

# Carrying Capacity As an Ethical Concept

by Garrett Hardin

**L**ifeboat ethics is merely a special application of the logic of the commons.<sup>1</sup> The classic paradigm is that of a pasture held as common property by a community and governed by the following rules: First, each herdsman may pasture as many cattle as he wishes on the commons; and second, the gain from the growth of cattle accrues to the individual owners of the cattle. In an under populated world the system of the commons may do no harm and may even be the most economic way to manage things, since management costs are kept to a minimum. In an overpopulated (or overexploited) world a system of the commons leads to ruin, because each herdsman has more to gain individually by increasing the size of his herd than he has to lose as a

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*Garrett Hardin, Ph.D., was Professor of Biology at the University of California, Santa Barbara, when this essay was published by Soundings, 59:120-137, Spring 1976, at which time he was seen as "one of the principal provocateurs of current discussions of lifeboat ethics and triage in relation to world famine."*

single member of the community guilty of lowering the carrying capacity of the environment. Consequently he (with others) overloads the commons.

Even if an individual fully perceives the ultimate consequences of his actions he is most unlikely to act in any other way, for he cannot count on the restraint *his* conscience might dictate being matched by a similar restraint on the part of *all* the others. (Anything less than all is not enough.) Since mutual ruin is inevitable, it is quite proper to speak of the *tragedy* of the commons.

Tragedy is the price of freedom in the commons. Only by changing to some other system (socialism or private enterprise, for example) can ruin be averted. In other words, in a crowded world survival requires that some freedom be given up. (We have, however, a choice in the freedom to be sacrificed.) Survival is possible under several different politico-economic systems — but not under the system of the commons. When we understand this point, we reject the ideal of distributive justice stated by Karl Marx a century ago, "From each according to his ability, to each according to his needs."<sup>2</sup> This ideal might be defensible if "needs" were defined by the larger community rather than by the individual (or individual political unit) *and if "needs" were static.*<sup>3</sup> But in the

past quarter-century, with the best will in the world, some humanitarians have been asserting that rich populations must supply the needs of poor populations even though the recipient populations increase without restraint. At the United Nations conference on population in Bucharest in 1973, spokesmen for the poor nations repeatedly said in effect: "We poor people have the right to reproduce as much as we want to; you in the rich world have the responsibility of keeping us alive."

Such a Marxian disjunction of rights and responsibilities inevitably tends toward tragic ruin for all. It is almost incredible that this position is supported by thoughtful persons, but it is. How does this come about? In part, I think, because language deceives us. When a disastrous loss of life threatens, people speak of a "crisis," implying that the threat is temporary. More subtle is the implication of quantitative stability built into the pronoun "they" and its relatives. Let me illustrate this point with quantified prototype statements based on two different points of view.

*Crisis analysis:* "These poor people (1,000,000) are starving, because of a crisis (flood, drought, or the like). How can we refuse *them* (1,000,000)? Let us feed *them* (1,000,000). Once the crisis is past those who are still hungry are few (say 1,000) and there is no further

need for our intervention.”

*Crunch analysis:* “Those (1,000,000) who are hungry are reproducing. We send food to *them* (1,010,000). *Their* lives (1,020,000) are saved. But since the environment is still essentially the same, the next year *they* (1,030,000) ask for more food. We send it to *them* (1,045,000); and the next year *they* (1,068,000) ask for still more. Since the need has not gone away, it is a mistake to speak of a passing crisis: It is evidently a permanent crunch that this growing “they face — a growing disaster, not a passing state of affairs.”

“They” increases in size. Rhetoric makes no allowance for a ballooning pronoun. Thus we can easily be deceived by language. We cannot deal adequately with ethical questions if we ignore quantitative matters. This attitude has been rejected by James Sellers, who dismisses prophets of doom from Malthus<sup>4</sup> to Meadows<sup>5</sup> as “chiliasts.” Chiliasts (or millennialists, to use the Latin-derived equivalent of the Greek term) predict a catastrophic end of things a thousand years from some reference point. The classic example is the prediction of Judgment Day in the year 1000 anno Domini. Those who predicted it were wrong, of course; but the fact that this specific prediction was wrong is no valid criticism of the use of numbers in thinking. Millennialism is numerology, not science.

