CHAPTER 2

Overpopulation—the modern denial

The word overpopulation was brought into the modern public consciousness in 1968 by a book called *The Population Bomb* written by Paul Ehrlich. The book was a warning to the world that the human population was a ticking time bomb about to explode. The book badly missed the mark with its predictions of resource shortages and famine. For example, Ehrlich predicted that four billion people would starve to death in the 1980s. Based on that prediction, he also called for some highly unpopular measures to reduce our population growth. To ice the cake, he made a bet with an economist named Julian Simon about the price of five metals over a ten-year period. Ehrlich said the price would go up as a result of dwindling resources and Simon said the price would drop. The price dropped. Ehrlich paid up. Why Ehrlich thought that new sources for those metals would not be found or that manufacturers would not make compromises to compensate for shortages is beyond me. As an engineer at Boeing, I often altered a design to use high strength aluminum instead of titanium because the cost of titanium was too high. At one time, most sources of titanium were in the Soviet Union. We used titanium extensively after the fall of the Berlin wall.

I recently met Paul Ehrlich at a signing for his latest book *One with Nineveh*. I listened to him speak for an hour. He is an

impressive figure, tall, vigorous, with a deep voice and a tremendous sense of humor. I was very impressed.

Anyone who makes the mistake of predicting human trends with precision is asking for trouble. One can predict with relative certainty that the stock market will crash or boom, but you would be rash to say when those things will happen or to what extent. People with a propensity for betting are going to lose once in a while. Simon's betting record wasn't flawless. In 1997 he paid $1000 to David South, a professor at Auburn University, over the predicted price of pine sawtimber.[1] That's the problem with gambling, you have to stop when you're ahead.

A later book, *The Population Explosion*, published in 1990 by Ehrlich and his wife, Anne, did a much better job documenting the havoc wreaked upon the planet by our huge numbers. The title of the book suggests that the population bomb has gone off, and evidence of that blast can be seen everywhere.

The population growth advocates point out that because of improved technology, food production presently outstrips population growth. They also believe that resource shortages will always be compensated for with new technologies. However, they are making the same mistake that the Ehrlichs made. They are extrapolating what exists today into the future.

In 1968, the same year that *The Population Bomb* was published, with a third of the world hungry, and with the percentage of world population growth maxed-out at about 2.1 percent, it looked like Ehrlich's concerns were dead on. The Ehrlich's had assumed that because a third of the planet was already hungry we had reached the limits of our ability to feed ourselves. Logically, this left only one option, reducing population growth. Coincidentally, 1968 was also the last year to see an increase in the *percentage* of world growth—not *total* growth—and was the start of a decline in *percentage* of growth that continues to this day—see Figure 1. However, predictions of extremely rapid population growth held true and Ehrlich's predictions of mass starvation would also have panned out if our food supply had not unexpectedly increased even more rapidly than our population.

Although the percentage of population growth began to decrease in 1968, the actual number of people being added every

[1] http://www.forestry.auburn.edu/sfnmc/web/bet.html

year continued to increase as a result of population momentum reaching a peak of about 87 million in 1989—see Figure 1. Again, by coincidence, this was the same year that the *Population Explosion* was published and also marked the start of a decline in the number of people added every year that continues to this day. Approximately 75 million people were added to the world population in 2003.

Year	Population	Growth	# added per year
1964	3,276,816,764	2.08%	69,021,089
1965	3,345,837,853	2.08%	70,227,393
1966	3,416,065,246	2.02%	69,742,104
1967	3,485,807,350	2.04%	71,868,340
1968	3,557,675,690	2.08%(Bomb)	74,665,661
1969	3,632,341,351	2.05%	75,268,761
1970	3,707,610,112	2.07%	77,580,647
1971	3,785,190,759	2.01%	77,006,527
1972	3,862,197,286	1.96%	76,511,302
1973	3,938,708,588	1.91%	75,889,828
1974	4,014,598,416	1.82%	73,625,631
1975	4,088,224,047	1.75%	72,167,756
1976	4,160,391,803	1.73%	72,536,792
1977	4,232,928,595	1.70%	72,474,692
1978	4,305,403,287	1.74%	75,373,540
1979	4,380,776,827	1.72%	75,928,390
1980	4,456,705,217	1.70%	76,259,715
1981	4,532,964,932	1.76%	80,436,954
1982	4,613,401,886	1.73%	80,530,264
1983	4,693,932,150	1.68%	79,634,655
1984	4,773,566,805	1.68%	81,036,085
1985	4,854,602,890	1.70%	83,004,818
1986	4,937,607,708	1.73%	85,962,468
1987	5,023,570,176	1.71%	86,583,085
1988	5,110,153,261	1.67%	86,179,948
1989	5,196,333,209	1.67%	87,422,136(Explosion)
1990	5,283,755,345	1.56%	83,182,744
1991	5,366,938,089	1.53%	82,725,730
1992	5,449,663,819	1.48%	81,337,993
1993	5,531,001,812	1.44%	79,976,536
1994	5,610,978,348	1.41%	79,887,428
1995	5,690,865,776	1.36%	77,746,508
1996	5,768,612,284	1.35%	78,192,518
1997	5,846,804,802	1.32%	77,770,099
1998	5,924,574,901	1.31%	77,934,526
1999	6,002,509,427	1.29%	77,632,256
2000	6,080,141,683	1.26%	77,258,877
2001	6,157,400,560	1.24%	76,849,827
2002	6,234,250,387	1.22%	76,299,210

2003	6,310,549,597	1.19%	75,477,418
2004	6,386,027,015	1.16%	74,526,549

Figure 1: Population Data
Source: U.S. Bureau of the Census, International Database.

