Two hundred years after the first publication of Malthus' great Essay is an appropriate time to undertake a new evaluation of a man who was remarkably prescient and in many ways modern. But he was also a prisoner of his time, as we are prisoners of ours. What does he have to say to us now?

The Malthusian Trap: Population and Food.

The modern population debate really began in the 1790s with three writers: On one hand, the utopians Condorcet and William Godwin, who thought human ingenuity was capable of solving all problems and that growth was therefore essentially unlimited; and on the other hand the English clergyman and economist Thomas Robert Malthus, who said that "the power of population is indefinitely greater than the power in the earth to produce subsistence for man. Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio." Malthus later amplified the phrase "when unchecked" by discussing the different checks on population growth. (I will come back to that modification.) He is most remembered, however, for that original stark assertion.

Condorcet and Godwin are pretty much forgotten, though faith in the myth of perpetual growth continues unabated. Malthus is still being debated, with Condorcet's intellectual heirs saying "look; it didn't happen" and neo-Malthusians saying "maybe not yet."

The difference of opinion is rooted in a difference of time horizons and in the role of technology. Neo-Malthusians generally would admit that Malthus envisaged a closed system and did not see the tremendous importance of the New World in offering new lands, accepting migration and taking the pressure off Europe. His second failure was his linear arithmetical model of food production. He envisioned sustained growth in output only by opening new land (though he admitted a limited role for mulching). In an era when yields varied mostly with the weather and the quality of the land, he did not foresee that technology, cheap energy, fertilizer and artificial pesticides could raise yields geometrically. If science and technology had not succeeded in raising yields as they have in the past half-century, nobody would be questioning Malthus now.

These techniques have deferred Malthus' prediction but not necessarily vitiated it. There are disquieting signs that that run of success is coming to an end; yields are tending to plateau, pests' resistance to pesticides is growing. Malthus may be on the way to vindication. Beyond that, as I will later describe, the technologies themselves raise issues more serious than even Malthus imagined.

The Solution Malthus Missed

To stop with Malthus' broodings about the consequences of population growth is to slight the issue that has polarized the debate about Malthus and indeed about population policy: what, if anything, can be done about it? At the beginning, Malthus' answer was: "very little."

In the first (1798) version of his essay, he recognized both "preventive" and "positive" checks

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on population growth. The positive checks were the limits imposed by hunger, disease and war, or "misery" as he categorized them. The preventive check was deliberate management of fertility. 

Ordained minister that he was, Malthus had a straightforward (and rather appealing) view of a virtuous life: early marriage and fidelity to a single wife, which led naturally to many children. He recognized delay and avoidance of marriage as "preventive" controls on population, driven by the wish to preserve one's standard of living, but he did not applaud them. He was strangely ambivalent. Having described in sympathetic terms why people may seek to avoid having children, he went on to warn of the "vicious habits" that resulted from abstinence. He made veiled references to debauchery, "vicious customs with respect to women" (prostitution, presumably), "unwholesome manufactures" (the condom had recently been invented) and probably he was thinking also of homosexuality. He was studiously vague (in deference to the conventions of the period) but when he summarized the checks on population growth, he lumped them into two categories: "misery or vice." In other words, the usual ways of diverting the procreative urge are vicious, and there is no acceptable way of avoiding the trap.

Others before him had observed the tendency of populations to rise in favorable periods and then to crash or stop growing in bad periods, but Malthus gave the systematic explanation. He was seized with a brilliant insight, but he carried it too far. He had identified in humans what Darwin shortly thereafter generalized into the cornerstone of the theory of natural selection: that any species, to be successful, must be more fecund than its habitat can support. It is that margin of fecundity that enables the species to move into new niches or adapt to changes in its environment, but failing those opportunities the excess fertility is doomed to die off for lack of food or as prey for other species. Darwin propounded the theory of evolution to explain that process. Malthus did not carry it so far, but he promoted a tendency into an absolute. He slighted the ability of humans to foresee consequences and to regulate fertility to achieve perceived benefits such as a better standard of living.

"Preventive checks" — deliberate family planning — were practiced long before Malthus. Even as he wrote, there was practical evidence that the "Malthusian trap" did not operate so absolutely as he thought. The Renaissance followed the Black Death in part because, mortality having reduced the European population sufficiently to escape the trap, Europeans were not willing to return to the subsistence levels that characterized the preceding centuries. There was some surplus, which supported the arts and civilization we associate with the Renaissance. The shortage of labor, in fostering the development of labor-saving devices, prepared the way for the Industrial Revolution, which was gathering force and was financing the importation of New World grain as Malthus wrote.2 French peasants, given title to their lands by Napoleon, limited their offspring so as to pass on their holdings intact. Coupled with emigration, such adjustments spared Europe from famine even before the systematic rise in crop yields that started in this century. (The terrible exception was the 1848 famine in Ireland, which took place, significantly, in a peasant economy little affected by those changes.)

