Who invented supply and demand?

Water is vital and cheap, a diamond useless and expensive. Between 1871 and 1874 three men in three countries explained why; Walras linked every market to every other, and Marshall drew the picture of your lessons in 1890.

1 The puzzle

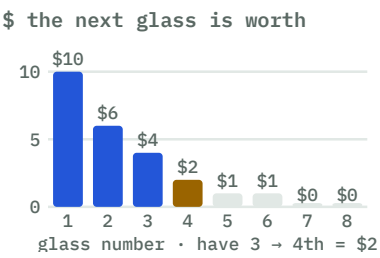
water · diamonds

- **Adam Smith** (Lesson 1) · Wealth of Nations, **1776**, Book I, ch. 4: "Nothing is more useful than water; but it will purchase scarce any thing" (= buys almost nothing) · a diamond "has scarce any value in use" (= almost no use), yet buys a great deal
- Water → vital, **cheap** · diamond → useless, **expensive** → why? Smith: no answer · Ricardo, Marx → value = work (Lesson 3)

2 The last unit

marginal value

- **Marginal value** = what **one more** unit is worth to you, given what you already have
- Coralia, hot day · next glass: `$10 · $6 · $4 · $2 · $1 · $1 · $0…` → have 3 → 4th worth **$2** = most you pay · have 10 → 11th worth **$0**
- Price follows the **last** unit, not the total ⇒ water plentiful → last glass ≈ $0 · diamonds rare → last one still worth a lot
- Practice · pizza: `$6 · $5 · $4 · $3 · $1 · $0` · price $2 → buy while worth > price → **4** · worth `6+5+4+3 = $18`, pay `4 × 2 = $8`



3 The revolution

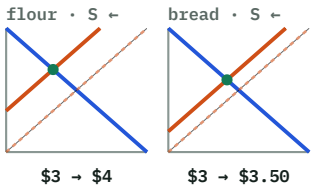
1871–1874

- **William Stanley Jevons** · English · `1835–1882` · Manchester · The Theory of Political Economy, **1871**
- **Carl Menger** · Austrian · `1840–1921` · Vienna · Principles of Economics, **1871**
- **Léon Walras** · French · `1834–1910` · professor in Lausanne, Switzerland · Elements of Pure Economics, **1874**
- Three countries, mostly apart → same idea: price follows what one more unit is worth to the **buyer**, not the hours of work in it = **marginal revolution** · buyer counts as much as maker

4 Walras

every market at once

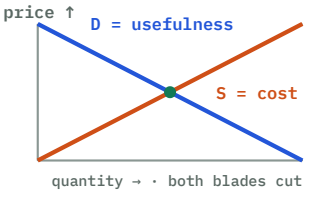
- Coralia · drought → flour supply ← → `$3 → $4` → baking costs more → bread supply ← → `$3 → $3.50` ⇒ one shock spreads
- Economy = thousands of **linked markets** (flour, bread, ovens, bakers' wages) → one set of prices that clears all at once? → **general equilibrium** = every market clears (buyers want = sellers offer) at the same time
- **Tâtonnement** (French, "groping") → prices called · raised where shortage · cut where left over · called again ↻ · "Walrasian auctioneer" (auctioneer = price caller at a sale) = **later** economists' picture · **Walrasia** = the island where every market clears
- Practice · big harvest: flour supply → `$3 → $2` (80 sacks) → bread `$3 → $2.50` · drought → fewer loaves → fewer bakers (a third market)



5 Marshall

the scissors

- **Alfred Marshall** · English · `1842–1924` · Cambridge professor 1885–1908 · Principles of Economics, **1890** → textbook of a generation · quantity along the bottom, price up the side
- Book V, ch. 3: "We might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or cost of production." · utility = usefulness
- ⇒ price = **both** blades: usefulness (buyers, demand) + cost (sellers, supply) · Book III, ch. 4: "The elasticity of wants" = how strongly buyers react to a price (Micro 3)
- Who drew the cross first? → **Cournot** (French mathematician) demand curve **1838** → **Rau** (German economist) both lines **1841** (Jenkin again 1870) → Marshall: the standard, **1890**
- Practice · festival: buyers +20 loaves at every price, costs same → at $3: `80 − 60 = 20` short → **$3.50** (70 = 70) ⇒ buyers' blade cut



6 So what?

what survived

- FOR marginal value, elasticity, the textbook cross → all from these years, still explain everyday prices · AGAINST the pictures assume prices move until markets clear → how fast, and always? → long argued
- Argued later → does a whole economy ever reach general equilibrium? → Lesson 5: Keynes, Marshall's student at Cambridge → a country can sit with workers idle, no price fixing it
- **Timeline of ideas** · 1776 · Smith · prices coordinate strangers → 1798–1817 · Malthus and Ricardo · land is limited, people are not → 1867 · Marx · profit comes from unpaid work (he said) →

1871–1890 · Jevons, Menger, Walras, Marshall · value is the last unit, and every market touches every other

Watch out: price follows the **last** unit, not the total or the first · buy while a unit is worth **more** than its price · a shock in one market moves the **supply** of the next (flour → bread), not its demand · Walras did not draw the first cross (Rau, 1841)