Political Climates: Proxy, Population, and Global Heating

THOMAS PATRICK PRINGLE
Assistant Professor, University of Southern California

ABSTRACT

As climates cannot be perceived, they demand mediation. Media histories show how the global climate's numerical abstractions become a set of images, which can be arbitrary and politically motivated. To account for how certain images come to stand in for the global climate, this article proposes a media historiographical method that moves between the history of ecological ideas and corresponding practices of mediation. To illustrate the method, this study compiles a media history of the U.S. political context in which population growth became a proxy for global heating. This proxy relationship shaped environmentalist media, including nontheatrical film, Hollywood fiction productions, right-wing advertising campaigns, and popular documentaries. Such representations utilize predictions of the future of the earth's population as stand-ins for carbon dioxide, interpreted in terms of per person emissions. At stake are questions regarding the media historiographical narration of climate change: How and why do *specific* images persist as descriptions of global heating? This article argues in favor of a politicized methodology that accounts for the media history of the warming present. Confronting this specific xenophobic genealogy is critical to identifying obstinate, pervasive, and strangely axiomatic equations between population and global heating persistent in recent climate change media.

INTRODUCTION: PROXIES IN ENVIRONMENTAL MEDIA HISTORIOGRAPHY

Scholars in media studies have drawn critical attention to how the knowledge produced by climate science engenders media representational problems. Wendy Hui Kyong Chun looks to how climate science relies on the collection of historical proxy indicators—material samples including ice cores and tree rings but also written archival records—to reconstruct something that cannot be empirically known as it cannot be experienced and documented: the earth's past climates.[1] As Chun writes, "[b]ecause human records of climate indicators are fairly recent, we need proxies, such as tree rings and ice samples, to measure temperature not only before human records but also before humans existed."[2] Proxy is a term that describes climate data's representational structure, as proxies stand in for past climatic conditions without being, in themselves, evidence of a climate. The space between one tree's rings, indicating its growth during a single year, may instead correlate to the amount of carbon dioxide lodged in an ice core, giving analogical and multifaceted evidence of what the climate was like in a given place at a given time.[3] Only by compiling enough proxies from disparate locations can climate science gain the epistemological foothold required to understand how the observable and documented *recent* past differs from a historical record of what cannot be

observed (Figure 1). This historical foundation and baseline, as famously illustrated by Michael Mann's 1999 "Hockey Stick" graph, allows predictions for how the climate will change in the future.
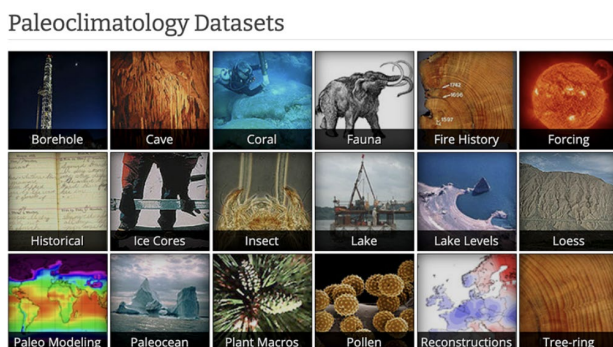
Figure 1. Historical Climate Proxy Indicators, NOAA, Climate.gov.

The visual culture of climate change is likewise populated by proxies: media objects discursively conditioned to stand in for something that cannot be directly observed but must be made meaningfully consonant with a scientific, numerical abstraction.[4] This is a postmodern media practice emergent from postmodern science, privileging correlation above classic understandings of causation, and replete with its own distinct set of potentials and challenges.[5] Chun identifies images of starving polar bears as exemplary. Such images may compel audiences because of their emotional charge.[6] But as these images cannot materially corroborate a *changing climate*—instead audiovisual representations of emaciated bears speak on behalf of how global warming reduces a region's ice over time—the images are open to recontextualization within countervailing regimes of signification, such as denial. Through contextual cues like captions, editing, or narration, the actual image of a starved polar bear *must be made meaningful* within climate change discourse to either signify global heating, to deny that heating, or otherwise. If climate change is a discourse, its visual culture mediates global warming in relation to proximal fields of knowledge, whether polar bear endangerment or, in this article's primary example, demographics. The denotation of an image cannot index climate change defined as a long-term shift in weather patterns caused by increases in atmospheric carbon dioxide concentration, but it can point toward, and put into relation, other phenomena. Thus, images of global warming are also proxies, signifiers *functionally* dependent on *how* they stand in for climate change. No image on its own offers inscriptive evidence of changes in planetary atmospheric chemistry, but many implicate correlated phenomena as though caused by climate. W*hy* do certain visual signifiers correlate global warming to *something different* than climate change? *How* did specific images come to speak for the material relationship between the burning of fossil fuels and concentrations of carbon dioxide in the atmosphere?

If "proxy" describes both how historic material indicators reconstruct an unknown, because unknowable, climatic past *and* how visual culture disseminates the abstraction of climate change knowledge through representations of something unrepresentable, then "climate proxy" names the *semiotic function* of standing in and speaking for an obscurity. Common to both efforts is portraiture, because the unknowable past and the irrepresentability of atmospheric chemical change need to be crafted and framed for *context of reception*.[7] A tree ring can only stand in for a climate if it joins other tree rings (and ice cores, etc.) for purpose of interpretation in the present. An image

of an endangered polar bear can only speak for climate change if its representation is tailored to a scientific discourse for the purpose of present edification. A media history of global warming needs to account for this two-fold semiotic structure: climate proxies both speak for an obscure cause *and* portray that cause as evidence.

Climate proxies as media pose semiotic and historiographical questions. Consider how human authored archives, say weather observations on a 19th century trading vessel, become reinterpreted as evidence of climatic change.[8] According to present need, these logs join other proxies that document the same geography and period to better understand relationships between climate today and climate two hundred years ago. How does a weather log mediate a climate in a manner analytically comparable to an ice core or tree ring? All three are historical indices united in their compilation by a *context of reception;* the interpretive act of compilation also ascertains the evidence they present. If proxies are media (and media proxies), their indexical status is key to how they become historical subjects. Viewing these mediators from Mary Ann Doane's argument about photographic indexicality, an ice core or tree ring "designates something without describing it": carbon dioxide concentration appears in trapped gas or the space between tree rings, but its materiality doesn't self-narrate as climate data because it must be included in an archive to generate legibility.[9] Like a fingerprint, proxies are inscribed by the world as their cause. However, since any "index is evacuated of content," these materials only perform their *indexical function* as climate proxies because of deixis: an ice core or tree ring indicates a temporal arrangement between the present of archival interpretation and the past.[10] This *function* also defines the duration signified by a given sample, as a tree ring or weather log spans time. Inscription corroborates historical reality while deixis locates the index in relation to a contingent epistemological context of reception. Indexicality is not self-evident but depends on both the material trace of reality and historically grounded practices of interpretation. An index may appear to privilege inscription above deixis or vice versa, but it is their mutual constitution that enables comprehension of an evidentiary object's existential tether to historical reality. A ship's log's status as a climate proxy helps clarify as, while a written record of a single day may conventionally symbolize weather, an archived compilation of entries, interpreted alongside other proxies, indexically point to climate because a multitude of records indicates an average that is dependent upon meteorological patterns in a region over time.

Climate proxies are not simply material traces of past conditions but shifting signifiers that depend on a historically contingent system of reasoning—climate science—to organize and base knowledge *now* in relation to *then* and *tomorrow*. Thus, a climate proxy "can only achieve its referent, in relation to a specific and unique situation of discourse, the here and now of speech."[11] In the present, a single historical proxy is only meaningful alongside other historical indicators that structure comprehension of how today's concentration of atmospheric carbon dioxide differs from the past, which forms the basis of understanding the future of climate change. Climate proxies serve as corroborative indices for something they can't directly depict in representational isolation. They are fingerprints in a database. Because they are collectively deictic in arranging the past in relation to present and future, but also inscriptive, they animate an enduring problematic of media historiography identified by Lisa Gitelman. Any instance of media indexicality "was caused in the moment of the past that it represents."[12] Media as historical subjects serve as past material events in relation to the present *and* as portraits or evidence of that past: "inscriptions attest to the moments of their own inscription in the past. [. . .] they instantiate the history that produced them."[13] For this reason, compiling a genealogy of episodes when climate is spoken for and presented as

evidence produces a *media historiography of global heating*: a method attuned to the changing social contexts in which climate data is interpreted and climate change knowledge is thus based. This method attends to the historical conditions of *how* and *when* data become appreciable as global heating. The inclusion of data within, or exclusion of data from, climate change as a discursive archive directs critical attention toward how the knowledge politics of global warming *have a media history*. Predictive epistemology depends on how the discourse of climate change refines the experience of weather; changes in these perceptions—i.e., the historically different political formulations that assert and figure population growth as a stand in for atmospheric carbon dioxide concentration—are critically problematized by a *media historiography of global heating*.

To illustrate this method, the following historical analysis compiles how population growth became a climate proxy prevalent in U.S. media discourse. Assembling images generated from numerical abstraction and disseminated over time shows that this particular climate portraiture stands in for a metonymic causal chain that is social and racially motivated. This media-historical scaffolding provides a critical narrative for the present, problematizing the axiomatic equation of global heating and population growth.
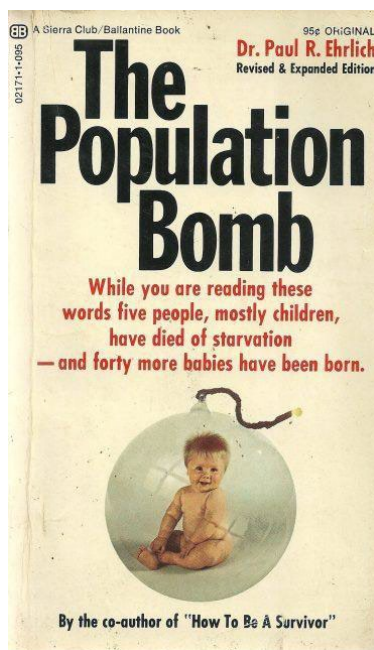
Figure 2. **The cover design of the 1971 edition of Paul Ehrlich's** **The Population Bomb.** *Image author unknown, credit to Ballantine Books, a division of Random House.*

IMPACT = POPULATION X AFFLUENCE X TECHNOLOGY

American entomologist and Stanford ecology professor, Paul Ehrlich, published *The Population Bomb* in 1968 and the book remains one of the most influential and controversial environmental documents of the twentieth century. In this publication, financed by the Sierra Club, Ehrlich calculated that population growth, the production rate of agriculture at the time, and predicted energy use through the 1970s and 1980s would lead to what he called "the problem" of

overpopulation.[14] This prediction stressed that increased population could reduce the availability of natural resources to the point of violent societal breakdown. He argued that states and economies could not meet their growing populations' demands for sustenance and that the consequence would be famine on a global scale. Here, demographic concerns about rapid growth that began in the 1950s during the baby boom took hold in environmentalist political circles.

