

To Breed or Not to Breed

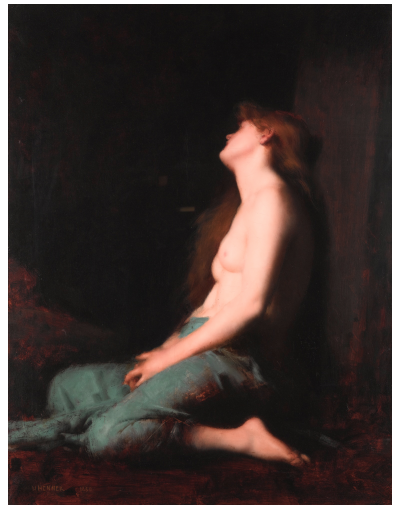
The Last Woman's Bioethics of Sustainability in Facing Extinction through Overpopulation (Putting to Sleep the Hare of Population, so the Tortoise of Sustenance Catches Up)

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My celibate hairstylist told me that his Mormon brother “turned into 40 people,” and he blames religion for over-population. His brother had three daughters, and they had a dozen kids each, whom he can’t name or keep track of. He hopes for an intervention from space: an alien who will come sterilize humanity.

On the Catholic front, Pope Francis made an unprecedented comment several years ago, suggesting that parents should responsibly limit the number of children they have. He told the story of an irresponsible woman with seven children by Cesarean section, who was pregnant with an eighth. Pope Francis asked if she wanted to leave the seven orphans and continued, “God gives you methods to be responsible. Some think that—excuse the



Jean-Jacques Henner
Solitude (La Magdeleine)

word—that in order to be good Catholics we have to be like rabbits. No.”¹ The 1968 encyclical *Humanae Vitae* outlined the contraceptive ban and warned against “Neo-Malthusianism,” a reference to Thomas Malthus’ “dismal theory” of 1798 predicting an irreversible world food crisis resulting from exponential global population growth exceeding arithmaic food supply, an essay that became the manifesto of Neo-Malthusians in the 1960s, like Paul Ehrlich who wrote the Sierra Club’s 1968 runaway best-seller, *The Population Bomb*.²

In 1798, Thomas Malthus admitted to having a melancholy hue, but after reading his contemporary’s visionary speculation, he rejected conjectures in the name of evidence, and concluded that the superior power of the population cannot be checked without misery or vice (war, epidemic, pestilence, plague, famine) because subsistence is arithmetical, whereas the population expands exponentially; everything therefore depends on the relative proportion of population and food, not on the absolute number of people. Malthus wrote his infamous essay to abolish all policies that encourage population and replace prevailing opinions with a more just notion, adding moral restraint to the checks of misery and vice: “the duty of man is not to propagate the species, but to propagate virtue and happiness.”³ By diminishing the population,

¹ Joshua McElwee, “Francis lambasts international aid, suggests Catholics should limit children,” *National Catholic Reporter*, January 19, 2015, accessed February 20, 2020, <https://www.ncronline.org/news/francis-lambasts-international-aid-suggests-catholics-should-limit-children>.

² “With inexpressible abhorrence” after the fifth edition of Malthus’ essay was printed and having circulated in the public for 20 years, British social philosopher William Godwin wrote *Of Population* to oppose Malthus’ “voice that has carried astonishment and terror into the hearts of thousands with a voice of despair.” After 350 pages, Godwin concluded optimistically: “Man is to a considerable degree the artificer of his own fortune. We can apply our reflections and our ingenuity to the remedy of whatever we regret. ... There is no evil under which the human species can labour, that man is not competent to cure.” William Godwin, *Of Population: An Enquiry Concerning the Power of Increase in the Numbers of Mankind* (1820), The Online Library of Liberty, 346. http://files.libertyfund.org/pll/pdf/Godwin_0876_EBk_v7.0.pdf.

³ Thomas Malthus, “An Essay on the Principle of Population” (1798, 1803), in *A Norton Critical Edition: Thomas Robert Malthus: An Essay on the Principle of Population*, edited by Philip Appleman, 2nd edition (New

vice and misery would also decrease, said the aspiring prophet of long-range benevolence.

There is nothing new here under the sun because cuneiform tablets show the Babylonians feared the world was too full in 1600 BCE.⁴ But after the population increased by 400% in the twentieth century, the scale is clearly unprecedented, as announced in 1970 by the Neo-Malthusian academics Paul and Anne Ehrlich: “explosive growth was the most significant terrestrial event of the past million millennia.”⁵ And Dr. Joel Cohen, Professor of Population at Columbia University, said the population peaking at 3 billion in the 1960s with a 2% annual growth rate in 1965–1970 was the most significant demographic event in history.⁶ Since then, global population growth has slowed to 1% annually in 2015–2020 to the present 7.8 billion, but even if this rate continues to decrease, global population will reach 8.5 billion in 2030, 9.7 billion in 2050, and 10.9 billion in 2100 because of the larger

York: W.W. Norton & Company, 2004) 26, 131, 133. Originally published anonymously, Malthus’ essay was still the first of its kind in an age when population growth was the mark of social well-being rather than a threat to the betterment of society. Malthus was influenced by Adam Smith, who wrote in *Wealth of Nations* (1776) that no species can multiply beyond subsistence. Malthus in turn influenced Charles Darwin’s 1859 *On The Origin of Species*. Technologies arose that discredited Malthus’ ratios, including the steam engine reaching its full potential along with the food supply revolution, and later biochemical and genetic technologies in agriculture.

⁴ That was when most large cities in the fertile crescent had 55,000 to 300,000, with average cities having 100–200, or up to 400 people. Sure enough, our current urban population is doubling by 2050 from 3 to 6 billion. Olof Pedersén, Paul J.J. Sinclair, Irmgard Hein and Jakob Andersson, “Cities and Urban Landscapes in the Ancient Near East and Egypt with Special Focus on the City of Babylon,” in *The Urban Mind: Cultural and Environmental Dynamics*, ed. Paul J.J. Sinclair, Gullög Nordquist, Frands Herschend and Christian Isendahl, (Uppsala: African and Comparative Archaeology, 2010), 122.

⁵ Paul R. Ehrlich and Anne H. Ehrlich, *Population, Resources, Environment: Issues in Human Ecology* (San Francisco: W.H. Freeman and Company, 1970), 1.

