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## How Many is Too Many?

*Biologists have argued for a century that an ever-growing population will bring the apocalypse. Economists argue that man and markets will cope -- so far none of the predicted apocalypses have arrived. The near-term questions, though, are political, and they are overlooked in the fierce battles.*

by Charles C. Mann

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IN 1980, WHEN I WAS LIVING IN NEW YORK CITY, it came to my attention that the federal government was trying to count every inhabitant of the United States. In my building -- subject, like many in New York, to incredibly complicated rent-control laws -- a surprising number of apartments were occupied by illegal sub-tenants. Many went to elaborate lengths to conceal the fact of their existence. They put the legal tenant's name on the doorbell. They received their mail at a post-office box. They had unlisted telephone numbers. The most paranoid refused to reveal their names to strangers. How, I wondered, was the Census Bureau

going to count these people?

I decided to find out. I answered an advertisement and attended a course. In a surprisingly short time I became an official enumerator. My job was to visit apartments that had not mailed back their census forms. As identification, I was given a black plastic briefcase with a big red, white, and blue sticker that said U.S. CENSUS. I am a gangling, six-foot-four-inch Caucasian; the government sent me to Chinatown.

Strangely enough, I was a failure. Some people took one look and slammed the door. One elderly woman burst into tears at the sight of me. I was twice offered money to go away. Few residents had time to fill out a long form.

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Eventually I met an old census hand. "Why don't you just curbstone it?" he asked. "Curbstoning," I learned, was enumerator jargon for sitting on the curbstone and filling out forms with made-up information. I felt qualms about taking taxpayers' money to cheat. Instead, I asked to be assigned to another area.

Wall Street is not customarily thought of as residential, but people live there anyway. Some live in luxury, some in squalor. None were glad to see me, even though I had given away the damning U.S. CENSUS briefcase to my four-year-old stepson. The turning point came when I approached two small buildings. One was ruined and empty. The other, though scarcely in better

condition, was obviously full of people, but not one of them would answer the bell. In a fit of zealotry I climbed through the ruin next door. Coated with grime and grit, I emerged on the roof and leaped onto the roof of my target. A man was living on it, in a big, dilapidated shack.

He flung open his door. Inside I dimly perceived several apparently naked people lying on gurneys. "Go away!" the man screamed. He was wearing a white coat. "I'm giving my wife a cancer treatment!"

My enthusiasm waned. I jumped back to the other roof. On the street I sat on the curbstone and filled out a dozen forms. When I was through, fifty men, women, and children had been added to the populace of New York City.

**PROFESSIONAL DEMOGRAPHERS ARE NOT AMUSED BY** this sort of story. This is not because they are stuffy but because they've heard it all before. Finding out how many people live in any particular place is strikingly difficult, no matter what the place is. In the countryside people are scattered through miles of real estate; in the city they occupy nooks and crannies often missed by official scrutiny. No accurate census has ever been taken in some parts of Africa, but even in the United States, the director of the Census Bureau has said, the last official count, in 1990, missed more than five million people -- enough to fill

Chicago twice over. If my experience means anything, that number is low.

It's too bad, because How many are we? is an interesting question. Indeed, to many people it is an alarming question. For them, thinking about population means thinking about overpopulation -- which is to say, thinking about poverty, hunger, despair, and social unrest. For me, the subject evokes the vague unease I felt toting around *The Population Bomb*, which I read in school. ("It's Still Not Too Late to Make the Choice," the cover proclaimed. "Population Control or Race to Oblivion.") In other people it evokes the desire to put fences on our borders and stop the most wretched from breeding.

