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Jacob Darwin Hamblin

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Introduction by Jacob Darwin Hamblin, Oregon State University

It has been nearly half a century since the biologist Paul Ehrlich “dropped” *The Population Bomb*. Although it struck some readers as a refurbished version of Thomas Malthus’s 1798 *Essay on the Principle of Population*, Ehrlich’s 1968 book raised new questions about a world of increasing numbers of people and limited resources. It served as a call to action, linking responsible reproductive practices to a range of issues from agriculture to pollution, and it quickly found a place in the canon of the rising environmental movement. The text has now crept into history, inviting an assessment of neo-Malthusian thinking in historical context, even as the pressures of world population continue to mount.

When *The Population Bomb* appeared, Ehrlich’s worry—sparked by a trip to India during which he witnessed people teeming about his taxicab—was widely shared. President Lyndon Johnson had warned about the alarming rise in world population, and even conservative commentator William F. Buckley reflected that the “old dog Malthus turned out to be very substantially correct in his dire predictions” (163). In a few years, though, that unity evaporated, and even among environmentalists Ehrlich found a few implacable foes.

How did that short-lived consensus about the population crisis come about, and how did it influence the environmental movement of the late 1960s and early 1970s? And then, why did it cause such controversy? **Thomas Robertson** asks these questions in *The Malthusian Moment*, a book that treats the population crisis in historical perspective, tying it not only to the physical reality of increasing numbers of people, but to the cultural, intellectual, and political trends of the mid-twentieth century. For Robertson, the wave of concern about population pressure did not merely a dust off of an old idea, but instead was an expression of concerns about poverty, hunger, and other serious issues in the wake of the Second World War. From the 1940s to the early 1970s, an “unusual alignment” of historic forces created a Malthusian moment, contributing to the environmental movement. These forces included population growth, certainly, but also included national security concerns, race relations, and women’s reproductive issues. The solutions offered during that era could be either “extremely liberating or shockingly repressive” (8).

One of this roundtable’s commentators is **Toshihiro Higuchi**, who completed his Ph.D. at Georgetown University in 2011. Now a faculty fellow at University of Wisconsin-Madison, Higuchi’s work focuses on the international dimensions of environmental issues during the Cold War. His dissertation, on the global nuclear fallout controversy, won the 2012 Oxford University Press USA Dissertation Prize in International History. In the dissertation, Higuchi pointed out the need to bridge the gap between cold war history and environmental history.¹

¹ Toshihiro Higuchi, “Radioactive Fallout, the Politics of Risk, and the Making of a Global Environmental Crisis, 1954-1963,” Ph.D. dissertation, Georgetown University, 2011.

I invited **Amy L. Sayward** to comment on Robertson's book because of her work on postwar international organizations, including ones that tried to address concerns raised by neo-Malthusians. Sayward is Professor of History at Middle Tennessee State University. When I visited the archives of the Food and Agriculture Organization in Rome several years ago, the staff presented me with two "bibles"—one was a finding aid, and the other was Sayward's book *The Birth of Development* (written under the name Amy L. S. Staples). The book highlights the role of FAO and other international agencies to confront hunger, and it shows how some of the most ambitious postwar dreams clashed with national interests in the United States, Europe, and elsewhere.²

Saul Halfon's work touches directly on the population questions raised in *The Malthusian Moment*. Currently an Associate Professor at Virginia Tech, Halfon has demonstrated the ways in which the international population problem was reframed during the 1990s, when a new consensus emerged that emphasized women's empowerment as a solution to an array of problems. In *The Cairo Consensus*, he highlights the importance of demographic and health surveys in establishing a shared discourse between women's issues and the population crisis.³

Sabine Höhler has written on many of the same people and events discussed by Robertson. She is currently an Associate Professor in Science and Technology Studies at the Royal Institute of Technology, Stockholm. Her work is animated by the notion of "Spaceship Earth," which encapsulates both the fragility of life and reliance on science and technology. Her work explores the connections between environmental consciousness and the space age, and she shows how the images of spaceships and lifeboats were used to illustrate the problems and potential solutions to population pressures.⁴

Before turning to the first set of comments, I would like to pause here and thank all the roundtable participants for taking part. In addition, I would like to remind readers that as an open-access forum, *H-Environment Roundtable Reviews* is available to scholars and non-scholars alike, around the world, free of charge. Please circulate.

² Amy L. S. Staples, *The Birth of Development: How the World Bank, Food and Agriculture Organization, and the World Health Organization Changed the World, 1945-1965* (Kent, OH: Kent State University Press, 2006).

³ Saul Halfon, *The Cairo Consensus: Demographic Surveys, Women's Empowerment, and Regime Change in Population Policy* (Lanham: Lexington Books, 2006).

⁴ Sabine Höhler, "'Spaceship Earth': Envisioning Human Habitats in the Environmental Age," *Bulletin of the German Historical Institute* 42 (2008), 65-85.

Comments by Toshihiro Higuchi, University of Wisconsin-Madison

It might sound odd and superficial to begin my review of Thomas Robertson's thoroughly researched, sharply analytical, and richly narrated book by talking about its illustrations. But take the image from page 145: it is a sketch of a mushroom cloud reprinted from a book published in 1971 by Georg Borgstrom, Swedish geographer and one of the leading Neo-Malthusians in Europe. In the caption, Robertson interprets the image in the context of the Cold War and nuclear fear, explaining that population growth was often imagined as "a military problem that tapped into the apocalyptic fears of the atomic age" (145). "The mushrooming of concern," Robertson observes earlier in the book, "grew as much from the alignment of potent international and domestic ingredients—ideas about poverty, war, racial difference, technology, sex, motherhood, and the role of the government—as from numbers on a chart" (8).

The image of the population bomb nicely captures Robertson's core argument. Just like the atomic bomb, the Malthusian problem inside and out of the United States was perceived to endanger the American way of life underwritten by the unlimited prospect of economic growth and mass consumption. Carefully mapping the historical trajectory of Neo-Malthusian discourses from the interwar to the Reagan era, Robertson challenges a mainstream interpretation. Matthew Connelly's latest book, for example, sees Neo-Malthusianism as a boost for birth control to save and perpetuate the promise of economic development and social welfare from the looming ghost of overpopulation on the horizon.⁵ In contrast, Robertson brings in the parallel intellectual development, led by Paul Ehrlich and others, that came to reconsider the fundamental premise of the growth- and consumption-driven lifestyle from a sweeping ecological point of view set on a global scale. Robertson argues, and the book convincingly demonstrates, that the Malthusian Moment that worried Americans in the postwar era was "not just a demographic bomb but also a cultural, scientific, and political bomb" that threatened the very fabric of American life (8).

A closer look at Borgstrom's mushroom cloud, however, reveals something unusual about how he and other Neo-Malthusians imagined the population bomb. His illustration is not only an allegorical image of nuclear fear, but also a demographic chart showing the past 2,000-year world population growth. The chart is rotated in 90 degrees so that the time axis is the "stem" of the mushroom cloud, with the population axis as its spread "arms." The left arm represents population growth in Asia, while the right arm shows that in the rest of the world. This visual presentation of demographic (and resource) statistics is hardly unique to Borgstrom's illustration. In fact, a distinct feature of Neo-Malthusianism seems to be the profusion of charts, coming in all imaginable forms, not only in scholarly studies but,

⁵ Matthew Connelly, *Fatal Misconception: The Struggle to Control World Population* (Cambridge: Belknap, 2008).

more importantly, in popular literature. In my opinion, the ubiquitous use of charts is one of the major contributions of the Neo-Malthusian discourse to the formation of environmental awareness in the United States and the world.

