

On Minority Reports

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Minority Report: a separate report prepared by a group constituting or representing a numerical minority (as of a committee).

--Merriam-Webster Dictionary

Occam's razor: a scientific and philosophical rule that entities should not be multiplied unnecessarily which is interpreted as requiring that the simplest of competing theories be preferred to the more complex or that explanations of unknown phenomena be sought first in terms of known quantities.

--Merriam-Webster Dictionary

*"Well take the long way home
Take the long way home"*

--Supertramp

*"Two roads diverged in a wood, and I—
I took the one less traveled by,"*

--Robert Frost

The majority of problems one encounters in our world, akin to the distribution of power laws, can be "solved" by considering Occam's razor logic. There are, however, some unique counter-examples, that demonstrate a degree of variety and complexity in our world, that seem ripe for further attention, e.g. the level of complexity of photosynthesis and blood clotting factors or the role of imaginary numbers in Quantum Mechanics, not to mention the length of (or random nature of) the irrational number π . In short, not all is obvious in our world, and so simple as to be solvable using Occam's proverbial razor.

Let us first examine some examples of issues that may appear to have simple solutions and how the simple conclusion or assumption is ultimately false. Then, along the lines of "connections between seemingly disparate concepts," let us examine some alternate or "minority report" theories or explanations of problems or common theories along with some speculative thoughts.

Sunlight, skin color, and academic performance in the United States

On a recent day, an advanced Information Technology classroom in an American midwestern university contained an interesting distribution of students by race. Of the 30 students, there were 8 White American students, 10 Chinese nationals, 10 Indian nationals, and 2 Black American students. A racist White student interpreted the distribution as "proof" showing that Black students are not as academically gifted as other groups. All evidence, however, has always shown otherwise and, at our molecular core, as the famous Harvard biologist proclaimed, "we are all Africans."

Now the counts of the given ethnic groups can easily be understood by the very nature of their percentages of the total global population with over a billion Chinese and over a billion Indian individuals accordingly having a trickle-down percentage of students in any given classroom around the globe, not to mention their possible propensity to gravitate toward Information Technology courses and/or universities in the United States. Similar numbers represent the percentage of minorities in a given class on average in the United States of Black, Hispanic and other minorities versus white American student counts in those same classrooms.

But, perhaps, there is something we are not considering, especially since we exist in a White dominated American culture and society. Obviously there is nothing at all wrong with any Black or minority human design or brain but, perhaps, on top of all the systemic socio-economic and historical disadvantages, they must already deal with on a daily basis, there is yet another challenge that is not discussed, quite simply, as the challenge does not impact White Americans?

Humans tend to ignore that which changes slowly, that which is unseen, and that which is not directly in front of them. Consider the growth of income inequality over the last few decades without political unrest, the impact and yet often lack of fear of radiation and fructose-loaded diets, the decline of American exceptionalism compared to other nations around the world in benchmark scores, and even the impact of allergens on social or mental behaviors from the under-reported impact of histamine and its relationship to serotonin. But specific to this situation, let us consider the relationships between sunlight and skin color and academic or mental performance.

White skin color is an evolutionary adaption or mutation that leads to an environmental advantage. But that environment happens to be areas of the planet that have less sunlight than the equatorial origins of our species. These areas include the continental land masses that contain the modern nations associated with Western Civilization that happen to all be at higher, and much higher, latitudes compared to the equator. This very situation includes the United States. Only recently has the impact of sunlight, and particularly the lack of it, been correctly attributed to ailments like Seasonal Affective Disorder, sleep disorders, depression, and higher blood pressure not to mention the historically recognized association of the disease Rickets from lack of vitamin D, i.e. sunlight, in childhood development. Bipolar disorder has also been shown to correlate directly with a sensitivity to blue light, i.e. sunlight.

As a “natural sunscreen,” melanin, in human skin, absorbs ultraviolet-B (UVB) light - the same light that initiates vitamin D synthesis. Thus, the darker one’s skin, the longer it will take for them to absorb an adequate amount of light and to obtain enough vitamin D – usually requiring the individual to take vitamin D supplementation of more or significantly more than 500 mg per day. According to a University of Pennsylvania study, in one experiment, a White participant experienced a 50-fold increase in blood levels of vitamin D within 8 hours of UVB light exposure, while it took the darker-skinned participant at least five times as long, at least 40 hours, to register even a 30-fold increase in vitamin D concentrations.

Thus, let us consider the design of our modern world in regard to these observations. We have filled our living spaces with artificial light - day and night, we have created school buildings and classrooms with zero windows and extremely bright fluorescent lamps, and we have removed the amount of time spent outside with the elimination of physical education classes and outside breaks for students and workers. In short, we have unintentionally handicapped all human beings with darker skins – that inherently require more sunlight to make necessary vitamin D required for circadian rhythm sleep and focus from this proper brain clocking – and, subsequently, advantaged all those human beings with the evolutionary advantage of lighter skins, the proverbial silent majority, that do not require as much sunlight! The lost realization is that this is a significant bias. Year-over-year the impact of the inability to sleep and focus optimally during fall, winter, and early spring months (that contain the majority of the months of the year in which primary education occurs) creates a large built-in environmental hazard and bias, to those with darker skin, that require more sunlight to sleep and focus properly.

Thus, it is imperative that nations, especially those above the 30th parallel, begin to build schools, libraries, and workplaces with considerations toward sunlight with windows and skylights and without fluorescent and blue-light light bulbs during evening and night hours. This is in addition to the obvious need for other environmental health staples like proper air quality (removal of pollutants and ozone and allergens like dust mites and mold), clean water, (e.g. Flint Michigan public water crisis), access to high quality and unprocessed food, clean germ-free food and break areas, and the need for natural “green spaces” that have shown to have such a significant impact on mental and physical health and wellness. Without considering these unseen, yet significant, aspects of our daily living environments, especially in regard to sunlight, we inadvertently create an environment that disadvantages a large percentage of the population and directly impacts the ability of millions to fully live their lives to their potential.

