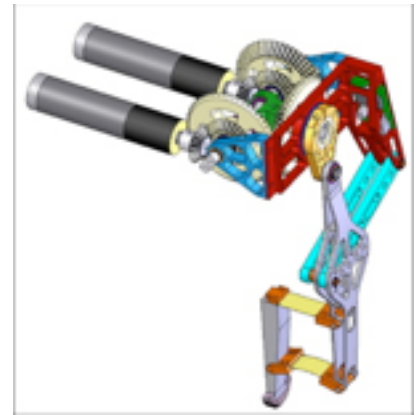


ME112: Mechanical Systems

Lecture 4, Jan 20 2016

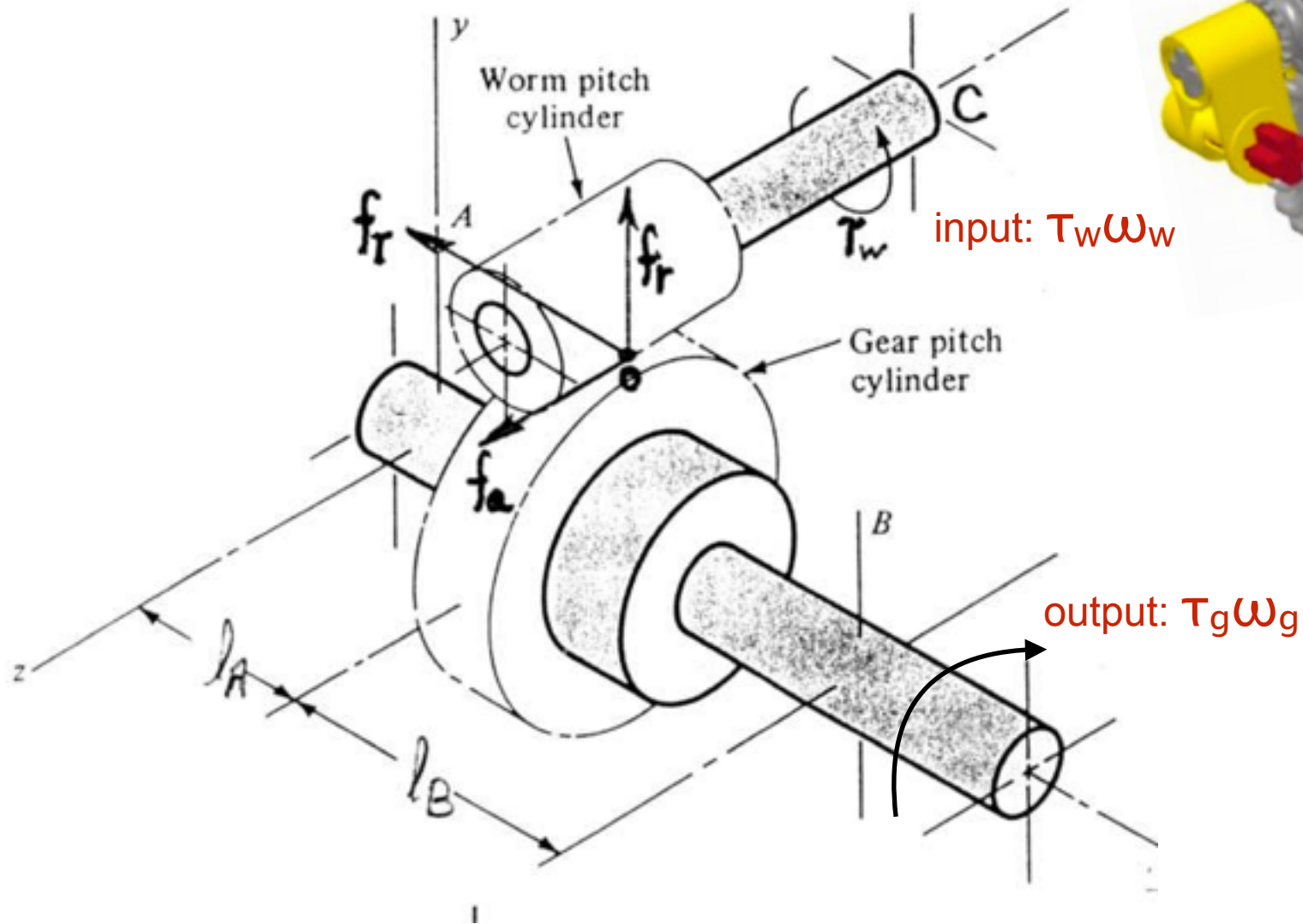


Other power transmission options

- Screws and worms
- Cables and belt drives
- Planetary gears
- Table of options

But first, a word from Hannah and “*Jason*”...

