

Overpopulation in Late Twentieth-Century American Imagination

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Authorization to Submit Thesis

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Abstract

Overpopulation caught the attention of scientists, popular science authors, and science fiction creators alike in the second half of the twentieth century. Overpopulation embodied the disaster that would finally bring about the end of the world as they knew it. Concerns varied between the groups, but generally focused on standards of living, quality of life, gender roles, reproduction, freedom, or access to a healthy natural world. Science writers and science fiction creators worried that society did not effectively understand the devastating potential of overpopulation and played upon Americans' fear of loss to try to induce a greater response to the threat of overpopulation. A Gallop poll in 1971 showed that 46 percent of respondents said U.S. population growth was a major problem. Though, not everyone agreed that overpopulation posed a threat. Those who believed in the overpopulation menace could not agree on how to address it. There was no unified path forward. Americans, clear from newspaper articles discussing the country's policies, did not want to implement the same population control tactics as communist China, but neither did most Americans want to share or give up any resources. Any measure to end the threat of overpopulation seemed too extreme and failure seemed unavoidable with either controlling reproduction or not acting. The scale of the problem of overpopulation also felt daunting. The American public felt largely separated from most of the negative effects of overpopulation. Many within the U.S. public eventually saw overpopulation as a sort of trope.

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Dedication

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Introduction: Population and Control - A Brief History

My fellow citizens, it is with a heavy heart that I bring you the findings of the council. After deliberating in continuous session for the last four months in unceasing efforts to find a solution to the devastating problem of overpopulation threatening to destroy what remains of our planet, the world federation council has considered and rejected all half-way measures advanced by the various regional scientific congresses. We have also rejected proposals for selective euthanasia and mass sterilization. Knowing the sacrifices that our decision will entail, the world council has nevertheless reached a unanimous decision. I quote ‘because it has been agreed by the nations of the world that the earth can no longer sustain a continuously increasing population, as of today, the 1st of January, we join with all other nations of the world in the following edict: childbearing is herewith forbidden.’ The conception of a child shall be the gravest of crimes, punishable by death. -*Z.P.G.* (1972)¹

So opens the dystopian, overpopulation science fiction movie *Z.P.G.* Like many science fiction stories, this 1972 film both reflected fears held by the U.S. public and reinforced these anxieties, such as the loss of personal liberties. Opinion polls published in newspapers from 1960 to 1995 articulate these growing anxieties. One contributor wrote in 1967, “Perhaps the most significant change resulting from population growth is a diminished individual freedom.”² He goes on to paint a picture of a terrifying future with diminished quality of life and a destroyed natural environment. Popular science publications often echoed the latter concern, focusing on the loss of nature due to overpopulation. Science fiction authors and popular science writers played upon Americans’ fear of loss to try to induce a greater response to the threat of overpopulation.

For most of humanity’s past, populations regularly lived on the brink of starvation due to population numbers outpacing food production with reports of mass die-offs.³ Despite

¹ *Z.P.G.* (1972), Film, Directed by M. Campus. Denmark, United States: Sagittarius Productions, Inc.

² Charles Summerour, “Overpopulation’s Effects Harmful to Quality, Future of Our Lives,” *The Anniston Star*, December 17, 1967.

³ For instance, mass die-offs—from disease or famine—plagued the European continent through the nineteenth century. -Clive Ponting, *A New Green History of the World: The Environment and the Collapse of Great Civilizations*, Rev. ed. (New York: Penguin Books, 2007), 103-104.

some improvements in agricultural productivity and access to more diverse or hardy crops in recent centuries, there was not adequate space to grow enough food to support a continually expanding population. In addition to natural forces exerting pressure on population size, crop yield, weather, climate, and disease, many societies in human history took action to increase or decrease their population.⁴ According to ecofeminist and ecocriticism scholar Greta Gaard, “There is ample evidence that humans have deliberately shaped their numbers from the most ancient societies to the present.”⁵ Societies and their leaders increasingly implemented official population control policies in the nineteenth century.⁶ By the second half of the last century most developing countries implemented population growth reduction policies that covered more than half of the world’s people.⁷

More groups increasingly shared fear of an ever-expanding population consuming all the world’s resources since the nineteenth century. Thomas Robert Malthus first popularized the idea of overpopulation as a significant but solvable problem in 1798 in his *An Essay on the Principle of Population*.⁸ He posited that arithmetic food production restrained geometric human population growth. Malthus argued that similar laws of necessary population checks also bound other plants and animals.⁹ He suggested humans needed to implement population

⁴ Ponting, *A New Green History*, 104.

⁵ Greta Gaard, “Reproductive Technology, or Reproductive Justice?: An Ecofeminist, Environmental Justice Perspective on the Rhetoric of Choice,” *Ethics & the Environment* 15, no. 2 (September 2010): 103-29.

⁶ “The nineteenth century and with increasing urgency following the War, European governments sought to increase their populations motherhood and family.”- David L. Hoffmann, “Mothers in the Motherland: Stalinist Pronatalism in its Pan-European Context,” *Journal of Social History* 34, no. 1 (Autumn 2000): 35-54.

⁷ Tiloka De Silva and Silvana Tenreyro, “Population Control Policies and Fertility Convergence,” *The Journal of Economic Perspectives* 31, no. 4 (Fall 2017): 205-28.

⁸ Thomas Robert Malthus, *An Essay on the Principle of Population, as it Affects the Future Improvement of Society, with Remarks on the Speculations of Mr. Godwin, M. Condorcet, and Other Writers*, 1st ed. (London: J. Johnson, 1798).

⁹ Human populations were more complicated, however, and expansion to or beyond resource limits had catastrophic effects on people’s social, mental, and physical health. -Alison Bashford and Joyce E. Chaplin,

control measures to prevent people from suffering from those restraints imposed by nature, such as famine. Malthus wrote as a product of his time, just before the impacts of the Industrial Revolution were largely recognized. Malthusian fears ebbed at the end of the nineteenth century, when focus shifted to creating racially healthy colonies.¹⁰

Advancements in industry, agriculture, and medicine changed the societal and economic landscape in the early twentieth century and changed opinions about population composition. The climate in the United States at the beginning of the century was one of fear due to impressions of changing demographics, ethnically and religiously, from record levels of immigrations, which translated into fears over feeble-mindedness, obsessions with morality, and prejudices against lower social classes.¹¹ These fears opened the door for the eugenics movement, which garnered interest and support leading into the twentieth century from the likes of Charles Darwin, Francis Galton, Theodore Roosevelt, and several other powerful politicians, celebrities, and businessmen. Subsequently, the U.S. government implemented several eugenic policies and concerns about overpopulation, particularly growing populations of inferior groups, increasingly captured the attention of the American people with the support of these influential figures. Over 60,000 people were forcibly sterilized as part of attempts to cleanse society of “inferior beings,” consisting mainly of

The New Worlds of Thomas Robert Malthus: Rereading the Principle of Population (Princeton, New Jersey: Princeton University Press, 2016).

¹⁰ Kathrin Levitan, “‘Sprung from Ourselves’: British Interpretations of Mid-nineteenth-century Racial Demographics,” in *Empire, Migration and Identity in the British World*, Kent Fedorowich et al. (Manchester: Manchester University Press, 2013), 60-81.

¹¹ Adam Cohen, *Imbeciles: The Supreme Court, American Eugenics, and the Sterilization of Carrie Buck* (New York: Penguin Press, 2016).

people of color, poor people, institutionalized and criminalized populations, physically or mentally disabled people, and women.¹²

Eugenics publicly fell out of favor after World War II. Having lost huge numbers of soldiers and civilians, fears about overpopulation diminished briefly in the United States and Europe in the years immediately following the war. Many viewed the years following WWII as some of the most prosperous for the United States, a time marked by suburban growth, increasing wealth for the middle class, and greater access to new technologies. The economy boomed, more people attended college, and more couples purchased homes and had large families. Tensions existed, however, particularly due to the Cold War and fear over the spread of Soviet-style authoritarianism. Population once again caught national attention with a significant rise in the birth rate and growing immigration numbers. Immigration to the United States, which drastically decreased during the Great Depression and WWII, began to increase once again by 1950. As a result of such demographic shifts, demographer Anthony Allison described, “The 1960s saw the continued unfolding of forces from the 1950s that were leading to greater acceptance of interventions to reduce the rate of population growth. Opinion polls indicated that an overwhelming majority of Americans favored free access to birth control.”¹³

The 1960s also witnessed a convergence of social movements and social and environmental anxieties. For many, these movements, such as civil rights, environmentalism,

¹² Allen Kelley and C. Schmidt, “Aggregate Population and Economic Growth Correlations: The Role of the Components of Demographic Change,” *Demography* 32, no. 4 (November 1995): 543-555.; Jacqueline Bhabha, “International Gatekeepers? The Tension between Asylum Advocacy and Human Rights,” *Harvard Human Rights Journal* 15 (Spring 2002): 155-181.; Thomas Leonard, “Mistaking Eugenics for Social Darwinism: Why Eugenics Is Missing from the History of American Economics,” *History of Political Economy* 37, no. 1 (December 2005): 200-233.

¹³ Anthony C. Allison, *Population Control* (Harmondsworth, Eng.: Penguin Books, 1970), 23.

second-wave feminism, gay rights, and sexual liberation, and the counterculture challenged their very way of life. These causes called into question the arbitrary limitations placed on marriage, gender roles, social mobility, and cultural norms which formed the foundations upon which many constructed their lives. The fear incited by these changes led to severe backlash and consequently greater attention to the “population problem.” Motivated in part by global anti-imperialist movements and decolonization, groups within the American public began questioning political and economic power and human rights through movements centered on civil rights, second wave feminism, and gay liberation. At the same time, both an expanding environmental movement and sexual revolution began demanding greater access to birth control. In 1962, the United Nations passed a resolution that there existed an undeniable connection between “poverty, health, nutrition, literacy, and rapid population growth.”¹⁴

As many historians have shown, fears of national identity change, immigration, war, economic recessions, natural resource scarcity, disease, and power struggles drove population control policy implementation around the world. In Europe, Latin America, China, and the United States from the 18th century to the end of the twentieth century, governments persistently agonized over population numbers.¹⁵ The American public also

¹⁴ Allison, *Population Control*, 24.

¹⁵ Leslie Tuttle, *Conceiving the Old Regime: Pronatalism and the Politics of Reproduction in Early Modern France* (New York: Oxford University Press, 2010).; Alison Bashford and Joyce E Chaplin, *The New Worlds of Thomas Robert Malthus: Rereading the Principle of Population* (Princeton, New Jersey: Princeton University Press, 2016).; Marius Turda and Aaron Gillette, *Latin Eugenics in Comparative Perspective* (London: Bloomsbury Academic, An Imprint of Bloomsbury Publishing Plc, 2014).; Susan Greenhalgh, *Just One Child: Science and Policy in Deng's China* (Berkeley: University of California Press, 2008).; Michelle Murphy, *Seizing the Means of Reproduction: Entanglements of Feminism, Health, and Technoscience* (Experimental Futures. Durham: Duke University Press, 2012).

showed concern about population numbers, both domestically and internationally, for reasons sometimes differing from those of governments.

Building on these vital understandings of the intertwining of policy and culture, this thesis examines how fear influenced science fiction authors and popular science writers who constructed narratives about the dangers of overpopulation. Focusing on the consumption of popular science and science fiction by the American people helps fill a gap in overpopulation studies. People turned to these avenues of information because of their connection of science to social issues. Popular science authors wrote with their audience's reactions in mind, carefully choosing how to present the science and predictions for humanity and the natural environment. Science fiction combined scientific projections with dramatic and engaging stories. Studies have shown people draw on their interactions with science fiction when discussing scientific topics.¹⁶

Cultural historians have increasingly exposed how previous histories of overpopulation have focused on discourse created by scientific and political elite. These studies often do not capture the opinions, intellectual debates, or anxieties held by a majority of the population.¹⁷ Such histories often failed to fully explore mass communication and public perception. As Jesse Olszynko-Gryn and Patrick Ellis, authors of "Malthus at the Movies" stated, "This is a major oversight for the analysis of a movement that was fundamentally about reaching a large proportion of the world's population."¹⁸ Particularly,

¹⁶ Emma Hughes and Jenny Kitzinger, "Science Fiction Fears? An Analysis of how People Use Fiction in Discussing Risk and Emerging Science and Technology," *Social Contexts and Responses to Risk Network*, 2008, 4.

¹⁷ Jesse Olszynko-Gryn and Patrick Ellis, "Malthus at the Movies: Science, Cinema, and Activism around Z.P.G. and Soylent Green," *Journal of Cinema and Media Studies* 58, no. 1 (Fall 2018): 47-69.

¹⁸ Olszynko-Gryn and Ellis, "Malthus at the Movies," 48. Also see: Ellis, Emma Hughes, Jenny Kitzinger, Andreu Domingo, Jean Parkinson, and Ralph Adendorff.; Emma Hughes and Jenny Kitzinger, "Science Fiction Fears? An Analysis of how People Use Fiction in Discussing Risk and Emerging Science and

these studies have shown “the central role that demography plays in the contemporary exercise of power, particularly in reconciling the conflict between the individual and the collective.”¹⁹ While research has been crucial to the place of demography in places of power, so too have “many popular ideas about population from within the broader culture.”²⁰ Filling this gap, I expose the attempts of different groups, scientists and the science fiction community, to inspire society, and perhaps governments, to act on overpopulation, how the public ultimately received the messages, and why it has yet to be resolved.

Most popular science magazines, rather than publishing demographic articles which included numbers, data, and statistics, offered messages about the consequences on people’s lives. Authors chose their words carefully when writing about overpopulation in popular science magazines, attempting to do justice to the seriousness of the subject without unnecessarily dramatizing their concerns. They wrote as if aware of the potential social consequences of their arguments and assumptions and the potential harm they could bring. Public messaging about overpopulation or reactions published in newspapers rarely reflected such cautiously chosen rhetoric.

Unlike the works and documentaries produced by scientists, speculative fiction creators could explore the devastating potential of overpopulation without citing statistics or relevant data. Science fiction films and novels of the 1960s through the 1990s created numerous dystopian futures that portrayed the devastation of overpopulation. These

Technology,” *Social Contexts and Responses to Risk Network* (2008). According to Hughes and Kitzinger, “Ordinary people may sometimes be invoked as subject to the influence of such fictions but, with a few honourable exceptions, they are rarely consulted or studied in their own right. Very little work addresses how audiences actually relate to fictional narratives.” “Science Fiction Fears,” 6.

¹⁹ Andreu Domingo, ““Demodystopias”: Prospects of Demographic Hell,” *Population and Development Review* 34, no. 4 (December 2008): 740.

²⁰ Domingo, “Demodystopias,” 725-45.

“demodystopias” elicited fears among the American public about government control, degradation of the standard of living, and distrust of religious, scientific, and corporate entities. While set in fantastical worlds, the message was clear: the threat of overpopulation was real. The creators injected their own fears and concerns into the storylines. Like many scientists, these architects of demodystopias feared overpopulation would cause the end of life as we know it. While each work touched on some human-caused environmental degradation or catastrophe, the real concerns revealed themselves to be about the potential changes in the social landscape. These fears seemed to resonate with the American people. With no obvious “fix” from the scientific communities and more easily consumed than scientific reports, the concerned public turned to science fiction for predictions about overpopulation.

While clearly a concern among the scientific and science fiction communities, overpopulation encompassed much more. Overpopulation represented a single issue where people could channel their major anxieties of the twentieth century, including the social improvements and potential evils of science, the role of religion versus those “playing God,” the need to care for the planet, domestic communist revolution like that of Vietnam, and the control over women’s bodies. Overpopulation served as the focal point in the American imagination to address the core debates of modern America.