Following is an example of how the percentage of growth can fall but the total population can continue to grow. Assume you have 10,000 mice and their population grew by 10 percent in a mouse year. That would give you 1,000 more mice for a total population of 11,000 mice (0.1 x 10,000=1,000). The next mouse year the population increased only 9.9 percent adding 1089 mice (0.099 x 11,000=1,089). You can see that 89 more mice were added the following year than the previous because 9.9 percent of 11,000 is a bigger number than 10 percent of 10,000. The percentage of growth today is about 1.2 percent—see Figure 1.

Ehrlich's predictions missed their marks for several reasons. Keep in mind that everything I am about to say is in hindsight. Many things have come to light in the last 36 years that explain why the predictions never panned out. They were not part of the debate in 1968.

First, it has long been assumed that human population grows exponentially. To this day, if you search the Internet for the definition of exponential growth the authors will invariably use population growth as an example. Anyone who has had a course in biology knows the age-old example of lily pads on a pond. The most elegant version of this I have ever heard came from E.O. Wilson in his book *Consilience*:

> "A lily pad is placed in a pond. Each day thereafter the pad and then all of its descendants double. On the thirti-eth day the pond is covered completely by lily pads, which can grow no more. On which day was the pond half full and half empty? The twenty-ninth day."

When each pad on the twenty-ninth day replicated itself, collectively, they covered the rest of the pond. In this case the analogy is an attempt to describe the rate at which humanity is destroying the planet's biodiversity, not the usual description of human population growth.

I am going to try to explain this without—as the young bucks I play basketball with would say— "getting mathematical on your ass." The most common example of exponential growth that almost everybody understands is an interest bearing savings account. If you plot the growth of your account over time you will eventually see the "j" shaped curve characteristic of exponential growth. However, if you closely inspect the shape of the actual human population growth curve—as opposed to a theoretical one—you will discover that it does not look like it was generated by exponential growth. It actually looks quite linear in most areas although it has had a very steep slope—has been increasing very rapidly—over the past 40 years.[2]

Ehrlich along with everybody else in 1968 assumed that our growth was exponential when in reality it was just growing extremely fast, which is a fine point and not really relevant unless you are trying to win an argument with a mathematician. In addition, it was thought that our food supply would grow linearly. Linear growth will always be outstripped by exponential growth, given enough time. What everyone missed is the fact that our technology growth is exponential and our food supply is a function of that technology.

Technology growth is exponential because technology begets more technology. For example, the ability to make iron allowed us to make iron picks and shovels which allowed us to mine more iron ore, make iron plows, internal combustion engines, and the steel oil rigs that extract the fossil fuels that run those engines and provide us with most of our fertilizer and plastics used to make computers… and on it goes. Remember, this has all come to light in hindsight. Nobody was presenting all of these ideas as a counter argument in 1968. Most everybody feared that the Ehrlichs were making a good point. The data at hand was looking very grim.

The final straw was falling fertility rates. People in the developed nations were having fewer children. As is typical with economists and stock analysts, long-winded explanations for why things happened begin showing up *after* they have hap-

[2] http://en.wikipedia.org/wiki/Malthusian_catastrophe. Also see How Many People can the Earth Support? By Cohen, pages 81-84.

pened. These explanations have all been collected under a heading called the demographic transition theory.

The online encyclopedia Wikipedia defines the demographic transition as follows:

> "In demographics, the term demographic transition is used to describe the transition from high birth rates and death rates to low birth and death rates that occurs as part of the economic development of a country from a pre-industrial to a post-industrial economy."

Unlike most theories, no single person gets credit for this one. It was formulated and reformulated by groups of economists starting in the late 1920s and is still being continually revised.[3] Some don't see it as a theory so much as a collection of reasons that do a reasonable job of explaining why fertility rates have been falling.

Today's wealthy western countries went through a transition. Nutrition and medical science were improved by an ever-increasing technological database, causing a dramatic decrease in death rates, which in turn created a population explosion. This is exactly what you see happening in third world countries today because the green revolution combined with medical science has lowered child mortality. But, you can't just feed poor people and provide them with vaccines and antibiotics. You must also provide them with an education, family planning, and decent jobs. A decent job can also mean a well-run farm.

What happened next in the West was a drop in fertility. Fertility rates in some nations are below replacement level. Fertility rates are also dropping now in third world nations and the hope is that they too will make the "demographic transition" to low fertility rates as the western nations did.

The theory is anything but airtight. Exceptions abound around the world. Our own birth rates plummeted during the hard times of the great depression but went ballistic during the hot economy of the forties and fifties creating the baby boom generation. Both trends were counter to what the theory would have predicted.

---

[3] http://www.ub.rug.nl/eldoc/dis/rw/b.j.de.bruijn/thesis.pdf

There are, of course, arguments over what caused the world population to explode but most arguments are over what caused our fertility rates to fall and whether or not the third world will make the full transition.