⁶ Joel E. Cohen, “Human Population Grows Up,” in *A Pivotal Moment: Population, Justice, and the Environmental Challenge*, ed. Laurie Mazur (Washington, D.C.: Island Press, 2010), 28.

number of people reproducing, albeit at 1%.⁷ As far as the birth rate per woman, a rate of 2.1 births per woman will prevent population decline; the 1990 global average of 3.2 births per woman fell to 2.5 in 2019, and by 2050, the rate is projected to be 2.2.⁸ And the other side of the population coin is sustenance. Different cultures tend to consume different amounts of resources, so by eating a purely vegetarian diet, current grain production could feed 10 billion people consuming at the rate of one average Indian, 5 billion Italians, and 2.5 billion Americans.⁹

A Bioethics of Contra-Ception¹⁰

By opening with two religious illustrations of the population crisis (my hairstylist's Mormon brother and Pope Francis), I do not mean to scapegoat religion alone. Still, many would be relieved to hear the Pope do more than telling Catholics to stop breeding like rabbits, but having him reverse the 1968 encyclical banning contraception, showing that he understands our present population

⁷ Department of Economic and Social Affairs, Population Division, *World Population Prospects 2019* (United Nations: New York), 5. https://population.un.org/wpp/Publications/Files/WPP2019_DataBooklet.pdf.

⁸ The highest rates in 2019 are in LDCs (less developed countries): sub-Saharan Africa (4.6), Oceania excluding Australia/New Zealand (3.4), Northern Africa and Western Asia (2.9), and Central and Southern Asia (2.4). United Nations Department of Economic and Social Affairs, Population Division, *World Population Prospects 2019: Highlights*, June 2019, last accessed February 20, 2020, <https://www.un.org/development/desa/publications/world-population-prospects-2019-highlights.html>.

⁹ According to Lester Brown (*Plan B 4.0: Mobilizing to Save Civilization* [New York: W.W. Norton & Company, 2009], 233-4; http://www.earth-policy.org/images/uploads/book_files/pb4book.pdf), "Using round numbers, at the U.S. level of 1,763 pounds of grain per person annually for food and feed, the 2-billion-ton annual world harvest of grain would support 2.5 billion people. At the Italian level of consumption of close to 880 pounds, the current harvest would support 5 billion people. At the 440 pounds of grain consumed by the average Indian, it would support 10 billion." It may appear that we could eat less and sustain the world's population, but how many people would be satisfied with a purely vegetarian diet, much less barely having enough to eat?

¹⁰ For this essay, I hyphenate this common word to defamiliarize and reactivate its bipartite structure: contra-ception.

phenomenon as he awaits his heavenly reward, and he has a viable vision of a future for everyone alive here and now on Earth.¹¹

The global population is staggering, but as a relentless optimist blessed with *joie de vivre*, I will explore ways to maintain a hopeful outlook by seeking interdisciplinary solutions. After all, the more optimists there are among the 7.8 billion, the more joyful the global population will be. Despite the paradox that human values now mean a bioethics of contra-ception, I am pro-human, pro-choice, pro-equality, and pro-aesthetics, and yet all of these values require space and resources in our only finite home. We are mortal, and our beloved Earth is appearing to be increasingly more mortal in this Anthropocene, in the Sixth Extinction in 540 million years, because humans (especially in China, and then in the United States, with half as many CO₂ emissions as China, and then the European Union, followed by India) are causing mass extinctions of plant and animal species, leading to a loss of 10,000 species a year, polluting the oceans and fresh water sources, and altering the atmosphere.¹²

Like a Marxian opiate, masses crave the luxuries of advanced capitalism, indulging in a high standard of living without accountability for our own carbon footprints and the footprints of

¹¹ The Supreme Pontiff Paul VI, Encyclical Letter *Humanane Vitae* (*Of Human Life*), 1968, last accessed February 20, 2020, http://w2.vatican.va/content/paul-vi/en/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae.html.

¹² Nobel Laureate and atmospheric chemist Paul Crutzen contends that we are no longer in the Holocene (“entirely recent” epoch) that started 11,700 years ago after the last major ice age that began 3 million years ago. In a 2000 article in the journal *Nature*, Crutzen coined the term “Anthropocene”—a new geologic epoch with humans dominating biological, chemical, and geological processes on Earth (Paul J. Crutzen, “Geology of mankind,” *Nature* 415 [January 3, 2002]: 23). Students are still taught that our current age is the Holocene, but “this name change would stress the enormity of humanity’s responsibility as stewards of the Earth.” In this “Anthropocene” era—short of a meteorite, world war, or pandemic—Natural ecosystems are embedded within human systems. Nature is us, so we must be stewards rather than mega-consumers on a crusade (Paul J. Crutzen and Christian Schwägerl, “Living in the Anthropocene: Toward a New Global Ethos,” *Yale Environment* 360, January 24, 2011; last accessed February 20, 2020, https://e360.yale.edu/features/living_in_the_anthropocene_toward_a_new_global_ethos. Pollution by country ranking data are from World Population Review (worldpopulationreview.com).

around 300,000 new babies born every day (9,000 an hour!), with an imbalanced 100,000 deaths a day.¹³ Today, we confront the impact of future billions on many fronts in our choices about what to eat, where to live, how to earn a living, and how many children to have. I want to reverse doomsday reports before it's too late, and although some scientists say it is already too late, I still want to try to spread a simple message of sustainable population anti-natal under-growth. Action is the antidote to existential threats to the one million animal and plant species on the verge of extinction, including bees, bats, Emperor Penguins, and porpoises. And the rate of extinction is accelerating. Biodiversity is key to a healthy planet, and we have known about the damage—including over-population—humans have done for decades.¹⁴ On a related environmental front, the 11-year old Greta Thunberg, with OCD and Asperger syndrome, fell into a deep depression and stopped speaking and eating for months when her teacher showed the class polar bears on melting icebergs.¹⁵ She couldn't understand how politicians didn't prioritize this existential threat, so now she spreads her message as a 17-year old Joan of Arc waging a climate strike, telling world leaders to panic and fear, and then act.

Like Greta, I am not a scientist or data analyst but an everyday activist, but unlike Greta I am an interdisciplinary professor with advanced degrees in Comparative Literature, Theology, and Poetics, so after reading Mary Shelley's *The Last Man* and feeling like it could be everyman's twenty-first-century Romantic memoir, I simply want to cope with the overpopulation epidemic and understand pragmatic and philosophical solutions moving forward.

¹³ Worldometers, "Current World Population," last accessed February 20, 2020, <https://www.worldometers.info/world-population/>.

¹⁴ Prof. Eduardo S. Brondízio (Brazil and USA), wrote: "Key indirect drivers include increased population and per capita consumption.... A pattern that emerges is one of global interconnectivity and 'telecoupling'—with resource extraction and production often occurring in one part of the world to satisfy the needs of distant consumers in other regions." UN Report, *Nature's Dangerous Decline "Unprecedented"; Species Extinction Rates "Accelerating,"* May 2019, Paris, May 6, 2019, last accessed February 20, 2020, <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report>.

