



Military Technologies

Weapons

- Primarily progressive extensions of one's reach**
- Began as simple tools**
 - ◆ Wooden clubs, spears, stone blades, missiles, etc..
- Multiple uses**

Three Basic Goals of All Military Efforts

Further—More Distance

Faster—Swifter Response

Fatter—Better Protected

Further

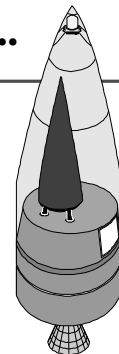
- Inches**
 - ◆ Clubs, knives, shields, sticks and stones
- Feet**
 - ◆ Swords, bayonets, spears, and rocks

And Further...

- Yards**
 - ◆ Bows & arrows, missiles, cannon, muskets, rifles
- Miles**
 - ◆ Artillery
 - ★ Fixed vs.. mobile
 - ◆ Rockets

And Still Further...

- Continents**
 - ◆ Bombers
 - ◆ Submarines
 - ◆ Intercontinental ballistic missiles
 - ★ MRVs & MIRVs



Faster—Weapons

- Muscle**
 - ◆ Man
 - ◆ Horse
 - ◆ Catapults

Faster—Weapons

- Simple Machines**
 - ◆ Longbows
 - ◆ Rams
 - ◆ Ladders

Faster—Weapons

- Stored Energy**
 - ◆ Crossbow, hot oil, Greek Fire
 - ◆ Gunpowder
 - ★ Pistols, rifles, cannon shells, grenades
 - ◆ Lasers

Faster—Weapons

- Complex Machines**
 - ◆ Machine gun
 - ◆ Tanks & airplanes,
 - ◆ Ballistic missiles
 - ◆ Cluster bombs & laser guided bombs
 - ◆ Computers, night vision goggles

Faster—Transportation

- Muscle Powered**
 - ◆ Man
 - ◆ Beast
- Wind Powered**
 - ◆ Ships

Faster—Transportation

- Mechanized**
 - ◆ Steam ships, river gunboats, submarines
 - ◆ Railroads
 - ◆ Trucks, general utility vehicles (Jeeps)
 - ◆ Armored personnel carriers
 - ◆ Aircraft

Faster—Logistics

Early

- ◆ Steal, rape, burn, and pillage
- ◆ Roads

Industrial Revolution

- ◆ Mass production
 - ★ Interchangeable parts (Eli Whitney)
 - ★ Standardization efforts

Faster—Information

Early—Days to months

- ◆ Couriers, carrier pigeons, ships

1800s—Hours to days

- ◆ Semaphore
- ◆ Telegraph
- ◆ Photographs and newspapers

Faster—Information

1900s—Seconds to hours

- ◆ Radio
- ◆ Television
- ◆ Satellites
- ◆ Faxes
- ◆ Aircraft

Fatter—Armor

Personal

- ◆ Leather
- ◆ Metal armor
 - ★ Chain Mail
 - ★ Plate Armor
- ◆ Kevlar

Fatter—Armor

Mobile armor

- ◆ Shields
- ◆ Horses
- ◆ Vehicles
- ◆ Tanks

Fatter—Armor

Public

- ◆ Earthen mounds and wooden walls
- ◆ Castles
- ◆ Bastions
- ◆ Anti-aircraft against air threats
- ◆ Strategic Defense Initiative—
“Star Wars” anti-ballistic missile
defense system

Fatter—Organizational

- Greek Phalanx (8 deep)**
- Roman 120 man, mobile unit**
- European kingdoms and knights**

Fatter—Organizational

- Swiss pikemen (19 ft pikes)**
- Western — Institutionalized military**
 - ◆ Routinized
 - ◆ Regimented
 - ◆ Hierarchical