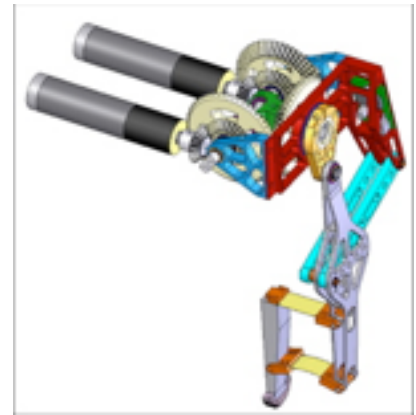
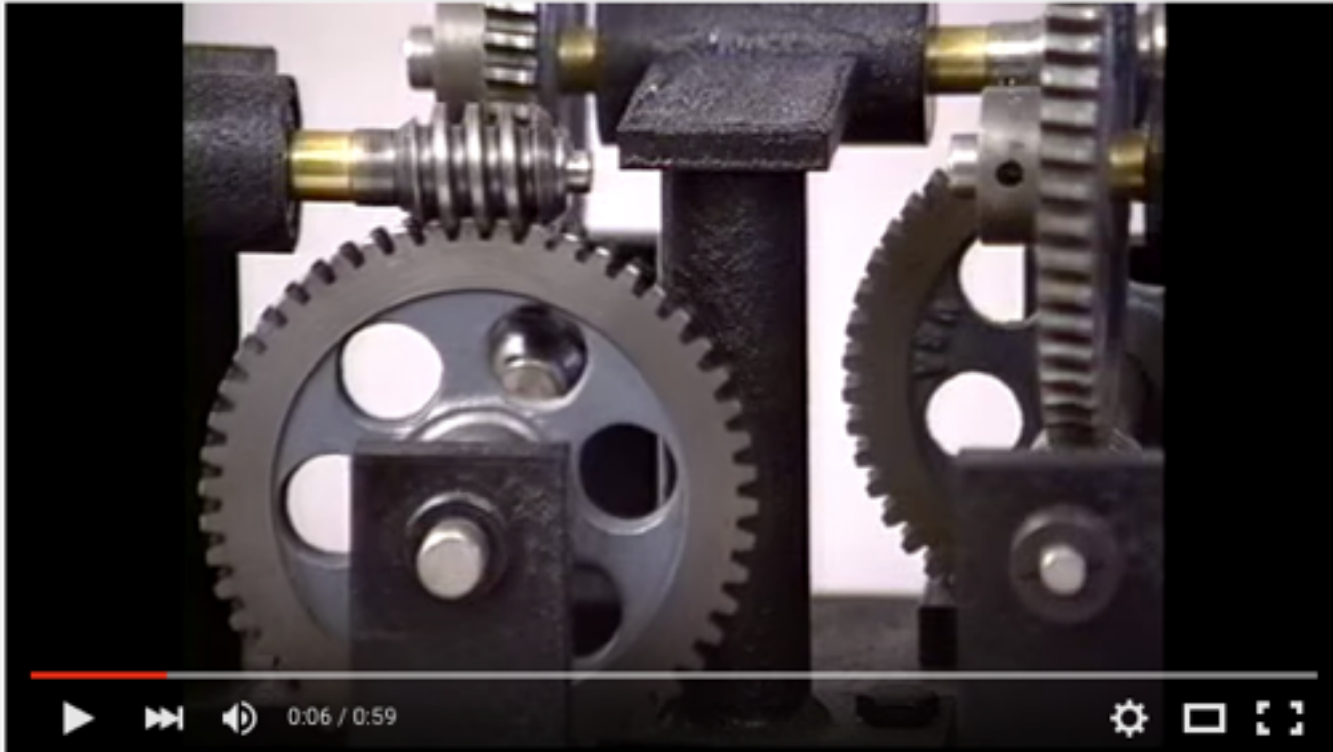
$$\vec{F} = \vec{f}_a + \vec{f}_r + \vec{f}_t$$



Planetary Gear Simulator

<http://www.thecatalystis.com/gears/>

Cool worm demo...