Faced with an abundance of sources about a variety of population themes, such as population control, population growth, and reproductive rights, I selected works which focus on “overpopulation” specifically, as it encompasses these themes and speaks to greater anxieties held by the American people. Popular science magazines best encapsulated the attempts of the scientific community, who felt a responsibility to use science to help solve

social problems and to communicate the risks of overpopulation. Science fiction novels and films represented the concerns of a community which used science as part of their dark social commentaries to warn of the apocalyptic effects of overpopulation, which would ultimately affect everyone. These two genres overlapped, drew on each other, and influenced the public's attitudes toward policy in unexpected ways. I used U.S. newspapers, particularly opinion articles, to identify which form of communication seemed to most resonate with the American people. U.S. newspapers published from 1960 to 1995 mentioned human overpopulation more than 50,000 times.

Science fiction creators and popular science writers wove a multitude of social matters and scientific predictions into their works attempting to inspire, even fearfully, the public to take the threat of overpopulation seriously. They hoped if the public would address population growth in the present, overpopulation—and therefore crowding, environmental degradation, infringement on rights, government control, and diminishing traditions—could be avoided. Popular science and science fiction managed to grab the attention of the American people, but not always with the desired responses.

Popular Science and Science Fiction: A Brief Introduction

One of the most ominous facts of the current situation is that over 40 per cent of the population of the underdeveloped world is made up of people *under 15 years old*. As that mass of young people moves into its reproductive years during the next decade, we're going to see the greatest baby boom of all time. Those youngsters are the reason for all the ominous predictions for the year 2000. They are the gunpowder for the population explosion. -Paul Ehrlich (1968)²¹

The earth was sick, blotched by hungry and desperate people from pole to shining pole. There had never been an uglier joke than pinning man's future on birth control. -Chad Oliver, "King of the Hill" (1972)²²

Popular science can be widely defined. Generally, it refers to the modes of communicating scientific discourse outside of academia.²³ Put another way, popularized science is science "explained to general audiences unfamiliar with scientific language, procedures, or principles."²⁴ Content and audience separate popularized science from scientific discourse, as "attitudes towards human participants in the texts is in fact a very prominent difference between popular and academic science texts."²⁵ Popular science writings and academic texts also establish objectivity differently.²⁶

Few agree on the precise definition of science fiction (scifi) or its exact origins, though it is generally thought to mean fiction based on imagined future or non-current

²¹ Paul R. Ehrlich, *The Population Bomb* (New York: Ballantine Books, 1968), 13.

²² Harlan Ellison, *Again, Dangerous Visions; 46 Original Stories* (Garden City, N.Y.: Doubleday Science Fiction, 1972).

²³ Sarah Perrault explains it as such, "popular science writing, broadly defined, is science-related writing that is aimed at nonspecialist audiences." -*Communicating Popular Science: From Deficit to Democracy* (Houndmills, Basingstoke, Hampshire; New York, NY: Palgrave Macmillan, 2013) 5.

²⁴ Marcel C. LaFollette, "Science on Television: Influences and Strategies," *Daedalus* 111, no. 4 (October 1982): 183.

²⁵ Jean Parkinson and Ralph Adendorff, "The Use of Popular Science Articles in Teaching Scientific Literacy," *English for Specific Purposes* 23, no. 4 (2004): 388.

²⁶ "The impression of objectivity achieved by the author of a popular article is thus of a different kind from the objectivity aimed at by the author of a research article. The writer of a research article wishes the reader to accept that the research findings are not the result of the writer's own subjective beliefs but rather reflect what was objectively observed. The popular science writer by contrast achieves an appearance of objectivity by basing what is said not on the writer's own opinions, but rather on the utterances of experts." - Parkinson and Ralph, "The Use of Popular Science," *English for Specific Purposes* 23, no. 4 (2004): 379-396.

scientific or technological advances and major social or environmental changes.²⁷ The phrase first appeared in writing in the late nineteenth century but came to define a genre in the 1920s and 1930s.²⁸ The “demodystopia” is a dystopia, or a hell-like version of a potential future, brought about by demographic change or where population numbers are a significant concern.²⁹ Authors and writers rarely, if ever, produced science fiction where they portrayed overpopulation as positive or not part of a portentous future.

Within the research and academic realm, peer-reviewed articles published during the second half of the century discuss overcrowding, negative effects of overpopulation, social drivers, how overpopulation worsens existing problems, environmental concerns, and public awareness and understanding. Some academic journals, such as *Science*, also included popular science articles intended for the public. Many scientists seemed to shy away from directly discussing or trying to prove overpopulation in their scholarly articles. Articles from the 1960s into the 1980s tended to focus more on the effects of overpopulation on certain groups.³⁰ While other articles from the 1980s and in the 1990s discussed perceptions of

²⁷ According to Bould and Vint: “Although the term ‘science fiction’ was not used until the 1930s, texts containing elements that are now synonymous with SF were in circulation long before then. There are a number of competing versions of the ‘true’ origin of SF: fan communities have tended to privilege the tradition that developed in American pulp magazines, while others have sought its origins in a longer and more canonical literary history. Within SF studies, Darko Suvin’s description of SF as the ‘literature of cognitive estrangement’ (1979: 4) has been particularly influential, moving definitional debates away from a focus on plot, setting and icons and towards formal characteristics and the political potential of the genre to imagine the world otherwise.”

²⁸ “The term ‘Science-Fiction’ was first used by William Wilson in 1851, but its entry into common usage is usually attributed to Hugo Gernsback around 1916.” -Mark Bould and Sherryl Vint, *The Routledge Concise History of Science Fiction* (Routledge, 2011), 1.

²⁹ Andreu Domingo, ““Demodystopias”: Prospects of Demographic Hell,” *Population and Development Review* 34, no. 4 (December 2008), 725.

³⁰ John M. Hunter, “Population Pressure in a Part of the West African Savanna: A Study of Nangodi, Northeast Ghana,” *Annals of the Association of American Geographers* 57, no. 1 (March 1967): 101-14.; John R. Aiello, Gregory Nicosia, and Donna E. Thompson, “Physiological, Social, and Behavioral Consequences of Crowding on Children and Adolescents,” *Child Development* 50, no. 1 (March 1979): 195-202.; Nanda Shrestha and R. Conway, “Issues in Population Pressure, Land Resettlement, and Development: The Case of Nepal,” *Studies in Comparative International Development* 20, no. 1 (March 1985): 55-82.

overpopulation.³¹ They conveyed an underlying assumption that overpopulation was a reality, often without directly stating as much.

For several decades, scientists favored print, particularly magazines, as their mean for disseminating their work to the public.³² Scientists were not the only authors of popular science articles. Journalists and historians also contributed, writing articles about updates in scientific fields, opinion pieces, interviews with scientists, and reviews of past discoveries. The fields of science authors also varied, from biology to sociology and ecology to psychology. Yet, some scientists chose not to write popularized science. Alongside professional concerns about acceptance in the scientific and academic communities and adding to their curricula vitae, such scientists resisted publishing in magazines because of how the public received the information. Archivist Marcel LaFollette claimed, “All scientific information is managed within the peer review system, as scientists authenticate the work of their colleagues; when that information enters the public domain, through either print or video mass media, scientists lose control over its presentation and interpretation.”³³ Scientists feared that publishers would choose topics, not because of current breakthroughs or recent discoveries, but based on issues most concerning to the public at the time. LaFollette further specified, “Many scientists[...] regard publication of an article in a general magazine—where

³¹ Charles E. Connerly and James E. Frank, “Predicting Support for Local Growth Controls.” *Social Science Quarterly* 67, no. 3 (September 1986): 572-86.; Stanley D. Gehrt, “The Human Population Problem: Educating and Changing Behavior,” *Conservation Biology* 10, no. 3 (June 1996): 900-03.

³² LaFollette, “Science on Television,” 184.

“See, for example, Daniel Greenberg, “Scientific Magazines Bursting Out All Over,” *Science and Government Report* 9 (1) (January 15, 1979): 1-2; William Bennett, “Science Hits the Newsstand,” *Columbia Journalism Review* 19 (5) (January-February 1981): 53-57; William Bennett, “Science Goes Glossy,” *The Sciences*, September 1979, pp. 10-15; and William J. Broad, “Science Magazines: The Second Wave Rolls In,” *Science* 215 (January 15, 1982): 272-73.

³³ LaFollette, “Science on Television,” 190.

neither editors nor readers are necessarily sympathetic to science—as a journey into unpredictable, potentially hostile, territory, a venture justified only by some purpose.”³⁴

One scientist, in particular, greatly aided the public’s reception of overpopulation warnings. Paul Ehrlich’s book, *The Population Bomb*, topped the best sellers list after its release in 1968. He found a way to connect with the American people and tap into their fears. While Ehrlich helped bring the science of overpopulation to the people, he also invited a great deal of criticism. Historians Jesse Olszynko-Gryn and Patrick Ellis noted, “Ehrlich’s best seller was published in paperback by the Sierra Club, a well-established environmental group, in partnership with Ballantine Books, known for publishing politically engaged science fiction alongside serious nonfiction dealing with social issues.”³⁵ By offering doomsday scenarios alongside his scientific data in his bestselling work, he managed to capture his audience’s attention, but also invited condemnation from the scientific community and some of the American public.³⁶ Science journalist Rae Goodell, in her article about scientists and the media, quoted, “‘They are no longer scientists,’ said Nobel laureate Arthur Kornberg concerning Paul Ehrlich and Barry Commoner. ‘They have become publicists or entrepreneurs.’”³⁷ Ehrlich reportedly later regretted the use of these apocalyptic scenarios as the “biggest tactical error in *The Bomb*’ because it enabled critics to cite their ‘failure to occur’ as a ‘failure of prediction’.”³⁸ Despite the efforts of Ehrlich and other scientists, the American people seemed divided throughout the end of the twentieth century

³⁴ LaFollette, “Science on Television,” 184.

³⁵ Jesse Olszynko-Gryn and Patrick Ellis, “Malthus at the Movies: Science, Cinema, and Activism around Z.P.G. and Soylent Green,” *Journal of Cinema & Media Studies* 58, no. 1 (Fall 2018) 60.

³⁶ Olszynko-Gryn and Ellis, “Malthus at the Movies,” 63.

³⁷ Rae Goodell, “The Visible Scientists,” *Sciences* 17, no. 1 (January 1977): 6.

³⁸ Olszynko-Gryn and Ellis, “Malthus at the Movies,” 62.

over the science about overpopulation. Beyond mistrusting or not understanding the scientific data about overpopulation, the public also seemed unable to decide whether overpopulation was an immediate problem or was even real, much like discussions about climate change today.

Though magazines such as *American Scientist*, *Scientific American*, *Science*, *Science News*, and *Science Newsletter* had distribution numbers in the tens of thousands, their impact on the American people, particularly regarding overpopulation, appears limited. Few people actually engaged with popular science content.³⁹ “The ‘attentive public’, people who are interested in science policy issues and generally informed about scientific matters is about 18 percent of the adult population of the United States,” which, according to LaFollete, included the “‘most well-formed and vocal critics of organized science in the population’.”⁴⁰

With increasing doubt in the scientific community in the second half of the century, the public’s trust in science and scientists became increasingly multifaceted. Despite medical and technical achievements, like landing a person on the moon, the American people also held scientists partially responsible for the destruction caused by the atomic bomb and chemical agents used in warfare. The eroding public trust in science created insurmountable consequences for communicating science to the people, as people’s trust in the person or institution providing information greatly affected their reception.⁴¹ Sociologist Brian Wynne conjectured that trust is influenced not only by the credibility of an individual scientist and the organization they represent, but also by a society’s past interactions with that person and

³⁹ Mary Ainley, Matthew Corrigan, and Nicholas Richardson, “Students, Tasks and Emotions: Identifying the Contribution of Emotions to Students’ Reading of Popular Culture and Popular Science Texts,” *Learning and Instruction* 15, no. 5 (October 2005): 433-447.

⁴⁰ LaFollette, “Science on Television,” 192.

⁴¹ Meyers, “Discourse Studies,” 273.

organization and their past experiences with similar situations being studied by the scientists, as well as their overall culture.⁴² Trust, however, was not generally replaced with a sense of distrust, as science in general continued to be held in high regard, but the American people remained skeptical.⁴³ Attempting to dissuade such doubts, science fiction architects offered a multitude of warnings.

Historians and sociologists have argued that science fiction has an impact on people's perception of science.⁴⁴ In a 2008 article, research showed "that people frequently reference science fiction in their discussions of science" and that "a great deal of concern is often expressed by policy makers about such pervasive references to fiction and their impact on public discussion about emerging science and technologies."⁴⁵ Science fiction created an avenue for expressing distrust with authority.

Works moved beyond frustrations with governments to outright fear mongering over totalitarianism and scripted lives with no room for personal choice or liberties.⁴⁶ Journalist Adrian Mourby explained it as such, "In predicting such a bleak future for the individual it is likely that dystopian fiction drew on the twentieth century's acute fear that progress dictated human beings would one day be reduced to little more than cogs in a social machine. The Communist experiment of Eastern Europe seemed for many years to prove that this was

⁴² Brian Wynne, "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science," *Public Understanding of Science* 1, no. 3 (July 1992): 281-304.

⁴³ Perrault, *Communicating Popular Science*, 46.

⁴⁴ Emma Hughes and Jenny Kitzinger, "Science Fiction Fears? An Analysis of how People Use Fiction in Discussing Risk and Emerging Science and Technology," *Social Contexts and Responses to Risk Network*, 2008.

⁴⁵ Hughes and Kitzinger, "Science Fiction Fears," 3-4.

⁴⁶ "Through the use of an imaginary future [demodystopias] have shown the central role that demography plays in the contemporary exercise of power, particularly in reconciling the conflict between the individual and the collective. Academic research has contributed to this exercise, but so too have many popular ideas about population from within the broader culture." -Domingo, "Demodystopias," 740.

everyone's ultimate fate. Individuality would be crushed as all irrelevance.”⁴⁷ History professor Michael Smith reinforces this notion of social and political reaction. He stated, “This view is precisely what the writers of speculative fiction about the consequences of unchecked population growth tried to embrace. As social critics, they were less constrained by probability than Ehrlich (who, it must be said, seemed not at all constrained at times) and could therefore allow their imaginations to conjure up believable scenarios that could ‘make more concrete and therefore more understandable the consequences of social trends’.”⁴⁸ Scifi offered glimpses into possible futures, with just enough science and plenty of drama included to influence readers. Science fiction, alongside popular science, influenced the general public’s thoughts about overpopulation. Newspapers, however, echoed the attitudes and themes of scifi more than science publications.

This thesis examines science fiction in the forms of novels, television, and film; though demodystopias also extended to comics, short stories, essays, poems, radio programs, and games.⁴⁹ I chose popular science and science fiction because of overpopulation’s

⁴⁷ Adrian Mourby, "Dystopia: Who Needs It? Adrian Mourby Shows That the Nightmare Scenario Can Be Both Dire Warning and Escapist Fantasy." *History Today* 53, no. 12 (December 2003): 16.

⁴⁸ Michael Smith, “The Short Life of a Dark Prophecy: the Rise and Fall of the Population Bomb Crisis, 1965-75,” in *Fear Itself: Enemies Real & Imagined in American Culture*, by Nancy Lusignea Schultz, (West Lafayette, Ind.: Purdue University Press, 1999), 344.