Our genes, whether we like it or not, are biased to their environments and the historical evidence of advanced cultures in South Asia, Africa, Latin American and South America are testaments to the equality of the potential of all races and humans. This, however, does not equate to an equivalence in the ability to adapt to “unnatural” low sunlight living environments where only those with a specific evolutionary mutation have an inherent advantage.

On a speculative note, one might even consider that with genes sensitive to their location on the globe relative to latitude, perhaps there is also a genetic proclivity to prefer given longitudes and how this could impact so many millions of humans as they have traveled for new lives in countries across the world. Although, while this could impact circadian rhythm clocking (i.e. the brain of a resident of Mumbai may tend to revert toward 7 am Mumbai time rather than New York City 7 am if there is less sunlight outside), it would not have the significant hit to vitamin D production that is so detrimental to those with darker skin tones in countries of higher latitude which is a critical environmental bias that needs to be accepted and addressed.

Gaps in traditional systems ignored *prima facie*.

Human behavior tends to accept human-built institutions as a given. Too much faith is placed on tradition and the belief that there can be no room for improvement as "that is the way it has always been done." In a similar fashion, we tend to not place enough value on the degree to which variables, that are not visible or obvious to us, may impact our lives. In this manner, we can posit that there exists an inherent flaw in our legal system.

While most would argue the logistical impossibility - of both the volume of low income plaintiffs overwhelming the American legal system as well as the challenges of measuring and placing into order the large number of low income plaintiffs - as being prohibitive to any fundamental change of our legal system, logically both are necessary to eliminate a fundamental flaw. Similar to a hospital medical emergency room, where near-death patients are moved to the "front of the line" due to the criticality or urgency of their need, an optimal legal system would not be processed as a FIFO (first-in, first-out) queue but, rather, it would, in a similar fashion, be based on urgency but, while not medical, it would be financial.

A wealthy plaintiff can literally afford to wait, but a poor plaintiff lives paycheck-to-paycheck whether daily, weekly, bi-weekly or monthly. Thus, the logical "order of processing" of legal claims should be based on both the impact or damages of the claim versus the net worth of the plaintiff (the damages amount as a percentage of their total net worth) as well as their ability, or lack thereof, to wait between paychecks. A poor claimant may not, literally, be able to afford to wait three months for a settlement or even to wait a year to have their case heard, especially if it is directly related to employment or their community reputation (e.g. criminal record), that has a much larger impact on the earning ability of the poor than the wealthy. Sadly, this inherent bias is known and utilized by large corporations daily in lawsuits from individuals as they simply hold-up cases in court as the corporations can "afford to wait" and hope to simply out-spend or outlast any lawsuits in an analogous "war of attrition."

One could argue that again we can see the impact of corporate lobbying's influence in our society as it works to "keep the system the same" as the current United States legal system, while in many ways the best in the world, by its very nature, favors those that can wait or can afford to wait. It is thus that we clearly see the fundamental flaw or bias in our legal system. The processing order of legal cases, especially individual lawsuit litigation, should be based not on the "date of filing" (time), but rather on the "urgency of need" and the "potential risk of ruin," financial or reputational, of the plaintiff. Given that fact that this data is easily available in tax information, paycheck and banking information, and credit bureaus, outside of the obvious logistical challenges, there is no reason to not alter the system outside of the inherent desire to keep the bias in place for just such reasons that benefit those it always has benefitted.

Another conceptual gap in a traditional system is the interpretation of the financial instrument known as interest. An individual or loaning party is paid a small amount (determined by the risk of default of the loan) as a fee for allowing a party to borrow a given amount of money. But are the normal metrics used to calculate interest taking all factors into account? The amount of interest paid is considered a reward fee for taking the risk of giving the loan (i.e. the potential outcome of not receiving all the funds back) and for the logistical headaches of doing the activity and the inherent "opportunity cost" of not having the funds gaining potential savings interest income in a bank or other account. However, the amount of interest should not be based on only the aforementioned factors as also, inherent in any loan, is the subsequent increase to the loaning party's net "lack of liquidity," however minute in amount, and the implied risk, again however small, that increases of the loaning party, at some point during the loan period, encountering a "liquidity trap" in which they would immediately need hard funds. This fractional amount of "liquidity trap risk" should be included in any interest calculation as liquidity can be life-saving to an individual or company if they face

unexpected shocks, consider the coronavirus, to enable them to bridge-the-gap in an emergency until the threat passes. Large financial institutions and university finance and mathematics departments are well aware of these types of risks, and many other risks, with entire academic departments devoted to the study of risk and risk avoidance and mitigation, however it is not a generally understood or communicated concept.

Let us close this section with a separate observation on the similarities between a nation's economy and a living organism, i.e. how in both homeostasis is optimal (not too hot or too cold vis a vis GDP output), the need for liquidity injections to stabilize, and the challenges of getting the system out of deflationary spirals.

Carrying capacity, coronavirus, and the appearance of costs in Nature

"And in order to calculate correctly the probability of an event in different circumstances, we have to add the arrows for every way that the event could happen – not just the ways we think are the important ones!"
--Richard P. Feynman -- QED: The Strange Theory of Light and Matter

Carrying capacity: the maximum population (as of deer) that an area will support without undergoing deterioration.
--Merriam-Webster Dictionary

We may consider Nature (i.e. aggregate life on planet Earth) as having billions of years of trial-and-error "memory" or "algorithmic experience." Regardless, humans all too often still fail to ever question our superiority over the world be it alive or not. Naturally, it is inherently difficult to know the "unknown unknowns," but humanity still increases our risks if we blindly do not consider alternate possibilities regarding the abilities of life and events in the world around us.

