

## **Malthus's theory**

In the 18th century an economist called **Thomas Robert Malthus** wrote an essay outlining his response to the problem. The work, entitled 'An Essay on the Principle of Population' (1798), set out Malthus's theory of population growth: a theory of how and why the size of the population would change.

Malthus thought that if the human population continued to grow, food production would not be able to keep up with demand and there would not be enough food to go around. The result, he warned, would be a terrible famine that would kill many people.

In ecological terms, Malthus was arguing that the human population was at risk of outgrowing its **carrying capacity** (the number of individuals that can be supported by a specific **habitat**). There are examples of this happening to particular populations of animals and insects, such as the **reindeer on St Matthew Island**.

Malthus reasoned that this disastrous outcome could only be avoided if the population stopped growing. He described two types of 'checks' that could stop population growth: a negative check that would cause a drop in the birth rate (e.g. increased use of contraceptives) and a positive check that would increase the death rate (e.g. disease or war). These checks, he argued, were more likely to take effect as the population got closer to its carrying capacity, either because governments would take steps to stop the population getting any bigger or because of increased competition and hardship within the population. This, Malthus thought, was what would save us from large-scale starvation.

But the population has not stopped growing. Since Malthus's lifetime the number of humans on the planet has continued to increase, and in 2011 the population reached **7 billion**. According to Malthus's theory, this should not have been possible. Where did he go wrong?

Malthus's theory was based on the assumption that the population would grow exponentially (1, 2, 4, 8, 16, 32) whereas food production would grow linearly (1, 2, 3, 4, 5), much more slowly. At the time when he was writing the Industrial Revolution had not yet arrived, and without developments such as pesticides and fertilisers the amount of food that could be produced per acre of land was much smaller than it is today.

Over the 250 years since Malthus published his essay, advances in/ technology and innovations in farming methods have allowed food production to grow quickly enough that we can now, in theory at least, provide sufficient food for the world's 7 billion inhabitants. Malthus did not account for these advances in his population theory, but another economist, Ester Boserup, did.

## **Malthus' Principle of Population**

In 1798, Malthus wrote *An Essay on the Principle of Population, as It Affects the Future Improvement of Society*. Malthus began with two "fixed laws of our nature." First, men and women cannot exist without food. Second, the "passion between the sexes" drives them to reproduce.

He explained that, if unchecked, people breed “geometrically” (1, 2, 4, 8, 16, etc.). But, he continued, the production of food can only increase “arithmetically” (1, 2, 3, 4, 5, etc.). “The natural inequality of the two powers of population and of [food] production in the earth,” he declared, “form the great difficulty that to me appears insurmountable [impossible to overcome].”

Malthus concluded: “I see no way by which man can escape from the weight of this law.” In other words, if people keep reproducing in an uncontrolled geometric manner, they will eventually be unable to produce enough food for themselves. The future, Malthus argued, pointed not to endless improvement for humanity, but to famine and starvation.

Malthus claimed that, if unchecked, the population of a nation or even the world would double every 25 years. He got this idea from Benjamin Franklin, who had estimated that 1 million American colonists, living in an abundant and healthy environment, would double to 2 million in 25 years. Malthus applied this doubling rule to Britain, with a population he estimated at 7 million. He calculated that in 25 years Britain’s population would reach 14 million, but food production would keep up. In another 25 years, the population would redouble to 28 million. Food production, however, increasing at the slower arithmetic rate, would only feed 21 million. Malthus recognized that his doubling rule would only apply in situations of continuous uncontrolled childbirth.

Malthus noted that the English poor added to their own misery when they married early and had too many children during good times. These children grew up to create an oversupply of workers and a drop in wages. Meanwhile, the population increase caused by their large numbers stressed food production and caused higher prices. The result, said Malthus, was hunger and a rise in child mortality (death).

Malthus argued that these conditions forced the poor to marry later and have fewer children, which brought the population and food supply back into balance. But as soon as things got better, the poor produced greater numbers of children again, and the whole cycle started again.

Malthus contended that the only way to avoid mass starvation in the future was to check population growth to keep it equal to food production. He declared, “The superior power of population cannot be checked without producing misery and vice.” By “misery and vice,” he meant starvation, plagues, war, contraception, abortion, and the killing of infants, none of which he wanted to see happen.

Was there nothing other than “misery and vice” to control population? In his book-length 1803 revision, Malthus called for “moral restraint,” which included chastity until marriage, delayed marriage, and having fewer children (he had five).

Malthus did not believe “moral restraint” would work, especially among the poor. Even so, he supported a public tax-supported primary school system to lift the lower classes out of poverty and irresponsible breeding and into middle class self-control and responsibility.

