



## Cornucopians - A Guide for the Perplexed

Posted by [Dave Cohen](#) on September 2, 2006 - 2:14pm

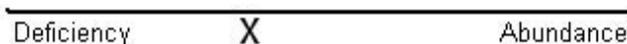
Topic: [Sociology/Psychology](#)

Tags: [abiotic oil](#), [cornucopians](#), [iea](#), [jerome corsi](#), [julian simon](#), [leonardo maugeri](#), [lindsey grant](#), [paul ehrlich](#), [peter huber](#), [pfc energy](#), [steven levitt](#), [thomas gold](#), [vaclav smil](#) [[list all tags](#)]

The Oil Drum continually attracts new readers interested in what those concerned about peak oil are saying. This story is mostly for them but also may serve as an amusing review for veteran contributors or readers. It is always a good idea to get back to basics. First time posters are welcome.

Part 1 defines [Cornucopian Fallacies](#) and gives a mainstream view from [PFC Energy](#) by way of contrasting such extreme views with a moderate voice in the center.

Part 2 presents a taxonomy of some present day Cornucopians who believe that there are no limits to growth. Bear in mind that those concerned about peak oil are sometimes labelled with a broad brush as Cassandras predicting eschatological doom. All of us fit somewhere on this scale.



The Doom & Gloomers are on the far left. The Cornucopians are on the far right. I am in the position left of center marked by an **X** today but that may change tomorrow should circumstances change. I believe we should never lose our sense of humor around here, a crime of which I have been guilty on occasion. Naturally, many serious points are made along the way.

This post does not deal with some optimists in the energy business like [Amory Lovins](#), [CERA](#), [Michael Lynch](#) and [CGES](#) who deserve a more extended treatment. That will be the subject of another story.

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### Cornucopian Fallacies

The Cornucopian always views the glass as half-full and being ever replenished. In his 1992 essay, [Lindsey Grant](#) (link above the fold) listed the characteristics of such thinking summarized here.

1. The implications of endless growth are understated or rejected out of hand.
2. Past economic trends are projected automatically onto the future.
3. Evidence that doesn't fit growth scenarios is dismissed.
4. There is an extraordinary faith in technology to solve all problems.

The true endless growth optimist usually has all of these properties, appealing to one or another in various arguments at various times. Underlying all of these fallacies is the presupposition that endless growth is possible because human cleverness is unlimited. It's not the case that historical

arguments relying upon faith in economics or technology are *completely wrong*. Far from it. The point is that Cornucopians take these arguments to an irrational extreme, ignoring pertinent realities about limits. This is an important point. Moreover, one can argue that human stupidity often outweighs the ingenuity that can be brought to bear but that is a subject for another post.

In 1980, Paul Erhlich made an [ill-considered bet](#) with Cornucopian Julian Simon over the future price of some metal commodities. You will recall that this was during the period of oil shocks following the Iranian revolution but prior to the glut of new oil that occurred on the markets after about 1985. Simon won the bet, scarcity turned to plenty later in the decade and the early 1990's heralded the arrival of the SUV. For those arguing resource depletion, this was not their finest hour. Ehrlich himself started sounding the alert a bit early in 1968 when he wrote [The Population Bomb](#) which

... predicted that "in the 1970s and 1980s hundreds of millions of people will starve to death", that nothing can be done to avoid mass famine greater than any in the history, and radical action is needed to limit the overpopulation.

Ahem. There was famine, of course, but hardly much worse than usual. Colin Campbell himself has been caught [crying wolf](#) prematurely. Despite these predictive failures, the Cornucopian position is fundamentally flawed and those concerned about resource scarcity will someday be right—unfortunately, it's just a matter of time.

## PFC Energy—The Radical Middle

Before moving on to the Cornucopian systematics project, it is instructive to consider the public views on peak oil of a well respected, mainstream energy consulting firm like PFC Energy.

In [PFC Energy's Diwan, GOP Rep. Bartlett of Maryland look at supply, price, economies](#), oil markets expert Roger Diwan states

Well, what we have here, in many ways, is a number of cyclical and structural issues which have brought us \$50 oil. It's true that we're running at very high capacity. Right now we're producing at 98 percent. It means that we have very little spare capacity. We've rarely had that phenomenon. And in term of this issue of peak oil, if you look at the current conditions, and if you trend them up for the next 10, 15 years, you see that, you know, with the present technology and the present access to resources, it's difficult to imagine that we're going to be able to produce a lot more than 100, 105 million barrel per day, which probably could be around 2015. So we're entering that era, if we don't have two dramatic changes. One is technology, both on supply and demand, and second one is access to the reserve which do exist in the Middle East.

