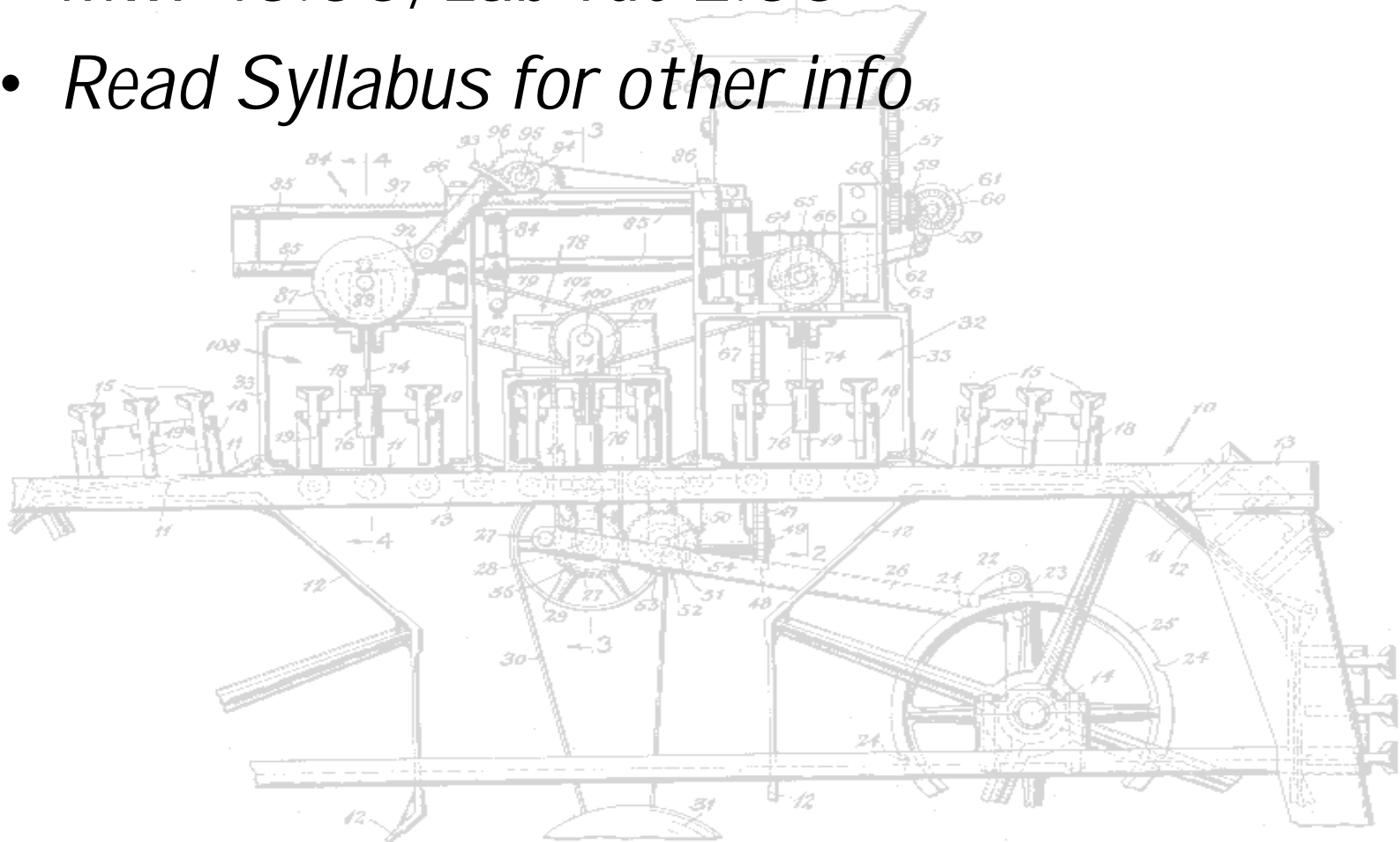

ENGR480 Manufacturing Systems

Spring 2009



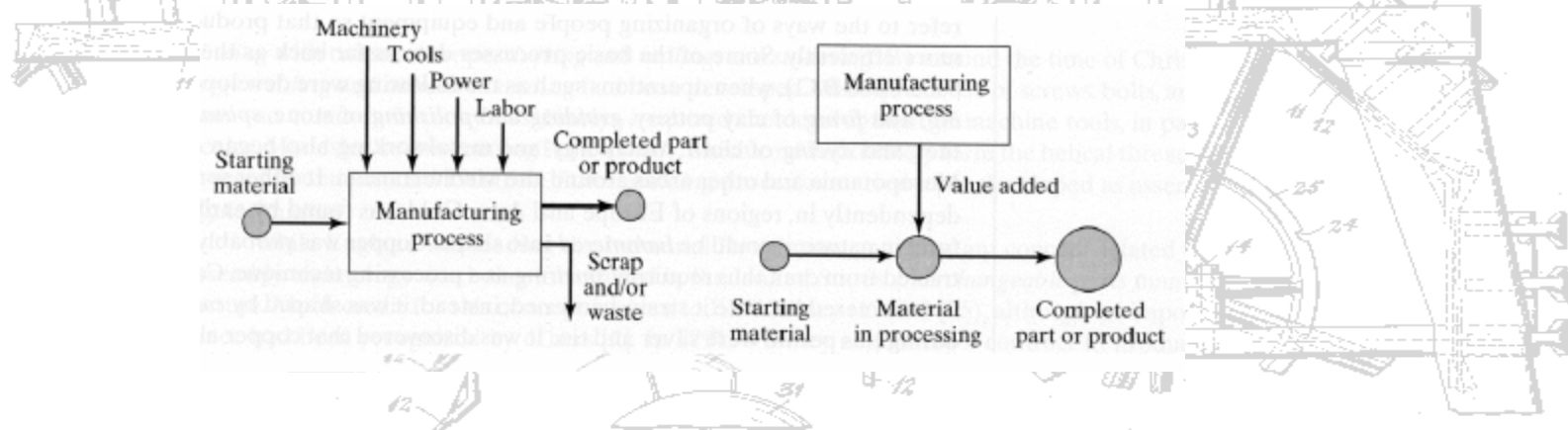
