The Post War Intellectual Roots of the Population Bomb. Fairfield Osborn's 'Our Plundered Planet' and William Vogt's 'Road to Survival' in Retrospect

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Abstract

This paper traces the "intellectual roots" of *The Population Bomb* by discussing two now largely forgotten 1948 best-sellers, Fairfield Osborn's *Our Plundered Planet* and William Vogt's *Road to Survival*. These books launched a Malthusian revival in the post War era and profoundly influenced a young Paul Ehrlich, whose own best-seller epitomised this movement, both in content and rhetorical style. Our paper is structured as follows. We first discuss the traditional opposition between so-called Malthusians and Cornucopians. This is followed by an overview of Osborn and Vogt's life and work, and a more detailed survey of their basic arguments on environmental destruction, population growth, economic development, technological change and the basic institutions of a market economy. A review of reactions to both books upon their publication follows. Our concluding thought is that, at the time of writing *The Population Bomb*, Paul and Anne Ehrlich should have been more cautious and revised their tone and rhetoric, in light of the undeniable and already apparent errors and shortcomings of Osborn and Vogt's analyses.

> "Both [Osborn and Vogt] are barking up the right tree. They have put their finger on the soil and water robber. This robber is an economic and business system which makes it profitable to destroy the elements that give us our food, our clothes, our houses and our gadgets – and, of course, ultimately ourselves."
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> Angus McDonald, 1948, p. 26

> "The postwar population explosion hysteria initiated by Guy Irving Burch and Elmer Pendell in 1945, injected by Burch and Vogt into the body of Fairfield Osborn's benignly intentioned books on natural conservation, and carried to full intellectual fruition by the Paddocks, Ehrlich and Hardin, succeeded far beyond the wildest hopes of the old-time eugenicists who started it all. Out of it came not only mass movements, such as Zero Population Growth, Inc., with chapters of active members in many American cities, but also new causes for older conservationist societies, such as the venerable Sierra Club."
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> Allan Chase, 1977, p. 406

Introduction

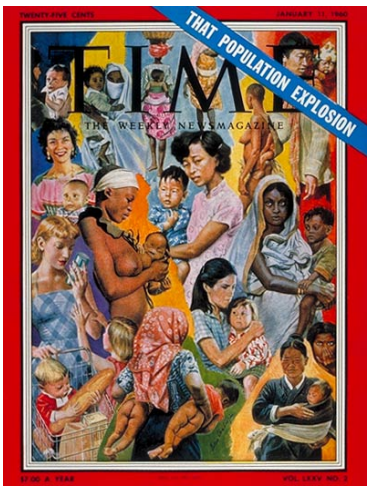
Suggesting that the 'population bomb' had already gone off, Paul Ehrlich famously began the first chapter of his best-seller by saying that if he had long understood the population explosion "intellectually," he had come to understand it "emotionally one stinking hot night in Delhi a few years ago" (Ehrlich 1968, p. 1). The purpose of mentioning his now infamous Indian trip and other direct experiences, such as the caterpillars that, as a child he was unable to nurture into butterflies due to DDT spraying on local foliage, is obvious; he needed to provide his target audience, the American readership, with captivating examples of the fate they would inevitably suffer unless they drastically curtailed population growth in their own country. The fact that *The Population Bomb* sold over three million copies by 1990 is a testament to Paul and his wife Anne's capacity to reach out and touch a broad audience.[1]

What is less well remembered today about the

Ehrlichs's early contribution is the context in which their 'intellectual' understanding of the alleged social, economic and environmental impacts of population growth came about. Despite a now widespread popular perception that theirs was a pioneering or innovative work,[2] *The Population Bomb* is actually best understood as "climaxing and in a sense terminating the debate of the 1950s and 1960s" (Luten 1986, p. 298). As Rubin (1994, p. 78) observed, the book originally drew little attention for "throughout the sixties, it appears that everybody was concerned about overpopulation" and its basic arguments were by then "familiar" as they had been vigorously promoted in previous decades by several population control and environmental activists. For example, the expressions "population bomb" and "population explosion" were first introduced in the early 1950s by the businessman and population control activist Hugh Everett Moore (1954) in a twenty-two page pamphlet similarly titled "The Population Bomb!" that by 1967 had gone through thirteen editions and a print run of nearly a million and a half copies (Kasun 1999; Robertson 2005).[3] Several individuals borrowed Moore's title in their own writings. Among the most prominent were the Commissioner of the United States Bureau of Reclamation Michael W. Straus (1955, p. 15) who used it in his book *Why Not Survive?*; the Stanford professor of chemistry J. Murray Luck (1957, p. 906) who discussed the concept in a presidential address on "Man against his Environment" delivered before the Pacific Division of the American Association for the Advancement of Science in 1957 that was later published in *Science*; and the director of the Population Reference Bureau Robert C. Cook (1956) who authored an article with this title in the *Bulletin of the Atomic Scientists*. The expression "population explosion" was for its part so widely used that it even graced the cover page of a 1960 issue of *Time* magazine (figure 1).[4] Not surprisingly in an age where A- and H-bombs were on everyone's minds, several authors also referred to the "P-bomb" (Slick 1958; Troebst 1962; Fabre-Luce 1964).

Radical prescriptions to cure the alleged threat of overpopulation were also common before the Ehrlichs had any popular impact on the issue. For example, one year before the publication of the couple's best-seller, the brothers William and Paul Paddock's (1967) in their book *Famine 1975!* promoted the creation of a triage system in which the least fit individuals in countries such as India, Egypt and Haiti would be allowed to starve in order to save the more robust ones. While few writers supported such extreme measures, the dominant perspective on population and environmental issues had by

Figure 1 **Cover of Time Magazine, January 11 1960**



Source: http://www.time.com/time/covers/0,16641,19600111,00.html

then become highly pessimistic. Milliman (1963, p. 74) summarized it as follows five years before the Ehrlichs's book: "1) Natural resources are disappearing rapidly; 2) this disappearance is totally undesirable; 3) the major reason for this disappearance is the greed of individuals pursuing selfish and profit motives; 4) the result is that the well-being of posterity is being sacrificed for the satisfaction of the whims of present generations."

The institutional origins, outlook, and educational efforts of the immediate post World War II era environmental and population writers and activists who shaped the worldview of the Ehrlichs and other prominent 1960s writers, however, are now largely forgotten or judged inconsequential. Typical in this respect is the population economist Julian Simon (1998, ix) who observes that, apart from "a brief double flip-flop" by the economist John Maynard Keynes, "not much of note" happened in the field of population economics between the contributions of Marx and Engels and those published in the 1960s. As the historian Thomas B. Robertson (2005, pp. 5–6) perceptively observes: "Although one can hardly pick up an environmental book from the late 1960s and early 1970s that does not warn about overpopulation, it is surprisingly easy to find a history of the movement that barely mentions overpopulation" and emphasizes instead factors ranging from the search for better environmental amenities (clear rivers, clean air and more green spaces and parks) and the destruction associated with suburban sprawl to pesticide use, nuclear weapons and the rise of ecological science. "Indeed," the historian adds, "Malthusianism has received nothing like

the attention given (deservedly) to [these] other major issues."[5]

Yet, the debate on population was really reignited, in 1948, with the publication of two international best-sellers: Fairfield Osborn's *Our Plundered Planet* and William Vogt's *Road to Survival*. Following important promotional efforts that included selections in popular book clubs, *Our Plundered Planet* had already been reprinted eight times by the end of its year of publication and was eventually translated into thirteen languages. For its part, Vogt's book was translated into nine languages while a condensed version (eventually translated into eleven languages) was published in *Readers' Digest*. According to one estimate, it eventually reached between twenty and thirty million individuals and was the biggest environmental best-seller of all time until the publication of Rachel Carson's *Silent Spring* in 1962 (Linnér 2003, p. 37), besides being the most important source of inspiration for Moore's (1954) *Population Bomb!* The great French demographer Alfred Sauvy (1972, p. 968) compared its impact to Malthus' work, while his colleague Jean Sutter (1955, p. 292) observed that it launched a worldwide discussion on population control. According to the economist Erich Zimmermann (1951, pp. 813–814), both books reached "literally millions" and left "their mark on the minds of many throughout the world." Although neither contained much that some expert had not already said, they presented for the first time "a certain holistic all-embracing, all-coordinating approach that reveals the woods where other experts pointed to single trees," and possessed "an eloquence born of evangelistic zeal that few experts can muster" (idem).

In the words of Chase (1977, p. 381), "out of *The Road to Survival* and its many literary and intellectual descendants" were to come Zero Population Growth as well as a number of other popular movements, along with "some of the most pervasive slogans of modern America." Because both Osborn's and Vogt's books soon became mandatory readings in several institutions of higher education, a "whole generation of impressionable young people were to come under [their] influence... during their most formative years. One of them was a freshman at the University of Pennsylvania, Paul R. Ehrlich" (idem). Interestingly, while Ehrlich "traced his own Malthusian beliefs to a lecture he heard Vogt give when he was attending college in the early 1950s" (Jamison and Eyerman 1995, p. 77), it was ultimately Osborn's rather than Vogt's book that was listed in his best-seller's bibliography, perhaps because, as will be demonstrated later in this essay, it showed less contempt for human life. For Ehrlich, these writers provided "a global framework for things he had observed as a young naturalist" (Horowitz 2004, p. 192).

Despite a few more in-depth treatments in broader histories of the population control and environmentalist movements (Allen 1977; Linnér 2003; Robertson 2005; Schlosser forthcoming), references to these books are now usually limited to a few paragraphs or footnotes in much larger volumes or are simply not mentioned in otherwise well-documented discussions of the history of modern eco-catastrophism (Bailey 1992). They were nonetheless fundamental in terms of shaping the issues, outlook, and rhetorical style of later writers and activists such as Al Gore who was introduced to these writers while attending a class on "Theology and the Natural Sciences" at Vanderbilt University (Cockburn and St. Clair 2000). Indeed, as Chase (1977, p. 381) observed, "for the next three decades, every argument, every concept, every recommendation made in *The Road to Survival* would become integral to the conventional wisdom of the post-Hiroshima generation of educated Americans," a statement which remains true to this day if one excludes concerns related to human-induced climate change.[6]

The purpose of this essay is to introduce twenty-first century readers to the now largely forgotten 1948 best-sellers of Osborn and Vogt, in the process making an implicit case that the birth of the modern environmentalist movement, including the intellectual roots of *The Population Bomb*, can actually be traced to the immediate post World War II "overpopulation" concerns rather than to other, less significant, issues. It is structured as follows: The first section discusses briefly the traditional opposition between so-called Malthusians and Cornucopians. This is followed by an overview of Osborn's and Vogt's life and work, and a more detailed survey of their basic arguments and rhetoric on environmental destruction, population growth, economic development, technological change and the basic institutions of a market economy. A review of reactions to *Road to Survival* and *Our Plundered Planet* is next. Our concluding thought is that Paul and Anne Ehrlich's tone and rhetoric should have been considerably more cautious in light of the undeniable and already apparent errors and shortcomings of Osborn's and Vogt's analysis at the time they wrote *The Population Bomb*.