⁴⁹ Comics: John Wagner and Carlos Ezquerra, *Judge Dredd*, (IPC Media, 1977). Games: *Dark Future*, Games Workshop, 1988, Racetrack Boardgame.; 7th Legion, Epic MegaGames & Vision, MicroProse, 1997, Windows PC Game. Radio: John W Campbell, “No Way Out,” *Exploring Tomorrow Science Fiction Radio Program*, Mutual Radio Network, April 9, 1958. Songs: The Kinks, “Apeman,” *Lola Versus Powerman and the Moneygoround, Part One*, Reprise, 1970, Vinyl.; Grand Funk Railroad, “So You Won’t Have to Die,” *Phoenix*, Grand Funk Railroad, 1972, Vinyl.; Killing Joke, “Unto the Ends of the Earth,” 4 on *Outside the Gate*, E.G., 1988, Cassette Tape.; Malevolent Creation, “Millions,” 11 on *In Cold Blood*, Pavement Music, 1997, Compact Disk. Novels and short stories: J. G. Ballard, “Billenium,” *Billenium*, (Berkley Medallion, 1962).; Harry Harrison, *Make Room! Make Room!* (Boston: Gregg Press Science Fiction Series, 1966).; Kit Reed, “At Central” in *Mr. Da V. and Other Stories* (Faber & Faber, 1967).; Robert Silverberg, *The Time-hoppers*, 1st ed. (Garden City, N.Y.: Doubleday, 1967).; John Brunner, *Stand on Zanzibar*, 1st ed. (Garden City, N.Y.: Doubleday Science Fiction, 1968).; Michael Coney, “The Sharks of Pentreath,” in *The 1972 Annual World’s Best SF* by Donald A. Wollheim. (DAW Books, 1971).; Alan Edward Nourse, *The Bladerunner*. (New York: D. McKay, 1974).; Joe W. Haldeman, *Worlds: A Novel of the near Future* (New York: Viking Press, 1981).; B.

connection to science, environmentalism, math, demography, statistics; it seemed quantifiable. Overpopulation, however, also seemed to be an issue that could not be solved by science and technology alone. There needed to be a social component, so I chose to investigate how the American public engaged with the science of overpopulation, how it was consumed by the average person. I assumed most people did not often read peer-reviewed journals. So again, I searched specifically for overpopulation in science fiction films and writings and popular science magazines. These productions encompassed a rather consistent thread of fear about the loss of self-determination and a frequent reemergence of reinforced gender roles.

Barry, *Sea of Glass*, (New York: Avon, 1988).; George Turner, *The Destiny Makers*, (HarperCollins Publishers, 1993).

The 1960s: Sex and Danger in Popularizing Overpopulation

There is no human circumstance more tragic than the persisting existence of a harmful condition for which a remedy is readily available. Family planning, to relate population to world resources, is possible, practical and necessary. Unlike plagues of the dark ages or contemporary diseases we do not yet understand, the modern plague of overpopulation is soluble by means we have discovered and with resources we possess.
-Martin Luther King (1966)⁵⁰

With roots stretching back over a century, activists for civil rights, feminism, environmentalism, and the resulting counterculture seized national attention from the late 1950s through the late 1960s. This period of reformist movements and social change also created anxieties for many Americans who previously enjoyed the benefits of largely unchallenged privileges in the decades, even centuries, prior. For many, these movements and the counterculture challenged their very way of life. Overpopulation simultaneously acquired a great deal of attention during this decade by enflaming concerns over sexuality, race, immigration, and government control. Overpopulation alarmists, activists, and researchers engaged with the public and the counterculture in intriguing ways. Popular science writers and science fiction creators attempted to make their fears about overpopulation relevant to the American public.

The United States changed demographically in the second half of the century, as well as socially. A drastic and noticeable increase in the total fertility rate (TFR) of the country after World War II alarmed many people, though that rate plateaued in 1960 at approximately 118 births per 1,000 women.⁵¹ Some of the American people praised the baby boom as a sign of productivity and strengthening the American way. This rate was actually

⁵⁰ Martin Luther King, Jr., Planned Parenthood Federation of America's Margaret Sanger Award acceptance speech presented by Coretta Scott King, Shoreham Hotel, NY, May 5, 1966.

⁵¹ Ellen Wright Clayton and Adrienne Stith Butler, Institute of Medicine, and Board on Children, Youth, Families, *A Review of the HHS Family Planning Program: Mission, Management, and Measurement of Results*, (National Academies Press, 2009), 43.

lower than the TFR before the war and steadily declined throughout the decade. The drop in fertility was not surprising considering the FDA approved an intrauterine device and first oral contraceptive in 1960 and the U.S. Supreme Court ruled in favor of married couples' right to use birth control in 1965.⁵² Throughout the decade, doctors also performed hundreds of compulsory sterilizations on poor populations and Native Americans. Voluntary sterilization was made available to Medicaid users in 1966.⁵³ By the end of the decade, countries agreed parents have the right to determine the number and spacing of children at the UN Conference on Human Rights in 1968.⁵⁴

Some Americans expressed concerns over immigration policies and poverty rates during this decade, revealing underlying racist attitudes that permeated these discussions. Though immigration sat at its lowest levels since 1900, with only 1.3 percent of the working-aged adults in the United States being foreign born, the 1965 Hart-Celler Act revived many Americans' apprehensions about the inflow of immigrants.⁵⁵ The Hart-Celler Act abolished the nationality-based quota system, allowing larger numbers of people to immigrate from South America and East Asia.. A year earlier, President Johnson introduced legislation, dubbed the War on Poverty, to combat the country's poverty rate of 19 percent.⁵⁶ This program targeted "problem populations," assuming that poverty among minority groups was

⁵² Clayton and Butler, *A Review of the HHS Family Planning Program*, 40.

⁵³ Center for Reproductive Law and Policy, NARAL Supreme Court Decisions Concerning Reproductive Rights.

⁵⁴ CRR & NARAL.

⁵⁵ Clayton and Butler, *A Review of the HHS Family Planning Program*, 56.

⁵⁶ Elizabeth Kai Hinton, *From the War on Poverty to the War on Crime: The Making of Mass Incarceration in America*, (Cambridge, Massachusetts: Harvard University Press, 2016).

“the historic and institutionalized consequence of color.”⁵⁷ Such liberal policies during the Cold War held unintended consequences for several groups that would carry into the following decades.

While the government focused on greater access to contraceptives and the socioeconomic plights of certain populations, scientists and science fiction writers weighed in on the overpopulation debate. Shifting attitudes toward the scientific community on the part of the American public appeared to encourage science writers to use more inclusive language that limited potentially harmful interpretation in popular science magazines. Science fiction creators seemed less concerned with appearing scrupulous and dramatically voiced concerns about overpopulation and losing “traditional American lifestyles.” Fear of diminishing quality of life, overpopulation abroad, and contraceptives—the need for greater access, potentially harmful side-effects, and who should use them—pervaded most conversations about overpopulation.

Popular science of the 1960s, when discussing overpopulation, tended to stay within the realm of ecological and environmental concerns, though it at times also addressed social concerns. According to Bruce Lewenstein, “A new era for popular science began in the early 1960s, when criticism began to appear of the unbridled enthusiasm for science that had reigned in the United States for the previous 20 years or so.”⁵⁸ Particularly, Rachel Carson’s *Silent Spring*, published in 1962, indicted several groups, including the scientific community, agricultural sector, and government, of tarnishing the environment and ignoring the serious

⁵⁷ Michael Harrington, *The Other America: Poverty in the United States*, (Baltimore, Md.: Penguin Books, 1971), 72.

⁵⁸ Bruce Lewenstein, “The Meaning of ‘Public Understanding of Science’ in the United States after World War II.” *Public Understanding of Science* 1, no. 1 (January 1992): 45-68.

consequences on human lives.⁵⁹ She asked readers, “Why should we tolerate a diet of weak poisons, a home in insipid surroundings, a circle of acquaintances who are not quite our enemies, the noise of motors with just enough relief to prevent insanity? Who would want to live in a world which is just not quite fatal?”⁶⁰ Carson was most critical of scientists and engineers making decisions while they left an unwitting public out of the process, arguing for democratic access to information and underpinning worries of authoritarianism.

Carson, like Ehrlich would do later, tapped into Americans’ fears about being merely commodities and intrusion into their lives. She exposed how the destructive and deadly practices of corporations and governments entered into people’s homes, lives, and livelihood, trading comfort for a slow death. She painted pictures of loss, of an imagined world without the sounds of spring, using florid and accusatory language like science fiction authors; “How could intelligent beings seek to control a few unwanted species by a method that contaminated the entire environment and brought the threat of disease and death even to their own kind?”⁶¹ Her best-selling work uniquely displayed the connections between scientific advancement, human health, and environmental degradation, though it also drew criticism for its imagined futures. Carson and Ehrlich were not the first scientists, however, to attempt to bring environmental concerns to the public’s attention.

William Vogt, arguably, laid the groundwork with his work *Road to Survival* and inspired both Carson and Ehrlich.⁶² After World War II, the U.S. government feared that overpopulation, resource exhaustion, and hunger would lead political instability in other

⁵⁹ Rachel Carson, *Silent Spring*, (Boston, Cambridge: Houghton Mifflin Company, The Riverside Press, 1962).

⁶⁰ Carson, *Silent Spring*, 12.

⁶¹ Carson, *Silent Spring*, 8.

⁶² William Vogt, *Road to Survival*, (New York: W. Sloane Associates, 1948).

countries, creating ideal conditions for communist insurrection which threatened American interests.⁶³ According to John Perkin's *Geopolitics and the Green Revolution*, "The American intellectual and political climate from 1945 to 1955 was critically shaped by the development of the cold war, a part of which included a theory that purported to link causally overpopulation, resource exhaustion, hunger, political instability, communist insurrection, and danger to vital American interests."⁶⁴ This led to the sharing of agricultural technologies to increase food production, known as the Green Revolution, which gained a strong foothold in the 1960s. William Vogt, an ornithologist, argued against increased food production and warned of the devastating effects a growing human population would have on the natural world.⁶⁵ He believed "that there was something fundamentally wrong with Western-style consumer societies. People needed to live in smaller, more stable communities, closer to the earth."⁶⁶ Though *Road to Survival* brought science into the hands of the American public and was commercially successful, the public and governments feared famine and the spread of communism more and so the Green Revolution continued.

Following the examples of Vogt, Carson, and Ehrlich, many scientific publications also included social perspectives in their research. The overpopulation hazard captured the attention of biological, physical, and social scientists alike and popular science magazines included articles by philosophers, theologians, and historians alongside these scientists. Such scientists, scholars, and authors, despite criticism of the perception of infallibility of science,

⁶³ John H. Perkins, *Geopolitics and the Green Revolution Wheat, Genes, and the Cold War*, (New York: Oxford University Press, 1997).

⁶⁴ Perkins, *Geopolitics*, 119.

⁶⁵ Charles Mann, *The Wizard and the Prophet: Two Remarkable Scientists and Their Dueling Visions to Shape Tomorrow's World*, (New York: Alfred A. Knopf, 2018).

⁶⁶ Mann, *The Wizard*, 9.

felt it was their duty to make science available for mass consumption.⁶⁷ Scientists trained in a wide variety of disciplines discussed the perceived dangers of overpopulation, bolstering the notion that Americans would feel the effects of overpopulation in most every avenue of life if not addressed.⁶⁸ In 1960, Warren Weaver, former director of the Rockefeller Foundation's Natural Science Division, argued that "it is imperative that the individual citizens of our democracy have an improved understanding of what science is, how it operates, and the circumstances that make it prosper."⁶⁹ People who communicated scientific themes to the public believed difficult and important social and political problems, which in their minds should have concerned every citizen, required scientific solutions.⁷⁰

Science fiction authors and creators also felt the need to inform the public about the perils of overpopulation. Discussing his book, *The Wanting Seed*, Anthony Burgess explained his desire to write about overpopulation,

I'd seen the ghastly results of over-population, and of course, I was living very close to Singapore, which is a little island crammed with humanity of all kinds, and naturally I saw this problem as one that was facing the east, but not yet facing the west. In my little novel I present this theme of over-population as affecting my own country, England. I imagine a future in which the population is so great that people

⁶⁷ Sarah Perrault, *Communicating Popular Science: From Deficit to Democracy*, (Houndmills, Basingstoke, Hampshire; New York, NY: Palgrave Macmillan, 2013), 44. This sense of responsibility influenced scientific writing, however, compelling several scientists to write as if information flowed only one direction and that was towards a population with little to no understanding of science. Perrault explains it as such, "By mid-century... popular science [became] characterized by unidirectional communication and a belief that 'public opinion has nothing to teach the scientists.'"

⁶⁸ Meyers claimed science writers also made assumptions about how the public received information. Scientists assumed that if people did not retain knowledge about certain scientific facts, deemed important or fundamental by scientists, they did not know nor understand science." - Meyers, "Discourse Studies of Scientific Popularization," 273.

⁶⁹ Warren Weaver, Mathematician, director of the Rockefeller Foundation's Natural Science Division (1932–55.)

⁷⁰ Lewenstein, "The Meaning of 'Public Understanding of Science'," 59.

haven't enough to eat and the state steps in and forces people to have fewer and fewer children.⁷¹

Burgess' Malthusian comments revealed his imperialist, even racist, notions about who caused overpopulation—countries of the east and island people, possibly natives. The ideas of lack of resources, deprivation, and totalitarianism also clearly influenced the author, as it did other scifi creators. Many other overpopulation commentators did not offer accounts of their motivations, though the motives often became apparent in their writings and film productions.

Authors of popular science articles chose to include socially conscious language among their scientific observations about the threat of overpopulation, focusing mainly on standards of living, birth control, and the need for more education and research. Unlike the works produced by scientists, speculative fiction expanded upon the disastrous outcomes from the research. These cautionary tales often critiqued government policies, commented on social movements, and exposed the biased desires of their creators. The creators of such dystopias turned to recalcitrant conservatism in the 1960s and 1970s, different from popular science. “Demodystopias” of the 1960s reflected and reinforced the fears conveyed by the American public about worsening standards of living, loss of traditions, and government motivations by painting pictures of future populations with sparkling veneers of efficiency, all while the people struggled from the consequences of overpopulation.

While by no means an all-encompassing or exhaustive list, science fiction generally fits into chronological classifications, exhibiting thematic changes each decade.⁷² Lincoln

⁷¹ Anthony Burgess, 1974, “Anthony Burgess interviewed in Italy in 1974 about *A Clockwork Orange*,” Interview by Un bellissimo messaggio, in person, Italy.

⁷² Lincoln Geraghty, *American Science Fiction Film and Television*, (London, England; New York, NY: Berg, 2009).

Geraghty, professor of film and communication, explained that U.S. science fiction in the 1960s focused primarily on the space race, nuclear war, and a divided country. Some of these themes were also present in demodystopias. According to sociologist Andreu Domingo, science fiction demographic dystopias also followed certain trends based on the decade of production.⁷³ The demodystopias of 1960s featured individuals frightened over the sheer numbers of people and losing themselves within an increasingly impoverished mass, reflecting an American preference for individualism and fears over communistic egalitarianism.⁷⁴

Scifi writers likely feared losing the sense of luxury and achievement of the postwar years, particularly when that loss seemed to come from sharing or competing with an increasingly diverse population. Television and paperback demodystopias of the 1960s embody the discussions about a divided nation and loss of individuality, but also touch on the sexual revolution, gender norms, distrust of the government, religion, and contraceptives. So too, popular science magazines in the 1960s produced articles which largely discussed birth control, education and research, standards of living, and proclaimed overpopulation as the greatest problem facing humanity. None, however, offered a united front on how to address the issue. Division presented a regularly occurring theme in popular science and science fiction, division among countries and classes restricting access to resources and division between governments and the public, generating distrust.