Others at PFC Energy are [concerned](#) as well."Over the last 20 years, the size of oil discoveries has fallen off dramatically. We are finding more fields than in the '60s and '70s, but they're much smaller," said Michael Rodgers, ex-oil geologist who is now senior director of PFC Energy, a nonpartisan energy consulting firm. "We're producing three barrels of oil for every one barrel of oil that we find."

There's [more](#). Seth Kleinman of PFC Energy stated "there's a certain degree of hesitancy for oil companies [like BP] to go on the record and say, 'we are doing well with oil prices where they are now, but 10 years down the road things actually look pretty dire'." Finally, Mike Rodgers will

speak at [ASPO-USA's 2006 conference](#) in Boston in November. Diwan's 2015 date for the peak seems to be the consensus at PFC Energy. A bit over 9 years is not so far off in the future though many believe there is not that much time to prepare. As stated above, the peak in world oil supply is just a matter of time for reasonable analysts. Not so, however, for Cornucopians who believe that fossil fuels are the gift that keeps on giving.



## A Cornucopian Taxonomy

One ordering considered was to rank these optimists by increasing degrees of silliness but that approach didn't seem possible. Instead, the following order and grouping is used.

- Abiotic Oil Enthusiasts
- True Pollyannas
- Blinkered Economists

The final section will end with a few remarks on the social role of Cornucopians and their role in society. This section is a bit irreverent so if that offends you, quit reading here.

### 1. Abiotic Oil Enthusiasts

*"Hydrocarbons are not biology reworked by geology (as the traditional view would hold) but rather geology reworked by biology"*—[Thomas Gold](#).

The [snake oil](#) theory of oil formation has little to do with the cooking under pressure of ancient buried pond scum—microscopic plants and animals. Rather, oil is continually formed in the deep mantle and percolates up to the upper layers of the Earth's crust where industrious petroleum engineers can extract it. This is the Cornucopian view *par excellence*, the *literalist* interpretation often found in fundamentalist religion.

A more recent manifestation of the theory comes to us from [Black Gold Stranglehold: The Myth of Scarcity and the Politics of Oil](#) by Jerome Corsi (right) and Craig R. Smith. The indefatigable WorldNetDaily.com [notes something sinister](#) in Rigzone's decision to remove an article by Corsi from their website:



Corsi said the [Rigzone] incident, along with many ad hominem attacks he and co-author Craig R. Smith have received, illustrate the general unwillingness of opponents to address the book's arguments.

"They don't want to debate us, they want to shut it out," Corsi said.

He added, "It's usually a good indication you're on to something."

The last section of this essay will address what it's a good indication of—not credible geology in this case. Interestingly, the abiotic oil theory arose in Russia as supporter [Dave McGowan](#) tells us.

The modern Russian-Ukrainian theory of deep, abiotic petroleum origins is not new or recent. This theory was first enunciated by Professor Nikolai Kudryavtsev in 1951, almost a half century ago, (Kudryavtsev 1951) and has undergone extensive development, refinement, and application since its introduction. There have been more than four thousand articles published in the Soviet scientific journals, and many books, dealing with the modern theory. This writer is presently co-authoring a book upon the subject of the development and applications of the modern theory of petroleum for which the bibliography requires more than thirty pages.

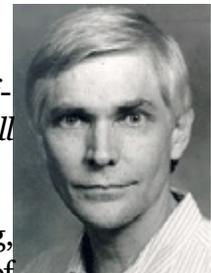
Needless to say, the revival of the Russian oil industry in the last several years is not due to replenishment of declining existing fields like [Samotlor](#) from the Earth's deep mantle.

## 2. True Pollyannas

*We now have in our hands, in our libraries really, the technology to feed, clothe, and supply energy to an ever-growing population for the next 7 billion years... We [are] able to go on increasing forever—from Scarcity or Abundance, Myers and Simon, 1994.*

This "catch-all" category includes [Peter Huber](#) (right) and [Vaclav Smil](#).

