

THE CLIMAX OF HUMANITY

BY GEORGE MUSSER

Demographically and economically, our era is unique in human history. Depending on how we manage the next few decades, we could usher in environmental sustainability—or collapse

The 21st century feels like a let down. We were promised flying cars, space colonies and 15-hour workweeks. Robots were supposed to do our chores, except when they were organizing rebellions; children were supposed to learn about disease from history books; portable fusion reactors were supposed to be on sale at the Home Depot. Even dystopian visions of the future predicted leaps of technology and social organization that leave our era in the dust.

Looking beyond the blinking lights and whirring gizmos, though, the new century is shaping up as one of the most amazing periods in human history. Three great transitions set in motion by the Industrial Revolution are reaching their culmination. After several centuries of faster-than-exponential growth, the world's population is stabilizing. Judging from current trends, it will plateau at around nine billion people to ward the middle of this century. Mean while extreme poverty is receding both as a percentage of population and in absolute numbers. If China and India continue to follow in the economic footsteps of Japan and South Korea, by 2050 the average Chinese will be as rich as the average Swiss is today; the average Indian, as rich as today's Israeli. As humanity grows in size and wealth, however, it increasingly presses against the limits of the planet. Already we pump out carbon dioxide three times as fast as the oceans and land can absorb it; mid-century is when climatologists think global warming will really begin to bite. At the rate things are going, the world's forests and fisheries will be exhausted even sooner.

These three concurrent, intertwined transitions—demographic, economic, environmental—are what historians of the future will remember when they look back on our age. They are transforming everything from geopolitics to the structure of families. And they pose problems on a scale that humans have little experience with. As Harvard University biologist E.O. Wilson puts it, we are about to pass through “the bottleneck,” a period of maximum stress on natural resources and human ingenuity.

The trends are evident in everyday life. Many of us have had the experience of getting lost in our hometowns because they have grown so much. But growth is slowing as families shrink. Ever more children grow up

not just without siblings but also without aunts, uncles or cousins. (Some people find that sad, but the other way to have a stable population is for death rates to rise.) Chinese goods line Wal-Mart shelves, Indians handle customer-service calls, and, in turn, ever more Asians buy Western products. Spring flowers bloom a week earlier than they did 50 years ago because of global warming, and restaurants serve different types of fish than they used to because species that were once common have been fished out.

THREE GREAT HISTORICAL TRENDS define the present day: [Humanity has grown, gotten richer, and transformed the planet.] Understanding these trends provides a framework for dealing with, rather than becoming paralyzed by, the problems of the world.

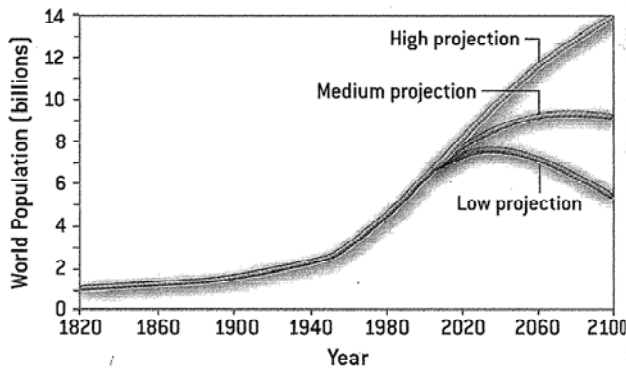
Looking at the present era in historical context helps to put the world's myriad problems in perspective. Many of those problems stem, directly or indirectly, from growth. As growth tapers off, humanity will have a chance to close the books on them. A bottleneck may be tough to squeeze through, but once you do, the worst is behind you.

The transitions we are undergoing define the scope of the challenges. Scientists can estimate, at least roughly, how many people will inhabit Earth, what they are going to need and want, what resources are available, and when it is all going to happen. By the latter half of this century, humanity could enter an equilibrium in which economic growth, currently driven by the combination of more productivity, more people and more resources, will flow entirely from productivity—which would take much of the edge off conflicts between the economy and the environment. Old challenges will give way to new ones. This process is already evident in countries at the leading edge of the transitions. The Social Security debate in the U.S., like worries about pensions in Europe and Japan, is the sound of a society planning for life after growth.