Several popular science article authors also tended to include social warnings amid their research discussions. Science and technology historian Harold Dorn explored forecasts

⁷³ Andreu Domingo, CED Centre d'Estudis Demogràfics (Centre for Demographic Studies), Doctor en Sociologia.

⁷⁴ Domingo, "Demodystopias," 731.

of population growth and their potential implications on the environment and people in this article, while commenting on how government reactions affected those implications for *Science*.⁷⁵ He also acknowledged that carrying capacity was a guess and food scarcity was a result of unequal access to resources, stating, “The present distribution of population increase enhances the existing imbalance between the distribution of the world’s population and the distribution of wealth, available and utilized resources, and the use of nonhuman energy. Probably for the first time in human history there is a universal aspiration for a rapid improvement in the standard of living.”⁷⁶ As a researcher at the National Institute of Health, Dorn included mathematical models and historical trends to predict population growth, but chose to also include social variables in his observations. He claimed, “The U.S. government attempts to restrict production of certain agricultural crops by paying farmers not to grow them. Simultaneously, in Asia and Africa, large numbers of persons are inadequately fed and poorly clothed.”⁷⁷ Several popular science articles chose to speak out about inequality or question governments in similar manners, while the science fiction community took different approaches.

Flashing on to home television screens in 1969 with its telltale brightly colored costumes and dramatic interactions, viewers watched Captain James Kirk and Mr. Spock negotiate with the leadership of an overpopulated planet.⁷⁸ By its third season, audiences expected *Star Trek* episodes to grapple with moral issues and social taboos. “The Mark of

⁷⁵ Harold Dorn, “World Population Growth: An International Dilemma,” *Science* 135, no. 3500 (January 1962) 283-290.

⁷⁶ Dorn, “World Population Growth,” 290.

⁷⁷ Dorn, “World Population Growth,” 284.

⁷⁸ *Star Trek*, “The Mark of Gideon,” Episode 3x16, Directed by Jud Taylor, Written by George F. Slavin and Stanley Adams. (NBC, January 17, 1969).

Gideon” was no exception. Actor Stanley Adams co-wrote *Star Trek’s* “Mark of Gideon” episode. Adams expressed concern about overpopulation and said in an interview he was “in a position to really say something about the overpopulation problem.”⁷⁹ He reportedly discussed the topic with show creator, Gene Roddenberry, after the episode “Trouble with Tribbles,” which showcased Malthusian growth predictions in an alien population.⁸⁰

Aside from the obvious challenge of addressing overpopulation, the crew of the *Enterprise* also contended with restrictive government policies and interfering officials. The episode’s writers did not hide their discontent of government imposition. Spock exclaimed to another crew member, “Diplomats and bureaucrats may function differently, but they achieve exactly the same results.”⁸¹ The frustration with government remained apparent throughout the episode as characters deliberately defied orders and openly challenged government officials, subtly encouraging viewers to do the same when necessary.

Distrust of governing bodies and the fear of government-imposed restrictions on personal freedoms appear in most demodystopias. With Cold War-induced fears about government oppression and the spread of communism, authors and writers viewed the citizens of the United States as particularly receptive to warnings about the potential loss of freedoms. Andreu Domingo argued that the path to totalitarianism occurred naturally in times of scarcity with looming threats of revolt.⁸² The lack of control over runaway population growth caused such poverty and scarcity according to overpopulation dystopias.⁸³

⁷⁹ “Personal appearance: Stanley Adams,” *Starlog*. Episode 003, 29 January 1977, O’Quinn Studios New York.

⁸⁰ Paula Block, *Star Trek: The Original Series 365*, (Abrams Books, 2010).

⁸¹ *Star Trek*, “The Mark of Gideon.”

⁸² Domingo, “Demodystopias,” 731.

⁸³ Domingo, “Demodystopias,” 739.

Published years before *Star Trek* aired, Anthony Burgess' *The Wanting Seed* in 1962 offered readers equally obvious criticisms of government.⁸⁴ From the very first chapter Burgess presented the future U.K. government as cold and indifferent to the plights of people when one of the main characters, Beatrice-Joanna, must hand over the body of her recently deceased young son over to the Ministry of Agriculture to be turned into phosphorus pentoxide. They dismissed her and her feelings of despair over the loss of her only child. The book also presented the government as imprudent and capricious in its efforts to reduce population growth by promoting homosexuality, particularly among high ranking officials and authority figures. The real threat, or the government—closely dictating fertility, jobs, and personal appearance, and invading their privacy—presented itself when readers learned the government spied on Beatrice-Joanna's lover, a government official.

Just as concerning as government callousness, many authors and screenwriters projected sheer increases in population numbers as a grave issue, especially in a global context. For instance, Harold Dorn's article in *Science* proclaimed the effects of the decision to reproduce no longer impacted solely the couple having a child but produced far-reaching consequences for the global population.⁸⁵ Dorn wrote, "A stage has been reached in the demographic development of the world when the rate of human reproduction in any part of the globe may directly or indirectly affect the health and welfare of the rest of the human race. It is in this sense that there is a world population problem."⁸⁶ Similarly, in a *Science News-Letter* article, Ann Ewing presented the situation in more dire and rigid terms. She

⁸⁴ Anthony Burgess, *The Wanting Seed*, (London: Heinemann, 1962).

⁸⁵ Harold Dorn, "World Population Growth: An International Dilemma," *Science* 135, no. 3500 (January 1962) 283-290.

⁸⁶ Dorn, "World Population Growth," 290.

reported, “There are already too many people in the world. The ‘population explosion’ is real and there will be even more tremendous increases in the future.”⁸⁷ Dorn also commented on the unprecedented growth rate describing it as a “spectacular spurt during recent decades in the increase of the world’s population that must be unparalleled during the preceding millennia of human existence. Furthermore, the rate of increase shows no sign of diminishing.”⁸⁸

Some popular science writers presented the numbers as purely mathematical probabilities, removing the human aspect of the equation. One article in *American Scientist* compared growing human populations to those of swarming insects.⁸⁹ “Population Regulation in Insects and Man” asserted that insect swarms and human population booms likely have similar triggers and could therefore be predicted and prevented. The author stated, “it was felt that some understanding might be gained with regard to the regulation of human populations since the type of mortality factors acting at the time of insect population increase can be recognized in man.”⁹⁰ Popular science writers clearly shared a concern over masses of people much like demodystopian fears over getting lost in the swarm.

Science fiction of the 1960s conveyed similar apprehension over the rapidly increasing global population numbers. Scifi creators used their female leads to show readers and viewers what the country would lose should overpopulation continue. Beatrice-Joanna

⁸⁷ Ann Ewing, “World Overpopulation Zooms,” *The Science News-Letter* 82, no. 10 (September 1962), 162.

⁸⁸ Dorn, “World Population Growth,” 283.

⁸⁹ D. G. Harcourt and E. J. Leeroux. “Population Regulation in Insects and Man,” *American Scientist* 55, no. 4 (December 1967) 400-415.

⁹⁰ Harcourt and Leeroux, “Population Regulation,” 401.

was a woman out of time in Anthony Burgess' *The Wanting Seed*.⁹¹ Her curvy body alluded to fecundity, which the future society rejected. Burgess displayed that fear of losing individualism in a mass of people by stressing the loss of femininity in favor of a more androgynous society. The alien from the overpopulated planet Gideon, Odonia, also portrayed loss by explaining in the *Star Trek* episode, "Because there are so many of us. So many. There is no place, no street, no house, no garden, no beach, no mountain that is not filled with people. Each one of us would kill in order to find a place alone to himself. They would willingly die for it, if they could." The scifi creators suggested that such crowded conditions make life not worth living, a theme which reappeared in the years following.

Another theme that reoccurred throughout the twentieth century, was the influence of religion, particularly around contraceptives and abortions. Religion played a role in both *The Wanting Seed* and "The Mark of Gideon," though in different ways. Kirk critiqued the Catholic Church, without directly calling it out, for its opposition to artificial birth control and therefore its contribution to overpopulation and misery. Anthony Burgess acknowledged his worries about overpopulation and Malthusian measures in an interview in 1974 and discussed the influence of his Catholic faith.⁹² He claimed everyone had the right to be born, though not necessarily to live. Popular science articles often refrained from discussing religion directly, though several authors discussed contraceptives. Ann Ewing's *Science News-Letter* article argued that birth control was the only humane solution to combatting overpopulation.⁹³ She stated, "the most effective way to reduce births is a readily available,

⁹¹ Burgess, *The Wanting Seed*, 1962.

⁹² Burgess, "Anthony Burgess interviewed in Italy," 1974.

⁹³ Ann Ewing, "World Overpopulation Zooms," *The Science News-Letter* 82, no. 10 (September 1962), 162-163.

cheap oral contraceptive,” which should be accessible to all because “nuclear bombs may kill but overpopulation can destroy the soul and degrade the dignity of a human being.”⁹⁴

Authors often depicted the need for birth control access as an economic and development priority, rarely about women’s health. While largely excluded from popular science writings in the 1960s, women played prominent a role in scifi pieces.

As the lead women helped enlighten the demodystopian consumers about what was at stake, they also emphasized gender roles. Burgess cast Beatrice-Joanna as jealous and spiteful. Odonia played the damsel in distress role. She conveyed relief at being saved by Captain Kirk and fell in love with him after knowing Kirk for only a few hours. Though, in femininely manipulative fashion, she also ultimately deceived him. Open relationships appear in both demodystopias, though carry different messages. Generally, the productions of the 1960s and 1970s cast futuristic societies as immoral, a backlash to the liberalism and civil rights movements of the time.

Reacting to the sexual revolution, feminism, and gay rights, scifi authors foretold of worlds with not only runaway population growth, but also of societies flouting monogamy and the degradation of the institution of marriage. In Burgess’ imagined world, marriage still existed, but was frowned upon in favor of more open homosexual relationships, while characters engage in extramarital affairs. *The Wanting Seed* used the rise of affairs and homosexuality as a warning of what an overpopulated world could become. *Star Trek’s* characters regularly had affairs, though the show portrayed this behavior as normal for the time. Such affairs, however, still served to reinforce heteronormativity and gender roles. Such gender stereotyping and role reinforcements existed almost solely in scifi during this

⁹⁴ Ewing, “World Overpopulation Zooms,” *The Science News-Letter*, 163.

decade. Though popular science authors addressed sex and gender in later decades, they refrained in the 1960s.

In contrast to scifi, popular science articles emphasized education, environmentalism, and even some concerns about racism that science fiction generally ignored during that time. In 1961, the author of an article in *American Scientist*, Dr. Theodosius Dobzhansky, examined the idea of genetic decay as the primary topic of the piece, but claimed that runaway population growth created more problems than genetics.⁹⁵ He also warned against using genetics to determine quality of humans in overpopulation control efforts, like eugenics of the past, stating, “Human life is sacred; yet the social costs of some genetic variants are so great, and their social contributions are so small, that avoidance of their birth is ethically the most acceptable as well as the wisest solution. This does not necessarily call for enactment of Draconian eugenic laws.”⁹⁶ He then called for more research and more education of the people of their reproductive options, he made his observations and warnings clear, but not dramatic.⁹⁷

While popular science and science fiction garnered success in communicating their different concerns to the American public, the most effective tool in helping overpopulation gain notoriety was Paul Ehrlich. In 1968, Dr. Paul Ehrlich helped thrust the overpopulation movement into the U.S. mainstream with the release of his bestselling book, *The Population*

⁹⁵ Theodosius Dobzhansky, “Man and Natural Selection,” *American Scientist* 49, no. 3 (September 1961): 285-99.

⁹⁶ Dobzhansky, “Man and Natural Selection,” 297.

⁹⁷ In 1963, *Science News-Letter* published two articles also calling for more education and research about overpopulation, desires which scifi works did not reflect. -Barbara Tufty, “Half the World is Hungry,” *The Science News-Letter* 83, no. 24 (1963) 371-372.; “Population Problems Hit with New Grants,” *The Science News-Letter* 84, no. 3 (1963) 43.

Bomb.⁹⁸ Ehrlich renewed Malthusian concerns about global population growth. Paul Ehrlich, a biologist by trade, viewed human overpopulation as a problem that might beset any animal species spreading out to the limits of their environment.

Much like Malthus before him, Ehrlich's science-based ideas spread quickly, gaining popularity, but also faced opposition. He continued to publish several more books about human overpopulation in the following years and appeared before thousands of American viewers on several appearances on the "The Tonight Show Starring Johnny Carson." Such appearances, his multitude of publications, and his prominent bet with economist Julian Simon generated a great deal of attention for the overpopulation movement.⁹⁹ Ehrlich's most famous work, *The Population Bomb*, inspired fear in the American people by painting an apocalyptic future created by uncontrolled human population growth and helped launch a movement. He accomplished this by including more than mathematical models and statistics to bolster his claims; he offered readers future scenarios of an overpopulated world, bridging popular science and science fiction.

Discussions about the dangers of overpopulation also made their way into U.S. pop culture in a multitude of avenues, from cinema to the classroom to cookbooks.¹⁰⁰ The end of the 1950s to the mid-1970s marked a period of distrust of scientific authority.

Simultaneously, the science fiction community began exploring ecology and concern of the future and popular science writers attempted to reinforce the value of science in social

⁹⁸ Paul R. Ehrlich, *The Population Bomb*, (New York: Ballantine Books, 1968).

⁹⁹ Paul Sabin, *The Bet: Paul Ehrlich, Julian Simon, and Our Gamble over Earth's Future*, (New Haven: Yale University Press, 2013).

¹⁰⁰ Ellen Buchman Ewald, *Recipes for a Small Planet: The Art and Science of High Protein Vegetarian Cookery*. (New York: Ballantine Books, 1973). The first sentence on the first page of this cookbook reads, "With every increase in the population the world grows smaller."

debates. “Not only did professional science fiction writers forecast ecological doom; prominent ecologists also fictionalized their own predictions,” according to Olszynko-Gryn and Ellis.¹⁰¹ Both Ehrlich and Rachel Carson offered imagined visions of the future in their best-selling books, much like the dystopian worlds created in science fiction.

Whether influenced by Ehrlich or Carson’s works, popular science articles, or science fiction productions, the American public certainly talked about overpopulation. The public discussed overpopulation in newspapers around the country often. Americans’ generally wrote about overpopulation existing in other countries, where unequal food distribution contributed to the problem. Several writers compared the severity of the overpopulation menace to the threat of nuclear war.¹⁰² They also most often cited desires to maintain their quality of life as the primary motivation for combating overpopulation.¹⁰³ Andree Domingo gauged the success of the infiltration of overpopulation anxieties into popular culture by a distinct measure. He proclaimed, “Proof of the extraordinary influence that the fear of the population explosion had acquired was the publication in *Playboy* in 1968 of Kurt Vonnegut’s short story, ‘Welcome to the Monkey House’.”¹⁰⁴ This story explored an overpopulated world with voluntary euthanasia, fertility control, and the elimination of desire. The overpopulation conversation infiltrated science, entertainment, politics, general household conversations, and even pornography.

Despite such widespread interest, and concern, no country or government provided an effective or all-encompassing solution in the 1960s, and the overpopulation menace

¹⁰¹ Jesse Olszynko-Gryn and Patrick Ellis, “Malthus at the Movies: Science, Cinema, and Activism around Z.P.G. and Soylent Green,” *Journal of Cinema and Media Studies* 58, no. 1 (Fall 2018): 47-69.

¹⁰² “Growth in Population Outpaces Food Gains,” *Tucson Daily Citizen*, January 24, 1967.

¹⁰³ Summerour, “Overpopulation’s Effects Harmful,” 4.

¹⁰⁴ Domingo, “Demodystopias,” 729.

continued to loom over the United States throughout the rest of the century. So too, popular science authors and science fiction producers continued to inject fear into their works, hoping to inspire change decade after decade. These approaches to fear took new shapes in the years following.