Huber (with Mark Mills) is the author of [The Bottomless Well](#)—which has the self-explanatory subtitle *The Twilight of Fuel, the Virtue of Waste, and Why We Will Never Run Out of Energy*.



Although it's true that we will never run out of energy while the Sun keeps shining, broadly speaking the key issues seem to revolve around what the future sources of our energy will be, their energy density and how much of that energy can be converted to useful work. Also, speaking of work, *homo sapiens* can still do manual labor or employ domesticated beasts of burden. In any case, here is some *uncommon knowledge* (link above) from the Hoover Institute:

... will the ever-improving technological efficiencies of the free market provide access to virtually endless sources of new energy?

**Peter Robinson:** Heresy--now this is a big one by the way, take a deep breath. "The raw fuels are not running out." Now here you [Huber] seem, if I as a layman may say so, to have taken leave of your senses. Everybody knows that oil, coal, natural gas, all exist in fixed amounts, therefore, the more we use, the less remains.

**Peter Huber:** Fixed amount is a very elastic term. We have centuries' worth of coal in this country.... we could burn coal for a century. We can make unlimited amounts of electricity with coal if we want to. We have tar sands in Canada and in South America that have a century's worth of oil locked up in tar. The issue isn't whether the planet

itself is very limited in buried hydrocarbons. It clearly is not. The issue is do we want to get them out? Do we have the technologies to get them out? At what price can we get them out and what are the environmental impacts of doing so?

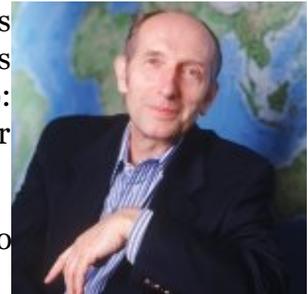
Most of us, one hopes, are bit skeptical about the statement that a "fixed amount [of hydrocarbons] is a very elastic term". It is a breathtaking argument until you think about it. Suddenly, complexities appear. It is best to go through the standard checklist. If the answer is "No" to any of the following grouped question sets

then — □

1. Is the project doable? Does the necessary technology exist?
2. Is the marginal energy return (EROEI) significantly greater than zero?
3. Are the environmental impacts acceptable? Are the mitigation costs manageable?
4. Does the project scale up? Are anticipated marginal costs favorable?
5. Do the projected annual return rates (ROR) or return on investment (ROI) justify the project?

All of these factors require complex analysis with the possible exception of #3, which is often skipped or glossed over. The "no lack of hydrocarbons" argument espoused by Huber pays lip service to the checklist but really ignores them—after all, *we will never run out of energy*. A similar argument is made by the International Energy Agency (IEA)—see below.

Turning to [Vaclav Smil](#), the Cornucopian rejection of PFC Energy and others concerned about crude oil depletion & production flows are presented in his [Peak Oil: A Catastrophist Cult and Complex Realities](#) from World Watch 19: pp. 22-24. Smil is the author of [Energy at the Crossroads](#) among other works.



[Note: You will need to download Smil's pdf file and use Adobe Acrobat to read it.]