Malthus himself described such behavior and its results, but he did not seem to recognize its prevalence and its potential, and he could not bring himself to advocate artificial birth control. He thus failed to provide, himself, the answer to the problem he had posed.

The Legacy of the Poor Laws

Starting in 1803, Malthus revised his essay in seven successive editions, and it grew far longer. He explicitly sought to "soften some of the harshest conclusions of the first Essay." He added a third check, "moral restraint," to misery and vice. He did not define it precisely, but the central idea was that couples should delay marriage until the husband was able to support the resulting children, abstaining from sex until then (avoiding "vicious" practices) by keeping marriage as the ultimate goal. The change in tone is more cosmetic than real. Malthus recognized the policy option but he was still unable to shake his distaste for contraception or any other means of limiting fertility, other than the uncertain hope for "moral restraint." Caught in his own morality, and unable to promote those "evil" behaviors, he sought to solve the problem by exploring other ways in which fertility could be held down.
We see in his writings the rational philosopher matched against perhaps the strongest of all human drives. He made all the right arguments. He proposed the gradual change of institutions that "directly encourage marriage," particularly at an early age. He recognized that improved living conditions led to lower fertility, and he explored various ways in which agricultural earnings could be raised. Most fundamental of all, he sought to convince the poor that "the withholding of the supplies of labour is the only way of really raising its price, and that they themselves, being the possessors of this commodity, have alone the power to do this." (It is a lesson our modern politicians have still to learn when they promote free trade with nations in which labor costs perhaps $1 a day, or pass immigration laws that promote the mass entry of unskilled workers to compete with our own poor for a diminishing pool of low-skill jobs.)

He was expecting a great deal of the "poorer classes." He knew it and, far ahead of his time, argued for universal education to help the poor understand where their interests lie. This led his opponents to charge him with proposing to educate the poor to read the insidious writings of Tom Paine. Not a bad idea.

Even so, Malthus recognized that education would not reach all the poor, and this led him to a proposal that caused many humanitarians — from then till now — to attack him as the Devil incarnate. He proposed the gradual abolition of the Poor Laws, which since Elizabethan times had provided a bare subsistence for the desperate. The tax burden of those laws had been rising dramatically, and he argued that the worthy who had no more children than they could support were being impoverished to support the unworthy poor who, fed by society, continued to procreate. The effect of the Poor Laws, he argued, was thus to increase the demand for food without increasing its supply.

"With regard to illegitimate children," he said, "after the appropriate notice had been given, they should not be allowed to have any claim to parish assistance, but be left entirely to the support of private charity. If the parents desert their child, they ought to be made answerable to the crime. The infant is, comparatively speaking, of little value to the society, as others will immediately supply its place."

That harsh language generated a firestorm of criticism that has yet to abate. The attack was undoubtedly humane in intent, but, in part the result of ignorance; his opponents had not grasped the force of his argument about the population-food balance.

Malthus' detailed proposal was more humane than that passage suggests — and less consistent. He also proposed "for cases of extreme distress, county workhouses... supported by rates on the whole kingdom and free for persons of all counties, and indeed of all nations." He assumed that, if the conditions were harsh enough, people would not have children, but he never attempted a proof; modern experience (e.g. in China) suggests that that threshold is very low indeed. He also offered another proposal: that society should provide "a place where any person, whether native or foreigner, might do a day's work at all times and receive the market price for it." A surprisingly modern idea, but he never did show why such a system might not lead to precisely the population-food trap he had earlier described.

Given his reservations about birth control, his proposal to end most governmental charity was perhaps the only way in which his broader purpose could be achieved. Still, he was a tough man with a tough sell, and his view of the Poor Laws has colored all subsequent memory of the man.

A Revisionist View of Malthus

This whole debate is still very much with us, and the modern population movement is justified in revising Malthus in major ways:

- Malthus described the trap, eloquently. The point now at issue is how to promote conscious action — the human intelligence at work — to escape it. Malthus was torn. We can see the choice much more clearly. It is a great opportunity, if humans have the wisdom and the discipline to use it. We recognize that
family planning, reinforced by abortion as a necessary final resort, is an integral element in achieving the purpose we share with Malthus.

