Cover Sheet

Garrett Hardin's Tragic Sense of Life

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Abstract

I discuss biologist Garrett Hardin's view of human nature, with examples from the background to his seminal 1968 essay "The Tragedy of the Commons" and his testimony before the US House of Representatives in the 1970s. Hardin saw the human species as being governed by deterministic laws of the same kind that controlled all other forms of life. Humans, as much as cattle and microbes, were in inevitable competition for space and resources. Equal parts Malthusian political economy and Cold War systems science, his view was the survival of the human race depended on obeying these iron laws. Human freedom was the recognition of---and obedience to---its nature. This determination for humanity to act within the strictures placed on itself by its own nature was what he called "lifeboat ethics." In order for the citizens of the rich countries to survive, many in the Third World would have to die. In this sense I characterize Hardin's sense of life as *tragic*, both as a play on the title of his famous essay, and to emphasize his view that the problem of human population growth had no 'win-win' solutions.

Keywords

Tragedy of the Commons, Competitive Exclusion, Life Boat Ethics, Immigration, Political Economy, Systems Science, Conservatism

Abbreviations

None

* * *

Introduction

Garrett Hardin's status as a public intellectual was tied to the popularity of his 1968 essay "The Tragedy of the Commons." The essay was essentially a qualitative modeling exercise wrapped in a parable about a hypothetical public pasture. The model in "The Tragedy of the Commons" demonstrates quite clearly Hardin's views on rationality and human nature. He wrote:

The tragedy of the commons develops in this way. Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons... As a rational being, each herdsman seeks to rationalize his gain. Explicitly or implicitly, more or less consciously, he asks, "What is the utility to me of adding one more animal to my herd? This utility has one negative and one positive component.¹

Each cow added to the pasture benefitted the herdsman in its entirety, the full value of the cow. Each additional cow also degraded the pasture, and thus hurt the herdsman's ability to support cows. However, each individual herdsman was only hurt fractionally by this degradation, as each of his fellow herdsmen also had to bear the shared cost of a degraded pasture.

Adding together the component partial utilities, the rational herdsman concludes that the only sensible course of action for him to pursue is to add another animal to his herd. And another, and another... But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limits—in a world that is limited. Ruin is the destination towards which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin

¹ Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3858 (1968): 1243-1248, on 1244.

to all.²

Hardin's systems view of human rationality and human nature led to a series of conclusions.

First, the system as a whole was composed of many semi-autonomous subsystems. In the case of human population growth this meant that each country's population dynamics were functionally independent from all the others, only communicating with them through immigration flows.

Following from this he concluded that dealing with the whole planet as a unit of intervention was fruitless absent the rise of an effective global government, a development he didn't rate as very likely.

In the 1970s and '80s the notion of the tragedy of the commons, and Hardin's essay on the topic, was taken up with gusto in environmental science, political science, economics, management, often in concert with concerns about the "free rider" problem imported from economics.³ By the early 21st Century, widespread concern with high population growth in policy circles had ebbed, and the tragedy of the commons as a set of problems had shifted to nearby fields. But in 1968 things were different: from the 1940s–1970s a "Malthusian moment" swept population biology, policy discussions, and the political imaginaries of diverse publics in the United States.⁴ The questions scientists like Garret Hardin raised, and the unsettling answers to them, seemed to have existentially high stakes. His role as a popularizer and polemicist more than as a biologist brought his ideas about population, ecology, family planning, and immigration into all of these fields, at least partly facilitated by his eccentric, stubborn, and contrarian

² Ibid., 1245

³ Garrett Hardin, "Extensions of the Tragedy of the Commons," *Science* 280, no. 5364 (1998): 682-683.

⁴ Thomas Robertson, *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism* (Rutgers University Press, 2012).

personal and professional style.

Until quite recently it was quite difficult to place Garrett Hardin on the present American political spectrum of liberal to conservative or Left to Right. Despite the fact that he identified himself as an "eco-conservative," his support for liberalizing laws against abortion and contraception combined with his advocacy for government protection of the environment made him seem out of place on the contemporary Right. Additionally, his suspicion of free market fundamentalism made him incompatible with the deregulation and *laissez faire* favored by Republican Party since the neoliberal turn of the Reagan Presidency. But, of course there has always been an illiberal and nativist faction within American conservatism, less concerned with the preservation of markets and property rights than with the danger of encroaching immigrants and the disruption of traditional social hierarchies. This political tendency's most notably national exemplars until recently was Pat Buchanan, and to a lesser degree David Duke. Now, with Donald J. Trump as the presumptive Presidential nominee of the Republican Party, the connection is much easier to make. If Hardin were alive today he would probably view the New York real estate developer's personal style as an embarrassment. But Hardin would no doubt endorse Trump's proposal to build a wall between the United States and Mexico. When one conceives of life as a tragic lifeboat, one needs systems to keep one's neighbors at arms length.