Examples to consider are the apparent parallels in the natural world to concepts in human economics - beyond the similarity of mathematical equations seen in all dynamic systems. Theologians and philosophers have for eons proffered the idea that to "have" life there is a *cost*, with that cost being suffering. But, regarding the nature of intelligence, we see no parallel consideration. Perhaps existence itself has juxtaposing benefits, with their associated costs, along the foundational lines of literal existence paired with scarcity, life with suffering, and intelligence perhaps, sadly, with "terror" or destruction.

If we, for the sake of a thought experiment, anthropomorphize our Universe as having an internal or external God-like "score-keeper" then, we have a possible witness to the amount of terror and destruction "experienced," or the aggregate amount of terror and destruction, from the perspective of other living beings on this planet - animal, plant, etc.... not to mention other humans. But this cost, while it is a massive cost, is so difficult to see especially given the historic claim in world religions of the superiority of mankind and of humans having "dominion" over all else on the planet; incredible given we know so little of what lies amongst the depths of our Universe.

Now one may counter the idea of this cost noting the lack of terror and destruction caused by other intelligent beings like dolphins, chimps, etc.... thus, if we consider intelligence, rather, to represent "general human-level intelligence," we can make the claim that, once this human level of intelligence is unleashed into an ecosystem, it will expand and behave as if viral or parasitic.

In general, we have observed that unchecked intelligent beings consume, enslave, and destroy other living beings as empowered overlords of their world. While not desiring to evoke an emotional response, one must consider every calf in a cage, every stray raised alone, every being hunted or trapped for fur, every chicken minced, every donkey loaded, every rhino mutilated, every whale sliced, every cat or dog abused, every forest burned, etc.... to obtain an accurate aggregate accounting, if per our thought experiment, these experiences are being tallied. In our thought experiment then, what would the final "accounting tally" be for the eons upon eons of literal human intelligence created, or indirectly caused, terror and destruction? This is not even considering every human vanquished, every human enslaved, and every innocent victim of religious or ethnic violence. The saying holds that "a primary reason to study history is that no rational mind could imagine the cruelty that other humans can inflict" from gas chambers to experiments to genocides. Humanity, perhaps shockingly, however, carries on with ignorant hubris that these moments are not

accounted for at all. If we continue to assume a metaphysical judge and accountant, then humanity also falls victim to a self-created hypocrisy as we praise ourselves for removing plastic that is choking a seal, agreeing completely that this a good thing, knowing that we created and polluted that very same plastic trash. All these "moments" humans mentally ledger as being "over there," or due to other unethical humans or from humans in some past era or other less-developed country with the inherent bias that no Nature or history or metaphysical accountant actually could be bearing witness or keeping account, i.e. who could judge humanity?

But while Nature, with its billions of years of "memory" seems like the slowest of "slow boats that turn," it nonetheless does turn. Now while Nature may (or may not) abhor a vacuum, it certainly has always lusted for equilibrium or homeostasis within any and all ecosystems and gene pools. Thus, humanity seems to patently ignore the possibility that the actions of humanity, be they direct effects or indirect side effects, that have destabilized the global ecosystem (deforestation, species extinctions, air, water, chemical and radiation pollution amongst others), could possibly face any resistance or backlash from Nature. Blind to the possible "cost of intelligence" humanity basically walks blind to the very "circuit breakers" that Nature apparently has at its disposal (viruses like E-Bola, Marburg, and anthrax, plagues, parasites, mutations and illnesses like cancer, and epigenetic and cellular messengers) as well as theoretical threats that, whether part of Nature's or life's arsenal or not, are definitely threats and exogenous shocks that occur in our greater reality from storms to volcanoes, earthquakes, and tsunamis to even ice ages, solar flares, galactic procession asteroid and comet strikes, and even gamma ray bursts. The very nature of the "clock" used by Nature, that makes it seem so hidden and powerless, is the very same mechanism that makes its "memory" and "arsenal" so vast.

In Nature there is billions of years of evidence that it "balances its books." Intelligent humans, for the most part, however, cannot "see beyond our yard" and our immediate wants and needs. In theory, we could even be a first beta-run (or even a failed) attempt at general intelligence when considering humans in a geologic timescale. One could claim that humans simply cannot co-exist within their planetary eco-system and that we are blind to the inherent "costs" in a Universe "built" with them in its very foundations akin to a yin and yang reality. Humans have come so close to understanding the "depth of the ocean" of reality, but it is perhaps our ignorance of its breadth that could potentially lead to our downfall.

So why might now be any different? Perhaps because, up until the recent past, human life was not a threat to the net existence of life, or the existence of the majority of life, on the planet. Now, however, given the rate of species extinctions, we are literally pushing against the fundamental algorithms that drive all life - in terms of survival via both fecundity and variety. To be clear, the existence of humans could be considered as anathema to, if not a threat to, the aggregate existence of natural DNA-based life on planet Earth. This current situation could, in theory, be a harbinger of the "wrath" of Nature. Now mass extinctions have happened in the past, but these were due to sudden "exogenous shock" events - asteroid or comet strikes, gamma ray bursts, super volcanoes, ice ages, etc.... But any internal threat on this planet to aggregate life (i.e. that Nature can eliminate or avoid) Nature has demonstrated that inherently it will. To survive via the avoidance or elimination of threats is part of life's simple and core cellular automata-like program. It can take decades or centuries, but life or Nature will do it if possible.