Once again, keep in mind that no one wrote a best selling book in 1968 countering the Ehrlichs that said, "Relax everybody, just relax, fertility rates will fall and food production will then catch up. Giant well-funded NGOs like Conservation International will come into existence to try to save what is left of the planet's biodiversity. Everything will be fine, really. Go back to sleep."

Following is an abbreviated list of reasons given for the falling fertility rates in the West:

1) People got jobs in cities and no longer needed children as indentured labor for farm work (urbanization).
2) People no longer had extra children as a hedge against high infant mortality thanks to better health care.
3) Women were emancipated; they became better educated and joined the work force.
4) Contraceptive technology improved.
5) Social security programs replaced the need to have children around to help out in old age.
6) Somehow the idea got planted into people's heads that it might be wise to have fewer children. Having fewer children became a fad. This implies that if a fad comes along in the future saying that having more children is the "in" thing to do, then we are going to see a fertility spike. For example, fertility rates for new immigrants from Mexico remain high because they are unaware that large families are not "in." They have not realized yet that their new peers in their new culture frown upon large families. Their children will not keep those same fertility rates, being more aware of their cultural norms.

Every last one of these points are contested or promoted by one group or another and each group has studies and reams of data to back them up. Why? Because we are human beings, and

as human beings it is part of our nature to argue, and fight, and bicker at the drop of a hat, like Siamese fighting fish.

These six reasons are interrelated. For example, they all depend on reason 4—new and improved contraceptive technology. But, contraceptive technology is only good for avoiding unwanted pregnancies. Distributing contraceptives, providing sterilization and abortions does little good if people still want to have large families. Inversely, people who want smaller families need family planning to accomplish that.

Reason 2—reduced infant mortality—does not decrease fertility by itself. Think about it. Reduced infant mortality means increased fertility. Reduced infant mortality has to be combined with most of the other reasons for it to result in lowering fertility rates—fewer babies.

Logically, this suggests that further improvements in health care without doing the other things will just make more impoverished babies. In other words, you pretty much have to fund all of these things at once to have success. Improving the health care of desperately poor people without also getting them out of poverty, educating and empowering their women, providing family planning (the spacing of children, safe pregnancy terminations, contraceptives, and instructions for using them) will not reduce fertility rates. The commercials you see asking for money to feed hungry children and to provide them with health care may be making more of those hungry children. If that money were to simultaneously go to things that would reduce their poverty—educating and empowering their mothers and providing family planning—then you would have something. So, donate your money, but donate it in a manner that covers all bases. The road to hell is paved with good intentions.

Following is another abbreviated list, this time, of mindsets you will encounter in the population debate:

1) There are those who feel that poverty reduction is all that matters. Some groups promote the reduction of poverty over family planning. It is true that if you can reduce the level of poverty sufficiently, people stop going hungry regardless of family size. America's baby boom is an example of this, but for that to happen you have to have a very high standard of

living. Fertility rates become unimportant with regards to hunger if you can raise the standard of living high enough and since fertility rates have had a tendency to fall with increased standards of living, why emphasize family planning? With this reasoning, all efforts should go to poverty reduction; family planning is largely irrelevant.

2) There are those who feel that it is not feasible to reduce poverty without a population reduction because we are consuming the planet in a non-sustainable manner already and poverty reduction will accelerate that consumption.
3) There are those who feel we will all learn to live sustainable lives and preserve the planet regardless of population size.
4) There are those who feel population reduction is all important and that the rate of reduction has to be greatly accelerated by increasing our death rates as well as reducing our birth rates.
5) Finally, there are those who believe none of the above. Neither population reduction nor sustainable lifestyles are necessary because human ingenuity and free markets will always prevail; the more people we have on the planet, the better off we are.

I will start by discounting mindset four—we must increase our death rates. I will not discuss why because there is near consensus in the world that it should be discounted and defending my position is not necessary.

The problem with mindset one is that family planning and poverty reduction are inextricably interlinked. The key is that you need family planning to reduce fertility rates; it is the means by which you accomplish a reduction in birth rates once women decide they want it. Poverty reduction is the mechanism that persuades women to have fewer children; family planning provides them with the means to accomplish it. They must be promoted simultaneously. For poor nations, a reduction in fertility is also necessary for a reduction in poverty—unless the extra children are helping to reduce poverty, as is the situation with child labor and subsistence farming. In which case, women are free to have more children anyway. However, in most instances, a poor woman with eight young children has no chance of pull-

ing herself up and out of the poverty trap. They argue that programs that provide *only* contraception, sterilization, and pregnancy termination procedures are ineffective in reducing poverty. They are partially right of course, as I said earlier. But, a stool with only two legs is worthless. If you are not providing family planning at the same time you are striving to reduce poverty and protect the environment you have a two-legged stool. The reductions of poverty and population growth go hand in hand. Those who lobby that energy and money must be concentrated on poverty reduction and empowerment at the expense of family planning are ignoring the fact that there are about 40 million abortions performed annually. Take a minute and think about that.

Mindset two best describes my own, and is the most common mindset among those who strive to reduce population growth.