Recent work in *Endeavour* has linked Hardin's advocacy for birth control and conservation to right-wing nativist political networks centered on anti-immigration activist John Tanton.⁵ The ethnic nationalist politics of that *milieu* was distinctly at odds with the liberal and colorblind vision of human nature then being developed in American universities. According to

⁵ S. Normandin and S.A. Valles, "How a Network of Conservationists and Population Control Activists Created the Contemporary US Anti-Immigration Movement," *Endeavour* 39 (2): 95-105.

the post-war human sciences human nature was open, flexible, pluralistic, and gregarious. This suite of commitments was contested from the political Left in the form of a classed analysis of social struggle against oppression; and from the Right by various endorsements of natural hierarchies, be they racial, cultural, or economic.⁶

Compared to this mix Hardin's views were strikingly different. I call his a *tragic view of human nature*, because it proclaimed the necessity of making tragic choices between the good of the few and the survival of the many. Hardin advocated liberalizing laws against abortion and birth control, was skeptical of the self-regulatory abilities of free market economics, and made common cause with the environmental and conservation movements. Yet simultaneously he was a nativist who argued that food aid to poor countries was at best counterproductive, and that immigration to the US risked degrading the natural environment and fomenting social conflict. If these views seem incongruous it is only because we have come to associate free market fundamentalism with the political Right, and environmentalism and reproductive rights with the Left. So the political realignments of the late 20th century partially explain this disjuncture, but more illuminating still are Hardin's views of human nature especially rationality, and the versions of rationality baked into his methods and tools. But first a word about the man.

Garret James Hardin (1915-2003) was born in Dallas, Texas. He attended high school in Chicago, and then the University of Chicago on scholarship. He graduated in 1936 and completed a PhD at Stanford in microbial ecology in 1941. He remained at Stanford for a few years in a Carnegie Institute of Washington-funded department where his research on algal

⁶ Jamie Cohen-Cole, *The Open Mind: Cold War Politics and the Sciences of Human Nature* (Chicago: University of Chicago Press, 2014).; Andrew Jewett, *Science, Democracy, and the American University: From the Civil War to the Cold War* (Cambridge University Press, 2012).; Fred Turner, *The Democratic Surround: Multimedia and American Liberalism from World War II to the Psychedelic Sixties*. (Chicago: University of Chicago Press, 2013).

ecology was oriented towards increasing the global food supply. It was there that he grew increasingly alarmed at the rate of human population growth, and pessimistic about the prospects of research science doing anything to stop it.

In 1946 Hardin accepted a position at the University of California's campus in Goleta (later UC Santa Barbara), where he remained until his retirement in 1978. Hardin's output was not limited to scholarly works. He produced and acted in science education filmstrips, appeared on televised debates, and videotaped interviews. The reception of "The Tragedy of the Commons" (henceforth *Tragedy*) brought him worldwide notoriety, and he embraced his role as a public intellectual. He lectured and wrote on the environment, immigration, population control, abortion, and euthanasia, all framed by the dire necessity of what he called "life boat ethics." He wrote dozens of opinion and editorial articles for newspapers and magazines like *The Humanist*, *The New York Times*, and *Science*. He also contributed material to publications in the far Right and white nationalist scenes such as *The Social Contract*, and *Chronicles*.⁷ Hardin accepted money from the Pioneer Fund, a foundation notorious for supporting projects like Arthur Jensen's research into the hereditarian basis of intelligence, Charles Murray's *The Bell Curve*, and the racial psychology research of J. Phillip Rushton. In 1994 he was a signatory to the public statement in the *Wall Street Journal* entitled "Mainstream Science on Intelligence."⁸ In addition to his popularizations and activism, Hardin co-founded or served on the board of several advocacy and educational organizations dedicated to population and immigration control,

⁷ Southern Poverty Law Center's "Extremist Files" entry on Hardin (<https://www.splcenter.org/fighting-hate/extremist-files/individual/garrett-hardin>) accessed May 31, 2016.

⁸ Charles A. Murray and Richard Herrnstein, *The Bell Curve: Intelligence and Class Structure in American Life* (Free Press, 1994); Linda Gottfredson, "Mainstream Science on Intelligence." *Wall Street Journal*, December 13, 1994.

including Californians for Population Stabilization, The Environmental Fund, and the Federation for American Immigration Reform (FAIR). He was also a father of four.

The Birth of *Tragedy*

Tragedy was Hardin's most well known piece of writing. Based on a 1968 speech at a meeting of the American Association for the Advancement of Science,⁹ he reworked into an article in *Science* later that year. *Tragedy* was adopted as a model in behavioral science, politics, international relations, and ecology. It also became a powerful common-sense argument against "free riders" in policy circles, legislative debates, and in the popular press.