1. Malthusians and Cornucopians

Basic concerns regarding resource availability and anthropogenic environmental degradation are at least as old as civilization (Lowenthal 1990; Simon 1998;

Spengler 1998; Tainter 2006, 2008). In the words of the then prominent economist Alfred Marshall (1920, book IV, ch IV, paragraph 3): "The study of the growth of population is often spoken of as though it were a modern one. But in a more or less vague form it has occupied the attention of thoughtful men in all ages of the world." As Luten (1980, p. 125) later observed, "the question of limits to growth and optimism and pessimism regarding the human prospect [has been] debated [in the last two centuries] without consensus" with interest in the issue "wax[ing] and wan[ing] more times than can be counted."

On the one hand, writers such as Confucius, Plato and Aristotle anticipated modern concerns, perspectives and concepts ranging from growth-induced depletion of soils, minerals and biomass resources to "ecological balance" and "steady-state economics." Best remembered today, of course, is the first edition of the English economist Thomas Robert Malthus' (1766–1834) *Essay on the Principle of Population* (1798) whose contribution is typically (and somewhat unfairly in light of his later writings) summarized as stating that natural checks, such as limited food production capabilities, will inevitably result in famines and wars, which will in turn reduce population sizes to much smaller and ultimately more sustainable levels.[7]

On the other hand, some analysts viewed a growing population as a generally positive thing, as it provided more arms to work and more heads to create new solutions (Simon 1998; Slocombe 1993).[8] While their social philosophy spanned the political spectrum, they eventually came to be labeled 'cornucopian' by allusion to the mythical Greek "horn of plenty" (cornucopia).[9] For example, the British political economist William Petty (1888, p. 49) wrote in 1682: "[I]t is more likely that one ingenious curious man may rather be found out amongst 4,000,000 than 400 persons." Friedrich Engels (1844, non-paginated) observed that the "productive power at mankind's disposal is immeasurable. The productivity of the soil can be increased *ad infinitum* by the application of capital, labour and science." Another long-standing critique of the Malthusian outlook is its general disregard for the value of (most) human life. In the words of the French mutualist theorist Pierre-Joseph Proudhon (1886, pp. 6–7), it is nothing short of "the theory of political murder; of murder from motives of philanthropy and for love of God". While Malthusians "act in good faith and from the best intentions in the world" and "ask nothing better than to make the human race happy," they "cannot conceive how, without some sort of an organization of homicide, a balance between population and production can exist" (idem).

During most of the nineteenth century, the opening of new territories, technological developments and increasingly large levels of international trade convincingly disproved the most apocalyptic scenarios, at least from a trans-Atlantic perspective (De Steiguer 2006; Foster 1998). As a result, the Malthusian doctrine was "almost universally rejected" by American thinkers at the turn of the twentieth century (Ekirch 1963, p. 40), although this was much less the case in Great Britain (Robertson 2005; 2008). In the words of the US politician John J. Ingalls, it was "a curious fact that with increasing population, creating increased demands, all products of the field and farm have diminished in value, and that with the exhaustion of the public domain farming lands have become more and more unsaleable" (quoted by Tourgee 1896, p. 13). As another contemporary American observer put it:

> "The time may come, to be sure, when the Malthusian theory will be revived, but it is not in our day, nor will it be in our century, for scientific thought almost completely overturned the theory and has relieved it of its strength in exciting the fears of economists or of philosophers that the world was gradually but surely coming to that position where it could not supply its population with food, and that some method of checking population must be the resort. The broadening of the area of supply through discovery and the taking up of vast tracts of land were the immediate means of depriving the doctrine of its force, but later on intensive agriculture and the discoveries of science succeeded in relegating the theory to the past." (Wright 1904, p. 898)

In later decades, orthodox Marxists (Perelman 1972), optimistic economists (Zimmermann 1933; Simon 1996; Bradley 2009) and other writers, the most influential in terms of reaching a broad American audience before the publication of Osborn and Vogt's best-sellers being perhaps the Harvard geologist Kirtley Fletcher Mather (1944) with his short book *Enough and to Spare*,[10] would present various versions of the Cornucopian perspective.

While resource availability was the traditional concern of [neo] Malthusians, some nineteenth century writers also emphasized the social and economic consequences of ecological degradation. For example, after lamenting the environmental destruction and alleged resulting civilizational collapse of ancient Persia, Egypt and Mesopotamia, the natural historian Felix Leopold Oswald (1879, pp. 35–36) observed that the "physical

laws of God can not be outraged with impunity," that there were "some sins against which not one of the Scriptural codes of the East contains a word of warning" and that the "destruction of forests is such a sin, and its significance is preached by every desolate country on the surface of this planet." The English author and Church of England priest Mark Pattison (1881) observed for his part that he had simply "to utter the fatal phrase, 'sanitary arrangements,'" to remind his readers of how "next to nothing" had been done "to remedy the overgrowing pollution of earth, air, and water by our teeming population" despite much effort on this issue.

In the last quarter of the nineteenth century, individuals later labelled 'conservationists' began to promote the notion that private interests were mismanaging American resources on a large scale and that the best way "of eliminating waste in natural resource use [was] through government intervention" (Mason 1958, p. 160).[11] This movement gained much political traction through President Theodore Roosevelt's 1908 Governors' Conference; a gathering convened to "prevent the advent of a woodless age, and defer as long as possible the advent of an ironless age" (Roosevelt quoted by Nolan 1958, p. 51). The dominant perspective at this meeting was summed up as follows by Frederick Winslow Taylor (1911, non-paginated) in the introduction to his best-selling *Principles of Scientific Management*: "We can see our forests vanishing, our water-powers going to waste, our soil being carried by floods into the sea; and the end of our coal and our iron is in sight." The next year, the President of the New York Zoological Society (and Fairfield Osborn's father) Henry Fairfield Osborn similarly observed that, with the exception of conservation areas, nowhere was "nature being destroyed so rapidly as in the United States." As he put it, not only did "vulgar advertisements hide the landscape," but "air and water are polluted, rivers and streams serve as sewers and dumping grounds, forests are swept away and fishes are driven from the streams. Many birds are becoming extinct, and certain mammals are on the verge of extermination."[12]

It is probably fair to say, however, that it was not until the publication of Osborn's and Vogt's books that a Malthusian revival took hold of a significant segment of the American population. As the historian Samuel P. Hays (1958, pp. 41–42) observed a decade after their original publication:

> "[On] the whole the atmosphere of the years since World War II has shifted, I believe, from optimism to a guarded pessimism. We think less of possibilities and more of limits; we think less in terms of human betterment, and more in terms of human survival. The unlimited horizons of technology are less often in our minds today than the compulsive use of technology in a race toward world suicide. This new emphasis appeared soon after World War II in two popular books, William Vogt's *Road to Survival* and Fairfield Osborn's *Our Plundered Planet*, both of them infused with Malthusian pessimism, both emphasizing the enormous problem of population growth and the world's limited food supply. Both warned that technology was not enough; resources were not unlimited; the pressure of population itself must be reduced. The increasing emphasis on national security augmented this sense of the limits, rather than of the opportunities of resources, of the need to husband rather than to develop, of the need to stockpile and save."

2. Biographies and backgrounds

Life and work

William Vogt was born on May 15, 1902, in Minneola, New York. After graduating with honors in 1925 from St. Stephens (now Bard) College, he was, among other things, an early opponent of marshland drainage for mosquito control and later assumed a series of positions that gave him the opportunity to further pursue his interests in birds and the environment. In 1942, the focus of his career shifted from studying animals to man, when as Associate Director of the Division of Science and Education of the Office of the Coordinator in Inter-American Affairs, and then with his appointment as Chief of the Conservation Section of the Pan American Union, he was given the opportunity to study the relationship between climate, population and resources, as well as directly observe the devastating and widespread poverty of various Latin American countries. These experiences formed the background to the perspective he later elaborated on in his *Road to Survival*, a book motivated by his strong belief that then-current trends in fertility and economic growth were rapidly destroying the environment and undermining the quality of life of future generations. Vogt's most significant contribution was to link environmental and perceived overpopulation problems, warning in no uncertain terms that current trends would deliver future wars, hunger, disease and civilizational collapse.

The publication of the *Road to Survival* soon provided Vogt with the credibility to contribute to population

debates in various high profile roles. From 1951 to 1962, he served as a National Director of the Planned Parenthood Federation of America. In 1964, he became the Secretary of the Conservation Foundation, and until his last days, served as a representative of the International Union for the Conservation of Nature and Natural Resources to the United Nations. Upon his death on July 11, 1968, he was remembered for the provocative questions he had dared to ask and for tackling a subject matter that remained shrouded in controversy.[13]

For his part, Henry Fairfield Osborn Jr. was born on January 15, 1887, in Princeton, New Jersey. Writing under the name Fairfield Osborn and known as "Fair" to his friends, he was part of the wealthy and influential Osborn clan and the son of Henry Fairfield Osborn, a prominent paleontologist, eugenicist and "distinguished Aryan enthusiast" (Gibson 2002, p. 38).[14] Osborn Jr. originally became interested in science after accompanying his father on field trips throughout his youth. After obtaining his Bachelor of Arts from Princeton University, he went on to study biology at Cambridge University, but then pursued a career in international business. Towards the end of the First World War, he served briefly as a Captain in the United States Army, after which he returned to private enterprise. In 1935, he retired and devoted himself to environmental causes. He continued in his capacity as secretary and board member of the New York Zoological Society, a position he held from 1923 until 1940, when he was named president and board member, a position he held for the rest of his life.

Like Vogt, Osborn's public profile increased dramatically with the publication of *Our Plundered Planet*. He is also remembered for being an early opponent of synthetic pesticide use, for producing several films dealing with endangered species, flood control and water resources, as well as for his second book, *The Limits of the Earth* (1953), and a collection of short essays he edited under the title of *Our Crowded Planet* (1962). From 1948 to 1961, he served as the first president of the Conservation Foundation, an organization he founded with a number of like-minded colleagues to raise awareness about ecological problems. Upon retiring as president, he served as chairman of the board of this organization from 1962 to 1969. From 1950 to 1957, Osborn was also a member of the Conservation Advisory Committee for the U.S. Department of the Interior, while simultaneously serving on the Planning Committee of the Economic and Social Council of the United Nations. In 1965, he helped establish the Institute for Research in Animal Behavior. Upon his death in New York City on September 16th, 1969, he was remembered for playing a valuable role in a number of conservation organizations and for his outreach initiatives to warn of the dangers of uncontrolled population growth and to promote responsible natural resource consumption.[15]

Despite coming from very different backgrounds, Vogt and Osborn became inextricably linked by the commonality of their work and recognized the benefits of working together to achieve their shared goals.

