

On Human Nature

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Abstract. Humans are pretty smart. Even having words like eternity, infinity, and hypervolume, all concepts totally alien to our limited existence in time and space, is a tribute to human intellect. We are the only product of natural selection that understands where we came from and how we got here. Balfour (1895) said of us that “matter knows itself”. These are truly remarkable feats and humans have much of which we can rightfully be proud. However, we also have our share of visible flaws and human failings. As Nietzsche pointed out, human nature is fundamentally flawed. Here I seek to try to explain why we are like we are using reason and common sense. I identify hard-wired human instincts and discuss how these once adaptive behaviors have now become liabilities to our survival.

Keywords: Instincts, Greed, Revenge, Tribal Loyalty, Music, Spirituality

Humans are pretty smart. Indeed, Linnaeus was so impressed with us that in 1758 he named our species *Homo sapiens* (“*Homo*” is Latin for man, “*sapiens*” is Latin for wise or knowing). We have certainly had our share of geniuses. Look at all we've accomplished: art, music, science, technology, engineering, and mathematics. We recognize the periodic table of the elements, physical laws of motion, the laws of thermodynamics, as well as Einstein's theory of relativity. We have dated our cosmos back to the big bang 13.8 billion years ago. We have studied the fossil record and know when life arose and how it has evolved. We know how genetics works and we can sequence and interpret DNA and even splice genes between different species to make genetically modified organisms (which may well prove to be a grave mistake). We know about microscopic viruses and bacteria as well as our own microbiomes. We have begun to explore space. It is a tribute to human intellect that we even have words like eternity, infinity, and hypervolume, all concepts totally

alien to our limited existence in time and space. We are the only product of natural selection that understands where we came from and how we got here. Balfour (1895) said of us that "matter knows itself". These are truly remarkable feats and humans have much of which we can rightfully be proud.

However, we also have our share of visible flaws and human failings. What's wrong with us? Why do we keep repeating past mistakes? As Nietzsche pointed out, human nature is fundamentally flawed. Few if any of us will be able to read the following list without finding ourselves guilty as charged on at least some counts.

We are selfish and greedy

We demean and disrespect others

We waste water and energy

We are hypocrites

We carry grudges

We lie

We plot

We steal

We cheat

We litter

We are vain

We are lazy

We do drugs

We are envious

We are prideful

We eat too much

We drink too much

We drive drunk

We run red lights

We text while driving

We talk on cell phones while driving

We buy into mass movements
We are vengeful and vindictive
We betray our friends and spouses
We get angry and fight
We are mean spirited
We kill each other
We destroy natural beauty

I am embarrassed, even ashamed, to be human. We all should be.

Mark Twain blamed God for our flawed human nature. He asserted that humans are a "lousy invention," fundamentally flawed, and that criticizing us is like "hitting a child." He went on to say that we have "no control", no "will", and are compelled to commit sins. "God is responsible for every act and word of a human being's life between cradle and grave." Twain said we should not blame ourselves but should be pitied for being the wretches we are.

Here, rather than invoke some hypothetical deity, I seek to try to explain why we are like we are using reason and common sense.

Human Rationality and Emotions

"You don't have a soul, Doctor. You are a soul. You have a body, temporarily." -- Walter M. Miller Jr., A Canticle for Leibowitz

"The meaning of earthly existence lies not, as we have grown used to thinking, in prospering but in the development of the soul." -- Aleksandr Solzhenitsyn, Cancer Ward

"It is scarcely necessary to remark that a stationary condition of capital and population implies no stationary state of human improvement. There would be as much scope as ever for all kinds of mental culture and moral and social progress; as much room for improving the Art of Living, and much more likelihood of its being improved" -- John Stuart Mill 1859

Development of verbal language allowed us to exchange and expand ideas and concepts better, no doubt facilitating control of our environment, and thereby our survival and reproductive success. However, language is a double-edged sword: words help us formulate concepts, but at the same time, they limit the directions our thought

processes can take. The ways in which we can envision the natural world around us are constrained by the words we develop, especially by the different meanings, attitudes, and emotions they can convey. Words, nouns in particular, can have very different referents between humans. For example, the word "mountain" means something quite different to someone raised in Switzerland versus someone raised in Oklahoma. Precise definitions or universal agreement are needed to insure accurate passage of understanding.

Humans explain events and phenomena in two very different ways. One approach to knowing (common sense) involves thinking and is objective, based on making repeatable observations that allow us to predict nature and future events -- this rational logical approach to knowing led to scientific methodology. Another, very different, non-objective mystical approach to "knowing" (faith-based) is based primarily upon the invocation of supernatural explanations, bolstered by religious authorities who claim to have special access to supernatural sources. This irrational non-scientific approach, championed by religions of all kinds, has helped many humans accept and cope with things they have no power to change or difficulty understanding rationally, such as unexpected deaths, other misfortunes, or natural disasters. Unfortunately, the power conferred on religious leaders has often led to serious abuses and resistance to accepting the rational understanding of the functioning of nature as demonstrated by new scientific discoveries. These two diametrically opposed ways we interpret and "know" about our environments have contributed to the regrettable past and present day conflicts between science and religion.