*The Population Bomb* appeared twenty-five years ago, in 1968. Written by the biologist Paul Ehrlich, of Stanford University, it was a gloomy book for a gloomy time. India was still undergoing a dreadful famine, Latin American exports of grain and meat had dropped to pre-war levels, and global food production was lagging behind births. More than half the world's people were malnourished. Nobel laureates were telling Congress that unless population growth stopped, a new Dark Age would cloud the world and "men will have to kill and eat one another." A well-regarded book, *Famine 1975!*, predicted that hunger would begin to wipe out the Third World that year. (Fortunately, the book pointed out, there was a bright side: the United States could

increase its influence by playing triage among the victims.) In 1972 a group of researchers at MIT would issue *The Limits to Growth*, which used advanced computer models to project that the world would run out of gold in 1981, oil in 1992, and arable land in 2000. Civilization itself would collapse by 2070.

The projections failed to materialize. Birth rates dropped; food production soared; the real price of oil sank to a record low. Demographers were not surprised. Few had given much credence to the projections in the first place. Nonetheless, a certain disarray appeared in the work of what Ansley Coale, of Princeton's Office of Population Research, calls the "scribbling classes." Doubts emerged about the wisdom and effectiveness of the billion-dollar population-control schemes established by the United Nations and others in the 1960s. Right-wingers attacked them as bureaucratic intrusions into private life. Critics on the left observed that once again rich whites were trying to order around poor people of color. Less ideological commentators pointed out that the intellectual justification for spending billions on international family-planning programs was shaky -- it tacitly depended on the notion that couples in the Third World are somehow too stupid to know that having lots of babies is bad. Ehrlich dismissed the carpers as "imbeciles."

Population has become the subject of a

furious intellectual battle, complete with mutually contradictory charts, graphs, and statistics. The cloud of facts and factoids often seems impenetrable, but after peering through it for a time I came to suspect that the fighters had become distracted. Locked in conflict, they had barely begun to address the real nature of the challenge posed by population growth. *Homo sapiens* will keep growing in number, as everyone agrees, and that growth may have disagreeable consequences. But those consequences seem less likely to stem from the environmental collapse the apocalyptists predict than from the human race's perennial inability to run its political affairs wisely. The distinction is important, and dismaying.

### **Cassandras and Pollyannas**

#### **HOW MANY PEOPLE IS TOO MANY?**

Over time, the debate has spread between two poles. On One side, according to Garrett Hardin, an ecologist at the University of California at Santa Barbara, are the Cassandras, who believe that continued population growth at the current rate will inevitably lead to catastrophe. On the other are the Pollyannas, who believe that humanity faces problems but has a good shot at coming out okay in the end. Cassandras, who tend to be biologists, look at each new birth as the arrival on the planet of another hungry mouth. Pollyannas, who tend to be economists, point out that along with each new mouth comes a pair of hands.

Biologist or economist -- is either one right? It is hard to think of a question more fundamental to our crowded world.

Cassandras and Pollyannas have spoken up throughout history. Philosophers in ancient China fretted about the need to shift the masses to underpopulated areas; meanwhile, in the Mideast, the Bible urged humanity to be fruitful and multiply. Plato said that cities with more than 5,040 landholders were too large; Martin Luther believed that it was impossible to breed too much, because God would always provide. And so on.

Early economists tended to be Pollyannas. People, they thought, are a resource -- "the chiefest, most fundamental, and precious commodity" on earth, as William Petyt put it in 1680. Without a healthy population base, societies cannot afford to have their members specialize. In small villages almost everyone is involved with producing food; only as numbers grow can communities afford luxuries like surgeons, scientists, and stand-up comedians. The same increase lowers the cost of labor, and hence the cost of production -- a notion that led at least one Enlightenment-era writer, J. F. Melon, to endorse slavery as an excellent source of a cheap work force.

As proof of their theory, seventeenth-century Pollyannas pointed to the Netherlands, which was strong, prosperous, and thickly settled, and claimed that only

such a populous place could be so rich. In contrast, the poor, sparsely inhabited British colonies in the New World were begging immigrants to come and swell the work force. One of the chief duties of a ruler, these savants thought, was to ensure population growth. A high birth rate, the scholar Bernard Mandeville wrote in 1732, is "the never-failing Nursery of Fleets and Armies."