At first glance, charts might seem trivial and irrelevant to our understanding of Neo-Malthusianism. It might look like just another innocuous visual aid to drive one's argument. A chart, however, is a powerful, even decisive, device capable of shaping how we look at complex, large-scale, and long-term environmental changes that would otherwise remain imperceptible to us. It propels a few carefully selected variables to the forefront, allowing them to dominate our sight—and our thoughts. It is common that charts that show trends in population growth are construed as the indisputable evidence of *overpopulation*. This impression becomes even stronger when lines are extended into the sphere of future projections. Above all, charts, unless carefully crafted, have the effect of masking all uncertainties, removing doubt from knowledge, and spurring action. A chart purported to show an exponential growth of world population out of context is only a step away from making the reductionist conclusion that population is *the* problem, and that birth control is *the* solution. This mode of persuasion deployed by Neo-Malthusianism, which proved exceptionally successful, sowed the seeds of self-destruction. Charts created racial, class, and gender blind spots because their deceptively simple representation allowed people to bring their own prejudices into the interpretation. All prophecies that the charts were supposed to guarantee did not happen, at least not within the short time-span. In this sense, Neo-Malthusianism's distinct style of persuasion, using "numbers on a chart," is no less important than its ecological critiques for the rise of modern environmentalism and its limits.

Take one latest example to appreciate the awesome—and controversial—power of charts in our understanding of a complex and high-stake environmental dynamic: the much-storied "Hockey Stick" chart in the climate debate. Michael E. Mann and others originally drew this iconic chart in 1999 to visualize the conclusion that the recent temperature rise was exceptional—and by inference, anthropogenic. The reconstructed chart of temperature fluctuations in the Northern Hemisphere during the past millennium was largely flat until 1900 like a stick's "shaft," and then it shot up like the stick's "blade." The 2001 Intergovernmental Panel on Climate Change report—and Al Gore, of course—featured this chart in a prominent place as the compelling piece of "evidence" for anthropogenic climate change. Any historical reconstruction of climate data, however, cannot avoid containing large uncertainties in it. The Hockey Stick chart quickly became a chief target of attack by climate skeptics because of its power to bring the debate to closure in the public sphere. It was no wonder that all "merchants of doubt" jumped at this chart as a non-scientific hoax and mounted all efforts to flatten the blade.

Population and resource statistics that Neo-Malthusians consulted to draw charts as a tool of persuasion also constituted an epistemic underpinning of their globalist gaze illuminated in Robertson's book. A global problem like the population-resource balance is not only born global but also deliberately globalized through the

reframing of epistemic lenses. Paul Edwards, Clark Miller and others who discuss the genesis of global climate change, for example, point out how the construction of the general circulation model of the atmosphere “globalized” the meteorological outlook that had been essentially local until then. Matthew Connelly uncovers a strikingly similar dynamic for Neo-Malthusianism, which became global when the collection of population and resource statistics began to be coordinated worldwide after WWII. Although statistics itself is neutral in terms of geographic scale, a number of Neo-Malthusian pundits tended to aggregate data into a regional or world scale. Their charts, as it turned out, erased key local variations and complex population-resource relations. Charts based on aggregate statistics, in short, amounted to “seeing like a planet,” to reframe James Scott’s phrase “seeing like a state.” It is such an epistemic outlook that brought what Robertson identifies as “potent international and domestic ingredients” into unusual alignment.

In conclusion, Neo-Malthusianism’s contributions to the rise of American environmentalism seem to be even richer than what Robertson has suggested in his book. To be sure, Robertson did an excellent job in carefully retrieving the genealogy of ecological critiques against the American way of life without losing his sight on their dark side and excess. The author was also successful in locating the birth of American environmentalism in the confluence of Cold War America’s domestic and international concerns in its crisis stage of the late 1960s and early 1970s. What is left untouched in the book, however, is the episteme and rhetoric of Neo-Malthusianism. Its systematic exploitation of statistics and charts as a singular tool of diagnosis, prediction, persuasion, and mobilization—and its equally systematic production of blind spots and vulnerable sides—strongly resonated with the subsequent course of modern environmentalism leading up to the current climate debate. In this sense, the “Malthusian moment” opened the new era of environmental awareness.

Comments by Amy L. Sayward, Middle Tennessee State University

“At the Intersection”

I loved this book. It’s the type of book that gets you thinking—about your field, your research, your teaching, and how the world works in general.

As an international historian (we used to be known as diplomatic historians) and someone who’s currently writing a book about the United Nations, I frequently find myself exploring the borderlands between national and international history. It seems to me that it is exactly in these spaces (physical as well as intellectual) that identity, action, and thought are contested, negotiated, and defined. As I was writing my first book, I came face-to-face with the postwar international response to food shortages and population growth.⁶ The Food and Agriculture Organization of the United Nations (FAO) in those years was desperately aware of the Malthusian dilemma, as it worried about both immediate postwar food shortages and how to address the burgeoning nutritional needs projected into the longer postwar era. In a much more radical approach than any described in *The Malthusian Moment*, FAO Director-General Sir John Boyd Orr proposed that the long-term solution was to stop thinking of food as a commodity at all and to simply distribute it to those who needed it. Realizing that this was impossible in the world as it was, Orr then moved to create a World Food Board that was only slightly less radical in its suggestion of creating international food buffer stocks that would ensure the globe’s farmers a fair price and the world’s hungry a sufficient food supply at a reasonable price. Not surprisingly, the world’s largest food exporter (the United States) and its largest food importer (the United Kingdom) teamed up to derail the proposal and maintain the status quo, leaving the plans for a World Food Board languishing in history’s dustbin.⁷

The World Health Organization (WHO) also quickly became aware of the challenges of population, as its work decidedly had an impact on population in the short term; its distribution of antibiotics, vaccines, and DDT ensured that millions lived whose lives would have otherwise been shortened by infection and diseases such as yaws, tuberculosis, and malaria in the postwar period. Yet the WHO chose to side-step the political landmine of population early on. As it prepared to launch its Malaria Eradication Program, the WHO membership declared that the maximum population of the planet was unknowable and that future generations might well increase that

⁶ Amy L. S. Staples, *The Birth of Development: How the World Bank, Food and Agriculture Organization, and the World Health Organization Changed the World, 1945-1965* (Kent, OH: Kent State University Press, 2006).

⁷ Amy L. S. Staples, “To Win the Peace: The Food and Agriculture Organization, Sir John Boyd Orr, and the World Food Board Proposals,” *Peace & Change* 28 (October 2003): 495-523.

capacity in any case.⁸ We see a similar argument in *The Malthusian Moment* enunciated by Ronald Reagan on his road to the White House; he would become a leading spokesman of the coalition of forces that disputed the Malthusian crisis mentality of the 1970s and dismantled the consensus that population was a “problem” and that there were clear and evident solutions that should be pursued. I really like the way in which *The Malthusian Moment* has helped me to contextualize these U.N. developments within an even larger intellectual context about the interconnections between war, population, development, consumption, and environmental resources. In a perfect world, or perhaps in a second book, it would be fascinating to hear Robertson fill out this debate—what were ecologists, policy-makers, politicians, biologists, and commentators in Europe, Latin America, the Middle East, and the other parts of the world saying about exploding population and limited resources? Were the American commentators communicating with counterparts abroad? Or were they—like Paul Ehrlich in India—just observing and commenting on what they saw abroad?