Thus, we should consider, when analyzing events like coronavirus outbreaks, if humanity might not have "crossed a line" in regard to our existence in our planetary ecosystem. Note this is not asking us to consider life or Nature as akin to a magic "mother Earth" entity but, rather, to accept the impact of humanity on the equilibrium and homeostasis of our planetary ecosystem and life that, with its basic "selfish gene" drives, strives so very hard to maintain. The extinction of humanity could even be akin to an aggregate DNA gene pool simply dumping a "failed strategy" akin to the removal of a leg with gangrene. If Nature has literally "turned against" human life, then obviously we might have a very big problem with potentially the coronavirus equivalent to the tip of the proverbial iceberg.

Nature has genetic "memory" as well as "algorithmic intelligence" from billions of years of brute force and distributed trial-and-error activity. We can posit that life on Earth (Nature) is the epitome of "distributed intelligence." Nature may not be very fast, but it is near optimal in terms of "hedging bets" for the aggregate survival of life or for a given gene pool. If Nature has pivoted to "consider" or react to the human species or gene pool as an aggregate existential threat to all life, then it cannot be considered impossible that the covid19 coronavirus is an environmental "circuit breaker," like a speed limit warning, for either the size of the human population (indicating that humans have actually reached the planet's carrying

capacity for human beings) or even a "shot across the bow" indicative of a system falling out of equilibrium and possibly now bouncing back.

If we consider life on Earth as a form of distributed intelligence (e.g. consider how photosynthesis uses quantum entanglement to optimize energy efficiency) then, given Nature's vast trove of resources and its ability to handle randomness and to "be patient," the prospects of humanity do not bold well regardless of our level of intelligence or nobility. While the coronavirus is possibly a circuit-breaking mechanism against human population sprawl (to avoid carrying capacity ecosystem resource depletion vis a vis E-bola virus as an analogous "warning" to humans that we have gone too far "into the jungle" akin to Nature's forge (consider Tolkien's dwarves that dug too deep and lost everything to the Balrog)), there still remains the possibility, if not existential fear, that this is only the beginning of a natural "correction."

As we continue this thought experiment, considering life on Earth or Nature as a distributed intelligence, at the very least, if not an arbiter or accountant of experience itself, then there is, however, another perspective completely opposite of that of the coronavirus as population carrying capacity circuit breaker.

In the last decade, the growth rate of human populations on every continent has become negative. Now while our overall population is still increasing above the current 7.8 billion humans in the year 2020, the birth rates on every continent are all declining. From the perspective of the human gene pool, this is a very "bad" thing. Note also that the demographic "shape" of the societies of many countries is sub-optimal from a tax base and resource allocation perspective as, for all intents and purposes, these populations are too "top heavy" with too many elderly people. The "selfish gene" human gene pool, again considered as a distributed intelligence, "hates this" and, arguably, the world economy might also not be able to afford it. Thus, it is not beyond our imagination to consider that Nature, regarding human life, might be reacting in an opposite manner as literally trying to rid the human population of elderly humans, which it could "consider" as not "useful" (all the gene pool cares about again is an organisms ability to reproduce and to do so with variety) and even harmful to the gene pool as it considers sick or old organisms as potentially utilizing precious resources that could be used to assist its goals of sustaining and reproducing new human life, and thus there is an anthropomorphized possible "logic" implied to the nature of the virus targeting the elderly, weak, and/or sick that are all (from the perspective of the "selfish gene pool") a drain on critical reproductive resources.

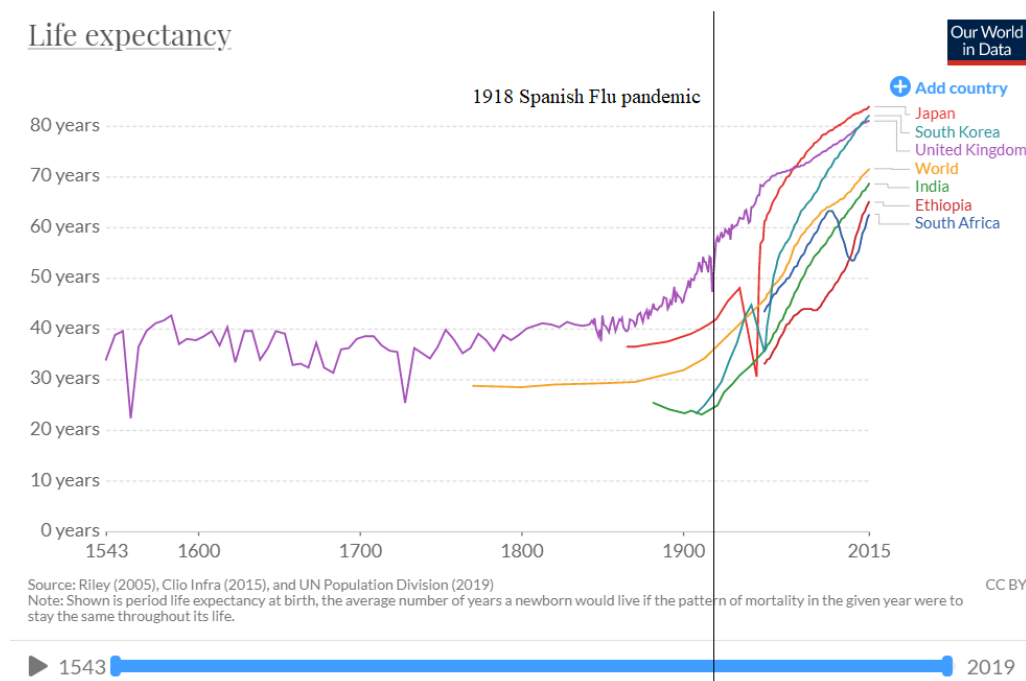
As Caitlin Cheadle noted in 2016:

So here we are now, with a global fertility rate of just 2.5 – roughly half of what it was 50 years ago. Today, 46% of the world's population lives in countries that are below the average global replacement rate of 2.1 children per woman. Because these countries (59 to be exact, including BRIC nations Brazil, Russia, and China) are not repopulating quickly enough to sustain their current populations, we are beginning to see a substantial imbalance in the ratio of elderly dependents to working-age people, which will only intensify over the coming decades. By 2100, the U.N. predicts that nearly 30% of the population will be made of people 60 years and older. Life expectancy also continues to increase steadily, which means those dependents will be living even longer. Between 2000 and 2015 the average global life expectancy at birth increased by around 5 years, reaching an average of 73.8 years for females and 69.1 years for males.