Tragedy was simultaneously an exercise in advocacy and theoretical model building. Hardin built the model and argument in *Tragedy* on his reading of earlier works, and looking at them explains how the famous essay came out the way it did, and also how it traveled so well and so easily. Hardin's population projections were rooted in the population science of the early 20th century. The logistic curve (also known as the S-shaped curve) described population growth and stabilization and had been developed in the 1920s by Raymond Pearl and Lowell Reed at Johns Hopkins University.¹⁰ In this model the geometric growth of a population is progressively retarded by the side effects of growth like pollution, scarcity, and predation until the overall rate of growth approaches zero. This research dovetailed with contemporary debates in the early 20th

⁹ The 1968 meeting was of the Pacific Division of the AAAS at Utah State University.

¹⁰ Jan Salomon Cramer, "The Early Origins of the Logistic Model," *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 35, no. 4 (2004): 613-626.

century around eugenics, population control, and quotas for immigration into the United States and in university admissions.¹¹

The work of Georgii Gause (1910–1986), a Russian correspondent and collaborator of Pearl's, provided another plank for the platform that Hardin built for *Tragedy*, the competitive exclusion principle. Competitive exclusion was postulate derived from the results of a series of experiments carried out by Gause, and noted by multiple researchers in the early 20th century, including Joseph Grinnell as early 1917.¹² Gause concluded that only one species could survive in any one ecological niche. All other species would be outcompeted and their populations would crash (**Figure 2**). His findings were not uncontested: G. Evelyn Hutchinson at Yale questioned the inevitability of competitive exclusion in 1961 in his paper "The Paradox of the Plankton". He noted that oceanic plankton species did not seem to squeeze each other out of a given habitat, and instead apparently fluctuated between different levels and balances of species, or continued to coexist for long periods of time.¹³

But, Hardin saw a centrally important lesson in the competitive exclusion principle, and extrapolated from it to reach his notion of self-imposed collective social doom that comes through so clearly in *Tragedy*. Groups of individuals (whether social, biological, or economic) cannot co-exist if they rely on the same resources. One group must necessarily out-compete the

¹¹ Garland E. Allen, "Old Wine in New Bottles: From Eugenics to Population Control in the Work of Raymond Pearl," in *The Expansion of American Biology*, ed. Jane Maeinshein (New Brunswick, Rutgers University Press, 1991).; Sharon Kingsland, "The Refractory Model: The Logistic Curve and the History of Population Ecology," *Quarterly Review of Biology* 57, no. 1 (1982): 29-52.

¹² Georgii Gause, "Experimental Studies on the Struggle for Existence I. Mixed Population of Two Species of Yeast," *Journal of Experimental Biology* 9, no. 4 (1932): 389-402.; Georgii Gause, "Ecology of Populations," *The Quarterly Review of Biology* 7, no. 1 (1932): 27-46.

¹³ G. Evelyn Hutchinson, "The Paradox of the Plankton," *American Naturalist* 95, no. 882 (1961): 137-145.

other and either drive it into extinction or force it to exploit a different resource pool. For Hardin, recognizing the truth of this principle frees society to act in accordance with it. Denying its truth would only force society to obey it blindly and without comprehension. In a period when geneticists had rallied around a sort of agnostic anti-racism, Hardin argued that the existence of discrete biological races (in the form of blood groups) meant that the iron laws of competitive exclusion were in effect in humans as well and that different groups of humans were in competition for the same resources, with only one result possible.¹⁴

The origin story of *Tragedy* illustrates a curious though common borrowing operation going on between biology and economics, or more accurately between biology, economics, natural history and political economy.¹⁵ By Hardin's own account Gause's work was indebted to Grinnell, Pearl, the demographer Alfred Lotka, and the mathematician Vito Volterra, who had previously come to similar conclusions. The notable thing is that Hardin himself attributed the development of the exclusions principle at work in 19th century political economy (vaguely citing 19th century French political economist Simonde de Sismondi) and threw in a side comment that he agreed with John Maynard Keynes view that the biological principle of natural selection is just a vast generalization of the principles laid out by British political economist David Ricardo.¹⁶ Further, Hardin proposed that the principle of competitive exclusion itself originated in political economy. He cited an 1883 by a French mathematician J. Bertrand, which

¹⁴ William B. Provine, "Geneticists and Race," *American Zoologist* 26, no. 3 (1986): 857-888.

¹⁵ On similar borrowings, see Paul Erickson, *The World the Game Theorists Made* (Chicago: University of Chicago Press, 2015).

¹⁶ "In Chapter 3 of *Nature and Mans Fate* I have argued for the correctness of John Maynard Keynes' view that the biological principle of natural selection is just a vast generalization of Ricardian economics. The argument is based on the isomorphism of theoretical systems in the two fields of human thought" ---Garrett Hardin, "The Competitive Exclusion Principle," *Science* 131, no. 3409 (1959): 1292-1297.

outlined a price war between two merchants. The hypothetical merchants might have colluded to fix the price and thus both benefit, but instead they kept on dropping their prices and continued to do so until their strategy no longer attracts additional buyers. Bertrand noted that the one merchant who could set his prices the lowest would be able to attract all of the available customers, thus driving the other merchant out of business. Thus, Hardin's appreciation of Gause's models of paramecia competition finds its analogue in Bertrand's story of commercial competition. As we will see below, this 'arms race' or competitive ratchet type mechanism plays an important role in *Tragedy* as well. Again, this is perhaps not surprising given that Hardin considered ecology to be a meta-discipline that studied the relationships between all manner of things, which thus "...in the broadest sense includes the science of economics and the study of population genetics."¹⁷

He was aware that the conclusions implied by his argument would be hard for both scientists and lay readers to accept given that their ramifications were painful and would upset the sensibilities of civilized people. He repeatedly argued that the acceptance of the competitive exclusion principle would be hampered by denial and that it was vital to love "the reality principle" and face the truth of the matter squarely.