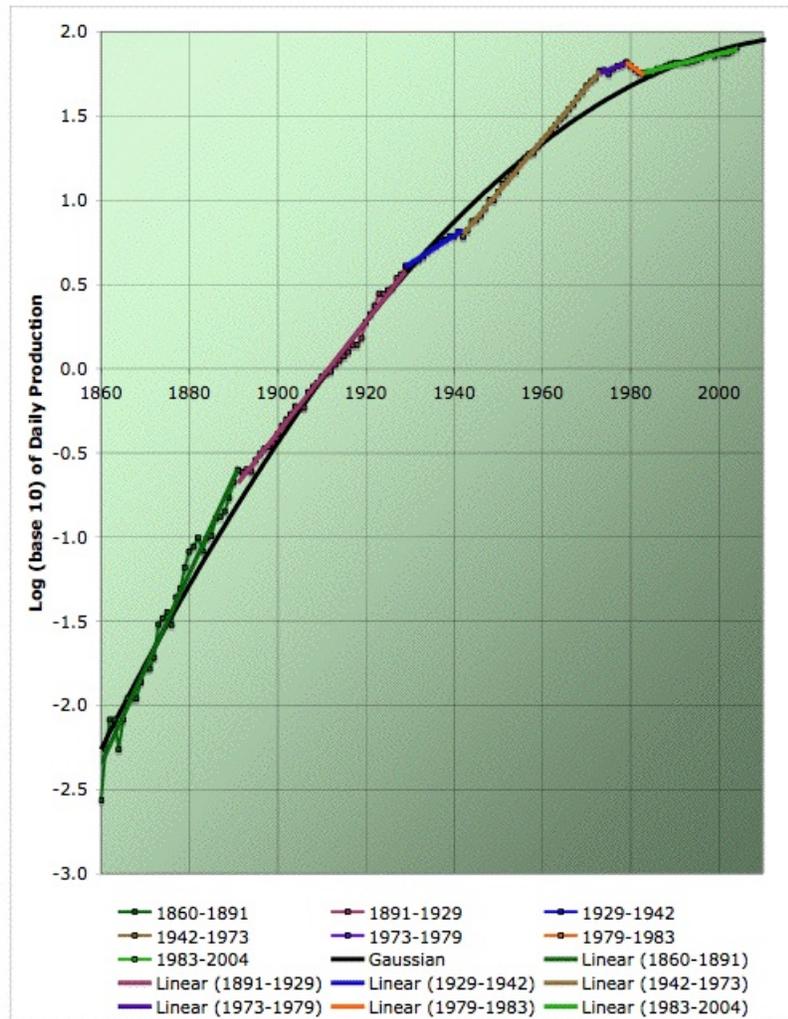
These conclusions [about the catastrophic end of industrial civilization] are based on interpretations that lack any nuanced understanding of the human quest for energy, disregard the role of prices, ignore any historical perspectives, and presuppose the end of human inventiveness and adaptability. I will raise just three key points aimed at dismantling the foundations of this new catastrophist cult. First, these preachings are just the latest installments in a long history of failed peak forecasts. Second, the peak-oil advocates argue that this time the circumstances are really different and that their forecasts will not fail—but in order to believe that, one has to ignore a multitude of facts and possibilities that readily counteract their claims. Third, and most importantly, there is no reason why even an early peak of global oil production should trigger any catastrophic events.

Smil hates predictions of any sort. He finds peak oil predictions particularly irksome. Commenting on M. King Hubbert's correct and therefore vexing forecast that the US lower-48 would peak in 1970 —minus Alaska!, as Smil points out—

This feat led the peak-oil groupies to consider Hubbert's Gaussian exhaustion curve

with the reverence reserved by the Biblical fundamentalists to Genesis. In reality, it is a simplistic "geology-only" model based on rigidly predetermined reserves and ignoring any innovative advances or price shifts.

If Smil wants a Gaussian, he should [get](#) one.



*Average annual oil production on a semilog plot with quadratic (ie Gaussian) fit in addition to piecewise exponentials. Click to enlarge. Believed to be all liquids, but excluding refinery gains.*

*Data sources: API, ASPO, and BP.*

**[Update by Dave Cohen on 08/28/06 at 12:29 PM EDT]** I wish to point out that in my role as *groupie* and member of a *cult*, the essential but unfilled social role is that of the *leader*. It boils down to this: Who to worship? There are many worthy candidates—so many, in fact, that I can not make up my mind.