As an international historian in a department full of graduate students studying U.S. public history, I am frequently explaining (or some might say proselytizing about) how the “national” is unknowable without an understanding of the “international.” Just today, I suggested the book to one of our graduate students, who wanted to understand how national parks changed as a result of Great Society programs; my only regret is that the book lacks a bibliography, a lamentable deficiency in many academic monographs these days. Indeed, it often seems to me that “the international” is “the national” and vice versa (at least during the twentieth and twenty-first centuries). Scholars examining the Spanish-American War, the women’s suffrage movement, U.S. President Woodrow Wilson’s post-WWI diplomacy, the Civil Rights Movement, and other significant events of the last century have illuminated the ways in which one cannot understand U.S. foreign policy without a deep understanding of the domestic context; conversely, an understanding of international events helps us understand how “American” values are defined, contested, clarified, and muddled as a result of international events.⁹ As I read through *The Malthusian Moment*, I wondered which “familiar” event Robertson gained the most surprising depth by looking at it from these different angles.

⁸ Malaria Conference for the Western Pacific and South-East Asia Regions, “Report,” *WHO Technical Report Series* 103 (May 1956): 20, as discussed in Staples, *The Birth of Development*, 177.

⁹ See, for example, Kristin Hoganson, *Fighting for American Manhood: How Gender Politics Provoked the Spanish-American and Philippine-American Wars* (New Haven, CT: Yale University Press, 1998); Leila J. Rupp, *Worlds of Women: The Making of an International Women’s Movement* (Princeton, NJ: Princeton University Press, 1997); Erez Manela, *The Wilsonian Moment: Self-Determination and the International Origins of Anticolonial Nationalism* (Oxford: Oxford University Press, 2007); and Mary L. Dudziak, *Cold War Civil Rights: Race and the Image of American Democracy* (Princeton, NJ: Princeton University Press, 2000).

As I was planning a Summer 2013 graduate seminar on “Cold War America” that will focus on these interconnections between the domestic and the international, *The Malthusian Moment* literally became a textbook for me on how to marry the “national” and the “international.” So after my seminar students spend a couple of weeks examining a variety of works about key national/international debates in the immediate postwar era, the whole class will read *The Malthusian Moment* at the midterm point so that we can examine and discuss the ways in which these two realms intersect and interact. As each student is responsible for writing a book review each week, I intend to have students each write a review of *The Malthusian Moment* from a different perspective—i.e., review the book from the perspective of a historian of race, class, or gender or as an international historian, an American political historian, an environmental historian, or an intellectual historian. There aren’t very many academic monographs that are rich enough to be explored from so many different perspectives (so I hope that enough grad students enroll in the course to cover all of these!).

Finally, I think this book helps us not only as academics thinking about history but also as citizens of a very small 21st-century world, for if we know anything in this new century, it is that the world—its nations, its peoples, its problems and their solutions—is complex. Even though we might crave the “sound-bite” answer, we know deep down that *it’s just not that easy*. And if we get nostalgic, thinking that there used to be simpler answers to the world’s questions, this book will help to cure us of that nostalgia. We get to see two of our main protagonists of the Malthusian moment, John D. Rockefeller III and Paul Ehrlich, move steadily through the pages from their pat, cure-all answer (be it birth control or zero population growth) to a time when they rather quickly realize that the issue is more complex than a simple and single line of action. Race, class, gender, differing scientific opinions, and other national as well as international dynamics quickly muddied the clear and easy solutions offered to the Malthusian crisis of the mid-20th century. Indeed, *The Malthusian Moment* emerges very much as a work of intellectual history, with its biographical vignettes and its clear discussion of the arguments made by each main thinker. In fact, one of the strengths of the book is that each line of thought and each thinker is explored across the chapters and pages, as a fluid, real-life thinker responding to challengers as well as the changing social and political currents of their times. One gets a sense that the author is struggling with a similar dilemma—how and whether to utilize this history to understand our present-day challenges arising from global population, environmental concerns, and the very real politics of nation-states with competing interests. The conclusion to the book is very measured, seemingly trying to avoid the pitfalls experienced by the historical agents in his pages of making facile conclusions based on the available evidence or of underestimating the challenges to making any significant change in American culture and patterns of consumption. It’s the type of conclusion that leads me at least to want to have a few drinks with Thomas Robertson at a history conference and ask what he really thinks (or perhaps he might reveal his thoughts in this H-Environment roundtable).

It's frequently said that the standard of a good academic book is whether or not it causes you to change your lectures. I've been trying to think about how this book might make it into my American History survey lectures, but I know it's already caused me to rethink my upcoming graduate seminar on "Cold War America." And any book that gets you thinking not only about your teaching but also your own research and your place in the world is certainly a book worth reading.

Comments by Saul Halfon, Virginia Polytechnic Institute and State University

The *Malthusian Moment* provides a well-documented history of environmental Malthusianism from its roots in the first decades of the twentieth century to its decline in the 1970s and 80s. I am compelled by this account. What Robertson does so well is to show that environmental Malthusianism is not a singular ideology but rather a complex and evolving social movement, with internal contradictions and disagreements. This should not be surprising, but all too often critics, in particular, paint this movement in broad strokes. The book is very useful in allowing us to see that complexity, including divergent and evolving attitudes towards critical issues of social justice, coercion, birth control, technological change, and environmental resilience. The other thing that the book does extremely well is to show the important role that Malthusianism played in both the development of environmentalism and the broad sweep of politics in the US.

For Robertson, Malthusianism is best characterized as the melding of concerns about resource limits with a focus on population size. And this story shows us the power of the Malthusian approach in capturing fear and crisis and channeling it towards social change. This progressive Malthusianism, of course, works against the deep conservatism of Malthus himself, but never completely.

In the spirit of engagement rather than “review”, I use this text as a stepping-off point for thinking through two issues: the place of Robertson’s story in the macro-politics of population disputes, and the relation of environmental Malthusians to other contemporary population thinkers.

First, how does this particularistic account intersect with the broad ideological accounts told by a range of other authors (e.g., Harvey 1974; Waterman 1998; Lohmann 2005)? While I’ve never been one to favor macro-ideological accounts over the kind of detailed empiricism provided by Robertson, it is useful to think of Malthusianism’s place in its relationship to the Malthus-Godwin-Marx “debate”. This triad classically pits the liberal belief in the “perfectibility of man” against the radical focus on power and ideology and the conservative notion of natural limits and the necessity of suffering. Malthus, of course, famously wrote his treatise “Essay on the Principle of Population” in response to Godwin’s “Enquiry Concerning Political Justice” (Malthus 1798; Godwin 1796). He argued that Godwin’s optimism about human progress poorly accounted for the fact that natural laws prevent a perfect, egalitarian society, because only misery or vice can keep the population’s size in check. A perfectly content population will breed uncontrollably, he argued, leading ultimately to an undersupply of food and thus even greater misery. Godwin demurred, suggesting that enlightened thinking and learning would head off such a fate. Marx joined in some 70 years later to recast the frame of debate, suggesting that while nature may be limited, it is the control of resources within class struggle that ultimately leads to misery, and Malthus is just an apologist for class privilege

(Marx 1955, 261 & 306; although Waterman 1998, suggests that Marx's personal attacks on Malthus oversimplify his own relation to the population thesis). Each of these three authors make claims about human nature and the inevitability of a particular kind of unfolding – a teleology of human experience towards either class stability or egalitarian dreams.