Every instance of apparent coexistence must be accounted for. Out of a study of all such instances will come fuller knowledge of the many prosthetic devices of coexistence, each with its own costs and its own benefits. On such a foundation we may set about the task of establishing a science of ecological engineering.¹⁸

Referring again to the competitive exclusion principle he said "In the last decade it has become increasingly clear that it is a basic axiom of biological theory; and it will be my argument here

¹⁷ Ibid. 1297

¹⁸ Ibid.

that it is basic also to sociological and economic theory.”¹⁹ By this he meant that interactions between different economic and social actors, under conditions of free competition, would result in the more efficient group squeezing the less efficient ones out. Hardin concluded that free competition was not a desirable condition, not in economics, not in social conflict, and not in biology.

Free competition was the most efficient arrangement, but the most efficient arrangement was not necessarily the most stable. Therefore, the efficiency of free competition must be subordinated to rational planning and the abrogation of certain freedoms. As he put it, “We must devise and use such controls as are needed to keep the social system on the homeostatic plate. On this plateau but not beyond it freedom produces stability.”²⁰ He brought systems analysis explicitly into his argument, and in discussing genetics, animal breeding, ecology, antibiotics, and pesticides, he repeatedly raised the issue of what in genetics is called pleiotropy: many factors in a complex system have multiple effects, and a one-to-many causal mappings create a bewildering thicket of causal and reciprocal relationships that made the best and most stable course of action difficult to determine. He elaborated:

"Systems analysis points out in the clearest way the virtual irrelevance of good intentions in determining the consequences of altering a system. For a particularly clear-cut example, consider the Pasteurian revolution the application of bacteriology and sanitation to the control of disease. We embarked on this revolution because we wished to diminish the loss of life by disease. We got our wish, but it looks now as though the price will be an ultimate increase in the amount of starvation in the world. We could have predicted this, had we taken thought, for Malthus came before Pasteur, and Malthus clearly described the cybernetics systems that control populations.”²¹

¹⁹ Ibid.

²⁰ Ibid.

²¹ Garrett Hardin, “The Cybernetics of Competition: A Biologist's View of Society,” *Perspectives in Biology and Medicine* 7, no. 1 (1963): 58-84.

This leaves us with the three-part foundation for *Tragedy*: Classical political economy that Hardin called “Ricardian” but is closer to that of Malthus, ported into; cybernetics of control for complex phenomena, and; Hardin’s reading of the competitive exclusion principle and the conclusions he felt it forced him to make. These elements will help to explain the shortcomings of Hardin’s model and his prediction, and also give some insight into what capabilities he attributed to humans for rational planning and thought.

The Tragedy of the Commons

Tragedy opened with the claim that a class of problems existed with no technical solution. The dilemma of nuclear proliferation and the game of tick-tack-toe were both examples of this class of problem, because according to Hardin’s understanding of game theory, both were impossible to win if the players understand the rules perfectly. Winning was only possible by cheating, interrupting the game from outside, or simply refusing to play in the first place. “This last option”, according to Hardin “is what most adults do.” He then made his case “My thesis is that population problem is member of this class and the population problem cannot be solved in a technical way, any more than can winning the game of tick-tack-toe.”²² *Tragedy* actually spends more space exploring the intersection of political economy (Smith, Malthus) and 20th century systems sciences (game theory, John von Neumann), pollution, and ethics, than it does on population studies or really any empirical data at all. In the political economic arena, Utilitarianism and Bentham came in for serious criticism on several occasions. But it is clear that Bentham was just a stand-in for Hardin’s real target: technological Pollyanna and the mistaken

²² Garrett Hardin, “The Tragedy of the Commons,” *Science* 162, no. 3858 (1968): 1243-1248.

belief that any problem can be solved by optimizing. Instead, the real optimum population was less than the maximum, and the problem cannot be mathematically solved in a satisfying way.