'Proto-environmentalist' Influences[16]

While Vogt and Osborn's books were important influences on the development of later environmental thought, they were, like future generations of environmental activists, part of a long lineage that could be traced back to Malthus, his predecessors and his intellectual progeny, as well as writers and activists such as Ralph Waldo Emerson, Henry Thoreau, George Perkins Marsh, John Muir, Gifford Pinchot and Aldo Leopold. Both men claimed similar mentors, friends and intellectual frameworks, as well as of having been inspired by books such as Guy I. Burch and Elmer Pendell's overpopulation tract *Population Roads to Peace or War* (1945) and Paul Sears' analysis of dust bowls in *Deserts on the March* (1935). Also notable was G. V. Jacks and R. O. Whyte's (1939) *The Rape of the Earth: A World Survey of Soil Erosion*,[17] a synthesis of a large literature that essentially blamed unsophisticated cultivators for initiating a cycle of forest clearance, shifting agriculture, and the creation of grasslands through repeated burning, which eventually led to widespread soil erosion and exhaustion, ultimately resulting in desertification.[18]

Another important strand of policy writings was the game-management literature of the 1930s that documented and discussed early and well-publicized conservation experiments, such as in the Kaibab forest on the north rim of the Grand Canyon, where ecosystems collapsed due to a population explosion of herbivores that were no longer kept in check after their predators had been systematically removed (McCormick 1989; 2005). Various New Deal initiatives in the public planning of land use and restoration, such as the creation of the Tennessee Valley Authority, the Civilian Conservation Corps and various policies to address the "dust bowls" of the time, were also influential on their thinking.

Osborn and Vogt's intellectual outlooks, however, were formed not only by Conservation thinking and New Deal experiments, but also by one of the most influential movements of the first half of the twentieth century, eugenics.

Eugenics

In his classic *The Republic*, written in about 380 B.C., Plato suggested that improving society was in and of itself insufficient without the development of what would later be known as 'genetically improved' human beings. Modern 'eugenics' (in Greek, 'good breeding') would be founded on this premise by Sir Francis Galton in his 1883 book, *Inquiries into Human Nature*, in which he argued on behalf of improving human populations' intelligence, cultural talents, physical strength and dexterity, which he thought to some extent 'breedable.' More importantly, Galton believed that mankind was beginning to interfere with the mechanisms of natural selection through improved public health measures and, as a result, that coercive approaches were required to stave off its perceived deterioration and improve its chances of survival. In short, while Darwin imported concepts from the field of economics and applied them to biology, his cousin Francis Galton proposed that concepts from biology could form the basis of social engineering policies.[19]

During the late nineteenth and early twentieth centuries, eugenicists were eager to transform their movement from a purely academic exercise to a practical one through the creation of numerous academic and policy organizations in order to legitimize their science and to lobby governments to implement policies consistent with their theories. While it is beyond the scope of this paper to look into the history of this movement, a brief overview of some remarks made in 1932 by Osborn's father, Henry Fairfield Osborn, is instructive in terms of understanding the growing affinities between eugenicists and conservationists. The older Osborn first observed that eugenics was a "long known and universal law, namely the survival of the fittest and elimination of the unfittest" (quoted by Gibson 2002, p. 37). Attention to this natural law was made mandatory by numerous crises, chief among which were 'over-population' and the "over-destruction of natural resources, now actually world-wide" (idem). The solution, not surprisingly, was "prolonged and intelligent and humane birth selection aided by humane birth control" (idem). In the end, suffice it to say that the 'practical excesses' that it inspired in Nazi Germany's "centers of applied eugenics" (Chase 1977, p. 366) such as Auschwitz, delivered a major blow to both the field and humanity itself.[20]

In the years following the Second World War, new technologies and medications developed to reduce mortality in environments ranging from tropical islands to mosquito infected marshlands in temperate countries were about to be exported to less developed regions, virtually guaranteeing a new burst of population growth that would contribute significantly to the large numbers already added in the wake of the Industrial Revolution and nineteenth century globalization (Kasun 2001). Some leaders of the eugenics movement seized on these developments to regain some legitimacy and, in the words of one critic, soon developed "a new package wrapper for their old bill of goods" (Chase 1977, p. 369), i.e., the unsustainable demands these new mouths would soon place on already rapidly depleting natural resources and amenities. Osborn Jr. and Vogt, both previously involved in the eugenics movement, would pioneer the development of what would later be referred to as "neo-Malthusian ecology" (Foster 1998). The eugenics roots of modern environmentalism, however, would quickly (and conveniently) be forgotten in later years, despite the fact that any writing or movement that sprang from such a lineage should have been examined carefully. With these considerations in mind, we now turn to a brief summary of Osborn's and Vogt's rhetoric and key arguments.

3. Scope and urgency of environmental crisis in Osborn's and Vogt's work

Neither Vogt nor Osborn needed a picture of the Earth from space to describe a finite and increasingly fragile planet that was being ransacked by an ever increasing number of (if only temporarily wealthier) human beings. In Osborn's (p. 33) words, "so it is that the earth is constantly becoming smaller, or rather our knowledge of it is leading us to think of it as diminishing rapidly, which, after all, amounts to one and the same thing." Vogt (p. 285) echoed this sentiment, writing that humanity formed "an earth-company, and the lot of the Indiana farmer can no longer be isolated from that of the Bantu," a fact that was true not only in a "mystical" brotherhood-like sense where the suffering of starving babies half-way around the world should concern Americans, but "in a direct, physical sense" as environmental degradation on the other side of the globe ultimately affected the living standards of citizens located in the most advanced economies.

Osborn

Osborn's underlying premise was that human beings had allowed themselves to be blindsided by their own

accomplishments, and were unaware of the true extent of the damage inflicted on the planet in the process. Even specialists in a wide range of disciplines – from agronomy, biology and chemistry to politics and economics – while familiar with specific issues within the confines of their own expertise, lacked the necessary global perspective to fully appreciate the scope of the catastrophe. As such, it was "amazing how far one has to travel to find a person, even among those most widely informed, who is aware of the processes of mounting destruction that we are inflicting upon our life sources" (p. 194). So damaging was this widespread phenomenon that he deemed it "eventually [more] deadly" than the Second World War (p. vii), for "man's destructiveness has turned not only upon himself but upon his own good earth – the wellspring of life" (p. 11).

Of course, humanity's misuse of the land dated back to the "earliest periods of human history" (p. 89), leaving in its wake a "very large proportion of the originally habitable areas" already so misused that it was "sterile, barren [and] beyond reclamation" (p. 36). Recent acts of destruction, however, were unsurpassed in scale, and it had "been estimated that there has been a greater loss of productive soil in the last few decades than the accumulated loss in all previous time" (p. 69). Even recent accomplishments in the world's agricultural superpower, the United States, was one "great illusion" for the "story of our nation in the last century as regards the use of forests, grasslands, wildlife and water sources is the most violent and the most destructive of any written in the long history of civilization" (p. 175). It was therefore futile to cling "to the feeling [that] there must be some continent where the relationship between man and nature is not out of balance" (p. 166). In this context, man's "avoidance of the day of atonement that is drawing nearer as each year passes" implied that he had to quickly learn "to work with nature in understanding rather than in conflict" (p. 5). Failure to change would not only "point to widespread misery such as human beings have not yet experienced," it would also, in the end, threaten "even man's very survival" (p. ix). Humanity had "now arrived at the day when the books should be balanced" (p. 43).

Vogt

Vogt's thesis was perhaps expressed most concisely by the influential financier and political advisor Bernard Baruch in his foreword to *Road to Survival*: "Because of the great abundance of the earth's resources we have taken them for granted. But now, over most of the globe... we are face to face with a serious depletion of 'resource capital.' More than one country is already bankrupt." While such bankruptcy had "wiped out civilizations in the past; there [was] no reason for thinking we can escape the same fate, unless we change our ways" (p. ix). Decreasing returns could be found everywhere, for widespread mismanagement had reduced much of the earth's productivity to such an extent that "what one man-hour of labor could formerly produce, now requires ten, fifty, or even a hundred man-hours" (idem).

Vogt's conviction that past beliefs in progress or admonitions to be fruitful and multiply could provide no useful guidance for the postwar era is pervasive throughout his book. Dominant ideas evolved twenty centuries ago, while "magnificent in their days," had now become "millstones about [human] necks" and would most certainly turn out to be "idiotic in an overpeopled, atomic age, with much of the world a shambles" (p. 56). "We must accept change," he wrote, and "adjust our lives to it, if we are to survive," while a failure to understand some basic relationships "of man with his environment" would "almost certainly smash our civilization" (p. xiii).

Indeed, not unlike a parasite whose destructiveness "is limited by the absence of intelligence," humans used their brains to "tear down", basically becoming organisms willing to enrich their lives, at least temporarily, "by destroying the environment indispensable to [their] survival" (p. 95). For example,

> "The end of the Babylonian Empire is usually written in terms of wars with the Persians. Little or no weight is given to the fact that Ur, the great city of Abraham and once a thriving seaport, now lies 150 miles within a sterile desert. The goat and the ax, driving the sands down to the coast, were far more destructive weapons than the horses and javelins of the conqueror Cyrus. Hannibal had an empire worth fighting for, and the means of supporting a powerful army. Today the very habitat of the elephants that were his tanks and half-tracks has been overwhelmed by desert sand, and even the elephants are no more. Cato, in his bitterest brooding, could not have foreseen such utter destruction. The history of Babylon, Assyria, Carthage, China, Spain, Britain – and of the United States – is meaningless unless it is related to the way the peoples of these countries have treated the plants on which they depend. Indeed, most of the history that has been written on these areas gives a picture as distorted as a Picasso drawing, because it blindly

> ignores the part that plants and their habitats have played in man's story." (Vogt, p. 19)

A similar fate plagued the native inhabitants of areas later known as Mexico, Honduras and Guatemala, where the "populations exceeded the carrying capacity of the land" after they had abandoned hunting and turned towards agriculture (Vogt, p. 40). None, however, had done more damage than the Europeans, "one of the most destructive groups of human beings that have ever raped the earth" (p. 114). Throughout the nineteenth and twentieth centuries, they had destroyed the environment "with the seemingly calculated inexorability of a Panzer division" (p. 32). Their destructive behaviour had global repercussions. For example: "never before [had] the hydrologic cycle been badly dislocated in the presence of so many hundreds of millions people" (pp. 102–3). It was indeed possible that, in the course of modern American history, more "billions of dollars [had] been spent in an effort to compensate for the abuse of resources than have gone into all our battle budgets, including those of World War II" (p. 123).