But Malthus vehemently opposed giving government relief, such as food and shelter, to the impoverished. Making the poor comfortable, he argued, only encouraged them to have bigger families, which increased their numbers and continued their misery.

## **Boserup's theory**

Ester Boserup (1910–1999) was a Danish economist who specialised in the economics and development of agriculture. She worked for the United Nations and her experience working in low- and middle-income countries such as India helped to shape her theory of the relationship between human population growth and food production.

In her work 'The Conditions of Agricultural Growth: The economics of agrarian change under population pressure' (1965), Boserup challenged Malthus's conclusion that the size of the human population is limited by the amount of food it can produce. She suggested that food production can, and will, increase to match the needs of the population.

Drawing on her knowledge of farming in the developing world, where populations were growing quickly, Boserup argued that the threat of starvation and the challenge of feeding more mouths motivates people to improve their farming methods and invent new technologies in order to produce more food.

Boserup described this change as 'agricultural intensification'. For example, a farmer who has four fields to produce food for his family might grow crops in three of the fields, but leave the fourth field empty as the ground is dry and his crop will not grow there. However if the farmer has two more children, the pressure to produce more food might drive him to build irrigation canals to bring water to the fourth field or to buy a different type of seed that will grow in drier ground. He would change the way he farms to make sure that he has enough food to support a larger family.

## **Malthus Debunked**

After Malthus first published his essay in 1798, a storm of criticism erupted. The optimists called his vision of unavoidable mass starvation a "doctrine of despair." Others condemned his call for abolishing England's Poor Laws, which provided relief for the starving homeless. The historian Thomas Carlyle dubbed Malthus' new subject of economics the "dismal science."

Malthus and others who came to his defense, like economist David Ricardo, became the pessimists in the debate over the future of humanity. Over time, however, Malthus became slightly more hopeful about the future. He admitted the possibility of "gradual and progressive improvement in human society." When he died in 1834, the population of the world stood at about 1 billion people.

Ironically, during Malthus' lifetime, England was radically changing. The Industrial Revolution and the use of machinery in agriculture greatly multiplied what each factory and farm worker could produce. Malthus did not foresee the possibility of opening up vast new tracks of land for cultivation by steam-powered farm machines. Now, fewer farmers could produce more food than ever before. Thus, Malthus' "arithmetic" increase in food production seemed far too limited.

Later on, something unexpected happened as the Industrial Revolution modernized Europe. No longer needed for agricultural labor, people moved to industrial cities. Here they discovered less need for large families than on the farm where children helped with the planting, harvests, and other

chores. Also, since health conditions improved, child mortality declined. People discovered they did not have to have large families to compensate for some of their children dying young.

By 1900, in many parts of Europe, the fertility rate (average number of children born per woman) began to go down. This meant smaller families. This check on population growth was one Malthus never imagined.

Demographers, who study population trends, have discovered other reasons why families get smaller when a society modernizes. As poor women from farm regions become better educated, they tend to seek work outside the home, delay marriage, and have fewer children when they do marry.

<b>Year</b>	<b>World</b>	<b>Developing Countries</b>	<b>Europe</b>	<b>United States</b>
1950	2.5 billion	1.71 billion	547 million	158 million
2000	6.1 billion	4.92 billion	726 million	288 million
2010	6.9 billion	5.67 billion	732 million	318 million
2050	9.1 billion	7.87 billion	691 million	404 million

Source: Adapted from United Nations Population Division. World Population Prospects: The 2008 Revision Population Database. URL: <http://esa.un.org/UNPP>

In countries that have undergone modernization, married women often choose to have a job and a family, but with only one or two children. Many parents also choose between having a large family that may cause financial struggle or a having a small family that may allow a more comfortable lifestyle.

Thus, as a nation industrializes and its people become better educated, the fertility rate seems to drop, which means smaller families and a slowing of population growth. Economists call this the “demographic transition.”

By the 20th century, improvements in agriculture had sped up food production and the “demographic transition” had slowed down population growth. The old debate between the optimists and the pessimists appeared to be over. The optimists had won, and Malthus’ *Principle of Population* seemed dead.

<https://bigpictureeducation.com/malthus-vs-boserup>

<http://www.crf-usa.org/bill-of-rights-in-action/bria-26-2-the-debate-over-world-population-was-malthus-right.html>

Circle the Group you are starting out as:

Pro Malthus

Anti-Malthus

Create four points that summarizes your position

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What are arguments you will make in support of your position? (at least 2)

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Circle the Group you are doing second out as:

Pro Malthus

Anti-Malthus

Create four points that summarizes your position

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What are arguments you will make in support of your position? (at least 2)

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