"It is not mathematically possible to maximize for two (or more) variables at the same time. This was clearly stated by von Neumann and Morganstern, but the principle is implicit in the theory of partial differential equations, dating back at least to D'Alembert."²³ (Hardin 1968, p.1243)

The maximum population for a given territory would leave fewer calories per person than one that had less than the maximum. A bare minimum of calories for subsistence would leave no extra calories for recreation, sport, scholarship, or culture. Therefore "The optimum population is, then, less than the maximum. The difficulty of defining the optimum is enormous... we want the maximum good per person, but what is good?"²⁴ As a solution to the problem of incommensurable goods Hardin offered the practice of "a criterion of judgment and a system of weighting..." which already existed in nature in the form of natural selection. Differential reproduction in this case was taken as proof of worth. But since human society was not set up this way Hardin advised "Man must imitate this process."²⁵ In order to optimize for population it would be necessary to go against the economic common sense imposed by concept of the invisible hand.

"We can make little progress in working towards optimum population size until we explicitly exorcize the spirit of Adam Smith in the field of practical demography. The tendency to assume that decisions reached individually will, in fact, be the best decisions for an entire society."²⁶

Hardin was clear that the Invisible Hand was not the central thread of Smith's political economy,

²³ Ibid.

²⁴ Ibid.

²⁵ Ibid.

²⁶ Ibid.

but he was correct in capturing Smith's belief that human propensity to 'truck barter and trade' to their own advantage would have the net effect of increasing the wealth of a country through specialization and a division of labor.

In response to the notion that a group of individuals acting in their own best interest would increase the common good, Hardin again turned to another 19th Century political economist. He found a rebuttal to the invisible hand in population control in a scenario first sketched in a little-known pamphlet in 1833 by a mathematical amateur named William Forster Lloyd, whose pamphlet on population growth foreshadowed many of his own.²⁷

The tragedy in *Tragedy* unfolds as a parable about herdsmen, cattle, and a common pasture. In conditions of low population density, ensured by internecine warfare, famine, and disease, the common pasture is sustainable. However, if those population constraints are removed, and the number of herdsmen grows, the situation becomes untenable. Each herdsman has an interest in adding one more animal to his herd, which will have the effect of degrading the common pasture for all herdsmen collectively. Worse, each individual herder will benefit from all of each additional cow added to his herd, but will only suffer a fraction of the collective ill that increasingly affects all who rely on the pasture. Thus losing by winning, the herders are trapped in a vicious cycle or competitive ratchet in which there are no moves available to them except to continue down the road to total collapse of the grazing land and then catastrophe. Thus, while Smith's argument may hold true for commercial activity and the national wealth, it fails when considering a limited and exhaustible resource upon which no limitation of use is placed.

"Perhaps the simplest summary of this analysis of man's population problems is this: the

²⁷ William Forster Lloyd, *Two Lectures on the Checks to Population: Delivered before the University of Oxford, in Michaelmas term 1832* (Oxford, J. H. Parker, 1833).

commons, if justifiable at all, is justifiable only under conditions of low-population density. As the human population has increased, the commons has had to be abandoned in one aspect after another..."²⁸

In order to save the commons, or the resources now contained within them, they must be enclosed. But ["e]very new enclosure of the commons involves the infringement of somebody's personal liberty..."

"I believe it was Hegel who said Freedom is the recognition of necessity. The most important aspect of necessity that we must now recognize is the necessity of abandoning the commons in breeding."²⁹

This captures Hardin's tragic view perfectly. Human nature compels (some) humans to take the necessary steps to preserve (all of) humanity's future by doing away with the notion of common resources altogether, whether in parks, fisheries, or the capacity to have children.

The difficulties with Hardin's models were serious, and fairly obvious. He was comfortable with the hierarchically organized complexity of one-to-many and many-to-one type interactions, and he was acutely aware of how even small differences in geometric rates of change could have large and decisive effects on the behavior of a system. He even integrated notions of homeostasis, equilibrium-seeking, and feedback loops into his models. What ultimately made Hardin's models so inaccurate was their deterministic, nearly automatic layout. Things did what they did according to their natures, and natures could not be changed. Because components of a system were connected to other components, this meant that the bull-headed consistency of things had serious unforeseen effects for the whole system.

This mechanical complexity had two aspects. First, it tended to not allow for the parameters in the models themselves to change. Feedback loops, homeostasis, and Hardin's early

²⁸ Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3858 (1968): 1243-1248.

²⁹ Ibid.

appreciation of Raymond Pearl's work on the logistic function notwithstanding, his population models followed a perfectly deterministic trajectory. The ironclad nature of competitive exclusion, for example, depended on there being durable differences in the rates of reproduction between the two species under consideration. In *Tragedy's* parable of the open pasture and the self-interested herders, previous factors such as tribal wars and poaching had limited the expansion of population and the exploitation of the pasture. When those constraints were relaxed, a 'natural' rate of increase became manifest. It was outside of what Hardin was willing to consider realistic for the rate of natural increase to go down endogenously.

Second, the strategies attributed to the players in this resource games (the herdsmen and their flocks on common grazing land, tick-tack-toe, competitive exclusion) were fixed. They were all shortsighted utility maximizers who could not communicate or signal to their counterparts, and could not modify their strategies under changing conditions. Each of his actors was a rational being seeks to maximize his gain. Subsequent population studies have failed to confirm Hardin's predicted results and some researchers have called for the integration of institutional factors into future analysis.³⁰ But the limitations and failings of the model that emerged from *Tragedy* are less interesting than the fact that its highly idealized arguments, dependent on several unrealistic abstractions, should find itself taken up with such energy and creativity in environmental science, political science, economics, international relations, criminal justice.