If humans were wreaking havoc everywhere, only rarely had they ever learned to stabilize or rebuild. Typically, ecological collapse inexorably followed so-called "civilizational progress." With rare exceptions, man had "taken the bounty of the earth and made little or no return" (p. 110). Where he had not lost water and soil, he had "overgrazed and overcropped, and by the removal of animals and plants, [had] carried away important soil minerals, broken down the all-important soil structure, and generally exhausted the environment" (idem).

In short, mankind had for all intents and purposes "backed itself into an ecological trap" while, figuratively speaking, living on promissory notes (p. 284). All over the world, however, the "notes [were] falling due" and payment could not "be postponed much longer." Fortunately, there was still an option between "payment and utterly disastrous bankruptcy on a world scale." In Vogt's opinion, it was certainly "more intelligent to pull in our belts and accept a longer period of austerity and rebuilding than to wait for a catastrophic crash of our civilization" (p. 284), earnestly believing that "a fall in living standards [was] unavoidable" (p. 80). Indeed, the human race was "caught in a situation as concrete as a pair of shoes two sizes too small" and there was no need to blame "economic systems, the weather, back luck, or callous saints" (p. 288). Unless the human race rapidly readjusted its way of living to "the imperatives imposed by the *limited* resources of [its] environment" it might as well give up all hope of continuing to enjoy a civilized existence. "Like Gadarene swine, we shall rush down a war-torn slope to a barbarian existence in the blackened rubble" (idem).

This state of affairs, of course, called not only for clear-head analysis, but also for immediate and drastic actions. We now turn to a brief summary of Osborn and Vogt's diagnosis and remedies.

4. Causes of environmental crisis in Osborn's and Vogt's work

Osborn and Vogt's central argument was obviously along the lines of 'insufficient resources and too many people,' but in their minds a catastrophic situation had been made even worse by technological developments and greed. As Osborn (p. 201) put it, "the tide of the earth's population is rising, the reservoir of the earth's living resources is falling." In Vogt's (p. 194) terms, "the earth is not made of rubber; it cannot be stretched; the human race, every nation, is limited in the number of acres it possesses. And as the number of human beings *increases*, the relative amount of productive earth *decreases*, by that amount."

Resource scarcity

Like several writers before and after them, Osborn and Vogt viewed the physical finiteness of the Earth and its ecosystems as imposing some absolute limits on the scale and scope of human development. Unfortunately, in Osborn's (p. 41) opinion, "most people still have the notion that the living resources of the earth are illimitable and that they can be drawn upon as if there were an endless reserve." And yet, if population pressures and their attendant appetites for resources had "long been recognized as one of the major causes of war," there was "scarcely any recognition of the self-evident fact that such pressures are the major cause of the world-wide depletion of the natural living resources of the earth" (idem). Indeed, there could be little doubt that in light of trends then observable, such disturbances "will unquestionably increase in violence, even to the point of social disintegration" (Osborn, p. 30).

Perhaps most damaging was humanity's historical lack of understanding of rainfall and water management. This had not only "wasted millions of acres of land, caused sharp drops in crop yields, raised the crests of floods, starved cattle, spread deserts over the face of the earth, and launched ancient wars," but also led to such

mistaken beliefs as the notion that the "European and American economic system is applicable to the rest of the world," a delusion that was at best, the "hidden seed of future wars" (such as when "the petroleum famine overtakes us, or as the necessity of importing gasoline or refining it from coal or shale boosts its price" (Vogt, p. 147)) and at worst, would result in "the collapse of our civilization" (Vogt, p. 81).

Of course, the main reason why the Europeans – and to a lesser extent the Japanese, who possessed the "inconsiderable psychological advantage of being accustomed to a lower standard of living" (Vogt, p. 72) – had in time "enrolled under the banner of Dr. Pangloss"[21] (Vogt, p. 68) rather than the theories of the "clear-sighted English clergyman" Dr. Malthus (p. 72) is that they had been awash in "the bounty from the New World cornucopia" (p. 63) and had increasingly come to depend on imports from distant lands ranging from Africa to Australia and Latin America. Unbeknown to most of them, however, was that sugar production "was wearing out the soil in the West Indies and coffee… ripping down hillsides from Guatemala to Brazil" (p. 63), while other imports came at the cost of "gullies in Georgia, dongas in South Africa, barrancas in El Salvador, floods in Missouri, [and] dust storms in the Tasman Sea" (Vogt, p. 68).

Overpopulation

Osborn and Vogt saw population growth as the main cause of environmental destruction. Once, Osborn (p. 91) believed, "man's numbers were limited, and up to historic times he had plenty of land to support him adequately without allowing that land to become depleted," or, in Vogt's (p. 94) opinion, at least for "extremely long periods of time." This balance was lost as the development of agriculture and the "inclination of people to concentrate" in some geographical areas became clear (Osborn, p. 92). The "violent explosive upsurge in human numbers" (Osborn, p. 39) that coincided with the end of widespread and recurring famines in some parts of the world throughout the early decades of the nineteenth century, however, was the most worrisome development of all.

According to Vogt (p. 287), the "history of the future" – or at least the coming decades – had already been written. This basic idea could be conveyed using a simple graph with one curve being the human population that, "after centuries of relative equilibrium, suddenly began to mount, and in the past fifty years had been climbing at a vertiginous rate." The other curve would symbolize natural resources such as the "area and thickness of our topsoil, the abundance of our forests, available waters, life-giving grasslands, and the biophysical web that hold them together." With the exception of "local depressions," this curve had also maintained a "high degree of regularity through the centuries," but it too had begun to sharply diverge, "especially during the past hundred and fifty years," after which it "plung[ed] downward like a rapid." The fact that these two curves "have long since crossed" and were ever more rapidly "drawing apart," was becoming increasingly more obvious with each passing day (idem).

In places like Mexico, "the pressure of an increasing population, combined with the mounting injury to existing cultivable areas by erosion, is forcing people to use land that is totally unadapted to the growing of crops and at the same time is compelling the country to rely on imports for much of its basic food supply" (Osborn, p. 170). While its situation might not have seemed as dire to the casual observer, "unfortunately… in spite of the war, the German massacres, and localized malnutrition, the population of Europe, excluding Russia, increased by 11,000,000 people between 1936 and 1946" (Vogt, p. 199). Even a resource rich country like the United States was already "overpopulated from the standpoint of per capita economic welfare" and could conceivably benefit from reducing its population by a third – from 150 million individuals to 100 million (Vogt, p. 147). Indeed, Osborn (p. 40) feared an increase in conflicts and bloodshed at the prospect that the world's population would reach the three billion mark by the middle of the twenty-first century. Be that as it may, the "mounting destruction… inflict[ed] upon our life sources" and the "vast surges and pressures of increasing populations" were "conditions that need to be thought of together, not separately" (Osborn, pp. 194–195).

Not surprisingly, both Osborn and Vogt's writings on population and resource availability reflected the thinking of wildlife managers. For example, Vogt (p. 206) chastised the authors of a report written for the UN Food and Agricultural Organization on the prospects of post-WWII Greece because it didn't contain any "suggestion that a positive effort be made to reduce the breeding of the Greeks. How a group of scientists would justify such an omission on any rational grounds it would be interesting to know; such neglect would disqualify a wildlife manager in our most backward states!" The logical conclusion that could be derived from this premise was that rich countries like the United States "should [not] subsidize the unchecked spawning" of the inhabitants of poor countries like India and China until they had

adopted a "rational population policy" (Vogt, p. 77). Indeed, a high death rate could even be considered "one of the greatest national asset" of poor economies (Vogt, p. 186), while pests like tsetse flies and malaria carrying mosquitoes[22] could be thought of as "blessings in disguise" as well as the "protector of important resources" (Vogt, pp. 28–31). Failure to keep populations in check would deliver results similar to those observed earlier in the British Raj:

> "Before the imposition of *Pax Britannica*, India had an estimated population of less than 100 million people. It was in check by disease, famine, and fighting. Within a remarkably short period the British checked the fighting and contributed considerably to making famines ineffectual, by building irrigation works, providing means of food storage, and importing food during periods of starvation. Some industrialization and improved medicine and sanitation did the rest. While economic and sanitary conditions were being "improved," the Indians went to their accustomed way, breeding with the irresponsibility of codfish; as Chandrasekhar points out, sex play is the national sport. By 1850 the population had increased 50 per cent; by 1950, according to State Department estimates, the population of India will be over 432,000,000. The dilemma is neatly stated by Dr. Chandrasekhar, who says: "India's population today exceeds 400 millions and at the lowest minimum of 1,400 calories she can only feed less than 300 million people!... more than a hundred million people... are either starving or on the brink of starvation." (Vogt, pp. 226–227)

Fortunately, "British withdrawal from India may well result in the reversal of the population trend that this country so badly needs if her people are ever to achieve a reasonably decent standard of living" (Vogt, p. 237). Similar results could be observed in African colonies where Europeans had "temporarily removed the Malthusian checks" when they had "put down tribal wars, destroyed predators [and] moved enough food about the continent to check famine" without substituting "constructive measures to balance [their] destruction of the old order" (Vogt, p. 260). The introduction of new cultivars was similarly destructive in the long run. For example, Vogt (p. 33) believed that corn had probably caused more misery than syphilis, another potent contribution of the New World.

Measures to alleviate human suffering, such as the "flank attack on the tsetse fly with DDT or some other insecticide" carried out by "ecologically ignorant sanitarians, entomologists, and medical men" (Vogt, p. 257), was therefore worse than doing nothing. In chilling paragraphs reminiscent of what would later come to be known as "lifeboat ethics" and the "economics of spaceship earth,"[23] Vogt (p. 13) didn't see "any kindness in keeping people from dying of malaria so that they could die more slowly of starvation." Indeed, the modern medical profession was setting the stage for a disaster of epic proportions by continuing to believe that it had "a duty to keep alive as many people as possible" and, "through medical care and improve sanitation," being responsible "for more millions living more years in increasing misery" (p. 48). Actually, public sanitation and agricultural improvement campaigns in places like El Salvador, India and Puerto Rico, amounted to nothing short of "brutally misguided well-doing" (p. 179). One should instead take inspiration from Ancient Greece where the constant threat of overpopulation was "purposefully reduced" through "prostitution, infanticide, emigration and colonization" (p. 58) and conclude that if the conflict between communists and nationalists would in all likelihood result in the "horror of extensive famines in China within the next few years" it might well be, from a broader perspective, "not only desirable but indispensable" (Vogt, p. 238).

5. Economic development in Osborn's and Vogt's work

Osborn and Vogt's writings reflected the dislike of the profit motive and technological change that was characteristic of proto-environmentalist writings. Not surprisingly, they similarly called for more and better public management rather than greater reliance on market incentives. Interestingly, however, they also discussed concepts later known as the 'Tragedy of the Commons' and 'perverse subsidies.'