¹⁵ Charlotte Alter, Suyin Haynes, and Justin Worland, "Time 2019 Person of the Year: Greta Thunberg," *Time Magazine*, last accessed February 20, 2020, <https://time.com/person-of-the-year-2019-greta-thunberg/>.

I was born when best-sellers were *The Population Bomb* (1968) and blockbuster sci-fi films were *The Last Man on Earth* with Vincent Price (1964), and Charlton Heston's doomsday sci-fi films, *The Omega Man* (1971) and *Soylent Green* (1973). In all these films, the last man is a scientist with a serum that sustains his life; he is alone, except for a remnant of zombie-vampires.

My parents stopped at the Zero Population Growth quota of two kids, and I myself have one daughter (negative population growth), but when I see large families, as an educator, I am deeply concerned. These children become students who will be the future leaders struggling to preserve their own destinies. Do people not understand that population expands exponentially, whereas our natural resources are finite? This is the "dismal science" from 1798 of Thomas Malthus and his adherents, the Neo-Malthusians. Their political economic theory of an exponential population decimating finite resources is envisioned in the 2008 Pixar film, in which it is WALL-E and EVE, two programmed robots, who—after Earth had been trashed and the human population evacuated on a megacorporation's giant starliners—discover reasons to live: They find love, and a plant.¹⁶ This fertility is enough for humanity to return to Earth.

I care about a sustainable ecosystem for aesthetic reasons, for our quality of life, for job security, as well as to assure basic needs are met for every living being. And I want this for everyone on deontological grounds based on Immanuel Kant's categorical imperative: the idea of the will of every rational being as a will laying down universal law.¹⁷ No one wants to be overcrowded or made to be extinct through overpopulation that causes pollution and climate change. These are interrelated contributing factors in

¹⁶ Even with a current girlfriend (Grimes) and easy access to nature, Elon Musk tweeted: "Very dependent on volume, but I'm confident moving to Mars (return ticket is free) will one day cost less than \$500k & maybe even below \$100k. Low enough that most people in advanced economies could sell their home on Earth & move to Mars if they want." Elon Musk, Twitter, article by Catherine Clifford, "Elon Musk: Moving to Mars will cost less than \$500,000, 'maybe even below \$100,000,'" *CNBC.com*, February 20, 2019, last accessed February 20, 2020, <https://www.cnbc.com/2019/02/11/elon-musk-how-much-it-will-cost-to-move-to-mars.html>.

¹⁷ Immanuel Kant, *Groundwork for the Metaphysics of Morals*, Chapter 2, translated by Jonathan Bennett (2017): 30, <https://www.early-moderntexts.com/assets/pdfs/kant1785.pdf>.

this Sixth Extinction, but my focus is population. The time is long overdue to instate taxes *for* children rather than tax *credits*, and offer incentives for adoption. Yet donned the “dismal science,” I was told by Political Philosophy Professor Lucas Stanczyk at a 2019 Ethics Conference at the University of California, San Diego that even Harvard economists won’t touch population solutions “with a ten-foot pole.”¹⁸

Rage against Dying

Extinctions are not a new phenomenon on Earth. We are in the Sixth. Surely many of us have heard the doomsday reports. Earth may be in its middle to old age, having peaked biologically 300 million years ago.¹⁹ Gross polluters, petroleum industry workers, loggers, and developers may justify their actions and say, “Earth is resilient. We can dump our sludge into the ocean and it will disappear; garbage in landfills will decompose dust to dust; the Rainforest will reforest.” The truth is Earth is fragile and changeable.²⁰ But the tortoise of natural resources is left in the dust by the hare of population. How will our final days on Earth—and essentially Earth as we know it because we only have our point of view—be spent: in a fiery cataclysm, by drowning, ailing in an intensive care wing, or suicide? The poet Dylan Thomas reminds us “Do not go gentle into that good night / Old age should burn and rave at the close of day / Rage, rage against the dying of the

¹⁸ Lucas Stanczyk explored the need for policies to restrict freedoms like population growth with an imperative of sustainability, concluding: “The world should put in place all those restrictions on existing rights and freedoms that...will prevent even more serious sacrifices having to be made in order to meet, for everyone who ever lives, the several types of claims picked out by the theories of social and international justice. One important theoretical implication of this answer may well be that a certain form of sustainability is the central imperative of intergenerational justice, notwithstanding the challenges that have been leveled at this notion.” For an influential defense of this notion, see the report of the Brundtland Commission, *Our Common Future: The World Commission on Environment and Development* (Oxford: Oxford University Press, 1987), 28, 33.

¹⁹ Peter Ward, *The Life and Death of Planet Earth: How the New Science of Astrobiology Charts the Ultimate Fate of Our World* (New York: Holt, 2004), 12.

²⁰ *Ibid.*, 21.

light.”²¹ Saving our lives will take the momentum of everyone: a mass movement towards restrained, sustainable lifestyles while we have the luxury of an apparent “choice.” The largest generation ever is the current 3 billion people under the age of 25. Their choices depend on opportunities—especially for youth in Asia and Africa—that will shape our global political, economic, and demographic future.²²

In a very unofficial survey of “to breed or not to breed” this summer as a Lyft driver in my electric car (earning a sign-on bonus and still barely covering expenses), two couples heading to the Del Mar Fairgrounds for the horse races said they choose not to have children because of environmental dangers and school shootings, and they expect to be zombies when the apocalypse happens any day. Two college-aged tourist girls from the seventh most populous city in the world, Mexico City, said they just got used to living with crowds, and they say they want careers first, then a small family, although most families have four to five kids, and a lot of young people get pregnant because they are uneducated about family planning, and many women do not pursue an education to have an alternative to mothering, or as I see it, breeding. Times must be desperate when Disney doesn’t create another princess in 2008 to end the decade, but *WALL-E*’s EVE. Like these post-apocalyptic robots, each of us faces the prospect of “extinction” alone, from our solo point of view in an ultimate existential moment of solitude, so perhaps a viral case of “bioethics” will help save humanity’s future on Earth as we make sustainable choices minute by minute?

Jean-Paul Sartre contended that we are condemned to freedom; but we are more irretrievably and hopelessly sentenced to

²¹ Dylan Thomas, “Do Not Go Gentle Into That Good Night,” Poets.org, last accessed February 20, 2020, <https://poets.org/poem/do-not-go-gentle-good-night>.