³⁰ Elinor Ostrom, "Coping With Tragedies of the Commons," *Annual Review of Political Science* 2, no. 1 (1999): 493-535. ; D. Feeny, F. Berkes, B. J. McCay, J. M. Acheson, "The Tragedy of the Commons: Twenty Two Years Later," *Human Ecology* 18, no. 1 (1990): 1-19.

A Life Boat, Not a Spaceship

Many system-influenced scientists in the 1960s were turning their attention to the current state and future of planet Earth. The systems economist Kenneth Boulding suggested that if they were to survive, humans had to make a significant shift in their thinking. The history of all hitherto existing societies had been "open," in that their inputs did not depend on their outputs. There was always room to grow, even if there was not always the means to do so. But in the future a single unified human society would have to think of themselves as being "closed," with no access to a resources not already in the system. For this reason Boulding proposed one of the most culturally optimistic image of his time for the future of humanity: the spaceship.³¹ Hardin welcomed Boulding's warnings, but he did not believe that the economist had the right metaphor. He praised the image of the spaceship for its use in "justifying population control measures." But

"Unfortunately, the image of a spaceship is also used to promote measures that are suicidal. One of these is a generous immigration policy, which is only a particular instance of a class of policies that are in error because they lead to the tragedy of the commons."³²

Instead of a spaceship, Hardin offered the metaphor of the lifeboat. In a world where most countries were poor and had a high rate of population growth, but a few countries were rich and had a relatively low rate of population growth, the rich had their lifeboats and the poor had theirs.

Metaphorically, each rich nation amounts to a lifeboat full of comparatively rich people. The poor of the world are in other, much more crowded lifeboats. Continuously, so to

³¹ Kenneth Boulding, "The Economics of the Coming Spaceship Earth," in *Environmental Quality in a Growing Economy: Essays from the Sixth RFF Forum*, ed., Henry Jarrett (New York: RFF Press, 1966).

³² Garrett Hardin, "Living on a Lifeboat," *Biosciences* 24, no. 10 (1974): 561-568.

...speak, the poor fall out of their lifeboats and swim for a while in the water outside, hoping to be admitted to a rich lifeboat... What should the passengers on a rich lifeboat do? This is the central problem of "the ethics of a lifeboat."³³

Citizens of the rich countries had a moral responsibility to their own progeny to keep the citizens of poor countries from immigrating or seeking asylum. To do so would risk upsetting the metaphorical lifeboats that had a chance of reaching safety, which would mean doom for all. Therefore the lives of the people of the poor countries must be sacrificed so that humanity (in the form of the people of the rich countries) might survive at all. Aid that took forms other than immigration or asylum such as food aid was equally bad, because it risked supporting a vicious circle in which more food led to a larger population, which then had a claim to more food aid (**Figure 3**). For this reason Hardin characterized food aid as part of a "pejorative" (making things worse) feedback loop that could be modeled according to the conventions of cybernetics (**Figure 4**).

Hardin's vision of human nature was shortsightedly rational in a way that created long-term risks. But then also there exists the potential for an overarching rationality that can supervene human nature's shortsighted self-interested utility seeking in the interest of the group. This regulative rational force could in principle be either a perfectly efficient market with clear property rights for each and every piece of publicly used resources, or, more feasibly, a coercive state that would administratively allocate resources with an eye to long-term preservation rather than individual utility maximization. One way of putting this is that there is a distinction between instrumental rationality, which serves individual rational utility seeking interest, but dooms the collectivity; and substantive rationality, which sets a goal or end as the ultimate

³³ Ibid.

good and can override individual utility in the name of national or group self preservation. Put bluntly, the implications of Hardin's argument was the United States had to protect itself from the rest of the earth, and that native-born white people had to protect themselves from the rest of America.

In the Public Eye: Congressional Testimony

Hardin was an active advocate in the popular lecture circuit, on television and the radio, and as part of lobbying organizations. He even testified before congressional subcommittees. In 1974 he appeared before a House subcommittee of the Committee on Merchant Marine and Fisheries to give testimony and submit documents (**Figure 5**).³⁴ At the hearing, "Growth and Its Implications for the Future," Hardin offered the anti-immigration argument that should be familiar by now. He also criticized demographers for failing to appreciate his population growth models and for being too credulous of statistics and government census data.

One of the many peculiar things about this story is that Hardin, like his fellow Neo-Malthusian Paul Ehrlich, did his work in near total isolation from contemporary demography.³⁵ Hardin's models for the future of human populations entirely ignored developments in demographic science such as cohort analysis, population momentum, or population structure of any kind. He was familiar with the notion of demographic transition, in which birth rates fall to slow population growth, but he was completely dismissive of it on the basis of two

³⁴ U.S. Congress. House of Representatives, Committee on Merchant Marine and Fisheries, *Growth and its Implications for the Future: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment*, 93rd Congress., 2nd sess., June 1974.

