



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**