

Running Out of Growth: Humanity's Existential Crisis

Tanner Carson

Department of Political Science, Diablo Valley College

POLSC 120: Introduction to Politics

Adjunct Professor John Kropf

November 13, 2023

Abstract

Humans are animals; thus our nature is derived from the same systems that govern the rest of the natural world. Due to resources being scarce, humans are forced to compete both between each other and between other species to acquire the resources necessary for survival. However, humanity's unique intellect and ability to cooperate have enabled our species to pass down knowledge, skills, and technology over generations, leading to an unprecedented expansion of both population and standards of living globally. Humanity's success has been so remarkable that a few natural checks have been able to sufficiently slow down the expansion of both the human population and the resources consumed by our species. Humanity's inclination toward growth and expansion has ushered our species to grow to such an extent that our excessive consumption is destroying the environment on which that consumption depends. As global temperatures rise and landmasses are slowly eaten away by the rising oceans, the security of the environment grows ever more concerning. Human nature and its inclination to grow and expand our species is driving humanity toward environmental destruction.

Running Out of Growth: Humanity's Existential Crisis

Human nature, which is defined broadly by Merriam-Webster dictionary as, “the fundamental dispositions and traits of humans” (Webster, n.d.), is not completely unique to humans. We share the majority of our DNA with other primates (Gibbons, 2012), and our intellect is enabled by our shared neurological composition with other primate species (Fox, 2018). We ourselves are primates, we are animals, despite how much we categorize ourselves as something more, the natural mechanics that enabled humanity's existence as a species have existed long before humanity and will likely continue to exist after humans are gone. Rather than being completely unique, humanity's advantage is our evolved intellect, which has enabled our species to develop a unique “ratcheting culture,” in which humanity builds on each other's knowledge and ideas (How Are Humans Different..., 2018). This ratcheting effect has been the ace in humanity's sleeve, this one unique element of human nature has enabled our species to surpass all others. Humanity's mass expansion has, so far, been relatively unchecked by nature which has enabled the human population to balloon and standards of living to increase substantially, especially since the Industrial Revolution (Coren, 2018). Humanity's unchecked expansion of both population and consumption has led our species to a tipping point where our existence is being threatened, not by a force of nature, but by the negative externalities (such as climate change) that our mass expansion has caused. Thus, the fate of the human species lies in whether or not we can or will limit our growth and consumption sufficiently enough such that these negative externalities will not continue to grow at their projected pace.

Despite the dictionary definition referenced in the previous paragraph, the concept of human nature is not something tangible or easily quantifiable. Thus, there is no agreed-upon way of measuring or defining human nature, with some even questioning whether or not the phrase

even refers to anything at all. However, the simplest component of the definition, according to the Stanford Encyclopedia of Philosophy, is that “human nature is the set of human features or processes that remain after subtraction of those picked out by concepts of the non-natural, concepts such as ‘culture’, ‘nurture’, or ‘socialization.’” Essentially, this definition suggests that there is an inherent core aspect of human behaviors and characteristics that exists independently from various measurable non-natural forces. These fundamental components shared by all humans are responsible for our species’ traits and behaviors which are not determined by non-natural forces. These fundamental components and their influence, which, when aggregated, comprise human nature, are only fully revealed and made measurable after the removal of the components that are deemed as non-natural. Ultimately, this definition is incomplete, as it does not clearly provide a blueprint as to how to differentiate these so-called “natural” components of human behavior from those components that are labeled as non-natural. Natural entities, according to Aristotle, have the inherent capacity for their own production and development similar to the way in which an acorn contains the blueprint for its own realization as an oak tree. Thus, the concept of “nature” refers to the internal blueprint that enables and guides this self-realization. This is important because it provides both the basic structure of a philosophical template by which to distinguish the components of nature from those that are non-natural, while equally presenting the question of the uniqueness of human nature juxtaposed with the overarching subject of nature itself. Essentially, which components of human nature are unique to humanity alone (“Human Nature,” 2021)?

Humans share a surprising amount of DNA with other creatures, the closest being Chimpanzees, with whom we share nearly 99% of our DNA (Gibbons, 2012). Additionally, many of our behavioral tendencies are not unique to us either. An article published in the

National Library of Medicine, titled, “Personality Links with Lifespan in Chimpanzees” asserts that chimps display the same five primary personality traits of humans, which are: openness, conscientiousness, extroversion, agreeableness, and neuroticism; with chimps having a unique additional sixth trait, which is dominance (Altschul et al., 2018).