In science, most of the time, it is

not so much exact numbers that are important as it is the relative size of numbers and the direction of change in the magnitude of them. Much productive analysis is accomplished with only the crude quantitation of “order of magnitude” thinking. First and second derivatives are often calculated with no finer aim than to find out if they are positive or negative. Survival can hinge on the crude issue of the sign of change, regardless of number. This is a far cry from the spurious precision of numerology. Unfortunately, the chasm between the “two cultures,” as C. P. Snow called them,<sup>6</sup> keeps many in the non-scientific culture from understanding the significance of the quantitative approach. One is tempted to wonder also whether an additional impediment to understanding may not be the mortal sin called pride, which some theologians regard as the mother of all sins.

Returning to Marx, it is obvious that the *each* in “to each according to his needs” is not — despite the grammar — a unitary, stable entity; “each is a place-holder for a ballooning variable.” Before we commit ourselves to saving the life of *each* and every person in need we had better ask this question: “*And then what?*” That is, what about tomorrow, what about posterity? As Hans Jonas has pointed out,<sup>7</sup> traditional ethics has almost entirely ignored the claims of posterity. In an overpopulated world humanity cannot long endure under

a regime governed by posterity-blind ethics. It is the essence of ecological ethics that it pays attention to posterity.

Since helping starving people requires that we who are rich give up some of our wealth, any refusal to do so is almost sure to be attributed to selfishness. Selfishness there may be, but focusing on selfishness is likely to be non-productive. In truth, a selfish motive can be found in all policy proposals. The selfishness of *not* giving is obvious and need not be elaborated. But the selfishness of giving is no less real, though more subtle.<sup>8</sup> Consider the sources of support for Public Law 480, the act of Congress under which surplus foods were given to poor countries, or sold to them at bargain prices (“concessionary terms” is the euphemism). Why did we give food away? Conventional wisdom says it was because we momentarily transcended our normal selfishness. Is that the whole story?

It is not. The “we” of the above sentence needs to be subdivided. The farmers who grew the grain did not give it away. They sold it to the government (which then gave it away). Farmers received selfish benefits in two ways: the direct sale of grain, and the economic support to farm prices given by this governmental purchase in an otherwise free market. The operation of P. L. 480 during the past quarter-century brought American farmers to a level of prosperity never known before.

Who else benefitted — in a

selfish way? The stockholders and

employees of the railroads that

moved grain to seaports benefitted. So also did freight-boat operators (U.S. “bottoms” were specified by law). So also did grain elevator operators. So also did agricultural research scientists who were financially supported in a burgeoning but futile effort “to feed a hungry world.”<sup>9</sup> And so also did the large bureaucracy required to keep the P. L. 480 system working. In toto, probably several million people personally benefitted from the P. L. 480 program. Their labors cannot be called wholly selfless.

Who *did* make a sacrifice for P. L. 480? The citizens generally, nearly two hundred million of them, paying directly or indirectly through taxes. But each of these many millions lost only a little, whereas each of the million or so gainers gained a great deal. The blunt truth is that *philanthropy pays* — if you are hired as a philanthropist. Those on the gaining side of P. L. 480 made a great deal of money and could afford to spend lavishly to persuade Congress to continue the program. Those on the sacrificing side sacrificed only a little bit per capita and could not afford to spend much protecting their pocketbooks against philanthropic inroads. And so P. L. 480 continued, year after year.

Should we condemn philanthropy when we discover that some of its roots are selfish? I think not, otherwise probably no philanthropy would be possible. The secret of practical success in large-scale public philanthropy is this: See to it that the losses are widely distributed so that the per capita loss is small, but concentrate the gains in a relatively few people so that these

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few will have the economic power needed to pressure the legislature into supporting the program.

I have spent some time on this issue because I would like to dispose once and for all of condemnatory arguments based on “selfishness.” As a matter of principle we should always assume that selfishness is *part* of the motivation of every action. But what of it? If Smith proposes a certain public policy, it is far more important to know whether the policy will do public harm or public good than it is to know whether Smith’s motives are selfish or selfless. Consequences (“ends”) can be more objectively determined than motivations (“means”). Situational ethics wisely uses consequences as the measure of morality. “If the end does not justify the means, what does?” asks Joseph Fletcher.<sup>10</sup> The obsession of older ethical systems with means and motives is no doubt in part a consequence of envy, which has a thousand disguises.<sup>11</sup> (Though I am sure this is true, the situationist should not dwell on envy very long, for it is after all only a motive, and

as such not directly verifiable. In any case public policy must be primarily concerned with consequences.)