ENGR480 Manufacturing Systems

- *MWF 10:00, Lab Tue 2:00*
- *Read Syllabus for other info*



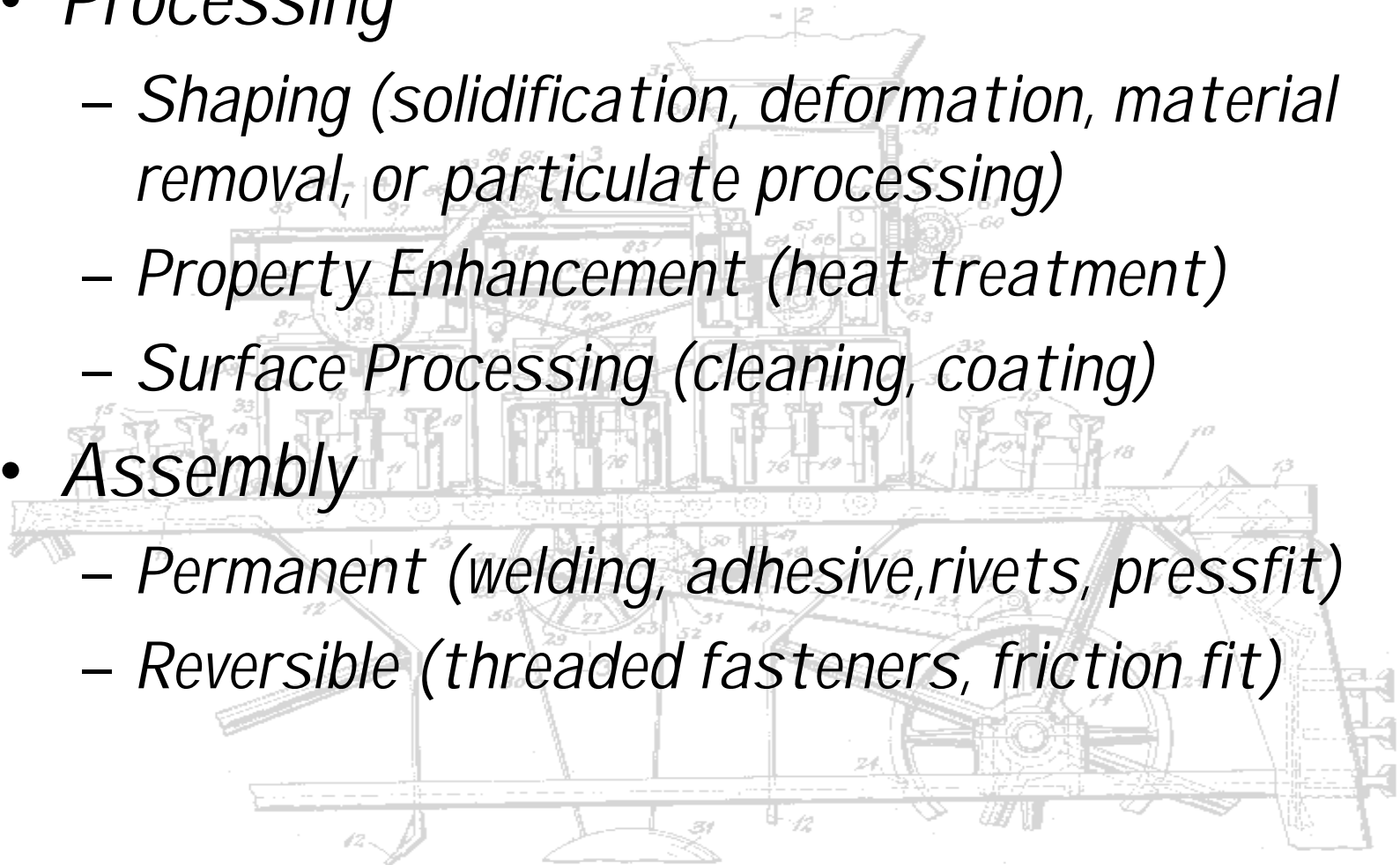
What is Manufacturing?