Again, if we view our human gene pool as part of an ecosystem with our own "selfish gene" pool "wanting" to maximize reproductive fecundity and variety then, perhaps, we may see global pandemics as possible gene pool or Nature ecosystem circuit-breakers that are trigger if the growth rate of non-reproducing subset of the population cross a certain level or reaches a maximum. Especially if a gene pool becomes too "top heavy" similar to the demographic age pyramid (image below) with elderly and non-reproducing organisms. Obviously human beings recognize the value of human life and the wisdom and skills of humans of advanced age, but it is very likely that the gene pool does not! Now, of course for this argument our sample size involves only examining two global pandemics but consider how in 1918 there was a global spike in life expectancy, then in the last few years, birth rates have plummeted globally. Changes in either will increase the percentage of non-reproducing populations. In each event it appears as if Nature has "thrown" a pandemic virus that removes a significant amount of the elderly and weak populations as if Nature was acting to "push the system" back toward a sustainable equilibrium.

The speculation here is not meant to panic any individual or family. The point is that large scale systems (comprised of many smaller units) tend to behave certain ways "over time" and that natural (i.e. living) systems have carrying capacity circuit-breaker mechanisms that likely also kick-in if the "rate of change" (not total size per se) of an ecosystem population subset becomes too out too askew. Again, without examining dozens of pandemics, this is in no way a statistically valid analysis but rather an interesting apparent correlation and thus, given the lower birth rates (which otherwise would have led to the real Malthusian Crisis of overpopulation in 20-50 years) we likely are headed toward much "smoother waters."

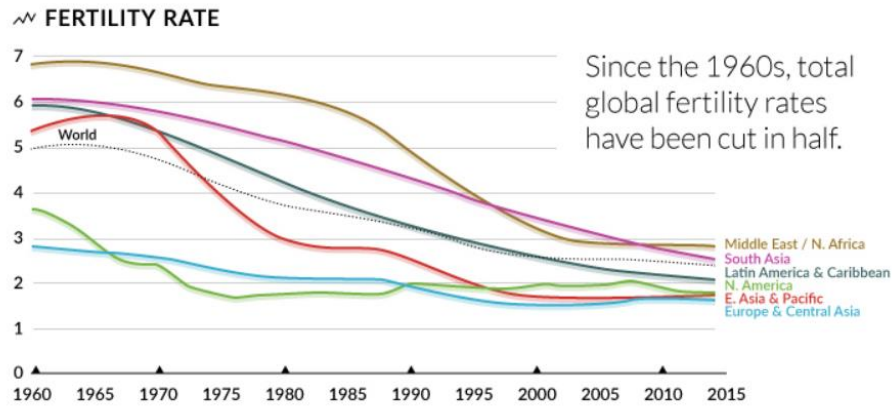
Now it is tricky to compare Nature to a system as often it does not have system controls and we risk over-analyzing what are actually just random exogenous shock events. Otherwise one could even consider this a good thing from a certain perspective. In a sense, Nature as a system really does not care or target the young and weak, it just does not want too many non-reproducing organisms that could consume too many resources from its critical young subset thus breaking Nature's (the human gene pool's) fundamental algorithm to reproduce and to reproduce with an optimal quantity, turnover rate (why we die on average at age 68) and level of variety to optimize our gene pool's ability to handle any and all external threats.



Rose, M., Ortiz-Ospina, E. & Ritchie, H. (2020). Life Expectancy. *Published online at OurWorldInData.org*. Retrieved from: <https://ourworldindata.org/life-expectancy>

	Population	Males	Females	Age 0-14	Age 15-24	Age 25-64	Age 65+	Fertility Rate
WORLD (2013)	7,162,119,434	50.4%	49.6%	26.0%	16.3%	49.5%	8.2%	2.50

Beltrán-Sánchez, H., Finch, C.E., & Crimmins, E. M. (2015, July). Twentieth century surge of excess male mortality. *Proceedings of the National Academy of Sciences*, 112 (29) 8993-8998; DOI: 10.1073/pnas.1421942112. Retrieved from: <https://www.pnas.org/content/112/29/8993>