Even judging an act by its consequences is not easy. We are limited by the basic theorem of ecology. “We can never do merely one thing.”<sup>12</sup> The fact that an act has many consequences is all the more reason for de-emphasizing motives as we carry out our ethical analyses. Motives by definition apply only to intended consequences. The multitudinous unintended ones are commonly denigrated by the term “side-effects.” But “The road to hell is paved with good intentions,” so let’s have done with motivational evaluations of public policy.

Even after we have agreed to eschew motivational analysis, foreign aid is a tough nut to crack. The literature is large and contradictory, but it all points to the inescapable conclusion that a quarter of a century of earnest effort has not conquered world poverty. To many observers the threat of future disasters is more convincing now than it was a quarter of a century ago, and the disasters are not all in the future either.<sup>13</sup> Where have we gone wrong in foreign aid?

We wanted to do good, of course. The question, “How can we help a poor country?” seems like a simple question, one that should have a simple answer. Our failure to answer it suggests that the question is not as simple as we thought. The variety of contradictory answers offered is disheartening.

How can we find our way

through this thicket? I suggest we take a cue from a mathematician. The great algebraist Karl Jacobi (1804-1851) had a simple stratagem that he recommended to students who found themselves butting their heads against a stone wall. *Umkehren, immer umkehren* — “Invert, always invert.” Don’t just keep asking the same old question over and over: Turn it upside down and ask the opposite question. The answer you get then may not be the one you want, but it may throw useful light on the question you started with.

Let’s try a Jacobian inversion of the food/population problem. To sharpen the issue, let us take a particular example — say India. The question we want to answer is, “How can we help India?” But since that approach has repeatedly thrust us against a stone wall, let’s pose the Jacobian invert, “How can we *harm* India? After we’ve answered this perverse question we will return to the original (and proper) one.

As a matter of method, let us grant ourselves the most malevolent of motives: Let us ask, “How can we harm India — *really* harm her?” Of course we might plaster the country with thermo-nuclear bombs, speedily wiping out most of the 600 million people. But, to the truly malevolent mind, that’s not much fun; a dead man is beyond harming. Bacterial warfare could be a bit “better,” but not much. No: We want something that will really make India suffer, not merely for a day or a week, but on and on and on. How can we achieve this inhumane goal?

Quite simply: By sending India a

bounty of food, year after year. The United States exports about 80 million tons of grain a year. Most of it we sell. The foreign exchange it yields we use for such needed imports as petroleum (38 percent of our oil consumption in 1974), iron ore, bauxite, chromium, tin, etc. But in the pursuit of our malevolent goal let us “unselfishly” tighten our belts, make sacrifices, and do without that foreign exchange. Let us *give* all 80 million tons of grain to the Indians each year.

On a purely vegetable diet it takes about 400 pounds of grain to keep one person alive and healthy for a year. The 600 million Indians need 120 million tons per year; since their nutrition is less than adequate presumably they are getting a bit less than that now. So the 80 million tons we give them will almost double India’s per capita supply of food. With a surplus, Indians can afford to vary their diet by growing some less efficient crops; they can also convert some of the grain into meat (pork and chickens for the Hindus, beef and chickens for the Moslems). The entire nation can then be supplied not only with plenty of calories, but also with an adequate supply of high quality protein. The peoples’ eyes will sparkle, their steps will become more elastic, and they will be capable of more work. “Fatalism” will no doubt diminish. (Much so-called fatalism is merely a consequence of malnutrition.) Indians may even become a bit overweight, though they will still be getting only two-thirds as much food as the average inhabitant of a rich country. Surely, we think, surely a well-fed India would be

better off?

Not so: *Ceteris paribus*, they will ultimately be worse off. Remember, “We can never do merely one thing.” A generous gift of food would have not only nutritional consequences, it would also have political and economic consequences. The difficulty of distributing free food to a poor people is well known. Harbor, storage, and transport inadequacies result in great losses of grain to rats and fungi. Political corruption diverts food from those who need it most to those who are more powerful. More abundant supplies depress free market prices and discourage native farmers from growing food in subsequent years. Research into better ways of agriculture is also discouraged. Why look for better ways to grow food when there is food enough already?

There are replies, of sorts, to all the above points. It may be maintained that all these evils are only temporary ones. In time, organizational sense will be brought into the distributional system and the government will crack down on corruption. Realizing the desirability of producing more food, for export if nothing else, a wise government will subsidize agricultural research in spite of an apparent surplus. Experience does not give much support to this optimistic view, but let us grant the conclusions for the sake of getting on to more important matters. Worse is to come.