Mandeville wrote when the Industrial Revolution was beginning to foster widespread urban unemployment and European cities swarmed with beggars. Hit by one bad harvest after another, Britain tottered through a series of economic crises, which led to food shortages and poverty on a frightful scale. By 1803 local parishes were handing out relief to about one out of every seven people in England and Wales. In such a climate it is unsurprising that the most famous Cassandra of them all should appear: the Reverend Thomas Robert Malthus.

"Right from the publication of the *Essay on Population* to this day," the great economic historian Joseph Schumpeter wrote in 1954, "Malthus has had the good fortune -- for this *is* good fortune -- to be the subject of equally unreasonable, contradictory appraisals." John Maynard Keynes regarded Malthus as the "beginning of systematic economic thinking." Percy Bysshe Shelley, on the other hand, derided him as "a eunuch and a tyrant." John Stuart Mill viewed



Malthus as a great thinker. To Karl Marx he was a "plagiarist" and a "shameless sycophant of the ruling classes." "He was a benefactor of humanity," Schumpeter wrote. "He was a fiend. He was a profound thinker. He was a dunce."

The subject of the controversy was a shy, kindly fellow with a slight harelip. He was also the first person to hold a university position in economics -- that is, the first professional economist -- in Britain, and probably the world. Married late, he had few children, and he was never overburdened with money. He was impelled to write his treatise on population by a disagreement with his father, a well-heeled eccentric in the English style. The argument was over whether the human race could transform the world into a paradise. Malthus thought not, and said so at length -- 55,000 words, published as an unsigned broadside in 1798. Several longer, signed versions followed, as Malthus became more confident.

"The power of population," Malthus proclaimed, "is indefinitely greater than the power in the earth to produce subsistence for man." In modern textbooks this notion is often explained with a graph. One line on the graph represents the land's capacity to produce food; it slowly rises from left to right as people clear more land and learn to farm more efficiently. Another line starts out low, quickly climbs to meet the first, and then soars above it; that line represents

human population. Eventually the gap between the two lines cannot be bridged and the Horsemen of the Apocalypse pay a call. Others had anticipated this idea. Giovanni Botero, an Italian scholar, described the basic relationship of population and resources in 1589, two centuries before Malthus. But few read Malthus's predecessors, and nobody today seems inclined to replace the term "Malthusian" with "Boterian."

The *Essay* was a jolt. Simple and remorselessly logical, blessed with a perverse emotional appeal, it seemed to overturn centuries of Pollyanna-dom at a stroke. Forget Utopia, Malthus said. Humanity is doomed to exist, now and forever, at the edge of starvation. Forget charity, too: helping the poor only leads to more babies, which in turn produces increased hardship down the road. Little wonder that the essayist Thomas Carlyle found this theory so gloomy that he coined the phrase "dismal science" to describe it. Others were more vituperative, especially those who thought that the *Essay* implied that God would not provide for His children. "Is there no law in this kingdom for punishing a man for publishing a libel against the Almighty himself?" demanded one anonymous feuilleton. In all the tumult hardly anyone took the trouble to note that logical counterarguments were available.

The most important derived from the work of MarieJean-Antoine-Nicolas Caritat,

Marquis de Condorcet, a French *philosoph* who is best known for his worship of Reason. Four years before Malthus, Condorcet observed that France was finite, the potential supply of French infinite. Unlike Malthus, though, Condorcet believed that technology could solve the problem. When hunger threatens, he wrote, "new instruments, machines, and looms" will continue to appear, and "a very small amount of ground will be able to produce a great quantity of supplies." Society changes so fast, in other words, that Malthusian scenarios are useless. Given the level of productivity of our distant ancestors, in other words, we should already have run out of food. But we know more than they, and are more prosperous, despite our greater numbers.