The 1970s: Ecology and the Problem of Control

The streets seemed alive with people. People eating, people washing, people sleeping. People visiting, arguing, and screaming. People thrusting their hands through the taxi window, begging. People defecating and urinating. People clinging to buses. People herding animals. People, people, people, people. As we moved slowly through the mob, hand horn squawking, the dust, noise, heat, and cooking fires gave the scene a hellish aspect. Would we ever get to our hotel? All three of us were, frankly, frightened. It seemed that anything could happen—but, of course, nothing did. Old India hands will laugh at our reaction. We were just some overprivileged tourists, unaccustomed to the sights and sounds of India. Perhaps, but since that night I've known the *feel* of overpopulation. -Paul Ehrlich (1968)¹⁰⁵

After working for NASA during the previous decade, James Lovelock introduced the world to the Gaia hypothesis in the 1970s, the same period which ushered in the movement of ecology beyond science, a field which increasingly grasped the attention of the American public.¹⁰⁶ Lovelock suggested Earth adjusts its environment to sustain life in an interconnected balance, unique to the blue planet.¹⁰⁷ Such thinking inspired new ideas about the relationship between humans and nature. The first Earth Day was held in 1970, as was the signing of the National Environmental Policy Act. Much of the American public expressed concern over pollution and environmental degradation during this decade, as well as ongoing concerns about overpopulation.

The decade of the 1970s also began with the establishment of Title X, which prioritized the healthcare and reproductive services of low-income families or uninsured people, under the Family Planning Services and Population Research Act.¹⁰⁸ That same year,

¹⁰⁵ Ehrlich, *Population Bomb*, 1. The 1972 revised edition changed the last sentence to: “Perhaps, but the problems of Delhi and Calcutta are our problems too.”

¹⁰⁶ Stephen B. Scharper, *Redeeming the Time: A Political Theology of the Environment*, (New York: Continuum, 1997).

¹⁰⁷ Scharper, *Redeeming the Time*, 53.

¹⁰⁸ Ellen Wright Clayton and Adrienne Stith Butler, Institute of Medicine, and Board on Children, Youth, Families. *A Review of the HHS Family Planning Program: Mission, Management, and Measurement of Results*, (National Academies Press, 2009), 40.

1970, the TFR in the United States sat around 95:1000, down from the previous decade.¹⁰⁹ Immigration, however, increased to approximately 1.6 percent of the population or 3.3 million foreign-born residents in the United States up from 2.4 million in the 1960s.¹¹⁰ The Housing and Household Economic Statistics Division of the Census Bureau also began collecting data during this period for the number of working age adults living in poverty in the United States, which increased from around 6.5 million in 1970 to almost 8 million by the end of the decade, though remained at around 9 percent of the population.¹¹¹ This decade also marked increased access to birth control and family planning services. In 1973, the Supreme Court ruled in the landmark case of *Roe v. Wade* in favor of extending access to abortions beyond medical necessity.¹¹² Three years later, the Court ruled that women did not need their husband's approval to get an abortion, but also held up a ban on public funding of abortions the next year.¹¹³ By 1978, Title X expanded to emphasize serving teenagers.¹¹⁴

The American public, scientists, and authors began to look internally for the causes of social, political, and environmental problems during the 1970s. More scientists began writing popularized science articles beginning in the 1970s, likely a response to the increasingly declining confidence in the scientific community among the American public.¹¹⁵

Overpopulation seemed less of a distant problem and the impacts of environmental degradation appeared in our own backyard with people moving in from all over the world.

¹⁰⁹ Clayton and Butler, *A Review of the HHS Family Planning Program*, 43.

¹¹⁰ Clayton and Butler, *A Review of the HHS Family Planning Program*, 56.

¹¹¹ Clayton and Butler, *A Review of the HHS Family Planning Program*, 49.

¹¹² Center for Reproductive Law and Policy, NARAL Supreme Court Decisions Concerning Reproductive Rights.

¹¹³ CRR & NARAL.

¹¹⁴ Clayton and Butler, *A Review of the HHS Family Planning Program*, 40.

¹¹⁵ LaFollette, "Science on Television," 191.

Alongside the environmental concerns people addressed in newspaper columns about overpopulation, they also revealed worries about the emerging youth culture in the country, political intervention in population control, homosexuality, urbanization, and overall quality of life. Continuing with the focus on potential effects of overpopulation on the American people from the previous decade, science publications of the 1970s focused heavily on psychology and social science studies of overpopulation and turned their gaze upon domestic issues.

Science fiction of the decade showed even more concern with domestic social issues alongside their exploration of ecological and scientific themes. Overpopulation boomed in science fiction in the 1970s. The demodystopias of the 1970s, novels and film, presented worlds where the people were largely disconnected from nature. The works also scrutinized society's sexual liberation movement and the criminal justice system, while criticizing the government and society's increasing dependence on technology.

While science fiction lamented society's escalating reliance on technology, the scientific community continued their call for more research during the 1970s. *Science News* offered a rather sardonic piece in 1975, "AAAS Meeting: The Quality of Life."¹¹⁶ The article opens with a quote from the American Association for the Advancement of Science's past president, "If our generation survives . . . people will look back at our time and say we were insane."¹¹⁷ It also reported the incoming president of the organization proclaiming the need to address overpopulation as one of the utmost threats to survival of the human race. The article's author pointed out some friction within the group, "other speakers represented a new

¹¹⁶ "AAAS Meeting: The Quality of Life." *Science News* 107, no. 5 (February 1975) 67-69.

¹¹⁷ "AAAS Meeting." 67.

sense of cautiousness. One session focused on the problems of the misuse of scientific data by the uninformed and by outright charlatans.”¹¹⁸ The AAAS meeting attendees called for greater involvement of scientists in public policy making and the need to better understand the desires of the American people regarding population control options through increased research, both opinions generally held by the association at large for several years. *Science News* also reported that the American Psychological Association moved to add a population control division in 1972.¹¹⁹ The article stated, “An APA task force was established to study the possibilities of teaching and training population psychologists and broadening the knowledge of population psychology[...] The goal was to generate new research topics and research models to focus on neglected areas and issues of population that have not been significantly challenged by psychologists.”¹²⁰ Scientists actively sought an increasingly prominent role in overpopulation responses, scientifically and socially.

One science fiction movie of the decade also embraced scientific advancement and study while the rest seemed to rebuff it. Identifying overpopulation as the source of social and environmental distress, *Z.P.G.* brought a ravaged world to the big screen in 1972.¹²¹ *Z.P.G.* director Michael Campus claimed his movie was, “not science fiction, it is science fact” in an interview with *Ecology Today*.¹²² *Z.P.G.*’s future earth deteriorated to a far more dire state than portrayed in the dystopias created in the previous decade. Pollution

¹¹⁸ *Ibid.*

¹¹⁹ “The APA Gets into Population Psychology,” *Science News* 102, no. 12 (September 1972) 182-183.

¹²⁰ “The APA,” 182-133.

¹²¹ *Z.P.G.*, (1972), Film, Directed by M. Campus, Denmark, United States: Sagittarius Productions, Inc.

¹²² Fradley Garner, “The First of January: An Interview by Fradley Garner,” *Ecology Today*, January 11, 1972, 44-46, in Olszynko-Gryn and Ellis, “Malthus at the Movies,” 55.

permanently darkened the skies and clouded the air. Overpopulation caused an environmental catastrophe beyond repair. Campus further claimed to have sought advice from scientists, rather than historians or political scientists, about the most plausible course of action governments would take if the world became overpopulated.¹²³ Even this film, however, conveyed how technology could dominate people's lives, with abortion machines in home bathrooms, shopping screens in living rooms, and robotic dolls replacing children.

People in the United States went to the cinema later that decade to see *Logan's Run*. This 1976 film portrayed a utopia-like civilization with dazzling attire and special effects. Though, the opening scene of the movie read, "Sometime in the 23rd century... the survivors of war, overpopulation and pollution are living in a great domed city, sealed away from the forgotten world outside. Here, in an ecologically balanced world, mankind lives only for pleasure, freed by the servo-mechanisms which provide everything." Only the youth occupied the dome, as all inhabitants participated in a culling, run by a computer, which killed everyone at the age of 30. The people in the dome depended on technology to supply their every need, as did those in *The World Inside*.¹²⁴

Of the many publications in the decade, 1971 offered two unique demodystopias, Silverberg's *The World Inside* and Ursula Le Guin's *The Lathe of Heaven*. Though analysis of the story tells otherwise, Silverberg's novel presented itself as a utopian novel where people of the future successfully overcame the issues of overpopulation and a multitude of other sins. Robert Silverberg described the creation of his demodystopia and playing on people's fears in an interview in 2015. He said, "Everybody dreaded the coming Calcutta-

¹²³ Olszynko-Gryn and Ellis, "Malthus at the Movies," 55.

¹²⁴ Robert Silverberg, *The World Inside*, 1st Ed, (Garden City, N.Y.: Doubleday Science Fiction, 1971).

fication of the world. (It didn't quite work out that way, at least not in the First World.) I said, instead of writing an anti-population-explosion tract, I will depict a happily overpopulated world, and from the inside to let the reader see what it's like to live there.”¹²⁵ His publisher purportedly inquired about Silverberg’s mental health after reading the manuscript.¹²⁶

Residing in mile high towers, Urban Monads, with hundreds of floors and thousands of residents, people of the future lived out their entire existences inside with machines supplying their every need in Robert Silverberg’s *The World Inside*. His novel offered an ironically pleasant overpopulated future. This vertical world emerged because of resource depletion and overpopulation, but with people living on top of each other instead of across the land, the earth could hold billions more. The government, therefore, supported and demanded pronatalist attitudes and policies. Residents had to dismiss any notions of privacy or ownership, married and reproduced early, and stayed inside, reflecting fears of authoritarianism with the ongoing Cold War, especially with national ambivalence towards the potential of a communist Vietnam. Such restrictions and dependence on science and technology undermined individual freedom in these science fiction works.

The Lathe of Heaven contained many of the same components of other science fiction during the time but was unique because Le Guin was one of the very few popular female sci-fi authors.¹²⁷ Ursula Le Guin offered a dystopian novel that stood apart, not only because of the author, but also her approach in discussing overpopulation.¹²⁸ The novel portrayed a dismal

¹²⁵ Scott Timberg, “Important Robert Silverberg Novel, Back in Print,” io9. *Gizmodo*, December 16, 2015.

¹²⁶ Scott Timberg, “Robert Silverberg, Science Fiction Elder Statesman,” *Los Angeles Times*, April 21, 2009.

¹²⁷ Le Guin, Ursula K. *The Lathe of Heaven*. New York: Avon Science Fiction, 1973.

¹²⁸ In an interview discussing the film adaptation of *The Lathe of Heaven*, Le Guin did not acknowledge overpopulation as a concern she was trying to address but said the ideas for the story instead

future with pollution, runaway greenhouse effect, and overcrowding, like the other demodystopias of the decade, but Le Guin seemed to suggest other societal issues, like classism, racism, and abuse of power, caused the problems of the future more than overpopulation. Le Guin chose to include characters who escaped out of their overcrowded city of the future and retreated into nature. Relief was only temporary, however, as those in power seemed determined to destabilize society. She also used a different approach to technology's influence in her 1971 novel, less about dependence and more as a weapon. Her writing exposed the abuse of technology by those in power, a concern shared by many overpopulation commentators. Both novels presented societies separated from nature and addressed issues of class, power dynamics, and a dependence on technology.

These ideas of abuse of power, selfish motivations, and questioning morality continued throughout the 1970s. *American Scientist* published two articles on 1971 morals, hope, and free-will.¹²⁹ An opinion piece entitled "Scientists and their Dreams", written by renowned engineer Vannevar Bush, questioned humans' ability to choose their own path forward or if we are all predetermined to perform certain actions because of evolution and physics. Bush said, "There is evidence that some kindred inborn sanity exists in man. If so, evolution put it there so that he would not, in the early days of the race, rush into such extremity of overpopulation that he would be overwhelmed by some other species with more

simply flowed through her onto paper. -Bill Moyers, "Interview with Ursula K. Le Guin about The Lathe of Heaven," DVD, Directed by Fred Barzyk and David Loxton, United States, 2000. I

¹²⁹ Vannevar Bush, "Views: Scientists and their Dreams," *American Scientist* 59, no. 6 (November 1971) 674-677.; Dillon Ripley, "Views: Conservation Comes of Age," *American Scientist* 59, no. 5 (September 1971) 529-531.

restraint.”¹³⁰ The author concluded that humans do indeed have free-will and the capacity to choose and direct their future.

The morality of population control, natural resource exploitation, and government intervention seemed to motivate several popular science authors. “Views: Conservation Comes of Age” examined the environmental ethic that developed in the United States during the first half of the century and science’s reluctance to change with it. The author claimed, “Most scientists, being inclined to deplore speech or the printed work lacking proof, tend to resent the doomsday school and to deprecate their colleagues who speak in apocalyptic terms[...] Yet sooner or later the shrill cries of yesteryear become the accepted dogma of the rationalists.”¹³¹ He also suggested that our moral compass will shift in the future and that “morality will increasingly lose its traditional religious foundation, and questions of the sanctity of human life will have to be judged on a long-term strategic basis, rather than an immediate, short-term or tactical basis.”¹³² Popular science authors believed these realizations and others, such as admitting to physical limits and overpopulation, would emerge as society’s ideals shifted away from religion to ones focused on the common good.

What was not clear was who should direct the moral shifts and make decisions for the people. Alongside fears about government control and social degradation, science fiction creators also included in their works their anxieties about other systematic control arising because of overpopulation. Authors and writers targeted religious institutions, corporations, and science and technology organizations as groups likely to abuse power, assume control, or fail in their missions in an overpopulated world. All set in the future, these overpopulation-

¹³⁰ Bush, “Views: Scientists,” 676.

¹³¹ Ripley, “Views: Conservation,” 531.

¹³² *Ibid.*

themed dystopias indicated that all the problems in the future began in the past. Unlike the more pointed works of the 1960s, the 1970s offered readers and viewers several carefully crafted cautionary tales about the ineptitude and deceit of government and other powerful institutions.

Restricted from going outside and told stories of the brutal people who tend the farmland, Silverberg entrapped his characters in a utopian vision of a world filled with tens of billions of inhabitants living in vertical structures. The governing body in *The World Inside* created a social structure based on celebrating fecundity and removing any forms of agitation. It becomes clear after the introduction of several characters' stories that the world was indeed not a utopia. Ruling class members were privileged to luxuries not available to everyone, including better food and more private space, reinforcing the notion that the ideal lifestyle depended on consumption. People in the monads had the illusion of freedom but lived in a communal society with the impression of having rid society of class, but subtly reinforced castes.

Outside *Logan's Run's* unique culture in the dome, Washington D.C. and the rest of the country laid in ruin. This movie depicted the fragility of our government and their inability to prevent what was to come, much like the efforts of the government and police force in the 1973 film, *Soylent Green*.¹³³ *Soylent Green* also painted a bleak picture of a dystopian future in the United States, placed in New York 2020, and home to 40 million people. People lived and slept on the streets, in hallways, and on stairwells. Production and innovation stalled, limited by the limitless growth. Most the people were jobless, had never

¹³³ *Soylent Green*, (1973), Film, Directed by Richard Fleischer, United States: Warner Brothers Pictures.

seen trees or nature, and ate modified food products. In the world of *Logan's Run*, however, technology and computers restricted the freedoms of the populace.