Instead of exploring this debate at length, which has been amply done elsewhere (e.g., Harvey 1974), I'd like to explore the ways in which the three positions of this debate, though reshuffled in terms of political alignment and correlates of the arguments, play out in the story as told by Robertson. For starters, modern Malthusianism, often referred to as neo-Malthusianism, is not synonymous with Malthus's original theory, which was focused more narrowly on food and England, and bound tightly to an existing theory of class. Malthus also understood birth control as a moral vice and as a detriment to capital and so preferred the inevitability of population boom and bust among the lower classes (Perelman 1979). Neo-Malthusians by contrast are a decidedly interventionist bunch, particularly when it comes to reproduction, and they conceptualize natural limits in a much expanded way. Nevertheless, this position remains associated with Malthus because of its continued focus on natural limits in relation to geometric population growth.

Thus, in the age of ascendant liberalism throughout the post-war period, the traditionally conservative Malthusian position took on the mantle of interventionist, progressive radicalism, challenging the very premise of growth and progress by appealing to a naturalistic argument about limits. This position appeared at first to align well with post-Marxist interventionism which was similarly challenging liberal and capitalist growth models. The progressive branches of both movements supported greater social equality, particularly for women. The weak coalition between these two sets of actors, however, was fractured by concerns over coercion, immigration, and racism as the post-Marxist focus on social justice and distribution of wealth encountered the non-negotiability of a neo-Malthusian emphasis on natural limits. From this macro-political frame, Robertson's story sheds new light on how the focus on limits managed to gain a foothold in the otherwise solidly liberal progressivism of post-war America, laying part of the groundwork for modern environmentalism, and how liberalism was ultimately reasserted. My second point builds on this last thought, and plays off Robertson's strong claim that environmental Malthusianism was not a unified project or ideology. Such an approach always raises definitional issues. While Robertson reasonably claims that Malthusianism had largely lost its hold by the 1980s, such a claim partly depends on how that crucial term is understood. Most importantly is the question of crisis in Malthusianism, and the implied relation between crisis and either immiseration or coercion. I raise this issue because it strikes me as central to the ethical disputes around Malthusianism, but is also important for thinking about the status of Malthusianism through the 1990s and into the present.

Two sorts of scholars and activists have historically occupied the polemical space of thought on population and resources: those who are right and those who are reasonable – the Malthusian ideologues and the realists. Although Robertson reminds us that this characterization is a bit unfair, the ideologues are the central figures of his book. Ehrlich and Hardin certainly, but also reaching back to the crisis orientation of Osborne, Vogt, and even Margaret Sanger, the progressive, feminist social reformer with eugenic beliefs. We might add such prominent figures as Lester Brown and the Club of Rome to this list, and also such recent scholars as Thomas Homer-Dixon (Meadows et al. 1972; Brown 1976; Homer-Dixon 1998). These scholars and activists have long captured the public imagination and kept population discourse in common parlance.

But it is population “reasonableness” that comes to prominence in the 1980s and 90s – not only following on the descent of Malthusianism, but hastening its demise (Corrêa 1994; Sen, Germain, and Chen 1994; Sen and Snow 1994; Cohen 1995). I think of figures like Amartya Sen (Sen 1981; Sen 1995), who has never been accused of Malthusianism, yet takes serious account of population growth in his analysis. Or more centrally, the 1994 Cairo Conference and its intellectual progenitors: people like Adrienne Germain, Joan Dunlop, Lincoln Chen, Steve Sinding, and Judith Bruce (Bruce 1987; Germain 1994; Sinding, Ross, and Rosenfield 1994; Dunlop, Kyte, and MacDonald 1996). These are professionals within the population field who take population and resource limits very seriously, were in fact brought into population work by Malthusian concerns, but work adamantly against a crisis framing, any hint of coercion, or a reductionist focus on global numbers. In Robertson’s focus on *environmental* Malthusianism, he loses sight of such individuals and the profound impact they had during the 1980s and 1990s on both public frames and national and international policy (see, e.g. Halfon 2007). Would these folks be considered Malthusians, given their sustained focus on population dynamics and its dangers? Not usually, because their notion of danger is much broader than a focus on inherent environmental limits would suggest, their concern with population dynamics is with far more than growth, and their scientific reference point is not ecology, but rather demography. These actors come from a line of thought that intersects repeatedly with the actors catalogued by Robertson, populating Malthusian institutions, but pushing population thought in a new direction. They are the inheritors of Godwin and Condorcet’s belief in human progress as much as Malthus’ pessimism about limits and Marx’s concerns with the structures of social inequality. They are pragmatists who borrow from all three traditions – a concern with limits and the ill effects of population dynamics with a faith in human progress and a sustained focus on power, equality, and justice.

The history of these other population thinkers accompanying the environmental Malthusians, then, once again raises the question of whether this perspective can include a non-crisis frame, and thus whether Malthusianism can ever escape its history of coercion – either the direct coercion of neo-malthusian population control or the indirect coercion of Malthus himself, who preferred the inevitability of the

misery of the poor to the deferred misery of rich and poor alike resulting from human compassion.

The above essay refers to the following scholarship:

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 Comments by Sabine Höhler, KTH Royal Institute of Technology, Stockholm

“Of Boats and Beds”

“Is there anything about the 1970s – as opposed, say, to the 1920s or 1870s – that should make this the decade in which limits to growth become apparent?”¹⁰ Environmental scientists like physicist John Holdren and ecologist Paul Ehrlich who posed this question in 1974 and also environmental historians tend to point to phenomena of unprecedented growth and decline: resource consumption, environmental degradation, pollution, and an exponential increase of world population. Tom Robertson resists such realist answers. He challenges his readers to perceive the intersections of the rising American environmental movement and a revitalized Malthusianism as a timely *political* conjunction around 1970. Unlike the Malthusians of the nineteenth century who were concerned with political economy the mid-twentieth century Malthusians pointed to the environmental effects of population growth. Environmental Malthusianism gained momentum as part of the political ecology of the era.

The Malthusian Moment drew on time and torque. Robertson shows how Malthusianism thrived on much more than the clash of conservation ecology and consumption economy in American history. In the short twentieth century from the First World War to the end of the Cold War Malthusianism sucked in models of ecological interconnectedness and of economic affluence; it prospered on domestic unsettlement, urban unrest and the social liberation movements of the 1960s, and it mustered further strength with international relations and foreign aid policy. Malthusianism fed and grew on the postwar American way of life, and yet the anxiety it gathered hit the country in a narrow moment. Ehrlich’s much-acclaimed *Population Bomb* (1968) turned out a barrel burst – within a few years it became the population “dud”. Soon the New Right bulldozed what was left of Malthusian discourse of absolute limits, to prepare the grounds for a new growth regime. Robertson’s book is beautifully written, knowledgeable and even gripping at times. The author brings original material and a fresh perspective to population politics that has enjoyed new attention in the context of the rising occupation with postwar environmentalism in recent years.¹¹ He narrates environmental history from a social history and foreign relations perspective. What does a scholar of science and technology studies have to add to such an encompassing story? I suggest that an STS perspective can grasp the conceptions of nature and environment that underpin their politics and economics. I would like to offer three points for discussion that address the ecological closed world perspective of the environmental era:

¹⁰ John P. Holdren and Paul R. Ehrlich, “Human Population and the Global Environment,” *American Scientist* 62 (1974), pp. 282-292, quote p. 290.

¹¹ Roundtable on Matthew Connelly, *Fatal Misconception: The Struggle to Control World Population*. Cambridge, Mass./London: The Belknap Press of Harvard University Press 2008.

