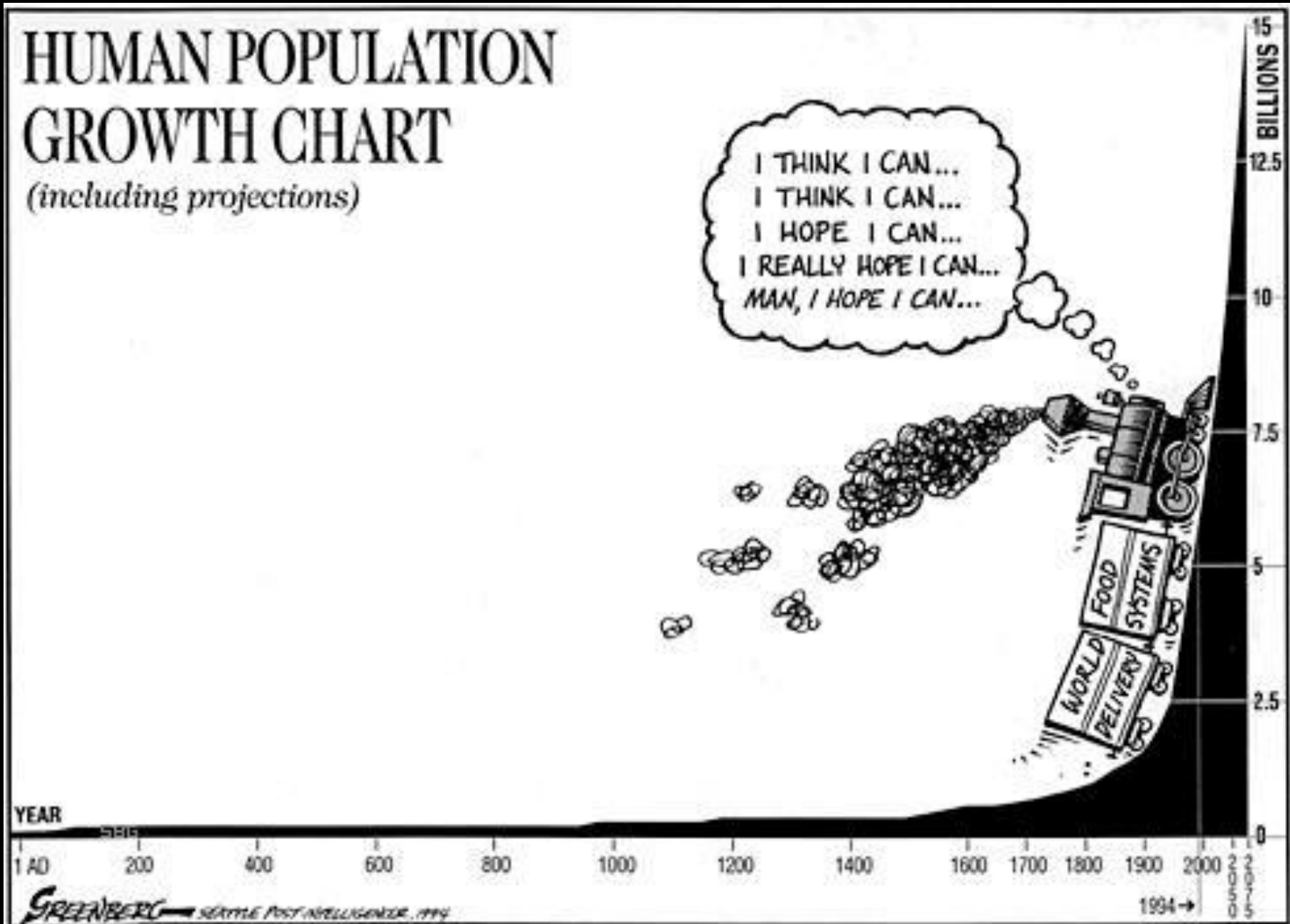


Theories for the relationship between population and resources



1) Explain the author's point of view



Pessimistic Approaches

- Thomas Malthus (1776-1834)
- Wrote *“An essay on the Principle of Population”* in 1798 which described a forthcoming population catastrophe
- 1798 - World population was roughly 800 million
- 2018 - World population has now grown to 7.6 billion



Malthus' core principles

- Food is essential for life
- Population increases faster than food supply
- Therefore Malthus predicted that population would grow until it reached the limit of food supply, then there would be widespread poverty and famine.

Malthus recognized that:

Population, if left unchecked, will grow **geometrically**:

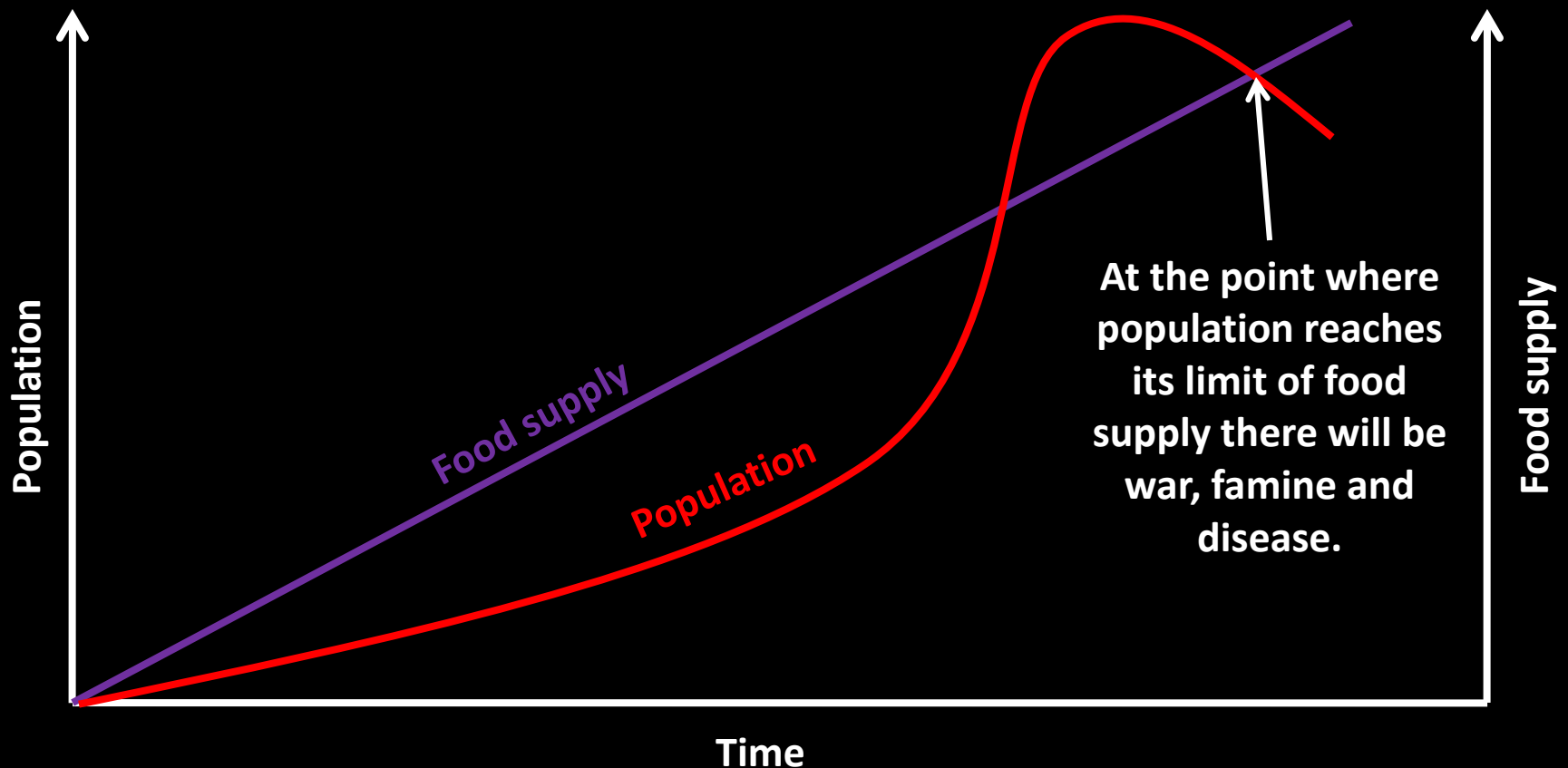
1, 2, **4, 8, 16, 32**

Whereas **food supply** increases **arithmetically** as the amount of land is finite:

1, 2, 3, 4, 5, 6

And therefore he said ...

... there would be a Malthusian catastrophe:



Malthusian Checks

- Malthus stated that once population reached this point, checks would come into play to readdress the balance between population and resources:
 1. positive checks – increased levels of misery (war, famine and disease)
 2. preventative checks – celibacy, later marriage etc

Was Malthus right?

- Evidence to support Malthus:
 - There has been a population explosion
 - Repeated wars & famines in Sahel region of Africa suggest population growth has outstripped food supply
 - FAO says that more than 800m people are chronically malnourished
 - UN say that by 2050 4.2billion people will be living in areas that cannot provide enough water for basic needs.



The Sahel region of Africa

But ...

- Critics say that Malthus did not allow for:
 - the development of new technology
 - The opening of new land for cultivation (mainly in the LEDW – Less Developed World)
 - The development of irrigation systems which have allowed for increased yields
 - The Green Revolution – widespread introduction of high-yield crop varieties, pesticides, fertilizers etc
 - The slow down in population growth as countries develop economically and progress to the latter stages of the DTM - Demographic Transition Model.

Neo-Malthusians

- Neo = new
- Accelerated population growth in LEDCs since the 1950s renewed Malthusian fears
- 1972, The Club of Rome published “*Limits to Growth Model*”

Club of Rome – basic conclusion

- If present growth trends continue, and if associated industrialization, pollution, food production and resource depletion continue unchanged, the limits to growth on this planet will be reached some time in the next one hundred years.
- The most probable result being a sudden & uncontrollable decline in population and industrial capacity.

Is the Club of Rome right?

- Don't panic yet!
- Doesn't take into account the ability of humans to respond to situations and innovate
- Human responses have changed e.g. alternative energy, HYV – High Yield Variety seeds sent to Africa

A more optimistic approach

- Ester Boserup (1910-1999)
- Wrote *“The Conditions of Agricultural Growth”* in 1965
- Opposite to Malthus
- People have resources of knowledge and technology to increase food supply as necessary



Boserup's main points

- Environments have limits that restrict population
- But these limits can be changed using technologies
- Population growth is the trigger for innovation to allow food supply to increase
- e.g. irrigation, weeding, crop intensification, better seed quality, tools, techniques etc

Was Boserup right?

- Evidence which supports Boserup:
 - Increasing intensity of shifting cultivation
 - Move from 'slash and burn' practices to using irrigation in rural areas with higher population densities
 - The Green Revolution – widespread introduction of high-yielding varieties, pesticides etc
 - Hugely increased yields allowed more people to be fed
 - GMOs – Genetically Modified Organisms

Was Boserup right?

- Boserup admits that overpopulation can lead to unsuitable farming practices which may degrade the land
- E.g. population pressure as one of the reasons for desertification in the Sahel region

What Do You Think?