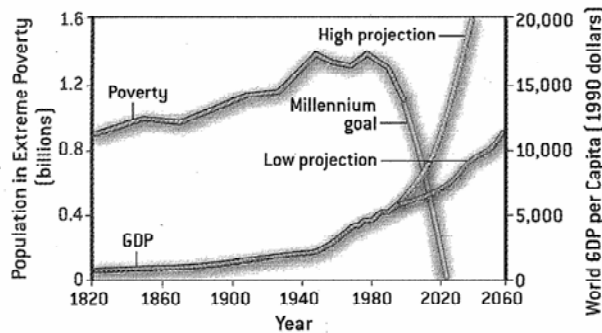
In the public's eyes, demographers have a checkered reputation. Thirty years ago, wasn't overpopulation the big concern? Paul Ehrlich's book *The Population Bomb* was a best seller. The film *Soylent Green*, starring Charlton Heston, dramatized a future in which people would be stacked like cordwood and fed little squares that looked like tofu but weren't. Lately, though, underpopulation has become the cause célèbre, heralded by neoconservatives such as Nicholas Eberstadt. Their concern is epitomized by another Heston movie: *The Omega Man*, in which humanity dwindles to nothingness. So which will it be: Too many people or too few?

THREE WORLD-CHANGING TRANSITIONS

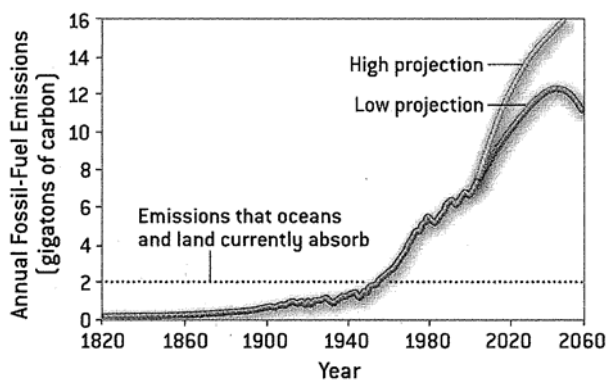
POPULATION GROWTH IS SLOWING ...



... PROSPERITY IS SPREADING ...



... BUT CO₂ EMISSIONS ARE TROUBLING



Mainstream demographers have not swung back and forth nearly as much as these extreme depictions might suggest. Families in the developing world have shrunk faster than expected, but the forecasts described in *Scientific American's* 1974 special issue on population have largely stood the test of time. In fact, the *Soylent Green* and *Omega Man* scenarios each contain an

element of truth. Humanity is still growing enormously in absolute terms, and past success at avoiding Malthusian nightmares is no guarantee of future performance. The decline in growth rates is a worry, though. Historically, most stable or shrinking societies have been down at heel.

Partisans of one scenario shrug off the challenges of the other, expressing "confidence" that they can be handled without actually doing much to ensure that they are. Once you blow away the fog of ideology, the outlines of a comprehensive action plan begin to emerge [box on opposite page]. It is hardly the only way forward, but it can serve as a starting point for discussion.

A recurring theme of this plan is that business is not necessarily the enemy of nature, or vice versa. Traditionally the economy and environment have not even been described in like terms. The most-watched economic statistics, such as gross domestic product (GDP), do not measure resource depletion; they are essentially measures of cash flow rather than balance sheets of assets and liabilities. If you clear-cut a forest, GDP jumps even though you have wiped out an asset that could have brought in a steady stream of income.

More broadly, the prices we pay for goods and services seldom include the associated environmental costs. Someone else picks up the tab—and that someone is usually us, in another guise. By one estimate, the average American taxpayer forks out \$2,000 a year to subsidize farming, driving, mining and other activities with a heavy environmental footprint. The distorted market gives consumers and producers little incentive to clean up. Environmentalists inadvertently reinforce this tendency when they focus on the priceless attractions of nature, which are deeply meaningful but difficult to weigh against more pressing concerns. The Endangered Species Act has provided iconic examples of advocates talking past one another. Greens blamed the plight of spotted owls on loggers; the loggers blamed unemployment on self-indulgent ornithology. In fact, both were victims of unsustainable forestry.

In recent years, economists and environmental scientists have come together to hang a price tag on nature's benefits. Far from demeaning nature, this exercise reveals how much we depend on it. The Millennium Ecosystem Assessment, published earlier this year, identified services—from pollination to water filtration—that humans would have to provide for themselves, at great cost, if nature did not. Of the 24 broad categories of services, the team found that 15 are being used faster than they regenerate.