1. Robertson acknowledges the groundwork of ecology and human ecology for Malthusian thought, and he adopts a critical view on the newly emerging populations, including human populations, as numerical aggregates. I argue that we need to bring the scientism in population accounting to the fore to understand how the ecological sciences undergirded contemporary survivalist discourse.
2. Throughout the book the author refers to the earth's carrying capacity as a growth-limiting concept of ecology, but he does so in an affirmative way. However, carrying capacity did not describe but it prescribed the earthly situation. We need to attend to the power of the concept to understand how it became a tool in ecology and in global politics.
3. Robertson repeatedly points to or employs boat imagery. But the "closed vessel of a planet with diminishing carrying capacity" (23) held a variety of meanings in store. When Ehrlich in his 1968 bestseller spoke of "the good ship Earth"¹² on the verge of sinking he referred to world population as a community. To this one-boat concept of interdependence and vulnerability Spaceship Earth added technoscientific management, a complex system of selectivity as well as an exit strategy.¹³ To understand how the spaceship differed from the ship in denoting growth and depletion phenomena we need to analyze how it reconciled sufficiency and efficiency solutions to environmental sustainability.

I will take Robertson at his word by discussing how Environmental Malthusianism saw humans as proliferating bedfellows and also as bounded boatfellows. Such a perspective could also free the environmental historians from the responsibility to take sides in a discourse that does not offer any safe ground. Robertson approaches the problem by giving a balanced account; he is careful to underline the Malthusians' contributions to environmental science without excusing their simplified population theories and eugenic tendencies. But being environmentalists did not turn the new Malthusianists into better or more bearable theorists. I argue that we must avoid accounting and balancing altogether as these practices mirror the methods the Environmental Malthusians marshaled and applied to construct the closed earth and the earthly resources to allocate.

¹² "It is obvious that we cannot exist unaffected by the fate of our fellows on the other end of the good ship Earth. If their end of the ship sinks, we shall at the very least have to put up with the spectacle of their drowning and listen to their screams." Paul R. Ehrlich, *The Population Bomb*. New York: Ballantine 1969 [4. ed.; first published 1968], p. 132.

¹³ For the "Only One Earth" perspective on Spaceship Earth see the book by political scientist and economist Barbara Ward, *Spaceship Earth*. New York: Columbia University Press 1966. The metaphor of the space capsule proved quite versatile. Together with political scientist Richard Harriman Ehrlich in 1971 organized a book titled *How to Be a Survivor: A Plan to Save Spaceship Earth* around the metaphor of Spaceship Earth, with chapter titles such as "The Size of the Crew" and "The Control Systems," along with one chapter describing the new "spacemen" culture that would have to develop. Paul R. Ehrlich and Richard L. Harriman, *How to Be a Survivor: A Plan to Save Spaceship Earth*. New York: Ballantine 1971.

1. Balancing the Masses

“Bookkeeping on a national scale” (13) paradoxically bore down on US citizens with the immense population losses and the poverty in Europe and its colonies in the wake of World War I. Americans were barely affected but their self-image of remoteness in an interconnected world waned. Robertson shows how population statistics became a key tool also to biologists who studied population-resource relations. In the 1920s Raymond Pearl observed *drosophila* generations in milk bottles multiplying and eating up their environment exponentially. While Pearl worried about differential fertility, about some populations ruthlessly outbreeding others, his colleague Edward East worried about deteriorating soil fertility. Population and resources, both sides of the relation rested on the view that the volume and surface of the earth were absolutely limited. Growth and consumption would ultimately meet the problem of finite space, expressed in the concept of the earth’s ecological carrying capacity. Ecologist Aldo Leopold added the environment as a relational term when he cautioned that capacity was not fixed but in danger of shrinking through overconsumption.

Robertson adds zest to this part of the book by paralleling the ecologists’ apprehensions with the Keynesian consumption-based growth economy that took hold in the US in the 1930s. Beliefs in the essential finiteness of the earth and the principally limitless growth made for a complicated constellation. And sure enough: both ecology and economy were heavily preoccupied with food chains, consumption cycles and balance sheets. I believe that this economy of nature needs to be taken seriously, since it became foundational in ecologists’ efforts after World War II to take nature into account.¹⁴ The eminent US conservationist Fairfield Osborn, whose work Robertson describes in detail, in the 1940s and 50s literally put a common denominator to the population-resources-environment conjunction when considering the world “under the control of the eternal equation – the relationship between our resources and the numbers as well as the needs of our people.”¹⁵ According to Osborn, this relation “finds expression in a simple ratio wherein the numerator can be defined as ‘resources of the earth’ and the denominator as ‘numbers of people.’ The numerator is *relatively* fixed and only partially subject to control by man. The denominator is subject to substantial change and is largely, if

¹⁴ Sabine Höhler, “The Law of Growth: How Ecology Accounted for World Population in the 20th Century,” *Distinktion. Scandinavian Journal of Social Theory* No. 14 (2007), special issue “Bioeconomy,” ed. Lars Thorup Larsen, pp. 45-64. For the change of “population” into a statistical entity to be handled by mathematics see Barbara Duden, “Population,” in: Wolfgang Sachs (Ed.), *The Development Dictionary: A Guide to Knowledge as Power*. London: Zed Books 1992, pp. 146-157. Ecological economists since the 1960s have referred positively to the task of “taking nature into account.” See Wouter van Dieren (Ed.), *Taking Nature into Account: A Report to the Club of Rome*. New York: Springer 1995. The problem of accountability is addressed in Sabine Höhler and Rafael Ziegler (Eds.), Theme Issue “Nature’s Accountability,” *Science as Culture* 19 (2010) 4.

¹⁵ Fairfield Osborn, *The Limits of the Earth*. Boston: Little, Brown & Co. 1953, p. 77.

not entirely, subject to control by man.”¹⁶ Arranging people and resources in a basic ratio, a fraction, opened up a new accounting perspective of adjusting the population-resources-environment relation: “We have now arrived at a day when the books should be balanced. But can they be?”¹⁷

Robertson points out that the early postwar ecologists invoked the Malthusian “laws” long before the full-fledged population ecology of the 1970s. The reformulation of ecology as an economical problem of balance paved the way for population ecologists like Garrett Hardin, another key figure of Robertson’s book, to set out and convert earthly masses of population and resources in absolute numbers. Hardin argued that, taken the 1970 rate of population growth of 2 %, within 600 years there would be “standing room only” on all the land areas, with a population of 8.27×10^{14} . Converting the entire mass of the earth to human flesh would result in 1.33×10^{23} people, achieved in only 1,557 years. The scope of space and time, the simplistic calculations as well as the inevitability of the expected future gave Hardin’s work a science fiction quality. He acknowledged that such thought experiments of mass balance might seem bizarre. “The real point of the mathematical exercise (so often missed) is to compel choice.”¹⁸

2. Thinking Locally, Acting Globally

My point is that the choice Hardin demanded on the grounds of pure mathematics opened certain options while closing others. Biomass calculus accredited the origins of and the solutions to the ‘population problem’ not to history and politics but to biology. Population ecologists justified coercive measures through science, and carrying capacity became their economic instrument. In terms of populations carrying capacity demarcated the maximum number of a species that an environment could support indefinitely without reducing its ability to support the same number in the future. In terms of nature’s revenues, Hardin defined carrying capacity as “the level of exploitation that will yield the maximum return, in the long run.”¹⁹ The problem of limited ecological carrying capacity gave rise to the question of how to dispense with the increasing “surplus” of human beings and entire populations.²⁰

¹⁶ Ibid., p. 207, emphasis in the text.