With severe overcrowding and few resources, even law enforcement broke the rules to get access to necessities. *Soylent Green's* main character, NYPD detective Robert Thorn, took his job seriously and condemned the practices of a corrupt police force, though also participated in questionable behavior, like stealing from a crime scene and sleeping with a suspect. Rather than the totalitarian enforcement of other dystopias, this world lacked any real governance. The government seemed unable to address the issues of runaway population growth and providing for so many inhabitants.

The government of *Z.P.G.* was not incompetent, but rather dictatorial. As such, the movie opened with the foreboding declaration against births for thirty years. The announcement stated the deciding government body openly rejected many of the suggestions for curbing population growth, with no explanation as to why. This set the stage for a life determined completely by government regulation; fertility, jobs, transportation, living quarters, and so on. This authoritarian government remained unseen throughout the film, dictating life as a pervasive, ominous, and unassailable force. The only avenue for the main characters Russ and Carol McNeil, who illegally conceive, to retaliate and gain freedom was escape.

Religious institutions and corporations did not escape the scrutiny of science fiction creators. *The World Inside* subtly critiqued the Catholic Church for its opposition to artificial birth control and therefore its contribution to overpopulation. *Soylent Green* also revealed the ineffectiveness of the Church, showing a priest attempting to aid the masses of people, but unable to contribute in any meaningful way. Corporations played a more sinister role in

science fiction. Often, corporations used their power to exploit the people and retain control. Most disturbing, working with the government to hide the fact that the oceans are dying and cannot provide enough protein to feed people, a corporation in *Soylent Green* turned the bodies of deceased persons into their most popular food item. People of *The World Inside*, who died or were sentenced to death, went down the waste chutes which created the heat for the urban monads, no longer honoring the dead with traditional mourning ceremonies, but using them to keep the urban machines working.

Film creators condemned the consumeristic practices in the United States and the overzealous introduction of technology into every facet of our lives. Consumerism, consumption, and the power of corporations contribute to the problems of overpopulation in these narratives, while also gaining more power and influence after the impacts of overpopulation come to fruition. Author Harry Harrison commented on *Soylent Green*, based on his book *Make Room! Make Room!*, stating, “The film, like the book, shows what the world will be like if we continue in our insane manner to pollute and overpopulate Spaceship Earth.”¹³⁴ The world in *Logan’s Run* resembles that of a shopping mall, attempting to show how negligent attitudes about excessive consumerism and runaway population growth lead to similar results.

Alongside these other social concerns, sheer numbers and increasing population sizes remained a primary focus in several popular science articles and demodystopias. *Science News’* article about the American Psychological Association’s move to add a population control division explained the division would focus on minority reactions to population

¹³⁴ Harry Harrison, “A Cannibalised Novel Becomes *Soylent Green*,” in *Omni’s Screen Flights - Screen Fantasies: The Future According to SF Cinema*, edited by Danny Peary (New York: Doubleday, 1984).

control, social development of children, mental and emotional effects of overcrowding, social consequences of abortion, and public reactions to contraceptive use.¹³⁵ The *American Scientist* article, “Views: Scientists and their Dreams,” posited that humans evolved with a natural inclination to keep population numbers within resource limits, much like other species.¹³⁶ The editorial drew attention, however, to the lack of natural safeguards against weapons or pollution. The author claimed, despite this, humans will change to better adapt and survive. He explained some scientists placed their hope in more than just numbers. Others conveyed less optimism.

Paul Ehrlich produced an article with fellow scientist John Holdren, linking their predictions about rapid population growth to human concerns for wellbeing.¹³⁷ Entitled “Human Population and the Global Environment,” the article directly connected environmental issues to human life by acknowledging the detrimental practices humans engaged in, which harmed biodiversity, and by classifying environmental problems according to the nature of their damage to humans. These classifications included direct and indirect effects, like lead poisoning and property erosion, respectively. The tone of this article, however, was not sympathetic to the plights of humanity. The authors used language which suggested the problems, overpopulation and environmental damage, were painfully obvious.

Along with spreading warnings about overpopulation, popular science writers and sci-fi creators additionally focused on sex, gender, and reproduction that writers of the

¹³⁵ “The APA Gets into Population Psychology,” *Science News* 102, no. 12 (September 1972) 182-183.

¹³⁶ Vannevar Bush, “Views: Scientists and their Dreams,” *American Scientist* 59, no. 6 (November 1971) 674-677.

¹³⁷ John Holdren and Paul Ehrlich, “Human Population and the Global Environment,” *American Scientist* 62, no. 3 (May 1974) 282-292.

previous decade did not display. Contributing science author James Moriarty launched the 1970s discussing why people choose to reproduce.¹³⁸ His *Science News* article explained that many couples saw having children as the natural or only path forward with no concept or little understanding of other options, especially for poor and working-class couples. Quoting a psychologist from the University of Michigan, the article states, “Population control is one of the most critical issues of our time. We should not only study the mechanical means whereby people have children, but we should also come to understand ‘What is the meaning of children?’”¹³⁹ The author cited a general lack of knowledge about contraceptive options and further delved into motivations behind procreating, which included mostly self-centered reasons, which reportedly could have negative effects on the children down the road. A *Scientific American* piece explored similar motivations for having children and also means for prevention. William Langer offered a history of population control measures, including celibacy and infanticide counts, in Europe during 1750-1850 in *Scientific American* to give context to population control methods of the day.¹⁴⁰

Science News produced two more articles in 1972 about overpopulation. An article entitled “750 Million Chinese Might be Wrong” examined the motivation behind China’s population control policies, encouraging couples to space out children and have no more than two, which it claimed were less about Malthusian fears and more about maintaining an effective work force.¹⁴¹ The articles also noted that the Chinese used nearly every form of

¹³⁸ James Moriarty, “The Psychology of Human Reproduction,” *Science News* 98, no. 7 (August 1970) 148-149.

¹³⁹ Moriarty, “The Psychology of Human,” 148.

¹⁴⁰ William Langer, “Checks on Population Growth: 1750-1850.” *Scientific American* 226, no. 2 (February 1972) 92-99.

¹⁴¹ “750 Million Chinese Might be Wrong,” *Science News* 102, no. 4 (July 1972) 51-52.

available birth control, had universal healthcare, and were largely celibate until marriage, which happened later in life. The country's mother and infant mortality rates also matched those of the United States at the time.

The vertical society of *The World Inside* promoted marriage, beginning at a young age, but also encouraged free-ranging relationships with all other inhabitants, discounting old taboos, including homosexuality, orgies, and incest. Characters expressed discomfort with this sexual freedom, much like those from some works in the 1960s, reacting to the counterculture and sexual liberation movement. There was this notion that if the world should become overpopulated, traditional norms will break down, including the sanctity of heteronormative marriage. Likewise, many of the female characters in *The World Inside* exhibited jealous tendencies as Silverberg reinforced gender roles. His women remained at home caring for children, held no leadership positions, and received the male night-walkers who roamed the buildings at night looking for random sexual encounters. Men in the book exhibited more aggressive behaviors, were ambitious, and were more likely to turn "flippo" and reject the system.

The movies, like the other scifi works of the 1970s, also reinforced gender roles and stereotypes. Women in *Soylent Green* came with expensive apartments as "furniture." The female lead, Shirl, was furniture in an expensive apartment that was also a crime scene. She was one of many housemates in the apartment complex who were kept and discarded on the whims of the tenants. Her character appeared helpless and fell quickly for Detective Thorn, as a damsel in distress. Similarly, Jessica in *Logan's Run*, at first expressed disinterest in Logan's advances. She appeared to be a strong advocate of a resistance group opposed to the culling, but quickly embodied the damsel in distress trope when she and Logan escaped and

she confronted the difficulties of surviving in nature. Both Shirl and Jessica told the male leads that they just want to be with the men, filling the domestic role of women, sentiments which Thorn and Logan not-so-subtly evade. *Z.P.G.* explicitly derided open relationships and reinforced gender norms. The two main characters and their neighbors held jobs at a museum as actors exhibiting scripted, trite versions of the polygamous lifestyles of swinger couples in the 1960s. Carol became so consumed with maternal instinct, she deceived her husband and broke the law to conceive.

A concern with the breakdown of traditional notions of marriage and relationships also continued in these two films. Much like *The World Inside*, *Soylent Green* portrayed casual sexual encounters as a natural consequence of overpopulation, not disturbing to future populations because overpopulation made preserving conventional relationships impossible. Likewise, characters in *Logan's Run* participated in the "circuit," touring the rooms of other residents for informal sexual encounters. The movie also conveyed this attitude towards sexual freedom and promiscuity as the probable result of the youth culture of the 1970s, as well as overpopulation.

Ursula Le Guin addressed mindfully choosing the sex of the main character in *The Lathe of Heaven* during an interview. She said she avoided having a female lead because she did not want the power dynamic with the antagonist to be about sex. Authors and producers often portrayed men as the villains and the saviors in the science fiction works. The portrayals of these gender roles resided in the background of the science fiction productions, products of the creators' own perceptions and biases and not necessarily crucial to the warnings about overpopulation.

With the help of successful science fiction productions, discussions in the sciences, and the continued determination of one butterfly professor, overpopulation took center stage among some of the greatest concerns occupying Americans in the 1970s. Paul Ehrlich continued to ride the wave of success from *The Population Bomb*. He first appeared on the *Johnny Carson Show* in 1970. Ehrlich starred as a guest of Johnny Carson almost every year during the 1970s, reaching thousands with each appearance. Ehrlich was part of a group dubbed “visible scientists” by Rae Goodell, who said the 1970s became an ideal time for science communication because of dramatic changes in media and tumultuous politics.¹⁴² Ehrlich, like other visible scientists, took advantage of the new forms of media to influence policymakers as well as the public.¹⁴³ He also made appearances on other television programs, founded the organization Zero Population Growth, which in turn encouraged science fiction productions to include themes about overpopulation, published several more books, and wrote popular science articles.¹⁴⁴ He connected with society, worked to garner their trust, and offered them a story to go along with the scientific research.

Experience with particular problems appears to be largely influential in the American public’s perception of overpopulation by the end of the twentieth century. Meyers said, “People assess messages about risk in terms of such factors as their trust in the person or institution telling them, its past record, their memory of other, similar issues, and their feelings about how this issue fits with their own experience.”¹⁴⁵ In fact, few Americans

¹⁴² Rae Goodell, “The Visible Scientists,” *Sciences* 17, no. 1 (January 1977): 6-9.

¹⁴³ Goodell, “The Visible Scientists,” 6.

¹⁴⁴ Andreu Domingo, “‘Demodystopias’: Prospects of Demographic Hell,” *Population and Development Review* 34, no. 4 (December 2008): 729.

¹⁴⁵ Meyers, “Discourse Studies,” 273.

actually “experienced” overpopulation, but many trusted Paul Ehrlich. Here, Paul Ehrlich filled in the experience gap with his storytelling,

I have understood the population explosion intellectually for a long time. I came to understand it emotionally one stinking hot night in Delhi a couple of years ago. My wife and daughter and I were returning to our hotel in an ancient taxi. The seats were hopping with fleas. The only functional gear was third. As we crawled through the city, we entered a crowded slum area. The temperature was well over 100, and the air was a haze of dust and smoke.¹⁴⁶

Ehrlich manufactured a scenario of discomfort. Americans could understand heat and filth, though most attempted to actively avoid such irritations. He spoke to their underlying desire to be clean and comfortable, insinuating that overpopulation makes such luxuries unobtainable.

Paul Ehrlich went a step further than his fellow scientists. He shaped a scene understandable and relatable to most people. Americans comprehended overcrowding and fears generated by being around so many destitute people. Alongside his projections of population doubling times and demographic statistics, Ehrlich offered a harrowing, albeit fictional, projection of an overpopulated world and the potential consequences for the people in the United States in his *Population Bomb*. He described nuclear attack stimulated by global warming and food shortages, a deadly pandemic that spreads too quickly for containment because of the masses of people, and developed nations’ lack of intervention in population growth leads to 70 million people dying annually.

Viewed as scientific predictions, Ehrlich was not alone in his doomsday discourse, but his scenarios could be considered the brashest. Other predictions from different sources

¹⁴⁶ Ehrlich, *Population Bomb*, 1.

varied from offering modest population forecasts to fantastic, fictionalized apocalyptic disasters.¹⁴⁷ As one author put it, “Paul Ehrlich probably contributed as much to the decline of interest in the population explosion as he contributed to consciousness raising. Both his scenarios and proposed solutions to the problem sounded, in the end, too much like science fiction.”¹⁴⁸ Such fictionalization of science likely aided in undermining the trust of the scientific community’s warnings against overpopulation.

Fears about overpopulation abounded in the 1970s. News broadcasts brought the Vietnam War right into people’s living rooms, the public celebrated Earth Day, and social movements of the 1960s continued. Overpopulation was becoming a regular topic of conversation, the beginnings of what popular science and science fiction producers wanted, but the conversations about overpopulation also began changing.

¹⁴⁷ Michael Smith, “The Short Life of a Dark Prophecy: the Rise and Fall of the Population Bomb Crisis, 1965-75,” in *Fear Itself: Enemies Real & Imagined in American Culture*, by Nancy Lusignan Schultz, 331-354 (West Lafayette, Ind.: Purdue University Press, 1999), 341.

¹⁴⁸ Smith, “The Short Life of a Dark Prophecy,” 343.

The 1980s & 1990s: Reduction, Revival, Reality

Our job is to bring about a worldwide demographic transition and flatten out that exponential curve—by eliminating grinding poverty, making safe and effective birth control methods widely available, and extending real political power (executive, legislative, judicial, military, and in institutions influencing public opinion) to women. If we fail, some other process, less under our control, will do it for us. -Carl Sagan (1997)¹⁴⁹

While TFR continued to drop in the 1980s and 1990s, new fears, like immigration, poverty, and AIDS seemed to dominate the American consciousness. The TFR fell to near 79:1000 in 1980, to approximately 70:1000 in 1985, and saw a slight bump in the 1990s before dropping below 70:1000 in 2000.¹⁵⁰ The number of adults aged 18 to 44 living in poverty in the United States rose to around 8.5 million by the end of the 1980s, launched to almost 13.5 million in 1985, and finally settled near 12 million by the end of the decade, remaining relatively the same through the end of the century.¹⁵¹ Immigration increased during this time with 6.8 million foreign-born, working-aged adults living in the United States and reached roughly 11.2 million persons by the end of the 1990s.

The AIDS epidemic seized the attention of the American public during the 1980s, reminding people of the very real threat of nature in the form of a pandemic. The Henry J. Kaiser Family Foundation started tracking news cases, death, and number of those living with the ailment in the United States in 1985. In 1987, the Foundation reported around 50,000 people living with AIDS and 20,000 deaths that year. Counts of those living with AIDS continued to increase, though estimated new cases and deaths started on downward

¹⁴⁹ Carl Sagan, “Billions and Billions: Thoughts on Life and Death at the Brink of the Millennium,” *Scientific American* 277, no. 1 (July 1997): 99.

¹⁵⁰ Ellen Wright Clayton and Adrienne Stith Butler, Institute of Medicine, and Board on Children, Youth, Families, *A Review of the HHS Family Planning Program: Mission, Management, and Measurement of Results*, (National Academies Press, 2009), 43.

¹⁵¹ Clayton and Butler, *A Review of the HHS Family Planning Program*, 49.

trends in the second half of the 1990s.¹⁵² As the demographics of the nation continued to change, national policy also began to shift on several reproductive rights issues.