²² Three in five people under the age of 15 are in Asia, and Africa will have 22% of the world’s population in 2050, so the keys are to invest in education especially in these LDCs to increase economic opportunities, and raise the cost of having kids by raising the standard of living which will slow population growth to sustainable levels. Martha Farmsworth Riche, “The Largest Generation Comes of Age,” in *A Pivotal Moment: Population, Justice, and the Environmental Challenge*, ed. Laurie Mazur (Washington, D.C.: Island Press, 2010), 38, 44-45.

utter isolation.²³ We can feel lonely in isolation, or in a crowd, or alone in our country of 331 million. The Gallup Poll's 2019 Global Emotions Report shows high rates of loneliness, and a 2017 press release from the American Psychological Association says that loneliness is a greater health risk now than smoking cigarettes or obesity.²⁴ Loneliness is subjectively measured as the apprehension of the nothingness that hides behind everyday reality—that of our ultimate insignificance and disappearance.²⁵ And while we can feel alone in Times Square, this feeling is unnecessarily exacerbated by reports of the Sixth Extinction. So let's get proactive.

Vanity Fair

The news and statistics can be immobilizing, which is why after researching population I supplemented “the dismal science” with Nobel Prize in Literature speeches for a fusion poem I presented at a Pacific Modern Language Association conference to remind leaders and thinkers to script a narrative with a future vision. But ultimately this population research gave me renewed hope as an educator and writer that an informed, enlightened world population surely would not commit mass suicide. Or are we too greedy and are short-term indulgences too compelling on this Pilgrim's Progress through Vanity Fair?

In a recent Honors Humanities survey course, when we reached the final chapter covering the twenty-first century, I challenged the students to come up with a “landmark or masterpiece” in the Humanities that was omitted in our textbook. Students offered Banksy the graffiti activist, or the Burj Khalifa in Dubai, or Elon Musk as a new Da Vinci. At the risk of being dubbed “Professor Buzzkill,” mine was Worldometers: the rapidly

²³ Ben Mijuskovic explores how people who fail to enjoy the company and recognition of others end up surviving by cultivating their own company in “Loneliness: An Interdisciplinary Approach,” *Psychiatry* 40, no. 2 (1977): 113–32.

²⁴ Gallup Global Emotions 2019 Report, last accessed February 20, 2020, <https://www.gallup.com/analytics/248906/gallup-global-emotions-report-2019.aspx>. Julianne Holt-Lunstad, “So Lonely I Could Die,” American Psychological Association Press Releases, August 5, 2017, last accessed February 20, 2020, <https://www.apa.org/news/press/releases/2017/08/lonely-die>.

²⁵ András Bálint Kovács, “Sartre, the Philosophy of Nothingness, and the Modern Melodrama,” *The Journal of Aesthetics and Art Criticism*, 64, no. 1 (Winter 2006): 135.

escalating, unrelenting population toll. It seemed to eclipse everything else and demand a reckoning, like the only Tarot card that could possibly be drawn from the deck, or the only Bible verse in red: “Confront me or nothing else matters.” One Indian student from a large family enrolled in the course admitted, “Gosh, I always wanted six kids, but now maybe I’ll stop at two or three.”²⁶ I was reminded how our roles as educators affect the future. But I also saw our delusion in thinking our choices have no consequences or bearing on the human species, as Clevon’s explosive family tree in Mike Judge’s 2006 film *Idiocracy* shows.

An advocate of prolific family trees is Brian Clowes, President of Human Life International. He has a wife of 45 years, and seven kids. He is pro-life and fights against all abortion rights. He wants to change policy by first changing our vision and values from the “ugly American” model of the Kissinger Report (1974, declassified in 1990) that wanted to maintain an uninterrupted supply of minerals from 13 of the fastest growing under-developed countries, and the U.S. feared their youth en masse would challenge imperialist exploitation. To avoid any uprising or dissent against U.S. exports, the Kissinger Report called for abortions, sterilizations, indoctrination, and withholding aid to dissenters.

On the home front, Brian Clowes urges families to have more children, not less, because people are not the problem, but the solution “if we are to avoid a worldwide demographic catastrophe.” Because he insists the most precious of our freedoms is the autonomy of the individual, he calls people to resist “colonization of the mind by contraceptive imperialism, media saturation, emotional self-hatred.”²⁷ I, too, believe in the need for self-love and human rights and minds free from colonization and media saturation. The danger in this Pro-Lifer’s thinking is that it is Narcissistic, and Narcissus is a condemned solitaire. Clowes suspects that the scientific reports in the media are skewed by Leftist ideology, so he ignores scientists’ warnings about overpopulation. I see Clowes as a Pied Piper with his virile pipe, conjuring children and populating willy-nilly in a fairytale land of

²⁶ Julie Sayhoun, Honors Intro to Humanities, San Diego State University, Spring 2014.

²⁷ Brian Clowes, “Exposing the Global Population Control Agenda,” Human Life International: Pro-Life Missionaries to the World, January 2017, last accessed February 20, 2020, <https://www.hli.org/resources/exposing-the-global-population-control/>.

plenty...until there is nothing left and even his organization, Human Life International, nurtures international human death.

In contrast, a global ideal is to educate and employ more women, or empower their agency to do more than breed. I thought Melinda Gates as a billionaire was naïve, but after reviewing her 2014 TED talk, “Let’s put birth control back on the agenda,” and researching the Gates Foundation, I see the validity in her assessment: “Women want to give every good thing to their children, so give them family planning options.”²⁸ She and Bill have three children, three years apart, and although she was raised Catholic, she does not believe contraception is a sin. She said nuns taught her to be socially conscious and to ask hard questions, and the Gates Foundation is a philanthropical research institute. The nuns also taught good Catholic girls to treat sex as sacred, and Melinda had this lingering concern that separating sex from procreation was promiscuity, but she ultimately rejected that guilt and disagreed: Giving women the choice to have sacred sex with a partner without procreating—in effect, enjoying a well-planned life—is more fully realized sanctity.

The one billion who have sex annually (Melinda’s statistic) should be free to use birth control without hesitation, having the power to plan their lives and provide healthier, better educated children. Birth control is not code for abortion or population control; she insists those are side issues, although birth control is precisely her impetus. At the core is the right to decide when to have a child.²⁹ Her Family Planning (FP) 2020 initiative held a

²⁸ The Bill & Melinda Gates Foundation, last accessed February 20, 2020, <https://www.gatesfoundation.org/>. With 1.3 million views: Melinda Gates, “Let’s put birth control back on the agenda,” TED talk, March 11, 2014, last accessed February 20, 2020, https://www.ted.com/talks/melinda_gates_let_s_put_birth_control_back_on_the_agenda?language=en.