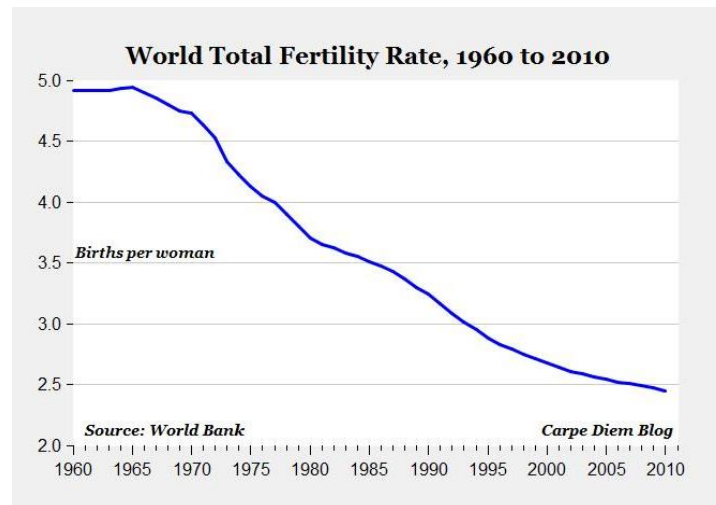
Source: World Bank, 2016

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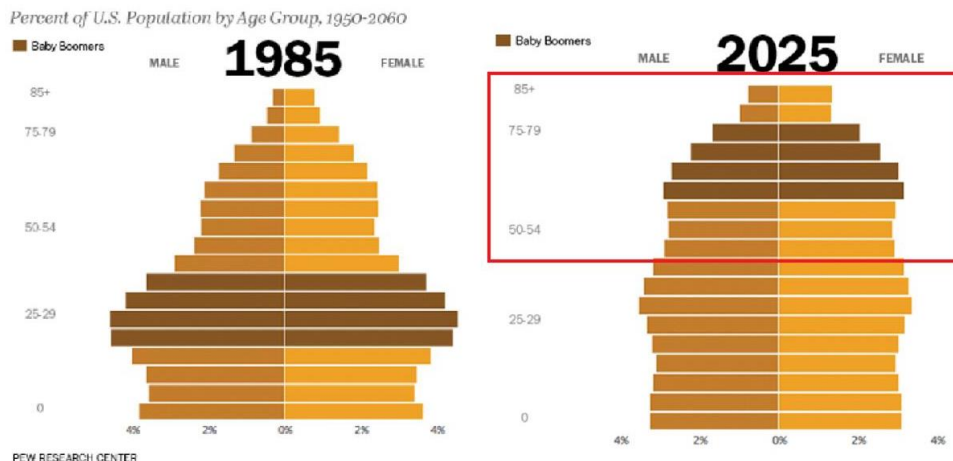


Cheadle, Caitlin (2016, November 25). Fertility Rates Keep Dropping, and it's Going to Hit the Economy Hard. *Published online at VisualCapitalist.com*. Retrieved from:

<https://www.visualcapitalist.com/fertility-rates-dropping-economy/>



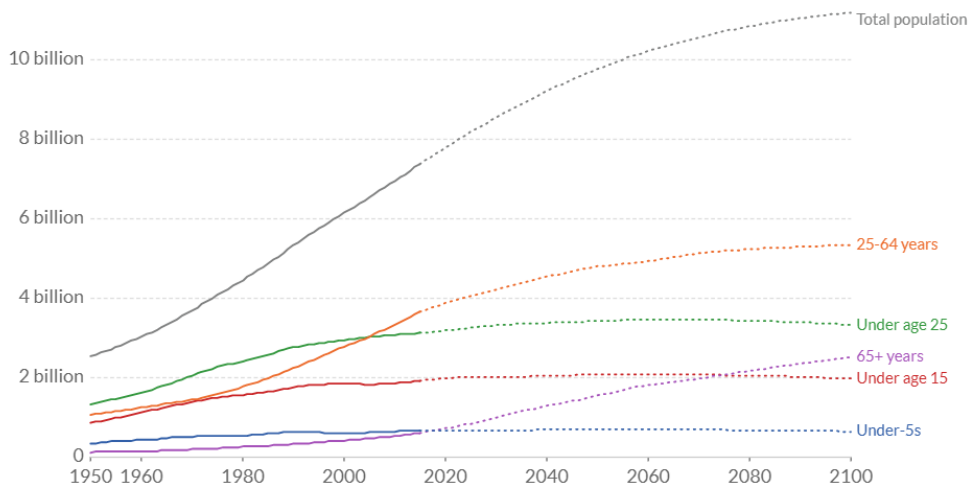
Perry, Mark J. (2013, May 14). Population Bomb? No, there's been a massive global drop in human fertility that has gone largely unnoticed by the media [Blog post]. Retrieved from <https://www.aei.org/carpe-diem/population-bomb-no-theres-been-a-massive-global-drop-in-human-fertility-that-has-gone-largely-unnoticed-by-the-media/>



Yoo, D., Bell, P, et al. (2014, December 29). Our favorite Pew Research Center data visualizations from 2014. Retrieved from <https://www.pewresearch.org/fact-tank/2014/12/29/our-favorite-pew-research-center-data-visualizations-from-2014/>

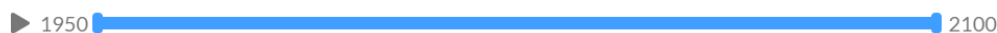
Population by age bracket with UN projections, World

Historical population estimates (from 1950 to 2015), and projections through to 2100 based on UN medium fertility scenarios. This is shown for various age brackets and total population.



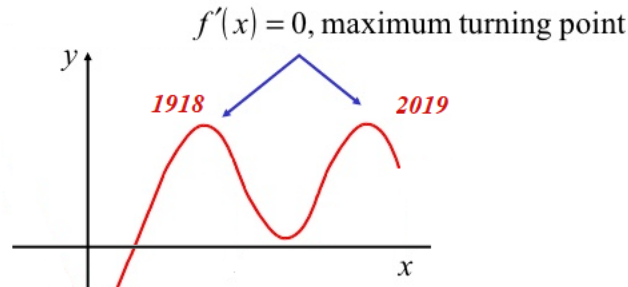
Source: UN Population Division (2017 Revision)

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Ritchie, H. and Roser, M. (2020). Age Structure. Published online at [OurWorldInData.org](https://ourworldindata.org/age-structure). Retrieved from: <https://ourworldindata.org/age-structure>

Both an increase in life expectancy and a decrease in birth rates can cause an equivalent maximum rate of growth of non-reproducing elements in a population, theoretically triggering an ecosystem induced equilibrium returning pandemic.