The 1980s ushered in an era of restricting and reversing a number of the reproductive health measures of the 1960s and 1970s. Conservative politics explicitly attacked reproductive care measures. In 1980, the U.S. Supreme Court upheld the Hyde Amendment prohibiting federal Medicaid funding of abortion services outside of saving the mother's life.¹⁵³ That same year, Title X introduced a sliding fee scale.¹⁵⁴ Ronald Reagan's administration implemented a "gag rule" in 1987 prohibiting Title X funded clinics from offering counseling about abortion.¹⁵⁵ The next year, the FDA approved the cervical cap.¹⁵⁶ The Supreme Court ruled to uphold a law banning the use of public employees or public facilities for abortions at the conclusion of the decade.¹⁵⁷ Some restrictions continued into the next decade, though the FDA approved the use of the contraceptive implant in 1990 and use of the contraceptive injectable in 1992.¹⁵⁸ Also in 1992, the U.S. Supreme Court refused to overturn *Roe v. Wade* in *Planned Parenthood v. Casey*, but upheld other abortion restrictions, invalidating only spousal notification.¹⁵⁹

Policy shifted once again under Bill Clinton, allowing for greater access to contraceptives. In 1993 the Clinton administration suspended Reagan's gag rule and, in 1994,

¹⁵² Clayton and Butler, *A Review of the HHS Family Planning Program*, 37.

¹⁵³ Center for Reproductive Law and Policy, NARAL Supreme Court Decisions Concerning Reproductive Rights.

¹⁵⁴ Clayton and Butler, *A Review of the HHS Family Planning Program*, 40.

¹⁵⁵ *Ibid.*

¹⁵⁶ *Ibid.*

¹⁵⁷ CRR & NARAL.

¹⁵⁸ Clayton and Butler, *A Review of the HHS Family Planning Program*, 41.

¹⁵⁹ CRR & NARAL.

Congress enacted the Freedom of Access to Clinic Entrances Act which protected those seeking or providing reproductive health services at clinics, while protecting religious freedoms at places of worship for those who opposed the use of contraceptives or abortion.¹⁶⁰ That same year, the Supreme Court affirmed the National Organization for Women's right to make use of federal anti-racketeering laws against anti-abortion terrorists.¹⁶¹ In 1997, the FDA approved the first emergency contraceptive and the Supreme Court extended the right to use contraceptives to teenagers.¹⁶² Policy favored reproductive health access by the end of the century, though a win for overpopulation activists, such success detracted from the urgent warnings science writers and science fictions creators continued to produce.

With the political and social shift towards conservatism due to growing populations in southern states, economic losses in the manufacturing industry, and increases in poverty and joblessness in the 1980s, overpopulation also lost a great deal of attention during the end of the twentieth century. Though, the AIDS epidemic prompted some to see the outbreak as a global response to overpopulation, "It looks like pretty soon we will not have to worry about overpopulation anymore. Like it or not, we see that AIDS alone has many victims already all over the world."¹⁶³ Such remarks often received heavy public criticism. Overpopulation once again gained some attention with the sociopolitical shift favoring reproductive health access in the 1990s, but nowhere near the status of the 1960s and 1970s. As global pandemics and conservative political shifts reduced attention of overpopulation, people began to see it as an unavoidable reality and some as a trope.

¹⁶⁰ CRR & NARAL.

¹⁶¹ *Ibid.*

¹⁶² Clayton and Butler, *A Review of the HHS Family Planning Program*, 41.

¹⁶³ Lukwik Kozlowski, "AIDS Ends One Problem," *Arkansas Gazette* (Little Rock, AR), July 5, 1991.

While social and political attention drifted in the 1980s, scientists continued their research into the causes and effects of overpopulation. Despite an apparent popular science “boom” in the early 1980s, magazines published fewer articles about overpopulation and rarely used the word during the decade.¹⁶⁴ *Scientific American* became the predominant voice of overpopulation articles by the end of the century. These few publications brought into focus overpopulation's connection to societal issues or the cyclic effect, proposed the impracticality of using strictly technology and numbers as viable solutions, criticized political interference, and explored the need for economic and sustainable development. The science authors of the 1990s responded to the social conservatism of the previous decade by providing a platform for support of women's rights and family planning options. Unique to popular science, like the decades before, several articles again called for more education about overpopulation in classrooms and more research, topics not often mentioned in scifi.¹⁶⁵

Demographic science fiction novels of the end of the twentieth century mirrored many of the science community's attitudes towards overpopulation. Scifi creators embraced neoliberalism in the 1980s and 1990s, shifting sides of the political spectrum from the decades before but still opposing or questioning government motives and methods of enforcement. Science fiction of the 1980s generally encompassed critiques of big business and embraced diversity, consumerism, and the spectacles and wonders of utopias.¹⁶⁶ The

¹⁶⁴ Lewenstein states, “15 magazines, 18 newspaper sections, and 17 television shows devoted to popular science first appeared between 1977 and 1984. Although similar publications and television shows did exist before 1977, this seemed an unprecedented number of new productions, especially in the newspaper and television fields.” (29) -Bruce V. Lewenstein, “Was There Really a Popular Science “Boom?,” *Science, Technology, & Human Values* 12, no. 2 (April 1987): 29-41.

¹⁶⁵ Leopold E. Klopfer, Rodger Bybee, Norris Harms, Barbara Ward, and Robert Yager, “Science, Society, and Science Education,” *Science Education* 64, no. 3 (Summer 1980): 377-95.

¹⁶⁶ Lincoln Geraghty, *American Science Fiction Film and Television* (London, England; New York, NY: Berg, 2009).

final decade of the century offered science fiction emphasizing globalization, culture wars, gender, embodiment, and distrust of the system.¹⁶⁷ Demographic novels of this period were strictly dystopian and also explored the feel of overpopulation and overcrowding, criticism of religious institutions, and a revival of sexual liberation attitudes.

The popular science articles also connected overpopulation to poverty and other environmental issues and expressed further concern over discussing women's rights and silencing poor, immigration, abortion, and racism in overpopulation conversations.¹⁶⁸ This showed a greater sophistication than earlier commentary, which had treated overpopulation as a distinct issue. By the time the twentieth century closed, scientists saw it connected with myriad issues that plagued the globe. Writing for *Scientific American*, Marguerite Holloway said overpopulation remained one of the most pressing global issues.¹⁶⁹ Holloway acknowledged the deep divisions among how to best address overpopulation and used the article as a call to action, promoting hope for the future and asking for improved quality of life, environmental strain prevention, and economic development.¹⁷⁰ She also dedicated a large portion of the article to women. Holloway explored different sides of the overpopulation debate, explaining that nongovernmental organizations at a forum in Rio “viewed efforts to control population as an infringement on women's rights, as a way to avoid eradicating poverty in developing countries and as a means of silencing Third World

¹⁶⁷ Geraghty, *American Science Fiction Film and Television*.

¹⁶⁸ Robert White, “The Great Climate Debate,” *Scientific American* 263, no. 1 (1990) 36-45.

¹⁶⁹ Marguerite Holloway, “Population Pressure: The Road from Rio is Paved with Factions,” *Scientific American* 267, no. 3 (September 1992) 32-41.

¹⁷⁰ “At times it seems there are as many opinions concerning what—if anything—to do about population growth as there are people on the planet. Bitter schisms often divide groups arguing for women's rights, family planning and health, environmental protection, reduced consumption of natural resources, economic development and population control.”- Holloway, “Population Pressure,” 32.

poor,” while other third-world feminists acknowledged “that the services often improve women's economic status and health-particularly when they are integrated with family health clinics and education.”¹⁷¹ In 1993, Holloway continued the conversation with a profile of Special Adviser to the UN Secretary General Nafis Sadik in *Scientific American*. They discussed women's rights, gender roles, reproductive health, abortion, and the need for more open discussions about these topics which had been nearly impossible to have due to the influence of the Church in years past.¹⁷² While many scientific articles conceded the need to assist women in reproductive health matters, among many other issues, few offered any suggestions.¹⁷³

Likewise, gender equality made appearances in the demodystopian novels of the 1980s and 1990s, though not as a central concern. These works appeared less concerned with maintaining the traditional norms of monogamous relationships; however, like previous decades, the authors of *Nature's End* and *Blue Mars* chose to openly discuss sex and gender. Like the demodystopias before it, James W. Kunetka and Whitley Strieber's 1986 novel, *Nature's End*, took readers to a horrific future in 2025 where actions of the past caused environmental degradation beyond repair.¹⁷⁴ *Blue Mars*, the final book in Kim Stanley Robinson's *Mars* trilogy, brought readers to the fourth planet in the solar system, where part

¹⁷¹ Holloway, “Population Pressure,” 32 & 38.

¹⁷² Sadik further explained that the influence of the Church and more conservative governments restricted such conversations, anywhere from international government meetings to individual medical appointments. -Marguerite Holloway, “Profile: Nafis Sadik: A Powerful Voice for Women,” *Scientific American* 268, no. 6 (June 1993) 36, 40.

¹⁷³ William Nordhaus, “Expert Opinion on Climatic Change,” *American Scientist* 82, no. 1 (January 1994) 45-51.; Gerard Piel, “AIDS and Population ‘Control’,” *Scientific American* 270, no. 2 (February 1994) 124.; Partha Dasgupta, “Population, Poverty and the Local Environment,” *Scientific American* 272, no. 2 (February 1995) 40-45.

¹⁷⁴ Whitley Strieber and James W. Kunetka, *Nature's End: The Consequences of the Twentieth Century*, (New York, NY: Warner Books, 1986).

of humanity resides.¹⁷⁵ These dystopias, perhaps in an attempt to elevate women to a place of power and strength, wrote female characters as more antagonistic than men.

Unlike the works of the past, the authors made a point of having characters attempt to discard tropes about sex and gender, though they did not fully succeed in eliminating conversations about gender stereotypes from their writings. In a scene commenting on demographics in an area, *Nature's End* included this sentiment, "It is a cliché to state that women are the aggressive sex, men the passive. But nowhere is this fact more clearly demonstrated than in the sexual makeup of this population. Women tend to break their ties with the past more easily, and to seek new alternatives when old solutions no longer work."¹⁷⁶ Characters in *Blue Mars* also discussed gender and consider male and female relationships. One male character, Zo, observed an interaction between a female and male colleague. Zo commented on Jackie's assertion of power over their male colleague and, instead of noting her strength, willpower, and leadership capabilities, connected this behavior with overcompensation for patriarchal attitudes of the past. He speculated,

The female hold on male sexual pleasure, on life itself—these were realities for patriarchs as much as anyone, despite all their repression, their fear of the female which had been expressed in so many ways, purdah, clitoridectomy, foot binding and so on—ugly stuff indeed, a desperate ruthless last-ditch defense, successful for a time, certainly—but now blown away without a trace. Now the poor fellows had to fend for themselves, and it was hard.¹⁷⁷

Some of the residual sexism and gender stereotyping of early decades persisted in 1980s and 1990s dystopias, while popular science works attempted to promote gender equality and

¹⁷⁵ Kim Stanley Robinson, *Blue Mars*, (New York: Bantam Books, 1996).

¹⁷⁶ Whitley and Kunetka, *Nature's End*, 275.

¹⁷⁷ Robinson, *Blue Mars*, 412.

women's rights. The demodystopias, in many ways, clung to conservative ideals throughout the decades as popular science writers took more progressive stances, particularly by the end of the century.

Unease over growing numbers of people also continued to appear in popular science and science fiction, though many science writers attempted to dismiss classist and racist associations with crowded areas. *Scientific American* published two articles in 1989 focusing on social issues in relation to overpopulation. "The Growing Human Population" focused on how distribution of resources, poverty, and inequality aid rapid population growth. The author pointed out population growth often outpaces economic growth, "Extreme crowding in Mexico City, the largest city in the world, forces millions of poor people to live in slums such as this one, where sewage disposal, adequate water supplies and other services do not exist."¹⁷⁸ The article also explored the racialized aspects of addressing population growth, stating, "Stimulating growth in the more developed countries, however, would set a bad example and, worse, would seem to carry a racist message: there are too many of you and not enough of us."¹⁷⁹ *Scientific American's* second publication explained the cyclic effect of overpopulation.¹⁸⁰ Overpopulation caused and was evidence of poverty, but overpopulation also forced poorer groups into marginal lands causing greater environmental damage, which reinforced the economic and ecological deprivation. The author called on readers to not blame the poor for overpopulation.

¹⁷⁸ Nathan Keyfitz, "The Growing Human Population," *Scientific American* 261, no. 3 (September 1989)119.

¹⁷⁹ Keyfitz, "The Growing Human," 126.

¹⁸⁰ Jim MacNeill, "Strategies for Sustainable Economic Development," *Scientific American* 261, no. 3 (September 1989) 154-165.

Some popular science authors focused more on the numbers and environmental issues rather than social connections. A 1990 article connected population growth to climate warming.¹⁸¹ The author claimed, “those interested in arresting population growth, especially in the Third World, point out that the climate-warming problem is probably not solvable as long as the number of human beings continues to rise. After all, it is people who consume natural resources and energy and who farm the land. Without population control, prospects for stabilizing the climate and arresting the deterioration of the habitability of the planet are abysmal.”¹⁸² Environmentalism still ranked high for many scientists alongside concerns for societal issues. In 1984, *Scientific American* offered an article examining population growth among rural Third World countries and specifically, China.¹⁸³ The author concluded peasant economies encouraged growth and attempting to improve standards of living for so many people strained natural resources.

Environmental concerns exacerbated by human population growth also emerged in science fiction. In the book, *Nature's End*, Kunetka and Strieber brought readers into stifling scenes, not only pressed upon with air pollution, but population. A character described the living situations as such, “This was the reality, though: crowded, cluttered, everyone on top of everyone else. ...I can understand why children brought up in cruisers are the heroes of the toughest dreams, always imaged as brutal and cruel. How can they enculturate out of an environment that's so cut off? These kids are as ill served as some miserable twentieth-century cultural isolates, slinking out of their ghetto with knives in their hands.”¹⁸⁴ Here we

¹⁸¹ Robert White, “The Great Climate Debate,” *Scientific American* 263, no. 1 (July 1990) 36-45.

¹⁸² White, “The Great Climate,” 41.

¹⁸³ Nathan Keyfitz, “The Population of China,” *Scientific American* 250, no. 2 (February 1984) 38-47.

¹⁸⁴ Kunetka and Strieber, *Nature's End*, 348.

see a subtle racist and classist comparison being made between the overpopulated and polluted future and what society depicts as ghettos today. Science fiction of the 1980s and 1990s retained some of that fear from the 1960s of getting lost in the masses of people.

Few could afford the luxury of being alone in these demodystopias. Suicide and death awaited many of the characters as casualties of overpopulation, a punishment for rejecting the system, or the only refuge away from all of the people. From the extraterrestrial planets in *Star Trek* and *Blue Mars* to the urban settings of *The Wanting Seed* and *Soylent Green* to the enclosed dwellings of *The World Inside* and *Logan's Run*, characters detested their overcrowded worlds, where innovation stalled and one could seldom be alone.