- Fertility is a critical social issue, but it must be reconciled with a modern sense of respect for the individual. We must offer a much more extensive exploration of the forces and calculations—the incentives and disincentives that influence fertility—than Malthus undertook. That point gets less attention than it deserves, even now. The descendants of those who do not heed the population argument will gradually supplant the descendants of those who do—and in the process raise overall fertility. Perhaps those descendants of the fertile will come to understand the overpopulation message, but it is not a good bet. If the message is not to be self-defeating, therefore, everybody must believe that family planning benefits them, now.

Expectations and the Role of Women

But how do we sell the idea? Malthus saw the dilemma, but he could not find a humane way to achieve a humane purpose. Are we still not caught on the dilemma of finding ways in which the fertile will recognize their own self interest, without starving them or their innocent children to do it?

The immediate answer may lie in an idea that appeared several times in Malthus' writings: "there appears to be something like a standard of wretchedness, a point below which they (the poor) will not continue to marry and propagate their species. This standard is different in different countries... The principal circumstances which contribute to raise it are liberty, security of property, the diffusion of knowledge, and a taste for the comforts and conveniences of life." In other words: raise human expectations. If people learn to believe that a better life is possible for them, and that too many children will make it impossible, they will listen to suggestions as to how to limit fertility. In most respects, his list is a very modern one.

In one regard, however, Malthus' writing sounds odd to the modern ear. He discussed fertility at great length with very little mention of the women who bear the children. That has all changed. There have been many investigations of the negative correlation between various indicators of women's status and their fertility: legal rights; educational levels; property rights; job opportunities. I believe they are all surrogates for a more fundamental change in women's perspective. They are coming to a sense of self-worth; they seek opportunity to find expression in a job or otherwise; and they are learning that they can control their own fertility. These attitudes can be promoted, perhaps much more directly than some recent declarations (e.g. the Cairo Programme of Action of 1996) would suggest. Show women the alternatives (they see evidence of a better life on television every day, anyway). Make the means available and affordable. Let women know they are there. And encourage policies that promote entry-level jobs. When it begins to catch on, fertility management achieves a certain majesty. The evidence lies in the recent fertility trends in the "emerging nations" now modernizing.

Excess fertility is hardly a problem in the industrial world right now. The opposite phenomenon—fertility too low to maintain the population—looms as a coming issue. When it becomes an issue will depend upon attitudes, explicit or consensual, as to what population level leads to an optimal way of life—and upon the degree to which industrial societies are willing to see their descendants replaced by third world immigrants and their descendants.

Whether high or low, fertility thus becomes a social issue, not just a question of individual choice. There is no automatic connection between women's decisions about their own fertility and the social good.

Beyond Malthus

The population issue is larger than Malthus realized.

Neo-Malthusians, although they may temper Malthus' conclusion, tend to be focused as he was mostly on the issue of food. It is not enough, however, simply to pursue the question whether Malthus was right. At this point in history, we should look beyond that single-track debate. Scientific
success has brought in its train a series of issues unimaginable to Malthus, but which make the prospect of growing populations much more ominous than he realized. Yields have been raised by techniques he could never have dreamed of. The biosphere, properly seen, is a fragile film upon the earth's surface. We have learned to make fertilizer from nitrogen that had been inert in the atmosphere — and inject it into the biosphere in highly active compounds. We extract carbon, sulphur, potassium and phosphorus from the lithosphere — and inject all of them into the biosphere. We are only beginning to comprehend the consequences: air and water pollution, acid precipitation, nitrogen saturation of forest soils, eutrophication of our water sources, climate warming and mysterious changes in the oceans. We are learning that the earth is an interconnected web, and our sense of the breadth of the issues posed by population growth has expanded immeasurably.

These consequences of population growth did not occur to Malthus or his adversaries. They were concerned only about human nutrition, not about the health of the biosphere. There now is, or should be, a fusion of the interest of the population movement with the environmentalists. The issue goes much beyond Malthus. We must break the widespread addiction to the myth of perpetual growth in the face of the scientists' evidence of its catastrophic consequences.

Malthus saw increased consumption as a "preventive check", not as a threat. We can agree with Malthus that a higher standard of living for the poor helps them to seek lower fertility, which in turn reduces poverty. Moreover, the poor of the world (or the rich, for that matter) are hardly likely to embrace austerity, and the poor are right. Now, however, we must address the environmental issue. Population and consumption are locked variables. They are inversely correlated. Other things being equal, one must decrease if the other increases, or environmental damage will rise. There is just one way to reconcile the social goal with environmental goals: population policy. Reducing fertility is both a protection for the environment and a self-reinforcing demographic process — a positive feedback loop, in the modern jargon.