The book was popular, selling more than three million copies in the first decade and translated into several languages.[15] The cover of the 1971 reprinting provides a succinct illustration of the temporality of the book's alarmism (Figure 2). A white, blonde child sits inside an amalgam of a crystal ball and a cherry bomb with a lit fuse, indicating the child as both a prophesized future and ticking detonation device. The subtitle reads: "While you are reading these words five people, mostly children, have died of starvation—and forty more babies have been born." In Ehrlich's rhetoric, the crisis was playing out in the alleged real-time of mass mediation with children dying as one reads the cover, but it's the projected unborn children that constitute the titular "bomb."

Jesse Olszynko-Gryn and Patrick Ellis have evaluated the impact this book had in Hollywood, turning critical attention toward how the major concerns of the environmental movement also included efforts to use film and mass culture to hype population growth as an ecological issue.[16] In 1968, Ehrlich cofounded a lobbying group in Palo Alto called Z.P.G., short for Zero Population Growth, to function as a media wing for the idea. An appearance in 1970 by Ehrlich on Johnny Carson's *Tonight Show* skyrocketed the group's enrollment. Olszynko-Gryn and Ellis record how Z.P.G. was featured as a *LIFE* magazine cover story in 1970 and that by the next year, Z.P.G. had 35,000 members as well as 400 local and state chapters, mostly in the Northeast and countercultural California. The organization protested and popularized slogans, including "Stop Heir Pollution" and "Make Love, Not Babies," through newsletters and letter-writing campaigns.[17] Their efforts inspired critical science fiction film productions, like the Danish-American production *Z.P.G.* (1972) and Charlton Heston's conservative passion project *Soylent Green* (1973).[18]

Figure 3. **Population Ecology *(1964), Stanley Croner and Isidore Mankofsky
for Encyclopedia Britannica Film Studios.***

These communication efforts were primed by a decade of non-fiction television broadcasts and documentaries linking population to reproductive health. Manon Parry has shown that these non-fiction media had a robust "diffusion model of influence" through the circulation networks of family planning institutions like Planned Parenthood.[19] *Population Ecology* (1964), in one instance, was produced in Hollywood by Stanley Croner and Isidore Mankofsky for Encyclopedia Britannica Films in collaboration with ecologist Ralph Buchsbaum and geochemist Harrison Brown.[20] It visually analogized insect and mouse ecology to human communities before contrasting rates of demographic change between different human populations.[21] Illustrating this ideation, the film negatively compares growth rates for the entire African continent, Mexico, and India to those in the U.S (Figure 3). Such media publicly argued that underdevelopment was environmentally deterministic, and thus famine, disease, and war are the human ecological result of when poor countries hit their "limiting factors of the environment, either natural or manmade."
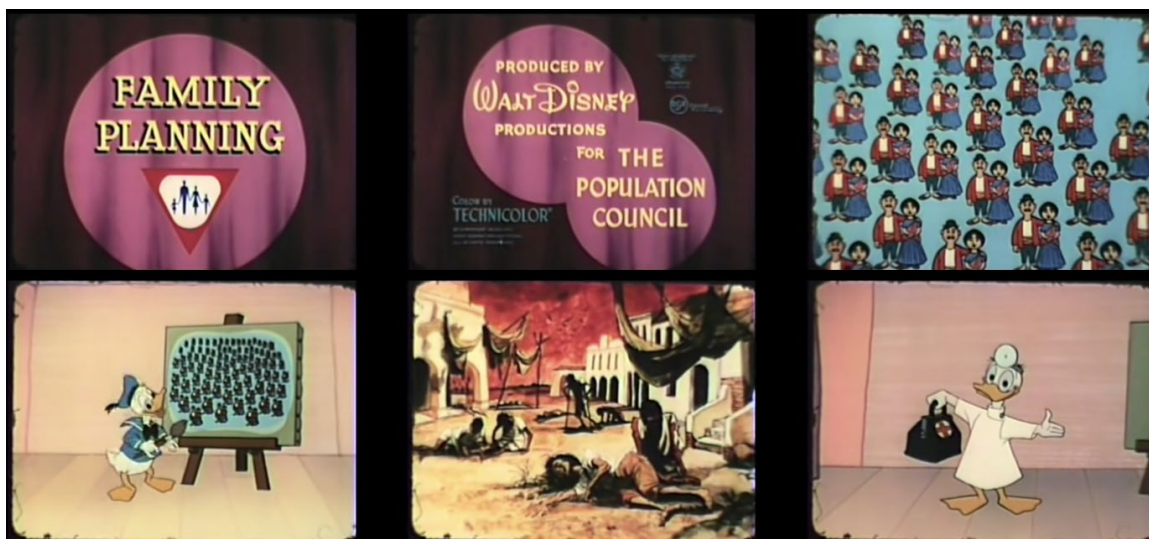
Figure 4. **Family Planning *(1967), Les Clark and Walt Disney Productions for The Population Council.***

Walt Disney's contribution to this media discourse, *Family Planning* (1967), reflects the globalization of American liberal environmental ideas by "threatening" Global South viewers with consequences for poor decisions (Figure 4), as described by communication strategists critical of this approach in 1969.[22] Commissioned by the Population Council, directed by Les Clark, and written by Bill Bosché of *Lady and the Tramp* (1955) fame, the 10-minute film features Donald Duck lecturing the "Third World" about population control via voluntary family planning.[23] The animation was translated into twenty-four languages and features triangle iconography developed by consultants to the Ford Foundation and India's Family Planning Program.[24]

Ehrlich's book notoriously mounted racist arguments about triage in developing countries, proposing population administration by world powers like the United States with global environmental concern operating as Earth governance. In other words, it proposed population control as a Malthusian white man's burden. Environmental historians frequently point to Ehrlich's opening description of a family trip to India, where he portrayed the streets of Delhi with disdain.[25]

Ehrlich described the growth of poor, racialized populations overseas as frightening, insisting that many nations were "beyond help" and that developed nations should abandon food aid.[26] As Eva Horn and Hannes Bergthaller write, in 1971 Ehrlich and John Holdren reduced this political concern to a mathematical formula: I = PAT or "the ecological impact (I) of human action is the mathematical product of population (P), the level of affluence (A) and technology (T)."[27] A "gross simplification," the abstraction of "ecological impact" formed a proxy relationship to population, GDP, and technological developments in energy efficiency.[28] In a metric that became widely institutionalized, the equal sign does all the work.

Archival news footage from an October 1969 overpopulation protest in Hayward, CA illustrates the prevalence of this racism in the leadership of the U.S. environmental movement. Stewart Brand, the libertarian entrepreneur whose ideas gave an individualist shape to both networked personal computing and consumer driven liberal environmentalism, speaks to the camera: "There's too many people, and we'd like to see people have fewer children and better ones. . . This is a little taste of what's to come if we keeping on having more children and worse ones, it's just less food for everybody, and more crowding, and it gets pretty unpleasant."[29] A student of Ehrlich, and then an emerging leader of the counterculture, Brand's qualification of "more children and worse ones" is unspecified.[30] But this would be abundantly clear to observers aware of Z.P.G.'s communication strategies. As Jade Sasser argues, such rhetoric "appealed specifically to a white, middle-class American audience, stoking their fears of the growing global presence of dark-skinned others."[31]

STANDARD OF LIVING = ECOLOGICAL FOOTPRINT

In the nineteenth century, the U.S. conservation movement dovetailed the political push for wilderness conservation with xenophobia, perhaps most notoriously advanced by eugenicists like Theodore Roosevelt, Madison Grant, and Henry Fairfield Osborn. Evaluating this legacy, Priscilla Huang catalogs a history of racism in the American environmental movement, focusing on the series of racialized laws that were designed to curb the birth rate of immigrant people of color in the United States. Detailing "The Rise of Environmental Nativism," Huang explains how the nineteenth century American conservation movement brought together "campaigns for wildlife protection with anti-immigrant rhetoric[,]" arguing that "population stabilization was needed because the country's population was growing at a rate that threatened to upset the delicate balance of the natural environment. Reducing immigration, they reasoned, was the solution."[32] Anti-immigration xenophobia has, historically, been at the center of American environmental concerns surrounding population and it became pronounced in a media discourse that grew rapidly alongside the publication of Ehrlich's book in 1968.