Other entities besides the crowds of people followed characters. In many demodystopias the government remained a constant presence, so too were characters dogged by war or conflict. Characters rarely escaped the omnipresent governments, reflecting the lingering fears over authoritarianism and communism. Such is the reality in *Nature's End*. The authors made it obvious from the start of the novel that the government was not to be trusted,

Our intention was to ruin one of the greatest and most terrible political figures in human history. To be frank, we were foolish enough to take on Gupta Singh. We haven't destroyed him at all. Very much the contrary, in the past six months Depopulationist Manifesto has been adopted by eight new countries and is under consideration right now by the United States Congress. And we are desperate.¹⁸⁵

The story transitioned from the short introduction and plea to a background report of government faults. Officials failed to prevent and correct an environmental catastrophe killing thousands in overcrowded, future Denver, Colorado. Weather conditions caused the

¹⁸⁵ Whitley and Kunetka, *Nature's End*, 1.

extreme pollution to settle in the city, literally choking the life from its residents. One of the main characters recalled losing his son in this catastrophe, which led to the fight against the authoritarian regime. Singh's Depopulationist Manifesto demanded all countries participate in a draft of the entire population wherein everyone will consume an oral dose, of which one third of the doses will be lethal. Strieber and Kuntka evoked fear over the possibilities of government-imposed population controls with no room for autonomy, much like *The Wanting Seed* and *Z.P.G.*

Near the end of the century, this subtle government criticism continued. In the 1996 novel, *Blue Mars*, after successfully terraforming the planet and colonizing, an oligarchical system evolved with a bureaucratic class. Robinson alluded to the fragility of government with the failure of leadership on Earth resulting in overpopulation, flooding, and a mass exodus to Mars, where the leadership must address a refugee crisis and navigate a war between factions fighting over the future of Mars. Robinson took readers away from Earth to terraformed Mars, but the problems of overpopulation followed. Faced with a global flood, people attempted to flee from overpopulated Earth to the new green and blue Mars, forcing the Martian inhabitants to choose between a population boom in their paradise or starting an interplanetary war, evoking fears over the realities of immigration in the United States.

Popular science authors also sought to bring the realities of government interference and intercommunity conflict to the American people. An article in *Science News* reviewed the legal changes to foreign aid by the United States and labeled them as a political message to China.¹⁸⁶ The government proposed restricting funding to the United Nations Population Fund (UNFPA) in 1985, because of China's coercive population control policies. The author

¹⁸⁶ J. Raloff, "Family Planning: U.S. Policy Changing?," *Science News* 128, no. 4 (1985) 55.

recalled, “Rep. Olympia Snowe (R Maine) criticized the suggestion that all of UNFPA's work in 114 other countries be jeopardized just to make a point to China. Roughly one-third of the agency's budget now goes for programs on maternal and child health, many of them in Africa.”¹⁸⁷ The article reported that several politicians saw this move as simply a means to curb funding to abortion services, infringing on the reproductive rights of women in other countries.

Popular science authors exposed discord in several avenues. In 1992, the author of “Responding to Global Change: Report on the Sigma Xi International Forum” expressed concern over the lack of change in messaging about overpopulation over past decades and conflict among interested parties about how to address overpopulation.¹⁸⁸ The article reported, “The world is not at a crisis stage, but the mere recognition of global problems is not enough. These problems are in urgent need of attention, before they progress beyond our control. However, it seems possible to shift the globe's temporal trajectory from the unpalatable future of swamped overpopulation, stark poverty and environmental ruin, to one of an equitable society. To do so will require decades of effort.”¹⁸⁹ Popular science authors understood that there was no quick, easy fix to overpopulation, a realization that was settling among the American people as well.

Perhaps as a response to the dwindling political support of overpopulation measures, scientists published few articles about the once prominent menace in the 1980s. The articles that did appear expressed more liberal views on placing blame for overcrowding and

¹⁸⁷ Raloff, “Family Planning,” 55.

¹⁸⁸ “Responding to Global Change: Report on the Sigma Xi International Forum,” *American Scientist* 80, no. 2 (1992): 205-208.

¹⁸⁹ “Responding to Global Change,” 206.

resource depletion and called for more countermeasures. The science authors of the 1990s reacted to the conservative attitudes of the prior decade with greater calls for equality, women's rights, and family planning options. Like the decades before, science writers seemed to understand the potential effect of their writings on the people most affected by overpopulation.

Without the restrictions of representing academic or research institutions, science fiction works more openly criticized institutions they believed contributed to the problem of overpopulation. In *Blue Mars*, the author suggested the influence of religion contributed to the conflict among groups, used by the people to bolster their fanatical claims. Likewise, the protagonist in *Nature's End*, Singh, employed his interpretation of religion to validate his actions and discredit his opponents. After threatening physical violence, he says to one such adversary, "Your mind may not have understood that you came to me for enlightenment. Your mind thought: I am going to convict this great dictator, this evil genius. Well, I say that your soul has a different reason for coming to me. Your soul thirsts for knowledge of the sacred, and because it senses that I possess such knowledge, it seeks me out."¹⁹⁰ Sci-fi creators throughout the decades indicated that the fragility of the Church, religion's use of circular logic, and the hierarchical structures of religious institutions made religion a prime tool of the corrupt and those seeking power in overpopulated futures.

Though less concerned with preserving traditional lifestyles and standards of living of the past, science fiction writers of the 1980s and 1990s still attempted to instill fear in their readers. Kim Stanley Robinson, author of *Blue Mars*, discussed his concerns about our future in an interview with an astrobiologist. Robinson posited, "Our intelligence has also led to

¹⁹⁰ Whitley and Kunetka, *Nature's End*, 142.

unprecedented problems as our planet reaches its carrying capacity. Is intelligence adaptive enough to adjust to the calamities of its own success?”¹⁹¹ *Nature’s End, Blue Mars*, and popular science articles served as warnings of government and institutional corruption, war, and the power of technology and corporations, but also of the potentially devastating effects of overpopulation.

The end of the century brought with it the end of the Cold War, benefits of the reach of the Green Revolution, the implementation of China’s one-child policy, the spread of a deadly pandemic in the form of AIDS, drastic political shifts with policy changes, and globalization—communication and trade on a massive scale. Fears about overpopulation changed with the dramatically changing landscape. While still a concern for many, conversations about overpopulation appeared less frequently and with less anxiety.

¹⁹¹ David Grinspoon, “An Astrobiologist Asks a Sci-fi Novelist How to Survive the Anthropocene: Kim Stanley Robinson Imagines Our Future,” *Nautilus*, 15: July 31, 2014.

Conclusion

In the event that I am reincarnated, I would like to return as a deadly virus, to contribute something to solving overpopulation. -Prince Philip, Duke of Edinburgh (1988)¹⁹²

Overpopulation caught the attention of scientists, popular science authors, and science fiction creators alike in the second half of the twentieth century. Overpopulation seemed to embody the disaster that would finally bring about the end of the world as they knew it. What was at stake varied between the groups, but each focused on standard of living, quality of life, gender roles, reproduction, or access to a healthy natural world. Science writers and science fiction creators worried that the political and social spheres did not effectively understand the devastating potential of overpopulation.

They chose to incite fear, hoping to encourage action, in different ways. Popular science authors reported the reality of the threat of overpopulation but chose their words about how to address the issue carefully, likely understanding the potential consequences of their suggestions. Science fiction writers, authors, and directors took a different approach. Their works appear to be a great deal less concerned with how the imagery might affect policy, indeed often openly criticizing the government and alternative lifestyles. They used ideas about overpopulation from the scientific community and ran with them, creating disturbing dystopian visions of overpopulated futures. A 1997 study found that high school students developed their opinions about scientific topics with information they received primarily through television, followed by books and magazines, and then school.¹⁹³

¹⁹² Prince Philip, "His Royal Virus," *Deutsche Presse Agentur*, August 1988.

¹⁹³ M.V. Rajeev Gowda, Jeffrey C. Fox, and Robin D. Magelky, "Students' Understanding of Climate Change: Insights for Scientists and Educators," *Bulletin of the American Meteorological Society* 78, no. 10 (October 1997): 2232-2240.

The messages about overpopulation appeared to reach the American public. Gallup polls conducted in 1963, 1971, and 1999 measured concern about overpopulation among the U.S. public.¹⁹⁴ In an article explaining the results, writer Mark Gillespie says the 1963 poll showed that 68 percent of the population knew about the overpopulation problem and, in 1971, 46 percent of respondents said U.S. population growth was a major problem. The poll conducted at the end of the century indicated Americans held more concern about population growth abroad. As of 1999, only 18 percent of Americans thought overpopulation equated to a major concern at the time, though 59 percent of respondents thought it was likely to become a major problem in the future.

The American public showed concern that their time of postwar affluence was threatened by the atomic bomb, environmental degradation, and a population bomb. People connected overpopulation to a multitude of anxieties: job insecurity, loss of environmental biodiversity, the spread of communism and authoritarianism, visibility of homosexuality, and religious causes. Several newspaper articles quoted authors and interviewees as saying, “overpopulation is the greatest threat.”¹⁹⁵ Others, positioning overpopulation in less dire terms, indicated they “worried” about overpopulation. They expressed concern over shifts in attention away from maternal health, the effects of unplanned pregnancies on children, the youth antisex movement, political opinions, the decisions to start families, pollution, natural resource availability, and immigration increases, all connected to overpopulation.¹⁹⁶ One

¹⁹⁴ Mark Gillespie, “Concern over Population Growth among Americans Less Prevalent Now than in Past,” *The Gallup Poll Monthly*, no. 409 (October 1999): 41.

¹⁹⁵ “Eulogy of Man,” *San Francisco Chronicle*, June 13, 1965.; “Birth Rate, Fads Linked,” *San Diego Union*, December 27, 1965.; “Panorama,” *Plain Dealer* (Cleveland, OH), November 20, 1984.

¹⁹⁶ Mary Strassmeyer, “For Planned Parenthood, a Productive Three Years,” *Plain Dealer* (Cleveland, OH), April 11, 1967.; C.A. Grinnell, “Gloomy,” *Oregonian Sunday* (Portland, OR), October 26, 1969.; Merla Zellerbach, “Make Lasagna, Not Love!,” *San Francisco Chronicle*, February 26, 1970.; “Frank Ivancie: Where Does He Stand?,” *Oregonian Sunday* (Portland, OR), August 17, 1975.; “Why Couples Remain Childless,”

reporter wrote, “All agree on the problem, if not the solution.”¹⁹⁷ This simple remark managed to capture the essence of overpopulation debate for all parties involved.

Disagreement seemed resolved to deter progress on curbing the population explosion. Not everyone agreed that overpopulation posed a threat or even existed. Those who believed in the overpopulation menace, could not agree on how to address it. There was no unified path forward. Americans, clear from several newspaper articles discussing the country’s policies, did not want to implement the same population control tactics as communist China, but neither did most Americans want to share or give up any resources afforded to them by a capitalist system. Any measure to end the threat of overpopulation seemed too extreme; policies either controlled and dehumanized women’s bodies or allowed for the destruction of the earth. Failure seemed unavoidable with either controlling reproduction or not acting. The scale of the problem of overpopulation also felt daunting. The American public felt largely separated from most of the negative effects of overpopulation compared to those in developing countries. Many within the U.S. public eventually saw overpopulation as a sort of trope.

With the contradicting narratives, waffling policies, and insurmountable challenges surrounding the overpopulation debate, Americans shifted overpopulation away from the realm of looming menace to a comical anecdote. Newspaper contributors used the phrase to deride others or belittle a situation. In 1970, warning against youth’s behaviors and attitudes one Wauwatosa, Wisconsin, resident said, “I wouldn’t want to wish this on our country but

Richmond Times Dispatch, July 11, 1982.; Karel Holloway, “‘Resourceful Earth’ Analyzes Trends, Paints Rosy Picture of Future,” *Dallas Morning News*, November 22, 1984.; John Vinson, “Open Immigration Dooms America.” *Detroit News*, April 29, 1997.

¹⁹⁷ Zellerbach, “Make Lasagna,” 41.

we need something to wake us up. We don't have to worry about overpopulation or running out of natural resources as we probably won't be around anyway. We are killing ourselves every minute that we allow this country to go into the hands of the Communists.”¹⁹⁸ Another contributor in 1972 trivialized overpopulation as part of a religious message, “Let's keep God's love in our hearts, do kind things for others. Above all let's have a perfect love of and trust in God and we needn't worry about overpopulation or anything else.”¹⁹⁹ Writers in the 1970s through the 1990s said Americans would not need to “worry about overpopulation” because of poor driving, low event participation, accidents, tourism, and persecution by religious zealots.²⁰⁰

The U.S. public may have been fascinated by overpopulation in the end of the twentieth century, but, despite the best efforts of the scientific and science fiction communities, governments and societies did not move to solve the problem on a large scale. The fascination with overpopulation, however, continued into the twenty-first century. After 2000, several popular films and documentaries hit screens depicting overpopulated worlds, *Idiocracy*, *No Vacancy*, *Critical Mass*, *Population Boom*, *The Thinning*, *What Happened to Monday*, *Downsizing*, *Avengers: Infinity War*, and many others.²⁰¹ The scientific community also continued to publish innumerable articles and books on the subject.

¹⁹⁸ S., “Wrong Way,” *Milwaukee Sentinel*, September 2, 1970.

¹⁹⁹ R.F.K., “Classroom Prayer,” *Springfield Union*, November 25, 1972.

²⁰⁰ “Opinion,” *San Antonio Light*, April 29, 1973.; Karen Monson, “Small Crowd, Big Treat,” *Chicago Daily News*, July 1, 1976.; M.K.N., “Let the Drivers Miss the Trees,” *Omaha World-Herald*, March 29, 1977.; “Lottery Changes Lives,” *Oregonian* (Portland, OR), August 5, 1986.; Thomas Meyers, “Debating Homosexuality on the Comics Pages,” *Post and Courier* (Charleston, SC), April 13, 1993.

²⁰¹ *No Vacancy*, (2005), Film, Directed by Michael Tobias. United States: Iron Image.; *Idiocracy* (2006), Film, Directed by Mike Judge. United States: Twentieth Century Fox.; *Critical Mass* (2012), Film, Directed by Mike Freedman. United Kingdom.; *Population Boom* (2013), Film, Directed by Werner Boote. Austria, United States: Nikolaus Geyrhalter Filmproduktion.; *The Thinning* (2016), Film, Directed by Michael Gallagher. United States: Legendary Digital Media.; *What Happened to Monday* (2017), Film, Directed by Tommy Wirkola. United Kingdom, France, Belgium, United States: Vendome Pictures.; *Downsizing* (2017),

Despite continued support from the scientific community and commentary from science fiction, most people still cannot decide if overpopulation is a pressing issue or even real. Much like today's climate change debates, some governments, societies, and individuals took steps to divert catastrophe, but most of the world still debates the limits of the problem. People today have even more ways to engage with the debates over population growth, though popular science and science fiction remain relevant. Science fiction in particular seems to resonate with the public and influence their opinions in unique ways. One researcher said this is because "good science fiction stories do not violate scientific principles, but rely on them to guide thought experiments through to possible consequence."²⁰²

People read and watch scifi not only for pleasure, but also because these scifi productions explore scientific concepts and questions with creativity and caution. It helps prepare the public for conversations about scientific topics and for living with scientific and technological advancements; "in many cases individuals most comfortable with the flood of new technologies and scientific discoveries and most able to see past the novelty to the potential for good or ill, have been prepared by their choice of literature. We are living in a world that seems science fictional, and science fiction readers have the advantage of knowing the terrain."²⁰³

The world holds approximately 7.8 billion people in 2020. Concerns about overpopulation are unlikely to abate in coming years. I chose to explore a gap in the cultural

Film, Directed by Alexander Payne. Norway, United States: Paramount Pictures.; *Avengers: Infinity War* (2018). Film, Directed by Anthony Russo. United States: Marvel Studios.

²⁰² Julie E. Czerneda, "Science Fiction & Scientific Literacy: Incorporating Science Fiction Reading in the Science Classroom," *The Science Teacher* 73, no. 2 (February 2006): 41.

²⁰³ Czerneda, "Science Fiction & Science," 39.

history and literature surrounding overpopulation to uncover how the American public consumed, interpreted, and used rhetoric surrounding overpopulation. Investigating how overpopulation became a focal point for social fears and how the public echoed concerns presented in science fiction, in particular, offers context to the ongoing conversations today and provides a better understanding of what most effectively motivated concerns and fears in the past that continue today.

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