Having gone far beyond Malthus' intellectual framework, the population movement should perhaps call itself "post-Malthusian" rather than "neo-Malthusian."

This shift of emphasis should be seen as an extension of Malthus' writings, not a rejection of them. Despite his limits, Malthus identified the issue which is likely to be central for humankind for the next few decades. To state it in revised terms: Which of the two geometric growths — agricultural output or demand — will continue, and how fast? and what will be the impact of that race, with its deployment of chemical fertilizers and pesticides, upon the rest of the natural systems that support us? Food still seems likely to be the immediate limiting factor for the growth of human populations. If he did not show the way out of the trap, his ghost may legitimately claim that he identified it, and that was his profound contribution to the study of population.

Negative Population Growth

Our new awareness of the environment thus raises a staggering issue which lies athwart the "solution" of rising expectations. What happens if everybody "succeeds?"

The United States consumes about 800 kilograms of grains per capita each year, including that used for animal feed. More modest consumers such as Italy and Taiwan consume about 350-400 kilograms. If everybody, worldwide, could afford that more modest supply level, and if we use the UN middle population projection, the total world demand for grains would rise about 75 percent by 2050 and would double by late in the 21st century, at which time world population would stop rising. (It could be much worse; the UN projection assumes rapid progress toward lower fertility.) The newly prosperous countries will be competing for food, in a world market that cannot accommodate them. There are present or looming problems of declining acreage, salinization of irrigated fields and the increased competition for water, pests' growing resistance to pesticides, the diminishing response of food plants to the efforts to raise yields, and the growth of population in the food exporting countries, that make it uncertain whether world food availability will hold its own, to say nothing of rising to accommodate the rising demand.

Food is connected with population in a particularly inelastic way. Population growth must be stopped and reversed to avoid a looming food crisis. Even more dramatic growth is foreseen in
the overall level of economic activity. Can the environment stand prosperity? The "Brundtland Commission" in 1988 concluded that, in fairness, we must anticipate a five- or ten-fold growth in world industrial output to accommodate the modernization of the less developed countries. The International Panel on Climate Change (IPCC) forecasts a seven-fold rise in world GDP by 2050 (i.e. average per capita GDP worldwide rises to the present industrial world level) and 25-fold by 2100. Those estimates epitomize the problem of trying to relieve poverty for a growing world population. It is inconceivable to me that, even with the best efforts at pollution control and conservation strategies, anything like that growth would be environmentally tolerable, and there is yet no sign that countries will make their best efforts.

Take the greenhouse effect as an example: the developed countries are talking (so far with no success) of bringing their CO₂ emissions back down below the 1990 level. The developing countries won’t commit themselves. The IPCC represents the best scientific advice available. It concludes that a 50 percent to 70 percent decline is needed right away, with further declines later, simply to hold the climatic impact of human activity to its present level — in the face of a seven-fold increase in world economic activity in the next half century. Impossible. Either the economic growth won’t take place, or climate warming will accelerate.

Climate change and air pollution are driven partly by fossil energy use. Third world countries will need more energy to fuel their industry and to meet the expectations of their people. The U.S. Energy Information Administration (EIA) points out that China and India, although they represent only 12% of total world energy demand, "accounted for over 30% of the world’s increase in energy use between 1980 and 1993."4

Let us use Asia (excluding Japan and the former USSR) as a surrogate for the emerging nations. The EIA expects Asian energy needs to double from 1990 to 2010, even with a sharp slowdown in growth rates and a dramatic improvement in energy efficiency. At that rate, their needs will pass present total world energy consumption in 2045. If they grow as they have been growing since 1970 and don’t become more energy-efficient, they will get there in 2027. If the energy is available, that sort of growth will multiply the damage that fossil fuels presently inflict on the environment.

The EIA has done an interesting exercise. If the rest of the world had reached the industrial countries’ level of per capita energy consumption and energy efficiency in 1990, total world energy consumption would have been three times the actual level in that year.6 As a sort of "best and worst case" scenario, population growth alone would run that growth up to more than 5:1 by 2050 (UN 1996 medium projection). Not likely, but a useful measure of the potential problem. Some dramatic combination of energy and population policies will be needed to arrest the environmental damage.

A similar prognosis holds true for acid precipitation, nitrogen production, forest and fishery resources, water availability in dry regions and indeed most of the environmental issues facing the world.