The Immigration Act, passed in 1965, opened the U.S. to increased migration from Asia and Latin America. By the seventies, media panics about undocumented migration proliferated racialized fears of "silent invasion," a phrase associating migrants with disease, war, and communist threat that was influentially coined in the 1977 words spoken by the head of the Immigration and Naturalization Service.[33] This increase in immigration coincided with a decrease in the U.S. fertility rate, which many environmentalists attributed to the efforts of their messaging. The president of the Los Angeles chapter of Z.P.G., Elaine Stansfield, reflected on this moment during 1979 Senate testimony: "We environmentalists felt, with relief, that the U.S. had just barely in the nick of time, begun to limit its population [. . .]. But other cultures and countries have not yet done this, creating

an additional impact on our population as their people immigrate here."[34] By 1974, Z.P.G. called for an end to undocumented migration and reductions on immigration in general.[35]
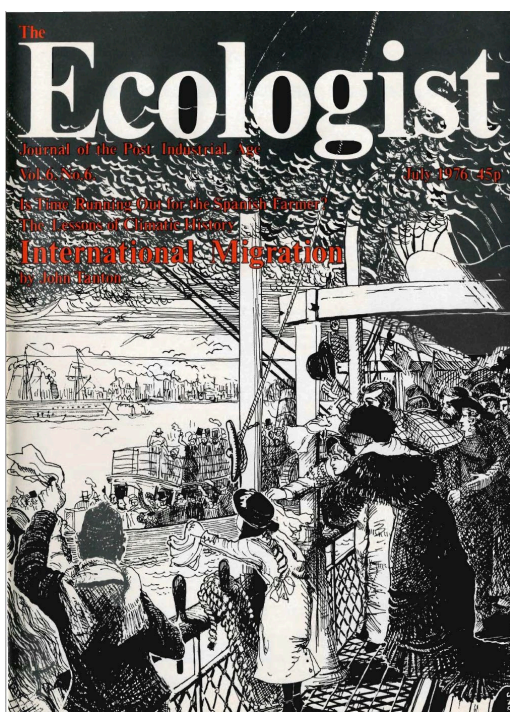
Figure 5. *"International Migration" by John Tanton,* **The Ecologist 6, no. 6 (1976)**

One of Z.P.G.'s earliest participants and board members, an ophthalmologist running the Planned Parenthood Federation of Northern Michigan named John Tanton, would take the lead on conceiving U.S.-bound immigration as an environmental problem. By this point, Ehrlich had expressed some regret about his earlier writing. Black activists in San Francisco, like Dick Gregory, openly criticized Ehrlich's endorsement of coercion: "Man's sprawling, undisciplined urban complexes, his concentrated and polluted misuse of natural environment, and his refusal to realistically use the resources nature has provided . . . has done more to create a population problem than the natural results of human reproduction."[36] Ehrlich's immediate response evoked the tenets of liberal universalism: the population bomb was "colorblind."[37] Responding to criticism, Ehrlich shifted positions and attempted to think through questions of inequality regarding population growth, maintaining that underdeveloped nations consumed less resources than rich, white Americans.[38] Tanton's position differed in that his racism emphasized culture. He argued in a 1976 issue of the environmental journal and magazine *The Ecologist* that "legal migrants from the less developed countries [would] bring their traditionally high fertility patterns with them" and that "International migration moves people from less consumptive lifestyles to more consumptive ones."[39] Tanton's article featured on the cover (Figure 5).

By 1979, Tanton had grown frustrated with Z.P.G.'s reluctance to push harder for governmental restrictions. To treat this, Tanton created the Federation for American Immigration Reform, or "FAIR," which institutionalized anti-immigration politics and environmental conservation within a non-profit advocacy organization.[40] Ehrlich sat on their advisory board until 2003 and personally

endorsed the organization in a 1979 anti-immigration treatise coauthored with Loy Bilderback and Anne H. Ehrlich, *The Golden Door: International Migration, Mexico, and the United States,* which argued that migration from central America was an ecological risk.[41]

The terms of this popular scientific argument, and how they began to elucidate and theoretically reify a position complementary to Tanton's cultural racism, are worth elaborating. As noted above, Ehrlich's rhetoric had shifted away from coercion, but his direction of argument instead led to increasingly economic questions. In one discussion of the U.S.'s projected domestic demographics *presuming no immigration*, the Ehrilchs and Bilderback ask readers to "assume that current discrepancies persist between the behavior of American citizens and those of [Less Developed Countries] in their consumption of petroleum and other nonrenewable resources."[42] Considering a proxy relationship between per capita GDP and individual petroleum use, were the U.S. to add 30 million citizens to its total numbers, "the American population will have an impact on the environment and resources of the globe roughly equivalent to the addition of one to two *billion* people in poor countries like Ecuador, Nigeria, Malawi, India, Burma and Indonesia."[43] Thus, each new American—*by birth or through migration*—"requires ever more costly exploration, extraction, transport, and refining activities."[44] In the following illustrative scenario, the authors argued that a 50-percent population increase within a given U.S. region might necessitate a 200-percent increase in freeway mileage, assuming general American population growth necessitates automobility.

From these speculations, the authors tried to specify and envision what continued population growth would look like along the U.S.-Mexico border. Acknowledging difficulty in predicting the cultural behaviors of migrants to the U.S., Ehrlich et al. suggested that "recent immigrants from nations like Mexico may bring with them a culture in which large families are still the norm."[45] Seemingly backed into an ideological corner, the authors harmonized conflicting views about the unsustainability of American consumption patterns with a static and racist idea of what the United States essentially was: "nothing resembling the present American way of life can persist if the Mexican population continues to increase [. . .] and the border between the United States and Mexico remains open."[46] This conditioned the book's ultimate and enduring formulation, which was synthetic in rationale: Should a Mexican migrant cross the border, their ecological footprint would grow in size. Formerly, underdevelopment was environmentally deterministic where poor populations required coercive intervention because they were poor; now, the developed world had become environmentally deterministic too, as its culture was based, ineluctably it would seem, on petroleum. Consequently, sustainable domestic life and border security became complementary American environmentalist pursuits. It followed that restricting U.S. immigration "will be not only better for the citizens of the United States, but for everyone in the world."[47] This argument grew to be a central talking point for right-wing environmental messaging in ensuing decades and the epistemic structure of this proxy established a scalar way to link immigration into the United States with environmental concern for the global climate.

RIGHT-WING MODELING AND SUPPLY-SIDE DEMOGRAPHICS

By the 1980s, the relationship between immigration, population, and environmental concern had started to shift at the policy level. In the waning days of his administration, Jimmy Carter handed newly elected Ronald Reagan *The Global 2000 Report to the President* (1980), an overpopulation and scarcity-based study that recommended policies derived from intensive three-year academic

research of planetary environmental conditions, including growing concern about global climate change. Reagan felt that he had been handed a political bomb and sought to find ways to mitigate the impact of the report in the public eye. Reagan's Environmental and Protection Agency (EPA) funded two researchers to achieve this work: the libertarian economist Julian Simon and the futurologist and nuclear strategist Herman Kahn.[48] Kahn and Simon compiled essays from a range of conservative economists, physicists, engineers, and oceanographers who responded with opposite conclusions point-by-point to *Global 2000*, earning the description of "cornucopians" in popular media.[49] Kahn and Simon published the essays as a volume of recommended policy positions in a report called *Global 2000 Revised* (1982). This became a 580-page anthology edited by Kahn and Simon: *The Resourceful Earth: A Response to Global 2000* (1984).[50]

What's fascinating about this intellectual production is how many chapters in *The Resourceful Earth* draw from the very same environmental data sets established by Carter's ecologists in *Global 2000*, such as identical numbers from the Bureau of the Census and much agricultural data from the Food and Agriculture association. Yet the writers in Kahn and Simon's book generally advanced the opposite view to each environmentalist conclusion. For example, in the population response, University of Pittsburgh economist Mark Perlman took no issue with the actual data that produced *Global 2000*'s model. Instead, he correctly pointed out that *Global 2000* does not establish a negative correlation between rate of population growth and standard of living.[51] Therefore, land and resource availability were unreliable ways of understanding the environmental impact of modelled population projections. While Perlman focused his critique on the unreliable epistemology of the government's models, Kahn and Simon's editorialization interpreted these points within a free-market economic agenda: "a growing population does not imply that human living on the globe will be more 'crowded' in any meaningful fashion. As the world's people have increasingly higher incomes, they purchase better housing and mobility."[52] This was a general editorial tactic, as the book's introduction recommended a total rejection of population growth as grounds for environmental regulation, with Kahn and Simon summarizing each entry in a manner designed to practically provide language and citational grounds for Reagan's deregulatory plans.[53]

Despite *Resourceful Earth*'s objectionable and trenchant free-market conservatism, it's important to underline how some of the book's individual criticisms have held up, as when the book's critiques of environmentalists are accurate it helps more clearly register in contradistinction what was happening at the same time in the West Coast environmental movement: at least initially, it was U.S. environmentalists, not Reagan's right-wing, who pushed people to think about population growth as an ecological crisis potentially treated by halting immigration.

For instance, in Gabriel Henderson's history of climate denialism he describes how the atmospheric scientist Helmut Landsberg's entry in *The Resourceful Earth* criticized the *Global 2000 Report*'s tendency to confuse projection with prediction. Uncertainty was omitted in the rhetoric of *Global 2000*'s scenario illustrations, which foresaw with confidence the full melting of the polar ice caps by the year 2000. As a result, Landsberg's position had both "merit and strategic value."[54] Meritorious in that, contrary to *Global 2000*'s projection, Landsberg reasonably believed that the doubling of carbon dioxide in the atmosphere "would not take place until well-into the 21st century" and that "any discussion of the future effects of carbon dioxide without the requisite uncertainties would distort understanding and undermine the intent to inform policy makers."[55] Yet, Landsberg's position was also strategic as, departing from these scientific criticisms, his argument could bend to the greater ideological arc of the book.

Arguing that "[t]he climate, both globally and locally, has not radically changed in the past few centuries [and] [m]ankind has been able to cope with such variations," Landsberg endorsed Kahn's and Simon's overarching techno-utopian optimism: "[t]here is little doubt that technology can remedy any difficulties which may arise."[56] This was precisely the kind of political extrapolation from fair critical points that provided strategically useful language for Kahn and Simon's polemic. In their introduction, Landsberg's argument was filtered through the right-wing politics of the book: "It would not seem prudent to undertake expensive policy alterations at this time because of this lack of knowledge, and because problems that changes in CO_2 concentration might cause would occur far in the future (well beyond the year 2000). Changes in the CO_2 situation may reasonably be seen, however, as an argument for increased nuclear power."[57] These editorial and publication tactics are evidence of foundational rhetoric for America's unique cultural history of climate denial.