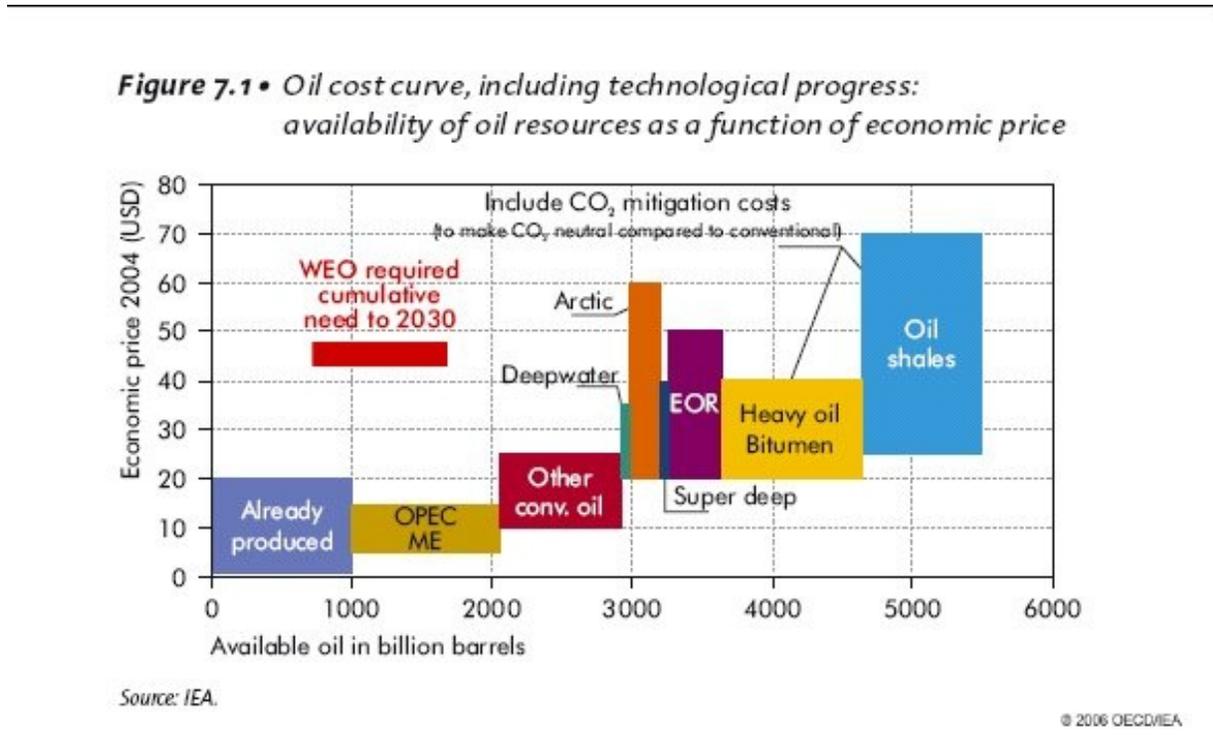
Smil's arguments are not dissimilar to those made by some economists and energy analysts like CERA or Michael Lynch. Please read the cited paper to get a flavor for the standard Cornucopian arguments, which include the effects of future oil demand & price or fuel substitutions—projecting the economic & technological past onto the future—and his doubts about whether the Earth has been thoroughly combed by petroleum geologists looking for fossil fuels.

### 3. Blinkered Economists

*The economists all think that if you show up at the cashier's cage with enough currency, God will put more oil in the ground*—Ken Deffeyes

Well, not *all* economists, Ken, but we know what you mean.

The Cornucopian economists discussed here are *blinkered*— a word meaning "subjective and limited, as in viewpoint or perception"—and does not refer to estimable observers like James Hamilton of [EconBrowser](#). There is no better place to begin than the International Energy Agency (IEA) and it's head [Claude Mandil](#) (right) who, strangely, was not trained as an economist. However, the figure just below indicates that trillions upon trillions of barrels of oil are recoverable solely as a function of price. Only sufficient investment is lacking to make the dream come true.



*IEA hydrocarbon resource recovery as a function of price — click to enlarge*

Growth is endless; technological progress is limitless. Factors like geology, spurious reserves additions like the OPEC revisions in the 1980s and the discoveries trend are ignored. The magic of the free market solves all problems, floats all boats. Conditions in the Arctic are still a little dicey for hydrocarbon E&P but the ice will melt off soon enough. Is anything more Cornucopian than this? The graph is from the 2005 [IEA report Resources to Reserves—Oil and Gas Technologies for the Energy Markets of the Future](#).

Not to be outdone, [The Economist](#) told us in the heady years of 1999 that we were [Drowning in Oil](#). Has the tune changed lately? Not much. In [Really Big Oil](#) (Aug 10th, 2006) one can learn that