Irrational belief and/or non-belief systems are pitted against rational views in an effort to erode public confidence in science. People have become polarized along the unfortunate rational-mystical divide. I remain amazed by how vehement religious fundamentalists have become (the ISIS-ISIL conflict exhibits tribalism at its worst). Human intelligence has also evolved so that we have remarkably good abilities to detect intentions of other humans in social interactions. We seem to have a propensity for superstitious mysticism and a tendency to emphasize explanations that invoke intention over those based on sheer mechanism, situation, or circumstances. Indeed, humans may be predisposed to see intentions in their friends and enemies. Similarly, we attribute conscious thought and intention to the actions of non-human animals (anthropomorphism). For example, predators "want" to kill us and prey "want" to escape from us. We even look for meaning and purpose in inanimate things such as the climate or the universe. Thus a destructive storm is interpreted as having occurred because people strayed from religious tradition or did something wrong and needed to be punished.

Everyone, religious or not, relies on objective rational thinking to handle problems encountered in everyday life. Thus, we all know we must eat to stay alive, things fall down not up or sideways, we seek to avoid collisions when driving, balance our budgets, etc. Many people switch back and forth between rational knowing to mystical faith-based "knowing" with ease. Natural selection has organized our brains in ways that promote such duality (Morrison 1999, Trivers 2011). Natural selection molded our emotions and instincts, including setting aside the right half of our brain for storage of subconscious irrational information. Rational logic and common sense reside in the left half of our brain along with speech. Morrison (1999) argues that this duality effectively gave the irrational right side of our brains invisible control over the rational left side:

"To properly accommodate this vital streak of insanity in an increasingly rational brain it was first necessary for people to perceive, quite accurately, that their genetic imperatives -- instincts, feelings and desires -- represented a source of considerable wisdom and 'super-natural' power; and second, to believe, less

accurately, that this inner source had its roots in an invisible world of super-intelligence, a mystical world that lay beyond rational comprehension."

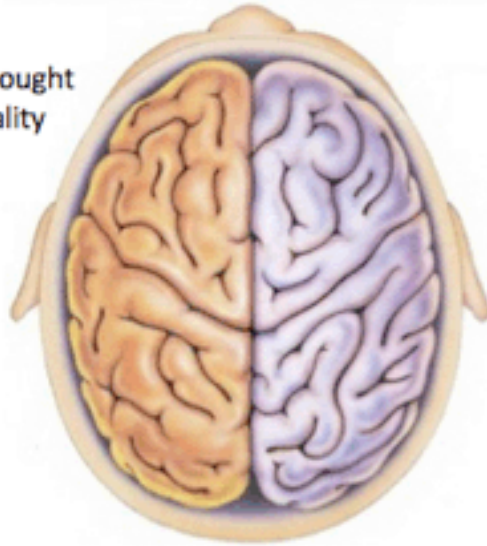
"Under the spell of our carefully programmed 'spirituality', we cannot help falling in love, yearning for idealised sexual gratification, nurturing our children, forging tribal bonds, suspecting strangers, uniting against common enemies, and on occasions, laying down our lives for family, friends or tribe" (Morrison 1999).

I once had an interesting conversation with an intelligent young Arab man named Thursday who asked me "how could our spirit be explained except by divine providence?" I tried to explain Morrison's arguments to him but encountered stiff opposition. Like many people, he was convinced that, unlike other animals, humans have a soul, a God-given spirit that lives on eternally.

People enjoy fantasy and thrive on mysticism as illustrated by the huge success of J. K. Rowling's Harry Potter books. Super heroes like Batman, Superman, Wonder woman, and Spiderman are everywhere and adored by small children. We train our kids to believe in age-specific mythical creatures, starting with the Tooth Fairy, Easter Bunny, and Santa Claus ("Papa Noel" in Brazil). One father decided it was time to break the news to his 12 year-old boy who still believed in Santa Claus. When he told his son there was no Santa Claus, his smart kid got a gleam in his eye and said "Oh, I get it, there's no God, either." Then, Daddy had to backtrack quickly and reassure his boy that God was indeed real. Kids are expected to outgrow their belief in the Tooth Fairy, the Easter Bunny, and Santa Claus, but not the cherished myth of one or more omnipotent deities. Everybody wants to believe that they have a soul, a caring god, and an afterlife, as comforting and irrational as that may be. Religions occupy a very special place in the irrational right side of our brains adjacent to our carefully programmed but irrational feeling of 'spirituality'. Any challenge to a devoutly religious person's faith meets with adamant opposition, even outright physical hostility.