By 1984, Simon's political advocacy had started to make waves in the Republican establishment. Simon testified before the House of Representatives Subcommittee on Census and Population about what he called the "myth" of "overpopulation," and his arguments were acknowledged by Reagan's staffers as an influence on the administration's global population policy in their presentation at a United Nations meeting on the topic in Mexico City.[58] Simon's arguments against population control doubled as a libertarian position for free enterprise, which he conceived as a market solution to all perceivable ecological problems. Caterina Rost describes how Simon's free market agenda was on full display in the words of Reagan's chief of the U.S. delegation in Mexico City, as recorded by *The New York Times*: "development of free-market economies was 'the natural mechanism for slowing population growth'" as the conference became a platform for the Reagan administration "to emphasize its abandonment of the pessimistic predictions of the *Global 2000 Report*."[59] For the Reagan administration's policy panel, "supply-side demographics"—initially a sardonic term employed by critics—trumped the environmentalist zeitgeist of population control.[60] Writing for the *Financial Times,* David Gardner reported that the U.S delegation "at its most basic equates the free market to a contraceptive."[61] The U.S. government, under both Reagan and Bush Sr., embraced the "supply-side demographic" optic on population growth because the policy was consistent with free market principles and catered to the anti-choice crowd in the Republican base. In this moment, population growth became a "boon" as human beings were theorized the "ultimate resource": "The child or immigrant will pay taxes later on, contribute energy and resources to the community, produce goods and services for the consumption of others, and make efforts to beautify and purify the environment."[62] In Reaganland, projected growth—inside and outside the United States—wasn't a looming ecological crisis at all but a speculative future of surplus value wrought from potential citizens (child or immigrant) as well as subsumed migrant labor. For Simon, undocumented migrants "contributed more than they took," as migrant workers without citizenship could take hard, cheap jobs and submit payroll taxes while using few social services.[63]

In 1986, Reagan signed the Immigration Reform and Control Act, which reflected both the economic argument made by Simon and acquiescence to nativist pressures by, on the one hand, granting a path to citizenship for three million undocumented migrants and, on the other hand, "aim[ing] to reduce the number of immigrants into the United States."[64] Tanton and FAIR were critical of Reagan's economic argument for migrant amnesty, but had worked closely with the administration and Wyoming Senator Alan K. Simpson to craft language that eschewed "overt racial prejudice."[65] FAIR ultimately contributed to passage of the act by building liberal-conservative consensus around topics like employer sanctions against businesses hiring

undocumented migrants and by reaching wider audiences through direct mail campaigns or providing scripted talking points for politicians on media circuits.[66] FAIR did not achieve its goals of limiting all immigration, but it did help shift U.S. public opinion toward having "restrictionist elements as the basis of any agreement. [. . .] Tanton's wish had come true: restriction was a legitimate, bipartisan position."[67]

CARBON = CARBON, OR: INCONVENIENT POPULATIONS

NumbersUSA (1996), ProEnglish (1994), Californians for Population Stabilization (1986) . . . Tanton used FAIR as a platform to cultivate a consortium of anti-immigration groups that worked as shell units supporting the bellwether restrictionist effort. The disintegrated structure of U.S. nativist political organization hid their funding, gave the appearance of broader support than what they actually had, and created perceived distance between entities to generate an air of legitimacy for those splinter cells that appeared as independent research wings. The Center for Immigration Studies (CIS), a D.C. based think tank and spin-off of FAIR established in 1985 to achieve "greater appearance of objectivity," is one of the groups Tanton established to produce research-driven citations for governmental policy implementation.[68]

The research output from Tanton's consortium included demographic theories correlating undocumented migration into the United States with carbon emissions. As early as 2001, CIS researchers were testifying before Congress that the carbon usage of individual Americans would become unmanageable as U.S. citizens, they argued, produced more greenhouse gases than people living in less developed nations. From this point of view, immigration restriction became a proposed policy for global warming mitigation: "Thus in the next two decades, because of population growth, [. . .] each individual could cut back significantly on his or her consumption of fossil fuels and yet total consumption would actually rise because the increase in population is more than the decrease in per-persons emissions."[69] Demonstrating nearly symmetrical ideation, CIS's institutional tether to FAIR shines through as a eugenic argument, first made by Ehrlich et al.'s *Golden Door* thesis, enters climate change discourse through a fairly prominent public platform: the U.S. House of Representatives.

CIS wasn't alone in bootstrapping overpopulation into conversations about global climate change. Just months earlier, in May 2001, the IPCC's *Third Assessment Report* included one of the first sets of official projections forecasting future relationships between population growth and carbon emissions.[70] The third assessment projections were based on the *Special Report on Emissions Scenarios* (2000), which calculated a population/climate proxy by utilizing a mathematical formula developed by Japanese economists termed "the Kaya Identity [. . .] a specific application of a frequently used approach to organize discussion of the drivers of emissions through the so-called IPAT identity."[71] As Horn and Bergthaller recall, the Kaya Identity is a "revised version" of Ehrlich's I = PAT. This formula evaluates carbon dioxide emissions based on multiplied relations between global population, world GDP, and global energy consumption.[72] As an identity, its numerators and denominators specifying GDP per capita, energy intensity of GDP, and emission intensity of the energy form cancel one another out. The Kaya Identity is a tautology that essentially means Carbon = Carbon, but where one side of the equation is dressed as population, GDP, and technology.[73] This formula was a successor to Ehrlich and Holdren's abstraction, now tailored by the IPCC to account for climate change futures specifically.

Did the Kaya scenarios run by the IPCC inspire CIS's racist application before U.S. Congress? It's possible, as CIS's work had not been as precise as carbon calculation until this point. But their broad influences also point more directly to earlier encouragement. A peer-reviewed journal article published by CIS researchers Leon Kolankiewicz and Roy Beck in the *Journal of Policy History* (2000) offers further clues about how the population/climate proxy strengthened.

As an inspiration for correlating global warming with population growth, the CIS authors refer to Vice President Al Gore's public arguments in 1998 that international family planning programs mitigate climate change.[74] Gore's argument appears most prominently as a presentation during a series of briefings on global warming hosted by the Clinton White House in the summer and fall of 1997. The audience was 100 TV broadcast meteorologists, to whom President Bill Clinton made his objective clear: "This climate change issue is one of the principal challenges that we face . . . [It's] a profoundly important issue and one, frankly, that you, just in the way you comment on the events that you cover, may have a real effect on the American People."[75] Memorialized by the beautiful analog grain of C-SPAN2's magnetic videotape, Clinton appealed to the nation's TV weathercasters as the first line of climate communicators leading U.S. citizens toward the signing of the Kyoto Protocol in 1998, which, of course, was never ratified by the Senate.

The V.P. speaks next for half an hour. Minutes into his presentation, he begins addressing population growth, leading his audience by framing the scale of the problem within the familiarity of their lifespan: " . . . and by the time of the American revolution there were one billion people on Earth and by the end of World War II, there were 2 billion people on Earth. That's when I was born, and when some of you were born."[76] Gore's effort to embody this abstraction before the camera is palpable: he's animated, turning directly to audience members, and engaging them as he speaks passionately about a problem that's clearly hard for some in the room to come to grips with.

Before the nation's weathercasters, the Vice-President delivers what he prefaces as a "true story" about a geography class he attended in the sixth grade when his teacher would pull down a world map in front of the students: "one of my classmates . . . was fascinated with the fact that South America and Africa had kind of the same outline, South America and the west coast of Africa . . . "[77] Gore turns away from the TV meteorologists and C-SPAN2 cameras to draw two similarly shaped, wavy vertical lines on a white board with an erasable marker (Figure 6). "He got up his courage one day and finally asked the teacher 'Did they ever fit together?' And the teacher said: 'That's the most ridiculous thing I've ever heard.'—and he went on to become a drug addict and a ne'er-do-well," to which the meteorologists respond with laughter. Gore would tell this same story, nearly line for line, close to a decade later in Davis Guggenheim's *An Inconvenient Truth* (2006), although the updated version reflects animus following the 2000 election: " . . . the teacher went on to become science advisor in the current administration."[78] In both cases, Gore uses his personal story about an axiomatic theory to demonstrate how a once inconceivable idea—like continental drift—becomes normalized. He implies that this story is much like how Americans—in both 1997 and 2006—were having a hard time understanding how human beings were capable of changing CO_2 concentration in the global atmosphere.

Figure 6-7. *"Did they ever fit together?" and "These two lines appear to me to go together," Author's Screenshots of Al Gore, "Global Climate Change," 10/1/1997.*

Gore also uses this story to send home a point about causality and climate proxies. The east coast of South America looks like the west coast of Africa, so did those ever fit together? A graph resembling Mann's "Hockey Stick" shows the historical concentration of carbon dioxide in the atmosphere alongside the rise in global mean temperature, which also appear to fit together (Figure 7). (This is presumably the inspiration for Gore's famous use of a forklift in the later film.) Gore's analogy brings us in tow, and we understand the correlation. Consider Gore's order of things:

> Every glacier in the world in mountains is receding rapidly; sea levels going up; . . . I know several of you here are from Chicago, was it two summers ago where the 400 people died in the heat wave? There's some people here from Detroit. A few years ago, somebody got malaria in Detroit . . . a subtropical disease. In the month he got malaria, the temperature was six full degrees warmer than the thirty year average for that month. Again, you can't say that's cause and effect, but the odds are shifting toward the kinds of consequences that are associated with rising temperatures.[79]

The *kinds* of consequences that are *associated* with rising temperatures: diminished glaciers, sea level rise, a deadly heat wave in Chicago, and a malaria case in Detroit . . . "kind," here, denotes the vague similarity that particular crises—*weather*—might have to generic climate change, while "associated" highlights how uncertainty underwrites the problem of communicating correlation as causation. Gore looks immediately perplexed following this statement, likely aware that the audience has seen how much he's struggling to explain that such disparate events can be unified by scientific abstraction. How else might climate change be mediated meaningfully for this audience, who will in turn ground global warming for American viewers in their localities through weather reports? Rapturous applause follows the presentation.

The similarities between this presentation and *An Inconvenient Truth* are extensive and remarkable. But it's equally notable what doesn't make it into Guggenheim and Gore's film. One audience member asks Gore about the 1995 heatwave in Chicago, and whether Gore was attributing the "400, 500 deaths" to global warming.[80] "No. Let me be precise in what I'm saying. [. . .] you cannot say that any of these specific events is caused by global warming," Gore responds, "But you can say and you should say the odds of these things happening are dramatically changing and going way up because the odds of having that kind of summer in Chicago are now much higher than they were 10, 20, 30, 40 years ago."[81] In this exchange, Gore also sees that he's losing his audience as the causal dimension of climate attribution is challenging.[82]

To recapture wayward minds, Gore starts talking about the importance of a study conducted in pre-automobile New York City that analyzed the relationship between horse manure and increased amounts of horse traffic due to growing population. The study discerned the correlated projection of horse manure (waste) to population growth (demand) by way of carriage use (commodity consumption). This prompts another audience question about global population, which, citing Gore's own words back to him, is "growing, essentially, out of control."[83] Gore responds by saying that one of President Clinton's first actions in office was revoking the "Mexico City policy," described above as Reagan's "supply-side demographics." Spoken in this context, Gore implies that U.S. investment in foreign birth control and abortion practices contribute to global warming mitigation. In doing so, he positively links population growth with global carbon dioxide concentration: "the momentum in the demographic system is such that we're inevitably going to go to 8 or 9 billion, the question is whether these changes will keep us from going to 10, 12, 14 billion . . . that same kind of momentum is in the greenhouse gas emission part of this, too."[84] More population growth is more demand, first for New Yorkers but now the Global South. This means more commodity consumption, once as carriage use and now as fossil fuel combustion. Thus, there is more waste as manure becomes CO_2. If this line looks like that line, don't they fit together? If CIS did definitively find inspiration in using overpopulation as a proxy for global heating within Al Gore's ideation, then linking demographic change to climate change was not popularized by CIS's congressional testimony. Rather, this correlative reasoning was cemented in public view through Guggenheim and Gore's 2006 film, likely the most popular work of mass culture in the history of climate change communication.