When the environment is properly accounted for, what is good for nature is often what is good for the economy and even for individual business sectors. Fishers, for

example, maximize their profits when they harvest fisheries at a sustainable level; beyond that point, both yields and profits decline as more people chase ever fewer fish. To be sure, life is not always so convenient. Society must sometimes make real trade-offs. But it is only beginning to explore the win-win options.

If decision makers can get the framework right, the future of humanity will be secured by thousands of mundane decisions: how many babies people have, where they graze their cattle, how they insulate their houses. It is usually in mundane matters that the most profound advances are made. What makes a community rich is not the computers and the DVDs, which you can find nowadays even in humble villages. It is the sewage pipes, the soft beds, the sense of physical and economic security. By helping to bring these benefits of modernity to all, science and technology will have done something more spectacular than building space colonies.

ACTION PLAN FOR THE 21st CENTURY

1. Understand the changes. Obvious though it may seem, this first step is so often neglected. It can be hard to look past the daily headlines to understand the core trends we are experiencing. Demographer Joel E. Cohen paints the broad picture of a larger, slower, growing, more urbanized and older population. The detailed projections are uncertain, but what is important is the general issues that they raise.

2. Achieve Millennium Development Goals. This month the United Nations General Assembly is reviewing the mixed progress toward these quantitative goals for reducing poverty and inequality. Economist Jeffrey D. Sachs, head of the U.N. Millennium Project, argues for a concerted aid effort. Besides advancing human well-being, it would ease environmental problems that are linked with poverty, such as air pollution and deforestation.

3. Preserve crucial habitats. Extinction is irreversible, so avoiding it is a top priority. Obscure creatures are not the only victims; economically valuable species, such as sturgeon and wild grain varieties, are also in trouble. Ecologists Stuart L. Pimm and Clinton Jenkins argue that rounding out nature reserves will cost money but bring multiple benefits. Even in narrow economic terms, countries are often better off saving old-growth forest than converting it to farms or ranches.

4. Wean off fossil fuels. The atmosphere can hold only so much carbon dioxide before the climate goes haywire. Reducing emissions requires extensive changes to how we produce and use energy, but Amory B. Lovins, one of the country's most innovative thinkers on the subject, argues that the task is not nearly as daunting or costly as

you might think. Accelerating the existing trend toward higher efficiency could do the trick.

5. Provide cheap irrigation to poor farmers. How can we feed all those new mouths without trashing the soil, exhausting aquifers and damming every last river? Development specialist Paul Polak argues that small-scale appropriate technology, such as manual pumps and drip irrigation, can boost yields, stretch out limited water supplies and start farmers on the path to prosperity.

6. Beef up health systems. In rich countries and rapidly developing ones such as China and India, more people now get sick from chronic conditions, such as heart disease and mental illness, than from infections. In poorer countries, malaria, tuberculosis and other bugs remain the big burden. Epidemiologist Barry R. Bloom argues that in both cases, the top priority is better prevention, ranging from vaccines and mosquito nets to antismoking campaigns.

7. Brace for slower growth. Political and financial institutions will have to retool as the economy approaches global constraints. Economist Herman E. Daly argues for new ways to collect taxes, set interest rates, and regulate pollution and resource extraction. In an accompanying commentary, economist Partha Dasgupta agrees with much of what Daly says but suggests that rich-country economies are already more sustainable than many people assume.

8. Prioritize more rationally. Right now priorities are set largely by who shouts the loudest or plays golf with the right people. As staff writer W. Wayt Gibbs describes, economists and, environmental scientists have been working on better approaches. With costs and benefits properly priced in, markets can act as giant distributed computers that weigh trade-offs. But they can fail, for example, when costs are concentrated and benefits are diffuse.

Musser, George. "The Climax of Humanity." *Scientific American*. Sept. 2005: 44-47.

REVIEW:

1. List three the great historical trends discussed.
2. How can understanding these trends provide a framework for dealing with, rather than becoming paralyzed by, the problems of the world?
3. Which film do you think best predicts our future: *Soylent Green*, or *Omega Man*? Choose ONE and explain your answer.
4. Do you believe the world's current trend toward upward prosperity can be sustained? Why or why not?
5. Discuss which of the action plans for the 21st century do you believe would have the greatest impact.