The Indian unemployment rate is commonly reckoned at 30 percent, but it is acknowledged that this is a minimum figure. *Underemployment*

is rife. Check into a hotel in Calcutta with four small bags and four bearers will carry your luggage to the room with another man to carry the key. Custom, and a knowledge of what the traffic will bear, decrees this practice. In addition malnutrition justifies it in part. Adequately fed, half as many men would suffice. So one of the early consequences of achieving a higher level of nutrition in the Indian population would be to increase the number of unemployed.

India needs many things that food will not buy. Food will not diminish the unemployment rate, quite the contrary; nor will it increase the supply of minerals, bicycles, clothes, automobiles, gasoline, schools, books, movies, or television. All these things require energy for their manufacture and maintenance.

Of course, food is a form of energy, but it is convertible to other forms only with great loss. So we are practically justified in considering energy and food as mutually exclusive goods. On this basis the most striking difference between poor and rich countries is not in the food they eat but in the energy they use. On a per capita basis rich countries use about three times as much of the primary goods — grain and the like — as do poor countries. (To a large extent this is because the rich convert much of the grain to more “wasteful” animal meat.) But when it comes to energy, rich countries use ten times as much per capita. (Near the extremes Americans use 60 times as much per person as Indians.) By reasonable standards much of this energy may be wasted (e.g., in the

manufacture of “exercycles” for sweating the fat off people who have eaten too much), but a large share of this energy supplies the goods we regard as civilized: effortless transportation, some luxury foods, a variety of sports, clean space heating, more than adequate clothing, and energy-consuming arts — music, visual arts, electronic auxiliaries, etc. Merely giving food to a people does almost nothing to satisfy the appetite for any of these other goods.

But a well-nourished people is better fitted to try to wrest more energy from its environment. The question then is this: Is the native environment able to furnish more energy? And at what cost?

In India energy is already being gotten from the environment at a fearful cost. In the past two centuries millions of acres of India have been deforested in the struggle for food, with the usual environmental degradation. The Vale of Kashmir, once one of the garden spots of the world, has been denuded to such an extent that the hills no longer hold water as they once did, and the springs supplying the famous gardens are drying up. So desperate is the need for charcoal for fuel that the Kashmiri now make it out of tree leaves. This wasteful practice denies the soil of needed organic mulch.

Throughout India, as is well known, cow dung is burned to cook food. The minerals of the dung are not thereby lost, but the ability of the dung to improve soil tilth is. Some of the nitrogen in the dung goes off in the air and does not return to Indian soil. Here we see a

classic example of the “vicious circle”: Because Indians are poor they burn dung, depriving the soil of nitrogen and making themselves still poorer the following year. If we give them plenty of food, as they cook this food with cow dung they will lower still more the ability of their land to produce food.

Let us look at another example of this counter-productive behavior. Twenty-five years ago western countries brought food and medicine to Nepal. In the summer of 1974 a disastrous flood struck Bangladesh, killing tens of thousands of people, by government admission. (True losses in that part of the world are always greater than admitted losses.) Was there any connection between feeding Nepal and flooding Bangladesh? Indeed there was, and is.<sup>14</sup>

Nepal nestles among the Himalayas. Much of its land is precipitous, and winters are cold. The Nepalese need fuel, which they get from trees. Because more Nepalese are being kept alive now, the demand for timber is escalating. As trees are cut down, the soil under them is washed down the slopes into the rivers that run through India and Bangladesh. Once the absorptive capacity of forest soil is gone, floods rise faster and to higher maxima. The flood of 1974 covered two-thirds of Bangladesh, twice the area of “normal” floods — which themselves are the consequence of deforestation in previous centuries.

By bringing food and medicine to Nepal we intended only to save lives, but we can never do merely one thing, and the Nepalese lives we saved created a Nepalese

energy-famine. The lives we saved from starvation in Nepal a quarter of a century ago were paid for in our time by lives lost to flooding and its attendant evils in Bangladesh. The saying "Man does not live by bread alone" takes on new meaning.