In the film, Gore briefly equates global population growth with the decline of carbon sequestration. Facing a teleprompter cue titled "The Population Explosion," Gore displays information sourced from the U.N. that projects a global population increase to 9.1 billion by the year 2050.[85] Recalling his performance in front of the weathercasters, he again embodies this fact. This rise is within the expected lifetime of people born into the baby boomer generation, like himself, who will see a total increase of just under 7 billion people: "In one human lifetime, *ours*, it goes from 2 billion to 9 billion, something profoundly different is going on right now. We're putting more pressure on the earth, most if it is in the poorer nations of the world . . . It puts pressure on vulnerable natural resources and this pressure is one of the reasons we have seen all the devastation."[86] In words echoing *The Golden Door,* Gore pins poverty outside the United States to the material destruction of forests, now interpreted as carbon sinks, which the film metonymically visualizes with a photo of a single Brazilian man cutting down a tree. This sequence effectively correlates the population growth of developing countries to the diminishing ability for the entire planet to autonomously process carbon dioxide by implying agricultural development drives forest reduction. The film presents no evidence showing causal relation between population growth and any specific instance of land use. Gore asserts the population projection of developed nations as a static line.
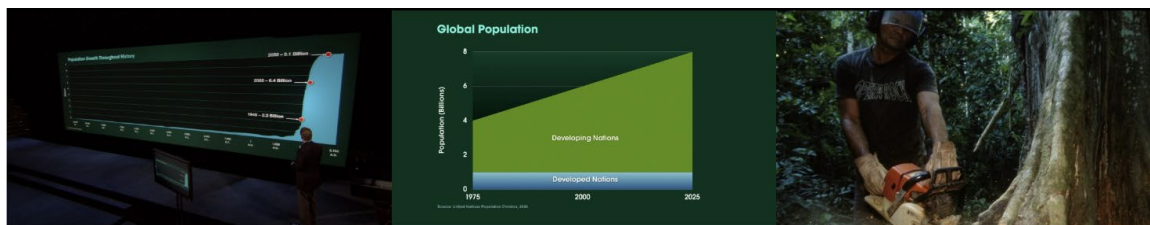
Figure 8. *Author's Screenshots of* **An Inconvenient Truth** *(2006),*
Davis Guggenheim and Al Gore.

In total abdication of any social history accounting for global inequality or the flows of capital within transnational corporate extraction and trade, this sequence stands in prominence as an illustration of how population became a proxy for global warming in popular media. Guggenheim and Gore imply a different strategy for those viewers in theaters or at home. In what's become one of the most controversial excerpts in the history of environmental communication, the film's credits articulate the inverse of the population scale for the assumed audience of viewers in developed countries who want to pitch in: "In fact, you can even reduce your carbon emission to zero. Buy energy efficient appliances and lightbulbs. Change your thermostat. [. . .] If you can, buy a hybrid car. [and] Tell your parents not to ruin the world you live in."[87] As Michelle Murphy writes in *The Economization of Life*, "[w]ith climate change, the problem of overpopulation is recharged for the left as well as liberal politics. Photos of global slums and crowded shopping malls in contemporary news media invite viewers to attach to overpopulation as the problem of a world overinhabited and depleted."[88] Gore and Guggenheim's film offers climate change action in the context of growing masses of poor people of color, wherein the affluent, liberal individual emerges from the correlation of population to climate as a meaningful agent of world history. Empowered by a provided sense of scale, the film's spectator might act locally while free to think the global as a menacing population.

In retrospect, the ease with which *An Inconvenient Truth* presents climate change as a population problem for the Global South, and as an individual consumer issue for Americans, is telling about how a population-centered view of the issue yields an epistemology that fits the U.S. liberal political model, which has served as basis for numerous global environmentalisms. Here, many selective individuals act together to create change while others, environmentally determined by their poverty, must sacrifice. Still, Gore and Guggenheim's film was slightly late in constructing a scalar relationship between global climate and individual consumer activities.

The honor of popularizing the "carbon footprint" goes to British Petroleum following their 2001 rebranding as BP, shorthand for "Beyond Petroleum." As early as 2003, BP ran TV ads produced by Ogilvy and Mather asking interviewees, and by extension viewers, about the size of their carbon footprint (Figure 9). The ads featured a URL linking to a carbon footprint calculator on BP's website. In her analysis of how BP's campaign tailored to different national audiences, Julie Doyle writes that ads broadcast in the U.S. capitalized on George W. Bush's withdrawal from the Kyoto Protocol by emphasizing how Americans could still participate in the climate fight from the comfort of home through repeated reference to liberal environmentalist agency occurring at the household scale, which could impact national metrics.[89] Broadly, the effort was an attempt to take public critical attention away from oil infrastructure and natural gas development plans by scaling climate action to the American family and individual. Doyle notes that a 2005 advertisement alludes to *The Wizard of Oz* as way of familiarizing their proposal to "find and produce new energy supplies": a

"decade long $15 billion investment in the Gulf of Mexico."[90] One outcome of this development was the discharge of 210 million gallons of oil from Deepwater Horizon in April 2010. Contextualizing how BP's dissemination of the carbon footprint correlated to new oil rigs enables an oblique historical view: perhaps the carbon footprint helped socialize the devastation of the Gulf Coast.

Figure 9. *"What on earth is a carbon footprint?" (2005),*
Ogilvy and Mather for BP.

These climate proxies—the correlational categories of the individual consumer versus the Global South population—enact what Anne Pasek calls "derangements of scale": documentary acts of "*aspirational mimesis*, where the shape of the macrocosm is imagined in relation to a highly symbolic microcosm, but without a legible analysis of how these two scales do or do not respond to the other."[91] BP provides a proxy relationship between individual consumption and global atmospheric chemistry without reference to societal dependence on fossil fuel extraction or its risks. Gore and Guggenheim correlate population projections in the Global South to the reduction of carbon sinks. *An Inconvenient Truth* offers these historical transactions in a figurative forecast: the future of population growth and carbon emissions fit together in a decontextualized image of logging in Brazil.

CONCLUSION: FORECASTING MIGRATION AS THOUGH WEATHER

In 2008, CIS released a publication titled *Immigration to the United States and World-Wide Greenhouse Gas Emissions*. Here, the authors argued that "the average immigrant (legal or illegal)" produces 18 percent less carbon emissions than "native-born American[s]," as "immigrants in the United States produce an estimated four times more CO_2 in the [U.S.] than they would have in their country of origin."[92] This is because, they argue, American per capita emissions are "much higher than almost all of the immigrant-sending countries, [and] immigration to the United States has significant implications for world-wide emissions."[93] In this vein of conservative climate change advocacy filtered through nativism, migrant population numbers become proxies for greenhouse gas production. In CIS's view, climate change is a solvable problem best initiated by immigration restriction.

The methodology exhibited by the CIS paper is flawed in several clear ways, most notably the faulty assumption made in how their study "postulates a broad correlation between a person's annual income and his or her annual CO_2 emissions."[94] Still, it's worth highlighting this document because it became an influential citation in a broader campaign of TV and print media issued by a separate Tanton-linked group: the Californians for Population Stabilization, or CAPS. This organization was formed by Tanton and UC Santa Barbara ecologist Garett Hardin, most infamous for his essays advocating free-market social Darwinism: "The Tragedy of the Commons" (1968) and "Lifeboat Ethics: The Case Against Helping the Poor" (1974). With Tanton, he formed CAPS in 1986 during a group secession from the Los Angeles chapter of Z.P.G.[95]

Figure 10. "One of America's Most Popular Pastimes," America's Leadership Team for Long Range Population-Immigration-Resource Planning for American Immigration Control Foundation; Californians for Population Stabilization; Federation for American Immigration Reform; NumbersUSA; and Social Contract Press. This advertisement was published in June and July editions of The New York Times, USA Today, *and* The Nation *in 2008. For instance, see:* The New York Times, *Jun. 4, 2008, A15.*

Following the popularity of *An Inconvenient Truth*, CAPS sensed opportunity. They ran ads in *The New York Times*, *The Nation*, and *Mother Jones*, among other environmentally inclined publications.[96] One ad, titled "One of America's Most Popular Pastimes," depicts an image of cars in suburban gridlock (Figure 10). Also recalling Ehrlich et al.'s *Golden Door*, the subtitle claims that "a majority of Americans agree that runaway population growth threatens their quality of life. [. . .] for every four new U.S. residents whether from births or immigration, approximately three more cars are added to our roads, increasing gridlock, energy use and greenhouse emissions." Insisting on CAPS's credentials as "the nation's leading experts on population and immigration trends and growth," the ad corresponds the reader's experiences stuck in traffic to American population growth, then jumps again to car use and ownership, all before making another scalar leap to greenhouse gas emissions.

Figure 11. "Concerned about Americans' Huge Carbon Footprint?" Author's screenshot of Californians for Population Stabilization 2012 advertisement.

