Why did Malthus get it wrong?

In 1798 a sum said people would outrun food. Two ratios, the Malthusian trap, Ricardo's rent of land, the two things the forecast missed, and what was true before and after 1800.

1 The people

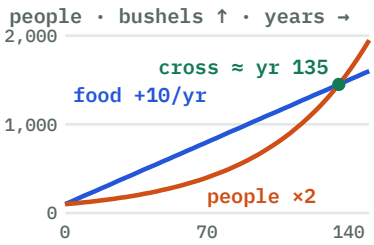
Malthus · Ricardo

- **Thomas Malthus** · English clergyman (priest) · `1766–1834` · An Essay on the Principle of Population (**1798**) → reply to Godwin (English writer), Condorcet (French thinker) → society improving without limit
- **David Ricardo** · English stockbroker and member of Parliament · `1772–1823` · Principles of Political Economy and Taxation (**1817**)
- Their question → if better-fed families have more children, can a country ever escape being poor? who gets the harvest when land is scarce?

2 The sum

multiply vs add

- Essay, ch. 1: "Population, when unchecked [nothing holding it back], increases in a **geometrical** ratio. Subsistence [food] increases only in an **arithmetical** ratio."
- Geometrical = multiplies `1, 2, 4, 8` · arithmetical = adds `1, 2, 3, 4` · ch. 2: "doubling itself every twenty-five years" → 100 years = **×16**
- **Rule of 70**: doubling time ≈ `70 ÷ rate` (Macro 10) · Coralia: 100 people at 2% → **35** years · food (bushel = big basket of grain, feeds 1 person 1 yr) 100 + 10/yr → yr 70: 400 vs 800 · yr 140: **1,600 vs 1,500** → lines have crossed (≈ yr 135)
- Practice, Palmera: 200 at 1% → 70 yrs · food 300 + 4/yr → yr 140: 800 vs 860 · yr 210: **1,600 vs 1,140** → slower rate only delays



3 The trap

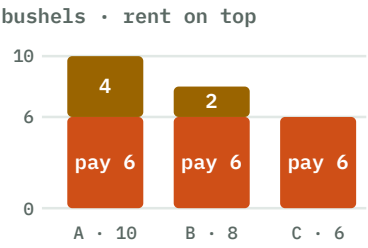
Malthusian

- **Malthusian trap** = extra output eaten up by extra people → income per person cannot keep rising
- Good harvest → better fed → more children born and surviving → more mouths per bushel → food per person falls back ↻ · checks: hunger, disease, war
- "Malthusian" = any gloomy forecast on people and food → **added later by others** · Malthus revised the Essay several times; the sum is from the 1st edition (1798)

4 Rent

Ricardo · land

- Principles, ch. 2: "**Rent** is that portion of the produce of the earth, which is paid to the landlord for the use of the original and indestructible powers of the soil"
- Best land first, then worse (**diminishing returns**, Micro 5) · the **worst field in use** sets the farmer's pay · rest = rent to the owner
- Coralia: fields 10 · 8 · 6 → pay **6** · rents `4 · 2 · 0` · farmers compete for field A → the extra 4 goes to its owner
- Practice: 12 · 9 · 7 · 5, need 28 → 3 fields, pay **7**, rents 5 · 2 · 0 · field D farmed → pay 5, A's rent **7** ⇒ more people → landlords gain



5 What happened

two misses

BEFORE 1800 the trap held	AFTER 1800 both lines moved
income per person: no lasting rise for centuries (Gregory Clark, Scottish-born economist, A Farewell to Alms, 2007) · output gains → more mouths · about **1 billion** people around 1800	**Farms**: UK wheat **1.3** → **8.6** tons/hectare (1805 → 2022) ≈ ×7 · hectare = square 100 m × 100 m · 10 ha: 13 → 86 t **Families**: English births fall from the late **1870s** (demographic transition, Development 3) · **8 billion** people, Nov 2022 (United Nations)

6 So what?

what survived

- `FOR` for centuries every gain became more people, not richer people · `AGAINST` people respond to prices and ideas: yields rose, families shrank
- Lasted: Ricardo's **rent** → city land costs more where plots are better placed (Finance 10) · his **comparative advantage** (each makes what it gives up least to make, trades the rest → both gain) → Trade 1
- Limits today (land, water, climate)? some: limits will bind at last · others: yields and smaller families beat every forecast so far → Lesson 10
- **Timeline of ideas** · 1776 · Smith · prices coordinate strangers → **1798–1817 · Malthus and Ricardo · land is limited, people are not: the trap and the rent**

Watch out: Malthus's arithmetic was fine; his two ratios were not laws · "right about the past, wrong about the future" · rent ≠ the farmer's pay: it goes to the owner of the soil · the worst field, not the best, sets the pay