Now obviously the origin and existence of the current virus, or any virus, is most likely due to the natural ebb and flow and variation of viruses in a community but the goal above is to propose possible minority report or alternate theories based on observations of the historical activities of life on our planet.

Returning one more time to the concept of costs in our physical world. Philosophically, or perhaps metaphysically, let us consider the apparent necessity of "costs" in our reality where, as soon as a Universe is created, the a priori Laws of Physics drive an inherent existence with scarcity (derivative of structure or separation into discrete items). But we can consider now a possible "pattern match" to tiers of costs with the "cost" of existence being scarcity, the cost of life being suffering, and the aforementioned cost of intelligence being possibly terror and destruction. But this inductively begs the question of could there then be yet another leap? What might the cost of the next level of reality possibly be? What could the cost of omniscience be? Now many philosophers have speculated that this could be the "loss of self" and/or time (time as necessary for structure and delineation and action) and arguably the "loss of sanity" as this existential leap might, quite literally, melt away "the self" and move to "the infinite" or Platonic world of forms. Answers on this level of hyperbolic speculation we may never know or be able to communicate.

Why genders?

*We're restless hearted, Not the chained and bound...
 We're too young to reason, Too grown up to dream...
 Now spring is turning, Your face to mine...
 And I can't escape, I'm a slave to love.
 --Bryan Ferry – Slave to Love*

Consider the question about why Nature has evolved organisms with two genders. Solid research has led to some likely reasons for this, but might there be another additional cause? Recent research has shown that the benefits of a second gender include improved aggregate fitness from variation of the gene pool as well as a significant decrease in terms of the risk of extinction for the gene pool.

Theoretical biologist Tamás Czárán of Eötvös Loránd University in Budapest, Hungary in 2004 noted how:

"many theoretical studies and computer simulations show that a one-sex situation is not likely to evolve into something else. So biologists had always wondered how nature got into the apparently wasteful habit of supplying species with an extra gender. ... But in real life, organisms are much more

likely to bump into a neighbor than someone from the other side of the tracks. The researchers say the reason is that the latter would more often mate with their relatives, because during the cloning phase, the neighborhood would be flooded by their wildcard offspring and suffer lower fitness due to inbreeding.”

And Pradeep Mutalik noted in Quanta Magazine in 2017:

“...there’s a key difference between asexual and sexual populations. ...consider the fascinating statistic that 30 to 60 percent of the population of Europe was decimated by the bubonic plague (the Black Death) in the 14th century. What would the number have been if we were asexual creatures who were genetically very similar or identical to one another? 90 percent? 99 percent? Extinction? ...For asexual creatures, every individual reacts in the same way. We can simplistically define an animal’s fitness f as the number of adult offspring that it produces. Essentially, the population of a species in the next generation then is simply the starting population multiplied by f . The long-term population after n generations is simply a set of serial multiplications from one generation to another, with the average f varying from one generation to another based on the conditions. While it is true that asexual creatures will tend to have a higher f most of the time compared with sexual creatures, there will be some rare catastrophes when the number f falls for both species, but really plunges for asexual creatures for whom it may approach or reach zero. And when that happens, boom — extinction, in a single stroke! ...They go extinct far more quickly than sexual species. The few asexual species of lizards that still survive are those that have retained large amounts of genetic variation by tricks, such as doubling their normal number of chromosomes thanks to their sexual ancestors. In general, asexual species are subject to the fatal flaw of serial multiplication; sexual species are not. The asexual species will still have a higher mean population growth rate, but this growth rate will also be more variable. But what happens when you factor in the larger growth-rate variability? Which species is more likely to become extinct sooner, and after how long, on average? If you’d like to be more realistic, you can add a random population growth or decrease of up to 10 percent every generation.”

But perhaps there is still a third reason to have a second gender - a reason that follows the lines of thought from cellular automata theories envisioned by Stephen Wolfram and Edward Fredkin akin to algorithmic biology?

If we consider the primary “female” as programmatically inclined toward reproduction then, at a practical level, having a male gender quite literally makes the male a “vault” to keep the necessary ingredients away from the female to prevent or delay reproduction. The key to the survival of the species is still based on the female, but the use of a split-off male gender, while it improves variation and variation in growth rates, it can also lead to an optimized reproductive turn-over rate. The male gender, thus, becomes the equivalent of Nature’s “selfish gene” pool having a “throttle” on how often, or not, to reproduce a species (in terms of years) by adding a second organism whose maturity rate is required to enable reproduction, in addition to that of a female. The existence and quantity of male organisms also can be a throttle as Nature can use them to control the amount or degree of competitiveness involved in the creation of a mating event which again can have the benefit for the gene pool of delaying the rate of reproduction akin to speed control.

Like the graph of *profit margin* in the business world model, where there is a peak “sweet spot” for maximum profit, we can see a similar use of a competitive external gender holding part of the reproductive ingredient set. In this manner, the odds, of not only a varied offspring but of a successful offspring, are maximized as well as the odds of the reproductive timing occurring not too soon and not too late. This is equivalent to not having too few or too many organisms for the carry capacity of a given ecosystem. There might even be evidence (excluding human intentional acts) where Nature in two gender species varies, ever so slightly, the number of male percentages in a gene pool population to ramp up or slow down reproductive turn cycles if needed.

Now many hold the opinion that Nature split into genders due to a need to specialize functions versus threats in the environment, i.e. a more muscular male will hunt while a more organized female raises offspring where, the more complex an organism, the longer this child rearing will take to create a mature adult organism (e.g. humans are well beyond 10 years). But, if we approach this issue with a systems perspective, then maybe this interpretation is not quite right.