In April 2012, CAPS ran TV ads for Earth Day on major U.S. news networks, including MSNBC, featuring a flannel-clad and bearded white hipster explaining the environmental benefits of curbing immigration by pointing at cardboard carbon footprint diagrams (Figure 11):

> Concerned about Americans' huge carbon footprint? Then you should be concerned about immigration. Sound crazy? Immigrants produce four times more carbon emissions in the U.S. than in their home countries. Left alone, immigration will drive a population increase equal to the entire American West in just thirty years. Reducing immigration won't solve global warming, but it is part of the solution. We've got some tough choices to make.[97]

As John Hultgren writes, the ad stirred controversy by airing on mainstream and traditionally progressive TV stations. The segment even caught the attention of Stephen Colbert, who satirized the ad on *The Colbert Report,* lauding CAPS's self-proclaimed ability to bridge ideological political divides in the United States: "Now, when a liberal yammers on about the record heat we had this winter, a conservative can say, 'Let's save the environment by building an electrified border fence that runs on alternative energy.'"[98] Prophetic words. A 2019 issue of *Scientific American* compiled appeals to Donald Trump from 27 concerned scientists and engineers, who implored the administration to line "the wall" with solar panels, windmills, and natural gas plants that would

help power the United States while prospective Central American migrants could be employed to maintain this natural security infrastructure from the country's exterior.[99]

For years, many believed that getting the right information out about climate change, or even the frequency of extreme weather events, would convince most Americans about the reality of global warming. Arguably, the regularity of climate disruptions has finally proven that reality. Recent polling by the Yale Program on Climate Change communication reports that 72% of American adults believe global warming is happening.[100] But these advertising campaigns, and the institutional and environmentalist cultures they emerge from, show how old-become-new forms of discrimination are being built into mediations of a climate changed future.

This media history charts how population demographics became correlated with global climate change in U.S. public culture. From insect ecology to the U.S. environmental movement, Reagan's immigration policy to Clinton and Gore's climate change advocacy, or *The Population Bomb* to the carbon footprint, recent media discourses equate demographics with global CO_2 emissions, and that equation is a dangerous product of efforts across the U.S. political spectrum. Each instance demonstrates how population was made to stand in for environmental impacts and how that effort was rendered intelligible through various media tailored to their context of reception: environmentalists, TV spectators, documentary audiences, and more. Including each of these episodes within a critical media historical narrative—compiling proxies for the purpose of understanding how they together arrange past, present, and future—makes legible how migration as population growth becomes predictable and securitized, as though weather derived from a changing climate. The mediated obstinacy of the population/climate proxy, and its scalar epistemic operation that moves from environmental abstraction to representational dissemination, must be historicized and confronted. Media historiography stands to valuably contribute to understanding how climate change can seemingly mean so many different things and take different, potentially violent, guises. Reconstructing environmental media practices alongside the life of ecological ideas gives clarity to how climate change, knowable through its mediations, is always an image of a globally heated future based on a history of weather.

ENDNOTES

[1] Wendy Hui Kyong Chun, "On Patterns and Proxies, or the Perils of Reconstructing the Unknown," in *Accumulation: The Art, Architecture, and Media of Climate Change*, eds. Nick Axel, Daniel A. Barber, Nikolaus Hirsch, and Anton Vidokle, (University of Minnesota Press, 2022), 114-7.

[2] Wendy Hui Kyong Chun, "On Hypo-Real Models or Global Climate Change: A Challenge for the Humanities," *Critical Inquiry* 41, no. 3 (2015): 90-1.

[3] See: Shannon Mattern, "The Big Data of Ice, Rocks, Soils, and Sediments: Inside the Material Archives of Climate Science," *Places Journal* (2017), https://placesjournal.org/article/the-big-data-of-ice-rocks-soils-and-sediments/; and Thomas Patrick Pringle, "The Climate Proxy: Digital Cultures of Global Warming," (PhD dissertation: Brown University, 2020).

[4] See: Julie Doyle, "Seeing the Climate? The Problematic Status of Visual Evidence in Climate Change Campaigning," *Ecosee: Image, Rhetoric, Nature*, eds. Sidney Dobrin and Sean Morey, (SUNY Press, 2009).

[5] Chun argues that climate science operates in a historical context when the perceived relationship between correlation and causation has changed and "most empirical science works via uncovering correlations," which is an especially prevalent development in Big Data. This provokes a critical question: "how are we to determine the force and primacy of various correlations?" Recognizing the real uncertainties in climate science means understanding that not only is the strict division between causation and correlation, which feeds the cultural perception of science as forensic and hypes Big Data, a reduction of how science has operated historically, but that embracing uncertainty and building new correlations may be one way to effect futures that are not foreclosed by probability: "We need to address uncertainty as enabling rather than disabling, for it is by engaging this changing relationship between what is true and verifiable, theoretical and empirical, that we can form new associations between knowing and doing." Chun, "Hypo," 692, 678.

[6] Chun, "Proxies," 113.

[7] Gayatri Spivak writes that "representing" is always both "proxy and portrait": every act of political surrogacy is also aesthetic and, accordingly, climate proxies both "speak for" an unknowable past while actively "portraying" a temporal configuration for the present. *The Post-colonial Critic: Interviews, Strategies, Dialogues*, (Routledge, 1990), 108-9.

[8] Benjamin Morgan analyzes the "Old Weather" initiative on *Zooniverse.org*, a participatory proxy collecting project that asked users to read through archival records of ship's captains' logs documenting arctic weather back to 1836. Once scanned, catalogued, interpreted, and compiled, this data informed the NOAA's 20th century reanalysis climate models, which used the assembled written records as data to clarify what climates looked like in the past, in turn refining future projections. Benjamin Morgan, "After the Arctic Sublime," *New Literary History* 47, no. 1, (2016): 19.

[9] Mary Ann Doane, "The Indexical and the Concept of Medium Specificity," *differences: A Journal of Feminist Cultural Studies* 18, no. 1, (2007): 133.

[10] Doane, "Indexical," 133.

[11] Doane, "Indexical," 136.

[12] Lisa Gitelman, *Always Already New: Media, History, and the Data of Culture*, (MIT Press, 2006), 20, 5.

[13] Gitelman, *Always Already New*, 20.

[14] Paul Ehrlich, *The Population Bomb: Revised Edition*, (Sierra Club/Ballantine, 1971), 1-44.

[15] Kirpatrick Sale, *The Green Revolution: The American Environmental Movement, 1962-1992*, (Hill and Wang, 1993), 22.

[16] Jesse Olszynko-Gryn and Patrick Ellis, "Malthus at the Movies: Science, Cinema, and Activism around Z.P.G. and Soylent Green," *Cinema Journal* 58, no. 1, (2018): 67.

[17] Olszynko-Gryn and Ellis, "Science," 49-50.

[18] Olszynko-Gryn and Ellis, "Science," 59-62. See also: Eva Horn, *The Future as Catastrophe: Imagining Disaster in the Modern Age*, (Columbia UP, 2018), 82-3.

[19] Manon Parry, *Broadcasting Birth Control: Mass Media and Family Planning,* (Rutgers, 2013), 48-9.

[20] Thomas Robertson mentions that Z.P.G. chapters would screen this film regularly. See: Thomas Robertson, *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism*, (Rutgers, 2012), 170. Six reels of "Population Ecology" 16mm film appear in the Ehrlich archive at Stanford. The film is available online through *Internet Archive*: https://archive.org/details/populationecology.

[21] Michelle Murphy describes how such deterministic S-curve projections of population growth, derived from insect ecology, mark the "economization of life" or the "historically specific regime of valuation hinged to the macrological figure of national 'economy.'" Michelle Murphy, *The Economization of Life,* (Duke UP, 2017), 4-6.

[22] J. T. Klapper qtd. in Parry, *Broadcasting Birth Control*, 89-90.

[23] Andrea Carosso notes that French demographer Alfred Sauvy's 1952 definition of the "Third World" shaped the geographical and political discourse of population control in the 1950s-1960s. Andrea Carosso, "Donald the Family Planner: How Disney Embraced Population Control," in *Family in Crisis? Crossing Borders, Crossing Narratives,* eds. Eva-Sabine Zehelein, Andrea Carosso, and Aida Rosende-Pérez, (transcript-Verlag, 2020), 185-7.

[24] Carosso, "Donald," 187; Simran Bhalla, "Ministries of Light: Modernism and Modernity in Indian and Iranian State-Sponsored Documentaries, 1960s-1980s," (PhD dissertation: Northwestern University, 2021), 118.

[25] Jade Sasser, *On Infertile Ground: Population Control and Women's Rights in the Era of Climate Change*, (NYU Press, 2018), 73.

[26] Matthew Connelly, *Fatal Misconception*: *The Struggle to Control World Population*, (Harvard UP, 2008), 259.

[27] Ehrlich and Holdren qtd. in Eva Horn and Hannes Bergthaller, *The Anthropocene: Key Issues for the Humanities*, (Routledge, 2020), 121

[28] Horn and Bergthaller, *Anthropocene,* 121.

[29] Evan White, KPIZ Eyewitness News, Bay Area Television Archive: https://diva.sfsu.edu/collections/sfbatv/bundles/189950; See also: Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*, (University of Chicago Press, 2006); and Andrew Kirk, "Appropriating Technology: The Whole Earth Catalog and Counterculture Environmental Politics," *Environmental History* 6, no. 3 (2008).

[30] Where Turner has shown how Brand's philosophy of holism, and his entrepreneurial network, proved influential within nascent Bay Area tech communities, Kirk has documented how Brand's publications helped shift the environmental movement away from technophobia. Synthesizing these historical accounts could help explain the emergence of "pronatalism" in Silicon Valley. Recent reporting associates pronatalists with tech communities and the "effective altruism" movement. Elon Musk is a prominent advocate. The movement takes on eugenic overtones in reflexively describing their own intelligence and technocratic understanding of predicted declines in birth rates as the reason to have as many (white, "intelligent") children as possible. For an overview of recent reporting on this, see: Arwa Mahdawi, "'Hipster Eugenics': why is the media cosying up to people who want to build a super race?," *The Guardian*, April 21, 2024: https://www.theguardian.com/lifeandstyle/2023/apr/20/pro-natalism-babies-global-population-genetics.

[31] Sasser, *Infertile Ground*, 73.

[32] Priscilla Huang, "Anchor Babies, Over-Breeders, and the Population Bomb: The Reemergence of Nativism and Population Control in Anti-Immigration Policies," *Harvard Law & Policy Review* 2, (2008): 393.

[33] Elena R. Gutiérrez, *Fertile Matters: The Politics of Mexican-Origin Women's Reproduction*, (UT Press, 2008), 23-4.

[34] "Testimony at Senate Commission on Immigration and Refugee Policy Hearings," qtd. in Gutiérrez, *Fertile Matters*, 79.

[35] Robertson, *The Malthusian Moment*, 197.

[36] Gregory qtd. in Robertson, *Malthusian*, 172.

[37] Ehrlich qtd. in Robertson, *Malthusian*, 172.