Despite our apparent similarities, physiologically, a human’s intellect far outweighs that of any other species on Earth. In the late 19th century, Dutch anatomist Eugène Dubois mathematically calculated the rate at which the size of the brain grows relative to the size of the body. Using this model, humans were found to have roughly 3 times the amount of excess brain mass compared to chimpanzees, and nearly double the excess brain mass compared to the runner-up, which was dolphins. This provides some insight into our capacity for intellect, our brain-to-bodyweight ratio is the highest of any species. This process of measuring capacity for intellect was later refined in the 21st century when researchers found that primates break this model; for primates, a bigger brain was found to always be a better brain, regardless of the size of the animal. This is due to a unique feature that primates have evolved, primates’ neuron size does not balloon as brain size increases (Fox, 2018).

For example, a rodent with the same number of neurons as a human, which is about 86 billion, would have a brain that weighed nearly 35kg, or 25 times the size of the human brain. In 2013, researchers found that the volume of white matter, which is the matter that transmits information in the brain, grows much faster in rodents than in primates; for example, “A large rodent called an agouti has eight times as many cortical nerve cells as a mouse, while its white matter takes up an astonishing 77 times as much space. But a capuchin monkey, with eight times as many cortical neurons as a small primate called a galago, has only 11 times as much white matter.”. This research shows that primates are unique in that as a primate’s brains get larger, the

capacity for intellect increases, unlike many other species. According to Jon Kaas, a brain scientist at Vanderbilt University, “Primates with large brains have really superior processing. But rodents with larger brains may be processing things almost the same as rodents with smaller brains. They haven’t gained much.” This evolved difference in our brain composition, and this change in how neurons connect and how our brains grow and develop is the fundamental reason why humanity exists today (Fox, 2018).

It is important to emphasize that humanity’s neurological capacity for intellect is not entirely unique. Other primates share this same brain processing scalability, it is just humans who have evolved to have the largest, most powerful brains (Fox, 2018). Because this aspect of our nature is not uniquely human, it would be incorrect to label the framework on which our intellectual prowess and processing ability are derived as unique to just human nature. While our intellect is a defining component of the human experience and equally, many aspects of our uniqueness are influenced by our intellect, our capacity for this intellect is not a unique part of human nature as it is not uniquely human, it is unique to primates. Rather than being the only creatures equipped with this template for superior processing power, we are the apex intellectuals so to speak; out of all of the primate species, humans have evolved to be the smartest. It is this neurological framework, a consequence of evolution, that has enabled our mass expansion as a species.

Humanity’s capacity for intellect is a product of evolution and natural selection. According to the Stanford Encyclopedia of Philosophy, the theory of natural selection through evolution was co-discovered by Charles Darwin and Alfred Wallace in 1858. Natural selection is the process by which certain random variations in heritable traits provide a competitive advantage to a creature in an environment where there is a struggle for existence, and sometimes,

a struggle for mating opportunities. This struggle is a result of certain “checks” that limit the population increase of a species that would occur in the absence of such checks. Such checks take different forms depending on the population and environment; examples are: “...limited food supply, limited nesting sites, predation, disease, harsh climactic conditions, and much else besides.” Because of these checks, not all members of a population are able to reproduce; however, due to variations in heritable traits, creatures with more competitive traits are more likely to survive and reproduce than others (Natural Selection, 2019).

Humans, quite obviously, are a part of this system, and due to the nature of resources being scarce (Natural Selection, 2019), we must compete with other creatures, both other humans and other animal species, in order to acquire these resources. Modern humans, however, are outliers in this system. Humanity’s intellect and ability to build upon our knowledge over time has provided our species with such a massive competitive edge over other animal species which has led to the modern world being dominated by the human presence. Our intellect has allowed our species to re-categorize ourselves as something above that of other animal species. All other species are at the mercy of our will, for example, over 200 million chickens are killed for consumption every single day; that’s 140,000 chickens killed every minute (Roser, 2023). Humans, for the most part, have won the resource competition that has historically limited the population growth of many species (Natural Selection, 2019).

While humanity’s competitively driven lust for growth of population and consumption is not unique to only human nature, our ability to cooperate and build upon each other’s knowledge is the differentiating factor between human nature and that of just nature. According to Pascal Gagneux, who is an associate professor of Pathology and Anthropology at UC San Diego, “Human minds are effective copying machines. Somebody comes up with a good idea, and then

everybody in the group maintains that idea. We develop a ratcheting culture, in which we build upon each other's ideas" (How Are Humans Different..., 2018). Humanity's unique ratcheting culture, this ability to continually improve upon our knowledge and skills over generations is the differentiating factor that separates humanity from all other creatures on earth.