Still, we have not described what may be the worst consequence of a food-only policy: revolution and civil disorder. Many kind-hearted people who support food aid programs solicit the cooperation of "hard-nosed" doubters by arguing that good nutrition is needed for world peace. Starving people will attack others, they say. Nothing could be further from the truth. The monumental studies of Ancel Keys and others have shown that starving people are completely selfish.<sup>15</sup> They are incapable of cooperating with others, and they are incapable of laying plans for tomorrow and carrying them out. Moreover, modern war is so expensive that even the richest countries can hardly afford it.

The thought that starving people can forcefully wrest subsistence from their richer brothers may appeal to our sense of justice, *but it just ain't so*. Starving people fight only among themselves, and that inefficiently.

So what would happen if we brought ample supplies of food to a population that was still poor in everything else? They would still be incapable of waging war at a distance, but their ability to fight among themselves would be vastly increased. With vigorous, well-nourished bodies and a keen sense of their impoverishment in other things, they would no doubt soon

create massive disorder in their own land. Of course, they might create a strong and united country, but what is the probability of that? Remember how much trouble the thirteen colonies had in forming themselves into a United States. Then remember that India is divided by two major religions, many castes, fourteen major languages, and a hundred dialects. A partial separation of peoples along religious lines in 1947, at the time of the formation of Pakistan and of independent India, cost untold millions of lives. The budding off of Bangladesh (formerly East Pakistan) from the rest of Pakistan in 1971 cost several million more. All these losses were achieved on a low level of nutrition. The possibilities of blood-letting in a population of 600 million well-nourished people of many languages and religions and no appreciable tradition of cooperation stagger the imagination. Philanthropists with any imagination at all should be stunned by the thought of 600 million well-fed Indians seeking to meet their energy needs from their own resources.

So the answer to our Jacobian question, "How can we harm India?" is clear: Send food *only*. Escaping the Jacobian by re-inverting the question, we now ask, "How can we *help* India?" Immediately we see that we must *never* send food without a matching gift of non-food energy. But before we go careening off on an intoxicating new program we had better look at some more quantities.

On a per capita basis, India uses the energy equivalent of one barrel

of oil per year; the U.S. uses sixty. The world average of all countries, rich and poor, is ten. If we want to bring India only up to the present world average, we would have to send India about 9 x 600 million barrels of oil per year (or its equivalent in coal, timber, gas, or whatever). That would be more than five billion barrels of oil equivalent. What is the chance we will make such a gift?

Surely it is nearly zero. For scale, note that our total yearly petroleum use is seven billion barrels (of which we import three billion). Of course we use (and have) a great deal of coal, too. But these figures should suffice to give a feeling of scale.

More important is the undoubted psychological fact that a fall in income tends to dry up the springs of philanthropy. Despite wide disagreements about the future of energy it is obvious that from now on, for at least the next twenty years and possibly for centuries, our per capita supply of energy is going to fall, year after year. The food we gave in the past was "surplus." By no accounting do we have an energy surplus. In fact, the perceived deficit is rising year by year.

India has about one-third as much land as the United States. She has about three times as much population. If her people-to-land ratio were the same as ours she would have only about seventy million people (instead of 600 million). With the forested and relatively unspoiled farmlands of four centuries ago, seventy million people could probably make it in comfort and dignity — provided

they didn't increase!

To send food only to a country already populated beyond the carrying capacity of its land is to collaborate in the further destruction of the land and the further impoverishment of its people.

Food plus energy is a recommendable policy; but for a large population under today's conditions this policy is defensible only by the logic of the old saying, "If wishes were horses, beggars would ride." The fantastic amount of energy needed for such a program is simply not in view. (We have mentioned nothing of the equally monumental "infrastructure" of political, technological, and educational machinery needed to handle unfamiliar forms and quantities of energy in the poor countries. In a short span of time this infrastructure is as difficult to bring into being as is an adequate supply of energy.)

In summary, then, here are the major foreign-aid possibilities that tender minds are willing to entertain:

a. Food plus energy — a conceivable, but practically impossible, program.

b. Food alone — a conceivable and possible program, but one which would destroy the recipient.

In the light of this analysis the question of triage<sup>8</sup> shrinks to negligible importance. If *any* gift of food to overpopulated countries does more harm than good, it is not necessary to decide which countries get the gift and which do not. For posterity's sake we should never send food to any population that is beyond the realistic carrying capacity of its land. The question of triage does not even arise.