<https://www.youtube.com/watch?v=5q-BH-tvxEg>

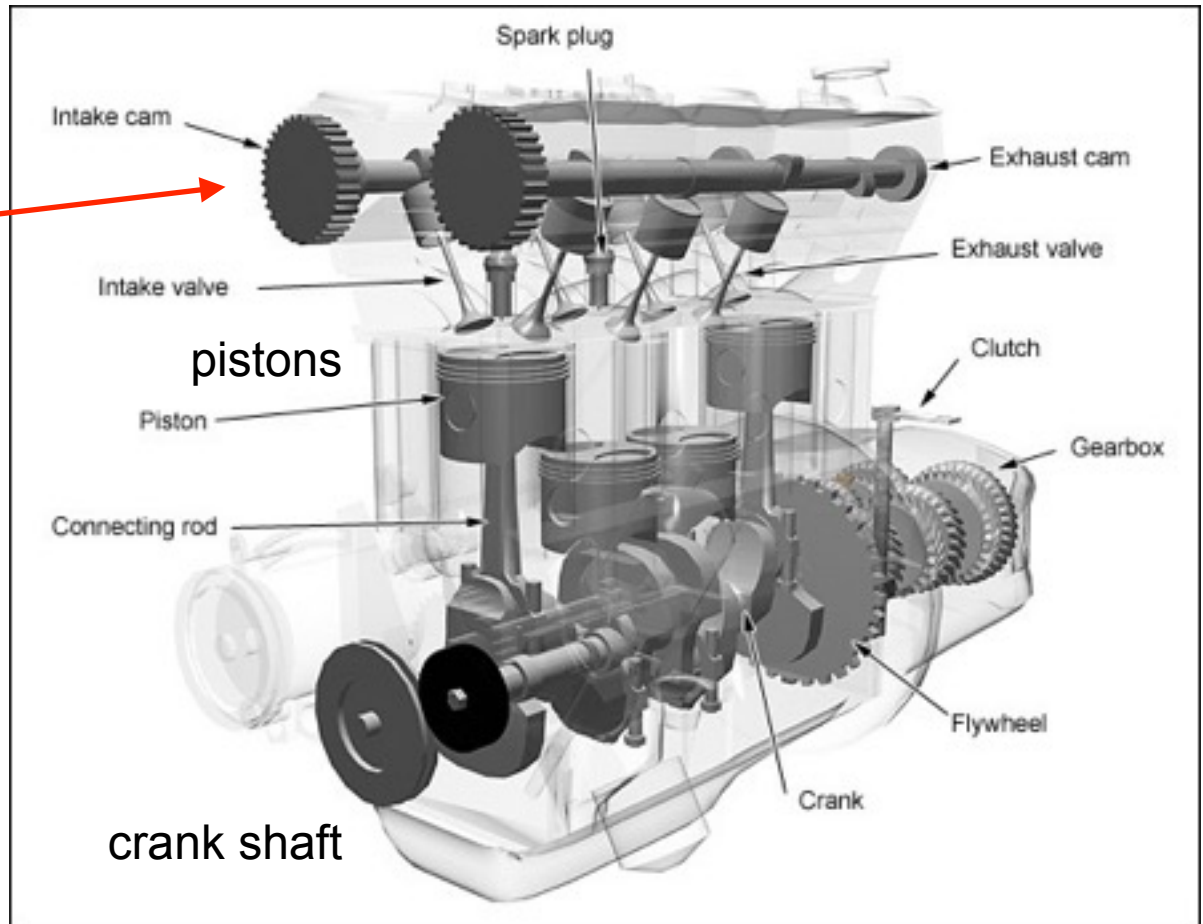
Each worm/worm gear pair reduces the speed of the motor by 50:1. Since there are 12 pairs of gears, the final speed reduction is calculated by $1/50^{12}$. The implications are quite large. With the motor turning around 200 rpm, it will take well over **two trillion years** before the final gear makes one turn. Given the truth of this situation, it is possible to do anything at all with the final gear, even embed it in concrete.