The technological and ideological advancements that humanity has made due to our ratcheting culture have enabled humanity to mitigate or even counteract many of the checks that normally limit the expansion of a population. For example, before the Neolithic Revolution, which is also referred to as the Agricultural Revolution, early humans hunted and foraged for their food. However, roughly 11,000-23,000 years ago, the way that humans acquired their food fundamentally changed. A journalist for National Geographic summarizes the impact of the Agricultural Revolution as "[t]he foragers became farmers, transitioning from a hunter-gatherer lifestyle to a more settled one." This shift caused human populations to become less nomadic, this is because seeds and crops needed to be planted, grown, and stored, and domesticated animals needed to be tended to. The increase in food availability as a result of such innovations spurred population growth; additionally, domesticated animals could be used to help with intensive farming labor which would have further increased the capacity for food production. This new period "ushered in the potential for modern societies—civilizations characterized by large population centers, improved technology, and advancements in knowledge, arts, and trade." While the cause of the agricultural revolution remains a mystery (Blakemore, 2019), its impact is undeniably significant; it marks the point where humanity began to establish the template for modern-day civilizations.

Additionally, the Agricultural Revolution and the technologies developed during its duration enabled humanity to better negate the impacts of certain population checks, primarily

food scarcity. The increase in food availability that was achieved during this time was monumental because it enabled humanity to gradually decrease the impact of this check on the population, thus enabling the human population to grow at a faster rate (Blakemore, 2019). The Agricultural Revolution was one of the first crucial steps that humanity took along the path toward planetary dominance.

As agricultural societies grew and as technology improved, the population increased in isolation, while living standards remained relatively stagnant. An economist described the capacity of an agricultural society in their essay titled, “The Industrial Revolution: Past and Future,” as, “...we know from many historical examples, traditional agricultural society can support an impressive civilization. What it cannot do is generate improvement in the living standards of masses of people” (Lucas, 2004). While the invention and expansion of the practice of agriculture have allowed humanity’s population to expand over centuries (Blakemore, 2019), it is the Industrial Revolution that has enabled humanity’s unprecedented increase in consumption that is a reality in many countries today.

Since the start of the Industrial Revolution in Britain in the mid-1700s, the global population growth rate increased from a modest 0.33% per year at the time to peaking at a staggering 2% per year by 1970. Humanity’s rapid population growth since the Industrial Revolution is credited to innovations that increased standards of living around the globe. Such innovations lead to better diets, higher birth rates, and lower mortality (Coren, 2018). Unlike previous societies, these modern industrial societies are characterized by accelerating income growth, while older, traditional societies were characterized by their stable per capita income. Up until about 1800, the difference between the global population and global production remained relatively constant, as the traditional agricultural societies were incapable of fostering

meaningful per capita growth. However, after the start of the Industrial Revolution in the 19th century, growth in both population and production accelerated rapidly; with production accelerating quicker than the global population (Lucas, 2004).

Unfortunately, the Industrial Revolution's impacts were not and still are not constant around the globe. For example, between the period of 1750 and 1800, per capita incomes were relatively constant throughout the globe at a level of around \$600-\$700 (measured in 1985 USD). However, roughly half a century later in 1850, there was a difference in per capita income of roughly a factor of two between English-speaking countries and the poorest countries of Africa and Asia. By 1900, the difference had ballooned to around a factor of six, in fact, the incomes of the African and Asian countries stagnated at around the \$600-\$700 range up until the 1950s. The impact of colonialism in these countries is described by Lucas as, "European imperialism brought advances in technology to much of the colonized world, and these advances led to increases in production that could, as in British India, be impressive. But the outcome of colonial economic growth was larger populations, not higher living standards" (Lucas, 2004). This discrepancy in the increase in living standards is due to human nature.

As a species, humans are exploitative, with colonialism during the Industrial Revolution being a good anecdote of this. The growth during the Industrial Revolution was life-changing for those who saw the benefit. And the progress made during the Industrial Revolution is undeniably incredible: life expectancies rose and so did consumption throughout the world. However, the benefit of this growth was not adequately distributed.