Mindset three, sustainable living, has potential to alleviate damage to the environment, however, the slogan, "live simply so that others may simply live" is flawed because, contrary to popular belief, my lifestyle here in America has little, if any impact on the life of someone in Africa. There is no mechanism to shift resources I do not use to those who need them more than I do. By eating less I do not provide more food for someone else. Selling my car will not help someone else live. As a voluntary movement, it has negligible impact. Asking those who have accumulated significant wealth and status to give it up is not going have much success. Profit motive and status seeking overrides most ideologies that do not have those drives as part of them. Surely, driving a small hybrid car will reduce emissions, but among environmentalists there is also a great deal of status associated with driving a hybrid car. Sustainable living alone will not be enough with nine billion people struggling to improve their lives: the idea is overwhelmed by the numbers. There is not enough iron on the planet to provide nine billion people with a hybrid car.

Mindset five—the more people we have the better off we will be—was championed by a conservative economist who I will introduce to you shortly.

The Ehrlichs were major players in the worldwide social fad, or meme, that put the idea into billions of people's heads that it was wise to limit the size of their families—reason six. The word meme was coined by Richard Dawkins in his book *The Selfish Gene*. He defined the meme as a unit of intellectual or cultural information that survives long enough to be recognized as such, and which can pass from mind to mind.[4] The meme idea is quickly becoming a meme in its own right. It is probable that the Ehrlichs were instrumental in starting the overpopulation meme, and that this same meme may be one of the reasons why the world population is predicted to peak between eight and ten billion instead of twelve to fourteen billion. The Ehrlichs certainly were not the first to discuss the idea of overpopulation. Malthus and others had written extensively on it. But the Ehrlichs were the ones most responsible for disseminating the idea to the common man through their popular books. The work done by the Ehrlichs is one reason why we don't have a much bigger population today or the famines they predicted.

Predicting the future often changes the future, thus nullifying the prediction—especially when trying to predict human behavior. I experienced an example of this paradox just yesterday. I was supposed to pick a friend up at the airport. The previous evening our TV news media had predicted dire traffic congestion because one of our two north-south highways was going to be closed for repairs. In addition, fog was expected which was going to make things even worse. Seattle is notorious for its traffic jams.

Ignoring the warning from these *doomsayers*, I set out to retrieve my friend in the middle of rush hour and set a new speed record for getting to the airport because the highway was practically deserted. The *pessimistic* prediction of horrific traffic snarls had kept everyone but the most foolhardy off the roads. Because they never materialized, should I have thumbed my nose at those who predicted traffic snarls or should I have thanked them?

It is highly probable that the work done by the Ehrlichs has had the same future-altering effect on slowing the devastation of our planet as well as improving the plight of humanity.

---

[4] http://maxwell.lucifer.com/virus/alt.memetics/what.is.html

Had the percentage of population growth remained at 1968 levels through 2004, there would be about 2 billion more people on the planet right now. Instead of having 800 million hungry today, we might have 2.8 billion hungry. There is no doubt that the warning from the Ehrlichs was a factor in lowering fertility rates. It also helped light the fires that created today's gigantic and well-funded relief organizations. Should we be thumbing our noses at the Ehrlichs or thanking them?

As a side note, if all abortions had been prevented throughout the world—as our current administration would like to see—our population might be about 12 billion today. It took about five minutes to build a spreadsheet to generate these numbers. You can build one for yourself to check me. I used 2.1 as the percent of growth starting with a population of 3.4 billion in 1965. There were about 40 million abortions performed worldwide last year—roughly 50 percent of the number of people added—so I assumed that without abortions, population growth every year would have been increased by about 50 percent.

Countering the Ehrlichs was the late Julian Simon. His books, *The Ultimate Resource* and *The Ultimate Resource 2* were embraced by economic conservatives, the Catholic Church, and pro-life groups. The books were also used to buoy policy by both Ronald Reagan and Pope John Paul II.[5] Simon urged the Reagan administration to cut off of funding to the International Planned Parenthood Federation. This led to the curtailment of U.S. support for worldwide family planning that continues to this day under the Bush administration.[6]

Simon believed that the more people we have on the planet, the better off *people* will be. He felt that with more people, there would be more geniuses like Einstein. He understandably made no mention of the greater number of Stalins and Pol Pots we would also have.[7]

---

[5] http://www.cato.org/pubs/policy_report/cpr-20n2-1.html

[6] http://www.goodbyemag.com/jan98/simon.html

[7] A review of Simon's book by Herman E. Daly can be found at http://www.mnforsustain.org/daly_h_simon_ultimate_resource_review.htm. This review was originally published in the Bulletin of the Atomic Scientists, January 1982.

One of the weakest links in Simon's works is that the preservation of the planet's biodiversity does not play a big role in the plan. The closest he came to addressing that issue was by showing how the first world countries have cleaned up their air and most of their rivers and lakes. You can swim in them again, and rivers no longer catch on fire. However, those victories belong to the antithesis of Julian Simon, the environmental activists who successfully enacted legislation, not to the industrialists now burdened with the cost of cleaning their effluents. Protecting the environment rarely has any potential for short-term profit. It usually costs money to protect the environment and therefore legislation has to be forced down the throats of those who lose profit as a result of that legislation. Our water is cleaner, but most sturgeon and salmon runs are gone and many freshwater bivalves are endangered or extinct. Introduced species dominate the fauna (carp) as well as the flora (milfoil). The biodiversity that once existed in our lakes and rivers continues to degrade.