¹⁷ Fairfield Osborn, *Our Plundered Planet*. Boston: Little, Brown & Co. 1950 [1948], p. 43.

¹⁸ Garrett Hardin, *Exploring New Ethics for Survival: The Voyage of the Spaceship Beagle*. New York: The Viking Press 1972, p. 172-174. Hardin used phrase from authors Edward A. Ross (1927) and Karl Sax (1955): Edward A. Ross, *Standing Room Only?* New York: Century 1927; Karl Sax, *Standing Room Only: The World’s Exploding Population*. Boston: Beacon Press 1960 [orig. 1955].

¹⁹ Hardin, *Exploring New Ethics for Survival*, p. 114.

²⁰ Ehrlich repeatedly spoke of “human surplus.” Ehrlich, *The Population Bomb*, p. 167. Sabine Höhler, “‘Carrying Capacity’ – the Moral Economy of the ‘Coming Spaceship Earth,’” *Atenea. A Bilingual Journal of the Humanities and Social Sciences* XXVI (2006) 1, pp. 59-74 (special issue “Humans and the Environment”).

William and Paul Paddock chose an approach that demonstrates the moral economy of global population surplus management in their 1967 book *Famine – 1975!* which Robertson mentions only in passing. The Paddock brothers proposed the classification system of “triage” used in military medicine to select populations facing a Malthusian food-population collision for rescue through US food aid.²¹ Triage assigned priority of treatment to those most likely to be saved through medical intervention, while discarding the “walking wounded” as well as those irretrievably lost. In order to prevent a fast approaching, executing triage on the level of nations would allow a rational choice between those nations doomed to suffer the Malthusian catastrophic disaster, those nations able to cope with the problem of overpopulation on their own, and those nations that should receive food aid with the chance to overcome their crisis.

The original publication was subtitled *America’s Decision: Who will Survive?* The Paddocks never criticized but confirmed the global hegemonic claim of the United States. From America’s privileged position to categorize between deserving and undeserving nations they construed confidence in America’s future strength: “The time of famines can be the catalyst for a period of American Greatness.”²² Paradoxically, Western states that like the US deemed themselves fit and authorized to decide about survival on a global scale were also those countries able to statistically corroborate the global classification systems and the categories they identified. The sciences, like demography, population ecology, resource ecology, or agriculture, supported the way ecologists economized the earth on the basis of carrying capacity.

3. Merging Sufficiency and Efficiency Ideals

In the final chapters of his book Robertson describes the increasing disunity of the ‘human family’ after 1970, when the “strange bedfellows” (152), which had joined for the brief climax of Environmental Malthusianism between 1968 and 1970, fell out with each other. Robertson compellingly talks about the most unlikely but timely partnerships of Environmental Malthusians with the women’s movement, the Republicans and their new president Richard Nixon, and even Pope Paul VI. These alliances fell apart with a politics of disaggregation on the global and the local scale: globally, the “one boat” rhetoric had given the first world a free pass as the major environmental consumer and polluter; domestically it affected minority groups while sparing the white majority.

Robertson admirably tackles the question of the “unity of mankind” by showing how this discourse of unity served claims of Environmental Malthusians “in the name of the greater good” (55) while justifying discriminatory practices. My objection concerns the use of Spaceship Earth as a figure of unity in the book. Spaceship Earth did not express that “we’re all the same” (190), and it did not follow the “we’re all in

²¹ William Paddock and Paul Paddock, *Famine – 1975!* London: Weidenfeld & Nicolson 1968 [orig. *Famine – 1975! America’s Decision: Who will Survive?* Boston: Little, Brown & Co. 1967].

²² *Ibid.*, p. 230.

the same sinking boat” logic (200). Instead it signified, following Ehrlich in 1967, literally “a spacecraft with a limited carrying capacity” (150). Spaceship Earth became the model for sustainable environmental management by combining ecological sufficiency and efficiency ideals. Both visions borrowed from the Space Age imagery and the ideal of an ecologically sufficient and technologically efficient space capsule.

Advocates of sufficiency argued in terms of absolute limits, stressing the need for sustained resource use and complete material recycling. As Robertson points out, the economist Kenneth Boulding, one of the founders of ecological economics, promoted ecological integrity and a steady state economy (96). However, also promoters of efficiency called on the Spaceship Earth metaphor. The architect Richard Buckminster Fuller built on proficient technological design to achieve development and economic growth. Fuller meant to overcome relative limits through ecological modernization. Spaceship Earth to him became the prototype of an environment yet to come, controlled by the global science and engineering elite.²³

Like the “one boat” model the spaceship ignored and downplayed important differences of race, gender, and class, as well as historical causes for differential development such as imperialist exploitation and capitalism. And yet the spaceship was highly selective. The spaceship selected according to criteria of system functionality to meet the requirements of a sufficient and likewise efficient seamless system, seemingly free of values and politics. Unlike ark ethics and Hardin’s lifeboat ethics, spaceship ethics selected according to utility, practicality and integrity, to maintain a metabolism, a circulatory system of exchanges of energy, matter and information. Unlike the “one boat” concept Spaceship Earth expressed not only community and vulnerability but also the optimum conditions for survival. This included the vision of exiting the environmental predicament altogether by sending offspring biospheres to populate other planets. Acknowledging the technological flip side of ecological ideals might contribute to the explanations of why absolute limits by the end of the Carter administration gave way to relative limits and to a new progressive model of “sustainable growth” the World Commission on Environment and Development promoted in 1987.²⁴

²³ Buckminster Fuller, Richard, *Operating Manual for Spaceship Earth*. New York: E. P. Dutton & Co. 1971 [orig. Carbondale: Southern Illinois University Press 1969]. Sabine Höhler, “The Environment as a Life Support System: the Case of Biosphere 2,” *History and Technology* 26 (2010) 1, pp. 39-58.

²⁴ World Commission on Environment and Development (Chairman Gro Harlem Brundtland), *Our Common Future*. Oxford/New York: Oxford University Press 1987.

Response by Thomas Robertson, Worcester Polytechnic Institute

During the research and writing of *The Malthusian Moment*, whenever the question of “What would all this amount to?” would begin to weigh too heavily on my mind, I would always ratchet down expectations by reminding myself that the book was not the “last word” on the subject but really only part of an ongoing conversation. I’m very pleased that Jake Hamblin (and H-Environment) has helped create the conversation I hoped for by assembling such an interesting group of interlocutors. Hearty thanks to Saul Halfon, Amy Sayward, Toshihiro Higuchi, and Sabine Höhler for their thought-provoking essays.

One of the reasons I wanted to write *The Malthusian Moment* was to give a more evenhanded account of an important history and important topic typically dominated by polemics. Thus I very much appreciate Saul Halfon’s emphasis on the difference within population circles between the ideologues (“those who are right”) and the realists (“those who are reasonable”). Halfon does a real service by putting my story into the larger political landscape of Malthus, Godwin, and Marx—not something I do explicitly in the book—and then showing how these intellectual traditions get scrambled in the twentieth century. Unlike the environmental Malthusians of the twentieth century, Malthus, Godwin, and Marx did not live in a world of the pill, mass produced condoms, and the IUD, nor in a world of global war, atomic power, the green revolution, DDT, modern feminism, and, especially, what John McNeill has called the “growth fetish.” Halfon points out that the Reasonable Malthusians combine “a concern with limits and the ill effects of population dynamics with a faith in human progress and a sustained focus on power, equality, and justice.” In other words, they do not fall into a single camp, but borrow from all three. He notes that Amartya Sen, one of the most cited critics of Malthusian extremism, also takes serious account of population growth in his work.