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Joseph Fletcher neatly summarized this point when he said, "We should give if it helps but not if it hurts." We would do well to memorize this aphorism, but we must be sure we understand the proper object of the verb, which is the recipient. Students of charity have long recognized that an important motive of the giver is to help himself, the giver.<sup>16</sup> Hindus give to secure a better life in the next incarnation; Moslems, to achieve a richer paradise at the end of this life; and Christians in a simpler day no doubt hoped to shorten their stay in purgatory by their generosity. Is there anyone who would say that contemporary charity is completely free of the self-serving element?

To deserve the name, charity surely must justify itself primarily, perhaps even solely, by the good it does the recipient, not only in the moment of giving but in the long run. That every act has multiple consequences was recognized by William L. Davison, who groups the consequences of an act of charity

into two value-classes, positive and negative.<sup>17</sup> True charity, he said, *confers benefits, and it refrains from injuring... Hence, charity may sometimes assume an austere and even apparently unsympathetic aspect toward its object. When that object's real good cannot be achieved without inflicting pain and suffering, charity does not shrink from the infliction... Moreover, a sharp distinction must be drawn between charity and amiability or good nature — the latter of which is a weakness and may be detrimental to true charity, although it also may be turned to account in its service.*

To the ecologically-minded student of ethics, most traditional ethics look like mere amiability, focusing as they do on the manifest misery of the present generation to the neglect of the more subtle but equally real needs of a much larger posterity. It is amiability that feeds the Nepalese in one generation and drowns Bangladeshis in another. It is amiability that, contemplating the wretched multitudes of Indians asks, "How can we let them starve?" implying that we, and only we, have the power to end their suffering. Such an assumption surely springs from hubris.

Fifty years ago India and China were equally miserable, and their future prospects looked bleak. During the past generation we have given India "help" on a massive

scale; China, because of political differences between her and us, has received no “help” from us and precious little from anybody else. Yet who is better off today? And whose future prospects look brighter? Even after generously discounting the reports of the first starry-eyed Americans to enter China in recent years, it is apparent that China’s 900 million are physically better off than India’s 600 million.

All that has come about without an iota of “help” from us.

Could it be that a country that is treated as a responsible agent does better in the long run than one that is treated as an irresponsible parasite which we must “save” repeatedly? Is it not possible that robust responsibility is a virtue among nations as it is among individuals? Can we tolerate a charity that destroys responsibility?

Admittedly, China did not reach her present position of relative prosperity without great suffering, great loss of life. Did millions die? Tens of millions? We don’t know. If we had enjoyed cordial relations with the new China during the birth process, no doubt we would, out of a rich store of amiability, have seen to it that China remained as irresponsible and miserable as India. Our day-to-day decisions, with their delayed devastation, would have been completely justified by our traditional, posterity-blind ethics which seems incapable of asking the crucial question, “*And then what?*”

Underlying most ethical thought at present is the assumption that human life is the *summum bonum*. Perhaps it is; but we need to inquire

carefully into what we mean by “human life.” Do we mean the life of each and every human being now living, all 4,000,000,000 of them? Is each presently existing human being to be kept alive (and breeding) regardless of the consequences for future human beings? So, apparently, say amiable, individualistic, present-oriented, future-blind western ethicists.

An ecologically-oriented ethicist asks, “And then what?” and insists that the needs of posterity be given a weighting commensurate with those of the present generation. The economic prejudice that leads to a heavy discounting of the future must be balanced by a recognition that the population of posterity vastly exceeds the population of the living.<sup>18</sup> We know from experience that the environment can be irreversibly damaged and the carrying capacity of a land permanently lowered.<sup>14</sup> Even a little lowering multiplied by an almost limitless posterity should weigh heavily in the scales against the needs of those living, once our charity expands beyond the limits of simple amiability.

We can, of course, increase carrying capacity somewhat. But only hubris leads us to think that our ability to do so is without limit. Despite all our technological accomplishments — and they are many — there is a potent germ of truth in the saying of Horace (65-8 B.C.): *Naturam expelles furca, tamen usque recurret*. “Drive nature off with a pitchfork, nevertheless she will return with a rush.” This is also the message of Rachel Carson,<sup>19</sup> which has been corroborated by many others.<sup>20</sup>

*The morality of an act is a function of the state of the system at the time the act is performed* — this is the foundation stone of situationist, ecological ethics.<sup>12</sup> A time-blind absolute ethical principle like that implied by the shibboleth, “the sanctity of life” leads to greater suffering than its situationist, ecological alternative — and ultimately and paradoxically, even to a lesser quantity of life over a sufficiently long period of time. The interests of posterity can be brought into the reckoning of ethics if we abandon the idea of the sanctity of the carrying capacity.