What would you choose?

Valve cam shafts rotate 1 revolution for every 2 revolutions of the crank shaft

What would you use to connect and transmit rotations between the crankshaft and the valve or cam shafts?

- Gears?
- Chain and sprockets?
- Timing belt and pulleys?



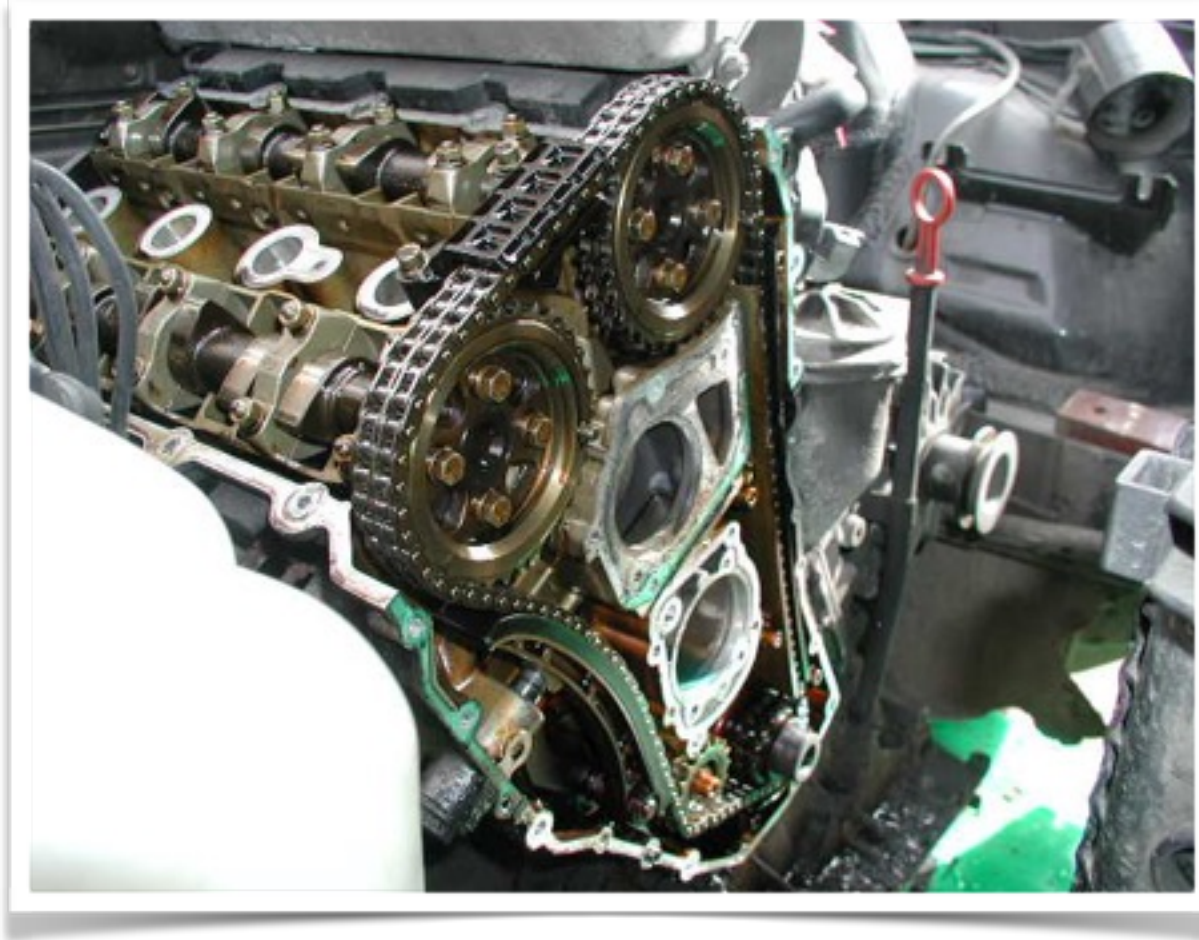
Timing gears!



Volvo B20 engine



Chain and sprockets!



BMW 318 (twin cam)

Timing belt and pulleys!



Lotus 907 (in a 1974 Jensen Healey)