Technological change

Both Osborn and Vogt shared a profound scepticism – if not overt dislike – of the alleged benefits of most scientific advances and technological innovations, at least inasmuch as they could be conceived by some as helping to reconcile economic development, population growth and environmental remediation. Apart from the fact that the development of sanitary technologies increased the

number of hungry mouths, the most damaging historically had been "the four fundamental tools of modern culture," namely fire, the plough, the axe and the firearm. Despite short-term benefits, each of these had over time resulted in "despoiled forests, erosion, wildlife extermination, overgrazing, and the dropping of water tables" and the consequent reduction of productivity in "some of the most fertile and productive regions of the earth" to levels almost comparable to those observed in "the Gobi or the tundras in Siberia" (Vogt, p. 33).

Recent technological developments only aggravated these trends. According to Osborn (p. 201), "technologists may outdo themselves in the creation of artificial substitutes for natural subsistence, and new areas, such as those in tropical or subtropical regions, may be adapted to human use, but even such recourses or developments cannot be expected to offset the present terrific attack upon the natural life-giving elements of the earth." Vogt (p. 147) similarly considered agricultural mechanization "of dubious value to the land, as it is more purely extractive than older methods" for one did "not find a manure pile outside the tractor shed"; brought lesser quality land under cultivation; was too dependent on rapidly dwindling petroleum reserves; and triggered a drift away from rural to urban areas, thereby reducing "the effectiveness of the self-contained rural population as an economic shock absorber" during future recessions.

The first industrialists could rely on "an abundance of new land and unexploited resources" and had, as a result, "undoubtedly raised potential living standards" if only for a few individuals (Vogt, pp. 74–75). By the middle of the twentieth century, however, worldwide environmental destruction – again, much of which had been instigated and caused by Europeans relying on the lands of others – was too serious to allow this process to go on much longer, as it had been nothing but a "stopgap, a means of postponing the day of reckoning" (Vogt, pp. 77–78). Indeed, "by the use of machine, by exploitation of the world's resources on a purely extractive basis, [humans] had postponed the meeting at the ecological judgement seat. The handwriting on the wall of five continents now told [humans] that the Day of Judgment is at hand" (Vogt, p. 78).

In Osborn's (p. 199) words, the "grand and ultimate illusion would be that man could provide a substitute for the elemental workings of nature." For instance, "chemical fertilizers alone [could never] be thought of as substitutes for the natural processes that account for the fertility of the earth," for in the long run "life cannot be supported… by artificial processes" (Osborn, p. 68). Even the increased life span observed in many countries was illusory, for it hid "evidences of a slow, silent, pervading deterioration of human health" through the "appearance of a whole series of 'new' illnesses" commonly referred to as "degenerative diseases" (Osborn, p. 85).[24]

Both Osborn and Vogt essentially viewed industrialization and urbanization as parasitic to natural and agricultural wealth.[25] In Vogt's (pp. 43–44) perspective, the farmer "is far more useful, productive, able and hard-working a member of our society than the vast majority of businessmen" and without the 'agricultural revolution' that preceded it by about a century, the industrial revolution "might well have been stillborn" (p. 59). In the meantime, the "growth of cities and extension of highways" shrank the amount of land available, thereby reducing its "potential carrying capacity" (p. 59). Furthermore, had "the parasite of European industrial development not been able to sink its proboscis deep into new lands, world history would have been very different. Enormous populations, heavy industry, social and economic pressures could not possibly have developed into the great carbuncle that exploded as World War I" (Vogt, p. 69).

Interestingly, and despite the fact that the publication of their books coincided with the awarding of the Nobel Prize in Physiology or Medicine to DDT's inventor Paul Müller, both Osborn and Vogt were highly sceptical of DDT long before the publication of Rachel Carson's *Silent Spring*. As Osborn (p. 61) put it, while DDT might seem a "cure-all," some initial experiments had shown it to be "withering to bird life as a result of birds eating the insects that have been impregnated with the chemical." The careless use of this substance could also result in the destruction of "fishes, frogs and toads, all of which live on insects." Vogt (p. 30) was somewhat more nuanced when he denounced the "widespread and unselective use of DDT" that destroyed not only pests, but also valuable insects which "pollinate fruit trees and parasitize destructive insects."

Profits and institutions

While Osborn (p. 183) was emphatic that "the profit motive, if carried to the extreme, has one certain result – the ultimate death of the land," this perspective is more developed in Vogt's (pp. 34–37) section on "profits are loss" in which he argues that "the methods of free competition and the application of the profit motive have been disastrous to the land" as people operating under "so-called economic laws" have generally disregarded "the physical and biological laws to which [the land] is

subject. Man assumes that what has been good for industry must necessarily be good for the land. This may prove to be one of the most expensive mistakes in history."

Osborn and Vogt's dislike of free markets stemmed in part from their abhorrence of popular consumerism and its attendant "gadgetry," such as "pulp-paper ordure of 'love' stories, crime tales, and 'comics' valuable enough to justify extirpation of the world's forests" and "unessential electrical knickknacks, industries, and the hydroelectric power necessary to operate them," the result of which being that the United States exhibited "one of the highest insanity rates in the world" (Vogt, p. 38). Of course, these vulgar pleasures resulted in part from the impossibility of assigning "a cash value to the heart's lift at the flash of a scarlet tanager, the outpoured song of the solitaire, the towering of white ibises over the Everglades, or even the homely chattering of the dooryard wren" (Vogt, pp. 129–130). Unfortunately, when touched by colonization, the native population exhibited much the same tendency to show off its newfound wealth, which often took the form of new cattle acquisitions that ultimately resulted in the "destruction of [its] capital, in terms of pasturage, fertility, and available water resources" (Vogt, p. 262).

Also significant in shaping their intellectual outlook was their observation of the environmentally destructive practices of the American "stockmen and sheepherders... [who] deteriorate and destroy the grasses, expedite erosion, and contribute to flood peaks... [and] exist by destroying the means of national survival," the "cut-out-and-get-out lumberman," the "wheatgrower who recklessly sets the trigger for a new dust-bowl explosion," the "hunter or trapper who takes more than his share of *surplus* animals," and "the farmer who exhausts his soil and fails to utilize soil-stabilization methods" (Vogt, p. 145). Of course, "renewable resources" were only renewable inasmuch as they were "managed on a sustainable-yield basis, with the crop restricted to replacement capacity," but unfortunately, Americans had been living on their "resource capital" since 1607 (Vogt, p. 67).

This lack of foresight could also be observed in developments motivated by the "desire for national enrichment" and "the wish to gain profit from the soil" in peripheral economies (Osborn, p. 110). For example, in Egypt, year-round irrigation had been substituted for the traditional basin or flood time irrigation "to support the profit motive, namely the growing of cash crops such as cotton and tobacco for export." As a result, Egyptian soil was "steadily deteriorating" and the "cotton yields are falling!" Similar practices could also be observed in overgrazed grasslands "where herdsmen try to maintain the largest possible number of animals on a limited range, grazing at all times, seasonable and unseasonable, and so destroy the grass and bushes to such an extent that nothing is left but nearly barren ground" (Osborn, pp. 54–55). In Osborn's (pp. 158–159) opinion, the situation which "better exemplifies the dire consequences of overusing the land for purposes of trade and profits" was the Australian sheep industry where a consistent effort had been made "to gain from the land more than it is capable of producing." Unfortunately, the day "when new fresh lands can be found is now almost over" (Osborn, p. 54).

Apart from 'exporting' the environmental problems of advanced economies, "get rich quick" schemes had also fostered among contemporary Americans a "waster's psychology" that would have "appalled [their] frugal forebears" and was regarded as "lunacy – even criminal lunacy – by people in other parts of the world" (Vogt, p. 67). Among other symptoms of this waster's minder were the "millions of dripping faucets... losing precious water" and the "millions of unneeded electric lights burn[ing], every year, untold thousands of tons of American coal" (Vogt, p. 68).

Osborn and Vogt's take on the environmental impact of the profit motive typically equates free-markets with profits at any costs and by any means, including government subsidies and government-granted privileges, along with environmentally destructive public initiatives that trampled private parties' property rights – in other words, private profits through public losses. Notable examples of this perspective include Vogt's (p. 34) condemnation of businesses that had poisoned "thousands of streams and rivers with industrial wastes" costing "hundreds of cities... millions of dollars so that they may safely drink the waste dumped into the rivers upstream" (p.34), and of typical private farming responses to fluctuating prices: "food prices rise and so does the world demand for food; the farmer overstocks his pastures, plants every available inch of marginal land to cash in 'while the going's good.' Prices fall and he loudly cries that he cannot afford to improve his land; he must have a subsidy" (pp. 34–35).

Both authors also alluded to the impact of land tenure on its management. For example, Osborn (p. 143) observed that historically much European land "was not as a rule held in great tracts by any one person, but was divided up and held in relatively small tracts for the use and benefits of individual owners and their families. Thus, it was protected and cared for." Furthermore, "stone walls as well as thick hedges surrounding most fields have also contributed to the continuance of soil fertility, for there can be little erosion in closely walled fields" (Osborn, p. 153). Of course, other property-rights

based social customs could be damaging to the land, such as a tradition of dividing up the land among children rather than leaving it to one child (Osborn, p. 152).

Vogt (p. 148) similarly recognized that "because sharecroppers and other farm tenants do not have a long-range stake in the land, their tendency – a reflection of our industrial philosophy – is to make as large a profit as possible and to spend on the land as little as possible." Although he seems to have been supportive of policies that would turn tenants into landowners (p. 148), he was nonetheless more circumspect for, if "in many regions a shift from tenancy to ownership would certainly save large acreages that are becoming marginal, if not desert," in "other areas, such a change might well tend to have the opposite effect" (p. 28). A case in point was Zapatista's Mexico where land reform had turned the land over from a few thousand landholders to several hundred times more, but less educated individuals, who were reluctant to change their farming methods. In Vogt's (p. 173) opinion, "it never occurred to Zapata that ownership of anything as indispensable as land imposes unavoidable responsibility, along with 'right.'" Indeed, Vogt probably never doubted that professional public land managers freed from political pressures would achieve better results than less-educated private owners, such as could be observed in the nationalization and subsequent management of the Peruvian guano islands (pp. 183–186).[26] Interestingly, this seems to have also been Osborn's (p. 126) perspective when he observed in the Russian context that "cultivating the land in small strips under earlier peasant ownership left the agricultural areas more defenceless against drought than the present-day collective farms" which benefited from "more intelligent methods such as the more extensive planting of winter crops, earlier spring planting and the cultivation of types of crops that are most capable of resisting drought conditions."