Left Brain

Rational Analytic Thought
Common Sense, Reality
Language
Logic
Mathematics
Science



Right Brain

Mysticism, Supernatural
Subconscious Mind
Music, Art
Emotions, Intuition
Instincts
Fear (of Snakes)
Greed
Revenge
Anxiety
Tribal Loyalty
Spirituality
Sex, Urge to Procreate
Ability to go into Denial

Religious folks abandon reason on a regular basis -- such people entertain irrational faith-based systems of belief. They are comfortable with "proofs" based on ancient mythology. People who "know" something or "believe" in "proof" are dogmatic and closed minded -- they are mired down intellectually, unable and/or unwilling to use logic to comprehend reasoned alternatives and cannot improve their limited understanding without substantial changes in their thinking processes. Such certainty is a dangerous illusion.

Beliefs can be dangerous. Take, for example, the Christian fantasy of "Rapture," the idea of the second coming of Christ. Believers in this myth are confident that they will go to Heaven and God will replenish Earth -- hence, they see no reason for conservation of any of Earth's resources.



Interestingly, music resides in the subconscious right side of the brain in the same place where logic, language and speech reside in the rational left side (Broca's area). No other ape has invented music. Our ancestors were probably inspired to invent

music by listening to bird songs. Both birds and people use music in courtship. Music can be soft and soothing but it can also be loud and distressing even spooky. Music evokes powerful emotions in humans and is exploited by our leaders to arouse us into action: thus national anthems evoke patriotism and are used to inflame our tribal instincts as we go into insane wars. Religious and political fervor are exploited similarly as deluded religious and political groups are pitted against each other. Sports fans form similar opposing groups using their team's theme song to elicit passion.

We are born into a given skin color, nationality, language, social and political culture, and religion (including our God or Gods) -- all are accidents of birth but have profound effects on our lives and the societies we live in. Indeed, taken together they determine which side you'll be on in the next war! Few people are able to shift from their birth group to another. The rules of a level playing field dictate that people will always want to immigrate from an impoverished birth group into another that enjoys a higher standard of living. Governments discourage illegal immigration. Oceans and border patrols reinforce boundaries and maintain heterogeneity and disparities between national groups.

Adamant insistence on faith-based "knowing" coupled with careless use of words like "believe" and "truth" have provided numerous opportunities to foment confusion and have allowed science to be deliberately maligned and misrepresented by those who stand to lose from changing sensibilities. Creationists are fond of demeaning science by saying that it is "just another belief system" and that evolution is "just a theory". They fail to understand that, in time, a well-substantiated hypothesis is elevated to become a robust scientific theory. Eventually, reliable scientific theories can even attain the status of 'law,' such as the laws of motion or the laws of thermodynamics.

Religious leaders have often rejected new scientific evidence when it reduced the domain of processes over which religion could claim authority. As a result, scientific

investigators have sometimes been vilified as Galileo was during the Spanish Inquisition -- scientists have even been tortured and executed because their views conflicted with mystical belief systems. Humans are all too good at being irrational and defending superstition. Denial must have been favored by natural selection: a prehistoric man or woman who worried too much about cave bears must have been in a useless state of anxiety. Our uncanny ability to refuse to face the menacing reality of overpopulation but instead go into denial may well be our undoing (Varki and Brower 2013)

Accurate knowledge of basic principles of community organization and ecosystem function are essential for wise exploitation of both natural and agricultural ecological systems. An understanding of basic parasitology is needed to control epidemics in human populations. The continuing existence of all the denizens of this poor beleaguered planet, including ourselves, will ultimately depend more on our ecological understanding and wisdom than it will on irrational mysticism or future technological "advances." We cannot rely on technological solutions. Technology is what got us to this precarious situation in the first place. Rather, we must obey natural laws of nature such as the laws of thermodynamics, reorganize society, and change our own lifestyles. Unless everybody plays his/her part, humanity is doomed.

Burning fossil fuels of any sort, and using energy in any way even via nuclear reactors only adds insult to injury because such activities produce waste heat that cannot be dissipated (Hansen *et al.*, 2005). Hence we are actually speeding up the rate of global warming by all our efforts to find and use more energy, fracking included. Our voracious appetite for energy and our steadfast refusal to live by the rules of thermodynamics is rapidly shortening the time left for all life on planet Earth.

Any thinking person can see that we surely must convert to a sustainable system where each of us leaves the planet in the same condition that it was in before we

were born. This will require much less extravagant lifestyles. We won't be able to move around so freely and we will have to go back to walking and riding bicycles or horses. In addition, humans will have to live without big cities. Before it is all over, if we are going to endure, we will have to overhaul our entire existence.