[38] Sasser, *On Infertile Ground*, 73-4.

[39] Tanton, "International Migration as an Obstacle to Achieving World Stability," *The Ecologist* 6, no. 6 (1976): 225-226.

[40] Robertson, *The Malthusian Moment*, 199.

[41] Ehrlich, Bilderback, and Ehrlich write that FAIR, "a new organization, [. . .] has been formed to deal exclusively with migration policy [. . .] dedicated to developing restrictionist policies that are humane and consistent with modern democratic values" (361). A 1981 update written by the same authors acknowledge the media rationale driving FAIR, as the organization's monthly newsletter "represents the only systematic attempt to gather the various strands of the debate and to present them to a general audience" (xxi). See: Ehrlich, Bilderback, and Ehrlich, *The Golden Door: International Migration, Mexico, and the United States*, (Malor Books, 2012).

[42] Ehrlich, Bilderback, and Ehrlich, *Golden,* 325.

[43] Ehrlich, Bilderback, and Ehrlich, *Golden,* 325.

[44] Ehrlich, Bilderback, and Ehrlich, *Golden,* 325.

[45] Ehrlich, Bilderback, and Ehrlich, *Golden*, 327

[46] Ehrlich, Bilderback, and Ehrlich, *Golden*, 329.

[47] Ehrlich, Bilderback, and Ehrlich, *Golden*, 328

[48] Regarding EPA sponsorship, as reported by Philip J. Hilts in *The Washington Post* in 1983: "Simon said that their report, called Global 2000 Revised, was done at the request of officials at the Environmental Protection Agency, who did not want the original Global 2000 'doom and gloom' conclusions to stand unchallenged." See: Philip J. Hilts, "Carter-Era Report on Global Ecology Challenged in New Study," *The Washington Post*, 30 May 1983.

[49] On "cornucopian" perspectives on the environment, and Simon's public contest with Paul Ehrlich, see: Paul Sabin, *The Bet: Paul Ehrlich, Julian Simon, and Our Gamble Over Earth's Future*, (Yale UP, 2013), 96-216.

[50] As Sabin writes: "Simon's efforts gave political conservatives a weapon that they badly needed to support their attack on liberals and environmentalists. *The Resourceful Earth* and *The Ultimate Resource* bolstered the Reagan administration's critique of environmental regulation and of Jimmy Carter's economic record," Sabin, *The Bet,* 160.

[51] Mark Perlman, "The Role of Population Projections for the Year 2000," *The Resourceful Earth: A Response to Global 2000*, eds. Julian Simon and Herman Kahn, (Basil Blackwell, 1984), 62.

[52] Julian Simon and Herman Kahn, "Introduction," in Simon and Kahn, *Resourceful*, 7.

[53] Melinda Cooper, *Life As Surplus: Biotechnology and Capitalism in the Neoliberal Era*, (University of Washington Press, 2008), 18-9; Andrew Ross, *Strange Weather: Culture, Science and Technology in the Age of Limits*, (Verso Books, 1991), 187.

[54] Gabriel Henderson, "Raising the Alarm: The Cultural Origins of Climate 'Denialism' in America, 1970-1988." (PhD dissertation: Michigan State University, 2014), 241.

[55] Henderson, "Raising," 241.

[56] H. E. Landsberg, "Global Climatic Trends," in Simon and Kahn, *Resourceful*, 299.

[57] Simon and Kahn, *Resourceful*, 23.

[58] Sabin, *The Bet,* 163-4.

[59] R. J. Meislin, "U.S. asserts Key to curbing Births is a free Economy," *The New York Times*, 9 August 1984: A1; Caterina Rost, "The Divergent Trajectories of an Idea: Sustainable

Development in Germany and the United States," (PhD dissertation: University of Washington, 2017), 86-91.

[60] David Gardner, "Abortion becomes a policy weapon," *Financial Times*, 16 Aug. 1984: 4.

[61] Gardner, "Abortion," 4.

[62] Julian Simon, *The Ultimate Resource*, (Princeton UP, 1981), 4.

[63] Simon qtd. in Sabin, *The Bet,* 165-6.

[64] Sabin, *The Bet*, 167.

[65] David M. Reimers, *Still the Golden Door: The Third World Comes to America Second Edition,* (Columbia UP, 1992), 24; Carly Goodman, "Unmaking the Nation of Immigrants: How John Tanton's Network of Organizations Transformed Policy and Politics," *A Field Guide to White Supremacy,* eds. Kathleen Belew and Ramón A. Gutiérrez, (University of California Press, 2021), 211.

[66] Goodman, "Unmaking," 212-3.

[67] Goodman, "Unmaking," 212, 216.

[68] Goodman, "Unmaking," 214. In the grant Tanton wrote to fund the founding of CIS, he wrote that "pro-immigration" politics "have the ear of the President." See: Ethan Fauré, "Where the White House Gets its Racist Immigration Policies," *Political Research Associates*, 1 Mar. 2018: https://politicalresearch.org/2018/03/01/where-the-white-house-gets-its-racist-immigration-policies.

[69] *What are the Effects of Population Growth? U.S. Population and Immigration Hearing before the Subcommittee on Immigration and Claims of the Committee on the Judiciary House of Representatives*, 107th Cong. 27 (2 Aug. 2001) (Statement of Steven Camarota, Director of Research for the Center for Immigration Studies).

[70] Sasser, *On Infertile Ground*, 125-6.

[71] Nebojša Nakićenović, Robert Swart, et al., *Special Report on Emissions Scenarios,* (Cambridge UP, 2000), 83-4

[72] Horn and Bergthaller, *Anthropocene*, 121.

[73] Mario Bunge, *Evaluating Philosophies*, (Springer, 2012), 57-9.

[74] Roy Beck and Leon Kolankiewicz, "The Environmental Movement's Retreat from Advocating U.S. Population Stabilization (1970-1998): A First Draft History," *Journal of Policy History* 12, no. 1 (2000): 143, fn. 63, 155. Beck and Kolankiewicz refer to both Gore's *Earth in the Balance* (1992) and public statements he made following a conference on global warming in 1998.

[75] Bill Clinton qtd. in John Morales, "How weathercasters helped change public opinion on climate change," *Bulletin of the Atomic Scientists*, 24 Oct. 2022: https://thebulletin.org/2022/10/how-weathercasters-helped-change-public-opinion-on-climate-change/.

[76] Al Gore, "Global Climate Change," *C-SPAN,* 1 Oct. 1997: https://www.c-span.org/video/?92129-1/global-climate-change; Gore also makes this point in the 2006 forward to his 1992 book, *Earth in the Balance: Forging a New Common Purpose* (Routledge, 2007): xi. While references to population growth are throughout the original printing, one stands out: Gore's interests in "global environmental threat" were cultivated in a college course he took on population in the 1960s led by climate science pioneer Roger Revelle. Gore, *Earth*, 4-5. The population parts of the book were reprinted in 1992 as an academic article: "Senator Al Gore on Stabilizing World Population," *Population and Development Review* 18, no. 2 (1992): 379-83.

[77] Gore, "Global," (1997).

[78] Al Gore and Davis Guggenheim, *An Inconvenient Truth*, (Paramount Classics, 2006).

[79] Gore, "Global," (1997).

[80] Gore, "Global," (1997).

[81] Gore, "Global," (1997).

[82] For more on the Chicago heatwave in the context of death, global warming, and TV news coverage, see: Eric Klinenberg, "Denaturalizing Disaster: A Social Autopsy of the 1995 Chicago Heat Wave," *Theory and Society* 28, no. 2 (1999): 239-95; Sasha Crawford-Holland, "The Temperature Complex: Epistemic Media and the Governance of Perception," (PhD dissertation: University of Chicago, 2024): 76-124.

[83] Gore, "Global," (1997).

[84] Gore, "Global," (1997).

[85] Gore's supplementary book, *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It,* (Rodale Press, 2006), gives only "Source: United Nations" for his 9.1 billion by 2050 projection. The book also indicates that "population explosion" was a phrase possibly used or scripted in some part of the rehearsed presentation, although it is notably missing from the Guggenheim cut, Gore, *Inconvenient*, (2006), 216-7. The phrase likely refers to Paul and Anne Ehrlich's 1990 book that developed Paul Ehrlich's earlier arguments, *The Population Explosion*, for which then-Senator Gore wrote an endorsement on the inside jacket material, or possibly the original work of Hugh Moore in a 1954 pamphlet that Paul Ehrlich credits with coining the term. See: Ehrlich, *Population*, (1971), vi.

[86] Guggenheim and Gore, *Inconvenient.*

[87] Finis Dunaway writes: "these gestures, while useful in reducing our personal carbon emissions, ultimately seem tokenistic, hardly the stuff to inspire the remaking of entire nations and economies. [. . .] Gore's brand of environmentalism has closely followed the neoliberal paradigm." Finis Dunaway, *Seeing Green: The Use and Abuse of American Environmental Images*, (Chicago UP, 2015), 270-1.

[88] Murphy, *Economization,* 137.

[89] Julie Doyle, "Where has all the oil gone? BP branding and the discursive elimination of climate change risk," *Culture, Environment and Ecopolitics*, eds. Nick Heffernan, David A. Wragg, (Cambridge Scholars, 2011), 210-11.

[90] Doyle, "Where has all the oil gone?" 210-11.

[91] Anne Pasek, "Mediating Climate, Mediating Scale," *Humanities* 8, no. 4 (2019): 159.

[92] Steven Camarota and Leon Kolankiewicz, "Immigration to the United States and World Wide Greenhouse Gas Emissions," *Center for Immigration Studies*, (2008): https://cis.org/Report/Immigration-United-States-and-WorldWide-Greenhouse-Gas-Emissions.

[93] Camarota and Kolankiewicz, "Immigration."

[94] Camarota and Kolankiewicz, "Immigration."

[95] Peter Coates, *American Perceptions of Immigrant and Invasive Species: Strangers on the Land*, (UC Press, 2007), 237. CAPS advocated "replacement-level" immigration restrictions that presumed the maintenance of national ratios of ethnic identity, a metric designed to hide their racism.

[96] John Hultgren, *Border Walls Gone Green: Nature and Anti-immigrant Politics in America*, (University of Minnesota Press, 2015), 2.