As can be expected, various 'tragedy of the commons' scenarios – or more accurately tragedies of open access or mismanaged commons – were also discussed by both authors. For example, Vogt (p. 35) wrote that "industry has been allowed to treat our underground water supplies as though they were inexhaustible, and the prosperity and possibly the existence of many of our cities have been jeopardized through waste of waters," while "commercial fishermen, assuming the pirate's prerogative to take whatever he can get, have reduced the populations of several important fishes to a point where it is no longer economically possible to take them." Indeed, because numerous American landowners had been plunged into bankruptcy by reckless environmental mismanagement such as "the removal of forest cover on an upper watershed [that] will inevitably damage the water supply in the valley below," Osborn (pp. 191–192) thought it obvious that there was "nothing revolutionary in the concept that renewable resources are the property of all the people and, therefore, that land use must be co-ordinated into an over-all plan." Indeed, this principle has been recognized in other democracies, such as in Western Europe, and in the United States through the Tennessee Valley Authority. Actually, there were now real grounds for hope in the United States as within "the last decade more has been accomplished than in all previous years of our history. Federal and state agencies are steadily doing more effective work and unlimited credit should be given to the able and intelligent men who are accomplishing everything within their power to save America for its future children" (Osborn, p. 196). But then Osborn (p. 197) asked rhetorically "Why should government do it?" in the land of free enterprises? Unfortunately, as it turns out, relying upon individual initiative could "only be counted upon when there is general public understanding of a situation and of the means of dealing with it," but this knowledge was lacking among the increasingly urbanized American population.

Interestingly, both authors were well aware of the reality of political management and the widespread impact of what would now be referred to as 'rent seeking' and its attendant 'perverse subsidies.'[27] A well-documented historical case to this effect was the medieval Spanish migratory sheepherders' institution known as the 'Mesta' whose members had been granted several privileges at the expense of the settled population by Spanish rulers hungry for wool-derived revenues. These privileges included "cutting small trees and branches to supply their needs in fuel and fodder as they went along" which seems "to have been the beginning of misuse of the untenanted lands through which they passed." Other privileges included the fact that "common lands in some cases were thrown open to the sheepmen, taxes for their use or their non-use were levied, and the money collected reverted to the crown or to political agents of the rulers." As a result, "everywhere land was overgrazed, forests were burned off to provide extra pasturage, young trees were cut down for fodder or firewood, and the desperate cycle of greed and overuse and erosion was set into motion." Although the Mesta was eventually overthrown, it was not before "it had in all too real a sense overthrown the balance of man and nature in Spain" (Osborn, pp. 148–151).[28]

Far from being an exception, the Mesta was a harbinger of things to come, inasmuch as the "people of other

countries are engaged in just this sort of wastage of their prime resources today. They – and this includes us of the United States – are too near to the picture to realize what is happening" (Osborn, p. 151). A case in point was overgrazing in American public lands that had become so worrisome that the Taylor Grazing Act had to be passed in 1934 to rein in abuses. Unfortunately, "powerful minority groups of cattlemen now dominate[d] its administration, their representatives comprising the personnel of the advisory boards that were established in each of the cattle-industry states." Not surprisingly, the advisory boards had over the years "acquired sufficient power to greatly influence the regulations, as to both the number of cattle that can graze in a region and the fees for grazing rights to be paid by cattle owners," which as can be expected, did not impact entrenched interests of those influencing the legal framework (Osborn, pp. 183–184). Of course, a 'floor' under wool prices and 'protective' tariffs only made things worse by preventing "many woolgrowers [from being] forced out of business" (Vogt, p. 43). But while "reducing herds and importing meat and wool from other countries might [have given] the grass a chance to restore itself," powerful cattle and sheep interests had successfully nullified "such obviously sound attempts to relieve the strain on American ranges" (Vogt, p. 31).

As could be expected, lumber interests were similarly "striving to effect arrangements so that the profits of their corporations may be assured and, if possible, increased" (Osborn, p. 191). Indeed, in Vogt's (p. 145) perspective, stock raising, hunting and fishing, lumbering and even much of farming had not only "emptied the bank vaults," but were now trying to remain relevant by "peddling the desks, chairs, and cuspidors" which, "in our national interest" should be "liquidated, at least in part. In the process, a good many people are certain to be hurt, as in any liquidation. But the longer it is postponed the more people will suffer."

The absurdity of subsidizing environmental destruction and then asking taxpayers to foot the bill for remediation was certainly not lost on either Osborn or Vogt. In the words of the latter, "western senators advocate enormously expensive Valley authorities, [but] continue to foster overgrazing and erosion of valley watersheds by voting for sheepmen's subsidies!" at a time when the American school system threatened "to break down because we cannot pay teachers a decent wage, or support hospitals to care for the sick, we are urged to spend billions on people too stupid to stay off flood plains, and on damming rivers that have got out of hand largely because of destruction of forests and grasslands" (Vogt, p. 127). In the long run, it was difficult "to see any justification for [the] support of extractive overcropping" (Vogt, p. 44).

6. Solutions in Osborn's and Vogt's work

In light of their diagnosis and formative influences, Osborn and Vogt's remedies were fairly straightforward if not always spelled out in much detail. Vogt (p. 264) thus wrote that if "economic, political, educational, and other measures" were indispensable, they would only succeed if "population control and conservation [were] included." Indeed, economic and political prescriptions that ignored "the ecological" dimension may force "the human race deeper into the mire" (idem). In turn, ecological health was dependent on two factors:

1 That renewable resources be used to produce as much wealth as possible on a sustained-yield basis. In other words, wise use to support as high a living standard as possible was desirable, but they shouldn't be exhausted as there could be no artificial substitutes.
2 That demand be adjusted to 'natural' supply, either by accepting less per capita (lowering living standards) or reducing population. Since civilization at the end of World War II could not survive a *drastic* lowering of standards, the need for population cuts was unavoidable (Vogt, p. 265)

While Osborn shared this prescription (pp. 194–201) and similarly believed that any real solution would "involve complete co-operation on the part of both government and industry, backed by the public's insistence that the job shall be done" (p. 200), he was even more emphatic on the need to "arouse public opinion" in terms of the seriousness of America's (and the world's) environmental crisis.

Such an undertaking would require "the co-ordinated effort of every group, governmental and private, that is dedicated to the cause of conservation" and would need to be "established throughout our educational system so that coming generations will grow up aware of the situation that lies at the root of the well-being of our nation" (idem). Thanks in part to Osborn, Vogt and their followers' actions, numerous organizations, from grassroot initiatives to the United Nations, would become involved in this outreach effort in following years and decades.

Although they stumbled upon some of the key insights of the perspective later known as "free-market

environmentalism,"[29] neither Osborn nor Vogt seemed to have considered the potential environmental benefits of reduced governmental interventions. A case can nonetheless be made that most of the "free-market practices" they denounced, such as financial and land subsidies to railroad, timber, grazing and other interests, as well as overfishing and overgrazing, can ultimately be attributed to failures to develop adequate market institutions such as private property rights or to let the price mechanism determine resource allocation without political interferences – what Bradley (2009) refers to as "political capitalism."[30] For example, Vogt failed to ask why polluting industries could not be sued for the damage they inflicted upon others – as was traditionally the custom in market economies until these rights had been taken away or drastically curbed by politicians seeking to "balance" economic growth and environmental protection – or why agricultural producers had become so dependent on subsidies or were often taking a short-term perspective on the impact of their activities. While he was well aware that the "subsidized industrialist" and the farmer benefiting from subsidy payments were very keen "to protest any real attempt at free enterprise" (p. 43), he was nonetheless always more inclined to favor greater (but obviously better) as opposed to lesser political management.

7. Reactions to Osborn's and Vogt's work

Many reviewers, such as Angus McDonald (1948) in *The New Republic*, often jointly praised the authors for their efforts and overall concerns, but some assessments were mixed and a few were extremely critical. As McCormick (2005, p. 139) observes, the two books "received approval from ecologists and adverse criticisms from soil scientists."[31] To give a few examples of the (overall more numerous) positive reception of these works, A. G. Hall (1948, p. 310) in *The Scientific Monthly* proclaimed that Osborn had "performed a task equal in importance to that of the prophets of old," while in his textbook *Economics*, John Ise (1950, p. 37) wrote that "both of these significant books are brilliantly written and should be read by all who are concerned about man's future." John Myres (1949, p. 80) in *Man* observed that *Our Plundered Planet* was "dedicated to all who care about tomorrow" and that the book was helpful in instilling responsibility in the public to live in harmony with nature, rather than continue to indulge in the activities that were imperiling the earth. Indeed, most reviews of *Road to Survival* reached a conclusion similar to the *Blackfriars Journal's* writer who claimed that Osborn provided his readers with a "valuable insight into the inter-relatedness of those secondary causes as revealed by the findings of the sciences of biology, ecology and agronomy" (Singleton, 1949, p. 493). The fact that Osborn was somewhat more optimistic than Vogt was reflected in generally more sympathetic assessments, even by writers who disagreed with his analysis (Chase, 1977; Zirkle, 1949).

There were nonetheless a few critical reviews. For example, Conway Zirkle (1949, p. 77) took Osborn to task in *Isis* for several factual errors and misunderstandings that could have been avoided with clearer wording and further claimed his statements often strayed from the truth or were overly general in nature without credible facts to support them. Other reviewers highlighted similar points or faulted Osborn and Vogt for their conclusions and lack of concrete solutions. Interestingly, even William Vogt (1948b, p. 510) criticized his friend Osborn on this point, claiming that while he repeatedly addressed the problems associated with overpopulation, he did not provide a viable solution to keep it from happening. More specifically, Brandt (1950, p. 88) considered Vogt's stance on agricultural practices and soil conservation no longer completely accurate by 1948 in light of recent advances. Taeuber (1949, p. 825) wrote that soil scientists would most likely find fault with Vogt's interpretation of basic facts, particularly regarding land use, soil wastage, and the availability of large scale resources for agricultural production in Africa and South America. F. Fraser Darling (1948, p. 262) claimed that while the rationale behind population reduction was obvious to most people, for political reasons no country would want to see their population decline, nor suffer the repercussions if it did.

As Cooke (1949) further observed, placing ecology ahead of other disciplines such as engineering, forestry and agricultural science, precluded the development of multifaceted solutions that alone would prove effective and, in the end, amounted to a utopian dream in light of the fact that ecology would never come to dominate public opinion. Fisher (1949) highlighted Vogt and Osborn's inability to relate conservation economics to economic theory as a major downfall, particularly in terms of attracting effective public support. Taylor (1949, p. 93) was visibly uncomfortable with Vogt's stance on how little value he assigned to human lives, especially in less advanced parts of the world, but nonetheless considered laudable his suggestion that the United States should make aid contingent upon an active birth control policy. A French reviewer who was visibly upset by Vogt's characterization of the Soviet Union as a 'police state'

wrote that the author's methods, basic mistakes and implicit conclusions were not unlike those of the worse geopolitical writings of pre World War II Germany (George 1951, p. 788).