A major contribution Simon made was in highlighting the fact that people are very adept at seeking solutions to their problems, finding ways to compensate for resource and food shortages. That is why we invented farming and domesticated animals.

The unknowns that bit the Ehrlichs are waiting to bite Simon's work as well. The interplay between dwindling natural resources, global economies, climate fluctuations, incurable plagues, a huge human population, and most of all, human nature, is far more complex than the simple idea "the more, the merrier." Simon did not publish his book until 1980. This was twelve years after the publication of *The Population Bomb*. Simon looked at the census data and put what he saw into a book. Food production was outpacing population growth and economies were growing. The predicted shortages had not materialized. He was counting beans. His work consists of reams of data documenting what was happening. The data eased a lot of minds, his in particular and provided fuel for conservative economists and pro-life groups.

I believe that Simon's greatest contribution was in documenting the awesome power that properly regulated free economies have to create incentives for profit that in turn create new

technology and make it affordable to the common man *even in the face of an exploding human population*. The magnitude of this exponential growth in technology was totally unanticipated by the Ehrlichs. However, it isn't necessary to have 6 billion people alive simultaneously to have exponential technology growth. We already had automobiles, airliners, antibiotics, vaccines, nuclear bombs, skyscrapers, television, and toaster ovens in 1945 when our population was about two billion. The planet was not a lonely desolate place then. Two billion is still a huge number. Technology growth was fully exponential. We have managed to stay fed and housed as a result of technological and economic growth, *not population growth*. It is not a coincidence that technology and population have both been growing rapidly. There is some correlation, in that medical and agricultural technologies have decreased infant mortality, and these are the overwhelming reason for our population growth. However, our huge population is not causing our technology growth. The lion's share of new technology comes from the industrialized countries, some of which have stable or even declining populations. The people in India, China, and Africa, have certainly benefited from these innovations and technologies, but the existence of all these people was not critical to the creation of these same technologies. The computer, the green revolution, and the Internet would have happened if the populations of India, Asia, and Africa had not grown since 1945. In fact, with fewer people living in squalor, there may have been even more contributions to technology from those parts of the world because the standard of living would have been higher.

The world's reserves of iron were estimated at 20 billion metric tons in 1950. They were estimated at 93 billion metric tons in 1980. A similar scenario exists for oil and many other resources.[8] This is the primary reason why the prices of these commodities remain low. The fact that we have managed to discover more natural resources is hardly evidence that we will never run out of them. Simon said that the only way for sure to know if resources are getting scarce is to look for rising prices, and since prices are not rising, there are no scarcities. What goes

[8]http://www.davidrhenderson.com/articles/0698_inmemoriamjuliansimon.html

unsaid is that most of the prices are not rising because we keep finding reserves—oil, and iron for example—that we did not know existed or that we did not know how to get at. It also means that we have not carved up the last of the forests or crashed the last of the fisheries. For example, we make fake crab meat out of fish that we used to consider trash. That is not the same as saying that we are not using up our resources. That only says that we have found ways to buy more time. Simon's view was that we will always find ways to buy more time. We will always be able to make more from less.

I would prefer not to take the risk. People want control over the timing of births, why not give them the means? A world stripped of its biodiversity by nine billion people is also a scenario we need to avoid. At the time of this writing, the number of undernourished people had started growing again by about five million a year.[9] Place your bets everyone.

I am not going to devote this book to a point by point critique of all of Simon's views. Suffice it to say that his views were not overly concerned with the biodiversity of the planet. In Simon's view, if a species cannot prove itself to be valuable to people, then it has no value. Simon once said,

> "We do not neglect the die off of the passenger pigeon and other species that may be valuable to us. But we note that extinction of species billions of them … has been a biological fact of life throughout the ages, just as has been the development of new species, some of which may be more valuable to humans than extinguished species whose niches they fill."[10]

This gives insight into Simon's world perspective and personally, it sends a chill down my spine. He simply was not concerned about the fact that our zoos are filling with the last specimens of various species like the Newly deer that have

[9] http://www.news24.com/News24/World/News/0,,2-10-1462_1450334,00.html

[10] (Simon and Kahn, The Resourceful Earth: A Response to Global 2000, P. 23)

become extinct in the wild. When you read an article on the Internet supporting Simon's views, you will also find that they are universally devoid of any mention of the planet's loss of biodiversity. Interestingly, you will also find that people with highly conservative or religionist viewpoints wrote the articles.

The truth is that *some* of Simon's views are correct and so are *some* of Ehrlich's. The solution is a combination of the ideas of both men—a reduced population and a healthy world economy with free trade generating technology that has the potential to save us *and the planet's biodiversity*.

Ultimately, Simon's view that things only get better with a larger population has at least four fatal logical flaws. First, if the answer to the world's problems is to increase our population—suggesting that 40 billion is preferable to 9 billion—what then is the upper limit? Is there an optimal number and if so, what is it? Is it 40 billion, or 10 billion, or was it 2 billion?

