



Materials: The Stuff of Things

What forces drive technological development?

- Power and Conquest
- Survival
- Financial Gain
- La Dolce Vita
(a.k.a. The Good Life)

Human History is Reckoned in Terms of...

Materials!

- ◆ Stone Age
- ◆ Bronze Age
- ◆ Iron Age
- ◆ Polyester Age (70's)

Properties of Stone

- Plentiful**
- Hard**
- Durable**
- But not easily shaped**

Properties of Bronze

- Not-so-plentiful**
- Man-made**
- Durable, but not very hard**
- Easily shaped**

Properties of Iron

- Does not naturally occur in its metallic form**
- Requires high temperatures**
- Unrefined, it is brittle**
- Refined as steel, it is tough**
- Durable and hard**
- Easily shaped**

**Where Were
Settlements Located
Prior to the 19th
Century?**

Why?

**Technological
Breakthroughs**

- Portable Power**
Steam Engines
- Inexpensive Steel**
Steam Boilers & Rails
- High Speed Steel**
Machine Tools

**Technological
Breakthroughs**

- Electric Motors**
A new form of power
- The Electrical Grid**
Wide area distribution of power
Commercial and residential users
- Consumer Products**
Modern conveniences

Technological Breakthroughs

Population Growth

Agriculture & Sanitation

Energy Requirements

Massive needs

GDP \propto energy usage

Environmental Pollution