Three contemporary critical discussions of Osborn's and Vogt's books nonetheless stood out.[32] The first significant condemnation of Osborn's and (mostly) Vogt's stance was penned by a *Time* anonymous (1948) reviewer who questioned the political implications of their neo-Malthusian stance and views on soil and population growth. As he put it, if even rich nations had too few resources to keep their populations passably well fed, then what should be done if not go out, conquer and clear other lands of their populations? After all, hadn't Germany, a country that had managed to "stretch" the sandy acres of the Prussian plain through innovative farming practices and highly skilled industry, already gone to war twice because of the unwarranted prevalence of the "slice-of-cake [that can't be grown] philosophy" among its people?

According to the reviewer, Vogt's assertions on soil had by then been totally discredited by "real agricultural scientists" who considered "every main article of the Neo-Malthusian creed" as "either false or distorted or unprovable." Arguing that an acre of soil is limited in terms of its production capacity or biotic potential ignored the fact that humans were capable of improving it. Indeed, only individuals who had turned their back on progress could accept the notion that they would have to adapt to soil patterns for survival. The reviewer also refuted the idea that the productive capability of the world's cultivated lands would continue to fall due to erosion and exhaustion. While Vogt was correct to point out that humans did not maintain soils as diligently as perhaps they could have, he had ignored tremendous recent progress in terms of improving soil quality, in the process delivering increased production capabilities, particularly in the United States.

The same writer criticized Vogt's basic outlook on human reproduction, especially his stance that, as long as food is available, humans would reproduce like 'fruit flies.' The basic problem with this argument was that it had long been know that richer people typically tend to have fewer children despite their access to a more abundant food supply, while the exact opposite was true of poorer classes.[33] If Vogt's argumentation was valid, industrialization should have triggered a rapidly increasing birth rate, but this could only be observed in the early stages of the process, whereas a steady decrease in birth rates was observed afterward. Furthermore, Roman Catholic Ireland had by 1948 achieved population stability and could boast of having one of the lowest birthrates in the world.

In the end, "real scientists" could only find a few iota of truth in Osborn's and Vogt's "errors, prejudices, mysticism and reckless appeals to emotion." Their "static" philosophy, however, gave "great comfort" to the type of state planner who believed that there were only so many resources available and that whatever was available needed to be strictly controlled. The attending result, of course, was that "any group ruled by this static idea will turn its back on progress and become socially reactionary" (idem).

Interestingly, *Time* published soon afterwards a short rebuttal to this essay written by Karl Sax (1948), then director of the Arnold Arboretum at Harvard University, who argued that while Vogt had "exaggerated the dangers of soil erosion," he had "underestimated the difficulties in the adequate control of population growth and the control of 'moral erosion.'" R. J. McGinnis (1948), then editor of the *Farm Quarterly*, similarly argued in another letter to the editors that while most 'soil men' had never taken the Malthusian framework "too literally," it had nonetheless proven useful in "frighten[ing] farmers into soil conservation." The *Time* editors nonetheless stood by the original review essay, pointing out that the scientists consulted in the preparation of the article (in the US Bureau of Plant Industry, Soils and Agricultural Engineering and in the US Soil Conservation Service) strongly disagreed with Vogt's assessment.

Another interesting follow-up to this controversy took place in November 1948, when the editors of *The Nation* contacted Vogt and offered him the opportunity to publish in their magazine a reply to the *Time*'s review. However, since they had not taken an editorial position on the issue, they intended to solicit comments on Vogt's reply in an effort to represent both sides of the debate. The person who soon followed up on their request was the University of Delaware geographer Earl Parker Hanson,[34] whose critique of Vogt's response was reportedly vitriolic. Vogt followed up by submitting another lengthy reply, this time to Hanson's piece, which he later refused to shorten at the behest of *The Nation*'s editors, resulting in the cancellation of the project.[35] Had this collaboration not fallen through, it may well have been one of the first times that both sides of the issue would have been debated in a public forum, thereby making them accessible to the layman.

Hanson, however, did not let matters rests and soon afterwards published a book titled *New Worlds Emerging* which he described as a rebuttal to Osborn, Vogt and other "Jeremiahs of geography, sociology and economics"

(Hanson 1949, p. 369). The geographer argued, among other things, that "it is never a land that is over-populated, in terms of inhabitants per square mile; it is always an economy, in terms of inhabitants per square meal" (p. 14). Adopting as his motto Robert Thorne's 1527 observation that "there is no land unhabitable, nor sea unnavigable," Hanson emphasized that much was land still available for development in the Amazon basin and in the lower Arctic (such as in Alaska). Denouncing the "hysteria" into which the modern world was "being stampeded... by the dreadful word *erosion*" (p. 135) and the resurgence of the "old, mechanistic Malthusian doctrine" (p. 12), he had no patience for the notions that natural resources should be conserved "not sanely by way of making the most of them, but hysterically, as an isolated party of explorers might hoard and ration its dwindling food supplies" (p. 12); that people should be considered as "liabilities" rather than "assets and potential resources" (p. 13); or that a region would be considered "over-populated" in terms of a population/space ratio alone without factoring in the potential benefits of economic development (p. 14) that would in time produce "more in order to have more to go around" (p. 370). Indeed, throughout history, humanity had met population increases "not in any one way, but by a complex, interrelated application of three distinct lines of effort, namely migration, change of social and economic organization, and technical invention" (p. 14). Hanson was especially critical of Vogt's "astonishing... tendency to resent all past progress" and lament that "Adam and Eve [had to leave] the Garden of Eden" (p. 371) without understanding that "conservation on large scale... can only be supported by energetic economic development" (p. 372). As he put it:

> "To proclaim a numerical limit on the world's arable lands, while decrying the technical advances with which that limit can be stretched by many millions of acres, is to turn one's back on reality. Even birth control on a large scale can be accomplished only by raising standards of living through industrialization. Not only do people need money for buying contraceptives, but they need many children for cheap labor so long as they live in poverty and degradation. They will be more likely to think about having fewer children when they are in a position to worry about sending them to college." (Hanson 1949, p. 272)

In a later paper, Hanson (1951) would describe the "currently popular Vogt school of demographers and conservationists" as postulating the twin bogeymen of overpopulation and soil erosion as the prices we must pay for conscious efforts to improve human existence" (p. 48) and describe Vogt as the "modern spiritual descendant" of earlier geographical determinists such as Ellsworth Huntington (p. 45). Interestingly, a comparison of Hanson and Vogt's books was sometimes an essay topic for geography students in the 1950s (Galloway, 2001, p. 246).

Finally, the Brazilian physician and geographer Josué de Castro's classic (1952) *The Geography of Hunger*[36] also became to a large extent a rebuttal to William Vogt, the "standard-bearer of the neo-Malthusians" who were keen to view "famished populations, raising the pressure of the world by their delirium of reproduction [as] criminals" who deserved "an exemplary punishment" and were "condemned to extermination, either by individual starvation or by controlling reproduction until the born-to-starve disappear from the face of the earth" (pp. 16–17). Raising issues similar to their other critics, de Castro adopted Hanson's perspective and further illustrated it by the purchase "for nearly nothing" of degraded coffee growing land in around São Paulo by Japanese immigrants who, being experienced in working "thankless soils," had developed from it a "magnificent green belt" which was then contributing much to the food supply (especially in terms of potatoes and vegetables) of the Brazilian industrial heartland (p. 285). De Castro ended his book by highlighting that the "real road to survival [was] still within the sight of man [and was] marked by the confidence he must feel in his own strength." As he put it:

> "The road to survival, therefore, does not lie in the neo-Malthusian prescriptions to eliminate surplus people, nor in birth control, but in the effort to make everybody on the face of the earth productive. Hunger and misery are not caused by the presence of too many people in the world, but rather by having few to produce and many to feed. The neo-Malthusian doctrine of a dehumanized economy, which preaches that the weak and the sick should be left to die, which would help the starving to die more quickly, and which even goes to the extreme of suggesting that medical and sanitary resources should not be made available to the more miserable populations – such policies merely reflect the mean and egotistical sentiments of people living well, terrified by the disquieting presence of those who are living badly.
>
> The world, fortunately, will not let itself be carried

away by such defeatist and disintegrative conceptions. In spite of their scientific aura, these ideas cannot show us a road to survival. They can only point the way to death, to revolution and to war – the road to perdition." (de Castro 1952, p. 312)

Reflective conclusion

Reviewing the evolution of the different versions of Malthus' *Essay*, Petersen (1969, pp. 142–143) observes that the first edition was written "with an aggressive confidence, a dashing style that passed over exceptions, anomalies, and minor points, and swept on to the main conclusion with youthful confidence" and that it "brought the author immediate fame and notoriety." In later decades, however, Malthus would painstakingly refine, expand, update and revise his manuscript, acknowledge predecessors and mistakes, answer critics, and reach more sober conclusions, such as the following:

> "On the whole, therefore, though our future prospects respecting the mitigation of the evils arising from the principle of population may not be so bright as we could wish, yet they are far from being entirely disheartening, and by no means preclude that gradual and progressive improvement in human satiety, which, before the late wild speculations on this subject, was the object of rational expectation... And although we cannot expect that the virtue and happiness of mankind will keep pace with the brilliant career of physical discovery; yet, if we are not wanting to ourselves, we may confidently indulge the hope that, to no unimportant extent, they will be influenced by its progress and will partake in its success." (Malthus 1826, Book IV, Chapter XIV)

Paul Ehrlich's 'explosive' public career, and its attendant fame and fortune, similarly took off at a relatively young age in the wake of a powerful call to action that has been described by otherwise well-disposed reviewers as "unscholarly and occasionally in error" (Luten 1986, p. 298). Unlike Malthus's original essay, however, the Ehrlichs's contribution came on the heels of a debate that had been raging for over two centuries in the Western World and at a time when some of the mistaken assumptions and predictions of Fairfield Osborn Jr. and William Vogt were already apparent. To give but one case, Vogt (p. 169) quoted a report according to which Mexico did not possess more than a third of the land required to provide its inhabitants with a reasonable diet. He further believed that "Mexico's arable land [was] being rapidly washed into the sea" and that the country was becoming steadily poorer "under the pressure of a rapidly growing population." In the years between the publication of Vogt's and the Ehrlichs's best-sellers, however, significant scientific advances in plant genetics and production methods completely overturned the situation. For example, the Mexican work of American agronomist Norman Borlaug and his team on the development of semi-dwarf high-yield and disease-resistant wheat varieties resulted in the 1963 Mexican wheat crop being six times larger than in 1944. Soon afterwards, Mexico became a wheat exporting country (Anonymous 1986). Of course, a few years later this know-how was transferred to Pakistan and India where they similarly helped to diffuse the local "population bombs" and earned Borlaug the nickname of "Father of the Green Revolution."