Malthus and Condorcet fixed the two extremes of a quarrel that endures today. The language has changed, to be sure. Modern Cassandras speak of "ecology," a concept that did not exist in Malthus's day, and worry about exceeding the world's "carrying capacity," the ecological ceiling beyond which the land cannot support life. Having seen the abrupt collapses that occur when populations of squirrels, gypsy moths, or Lapland reindeer exceed local carrying capacities, they foresee the same fate awaiting another species: *Homo sapiens*. Pollyannas note that no such collapse has occurred in recorded history. Evoking the "demographic transition" -- the observed propensity for families in

prosperous societies to have fewer children -- they say that continued economic growth can both feed the world's billions and enrich the world enough to end the population boom. No! the Cassandras cry. Growth is the *problem*. We're growing by 100 million people every year! We can't keep doing that forever!

True, Pollyannas concede. If present-day trends continue for centuries, the earth will turn into a massive ball of human flesh. A few millennia more, Ansley Coale, of Princeton, calculates, and that ball of flesh will be expanding outward at the speed of light. But he sees little point in the exercise of projecting lines on a graph out to their absurdly horrible conclusion. "If you had asked someone in 1890 about today's population," Coale explains, "he'd say, 'There's no way the United States can support two hundred and fifty million people. Where are they going to pasture all their horses?'"

Just as the doomsayers feared, the world's population has risen by more than half since Paul Ehrlich wrote *The population Bomb*. Twenty-five years ago 3.4 billion people lived on earth. Now the United Nations estimates that 5.3 billion do -- the biggest, fastest increase in history. But food production increased faster still. According to the Food and Agricultural Organization of the UN, not only did farmers keep pace but per capita global food production actually rose more than 10 percent from

1968 to 1990. The number of chronically malnourished people fell by more than 16 percent. (All figures on global agriculture and population in the 1990s, including those in this article, mix empirical data with projections, because not enough time has elapsed to get hard numbers.)

"Much of the world is better fed than it was in 1950," concedes Lester R. Brown, the president of the Worldwatch Institute, an environmental-research group in Washington, D.C. "But that period of improvement is ending rather abruptly." Since 1984, he says, world grain production per capita has fallen one percent a year. In 1990, eighty-six nations grew less food per head than they had a decade before. Improvements are unlikely, in Brown's view. Our past success has brought us alarmingly close to the ecological ceiling. "There's a growing sense in the scientific community that it will be difficult to restore the rapid rise in agricultural yields we saw between 1950 and 1984," he says. "In agriculturally advanced nations there just isn't much more that farmers can do." Meanwhile, the number of mouths keeps up its frantic rate of increase. "My sense," Brown says, "is that we're going to be in trouble on the food front before this decade is out."

Social scientists disagree. An FAO study published in 1982 concluded that by using modern agricultural methods the Third World could support more than 30 billion

people. Other technophiles see genetic engineering as a route to growth that is almost without end. Biologists greet such pronouncements with loud scoffs. One widely touted analysis by Ehrlich and others maintains that humanity already uses, destroys, or "co-opts" almost 40 percent of the potential output from terrestrial photosynthesis. Doubling the world's population will reduce us to fighting with insects over the last scraps of grass.

Neither side seems willing to listen to the other; indeed, the two are barely on speaking terms. The economist Julian Simon, of the University of Maryland, asserts that there is no evidence that the increase in land use associated with rising population has led to any increase in extinction rates -- despite hundreds of biological reports to the contrary. The biologist Edward O. Wilson, of Harvard University, argues that contemporary economics is "bankrupt" and does not accommodate environmental calculations -- despite the existence of a literature on the subject dating back to the First World War. A National Academy of Sciences panel dominated by economists argues in 1986 that the problems of population growth have been exaggerated. Six years later the academy issues a statement, dominated by biologists, claiming that continued population growth will lead to a global environmental catastrophe that "science and technology may not be able to prevent." Told in an exchange of academic gossip that

an eminent ecologist has had himself sterilized, an equally eminent demographer says, "That's the best news I've heard all week!" Asking himself what "deep insights" professional demographers have contributed, Garrett Hardin answers, "None."