Next, the idea that you will have more people like Einstein if you have more people, is nullified by the fact that you will also have more people like Stalin, Hitler, Pol Pot, Mao, Idi Amin, and Saddam Hussein (who does not really rank with the others). You will also have more serial murderers, poachers, psychopaths, thieves and rapists. When someone like Darwin or Einstein contributes to our knowledge database, their contributions stay with us. They are additive, each contribution building on the next over the centuries. It is not necessary that they all be living at the same time to contribute. The more people you have, the more bad guys you have, and they contribute nothing to our future database. They screw things up for finite periods. The theory of evolution and the theory of relativity would all have gotten here eventually if our population had never bloated to what it is today. In fact, they may have gotten here sooner if we had a smaller, richer, and better-educated population.

Third, the free market forces that continue to find ways to feed and house us will always try to do so at the expense of the environment if that is the way to maximize profit, which is usually the case. Legislation enacted by environmentally minded people is the only thing that stands in its way.

Finally, Simon's view that humanity will always find innovative ways to compensate for resource shortages plays right into

the hands of people like me trying to find a way to save the planet's biodiversity. If humankind will always find alternatives to compensate for shortages of things like copper and lumber, then there is no reason not to rope off all of the remaining ecosystems and get on with the business of finding creative alternatives. In other words, if Simon is correct—and when combined with Ehrlich's idea of a sustainable population size he just might be partially correct—then there is no reason *not* to rope off all of these places as an insurance policy for future generations. Why don't we leave the old growth forests alone? Why are we cutting down the Congo for its hardwood? Why are we cutting the Amazon down to feed cows? We will quickly adjust and find alternatives shortly after the commodities are made unavailable to us. Although it was not his intent, Simon has given the conservationists of the world just what they need to save it. Thank you Mr. Simon, may you rest in peace. Maybe, someday, the liberals and conservatives will override their instincts to form into self-righteous hate groups and give you and the Ehrlichs the respect you all deserve.

Many of the problems of the world are too complex for specialists. Paul Ehrlich, being a biologist, is poorly equipped to deal with the economic side of the equation and Simon, being an economist, was poorly equipped to deal with the biological side. This concept of pulling together multiple disciplines and sciences in an attempt to solve the world's problems is outlined in E. O. Wilson's book *Consilience: The Unity of Knowledge*. It turns out that most issues are interrelated. A multi-discipline approach is the only way to tackle them.

Late in the game (1995) a book was finally written called, *How Many People Can the Earth Support?* by Joel E. Cohen.[11] He had the advantage of hindsight having read the works of Ehrlich and Simon. Cohen took every precaution not to fall into the same trap as Ehrlich. He did this by refusing to predict the future. By refusing to be pinned down, he managed to write a book on overpopulation that was almost controversy free. This proved to be the book's weakest link, leaving many readers

[11] A review of this book can be found at http://www.kzpg.com/Lib/Pages/Books/96-04-12__How_Many_People_Can_..Cohen.html

wondering why they had bothered to read this 500-page tome. You can't change the future if you do not have the bravado to predict it. Intrigued by the title, many readers picked up the book hoping to find the answer. The answer, although correct—that it all depends—leaves us unfulfilled.

Cohen starts by making light of the numerous examples all through history of people who were concerned about overpopulation. The earliest example going back 4000 years. People have always harped about overpopulation. In other words, "the sky is falling" story has been around for a long time. This is an example of why population growth advocates often quote from the book to support their beliefs that overpopulation is a fabrication. What Cohen failed to convey, or possibly failed to see, is that overpopulation has always been a local problem. These people lamenting about overpopulation 4000 years ago had very legitimate concerns. Their small worlds *were* overpopulated. When the people of Easter Island were starving to death, the planet was far from overpopulated. The archaeological record is rife with examples of populations that have crashed because of overpopulation, leaving behind parts of the planet where the environment has been so damaged it has never recovered. I recommend that you read *Constant Battles* by Steven A. LeBlanc if you are interested in how commonly this has occurred throughout ancient history.

The people of Easter Island starved although there was plenty of food on the planet. There just wasn't enough food where they lived—in their world. They were trapped by the ocean that surrounded them. Similar barriers, usually political and cultural, constrain all people. These barriers are just as real as the ocean and just as dangerous to cross. They have always existed and always will. When an impoverished villager walks to another village only to find more impoverished villagers, he has a problem. It is only when the numbers of impoverished villages begin to grow to encompass entire countries that you will find a global population crisis, which is exactly where we are today.

Another aspect of Cohen's book that disappointed me was the dearth of discussion on the biodiversity of our planet. Out of 532 pages he devotes just four of them to this topic. Admittedly, they are four very well written and powerful pages. In fact, I

recommend that you read them next time you find yourself in a library. The sub-heading is *Time Constraints in Biological Diversity*, pages 336 through 340.

No one could predict an end to population growth until the percentage of growth stopped increasing. Thanks to falling fertility rates, demographers can finally predict roughly when our population will peak, and roughly what our population will be when it does—depending on assumptions of fertility and death rates. As we get closer and closer to the peak, it will get easier and easier to predict.

The fertility rates in some countries have already dropped below replacement level and have populations that are about to decline. There have been several pieces done in the media discussing this phenomenon. I read an article in the New York Times and saw a PBS documentary on the subject. In both cases, the media did a poor job describing to the public just what is going on. Many people who read the Times article or saw the documentary walked away with the impression that the world population was decreasing. I have seen it happen on two separate occasions. The individual misled by the Times article was a physician and the individual misled by the PBS documentary was an engineer. No wonder the public is confused on the issue. I have also heard three separate guests on National Public Radio say that the world population is decreasing. Nothing could be further from the truth.