Human Instincts

"...it is impossible to overlook the extent to which civilization is built up upon a renunciation of instinct ..."

-- Sigmund Freud, Civilization and Its Discontents

Like all animals, humans have instincts, hard-wired behaviors that enhance our ability to cope with vital environmental contingencies. Our innate fear of snakes is an example. Two other powerful instincts, greed and the urge to procreate, now threaten our very existence. Any attempt to control human behavior is bound to meet with resistance and disapproval. Unless we can change our behavior, humans are facing the end of civilization. Our problem has several elements. (1) We have invented social and economic systems that encourage greedy behavior, and we have actually institutionalized runaway greed. (2) We are in a state of complete denial about the growth of human populations. (3) Earth's finite resources simply cannot support 7+ billion of us in the style to which we'd like to live. (4) We must make a choice between quantity and quality of human life. (5) To head off the inevitable collapse, we can no longer wait and merely react but we must become proactive. We must find ways to control dangerous human instincts, especially our greed and our urge to procreate.



People have an instinctive fear of snakes. We are afraid of snakes because humans evolved alongside these creatures, many of which are dangerous. This fear saved the lives of our ancestors and became hard-wired innate behavior, also known as instinct. Similarly we possess many other instincts that were adaptive during most of human history. Fear is primal and may well be at the root of all our instincts.

Human instincts evolved long ago when we lived off the land as hunter-gatherers and took refuge in simple shelters like huts and caves. Although our instinctive behaviors were adaptive then (that is, they enhanced our ability to survive and reproduce), many do not work so well in modern environments. In fact, some of our instincts have become extremely serious impediments now threatening our very survival.

Consider, for example, revenge. Revenge made ample sense when we were hunter-gatherers living in small clans or tribes. If somebody messed with you or your family and you took revenge, they were unlikely to repeat offenses against you. But now, in our overcrowded man-made world, some people actually contemplate pushing red buttons that will set off nukes and destroy our planet's life support systems. Such revengeful behavior at a global level is clearly insane (Chomsky 2014).

Greed is another natural human instinct -- we are all selfish and greedy at heart, and for sound evolutionary reasons. In times of scarcity, a stingy cave man was more likely to survive and reproduce than a generous one who shared his limited resources with the less fortunate. In short, we have been programmed to be selfish. Humans have institutionalized greed -- we allow, even encourage, runaway greed. Our political and economic systems facilitate greed. Greed is the underlying driving force for both capitalism and entrepreneurship. Our banking and insurance companies, coupled with the formation of limited liability corporations and the stock market have allowed greed to explode.

Corporations have no conscience, but exist solely for whatever profits they can make. The stock market allows all of us to get a piece of the action. Corporate executives are paid obscene salaries and are not personally liable for activities they oversee. Corporations control politicians, who pass legislation that allows tax evasion and assures obscene corporate profits. The Supreme Court's absurd ruling that corporations are "people" gave them unlimited power to buy politicians. Runaway human greed now threatens our very future and must somehow be controlled. Any attempt to control greed will be strenuously opposed by the wealthy. Indeed, it may prove to be impossible to overcome human instinctive behaviors.

Humans are social creatures and as suggested earlier, we have been designed by natural selection to band together in small tribes. Tribal loyalty is instinctive but is exploited today to justify sexism and racism. Let's go back thousands of years ago when humans were still living in caves in Africa. Humans are frail compared to big African predators like leopards and lions, and we had to band together to survive.

Good leaders were essential for all members of the tribe. Imagine a smart cave man or woman who sat at the mouth of the cave studying the stars above month after

month. As the constellations changed with the seasons, this intelligent person noticed last year repeated itself. When days started to get longer and the skies above began to look like they had at the end of last winter just before last year's spring, our Shaman-to-be had an "ah ha" moment of deep thought.

Meeting with the tribe gathered around a campfire, he/she danced and beat a tune on a drum, eliciting emotions, asserting that she/he had had supernatural insights. Then, declaring that the cold weather was about to end, he/she predicted the upcoming springtime. When her/his forecast came true, his/her followers declared her/him a wise leader, conferring him/her with power. Leaders that could take better care of their followers were favored along with loyalty to the tribe. This process may well have been a driving force favoring enhanced intelligence as well as the use of music for tribal cohesion.

As we have seen, when faced with a threat, people have an almost uncanny ability to go into denial -- no doubt this relieves anxiety and might well be an asset under some circumstances. However, refusal to face reality can also be dangerous. Using our divided brains, we humans have almost certainly been selected to be able to deceive our own selves, effectively making us better liars and trusted leaders (Trivers 2011).