The difference in the forecasts -- prosperity or penury, boundless increase or zero-sum game, a triumphant world with 30 billion or a despairing one with 10 -- is so extreme that one is tempted to dismiss the whole contretemps as foolish. If the experts can't even discuss the matter civilly, why should the average citizen try to figure it out? Ignoring the fracas might be the right thing to do if it weren't about the future of the human race.

## **Two Nations**

POPULATION QUESTIONS ARE FUZZY. Even an apparently simple term like "overpopulation" is hard to define exactly. Part of the reason is that evaluating the consequences of rapid population growth falls in the odd academic space where ecology, economics, anthropology, and demography overlap. Another part of the reason is that attempts to isolate specific social or environmental consequences of rapid population growth tend to sink into ideological quicksand.

By way of example, consider two nations. One is about the size of Maryland and has a

population of 7.2 million; the other is as big as Montana but has a population of 123.5 million. The first has a population density of 703 people per square mile, a lot by most standards; the second has a density of 860 per square mile, among the highest on the planet. Country No. 1 has tracts of untouched forest and reserves of gold, tin, tungsten, and natural gas. Country No. 2 has few natural resources and little arable land. Life there is so crowded that the subways hire special guards to mash people onto the trains. Is it, therefore, overpopulated?

Most economists would say no. Country No. 2 is Japan. Paul Demeny, a demographer at the Population Council, in New York City, notes that Japan is where the Malthusian nightmare has come true. Population has long since overtaken agricultural capacity. "Japan would be in great trouble if it had to feed itself," Demeny says. "They can't eat VCRs. But they don't worry, because they can exchange them for food." Demeny is less sanguine about Country No. 1 -- Rwanda, the place with the highest fertility rate in the world. There, too, the production of food lags behind the production of people. But Rwanda, alas, has little to trade. "If something goes wrong," Demeny says, "they will have to beg."

Some economists might therefore attach to this crowded land the label "overpopulated." Others, though, might say that Rwanda has not yet reached the kind of



critical mass necessary to develop its rich natural endowment. Fewer than 200,000 souls inhabit Kigali, its capital and biggest city, hardly enough to be the hub of a modern nation. In this case, a cure for having too many children to feed might be to have more children -- the approach embraced by the Rwandan government until 1983.

Rwanda's leaders may well have been bowing to the popular will. By and large, people in the developing world have big families because they want them. "The notion that people desperately want to have fewer children but can't quite figure out how to do it is a bit simple," Demeny says. "If you picture an Indian who sees his children as capital because at the age of nine they can be sent to work in a carpet factory, his interest in family planning will not be keen." If the hypothetical impoverished Indian father does not today desperately need the money that his children can earn, he will need it in his dotage. Offspring are the Social Security of traditional cultures everywhere, a form of savings that few can afford to forgo. In such cases the costs of big families (mass illiteracy, crowded hiring halls, overused public services) are spread across society, whereas the benefits (income, old-age insurance) are felt at home. Economists call such phenomena "market failure." The outcome, entirely predictable, is a rapidly growing population.

Equally predictable is the proposed solution: bringing home the cost to those who experience the benefits. Enforcing child-labor and truancy laws, for example, drives up the price of raising children, and may improve their lives as well. Reducing price controls on grain raises farmers' incomes, allowing them to hire adults rather than put their children to work. Increasing opportunities for women lets them choose between earning income and having children. In the short term such modifications can hurt. In the long term, Demeny believes, they are "a piece of social engineering that any modern society should aspire to." Rwanda, like many poor countries, now has a population-control program. But pills and propaganda will be ineffective if having many children continues to be the rational choice of parents.