Setting the record straight, we can expect our population to increase about 50 percent in the next fifty-to-eighty years, peaking at eight to ten billion. One billion people were added between 1988 and 2000. At the time of this writing, there are 6.35 billion of us.[12]

If you type overpopulation into a search engine, you will be confronted by wildly varying opinions on the subject. I just did so and the following is a brief synopsis of what I found. Of the ten sites on the first page, only half were concerned with the negative effects of a burgeoning human population. One of the sites is hosted by a pro-life, ex-catholic, atheist and promotes the

[12] http://www.un.org/esa/population/publications/wpp2002/WPP2002-HIGHLIGHTSrev1.PDF
(click on highlights and go to page 6)

belief that the planet is *not* overpopulated. He argues that technology will always come up with ways to stretch our resources. It is a direct reflection of Julian Simon's work. According to this site, air and water are getting cleaner, food supplies are growing larger, poverty is being reduced, and all of these positive trends will not only continue into the future, but will get even better with a growing population. Another site claims that we have passed our sustainable limits and the world population is crashing as a result of disease and decreased fertility rates. It predicts that our population will peak at about 6.9 billion in about twenty-five years and continue to drop because we have destroyed our life-sustaining ecosystem. The population having already passed through 6.35 billion, I think they may have to update their site any day now. A member of the Catholic hierarchy in Seattle hosts another site and jovially confuses the term overcrowded with overpopulated. Then come the sites that talk of pet overpopulation. Finding the wheat amidst all of the chaff is no easy task, and I wish luck to you.

The recent slowing of growth is a victory of sorts for population reduction advocates. Their efforts over the last three decades have had a much bigger impact than most people realize, although it may prove inadequate to save our biodiversity. Those who taunt the family planning activists by pointing out that humanity's population is going to peak at numbers lower than those previously predicted, are inadvertently highlighting the success of those who have fought so hard to curb our growth. Once our population has peaked, the new battle will be to allow our numbers to decline. Family planning advocates will have an easier time of it because momentum, contraceptive technology, and most importantly, human nature—the desire to time births for personal quality-of-life issues—will be on their side. The simple fact that humanity can for the first time predict roughly when our population will finally peak is the shining light of hope in thirty years of effort to slow our population growth—if we can just continue to avoid famine while simultaneously protecting the planet's biodiversity through it all.

There are those who believe we can protect the planet's biodiversity even with nine billion humans striving to maintain and improve their lives; there are even more people who could

care less that we protect it at all. It is a collective case of self-deception to say we can protect an area in perpetuity by calling it a preserve. Government instability in places such as the Congo or Indonesia will be the final death knell for gorillas and orangutans. Experience with my own piece of private forestland has taught me much. It is remote and accessible only through rough logging roads, yet it is trampled by people. Trespassers leave their trash and toilet paper everywhere in addition to cutting tree branches and picking brush. Tree poachers, hunters, campers, dirt bikers, and four wheelers all leave their marks. A time-lapse camera would show a relentless flow of humanity over this landscape. History is filled with examples of wealthy individuals who owned nature preserves—usually for their own recreation. Sherwood Forest of Robin Hood fame is one of them. They all fall in the end to the pressures of population growth.

One of the demographic characteristics of a population that declines because of low birthrates is an aging trend. Before our population begins to drop, we will find that our average age will be much higher than in the past. The only way to avoid that scenario would be to increase death rates instead of decrease birthrates. This most certainly is not an acceptable option. At some point the world will have to grapple with a population that is top heavy with the elderly. I am going to say something now and repeat it a short time later for emphasis: Dealing with this aging issue is a moot point as far as the TIFIC is concerned because that day is coming with or without the TIFIC. The TIFIC would only move that day of reckoning up. The aging of our population will be a temporary condition because as we older people go off to heaven and hell, the natural and healthy ratio of young to old will eventually reach equilibrium again. This process will take some time, and cultural adjustments will have to be made. Again, it is a moot point as far as the TIFIC is concerned because that day is coming with or without it.

I can only guess what those adjustments would be. Resources that are now being spent to care for children may be shifted to care for the elderly since there will be no more unplanned pregnancies and therefore far fewer mothers needing welfare. Will an aging world population decrease the risk of war, allowing us to safely shift the trillions being spent on military

budgets to other things? Would it be better to make the necessary adjustments at a lower population level or wait until our population peaks?

One statistic we may see as the population ages is a declining crime rate. Crime rates often correlate with the number of young men in a population. Young bucks will be less numerous. The costs of controlling crime may drop. An aging population will create a demand for things that young people do best. Young men will be too busy making money to be out causing trouble.

Another concern with a shrinking population is that it may cause economic hardship. There are many that believe you cannot have economic growth without population growth. If this statement is true, there is a day of reckoning approaching since population cannot grow forever. Again, would it be better to address the issue when there are nine billion people? An economist is yet to be born who could predict an economic trend in advance. Economists make a living explaining in detail why trends happened.

