if one chooses to find it. Even the Apostle Paul conceded that we “see through a glass darkly” (1 Corinthians 13.12).

The U.S. military in the Vietnam War regularly used napalm bombs, dropped on civilians and soldiers alike, almost 400,000 tons of bombs. Napalm is an incendiary mixture of a gelling agent and a volatile petrochemical, used in flamethrowers, a liquid fire. A 9-year-old girl, Phan Thi Kim Phuc, had her clothes burned off and body badly burned in an attack on June 8, 1972. A photograph of her, naked and burning in agony, became a defining icon of the Vietnam War. She survived, later made her way to Saigon, underwent 17 operations, is permanently disfigured, considered suicide, but found a Bible and became a Christian. She was taken to Canada for treatment, where she now lives. She says she has forgiven those who caused her torment (PBS News, Denver 2020). The bomber pilots then considered themselves doing their patriotic duty; many Americans now regard this as a war horror of which we are ashamed. This was the greatest power in the world at its worst, compared now with a foreign Christian victim at her compassionate best. We humans are the best and the worst ... and a wicked mix of the awesome and the awful.

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