Primitive humans presumably did not even know how babies were formed, but nevertheless they made them. By favoring nerve endings that tingled in just the right places and parts that fit, natural selection, that ultimate puppet master, made certain we'd reproduce. Hence, like all animals, we are programmed to have instincts to breed. And breed, we do, in fact,

we are much too good at it for our own good, all 7+ billion of us. We must control our own reproduction. Our urge to procreate is one of our most powerful instincts. Males simply want lots of sex whereas females are programmed with nesting behaviors that involve a safe home place for their family (of course, sexual selection is much more complex than that simple one sentence brief synopsis).

Morality

Religions like to claim they hold some sort of a monopoly on morality. However many agnostics and atheists dispute this, claiming to be highly moral people. Indeed, morality is probably an ancestral condition among all great apes, perhaps among mammals in general. Jane Goodall discovered that chimpanzees are highly intelligent, emotional creatures living in complex social groups: "it isn't only human beings who have personality, who are capable of rational thought and emotions like joy and sorrow."

Goodall observed human-like behaviours including hugs, kisses, pats on the back, and tickling. She argues that such gestures reveal "close, supportive, affectionate bonds that develop between family members and other individuals within a community, which can persist throughout a life span of more than 50 years."

"During the first ten years of the study I had believed . . . Gombe chimpanzees were,

for the most part, rather nicer than human beings. . . . Then suddenly we found that chimpanzees could be brutal -- that they, like us, had a darker side to their nature."

In his book "The Bonobo and the Atheist: In Search of Humanism Among the Primates," Franz de Waal recounts hundreds of observations of the most humanoid great ape, bonobo chimpanzees, that reveal empathy (de Waal, 2014). Mirror neurons in our ape brains elicit empathetic responses: when another individual is hurt, a bonobo will come to its aid and console the injured party. Similarly, when a buffalo or an elephant falls down, others will come to its rescue and try to help it get back up on its feet. When someone yawns in a boring meeting, others begin to yawn, too, until everyone is bored.

Human Brains: Windows of Lucidity

*"If you were good enough, then what better reward than to be rolled up near the warmth of the fire, nestled into the sweet plump convexity of a female buttock?" --
Hooton (1946), Up from the Ape.*

*"The intuitive mind is a sacred gift, and the rational mind is a faithful servant. We have created a society that honors the servant and has forgotten the gift."
-- Albert Einstein*

The left and right sides of our brains communicate via the corpus callosum. Our conscious rational left brain appears to be much more limited than our subconscious right brain which is capable of pattern recognition and fast "unconscious intelligence" (Gladwell 2005, Isenman 1997, 2013). Gladwell (2005) calls this "thinking without thinking" and Isenman (1997, 2013) details several celebrated examples of insights gained from such intuition as described below. Einstein treasured intuition over rational thought and considered conscience to be intuitive. "Intuition leads us to greater understanding of ourselves and the universe." He once said "To these elementary laws there leads no logical path, but only intuition, supported by being sympathetically in touch with experience" (Holton 1978). He also said "the universe is rational and our highest destiny is to ponder it and co- create its laws. . . . what seems impenetrable to us is as important as what is cut and dried, and . . . our faculties are dull and can only comprehend wisdom and serene beauty in crude forms, but the heart of man through intuition

leads us to greater understanding of ourselves and the universe." Einstein had a reverence for all life and even for inanimate matter which he once referred to as "solidified energy." "I like to experience the universe as one harmonious whole. Every cell has life." When he was a boy, Einstein contemplated riding a wave of light which image ultimately led him to the theory of special relativity (Isenman 1997).

Another example of intuition in action was Mendeleev's dream showing him the periodic table of the elements which led to our understanding the structural principles of matter (Harmon 1984).

While contemplating atomic structure, August Kekule had his famous dream of six snakes grabbing each other by their tails which prompted his discovery of 6 carbon benzene ring (Rothenberg 1993).

The Dark Side of Human Nature

*"Everyone thinks of changing the world, but no one thinks of changing himself."
-- Leo Tolstoy*

When the irrational side of our brain is allowed to run rampant, it makes up magical supernatural stories and a darker side of human nature emerges. This is the stuff of horror movies many people love to watch. People seem to enjoy feeling strong emotions, even fearful ones. Why else would we pay to take a scary roller coaster ride?

Ancient Greeks invoked demons to explain unexplicable events that transpired. Demons were thought to be fallen angels, mystical entities with supernatural powers that existed in the air above people and could travel through solid objects, even into human bodies. Originally, demons were not malevolent but came to be later.

Witches and werewolves were ancient mythical creatures. Witches were seen as diabolical sorcerers, usually women, in league with the Devil that were supposed to

be able to cast evil spells on others. They could fly on broomsticks and turn food poisonous. Witchcraft could elicit abscesses, barrenness, convulsions, epileptic seizures, hernias, impotence, stomach pains, and just about anything else that was unpleasant. It's hard to believe that people once went on witch hunts and burned witches at the stake but they did in the middle ages. Werewolves were supposed to be able to transform themselves from humans into wolves and were invulnerable except to silver weapons.