- *Man-u-fac-ture: To make or process a raw material into a finished product, esp. by means of a large-scale industrial operation.*
- *From Latin manu + factus: by hand, to make*



Manufacturing Operations

- *Processing*
 - *Shaping (solidification, deformation, material removal, or particulate processing)*
 - *Property Enhancement (heat treatment)*
 - *Surface Processing (cleaning, coating)*
- *Assembly*
 - *Permanent (welding, adhesive, rivets, pressfit)*
 - *Reversible (threaded fasteners, friction fit)*

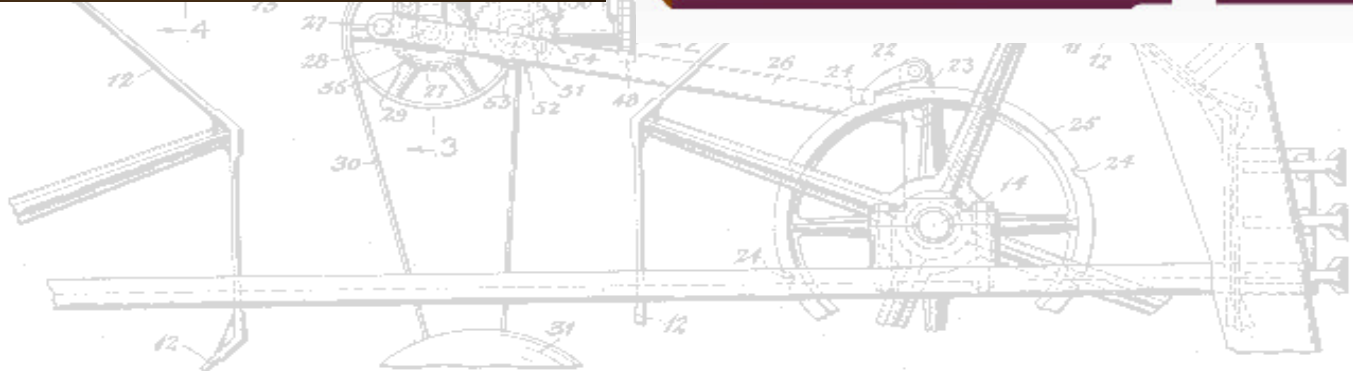
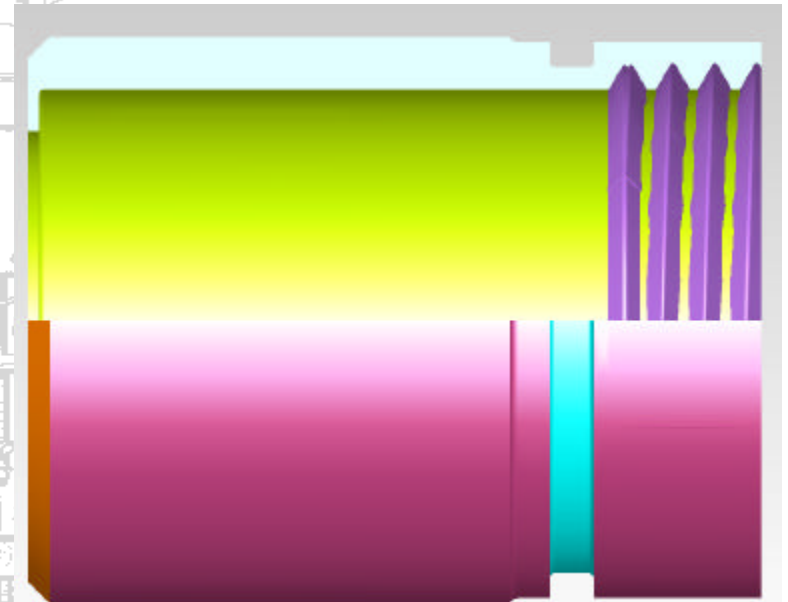
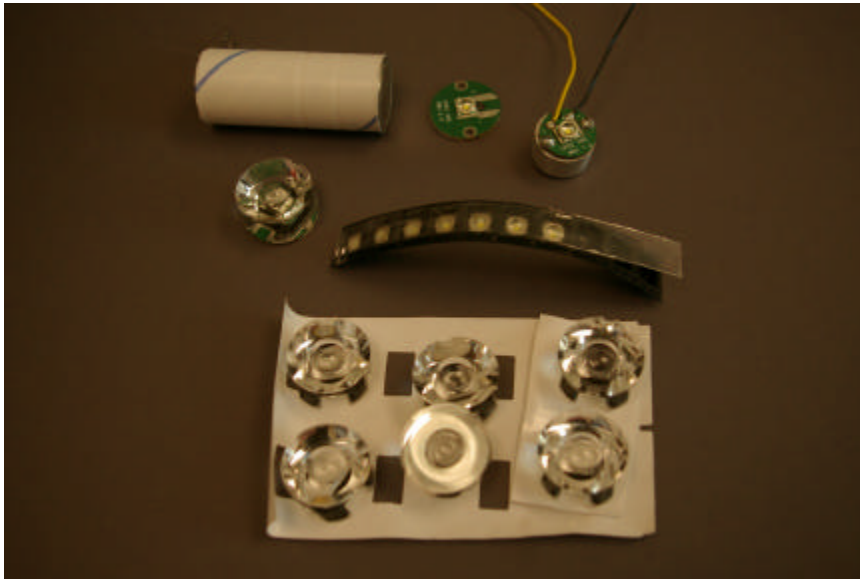


Short History of Manufacturing

- 3000BC: Egyptian and Korean sand casting
- 1000BC: Iron age began
- 26BC: Egyptian lathe turning
- 1770AD: Steam engine, industrial revolution
- 1801: Interchangeable parts
- 1911: F.W.Taylor's "Principles of Scientific Management"
- 1913: Henry Ford's mass production
- 1965: Toyota Production System, single-piece flow
- 2000: Virtual corporations, global manufacturing