It's entertaining, at least to me, to watch the stock analysts on the nightly business reports explain why the market did whatever it did. It's like watching a show on astrology or palm reading. Most people don't seem to care that analysts never successfully predict what the market will do ahead of time. That would be like asking a weatherman to predict the weather for a month in advance. It is suspected that both the weather and the world economy emulate chaos theory. The modern world has never experienced a decreasing population. We really don't know what will happen to economies. The last person to ask is an economist. They are historians, not soothsayers.

The knowledge we have to date pertaining to economics was gleaned in a world with an increasing population. Our economy may actually continue to grow in relation to the number of people because that number will be declining, resulting in a stable or improved standard of living.

Anything I say here, and anything an economist may say on the same subject is little more than speculation. I can pick up a newspaper and read about the economic problems created by our huge population and then read an article one week later telling me about the economic problems that will be created by a de-

creasing population. That is just one reason why I don't read newspapers. Their articles are, out of necessity, too brief to thoroughly discuss topics of any complexity.

Expect to see groups starting to promote pregnancies as our population growth slows further. They call themselves pro-natalists.[13] Will the development and distribution of the TIFIC become the next battleground for the pro-life and pro-choice activists? I'll bet my right arm on it.

France—along with Japan and some other countries—is attempting to grow its own workforce by appealing to patriotism and providing tax incentives for citizens to have more children. They see this as preferable to letting immigrants in to share the wealth. In 1920, France went so far as to outlaw all forms of contraception because so many young men had died in WWI. On the other hand, the governments of Korea, the Philippines, India, and China are working hard to reduce fertility rates.

When you stand back and look at our behavior, it all seems somewhat primitive: slaughtering our young men in massive wars, then cajoling our women to have more babies, or not to have more, depending on which country you are talking about. What I see are animal instincts of group protectiveness overriding rational thought in modern global economies. I see human nature at work.

There has been a huge mass migration across the planet from rural lands to cities in the last few hundred years. In 1800 only 3 percent of the world's population lived in cities and towns. By 2030 almost 70 percent of the world population will be living in cities.[14] This tendency will probably continue with a shrinking population. For example; the overall population of Mexico may decline while the population of its large cities continues to swell. This trend may continue all over the world. The economies of the cities may continue to be fueled by migrating workers while rural areas depopulate. If you ask why people are migrating to cities, you will get different answers depending on which economist you are talking to. In a nutshell, people are moving to cities because they perceive that they will be better off there.

---

[13] http://www.unfpa.org/swp/1998/newsfeature1.htm

[14] http://www.prb.org/Content/NavigationMenu/PRB/Educators/Human_Population/Urbanization2/Patterns_of_World_Urbanization1.htm

Why they have this perception can be debated, but perceptions change reality as often as reality changes perceptions—a wag the dog scenario. This fact—that human behavior cannot be described with equations—is the bane of all economic theorists.

The economic equations of supply and demand only work in a growing economy with a growing population. With a shrinking population, those equations will be turned on their ears. For example, with fewer people there will be less demand for lumber. Normally this would create a glut on the market and lower prices. The lower prices would mean less profit for the sawmills and layoffs for workers at the sawmills. With a shrinking population, however, you have fewer people needing jobs at those sawmills and fewer sawmills. A shrinking population does not automatically mean a shrinking economy. Population is a variable in the chaotic equations of economics.

Here is what I envision: As the world population shrinks, the existing trend of mass migration toward large cities to find employment and an improved quality of life will continue. At first this will tend to depopulate rural areas, rather than cities. This migration will be a source of labor fueling city economies much the same way immigration has fueled the U.S. economy. As the population continues to shrink, many cities will eventually begin to depopulate. These citizens will migrate to other cities with stronger economies. I see humankind continuing to lump together into cities linked through free trade. This will require countries like France and Japan to change their nationalistic attitudes and open their borders—in a controlled and logical manner—to immigrants the way the U.S. has *historically* done instead of prodding their citizens to have more French and Japanese babies.

Eventually the world population will stabilize with a natural and healthy ratio of young to old. The exponential growth of technology would continue—along with economic productivity—because technology is less dependent on population size than on free market forces and the fact that technology begets more technology.

Paradise would not be the word I'd choose to describe the world when we had a population of two billion considering that fifty million people had just died in the aftermath of World War

II.[15] The baby boom in America was about to go full-tilt, signaling the start of a world population explosion that is presently adding 75 million people a year. The passenger pigeon, Tasmanian tiger, Dodo, and countless other species were already long gone. The American Bison had come to within a hair's width of extinction, almost following the Auroch into oblivion. We can do tremendous things, bad and good, with two billion humans. Reducing our numbers is not the only thing that has to be done to save what is left.

In his book, *Sparing Nature-The conflict Between Human Population Growth and Earth's Biodiversity*, Jeffery McKee inadvertently summed up the whole overpopulation issue with respect to biodiversity in the first chapter. Having found a termite in his yard while doing an informal animal survey in support of writing his book, he immediately called the exterminator. The population debate is untenable. Let us give humanity something it wants—the TIFIC—and the rest will fall in place. This contraceptive could be the enzyme that starts a chain reaction, creating a world where people are free to lead lives of their choosing without driving to extinction the other creatures that we share our planet with.

[15] http://en2.wikipedia.org/wiki/World_War_II