Building on real vampire bats that feed on blood, mythical human vampires are ancient nocturnal creatures with fangs that drank the blood of others turning them into vampires. They could only be killed by driving a stake through their heart. Dracula was the stuff of this folklore.

Voodoo is an ancient African black magic religion that was brought to the New World by slaves -- it took a different form in Haiti than in New Orleans and is frequently misunderstood as malevolent. Amulets and charms were worn for personal protection as well as to bring harm to enemies. Voodoo was also used to cure anxiety, addictions, depression, loneliness, and other ailments. It seeks to help the hungry, the poor, and the sick. So called "voodoo dolls" (gris-gris) were used to bless rather than curse. Sticking pins in a doll was not to cause harm but rather to associate a particular spirit with the doll.

Occultism is an anthropocentric religious movement akin to intelligent design that seeks to "reconcile the findings of modern natural science with a religious view that could restore humans to a position of centrality and dignity in the universe" (Goodrick-Clarke, 1985). It was embraced by Nazi Germany and is now being forced on our society by the Discovery Institute in the guise of "intelligent design" (actually creationism). Over time, our understanding of the world around us has improved steadily as human knowledge has expanded. Our quest for understanding has liberated and enlightened many. During the Middle Ages, disease and other

undesirable phenomena were thought to be caused by demons, unseen creatures from Hell, that wrought havoc on the populace (Sagan, 1997).

Primitive peoples such as African, Australian, and New Guinean tribesmen once attributed sickness to the influence of witches and spirits. Australian aborigines believe in a host of tiny spirits that inhabit particular places. Some are heroes, others evil -- Mimi are slim and dwell in cracks and crevices in rocks. We now know that illnesses are frequently caused by microscopic bacteria and viruses -- this gives us some level of comfort that our lives are not controlled by unknown malevolent forces wishing to do us harm. The ultimate result is that instead of continuing to burn witches at the stake, we have sought to create a medical profession.

Here's a list of some of the many products of our imaginative irrational right cerebral hemisphere: Demons, Fiends, Genies, Ghosts, Goblins, Saints, Zombies, Phantoms, Chupacabras, Dragons, Magic, Racism, Sexism, Genocide, Astrology, Seances, Ouija boards, Ogres, Satan, Hell, Reincarnation, Angels, Paranormal and Extrasensory perception.

We are suckers. Human brains are easily manipulated, hence we have terms such as brainwashing and propaganda. Media and sales moguls take advantage of our gullibility to sell their products. Politicians and preachers exploit human gullibility to their own ends as well. True believers follow their leaders in mass movements ranging from cults to large groups of people (Hoffer 1951). Some refer to people as "sheeple" because we are so easily misled. Political parties, organized religion and patriotic nationalism are all examples of mass movements, as are loyal sports fans. Once such a belief system is in place, it can be extremely difficult to dislodge. People organize themselves into camps of groupies holding similar beliefs. Rupert Murdoch's Fox news channel is designed to appeal to right-wing conservatives, and many watch nothing else. Rush Limbaugh, Alex Jones, and Pat Robertson offer confident attitudes and strong opinions, which are adopted by their followers as embraced in the slogan "Rush is right!" Thinking takes work. People are lazy and too many do not make the effort to check out sources, but simply endorse and staunchly

defend opinions of others they think they respect. Perhaps one of the biggest threats to civilization is the resulting arrogant ignorance.

Human Cleverness

*"We shouldn't be looking for heroes, we should be looking for good ideas."
-- Noam Chomsky*

Humans are extremely clever animals. We have learned how to use all sorts of tools to enhance our lifestyle. These tools include things as simple as fish hooks, needles, fire, gunpowder, and dynamite, but also more complex machines such as electric, gas and/or diesel powered drills, mills, chain saws, cars, trucks, trains, bulldozers, ships, and airplanes. We break all the rules: humans can cut down gigantic ancient trees, build dams, move mountains, and kill with impunity huge beasts like bears, bison, elephants, and whales, megafauna that should by all rights be protected by their sheer size. Humans have come to think that we are above the laws of nature. Perpetual motion is impossible and there are no free lunches. Using energy in any form creates waste heat that cannot be dissipated.

We interact with our environments in a hierarchy of different ways, ranging from manipulation to knowledge and understanding to wisdom. Let us briefly consider each of these in turn, beginning with a hypothetical scenario. Suppose you had never seen an automobile, but one fine day (Carl Sagan's "last perfect day on Earth" comes to mind), you came around a corner and encountered a brand new car just sitting there, battery charged up, with a full tank of gas and keys in its ignition. Initially, you would be startled at its size and shininess, and might even be a little afraid of it. But, eventually your curiosity would prevail and you would begin to investigate.

