Precursors to the Industrial Revolution

I. Agrarian Revolution

II. Population Explosion

(one thing leads to another!)

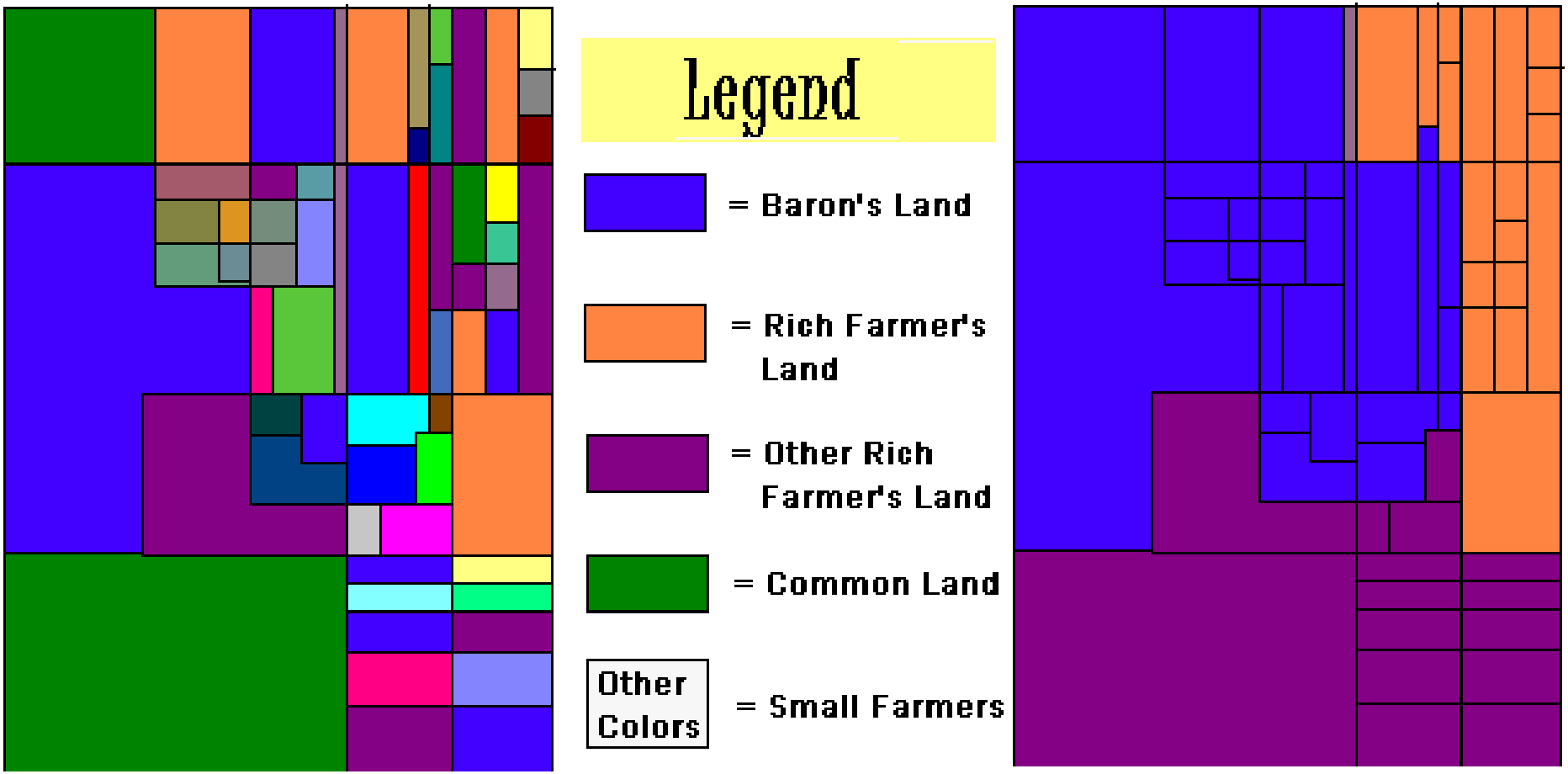
The Agrarian Revolution (late 17th – 18th C)

- More complex systems of crop rotation → more food → more people
- Grain crops alt. with nitro-storing crops
- **Townshend** – Turnips & crop rotation
- **Tull** – Seed Drill
- Farming more profitable on large pieces of land
  - **Enclosure movement** → end of common land use thus end of independence of rural poor who rely on them

  (see next slide!)
- England and the low countries lead the Ag Rev (drain Fen land)
- By 1815 land in UK is concentrated among a minority of landlords who rent to farmers→ landless rural proletariat

Before and After Enclosure

(fromhttp://www.cssd.ab.ca/tech/social/tut9/lesson_2.htm



Changes in Science / Farming → Population Explosion

- Until approx 1700 Europe's pop. kept low by famine, war & disease
- Plague disappears → fewer deaths (Asiatic brown rat replaces the black rat)
- Improved sanitation → better public health
- More food → more survival

Why Britain?

Britain has P^2EARS

P^2 – People & Peace

E - Enclosure Acts → farmers migrating to cities looking for work in factories

A – Agrarian Revolution Innovations

R – Resources: Rivers for water power (early mills)/ transport – later canals, Coal (fuel) & Iron (for machines / railroads)

S – So Many Colonies! →raw materials / export markets

Other Reasons

- Small country → easy transport
- Govt. laws protect private property
- Strong navy & merchant fleet b/c of American colonies

Advances in Textiles → more products / cheap products

Each invention creates a need for the next invention.

- **First - practice of <u>Domestic System</u> to get around guild law**
- **Flying shuttle**
- **Spinning Jenny**
- **Water Frame**
- **Crompton's Mule**
- **Cartwright's Power Loom 1787 → weaving can catch up with spinning**
- **Eli Whitney's Cotton Gin in US**

- The Urban Simulation

Factories become necessary

By mid-1820's "domestic system" can no longer compete with large machinery.

- People → large buildings that house machines
- Rise of Factories by rivers & streams

“Necessity is the Mother of Invention”

Problem 1– sometimes water freezes → no power

Problem 2 – lumber shortage – need heat for forges and homes → use of coal & deeper mining

Inventions...

- Newcomen’s engine (steam pump) – used to pump water out of mines
- James Watt –1760’s improves steam engine → used to power machines - year round production anywhere

Impacts!

I. Growth of cities
II. Middle Class expands & changes in nature
III. Working Class Conditions Worsen
IV. Massive shift in the common Lifestyle and Marriage

Manchester

(a case study)

Manchester in 1750

“From this filthy sewer pure gold flows”

– Alexis de Tocqueville on Manchester

- centered around factories
- ths outnumber births there
- x of people from countryside keep #’s high
- ement housing springs up
- ease & pollution in streets
- city planning - often no government or police
- ang up too fast – think internet problems!)