²⁹ Numerous sources agree that gender inequality and lack of reproductive rights are grave injustices. Worldwatch Researchers believe that ending the gender gap in education and economic opportunities, ending the sexual and gender violence against women, and increasing access to reproductive healthcare will slow population growth and improve the global crises, ultimately concluding “for the sake of the environment and healthy human relations, we should encourage this historic process.” Robert Engelman, Brian Halweil, and Danielle Nierenberg, “Rethinking Population, Improving Lives,” in *State of the World* (New York: Norton/Worldwatch Books, 2002), 130–38.

summit in 2012, planning to provide 120 million women in the 69 lowest-income countries with modern contraception by 2020. In sub-Saharan Africa and South Asia, women want injectibles which are easier to hide from husbands who want many kids, but clinics are out of birth control 150 days a year.³⁰ At last count, the Gates Foundation's FP2020 has reached 30 of the 120 million, allowing women and girls to decide—freely and for themselves—whether, when, and how many children they want to have, and, Melinda concludes, what is so controversial about that?

In countries with or without freedom of choice, every parent is accountable as a steward of the present, as Native American Chief Seattle is credited as saying, “We do not inherit the Earth from our ancestors, we borrow it from our children.” In the Sixth Extinction with climate change, pollution, and depleted resources, can we afford to be so cavalier about how we use our free will?

Scientists' Warnings Since the 1990s

What are world leaders and scientists actually saying? A milestone in population studies was the 1994 International Conference on Population and Development in Cairo, better known as “The Cairo Consensus,” which recognized the common ground between population and the environment and saw human suffering and environmental degradation as major priorities. World leaders put the needs of women and girls front and center, calling for delayed child marriage, incentives to help girls stay in school, and more widespread access to contraception. Their priority statement was signed by Nobel Laureates, College Presidents, Conservationists, Research Institutes—but no major U.S. politicians (just one, an Ambassador to East Asia, Marshall Green, 1916–1998).³¹

The 1995 Statement on Population Stability set goals and *voluntary* programs that maintained individual human rights and beliefs, providing education and reproductive health resources to

³⁰ Melinda Gates, “Let’s put birth control back on the agenda.”

³¹ United Nations Population Information Network (POPIN), *Report of the International Conference on Population and Development, 1994*, last accessed February 20, 2020, https://www.un.org/en/development/desa/population/events/pdf/expert/27/SupportingDocuments/A_CONF.171_13_Rev.1.pdf.

improve the status of women.³² The United States did not sign that 1995 Statement.

Another monumental action happened in 1992, when 1,700 world scientists wrote a warning to humanity, pleading:

Human beings and the natural world are on a collision course. ... A great change in our stewardship of the Earth and the life on it is required, if vast human misery is to be avoided. ... The earth is finite. ... And we are fast approaching many of the earth's limits. ... Pressures resulting from unrestrained population growth put demands on the natural world that can overwhelm any efforts to achieve a sustainable future.³³

After the 1,700 world scientists failed to make progress in 1992, fifteen years later in 2017, more than 15,000 world scientists issued a second notice:

To prevent widespread misery and catastrophic biodiversity loss, humanity must practice a more environmentally sustainable alternative to business as usual. ... Soon it will be too late to shift course away from our failing trajectory, and time is running out.³⁴

Scientists listed twelve action items, including: “further reducing fertility rates by ensuring that women have access to education and voluntary family-planning services, especially where such resources are still lacking.”

³² United Nations, *Report of the World Summit for Social Development*, Copenhagen, 6-12 March 1995, last accessed February 20, 2020, <https://undocs.org/A/CONF.166/9>.

³³ Union of Concerned Scientists (1,700 scientists), “1992 World Scientists’ Warning to Humanity,” last accessed February 20, 2020, <https://www.ucsusa.org/about/1992-world-scientists.html>.

³⁴ William J. Ripple, Christopher Wolf, Thomas M. Newsome, Mauro Galetti, Mohammed Alamgir, Eileen Crist, Mahmoud I. Mahmoud, William F. Laurance, and 15,364 scientist signatories from 184 countries, “World Scientists’ Warning to Humanity: A Second Notice,” 2017, *BioScience* 67, no. 12 (December 2017): 1026–1028, <https://academic.oup.com/bioscience/article/67/12/1026/4605229>.

We know factors contributing to extinction, and yet the global response to our crises is insufficient. In 2020, population theorists recommend that child-bearing choices must be voluntary rather than legislated top-down as in China with the One-Child, now Two-Child Policy—which will have prevented 1 billion births by 2060—and in India where the United States required sterilizations before granting food aid.³⁵ A UN Report from May 2019 says key indirect drivers are increased population and consumption, as well as technological damages to nature and lack of accountability. These contributing factors fuel the climate crisis, and because these factors are human-driven, humans can stop causing damage and become part of the solution. The UN Report adds a motivating note: “it is not too late to make a difference, but only if we start now at every level from local to global.”³⁶ We can write to our legislators because politics is influenced by public opinion; publish research for academics and editorials for the public; we can educate

³⁵ General Mao believed having as many children as possible would empower the country; population doubled between 1950 and 1976. The One-Child Policy of 1979 was the world’s most extreme form of population control; researchers confirmed that 400 million births were prevented between 1970 and 2015 and that by 2060, 1 billion births (descendants of the un-birthed) will have been prevented. This policy was enforced with inspections, and in some provinces governments required contraception, sterilizations, and abortions. One-child families were rewarded with 5 yuan a month plus a coveted “One Child Glory Certificate” providing priority childcare, medical care, and larger housing; two-child families lost the benefits, and three-child families were fined. With China’s population aging and shrinking, this policy was relaxed to a Two-Child Policy in 2016, if one of the parents was an only child. Now some fear that China’s shrinking population threatens to derail the world’s second largest economy; despite new incentives to have two children, some parents won’t have children in China’s struggling economy, and yet the Population Research Institute says that development is the best birth control. Lily Kuo and Xueying Wang, “Can China Recover From Its Disastrous One-Child Policy?” *The Guardian*, March 2, 2019, last accessed February 20, 2020, <https://www.theguardian.com/world/2019/mar/02/china-population-control-two-child-policy>. I also consulted numerous references listed under “One-Child Policy,” Wikipedia, last accessed February 20, 2020, https://en.wikipedia.org/wiki/One-child_policy.

³⁶ UN Report, *Nature’s Dangerous Decline “Unprecedented”; Species Extinction Rates “Accelerating,”* May 2019.

our students—the next generation of leaders; and we can support NGOs and conferences that help defuse the population bomb.