I agree with Halfon completely that critics of Malthusianism often paint with too broad a brush. They rarely define their terms precisely. In my telling, some postwar Malthusians aligned with Malthus’s conservatism by offering narrow interpretations of where poverty and environmental problems come from, warning of crisis, and calling for coercive measures that would have harshly “blamed the victim.” But not all who warned of population growth supported narrow diagnoses and coercive remedies. Some embraced an even stronger environmental logic than Malthus ever articulated, offered a diagnosis of society that emphasized population as part of a multicausal explanation, and recommended remedies that stressed voluntary methods and greater freedoms for women. Moreover, some showed elements of all of these. Also important, and often overlooked, is that many people, such as Paul Ehrlich, changed their views over time. Halfon nicely sums up one of my main messages: “Environmental Malthusianism is not a singular ideology but rather a

complex and evolving social movement, with internal contradictions and disagreements.”

Halfon is right that I devote more time and attention to the ideologues than to those with more reasonable views. That is perhaps because I wanted to show the blindspots of their approaches (something, alas, still necessary) and to show what's often missed or overlooked by blanket condemnations. I also wanted to emphasize the historical contexts in which all this played out. It's very possible that I was more interested in 1948 and 1970 than in 2013.

I did at one point contemplate ending the book not where I did—showing how the population and environment debates figured prominently in the Reagan Revolution—but with what Halfon suggests, a chapter emphasizing the triumph of the Reasonables. Halfon suggests examining the 1994 Cairo Conference and its intellectual progenitors: people like Adrienne Germain, Joan Dunlop, Lincoln Chen, Steve Sinding, and Judith Bruce. That would be a great place to start. Since I'm drawn to writing about politicians and writers who achieve a certain amount of public success, I probably would have also added an examination of Al Gore in the 1990s. Gore's *Earth in the Balance* (1992) focused in part on population matters, and yet was reasonable enough that it didn't jeopardize his spot on the Democratic ticket. Analyzing his achievements and compromises as part of the Clinton Administration would have provided a good chance to trace the evolution of middle-of-the-road population policies.

But, I confess, when it came to writing what would have been chapter 10 of *The Malthusian Moment*, I was out of steam and way over my word limit. Not intellectually justifiable choices, I admit.

One of the other main reasons I wrote the book was to “internationalize” the history of American environmental movement and to “environmentalize” the history of U.S. foreign relations during the middle decades of the twentieth century. So I was very pleased to see that H-Environment found a historian of foreign relations to review the book, especially one who, like me, enjoys “exploring the borderlands between national and international history.” Amy Sayward is exactly right that *The Malthusian Moment* is not a work of international history, in that I do not examine a global or transnational phenomenon from multiple national perspectives. Matthew Connelly's *Fatal Misconception* begins to do this for Malthusian thinking overall but, to my thinking, gives too little serious attention to environmental thought. Alison Bashford is working on a book that addresses environmental and Malthusian discourses in the Anglophone world, but, from what I understand, ends her study in the 1940s. A truly international history of population and environment thinking in the 1960s and 1970s can and should be done, and, indeed, at times I have considered it. It would be fascinating to compare the ideas, politics, and consequences of environmental Malthusian thinking in places like the U.S., the U.K., West Germany, France, China, India and multiple sites from the developing world. Anyone want to help with an edited volume?

I did not undertake such an international history because I felt I had my hands full just beginning to get at the complications of internationalizing the American context. As Sayward also notes, this smaller story was already very complicated, involving environment and foreign relations, but also the history of race, class, gender and the family, cities and suburbs, and conventional politics. I will be eager to hear how her classroom reviewing exercise works out. The idea that experts from so many diverse and contentious fields would take a fine tooth comb to my work has given me more than one nightmare, but I felt I had no choice, because of the breadth of the environmental Malthusian vision of the 1960s and the cultural complexity of that moment. I have no doubt that examining the full international history would add even more useful complexity to the story. (I should add that one chapter of my current work—an environmental history of U.S. development programs in Nepal during the Cold War—will try to shed light on the full meaning of U.S. population and environment programs by drawing upon archival and ethnographic sources from another national and local context.)

Sayward asks which “familiar” event gained the most surprising depth by looking at it from these different angles. Of course, familiarity is in the eye of the beholder. I’m afraid that I don’t have surprising answers. I would argue that, for diplomatic historians, the familiar events of World War II and the Cold War can be given a new depth through an environmental lens. No general needs to be told that geography and resources matter, but many a historian has forgotten this fact. As I argue in the book and expand upon elsewhere, this was the age of “total war.” Success itself depended upon the total mobilization of resources.²⁵

And for environmental history, I think that the environmental movement itself can be given new depth by looking at the international context. We are so used to seeing 1960s environmentalism as something that grows from American roots, from Thoreau and Muir and Theodore Roosevelt, that we overlook the global context of the 1960s (and, in fact, we overlook the global context that shaped Thoreau, Muir, and Roosevelt). When we think about Rachel Carson, for instance, how often do we think of DDT’s role in the global fight against malaria and the US’s struggle against communism in the third world? (This is changing, happily, because of books such as David Kinkela’s *DDT and the American Century*²⁶) When we teach about Earth Day, how often do we point out that many of the places being cleaned up were places fouled by America’s military-industrial complex? And as I try to show in the book, even American wilderness—supposedly untouched pockets of America’s remote landscape—can’t be understood without understanding the global context.

²⁵ Thomas Robertson, “Total War and the Total Environment: Fairfield Osborn, William Vogt, and the Birth of Global Ecology,” *Environmental History* 17:2 (2012), 336-364.

²⁶ David Kinkela, *DDT and the American Century: Global Health, Environmental Politics, and the Pesticide that Changed the World* (Chapel Hill: University of North Carolina Press, 2011).

I'm very hopeful that Sayward is right when she says that *The Malthusian Moment* "helps us not only as academics thinking about history but also as citizens of a very small 21st-century world."

Toshihiro Higuchi calls our attention to a fascinating dimension of environmental Malthusianism: the role of graphs and charts. He is absolutely right that charts played an important, even central, role in the writings of environmental Malthusians. Pretty much every book on the subject includes a series of graphs. One of my favorites is a graph in Garrett Hardin's 1949 textbook *Biology: Its Human Implications*, where the line representing human numbers runs through the margin and literally right off the page. And he is also right that graphs and charts played an important role in the construction of global knowledge. Indeed, intrigued by this issue, I started an earlier version of the book by asking, "How could one person come to believe that the entire planet had too many people?" I saw this question as a way to get at the epistemological foundations for grand claims about the entire globe—certainly one of the crucial dynamics of the postwar period and a subtheme of my book. I concur that charts were not innocuous visual aids, and that they often masked uncertainties, local variations, and other complexities. Graphs, I might put it, can be manipulative and tendentious.