³⁵ Though Ehrlich and Hardin had little in common politically

presuppositions. First, he argued that it was impossible, because GDP growth always produced an increase in birth rates, a priori. Second, data indicating that birth rates were falling in the poor countries of the world must be falsified, because poor countries' governments had no independent body checking up on their numbers. In his 1974 Congressional testimony he said as much:

Perhaps the worst population explosion of all is the explosion of statistics about population! We are overwhelmed with them. The production of statistics and books is not entirely innocent. The population problem frightens many people who are supposed to be experts in such matter: it is easier to grind out statistics or to write another book that it is to face the problem. Once in a while we should brush aside the forest of statistics and try to look at the heart of the problem. Let us do so. When we do, what do we discover? As a guide to action I suggest that no truth about population is more basic than what I call "Gregg's Law": You can't cure a cancer by feeding it... This should be obvious. Yet for the past twenty-five years we have been trying to stop population growth by feeding. The results have been disastrous. Excluding military aid we have distributed some 80 billions dollars for true foreign aid. The results? The numbers of desperately poor people has grown from one and a half billion to two and a half billion... We've tried to cure the cancer of overpopulation by feeding it: now it's growing faster than ever.³⁶

In the next few paragraphs of testimony he made a poke at demographers when he rhetorically asked "How did we happen to make this mistake? The principle cause is to be found in the Doctrine of the Benign Demographic Transition."³⁷ Later in the day he reiterated "This 'benign demographic transition' cannot be true. If you believe it is, submit it to the test. Send 50 million

³⁶ U.S. Congress. House of Representatives, Committee on Merchant Marine and Fisheries, *Growth and its Implications for the Future: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment*, 93rd Congress., 2nd sess., June 1974 on p. 450.

³⁷ Ibid.

tons of grain to India and then see what happens to the birth rate next year."³⁸ And to make it clear what he *really* meant, he added:

Every gift of food to an overpopulated country makes its people poorer. This is no paradox. It is the simple consequence of the truth that man does not live by bread alone.³⁹

According to Hardin, aid should be conditional on a country making progress on controlling the growth of its population, and the aid itself should be in the form of "energy and know-how" rather than food whenever possible. In any case, food aid was the product of the farm lobby rather than genuine humanitarian impulses, and should be viewed as such.⁴⁰ Finally, to drive home the national and implicitly radicalized perspective on life, health, and survival, global programs for storing food reserves should be avoided, but *national* food banks should be encouraged. Hardin's hypocrisy is a little breathtaking, in that food aid was discouraged on the basis that the agricultural sector is too productive and has a surplus it doesn't know what to do with, but at the same time food reserves should be protected because that same agricultural sector was precarious and likely to decrease in output in the near future.

The widespread proposal that we should set up a world food bank is, I think, the worst possible thing we could do... It would not be a world food bank, it would be a world food siphon, which would move food exclusively from rich countries to poor countries, thus worsening the situation for poor countries. However, I do think that every country, including our own, should have a national food bank, a federal reserve system.... We are

³⁸ U.S. Congress. House of Representatives, Committee on Merchant Marine and Fisheries, *Growth and its Implications for the Future: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment*, 93rd Congress., 2nd sess., June 1974 on p. 470.

³⁹ U.S. Congress. House of Representatives, Committee on Merchant Marine and Fisheries, *Growth and its Implications for the Future: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment*, 93rd Congress., 2nd sess., June 1974 on p. 452.

⁴⁰ U.S. Congress. House of Representatives, Committee on Merchant Marine and Fisheries, *Growth and its Implications for the Future: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment*, 93rd Congress., 2nd sess., June 1974 on p. 450.

living in a very vulnerable country right now: our own agricultural productivity is very likely to go down rather than up one of these years, and we have no reserves for this eventuality.⁴¹

Summing up the day's testimony, Hardin said

In the present instance, I think the simplest advice that such a long-range planning group could give to the Government would be: Do not send food to starving people. Now, I admit that sounds terrible. But sending food is clearly the worst thing we can do to posterity. I say, do not do it.⁴²

That does indeed sound terrible. But to focus on the morally repugnant aspect of Hardin's testimony is really to miss the point. He saw the inevitable dynamics of food aid and famine deriving from the natural operation of the system and the people whose interests drove them to behave as they did. It wasn't Hardin's ethnic nationalism that attracted his allies in the environmental movement, or brought him to testify before a congressional sub-committee. It was his emphasis on the invariant workings of complex phenomena, and his warning that their trajectory would end in tragedy unless some higher authority took over responsibility for the future of that system. That system could be the economy, or it could be immigration, agriculture, aid, or reproduction. Without rational cybernetic governance and control, simple efficiency and progress would lead to ruin.