No Panaceas, Just Holistic Actions

What prevents us from shifting course in this country is some disagreement on the statistics, along with short-sighted greed in business, religious fundamentalism opposing birth control, government intervention in population policy, and interference with women's autonomous decision to choose how many children to have. As cited above, world leaders and scientists publish reports calling for sustainability actions including family planning and birth control. This is not *carte blanche* anti-natalism; rather, it is about slowing the rabbit of population until the tortoise of resources catches up. But the Roman Catholic Church still teaches that contraception is "intrinsically evil," and President Trump has instated the "Global Gag-Rule"—the anti-abortion policy that blocks U.S. funds to NGO family planning and health programs that mention abortion.³⁷ Republican Presidents since Reagan in 1984 enact it, as Trump did just 48 hours after the Women's March on Washington in 2017, whereas all Democratic Presidents rescind it.

It is hard to find common ground with so many agendas in the population debate. Three major voices arise: *policymakers* say we need to fight poverty with the equitable distribution of income that will lead to a decline in fertility rates; *family planners* want to provide education and health clinics with birth control globally; *academics* say it is too late to solve the problem and the freedom to breed will bring ruin to us all, but we must still make an effort to shape an equitable world by educating girls worldwide so they stay in school and marry at a later age and/or have careers. This dialectic was dramatized by Bernard Berelson, the President and

³⁷ According to the Catechism of the Catholic Church regarding "The Love of Husband and Wife," using artificial means "to render procreation impossible is intrinsically evil." Libreria Editrice Vaticana, last accessed February 20, 2020, http://www.vatican.va/archive/ENG0015/_P86.HTM. International Women's Health Coalition, "Crisis In Care: Year Two Impact of Trump's Global Gag Rule," June 5, 2019, last accessed February 20, 2020, <https://iwhc.org/resources/crisis-care-year-two-impact-trumps-global-gag-rule/>. Amnesty International, "Trump's Global Gag Rule a Blow for Women's Health and Lives," last accessed February 20, 2020, <https://www.amnestyusa.org/74153-2/>.

Senior Fellow of the Population Council in New York City in his 1975 occasional paper, *The Great Debate on Population Policy: An Instructive Entertainment*.³⁸ (Remember the 1960s and 70s were the heyday for fears about population—and Charlton Heston’s doomsday sci-fi films, *The Omega Man* [1971] and *Soylent Green* [1973]—when academics announced that “explosive growth was the most significant terrestrial event of the past million millennia.”³⁹) Subtitled an “instructive entertainment,” Berelson’s three-way debate was entirely based on representative quotes from each position. Berelson ended the dialectic after 25 pages because the debate kept circling back on itself. He found no guidance from science, numerous constraints from politics, and, in between, a wilderness where judgments roamed.⁴⁰ Although the three positions often argued against straw men and refused to concede ground, they did agree on a handful of aspects: the demographic facts, the absence of panaceas, population as only a means, the need for both direct and indirect efforts, the empirical results of family planning, and perhaps even the existence of a problem.⁴¹

Awareness of the topic has the value of generating ideas and consensus to inform and improve action, but action is long overdue, probably because consensus has not been reached, so why don’t governments and NGOs address the crisis on multiple fronts, working together, rather than arguing over exclusive funding and righteousness? The United States does not have a future-oriented environmental or population policy, and it is time for one. The forest is on fire and we’re arguing over what kind of trees are dying.⁴²

There is inspiration and good news to draw from: If humans are the agents of destruction, we can be the agents of change and sustainability as the work of leaders proves and encourages us. The primatologist and humanitarian Jane Goodall relentlessly speaks 300

³⁸ Bernard Berelson, *The Great Debate on Population Policy: An Instructive Entertainment* (New York: The Population Council, 1975).

³⁹ Ehrlich and Ehrlich, 1.

⁴⁰ Berelson, 24.

⁴¹ *Ibid.*, 24.

⁴² For a sobering perspective on how quickly we need to act in light of accelerating climate change and species extinction: If Earth’s 4.5-billion-year-old history were compressed into a 24-hour day, animal life appeared at 10 p.m., dinosaurs after 11 p.m., extinguished by an asteroid at 11:40 p.m., and *Homo sapiens* appeared in the last two seconds! The past 5,000 years of human history is a single frame of film: the last tenth of a second (Ward, 14).

days a year at the age of 85 and now works on the population crisis and The Sixth Extinction through the Jane Goodall Institute (www.janegoodall.org), always ending her books and speeches with a note of hope, and urging Leonardo DiCaprio to continue her legacy, a challenge he accepts.⁴³ Al Gore's Climate Reality Project (www.climaterealityproject.org) offers summer internships to students. The Bill and Melinda Gates Foundation (www.gatesfoundation.org) has a team of "impatient optimists" who are researchers, educators, and philanthropists working to reduce poverty in the poorest countries, especially through family planning.

It's easy to look overseas "over there" and point a finger. But if the entire world lived as the United States does, according to the Global Footprint Network, we would need FIVE earths to maintain its consumption of natural resources; as it is, we need 1.7 earths to keep up with the population.⁴⁴ Although one Professor of Population (Joel Cohen of Columbia University) says no scientific estimates exist for the ideal population based on the Earth's carrying capacity (views range from 1 to 1000 billion), Anthropology Professor J. Kenneth Smail suggests that the ideal population is 2 to 3 billion.⁴⁵ The United

⁴³ Leonardo DiCaprio, "Jane Goodall," *Time Magazine*, April 2019, last accessed February 20, 2020, <https://time.com/collection/100-most-influential-people-2019/5567774/jane-goodall/>.

⁴⁴ Charlotte McDonald, "How Many Earths Do We Need?" BBC News, June 16, 2015, last accessed February 20, 2020. Tim DeChant, "If the world's population lived like..." *Per Square Mile*, August 8, 2012, last accessed February 20, 2020, <https://persquaremile.com/2012/08/08/if-the-worlds-population-lived-like/>. M. Wackernagel, J. Kitzes, D. Moran, S. Goldfinger, and M. Thomas (2006), "The Ecological Footprint of Cities and Regions: Comparing Resource Availability with Resource Demand," *Environment and Urbanization*, 2006, no. 18, vol. 1: 112.