[97] The video is now available on CAPS' YouTube channel, "Crowdifornia": https://www.youtube.com/watch?v=eDFFbiIbm2c

[98] Colbert qtd. in Hultgren, *Border Walls,* 1.

[99] The original article has been removed from *Scientific American*, but a revised version pitching the idea in the aftermath of blackouts in Texas remains online:

https://blogs.scientificamerican.com/observations/green-alternative-to-border-wall-might-have-saved-texas/.

[100] See: "Yale Climate Opinion Maps 2023":
https://climatecommunication.yale.edu/visualizations-data/ycom-us/.

REFERENCES

Beck, Roy, and Leon Kolankiewicz. "The Environmental Movement's Retreat from Advocating U.S. Population Stabilization (1970-1998): A First Draft History," *Journal of Policy History* 12, no. 1 (2000): 123-56.

Bhalla, Simran. "Ministries of Light: Modernism and Modernity in Indian and Iranian State-Sponsored Documentaries." 1960s-1980s PhD dissertation: Northwestern University, 2021.

Bunge, Mario. *Evaluating Philosophies*. Springer, 2012.

Carosso, Andrea. "Donald the Family Planner: How Disney Embraced Population Control." In *Family in Crisis? Crossing Borders, Crossing Narratives,* edited by Eva-Sabine Zehelein, Andrea Carosso, and Aida Rosende-Pérez. transcript-Verlag, 2020.

Coates, Peter. *American Perceptions of Immigrant and Invasive Species: Strangers on the Land*. UC Press, 2007.

Chun, Wendy Hui Kyong. "On Hypo-Real Models or Global Climate Change: A Challenge for the Humanities," *Critical Inquiry* 41, no. 3 (2015): 675–703.

———. "On Patterns and Proxies, or the Perils of Reconstructing the Unknown." In *Accumulation: The Art, Architecture, and Media of Climate Change*, edited by Nick Axel, Daniel A. Barber, Nikolaus Hirsch, and Anton Vidokle. University of Minnesota Press, 2022.

Connelly, Matthew. *Fatal Misconception*: *The Struggle to Control World Population*. Harvard UP, 2010.

Cooper, Melinda. *Life As Surplus: Biotechnology and Capitalism in the Neoliberal Era*. University of Washington Press, 2008.

Crawford-Holland, Sasha. "The Temperature Complex: Epistemic Media and the Governance of Perception." PhD dissertation: University of Chicago, 2024.

Doane, Mary Ann. "The Indexical and the Concept of Medium Specificity." *differences: A Journal of Feminist Cultural Studies* 18, no. 1, (2007): 128-52.

Doyle, Julie. "Seeing the Climate? The Problematic Status of Visual Evidence in Climate Change Campaigning." In *Ecosee: Image, Rhetoric, Nature*, edited by Sidney Dobrin and Sean Morey SUNY Press, 2009.

———. "Where has all the oil gone? BP branding and the discursive elimination of climate change risk." In *Culture, Environment and Ecopolitics*, edited by Nick Heffernan and David A. Wragg. Cambridge Scholars, 2011.

Dunaway, Finis. *Seeing Green: The Use and Abuse of American Environmental Images*. Chicago UP, 2015.

Ehrlich, Paul. *The Population Bomb: Revised Edition.* Sierra Club/Ballantine, 1971.

——— and Anne H. Ehrlich. *The Population Explosion*. Simon & Schuster, 1990.

———, Loy Bilderback, and Anne H. Ehrlich, *The Golden Door: International Migration, Mexico, and the United States*. Malor Books, 2012.

Fauré, Ethan. "Where the White House Gets its Racist Immigration Policies." *Political Research Associates*, 1 Mar. 2018. https://politicalresearch.org/2018/03/01/where-the-white-house-gets-its-racist-immigration-policies.

Gardner, David. "Abortion becomes a policy weapon." *Financial Times*, 16 August 1984.

Gitelman, Lisa. *Always Already New: Media, History, and the Data of Culture*. MIT Press, 2006.

Gore, Al. *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It.* Rodale Press, 2006.

———. *Earth in the Balance: Forging a New Common Purpose*. Routledge, 2007.

———. "Global Climate Change." *C-SPAN,* 1 October 1997. https://www.c-span.org/video/?92129-1/global-climate-change.

———. "Senator Al Gore on Stabilizing World Population." *Population and Development Review* 18, no. 2 (1992): 379-83.

——— and Davis Guggenheim, dir. *An Inconvenient Truth*. 2006; Paramount Classics.

Goodman, Carly. "Unmaking the Nation of Immigrants: How John Tanton's Network of Organizations Transformed Policy and Politics." In *A Field Guide to White Supremacy,* edited by Kathleen Belew and Ramón A. Gutiérrez. University of California Press, 2021.

Gutiérrez, Elena R. *Fertile Matters: The Politics of Mexican-Origin Women's Reproduction*. UT Press, 2008.

Henderson, Gabriel. "Raising the Alarm: The Cultural Origins of Climate 'Denialism' in America, 1970-1988." PhD dissertation: Michigan State University, 2014.

Hilts, Philip J. "Carter-Era Report on Global Ecology Challenged in New Study," *The New York Times*, 30 May 1983.

Huang, Priscilla. "Anchor Babies, Over-Breeders, and the Population Bomb: The Reemergence of Nativism and Population Control in Anti-Immigration Policies." *Harvard Law & Policy Review* 2, (2008): 385-406.

Hultgren, John. *Border Walls Gone Green: Nature and Anti-immigrant Politics in America*. University of Minnesota Press, 2015.

Horn, Eva. *The Future as Catastrophe: Imagining Disaster in the Modern Age.* Columbia UP, 2018.

——— and Hannes Bergthaller. *The Anthropocene: Key Issues for the Humanities*. Routledge, 2020.

Kirk, Andrew. "Appropriating Technology: The Whole Earth Catalog and Counterculture Environmental Politics." *Environmental History* 6, no. 3 (2008): 374-94.

Klinenberg, Eric. "Denaturalizing Disaster: A Social Autopsy of the 1995 Chicago Heat Wave." *Theory and Society* 28, no. 2 (1999): 239-95.

Landsberg, H. E. "Global Climatic Trends." In *The Resourceful Earth: A Response to Global 2000*, edited by Julian Simon and Herman Kahn. Basil Blackwell, 1984.

Mahdawi, Arwa. "'Hipster Eugenics': why is the media cosying up to people who want to build a super race?" *The Guardian*, 21 April 2024. https://www.theguardian.com/lifeandstyle/2023/apr/20/pro-natalism-babies-global-population-genetics.

Mattern, Shannon. "The Big Data of Ice, Rocks, Soils, and Sediments: Inside the Material Archives of Climate Science." *Places Journal* (2017). https://placesjournal.org/article/the-big-data-of-ice-rocks-soils-and-sediments/

Meislin, R.J. "U.S. asserts Key to curbing Births is a free Economy." *The New York Times*, 9 August 1984.

Morales, John. "How weathercasters helped change public opinion on climate change." *Bulletin of the Atomic Scientists*, 24 October 2022. https://thebulletin.org/2022/10/how-weathercasters-helped-change-public-opinion-on-climate-change/.

Morgan, Benjamin. "After the Arctic Sublime." *New Literary History* 47, no. 1, (2016): 1-26.

Murphy, Michelle. *The Economization of Life.* Duke UP, 2017.

Nakićenović, Nebojša and Robert Swart, et al. *Special Report on Emissions Scenarios.* Cambridge UP, 2000.

Olszynko-Gryn, Jesse, and Patrick Ellis, "Science, Cinema, and Activism around Z.P.G. and Soylent Green." *Cinema Journal* 58, no. 1, (2018): 47-69.

Parry, Manon. *Broadcasting Birth Control: Mass Media and Family Planning.* Rutgers, 2013.

Pasek, Anne. "Mediating Climate, Mediating Scale." *Humanities* 8, no. 4 (2019).

Perlman, Mark. "The Role of Population Projections for the Year 2000." In *The Resourceful Earth: A Response to Global 2000*, edited by Julian Simon and Herman Kahn. Basil Blackwell, 1984.

Pringle, Thomas Patrick. "The Climate Proxy: Digital Cultures of Global Warming." PhD dissertation: Brown University, 2020.

Reimers, David M. *Still the Golden Door: The Third World Comes to America*. 2nd ed. Columbia UP, 1992.

Robertson, Thomas. *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism.* Rutgers, 2012.

Ross, Andrew. *Strange Weather: Culture, Science and Technology in the Age of Limits*. Verso Books, 1991.

Rost, Caterina. "The Divergent Trajectories of an Idea: Sustainable Development in Germany and the United States." PhD dissertation: University of Washington, 2017.

Sabin, Paul. *The Bet: Paul Ehrlich, Julian Simon, and Our Gamble Over Earth's Future*. Yale UP, 2013.

Sale, Kirkpatrick. *The Green Revolution: The American Environmental Movement, 1962-1992*. Hill and Wang, 1993.

Sasser, Jade. *On Infertile Ground: Population Control and Women's Rights in the Era of Climate Change*. NYU Press, 2018.

Simon, Julian. *The Ultimate Resource*. Princeton UP, 1981.

——— and Herman Kahn. "Introduction." In *The Resourceful Earth: A Response to Global 2000*, edited by Julian Simon and Herman Kahn. Basil Blackwell, 1984.

Spivak, Gayatri Chakravorty. *The Post-colonial Critic: Interviews, Strategies, Dialogues*. Routledge, 1990.

Tanton, John. "International Migration as an Obstacle to Achieving World Stability." *The Ecologist* 6, no. 6 (1976).

Turner, Fred. *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*. University of Chicago Press, 2006.

White, Evan. "Overpopulation Demonstration in Hayward," *KPIX Eyewitness News report,* 12 October 1969. https://diva.sfsu.edu/collections/sfbatv/bundles/189950

AUTHOR BIO

Thomas Patrick Pringle is Assistant Professor of Cinema and Media Studies at the University of Southern California. With Gertrud Koch and Bernard Stiegler, he is the co-author of *Machine* (2019). Pringle's writing on environmental media appears in *NECSUS: European Journal of Media*

Studies, Journal of Film and Video, and *New Media and Society,* as well as the volumes *Toxic Immanence: Decolonizing Nuclear Legacies and Futures* (2022) and *Power Shift: Keywords for a New Politics of Energy* (2025). He serves on the editorial board of *Film History: An International Journal.*