Additionally, as a consequence of humanity's rapid growth, the massive increase in consumption realized since the Industrial Revolution has led humanity to forever alter the planet and the environment. Humanity's environmental impact is best stated by Sir Robert Watson, the

chair of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services who was quoted in a UN report saying, “The health of ecosystems on which we and all other species depend is deteriorating more rapidly than ever. We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide”

(Nature’s...,2019). While the growth in living standards and population since the Industrial Revolution has benefited humanity greatly, all of what humanity has created is now at threat due to the environmental decimation that has been rampant post-Industrial Revolution.

According to the NASA Earth Observatory website, “the average global temperature on Earth has increased by at least 1.1° Celsius (1.9° Fahrenheit) since 1880. The majority of the warming has occurred since 1975, at a rate of roughly 0.15 to 0.20°C per decade.” These temperature changes may seem insignificant to the uninformed, however, a small change in global temperatures may have drastic impacts; “A one-degree global change is significant because it takes a vast amount of heat to warm all of the oceans, the atmosphere, and the land masses by that much. In the past, a one- to two-degree drop was all it took to plunge the Earth into the Little Ice Age. A five-degree drop was enough to bury a large part of North America under a towering mass of ice 20,000 years ago” (World of Change, n.d.). These temperature impacts have had a measurable impact on the planet, for instance, global temperature changes have caused the global sea level to rise by 8-9 inches since 1880. In 2022, global sea levels reached a new record high at roughly 4 inches above 1993 levels. The rate of global sea level rise is increasing, it has more than doubled from 0.06 inches (1.4mm) per year throughout most of the twentieth century to 0.14 inches (3.6mm) per year in the decade between 2005 to 2016. As a consequence of these sea level increases, according to a peer-reviewed article published on Climate.gov, “High-tide flooding is now 300% to more than 900% more frequent than it was 50

years ago.” The effects of sea level rise are not easily reversed, and the optimistic expectations are already quite dim. Even if there is a significant decrease in greenhouse gas emissions, the United States sea level is projected to be roughly two feet higher in the year 2100 than it was in the year 2000. However, the pessimistic expectations are far bleaker, according to the same article, “...models project that average sea level rise for the contiguous United States could be 2.2 meters (7.2 feet) by 2100 and 3.9 meters (13 feet) by 2150.” If these predictions were to be realized, the impact would be extremely significant. Roughly 30% of the United States population lives in relatively high population-density coastal areas that may be vulnerable to sea level rise. Additionally, 8 out of 10 of the biggest cities in the world are near the coast. Rising sea levels in these areas threaten crucial infrastructure: “Roads, bridges, subways, water supplies, oil and gas wells, power plants, sewage treatment plants, landfills...are all at risk from sea level rise” (Lindsey, 2022).

It is important to stress that the climate crisis does not just threaten humanity and our infrastructure, but the environment as a whole. Over 85% of wetlands present in 1700 were lost by the year 2000, with wetland loss being roughly three times faster than forest loss. This increased rapid loss of wetlands over the last three centuries has impacted amphibian species heavily, with more than 40% of them being at risk of extinction (Nature’s..., 2019). Humanity’s decimation is unbounded, our species has continued to demolish the environment despite the harm caused.

Moreover, humanity’s harmful impacts do not exist in a vacuum, they bleed throughout the rest of the environment and cause reflexive changes, often to our own detriment. Humanity relies on the environment, we are animals, and without food to eat, water to drink, and air to breathe we have nothing; we would not exist. These essential components of our existence are

also currently at threat due to our impacts, for example, more than 75% of global food crop types require animal pollination to grow. However, due to pollinator loss, between \$235 billion and \$577 billion USD annual value of global crop output is at risk. These risks cannot afford to be taken, food is already lacking in many parts of the world, and a supply shock of this magnitude would have a measurably horrible impact; especially on those who currently lack access to food and clean water. Currently, roughly 40% of the global population does not have access to clean and safe drinking water and over 800 million people currently face food insecurity in Africa and Asia alone (Nature's..., 2019).

The damage that these changes are on the path to causing will be detrimental. These environmental damages are increasing the competition for already precious and scarce resources such as land, food, and water. These increases in resource scarcity and competition have historically fueled socioeconomic tensions and often led to mass displacement. There is obviously no guarantee that humanity will be able to effectively mitigate the negative impacts of climate change; meaning that scientists' predictions may very well be realized in the near future. According to the United Nations, at the 2019 Climate Actions Summit Secretary-General António Guterres described the climate emergency as... "a race we are losing, but it is a race we can win" (The Climate..., n.d.).