Manipulation

We excel at manipulation. This is the simplest and most direct way in which we modify things to our own ends. We pick up a rock and throw it at an animal. Early humans learned to sharpen flint and to make spears and bows and arrows, which greatly enhanced their ability to kill (as well as defend themselves).

Soon you would be touching that bright shiny car. When it didn't bite back, you'd start messing around with it. You might find the door handle and with your extreme cleverness, discover how to depress the latch and open the door. You would be pleased with yourself and continue exploration. Now you'd enter the car and sit on the driver's seat looking out the windshield. You'd wonder what the circular steering wheel was and might even try turning it. Sooner or later, you'd notice the bright shiny key in the ignition -- it might take a while, but eventually, you'd fiddle with the key and might actually turn it. When the starter began to turn over, you'd be startled, stop, jump out of the car, and run for cover. But, given your innate curiosity, you'd soon be back, testing, turning that key once again. Finally the engine would start. It's even louder noise would send you running back into the bushes, but not for long. Soon, you'd be sitting in the car again, but this time with its engine running. You'd fiddle with the gear shift lever and move it from park to drive. The car would lurch and maybe die. But you'd try again until you prevailed. You'd still have to discover the accelerator and brake pedals, but with a little luck and perseverance, you'd be driving around. And, you would be so very pleased with yourself for showing such ingenuity. Manipulation is the lowest form of human cleverness but one of the things we do best. Knowledge and understanding require more than curiosity and mere fiddling around, they require training and learning and must be passed on from person to person.

Knowledge

Now, eventually something in the car must fail. It might be as simple as a flat battery or running out of gasoline, or it might be more insidious such as a broken wire or mechanical part. If it was transparent enough, you might be able to use common sense and wire things together to keep the car running, but if the problem was harder to identify you would find yourself at a loss. This is where prior knowledge of auto mechanics could prove useful. If you had been instructed in how to repair vehicles, you would check the ignition for a spark, then check the carburetor for fuel, etc. You might be able to identify the problem and even replace a faulty part (assuming you had access to new parts).

Understanding

The difference between knowledge and understanding is subtle but important. A course in auto mechanics might have taught you how a car works and how to repair it, but you would not know how to design one from first principles. Building a car from scratch requires engineering ability, understanding exactly how a complex internal combustion engine works, such as how the camshaft opens and closes intake and exhaust valves in synchrony with pistons moved up and down by the crankshaft, as well as access to high-tech tools and a machine shop, among other things.

Wisdom

Still more advanced than manipulation, knowledge or understanding, wisdom requires thought and involves making difficult decisions, such as "should I drive this car?" Humans have no business hurtling along highways at high speeds in heavy multi-horse powered machines powered by burning fossil fuels. Yet because we can, we do.

Because thought is work, many avoid it. Wisdom is notoriously difficult to attain and is revered and treasured but is outside the realm of pure science. As Noam Chomsky has indicated, we desperately need all the deep thought, good ideas, and wisdom we can possibly muster. As I stated earlier, it is a real tribute to our intellect that we even have words for concepts as alien to our everyday existence as eternity, infinity, and/or hypervolumes! We can imagine things we can't actually experience.

Educated people tend to have fewer children than uneducated people (Wattenberg 1989, Last 2013). Garret Hardin pointed this out. He said those who don't have any conscience about the Earth are going to inherit the Earth (Hardin 1974), because those who cared made fewer babies than those who didn't care but left more progeny. And so human conscience is on its way out, if we persist, we're going to evolve into uncaring humanoids. That's probably already happening and IQs are falling for the same reasons, too (Herrnstein 1989).

We have been called "cave men with cell phones." Humans have built our own complex man-made environments and we live in funny little heated/air-conditioned caves powered and illuminated by fossil sunlight. Our buildings made of concrete, wood, glass and steel, are hooked together by the internet and paved roads. Hurling along at 70 mph, we are misfits in our own man-made environments. We have replaced listening to stories told around campfires in caves with watching television in darkened rooms. Greed and revenge made sense in the cave: a stingy cave man was more likely to survive to reproduce than a generous one, and a cave man who paid another back for trespassing was respected and less likely to be infringed upon again. Our hunter-gatherer instincts are still in place but now they are out of place: today we worship greed and allow or even encourage runaway greed. Revenge and tribal loyalty may have made sense in the cave, but they make no sense when it comes down to misplaced tribal loyalties and pushing a button to deploy a nuclear ICBM against another nationalistic group (Chomsky 2014). Yet, governments are insanely vying for the ability to conduct nuclear war! If we don't self correct our tribal instincts now, nuclear annihilation might well be in our future.

