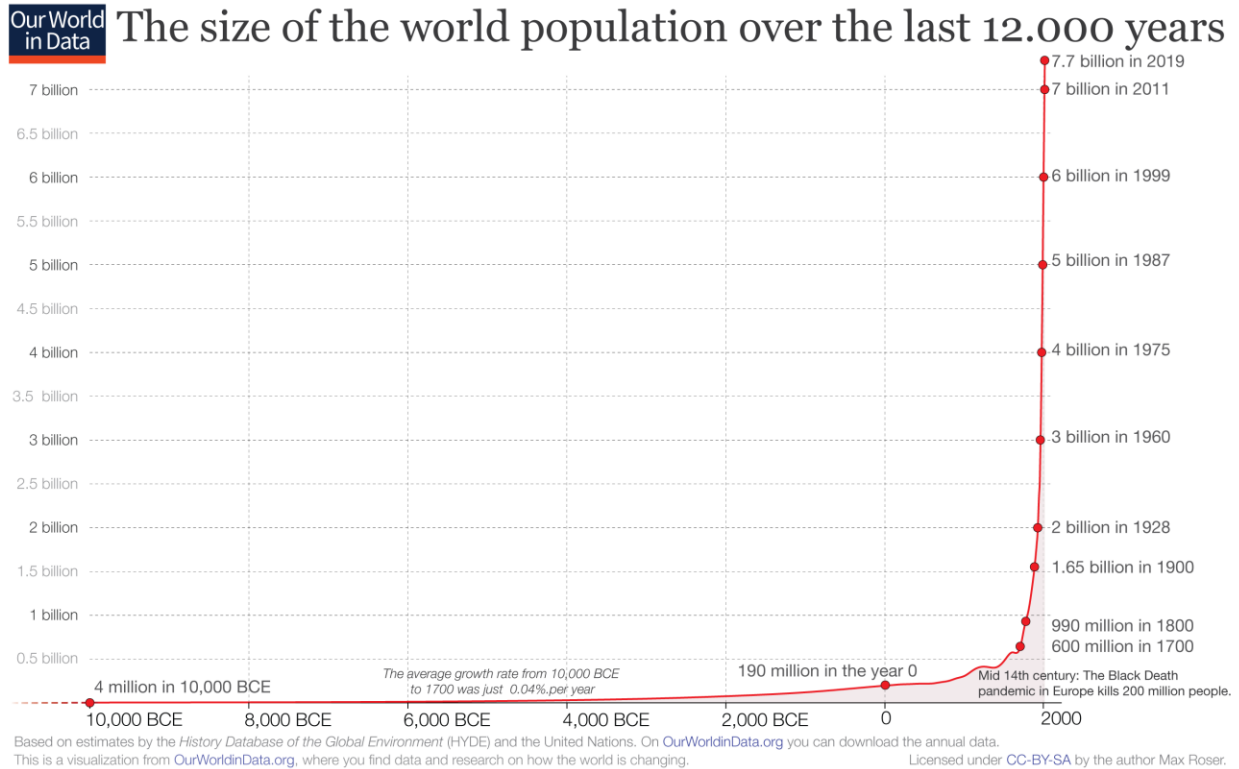


## TOPIC 36: THE FUTURE I

### I. Population

- a. There are now eight billion people on the planet. Are there too many people?



- i. Many people say yes. Some go as far as claiming humans are too dangerous to exist. The above graph is from the Voluntary Human Extinction Movement’s website (<http://vhemt.org/>). Their slogan is “May we live long and die out.” Yes, this is a real organization.
- ii. Less radical environmental groups advocate drastically reducing population and cite pollution, famine, and limits of natural resources as evidence that our current population is unsustainable. The earth has a “carrying capacity” that we are in danger of exceeding (or already have).
- b. Are they right? To answer that question we have to first tackle a bigger one: What’s “too many?”

## II. Malthusianism

- a. In Thomas Malthus' 1798 *An Essay on the Principle of Population*, Malthus argued that humanity was inevitably stuck in a terrible cycle: population grows geometrically but food production grows arithmetically thus mass famine followed population growth and then back up again.
  - i. Geometric means the growth is exponential, like herds of animals breeding. You can go from 10 to 50 in the same amount of time as it took to go from 2 to 10.
  - ii. Arithmetic means the growth is linear. More people leads to more food production, but there is only so much viable farmland and it takes time for crops to grow. These restraints meant that population would grow faster than food production.
  - iii. Take a look at that graph again and note that between 1700 and 1800, world population had grown more than 50 percent. While Malthus wouldn't have those exact figures at hand, it would've been obvious that there has been huge population growth. At the same time, the available farmland was not enough to feed this growing population.
  - iv. Malthus' essay was a warning: expect a famine soon.
- b. Malthus's theory made sense for the time he was writing. You can see it in the opening graph—human population grew at very modest levels for most of human history and there were indeed periods of mass famine.
- c. Unfortunately for Malthus, but fortunately for the rest of humanity, Malthus made his declaration at the dawn of the Industrial Revolution and the millennia-old pattern of stable population—of growth and contraction—was about to end and the mass starvation Malthus predicted never materialized.

## III. The economics of ideas

- a. Who is the greatest person who ever lived?
- b. Ideas are nonrivalrous, they grow as fast as people can think of them and they spread as fast as people can communicate
- c. Ideas change everything
  - i. Proper incentives encourage answers
  - ii. Which is why economists care less about if a problem has a solution and more about if there's an incentive to solve it.

## IV. The Ultimate Resource

- a. Markets are great institutions for solving problems, so much so that economist Julian Simon claims natural resources are *infinite*.

- i. Remember, prices measure scarcity: high prices imply the item is very scarce; low prices imply it is less scarce.
  - ii. A higher price creates an incentive to adapt (recall: a signal wrapped in an incentive).
    - 1. Find more sources, stretch what you have, create substitutes.
    - 2. Adaptations which were once not economical are now economical.
  - iii. The long run prices are decreasing even though population is increasing.<sup>1</sup>
  - iv. Since “finite” means “bounded” or “countable,” then the evidence suggests that resources are not finite. While no one denies the physical amount of, say, oil is finite, that physical amount doesn’t matter. In reality we don’t even know what it is. But in practice, for our purposes, resources are infinite.
- b. Hence the ultimate resource: ideas. By shifting the supply curve down, we get more of something at a cheaper price, a glorious combination!

---

<sup>1</sup> Even when prices notably increase, it’s due to a genuine improvement in the world economy. Contrary to doomsayers’ beliefs it’s usually demand, not supply, which drive any long run upward trend in prices. And even these are temporary.