I see two issues mixing together here. The first is the use of statistical information to describe (and often prescribe) reality. Certainly the use of statistics grew during the twentieth century and the population debates would provide a revealing case study. Statistics certainly became an important part of ecology. This can be traced in individual lives: during his early career Paul Ehrlich had an epiphany about the power of math as a tool for biologists, and as you read his descriptions of this realization, you can almost see his faith in his ability to predict the world run off the page. Another chapter of this story would be the use of computers to crunch and represent numerical patterns. The 1972 book *Limits to Growth* created such a sensation in part because of the cultural power of its computer simulations. If Malthusian debates provide a useful way to understand the evolving history of statistics, it's also true that statistics and other techniques of visual representation provide a useful lens for understanding Malthusian discourses. Sometimes population growth was represented through graphs and charts, as Higuchi emphasizes. Sometimes they are represented through verbal analogies—is the best way to think about population growth as a bomb, a wave, a flood, or as a glacier? And sometimes through maps, political cartoons, photographs, and video on TV and big screen (*Star Trek* and *Soylent Green* jump to mind). There are also combinations of photos and graphs, as with the image that Higuchi opens his review discussing. The visuals of the population movement are so compelling and complicated that I've acquired quite a collection, and I have often dreamed of organizing a museum exhibit.

One obvious question would be how much the forms of visual representation changed the debate about population. My hunch is that they were not insignificant, but I'd need more evidence before making a stronger claim.

An interesting side note to this discussion is the role that the debates about population played in the emergence of concern about scientific objectivity. Malthusians made such dire claims based supposedly on science that critics began to question the very notion of scientific objectivity. For instance, the geographer David Harvey's famous 1974 essay "Population, Resources and the Ideology of Science" begins as a critique of Malthusian arguments and ends as an early postmodern critique of science, experts, and objectivity. Certainly, any full investigation into this history would want to examine the use of graphs and charts, as Higuchi suggests.

Sabine Höhler's thoughtful and provocative review approaches *The Malthusian Moment* through an STS lens stressing the dangers of scientism. As she puts it, the science used by many environmental Malthusians, especially their faith in carrying capacity, had great power in that it was not just descriptive but also prescriptive. It "opened certain options while closing others." Science contained deep flaws because, as Höhler says, it often "accredited the origins of and the solutions to the 'population problem' not to history and politics but to biology." That seems right on the money to me, and is a message that I was hoping to get across.

But, on the issue of science, I may not be willing to go as far as Höhler. There are two points. First, it appears that Höhler is skeptical not just of flawed scientific claims but all scientific claims. She writes, "we must avoid accounting and balancing altogether as these practices mirror the methods the Environmental Malthusians marshaled and applied." Maybe by this she doesn't mean to suggest we do away with all scientific claims altogether, but if she does, I would need some more reasoning and evidence to be convinced.

Second, Höhler accurately notes that I am generally approving of the emphasis environmental Malthusians placed on limits. What I try to do is point out the complications of the concept of carrying capacity and its implementation (of which scholars such as Nathan Sayre have written about), and yet retain the critique that environmental Malthusians made of the obsessive growth that so dominated the postwar period.²⁷ Indeed, I identify that critique of unrestrained growth and consumption as a real contribution by the environmental Malthusians (noting, of course, their many failures). Höhler implies that she would like to do altogether without any idea of carrying capacity and limits. I find this very intriguing and would like to see a much more fleshed out version of the argument. Höhler also calls attention to the "boat" analogy and its updated "spaceship earth" idea, a metaphor that I find fascinating. She argues that Spaceship Earth did not express, as I claim, that "we're all the same" (190), and it did not follow the "we're all in the same sinking boat" logic (200) but instead expressed an ecological modernization concept emphasizing technological solutions. She points to Buckminster Fuller's ideas which, she argues, stressed technological efficiency. I

²⁷ Sayre, Nathan F. "The Genesis, History, and Limits of Carrying Capacity," *Annals of the Association of American Geographers*, 98:1 (2008), 120 -134.

agree completely that Fuller's emphasis was not on the common plight of humanity but on the technology. And Höhler is right that I don't devote much attention to Fuller's vision.

I would only point out that, just as there were many different meanings attached to the term "population control" or "Malthusian" in the late 1960s, there were many different concepts of Spaceship Earth floating around as well. Fuller had perhaps the best remembered notion, and Adlai Stevenson and Barbara Ward (and probably others) also spoke of Spaceship Earth. Paul Ehrlich liked the idea of a spaceship as opposed to a boat because the former so beautifully dramatized human reliance on interconnected technological systems. He, and many of his supporters, were drawn to the idea in part because of the logic of shared plight that the concept could—but did not necessarily—imply. Ehrlich's concept drew from the biological universalism that permeated much of the postwar decades, especially biological theory and civil rights activism. Ehrlich took part in both. This brand of "species universalism" dated back at least to the noted conservationist and Malthusian Fairfield Osborn, who argued in *Our Plundered Planet* (1948) that "we are all brothers under the skin."

One of the puzzles of Ehrlich's *The Population Bomb* is how the logic of a common humanity could coexist with the logic of race and class fear, which seems to pervade the book's famous opening scene, in which Ehrlich describes a taxi ride threatened by the impoverished masses on the outside. Ehrlich's logic of sameness would come under fire in the 1970s as the logic of cultural difference came to dominate the civil rights movement, and indeed Ehrlich would begin to complicate his idea by saying that, on Spaceship Earth, some of us rode in first class while others rode in steerage. He rejected Garrett Hardin's "lifeboat" ethics essays of the early 1970s in part because Hardin reasserts the importance of national and other social borders. Ehrlich wants to acknowledge the history of difference and oppression (thus his reference to steerage) but maintain a sense of common threat, thus maintaining the idea of a single vessel.

Nonetheless, Höhler's suggestion that more attention to the variety of Spaceship Earth metaphor that emphasized technological efficiency would add to our understanding of the 1970s makes good sense to me. I hope she, or someone, is pursuing this.

In conclusion, I'll add another word of thanks. Amy Sayward suggests pursuing the conversation over a drink some evening after a day of conference panels. I'm all for it.

About the Contributors

Saul Halfon is Associate Professor in the Department of Science and Technology in Society in Virginia Tech. He is the author of *The Cairo Consensus: Demographic Surveys, Women's Empowerment, and Regime Change in Population Policy* (Lanham: Lexington Books, 2006).

Jacob Darwin Hamblin is Associate Professor of History at Oregon State University. His books include *Arming Mother Nature: The Birth of Catastrophic Environmentalism* (Oxford, 2013); *Poison in the Well: Radioactive Waste in the Oceans at the Dawn of the Nuclear Age* (Rutgers, 2008); and *Oceanographers and the Cold War* (Washington, 2005).

Toshihiro Higuchi is ACLS New Faculty Fellow and Associate Lecturer, Department of the History of Science, University of Wisconsin-Madison. His Ph.D. (Georgetown, 2011) dissertation focused on global nuclear fallout hazards, and his publications include "Atmospheric Nuclear Weapons Testing and the Debate on Risk Knowledge in Cold War America, 1945–1963" in J. R. McNeill and Corinna R. Unger, eds., *Environmental Histories of the Cold War* (Cambridge University Press, 2010).

Sabine Höhler is Associate Professor of Science and Technology Studies at the Royal Institute of Technology in Stockholm, Sweden. She has published widely on population and other environmental issues, including "The Environment as a Life Support System: the Case of Biosphere 2" *History and Technology* 26 (2010) 1, pp. 39-58.

Thomas Robertson is Associate Professor of Humanities and Arts at Worcester Polytechnic Institute. In addition to *The Malthusian Moment*, his publications have appeared in *Environmental History* and *Diplomatic History*. He is currently research the environmental and social impacts of American development projects in Nepal.

Amy L. Sayward is Professor of History at Middle Tennessee State University. She is the author (under the name Amy L. S. Staples) of *The Birth of Development: How the World Bank, Food and Agriculture Organization, and World Health Organization Changed the World, 1945-1965* (Kent, OH: Kent State University Press, 2006).

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