A "European" standard of living is the explicit or implicit goal of the emerging countries. The problem is that the dream is unattainable for all but a few, even if there were monumental efforts at efficiency and conservation and a rapid move out of fossil fuels. At some point, not very far away, the emerging nations will recognize that they cannot pursue the growth pattern on which they have embarked, because food shortages, energy scarcity, environmental horrors and eventually the fact of climate change will conspire against them. Or they will be increasingly divided between a small rich minority and hungry masses. One can hardly predict how those conflicts will play out, but we may anticipate a less and less stable world until growth policies are reconciled with environmental limits and population policy is made a key element in the solution. The point I made earlier comes back into focus: expectations are rising, but you cannot anticipate rising living standards for a rising population. The solution is to turn population growth around, but that will take time even with the best of intentions.

This whole argument is beyond Malthus. He remarked that "the increase of absolute population... will of course take place." And he was right, in 1803, when world population was less than one billion.
The idea of negative population growth sounds revolutionary to ears accustomed to the belief in growth. It is a circular solution that solves many problems at once. With the long term prospect of fewer people, adequate food and higher living standards become possible. The process itself, by fostering fewer children in each generation, makes realistic the dream of better education, and then job opportunities, for all. It would mitigate the environmental damage of fossil energy use and extend its potential life. And finally, it would constitute the ultimate reversal of the "Malthusian trap." The dynamics of population would make rising individual consumption possible, and at some point the excess productive capacity of the land would permit the reversion to sustainable farming practices that would assure the continuation of that happy state. Applying Malthus' calculation in reverse might, with a sufficient advance in morality, finally make realistic some of the utopian dreams of a cooperative society envisaged by men like William Godwin who so fiercely castigated the living Malthus.

The anti-Malthusians

Perhaps Malthus' greatest misfortune was his own morality, which was the morality of his time. One hardly thinks of Malthus as ambivalent, but he was. He saw the solution in rough outline: "Finding, therefore, from the laws of nature we could not proportion the food to the population, our next attempt should naturally be to proportion the population to the food. If we can persuade the hare to go to sleep, the tortoise may have some chance of overtaking her." But he drew back from critical parts of the solution. One wonders how the debate would have gone if he said to Godwin: "Listen, I like your dream, but here is what will block it... and here is how to remove that block." Godwin might have been astonished at the solution, but on the other hand both might have come to recognize its necessity.

Similarly, his current opponents, lost in furious excoriation of Malthus, have failed to see his real contribution. In doing so, they lose the opportunity to explore with the population community a question to which we do not yet have a complete answer, but which will be a central issue for the indefinite future: how does the human race find humane ways to manage our own fertility so as to stay in harmony with the environment that supports us?

The population community from time to time points out that the alternative is to let environmental damage and rising mortality do it for us. But that warning encounters hostility from every quarter:

- from the religious Right, the Vatican, and the "right to lifers" who claim the right to decree whether and when and by what means others shall be allowed to regulate fertility;
- from those on the other side who oppose any proposal to influence women's free choice to decide "what to do with their own bodies";
- from businessmen promoting immigration to provide a supply of cheap and docile labor;
- from misguided humanitarians who lose sight of the needs of their poor fellow-countrymen and their own descendants.

The scope of the population argument may have advanced beyond Malthus, but not the self-righteous fury of his opponents. That very fury may be a reflection of something they do not want to admit: that the population issue imperils their fundamental beliefs.

Karl Marx called Malthus a "miserable parson" guilty of spreading a "vile and infamous doctrine, this repulsive blasphemy against man and nature." But at least he admitted the reason. The Encyclopedia Britannica observes that "[f]or Marx, only under capitalism does the dilemma of resource limits arise... The strident nature of Marx's attack upon Malthus' ideas may have arisen from his realization that they constituted a potentially fatal critique of his own analysis. 'If [Malthus'] theory of population is correct,' Marx wrote in 1875 in his Critique of the Gotha Programme... 'then I cannot abolish this [iron law of wages] even if I abolish wage-labor a hundred times...’" That time, Marx was right.

Malthus had one immense virtue. He did not deny a problem because it was a problem. If his opponents would look as squarely at population,
they would discover that they share an interest with the population community. A better future requires that humankind consciously manage our species' congenital drive to procreate beyond the capacity of the earth to support us. Perhaps we rather than they are the true optimists, because we suggest how to escape from a mathematically impossible expectation: unending growth on a finite planet.

NOTES