⁴¹ U.S. Congress. House of Representatives, Committee on Merchant Marine and Fisheries, *Growth and its Implications for the Future: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment*, 93rd Congress., 2nd sess., June 1974 on p. 452.

⁴² U.S. Congress. House of Representatives, Committee on Merchant Marine and Fisheries, *Growth and its Implications for the Future: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment*, 93rd Congress., 2nd sess., June 1974 on p. 478.

Conclusion

One unanswered question in my description of Hardin's view of human nature is its *political* relationship with the systems sciences, and with notions of human rationality. Therefore an interesting area to think with is the role of the "systems" approach in Hardin's modeling practices and his related notions of human rationality. The systems approach was a suite of concepts and modeling tools that became especially popular after World War II. Hunter Heyck's recent book *Age of System* charts its success in the human sciences and it was applied with equal vigor to specialties in biology dealing with complex phenomena.⁴³ Hardin was a charter member of the Society for General Systems Studies, which included such interdisciplinary post-war thinkers as Kenneth Boulding, Anatol Rapoport, and Ross Ashby.^{44,45} The systems sciences, like cybernetics, were obsessively rationalizing in their approach---but they focused on a form of rationalization that coordinated the relationship between parts and wholes, rather than the disassembly of wholes into parts. But what does this mean for Hardin's view of human nature? I think it shows that Hardin viewed complex systems with many interacting parts as prone to ruin and self-destruction without some kind of overarching coordinating power to regulate them---a rule that held equally true for sheep and people. Just as freedom in a commons led to ruin, freedom to reproduce led to famine, and freedom of movement could only produce cultural chaos and a metaphorical sinking lifeboat.

⁴³ Hunter Heyck, *Age of System: Understanding the Development of Modern Social Science* (Johns Hopkins University Press, 2015).

⁴⁴ Deborah Hammond, *"The Science of Synthesis: Exploring the Social Implications of General Systems Theory"* (University of Colorado Press, 2011).

⁴⁵ Although historian of science Andrew Pickering has recently argued that the post-war systems sciences represented an alternative science, a path not taken by an increasingly rationalizing West, I think this misses the mark. Andrew Pickering, *The Cybernetic Brain: Sketches of Another Future* (Chicago: University of Chicago Press, 2010).

One of the criticisms of Cold War rationality has been that it is 'formal' or 'thin,' ruling out questions of values and substantive rationality.⁴⁶ Hardin's notion of rationality was 'thick' in that it explicitly took into account the ends of the process, not just its efficient functioning. However, his substantive rationality was embedded in his commitment to national interest, and further, in an implicit notion of racialization. This view of human rationality is profoundly at odds with that of the classical liberalism of the 19th century as well as that of the refurbished "neo" liberalism (in the form of rational actor theory and the notion of self-regulating markets) that grew stronger in the United States in the 1970s. Hardin's rightwing politics aside, his theoretical perspective on the relationship between models, theories, and phenomena were indebted to the systems sciences' emphasis on regulation and coordination, and to the classical political economics of Ricardo, Smith, and Malthus. And so it is this cybernetic Neo-Malthusianism that makes Hardin seem so very strange to us now. Neither a liberal nor a democrat, skeptical of the market and of the human capacity to reason and communicate, his alliances of convenience with the women's movement and environmentalists have obscured his goals and his methods. The fact that his model in the *Tragedy* and its pessimism has passed into a common sense argument for markets in economics is odd to say the least. It is especially odd given the empirical wrongness of most of his predictions. Population growth has cratered in most countries, and US immigration (always contentious) is at high levels not seen since the early 20th century. Hardin didn't have a lot to say about global climate change, where it would seem that his model had some traction, but his commitment to national borders as the barrier to population growth and resource depletion kept him from seeing the lifeboat we were all in, the entire planet.

⁴⁶ Paul Erickson (ed.), *How Reason Almost Lost its Mind: The Strange Career of Cold War Rationality* (Chicago: University of Chicago Press, 2013).

Figures and Figure Captions

Figure 1. Garrett Hardin in 1963 (image from Garrett Hardin Society webpage <http://www.garretthardinsociety.org/>)

Figure 2. The Competitive Exclusion Principle. Gause, G. F. (1934) *The Struggle for Existence*. Baltimore, MD: Williams and Wilkins.

Fig. 26. The growth of the number of individuals of *Stylorzychia pustulata* cultivated separately, and in the mixed populations with *Paramecium caudatum* and *Paramecium aurelia* (on the medium of Osterhout).

Figure 3. The "Pejorative" Feedback Loop of food aid and famine. Garrett Hardin, "Living on a Lifeboat," *Bioscience* 24, no. 10 (1974): 561-568.

Figure 4. Food aid creates an escalating series of emergencies and interventions. Garrett Hardin, "Living on a Lifeboat," *Bioscience* 24, no. 10 (1974): 561-568.

Figure 5. "Growth and Its Implications for the Future," 1974.

**GROWTH AND ITS IMPLICATIONS
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Part 4**

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