Is the real driver for the split into genders the need to diversify or specialize functions against threats and to allow one gender to obtain resources and another to raise offspring? Some may consider this to be obvious, but in the question lies another, i.e. why does Nature even "bother" raising organisms that take so long to mature at all? One might look at the size, amount, and success (total survival time) of dinosaurs as implying the answer is simply "that life can", i.e. expand as much as possible not only in quantity but also in size to increase survival odds. One can imagine an analogy of never-ending competitive pressures akin to modern human employment environments where a college degree, that was initially a competitive advantage, then becomes assumed with graduate degrees then required to stand-out etc.... implying an always moving top bar. But let us consider another minority interpretation - obviously assuming no *prima facie* drive in Nature for the need to create human beings due to religious destiny.

In an ecosystem we have obviously limited resources, and threats and competition for those resources. But the advantage of an extended upbringing is not for the advantage of *size*, but rather of *intelligence*! In essence, it is the *need* to compete against other organisms - that had developed or begun to develop larger brains and the evolutionary adaptation of intelligence - that drove the requirement for extended child rearing and upbringing. But the original question remains still of *why* the need for a second gender to achieve this. Thus, it is possible that the usefulness of a second gender is actually *not* to increase reproductive success, of those specific organisms, but rather to primarily *limit* it.

Microorganisms quickly breed and reproduce and do so, quite literally, blindly. But these offspring do not require extensive "investments" of time and resources to raise them. But if, for example, human beings would be able to breed at that rate, a town would quickly run out of all resources. So then, in terms of the creation of a second gender, isn't a male then a waste of resources preventing the creation of more evolutionarily *valuable* female? The male in this model, however, provides the gene pool the benefit of being the "speed bump" or circuit breaker to slow down reproductive rates. Having a second gender, as well as having competitive or selective mating behaviors, leads to an "intrinsic dampening effect" to an organism's reproduction rate, thus, preventing excess births, thus allowing time and resources to raise the current offspring to enable the development of, or to maximize, Nature's newest, and arguably grandest, of evolutionary adaptations: intelligence.

Another modern-day analogy is often used as a comic reference here as note how this ancient strategy leads to the "distress" of so many of our young men at the local dance or pub. By the very nature of having males as tactical (immediate, problem-solving, hunting) and females, obviously generalizing here, (strategic, organizing, child-rearing) we have a logical, but *not* a complementary set of traits; we actually have a *disjunction* of traits between genders. But this serves Nature's "goal" in thus making reproduction relatively rare and rare enough to allow long periods of time for the child rearing of complex and intelligent offspring. It is only via splitting into two genders and by making the mating selection challenging "and limited" that Nature (here as the human aggregate gene pool) can speed-limit control the reproductive rates required to make intelligent organisms!

As a side note, one may often wonder why is it that human females "appreciate" the daredevil or the "out of the box" flamboyant male? Consider how biologists compare the beautiful and creative songs and colors of birds used for courtship to that of human male rock stars. But this may not be so simple an answer either. Consider if human females *only* mated with the "fittest" partners? In this scenario you would soon have pools of only very athletic, or perhaps very wealthy, offspring that are all related which, genetically, is counter to Nature's fundamental drive of fecundity by variety of form and optimized rate-of-change (birth rates). Thus, how amazing it is that human females often (obviously not always) do find "the outsider," "the rebel," the stereotypical "bad boy" character as attractive, as this is exactly the strategy that leads to the required and necessary degree of random gene pool variation that Nature requires to prevent a stagnant and/or inbred gene pool.

Circularity and the depth of knowledge

"The miracle of the appropriateness of the language of mathematics for the formulation of the laws of physics is a wonderful gift which we neither understand nor deserve."

--Eugene Wigner -- The Unreasonable Effectiveness of Mathematics in the Natural Sciences

"...a consistency proof for [any] system ... can be carried out only by means of modes of inference that are not formalized in the system ... itself."

--Kurt Gödel

The above commentaries are not research driven but are merely alternate theories, speculative ideas, and thought experiments shared as "outside of the box" and unorthodox examples to contrast with contemporary theories or streams of thought, i.e. there is benefit in the creation of a minority report.

Author Philip K Deck famously intimated the idea that what we experience, regardless of what it appears to be, might be actually a repeat of the same behind-the-curtain structural situations as if we are all on a stage of reality that appears over and over again but looks different to everyone in it even though it is actually not. He speculated on a reality that was filled with fractal arms all identical and connected but blind to us as humans. Strangely, he thought the entire world might be stuck in a past time period and that everything we see is simply a repeat of that period in a different guise. Now while these claims are obviously wildly fantastic, note that it is interesting that mankind makes tremendous leaps in knowledge, from particles to atoms to quarks to pure math and from Relativity to Quantum Mechanics and multi-verses, yet we still have the chasms of infinite number lines, Dark Energy and Dark Matter, and black hole and Big Bang singularities and the inability to achieve a Grand Unified Theory. In essence, while we may still remain confident in the forward progress of human ingenuity, science, and drive, it is possible that human minds could forever be stuck or limited in something like a "circular regress" akin to Dick's analogy of never reaching the "fractal floor."

Another minority report thought is the idea of considering our existence from a vastly larger scale of size and time. Then, might the existence of our entire Universe not possibly be simply a simulation run perhaps to solve a single problem? What is a span of 20 billion years to an intelligence that exists for trillions? In this paradigm who is to say if all the work and suffering of our entire Universe is not to simply attempt to create an intelligent being that can somehow solve a specific mathematical puzzle or have a specific experience?