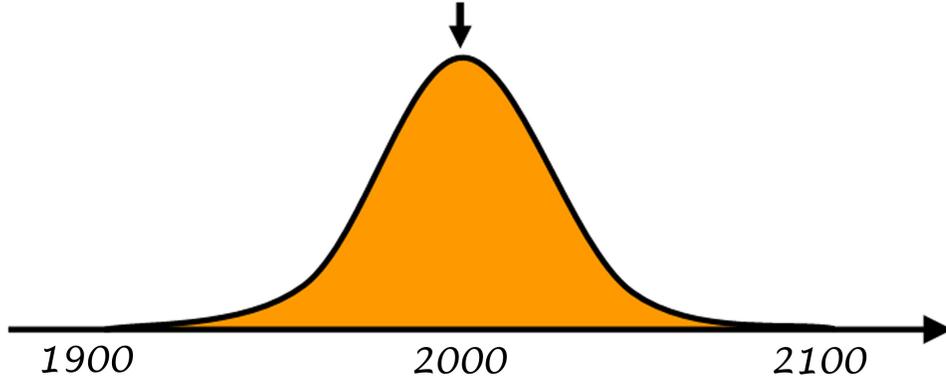
Saudi Aramco's proved reserves alone could keep the world supplied for several decades. But it is only exploiting ten of its 80 or so fields, so will be able to pump at the present rate for about 70 years even if it never discovers another drop of oil. In fact, Aramco and other NOCs are likely to find plenty more if they look, since their territory has not been very thoroughly explored. Only 2,000 wildcat wells have ever been dug in

the countries around the Gulf, according to Leonardo Maugeri, an Italian oilman, compared with more than 1m wells in the United States.

Almost all of you—TOD's new readers, veterans or important lurkers—you know who you are—will regard this as an unexpected revelation. 10 of 80 fields? Perhaps this refers to what may be the aptly named [Empty Quarter](#)? No one can say for sure—except the much esteemed & beloved Ali Al-Naimi, *The Economist* and it's quoted expert Leonardo Maugeri (Italy, ENI) who wrote [Oil: Never Cry Wolf--Why the Petroleum Age Is Far from over](#) for the journal *Science* in 2004. The whole point of peak oil theorists like TOD's [Stuart Staniford](#), of course, is that it's not the end of the oil supply, it's the middle.

# Herää !!!

Olemme tässä



## Öllyhuippu

*Telling Maugeri where we are  
I couldn't find one in Italian*

No story discussing Cornucopian economists would be complete without mentioning [Freakonomics](#) author Steven Levitt. Last year, responding to Peter Maass' excellent New York Times piece [The Breaking Point](#), Levitt [opined](#) that



What most of these doomsday scenarios have gotten wrong is the fundamental idea of economics: people respond to incentives. If the price of a good goes up, people demand less of it, the companies that make it figure out how to make more of it, and everyone tries to figure out how to produce substitutes for it. Add to that the march of technological innovation (like the green revolution, birth control, etc.). The end result: markets figure out how to deal with problems of supply and demand.

Unfortunately, the original blog post by Levitt is no longer available. At the time he admitted freely that he knew next to nothing about oil but that was not an impediment to understanding

I don't know much about world oil reserves. I'm not even necessarily arguing with their facts about how much the output from existing oil fields is going to decline, or that world demand for oil is increasing.

No comment is required but I will mention that I went to [The University of Chicago](#) where Levitt teaches and former home of the glorious Milton Friedman. That's the way they taught it then and it's apparently still the way they teach it now.

## Social Role of the Cornucopian

An excellent review of Cornucopian thinking is available in [Perilous Optimism](#). Outside of thinking, what's going on? Kurt Cobb has an insightful view of the [social role](#) of the optimist.

It's much easier to tell people what they want to hear than to tell them what they need to hear. This is the first and most important advantage a cornucopian thinker has when arguing before any audience. No one really wants to hear that the future may be filled with turbulent change and personal insecurity.

Cobb's observation is obvious and correct. At various times and with various people I have suggested a writing project—*The Idiot's Guide to Peak Oil* or something like that. Without exception, I have been told that this project is a non-starter. Few can tolerate the bad news and complex reality. The Cornucopian religious faith in positive lessons from history, technology and free markets obliterates the changed nature and complexity of the contemporary globalized world, thus bringing us "The Good News" of Jesus in secular form. One final story before we end.

Garrett Hardin addressed [Julian Simon's] claim in his book *The Ostrich Factor: Our Population Myopia*. He noted that when Albert Bartlett, a retired physicist of the University of Colorado, tried to test Simon's statement on a desk calculator, it flashed "Error", indicating that, multiplying steadily at 1 % per year for 7 billion years, the population would soon surpass his calculator's limit of  $9.99 \times 10^{99}$ . Bartlett's calculation assumed exponential population growth, with the population doubling every 43 years.

Error—does not compute.



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