Those who would like to make the theory of ethics wholly rational must look with suspicion on any statement that includes the word “sanctity.” There is a whole class of terms whose principal (and perhaps sole) purpose seems to be to set a stop to inquiry: “Self-evident” and “sanctity” are members of this class. I must, therefore, show that “sanctity” is used as something more than a discussion-stopper when it occurs in the phrase “the sanctity of the carrying capacity.”

Some there are who so love the world of Nature (that is, Nature *sine* Man) that they regard the preservation of a world without humankind as a legitimate objective of human beings. It is difficult to argue this ideal dispassionately and productively. Let me only say that I am not one of this class of nature-lovers; my view is definitely homocentric. Even so I argue that we would do well to accept “Thou shalt not exceed the carrying capacity of any environment” as a legitimate member of a new

Decalogue. When for the sake of momentary gain by human beings the carrying capacity is transgressed, the long-term interests of the same human beings — “same” meaning themselves and their successors in time — are damaged. I should not say that the carrying capacity is something that is *intrinsically* sacred (whatever *that* may mean) but that the rhetorical device “carrying capacity” is a shorthand way of dealing time and posterity into the game. A mathematician would, I imagine, view “carrying capacity”

as an algorithm, a substitute conceptual element with a different grammar from the elements it replaces. Algorithmic substitutions are made to facilitate analysis; when they are well chosen they introduce no appreciable errors. I think “carrying capacity” meets significant analytical demands of a posterity-oriented ethics.

In an uncrowded world there may be no ethical need for the ecological concept of the carrying capacity. But ours is a crowded world. We need this concept if we

are to minimize human suffering in the long run (and not such a very long run at that). How Western man has pretty well succeeded in locking himself into a suicidal course of action by developing and clinging to a concept of the absolute sanctity of life is a topic that calls for deep inquiry. Lacking the certain knowledge that might come out of such a scholarly investigation, I close this essay with a personal view of the significance of —

#### CARRYING CAPACITY (to Paul Sears)

*A man said to the universe:*

“Sir, I exist!”

“However,” replied the universe,

“The fact has not created in me

A sense of obligation.”

— Stephen Crane, 1899

So spoke the poet, at century’s end;  
And in those dour days when schools displayed  
the world,  
“Warts and all,” to their reluctant learners,  
These lines thrust through the layers of wishfulness,  
Forming the minds that later found them to be true.

“Need creates right, you say? Your need, your right?  
Have you forgot we’re married?  
Humanity and universe — Holy, indissoluble pair!  
Nothing you can do escapes my vigilant response.

“Dam my rivers and I’ll salt your crops;  
Cut my trees and I’ll flood your plains.  
Kill ‘pests’ and, by God, you’ll get a silent spring!  
Go ahead — save every last baby’s life!  
I’ll starve the lot of them later,  
When they can savor to the full  
The exquisite justice of truth’s retribution.

All that is past, now.

Original sin, then mere personal ego,

Open to the shafts of consciousness,

Now flourishes as an ego of the tribe

Whose battle cry (which none dare question) is

“Justice” — But hear the poet’s shade:

A tribe said to the universe,

“Sir, we exist!”

“So I see,” said the universe,

“But your multitude creates in me

No feeling of obligation.

Wrench from my earth those exponential powers  
No wobbling Willie should e’er be trusted with:  
Do this, and a million masks of envy shall; create  
A hell of blackmail and tribal wars  
From which civilization will never recover.

“Don’t speak to me of shortage. My world is vast  
And has more than enough — for no more than  
enough.

There is a shortage of nothing, save will and wisdom;  
But there is a longage of people.

“Hubris — that was the Greeks’ word for what ails you.

Pride fueled the pyres of tragedy

Which died (some say) with Shakespeare.

O, incredible delusion! That potency should have no limits!

‘We believe no evil ‘til the evil’s done’ —

Witness the deserts’ march across the earth,

Spawned and nourished by men who whine,

‘Abnormal weather.’

Nearly as absurd as crying, ‘Abnormal universe!’...

But I suppose you’ll be saying that next.”

“Ravish capacity: reap consequences.

Man claims the first a duty and calls what follows

Tragedy.

Insult ... Backlash. Not even the universe can break

This primal link. Who, then, has the power

To put an end to tragedy? Only those who recognize hubris in themselves.”

#### NOTES

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