⁴⁵ Professor Cohen distrusts the political agendas behind statistics of Earth's ideal carrying capacity and finds this to be a diversion from the immediate problem of simply and pragmatically making tomorrow better than today (Joel Cohen, "Human Population Grows Up," 34). Professor Smail is more certain: Earth's long-term sustainable carrying capacity—with an "adequate to comfortable" standard of living—is 2 to 3 billion. He cautions that the political mantra of the 20th and 21st centuries—"continued economic growth!"—ignores the many social and ecological negative consequences of growth; these "hidden costs" must be factored in to reveal the truly pernicious economic self-deception of the oxymoron, "sustainable growth." Professor Smail calls for "a very significant reduction in global human numbers over the next two or more centuries...requiring a major reorientation of human thought, values, expectations, and life-

Nations' low, medium, and high estimates for 2050 are 7.8, 9.2, and 11.9 billion.⁴⁶ The Swedish data visionary and founder of Gapminder, known as a fact tank of reliable statistics, Hans Rosling has said that we have reached peak child reproduction: two. But the population is still growing as a consequence of large generations born decades back. However, the accelerating population will soon peak and stop growing at an inevitable 11 billion by 2100, Rosling says.⁴⁷

Curbing population growth is not a panacea, but it can make crises easier to deal with. If one needs an ethical imperative from heavy-hitters, remember God's command in Genesis to be good stewards, and Immanuel Kant's categorical imperative, and 15,000 world scientists crying out in in 1992 and again in 2017 for long-overdue sustainability.⁴⁸

styles," as Albert Einstein prophesied 50 years ago. If we fail, even harsher realities will ensue (J. Kenneth Smail, "Remembering Malthus: A Preliminary Argument for a Significant Reduction in Global Human Numbers," *American Journal of Physical Anthropology* 118 [2002]: 292, 297).

⁴⁶ The United Nations Department of Economic and Social Affairs, Population Division, *World Population Prospects 2019*, United Nations: New York): https://population.un.org/wpp/Publications/Files/WPP2019_DataBooklet.pdf.

⁴⁷ Hans Rosling, "The Rapid Growth of the World Population, When Will It Slow Down?" Gapminder.org, last accessed February 20, 2020, <https://www.gapminder.org/answers/the-rapid-growth-of-the-world-population-when-will-it-slow-down/>. Also see Hans Rosling, "On Global Population Growth, Box by Box," TED talk, TED.com, June 2010, last accessed February 20, 2020, https://www.ted.com/talks/hans_rosling_on_global_population_growth/transcript?language=en. And Hans Rosling, "The Best Stats You've Ever Seen," TED talk, TED.com, February 2006, last accessed February 20, 2020, https://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen?language=en.

⁴⁸ God told Adam and Eve in Genesis 1:28, "Be fruitful and multiply, and fill the earth, and subdue it; and rule over the fish of the sea and over the birds of the sky and over every living thing that moves on the earth." And in Genesis 2:15, "Then the Lord God took the man and put him into the garden of Eden to cultivate it and keep it." New American Standard Version, last accessed February 20, 2020, <https://www.biblegateway.com/passage/?search=genesis+1+and+2&version=NASB>. Immanuel Kant described the "categorical imperative" as a rationally objective, necessary, unconditional principle that everyone must follow (*Groundwork for the Metaphysic of Morals*; see note 15). And 15,364 scientist signatories from

A New Bioethics of Sustainability...Includes Contra-Ception

In every 12-Step Program, the first step in recovery is admitting there is a problem. Bernard Berelson, former head of the Population Council, has stated: “The very recognition of a public problem means that something must be done about it. Once recognized, it must be addressed, and readdressed.”⁴⁹ But who am I addressing? In the Sixth Extinction, I imagine that I am the last woman speaking to other last men and last women, like Noah or Utnapishtim stepping from an ark into a desolated world. The Existentialist in me believes that as long as we have breath it is not too late, and it is still meaningful to communicate and create. As a Stoic, I believe it is rational to do so with dignity and equanimity in the face of crisis. And finally, as a good Buddhist, it is best to remain present and detached. But I’m not a good Buddhist and I care passionately about humanity’s future.

In her 1826 novel, Mary Shelley’s *Last Man* cried:

I will write a book—for whom to read?—to whom dedicated? And then with silly flourish (what so capricious and childish as despair?) I wrote, DEDICATION TO THE ILLUSTRIOUS DEAD. SHADOWS, ARISE, AND READ YOUR FALL! BEHOLD THE HISTORY OF THE LAST MAN.⁵⁰

It is time to revise our role as consumers into actively engaged stewards of our present and future with a bioethics of restraint and sustainability, not for our selfish right to breed, populate suburbs, and take family vacations to family reunions, but for humanity’s collective right to survive in a changing climate with finite—even

184 countries issued the “World Scientists’ Warning to Humanity: A Second Notice,” 2017.

⁴⁹ Bernard Berelson, “An evaluation of the effects of population control programs,” in *Population and Its Problems*, ed. H.B. Parry (Oxford: Clarendon Press), 133.

⁵⁰ Shelley’s *Last Man* is solitary and by instinct a wanderer, so he searches for a partner in a world decimated by plague. Until then, peril, death, hardship, and tempests—all the powers of destruction—beset him. Mary Shelley, *The Last Man*, 1826 (Oxford: Oxford University Press, 2008), 466, 468.

depleted—resources, to think not about today’s indulgences, but about the luxury of having a future history by legalizing and supporting global contra-ception and family planning efforts, educating girls and giving them careers to slow—not stop—population growth. This is an urgent plea that can’t be confined to bedroom conversations. Today the most moral, life-affirming choice “to be” is not to “breed.”

Postscript – April 4, 2020

In the midst of the COVID-19 pandemic, mourning the current tens of thousands of deaths and watching the death toll rise daily, I consider Malthus’ 1798 warning about viruses (along with poverty and famine) curbing population if humans do not curb the growth rate. In this Neo-Malthusian World, foreign policy author and neorealist Robert Kaplan writes:

Perhaps the reason why Malthus always has to be denounced as wrong is because the biting fear exists that at some basic level he is right. ... A common destiny in which we eventually prove Malthus wrong [for discounting human ingenuity in utilizing finite resources for an exponentially-expanding population] once again may be the result—but only after dealing with problems [like disease] that he alerted us to.⁵¹

Although Malthus may be prescient in forecasting disease in urban centers, “correlation is not causation,” as data scientists like to say, and arguing for a direct link between over-population as the cause of the virus would be an intentional and causal fallacy, because no virus “intends” to curb any size population and a certain population size does not spawn a virus (although masses may accelerate the evolution of a virus). All viral DNA “wants” to live, seizing on opportunities to invade and reproduce.⁵² Giving

⁵¹ Robert D. Kaplan, “The Neo-Malthusian World of the Coronavirus,” *The National Interest*, February 28, 2020, last accessed March 30, 2020, <https://nationalinterest.org/blog/buzz/neo-malthusian-world-coronavirus-127947>.