Conclusion

We humans have made a real mess of this planet. Signs are everywhere: fierce storms, tornados, floods, droughts, drugs, crime, unemployment and economic depression. People are in collective denial about overpopulation -- it's politically incorrect even to say the word. If you dare to do so, people respond as if you are some kind of a crazed misanthrope. Yet population pressure drives almost all of our many problems, including many different kinds of pollution of the atmosphere, water and land (and the effects of pollution on the health and livelihood of plants and animals, including ourselves), habitat destruction and fragmentation, endangered species, loss of genetic variability, extinction, disruption of natural ecosystems, human transportation of invasive organisms and resultant homogenization of earth's biota, evolution of resistant microbes that infect humans as hosts, epidemics, murder rates, energy and food shortages, climate change, political unrest, fighting, terrorism,

and insane wars. All these problems are our own fault: Human nature is seriously flawed. We must learn to control our deep-seated instincts. Without fundamental change in our behavior, we're doomed, as are all other life forms on this, our one and only spaceship, planet Earth.

The driving force behind all living entities is Darwinian natural selection, or differential reproductive success. Unfortunately, natural selection is blind to the long-term future -- natural selection rewards just one thing: offspring. It is a short-sighted efficiency expert. Individuals who leave the most genes in the gene pool of the next generation triumph -- their genetic legacy endures, whereas those who pass on fewer genes lose out in this ongoing contest. Sadly, natural selection favors overpopulation and may thereby result in extinction.

Some humans, like Roman Catholic Justice Scalia with his nine kids, unfortunately the most successful from the perspective of natural selection, combine greed with breeding and have obscenely large families. Earth simply doesn't have enough resources to support all of us in the style to which we'd like to become accustomed. Moreover, resources such as food, land, and water, are finite, whereas human populations are always expanding, steadily reducing per capita shares. People are encouraged to think that resources are ever expanding when the opposite is actually true. We are in a state of total denial about the overpopulation crisis -- instead of confronting reality, people

ignore it, and only want to relieve its many symptoms, such as shortages of food, oil, and water, global climate change, pollution, disease, loss of biodiversity, and many others. Overpopulation is a near fatal disease that cannot be cured by merely alleviating its symptoms. "Take an aspirin, get a good night's sleep, and come back in the morning." Unless we wake up, face reality, and reduce human populations, we are in for a world of hurt and even greater human misery. Of course, eventually, our population must and inevitably will decrease, but we could lessen the upcoming

misery by taking action now. Most people are unlikely to be proactive and are much more likely to procrastinate until they are forced to react. Watch Domino Effects. Unfortunately, too many other people ignore or remain oblivious to impending problems, continuing to consume, waste, and propagate (some, such as the infamous Duggar family of "19 kids and counting" TV fame, are literally breeding like bunny rabbits, and are actually proud of it). Rather than be celebrated on TV, such greedy breeders should be treated as criminal social pariahs, ostracized from society, because they are stealing other's rights to live, let alone reproduce.

If, as Garrett Hardin (1974) has suggested, those who have a conscience and who do care about the future state of the planet choose to leave fewer genes than those who do not care, in time humans will evolve into uncaring humanoids devoid of conscience. Indeed, this insidious process has already begun. James Lovelock once predicted that as we approach the finish line of our limited time on Earth, only about 100,000 people will be crowded together squabbling over resources inside the Arctic circle -- if so, many will carry the surnames Dugger and Scalia.

Humans could have been real stewards of Earth and taken care of all its many denizens, microbes, plants, fungi and animals. If we had used our ability to think and care, we could have been God-like. Instead, for a short-sighted and selfish transient population boom, we became rapists and the scourge of the planet. We wiped out and usurped vast tracts of natural habitat. We ate any other species that was edible and depleted many of Earth's multitude of natural resources. In a single century, humans burned up fossil fuels that took millions of years to form. We fouled the atmosphere, despoiled the land, and poisoned the waters, making the planet virtually uninhabitable even to ourselves (Can Humans Share Spaceship Earth? -- Pianka, 2012).

Despite our many shortcomings, we are **smart**, smart enough to recognize that we have dangerous instincts, and smart enough to control those instincts, but we just don't seem to care enough even to try. The disparity between what humans could

have been versus what we actually have become is tragic and unforgivable. If only people would live up to their full potential -- all it would take is using our brains to think, care, and try.

The bottom line is clear: our economic system based on continual growth must be replaced by a sustainable system where each of us actively chooses (or is forced) to leave the planet in the same condition that it was in before we were born. This will require major changes in our lifestyles. We won't be able to move around so freely (airplanes, cars, cell phones, and the internet will all become things of the past). In addition, humans will have to be more spread out, living without big cities. Before it is all over, we are going to have to limit our own reproduction, un-invent money, control human greed, revert back to trade and barter, and grow our own crops, among other things.

Here's the Happy Ending:

And they all lived happily ever after.....

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