To ecologists, this seems like madness. Rational, indeed! More people in Rwanda would mean ransacking its remaining tropical forest -- an abhorrent thought. The real problem is that Rwandans receive an insufficient share of the world's feast. The West should help them rise as they are, by forgiving their debts, investing in their industries, providing technology, increasing foreign aid -- and insisting that they cut birth rates. As for the claim that Japan is not overpopulated, the Japanese are shipping out their polluting industries to neighboring countries -- the same countries, environmentalists charge, that they are

denuding with rapacious logging. "If all nations held the same number of people per square kilometer," Edward O. Wilson has written about Japan, "they would converge in quality of life to Bangladesh...." To argue that Tokyo is a model of populousness with prosperity is, Wilson thinks, "sophistic."

Wait, one hears the economists cry, that's not predation, that's trade! Insisting on total self-sufficiency veers toward autarky. Japan logs other people's forests because its own abundant forests are too mountainous to sustain a full program of -- *and wait a minute*, haven't we been here before? The competing statistics, the endless back-and-forth argument? Isn't there some better way to think about this?

### **Good News, Bad News**

IN 1968, WHEN *THE POPULATION BOMB* WAS FIRST published, the United Nations Population Division surveyed the world's demographic prospects. Its researchers projected future trends in the world's total fertility rate, a figure so common in demographic circles that it is often referred to, without definition, as the TFR. The TFR is the answer to the question "If women keep having babies at the present rate, how many will each have, on average, in her lifetime?" If a nation's women have two children apiece, exactly replacing themselves and the fathers of their children, the TFR will be 2.0 and the population will eventually stop growing. (Actually,

replacement level is around 2.1, because some children die.) In the United States the present TFR is about 2.0, which means that, not counting immigration, the number of Americans will ultimately hit a plateau. (Immigration, of course, may alter this picture.) But the researchers in the division were not principally concerned with the United States. They were looking at poorer countries, and they didn't like what they saw.

As is customary, the division published three sets of population projections: high, medium, and low, reflecting different assumptions behind them. The medium projection, usually what the demographer regards as the most likely alternative, was that the TFR for developing nations would fall 15 percent from 1965-1970 to 1980-1985. At the time, Ronald Freedman recalls, this view was regarded as optimistic. "There was a lot of skepticism that anything could happen," he says. He was working on family-planning programs in Asia, and he received letters from colleagues telling him how hopeless the whole endeavor was.

Now a professor emeritus of sociology at the University of Michigan, Freedman is on the scientific advisory committee of Demographic and Health Surveys, a private organization in Columbia, Maryland, which is funded by the U.S. government to assess births and deaths in Third World nations. Its data, painstakingly gathered from surveys, are among the best available. From 1965-

1970 to 1980-1985 fertility in poor countries dropped 30 percent, from a TFR of 6.0 to one of 4.2. In that period, Freedman and his colleague Ann K. Blanc have pointed out, the poor countries of the world moved almost halfway to a TFR of 2.1: replacement level. (By 1995, Blanc says, they might be two thirds of the way there.) If the decrease continues, it will surely be the most astonishing demographic shift in history. (The second most astonishing will be the rise that preceded it.) The world went halfway to replacement level in the twenty years from 1965 to 1985; arithmetic suggests that if this trend continues we will arrive at replacement level in the subsequent twenty years -- that is, by 2005.

That's the good news. The bad news is that since the late 1960s, 1.9 billion more people have arrived on the planet than have left. Even if future rates of fertility are the lowest in history, as is likely, the children of today's children, and their children's children, will keep replacing themselves, and the population will increase vastly. Nothing will stop that increase, not even AIDS. Pessimists estimate that by the end of the decade another 100 million people will be infected by HIV. Almost ten times that number will have been born. Barring unprecedented catastrophe, the year 2100 will see 10 to 12 billion people on the planet.

Nobody will have to wait that long to feel

the consequences. In a few years today's children will be clamoring to take their place in the adult world. Jobs, homes, cars, a few occasional treats -- these are things they will want. And though economists are surely right when they say the lesson of history is that the great majority of these men and women will make their way, it is hard not to be awed by the magnitude of the task facing the global economy. A billion jobs. A billion homes. A billion cars. Billions and billions of occasional treats.

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