In order to effectively counteract climate change and its impacts, there needs to be a monumental shift in humanity's direction as a species. Humanity must redirect away from focusing on an increase in consumption and population to prioritizing the preservation of the environment at all costs. The world is on fire, the fate of humanity is not the only thing at stake. The ruination of the environment as we know it is upon us, and there is nothing that can stop it

but humanity. Human nature is the factor determining whether or not humanity's prosperity will continue.

Human nature is defined both by humanity's unique ratcheting culture and intellect conversed with the harsh competitiveness and greed that is derived from nature itself. Humanity is the apex predator in a system where all other creatures are at the mercy of our will. As a consequence of humanity's unparalleled success, the unchecked expansion of both population and consumption has led humanity to a crescendo where growth, primarily since the Industrial Revolution, is the cause of the climate crisis that threatens not only humanity's prosperity but potentially even our existence. Not only does climate change threaten precious scarce resources such as land, food, and water, but the loss of these resources increases competition among individuals and nations alike, which fuels tensions between different populations. Climate change is a "risk multiplier" that worsens the impacts of already existing challenges (The Climate..., n.d.). If sufficient effort is not made to immediately counteract the destructive impacts of climate change not only will the environment be permanently altered, but humanity will find itself living in a hellish world where millions of people are pushed from their homes by rising sea levels and millions more starve due to a lack of food availability. Competitiveness for scarce resources, an aspect of human nature that is shared with many other creatures, has been the motivating factor that has equally driven humanity's expansion and the environment's destruction. However, humanity's intellect and ratcheting culture, which is also attributable to humanity's success, is an aspect of human nature that is unique to humanity alone. It is these unique traits that enable humanity to guide our own fate on this planet, and if humanity can properly utilize those unique advantages, then our species may just be able to pull ourselves from our destructive path and ensure our continued prosperity into the future. If not, then the

decimation of the environment and the resources which humanity reaps benefit from is imminent.

References

- Altschul, D., & Hopkins, W., & Herrelko, E., & Inoue-Murayama, M., & Matsuzawa, T., & King, J., & Ross, S., & Weiss, A. (2018). Personality links with lifespan in chimpanzees. *National Library of Medicine*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6177254/#:~:text=Our%20close%20evolutionary%20cousins%20chimpanzees,a%0distinct%20trait%2C%20for%20dominance>
- American Academy of Arts and Sciences. (2017). How are humans different from other great apes? *American Academy of Arts and Sciences*. <https://www.amacad.org/news/how-are-humans-different-other-great-apes>
- Blakemore, E. (2019). What was the Neolithic Revolution? *National Geographic*. <https://www.nationalgeographic.com/culture/article/neolithic-agricultural-revolution>
- Coren, M. (2018). Much of the modern world is explained by one population spike. <https://qz.com/1216675/much-of-the-modern-world-is-explained-by-one-population-spike>
- Fox, D. (2018). Why are humans so much smarter than other primates? *Genetic Literacy Project*.
- Gibbons, A. (2012). Bonobos join chimps as closest human relatives. *Science.org*. <https://www.science.org/content/article/bonobos-join-chimps-closest-human-relatives>
- Gildenhuys, P. Natural Selection. (2019). *The Stanford Encyclopedia of Philosophy*. <https://plato.stanford.edu/archives/win2019/entries/natural-selection/>
- Lindsey, R. (2022). Climate change: Global sea level. *Climate.gov*.
- Lucas, R. Jr. (2003). The industrial revolution: Past and future. *Federal Reserve Bank of Minneapolis*. <https://www.minneapolisfed.org/article/2004/the-industrial-revolution-past-and-future>

Merriam-Webster. (n.d.) human nature. *Merriam-Webster Dictionary*. <https://www.merriam-webster.com/dictionary/human%20nature>

NASA Earth Observatory. (n.d.). World of change: Global temperatures. *NASA Earth Observatory*. <https://earthobservatory.nasa.gov/world-of-change/global-temperatures>

Roser, M. (2023). How many animals get slaughtered every day? Our World in Data. <https://ourworldindata.org/how-many-animals-get-slaughtered-every-day>

Roughley, N. Human Nature. (2023). *The Stanford Encyclopedia of Philosophy*. <https://plato.stanford.edu/archives/win2023/entries/human-nature/>

United Nations. (2019). Nature’s dangerous decline ‘unprecedented’; species extinction rates ‘accelerating’. *United Nations*. <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/>

United Nations. (n.d.) The climate crisis – a race we can win. *United Nations*. <https://www.un.org/en/un75/climate-crisis-race-we-can-win#:~:text=GLOBAL%20TEMPERATURES%20ARE%20RISING,no%20signs%20of%20slowing%20down>