In light of the Mexican and other cases at the time, it is difficult not to conclude that while the Ehrlichs's overall concerns were legitimate, their rhetorical style and exaggerations weren't. Furthermore, unlike Malthus, they were later in life unwilling to revise their position in light of new evidence and always refused to debate face-to-face their main critic, the economist Julian Simon.[37] One also gets an overwhelming sense of *déjà vu* in their more recent work, such as in, for example, their use of "The Population Explosion" as a book title (Ehrlich and Ehrlich 1990) or in comments that hark back to the old 'erosion literature,' such as their observation that "the extraordinary expansion of food production since Malthus's time has been achieved at a heavy cost – the depletion of a one-time inheritance of natural capital crucial to agriculture" that amounted in the mid 1980s to an annual loss of approximately 24 billion tons of topsoil and "millions of populations and species of other organisms" (Ehrlich *et al*. 1993, pp. 1–2; see also Ridley, this issue). As such, they stuck to the blueprint laid out by Osborn Jr. and Vogt whose *Time* (1948, non paginated) critic accused of constantly claiming "that new and frightening threats have developed recently."

As Rubin (1994, p. 79) observes, the only things that really sets apart *The Population Bomb* from other contemporary writings on the alleged population-resource problem is its emotional appeal and alarmist tone. It seems hard to deny that this was indeed the main lesson learned by the present generation of environmental writers from the Ehrlichs's success...

Notes

1. See, among others, Booth and Mongillo (2001), DeLeon (1994), Greene (1994) and Rubin (1994) for various discussions of the impact of *The Population Bomb*. Although the name of Paul Ehrlich is the only one appearing on the cover of the book, his wife Anne is described as a virtual co-author in the *Acknowledgements* section. Because of this and their later collaboration on numerous projects, references to the "Ehrlichs's" book will be made throughout this essay.
2. For example, Yale Law School professor Douglas Kysar (2003, p. 224) describes *The Population Bomb* as "a work that attempted to revive Malthusian concerns about population growth"; the economist Jason Scorse (2008, p. 109) contends that "population growth and its impact on the environment has been a hot topic for decades, ever since Paul Ehrlich's the 'Population Bomb' was published in 1968"; and the sociologist William Catton (2001,p. 234) quotes the population biologist Arthur S. Boughey has having credited *The Population Bomb* with having "helped revive attention to warnings about overpopulation."
3. Moore would later give the Ehrlichs permission to use his original title. Apart from his population control activism, Moore (1887–1972) is best remembered as the Dixie Cup Company founder and president. For a brief biographical sketch, see the Lafayette College's special archives devoted to the company and its creator <http://ww2.1afayette.edu/~library/special/dixie/bio.html>
4. Books published before 1968 whose title referred to a "population explosion" include Sax (1956), Fagley (1960), Lenica and Sauvy (1962), McCormack (1963), Nevett (1964), Park (1965) and Green (1966). Authors who used this expression in the collection of essays published by Osborn (1962) include the historian Arnold Toynbee; the biologist Julian Huxley; the food policy analyst, FAO director and Nobel Peace Prize winner Lord Boyd Orr; the lawyer Grenville Clark; the soil scientist Walter C. Lowdermilk; the Bishop of the Episcopal Diocese of California James A. Pike; and the essayist Joseph Wood Krutch.
5. Apart from Robertson (2005; 2008),various mentions and some discussions of key individuals and organizations can be found in Allen (1977), Buell (2003), Chase (1977), Cockburn and St Clair (2000), Gibson (2002), Gottlieb (2005), Horowitz (2004), Jamison and Eyerman (1995), Linnér (2003), Luten (1986), McCormick (1989; 2005), Miller and Santos (1999), Rubin (1994), and Schlosser (forthcoming).
6. While neither Vogt nor Osborn gave much credence to the idea, anthropogenic influences on the climate have been a reason for concern since before the eighteen century (von Storch and Stehr 2006).
7. There is much debate as to whether or not, and if so, how much, Malthus reached more optimistic conclusions in later editions of his treatise (Malthus 1826; Petersen 1969; Luten 1986; Bradley 2009).
8. Of course, military rulers were always partial to a growing population from which new soldiers could be drawn.
9. Although now mostly associated with the later work of economist Julian Simon (1996), the expression "cornucopian" was already widespread in the 1950s to characterize individuals who believed that technological innovation could provide a growing population with increasingly abundant food and other valuable resources (Ciriacy-Wantrup 1952; Ordway Jr 1953; Chandrasekhar 1954). For Simon's own misgivings about the term, see Dragos Aligica (this issue).
10. Mather's (1944) book's dust jacket cover reads as follows: "A leading American scientist surveys the resources of the earth and concludes that they are adequate to provide the basis for both freedom and security for all mankind. In a book that challenges the spirit as well as the mind, he shows that progress in co-operation will determine man's survival."
11. According to Dana (1958, p. 25): "Conservation as an organized movement, although not under that label, started in 1873, when the American Association for the Advancement of Science appointed a committee "to memorialize Congress and the several State legislatures upon the importance of promoting the cultivation of timber and the preservation of forests, and to recommend proper legislation for securing these objects." This action was motivated by fear of a future timber famine and by the conviction that such a famine could be averted only by governmental action."
12. Osborn's words were written in the foreword to William Hornaday's (1913, chapter 11, non-paginated) *Our Vanishing Wild Life* in which the author recommended, among other things, the prohibition of firearms for aliens whose origins could be traced back to "the lower classes of southern Europe." Worse among those were the Italians who, "wherever they settle... root out the native American and take his place and his income. Toward wild life the Italian laborer is a human mongoose. Give him power to act, and he will quickly exterminate every wild thing that wears feathers or hair. To our songbirds he is literally a 'pestilence that walketh at noonday'." Of course, "the great increase in the slaughter of song birds for food, by the negroes and poor whites of the South" had also become "an unbearable scourge to our migratory birds."
13. See Gibson (2002), Glacken (1969), McCormick (2005), Peterson (2005), Robertson (2005) and Sterling et al. (1997).
14. The Osborns were descendants of John Jay and Cornelius Vanderbilt, while J.P. Morgan was an uncle to

Osborn's father. They were also closely associated with other major American families, such as the Rockefeller's (Gibson 2002). Indeed, Osborn Jr. played a major role in shaping Laurance S. Rockefeller's environmental outlook and activities (Winks 1997). According to all the sources consulted in the preparation of this essay, Osborn Jr. rejected the racist outlook of his father.

15. See also Abernathy (1997), Gibson (2002), Robertson (2005), Smith (2005) and Sterling et al. (1997).
16. The influences discussed in this section are based on the content of the texts, footnotes, bibliographies and recommended readings found in both books. See also Abernathy (1997), Chase (1977), Linnér (2003, pp. 119–120); Reardon (2006, p. 10) and Vogt (1948b, p. 510).
17. The title of the American edition was the more prudish "Vanishing Lands: A World Survey of Soil Erosion."
18. See Hammond *et al*. (1978), McCormick (1989), and Williams (2003). Hard-liners in this movement often likened native farmers to careless, irresponsible and destructive children. As one of them put it, children were not "allowed to play with fire" even though they "may very much like to see the flame." Similarly, more enlightened administrators should not allow natives to "play fast and loose with their priceless treasures... well knowing that the country will be permanently injured thereby" (Unwin 1920, p. 92, quoted by Williams 2003, p. 402).
19. See Bajema (1976), Berson and Cruz (2001), Chase (1977), Itzkoff and Lynn (1991) and Stepan, 1991.
20. See Carlson (2001), Chase (1977), Connelly (2008), Gibson (2002), Kasanen (this issue) and Morawski (1984).
21. Dr. Pangloss is a fictional character in Voltaire's *Candide* novel whose naïve optimism is summed up by his motto "All is for the best in the best of all possible worlds."
22. The case of rodents was viewed as more complex, inasmuch as their presence was more a consequence of man's maltreatment of the land.
23. The 'lifeboat ethics' is a metaphor for resource distribution proposed by the ecologist Garrett Hardin (1974) in which a lifeboat bearing 50 people with room for a few more is in an ocean surrounded by a hundred swimmers. The "ethics" of the situation stems from the dilemma of whether or not (and under what circumstances) swimmers should be taken aboard. The 'economics of spaceship earth' metaphor is now mostly associated with the economist Kenneth E. Boulding (1966) to refer to the notion of the earth as a spaceship devoid of unlimited resources in which men must find their place in a cyclical ecological system.
24. The thought that these diseases were becoming more prevalent because other, more lethal, diseases had been successfully addressed doesn't seem to have occurred to Osborn.
25. Readers familiar with the history of economic thought will recognize echoes of the physiocratic perspective in Osborn and Vogt's writings. Interestingly, Vogt (p. 63) had this to say on the issue: "The physiocrats had perceived the difference between the symbolic level and reality, but they were submerged in 'progress' and 'prosperity.'"
26. Vogt had been a salaried employee of the *Compañia Administradora del Guano* where he was hired as an ornithologist to study guano producing birds and to develop ways to maximize outputs (McCormick 2005; Robertson 2005).
27. Rent-seeking occurs when an individual, organization or firm seeks to earn money by manipulating the economic and/or legal environment rather than through trade and the creation of wealth. 'Perverse subsidies" have both economic and environmentally negative impacts.
28. Of course, other factors at the time, such as the building of a large Spanish naval force, also played a role in the destruction of the Spanish environment.
29. Anderson and Leal (2001) is the most influential text in this perspective. Stroup (2008) is a concise discussion.
30. As Bradley (2009, 3) puts it: "Unlike free-market capitalism, political capitalism is a variant of the mixed economy, in which business interests routinely seek, obtain and use government intervention for their own advantage, at the expense of consumers, taxpayers, and/or competitors."
31. A prime example of the former would be Leopold (1948). The quotes discussed in this section are taken for the most part from the academic literature. Robertson (2005) provides more detail on the reception of these books in the popular press.
32. One could argue that some later reports sponsored by the US government and Resources for the Future (Bradley 2009) were to some extent indirect answers to Osborn and Vogt. For the purpose of our discussion, however, we limit ourselves to direct criticisms of their work.
33. The "lower fertility of the upper classes" was already apparent to Adam Smith and Thomas Robert Malthus (Petersen 1969, p. 151).
34. Mather's (2003, p. 6) history of this university's department of geography and geology provides much biographical information on Hanson's career up to his resignation from its chairmanship in 1956, including the fact that he "did not hesitate to express his own views with force, to argue with acknowledged experts in their fields, and to press hard for his own beliefs."
35. From Vogt, William. Correspondence, 1948–1949; Nation (New York, N.Y. : 1865). Records: Guide; Houghton Library, Harvard College Library, Harvard University; Call No.: MS Am 2302 (4577) http://oasis.lib.harvard.edu/oasis/deliver/~hou00189

36. The first edition of *Geography of Hunger* was published in Portuguese in 1946, but the English translation followed the publication of Osborn's and Vogt's books and was modified to address their writings.
37. According to Simon (1996: 605): "Ehrlich and I have never debated face to face. He says that he has refused because I am a 'fringe character'."

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