⁵² Yu Han Hailan Yang, “The transmission and diagnosis of 2019 novel coronavirus infection disease (COVID-19): A Chinese perspective,”

COVID-19 agency as the great equalizing Grim Reaper sounds like the reprehensible “fire and brimstone” threat of Jonathan Edwards’ Great Awakening, anthropomorphizing a ravenous virus out to recruit the living...to die.

SARS emerged in Guangdong (China’s most populous province with 113.5 million) in 2002, and 17 years later, the novel coronavirus emerged in 2019 from its epicenter in the densely populated city of Wuhan with 11 million people. Wuhan is a linchpin of commerce and a transportation hub on the Yangtze River with open-air “wet markets,” like Huanan Seafood Wholesale Market, the size of four soccer fields where consumers vie elbow to elbow for living and dead wildlife at shops like Dazhong Livestock and Wild Game, with 100 varieties to eat, domesticate, trade, hunt, or to be used as fur or medicine.⁵³

Although both virus pandemics originated in densely populated cities, no scientist on record has said that the viruses are directly “caused by over-population” as in Malthus’ 1798 doomsday scenario. However, population was an indirect factor in the emergence of “wet markets” to serve its dense population. And although population density is a major factor that helps explain the pathogen’s rapid spread, science explains its origins in wet markets: “Animals that don’t normally live together in the wild are thrown together in cages, often in confined, unsanitary conditions. That makes for a dangerous potential pool of virus combinations,” says Timothy Sheahan, an assistant professor of epidemiology at the University of North Carolina, Chapel Hill.⁵⁴

And the interest in wildlife as medicine for its greater *qi* (“energy”) is at least 2,000 years old, dating to texts like *The Inner Bible of the Yellow Emperor* that list food with *jinbu* (“fill the void” or cure) benefits such as eating bats to restore eyesight, or eating the palm civet (another animal implicated in hosting the SARS

March 6, 2020, in *Journal of Medical Virology*, last accessed March 20, 2020, <https://doi.org/10.1002/jmv.25749>.

⁵³ Simone McCarthy, Linda Lew, William Zheng, Echo Xie and Phoebe Zhang, “How Disease X, the epidemic-in-waiting, erupted in China,” February 27, 2020, *South China Morning Post*, last accessed March 30, 2020, <https://multimedia.scmp.com/infographics/news/china/article/3052721/wuhan-killer/index.html>.

⁵⁴ Ibid.

virus before it passed to humans) to cure insomnia.⁵⁵ It was traditional medicine coupled with unsanitary conditions that led to contagion at Wuhan's wet market, but population density played a supporting role. Andrew Cunningham, Professor of Wildlife Epidemiology at the Zoological Society of London, explains: "Spillovers from wild animals will have occurred historically, but the person who would have been infected would probably have died or recovered before coming into contact with a large number of other people in a town or in a city," said Cunningham.⁵⁶

Over-population and its accouterments have exacerbated pandemics. Ultimately, it is not a causal fallacy to suggest that over-population facilitates the rapid spread of novel viruses.⁵⁷ Zoologists and disease experts say that the huge number of fast-moving people destroying natural habitats enables dormant

⁵⁵ Professor of Economics Yi-Zheng Lian at Yamanashi Gakuin University in Japan traces the spread of COVID-19 to cultural causes: the Communist government punishing whistle-blowers and traditional Chinese medicine that sees wildlife as medicinal food. "Why Did the Coronavirus Outbreak Start in China? Let's talk about the cultural causes of this epidemic," *The New York Times*, February 20, 2020, last accessed March 30, 2020, <https://www.nytimes.com/2020/02/20/opinion/sunday/coronavirus-china-cause.html?searchResultPosition=49>. A recent study acknowledged the therapeutic effect of traditional Chinese medicine in treating COVID-19 patients but concluded that the studies were poorly designed and traditional medicine can have toxic effects and should not interfere with conventional treatments of COVID-19 cases. Yang Yang, Md Sahidul Islam, Jin Wang, Yuan Li, and Xin Chen, "Traditional Chinese Medicine in the Treatment of Patients Infected with 2019-New Coronavirus (SARS-CoV-2): A Review and Perspective," *International Journal of Biological Sciences*, March 20, 2020, last accessed March 30, 2020, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7098036/>.

⁵⁶ Nick Paton Walsh and Vasco Cotovio, "Bats are not to blame for coronavirus. Humans are," CNN Health, March 30, 2020, last accessed March 30, 2020, <https://www.cnn.com/2020/03/19/health/coronavirus-human-actions-intl/index.html>.

⁵⁷ Shashi Tharoor, former communications head of the UN, and currently a Member of Indian Parliament says "India's sprawling, populous and high-density cities offer fertile ground for the virus," and India's resources pale compared to China's. Shashi Tharoor, "India, a coronavirus catastrophe waiting to happen?" *South China Morning Post: This Week in Asia*, February 17, 2020, last accessed March 30, 2020, <https://www.scmp.com/week-asia/opinion/article/3050988/india-coronavirus-catastrophe-waiting-happen>.

diseases to host in humans quickly.⁵⁸ Whereas Melinda Gates' 2014 TED Talk addressed birth control and over-population, Bill Gates warned about a pandemic in a 2015 TED Talk, and again in a 2017 op-ed for *The Business Insider*.⁵⁹ As interdisciplinary scholars, we would expect a complex human response and ought to be suspicious of easy explanations. Cultural analyst and social theorist Prof. Penelope Ironstone at Wilfrid Laurier University acknowledges:

Pandemics are simultaneously social, cultural, economic, and political events with the potential to occasion rapid, dramatic, and sweeping interventions into the management, conduct, and understanding of everyday life.⁶⁰

Fortunately, human ingenuity reacts and rallies during crises, and societal consciousness may increase so we can make the necessary biopolitical changes and write a triumphant future for a sustainable population.

⁵⁸ Walsh and Cotovio, "Bats are not to blame."

⁵⁹ Bill Gates, "The Next Outbreak? We're not ready," TED talk, March 2015, last accessed March 30, 2020. https://www.ted.com/talks/bill_gates_the_next_outbreak_we_re_not_ready?language=en#t-67921; Bill Gates, "A new kind of terrorism could wipe out 30 million people in less than a year — and we are not prepared," *The Business Insider*, February 18, 2017, last accessed March 30, 2020, <https://www.businessinsider.com/bill-gates-op-ed-bio-terrorism-epidemic-world-threat-2017-2>.

⁶⁰ Penelope Ironstone, "This Pandemic is (Extra) Ordinary," *TOPIA: Canadian Journal of Cultural Studies*, University of Toronto Press, March 22, 2020, last accessed March 30, 2020, <https://www.utpjournals.press/journals/topia/the-pandemic-is-extra-ordinary?=&>.