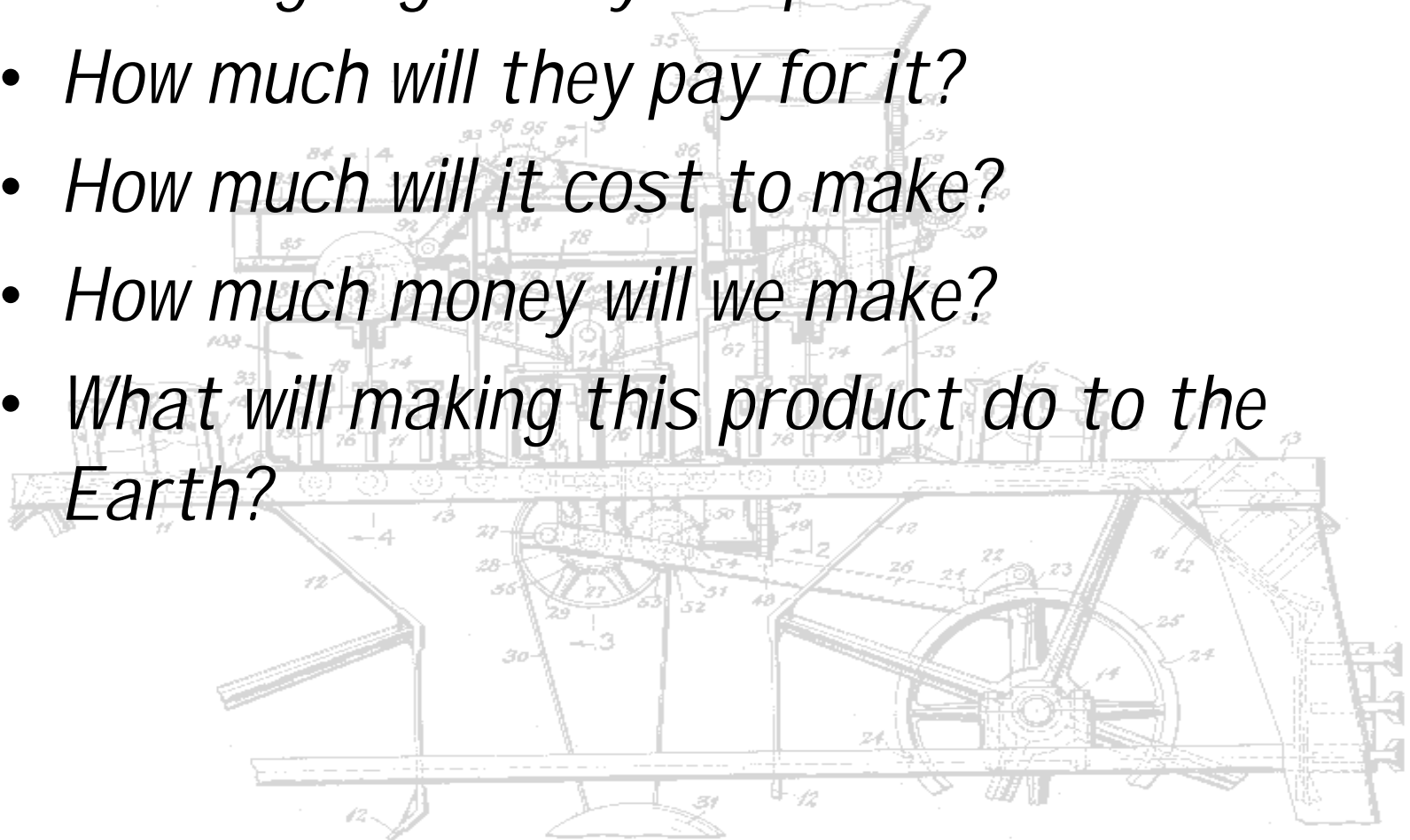
Our Manufacturing Company

FlashOfGenius LLC



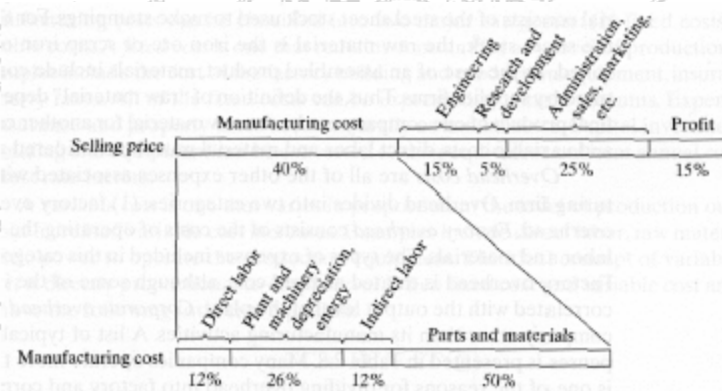
Some Questions a Manufacturer Needs Answered

- *Who is going to buy our product?*
- *How much will they pay for it?*
- *How much will it cost to make?*
- *How much money will we make?*
- *What will making this product do to the Earth?*



The Next Questions

- *Will we make 1 or 1,000,000 units?*
- *Should this product be durable or disposable?*
- *What will be our production schedule?*
- *How long can development take?*
- *How much should we invest in production efficiency for this product?*



Case History: Forge Industrial

- *Cement and sand bagging plant*
- *Manual palletizing:*
 - *120 pallets/day, 56 bags/pallet, 60 lb/bag = 400,000 lb/day*
 - *Crew of 4 (work release), changed twice/day*
- *Automatic palletizer*
 - *200 pallets/day
(672,000 lb/day, 68% increase)*

