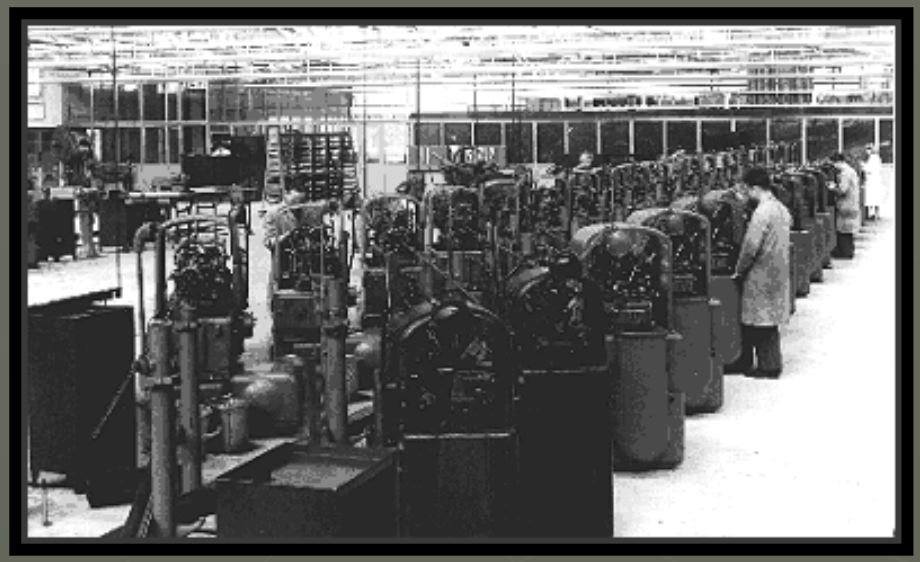
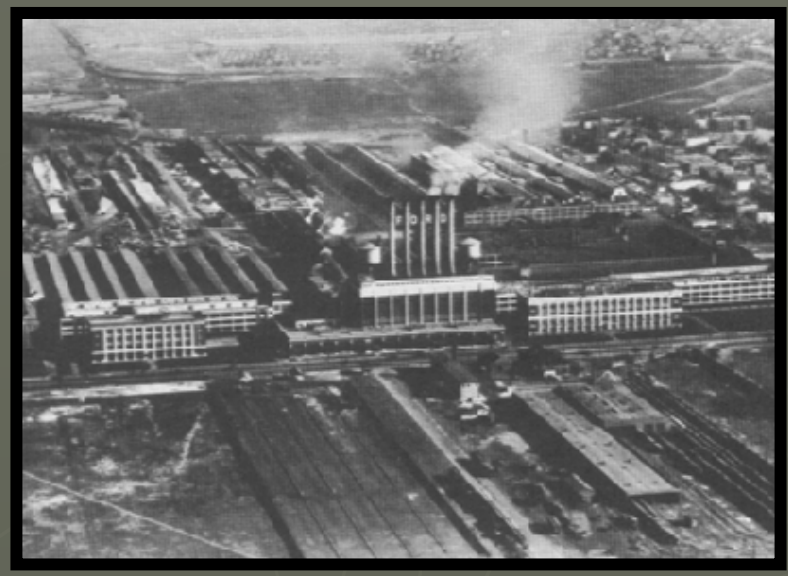
field fabricated solar powered steam turbines

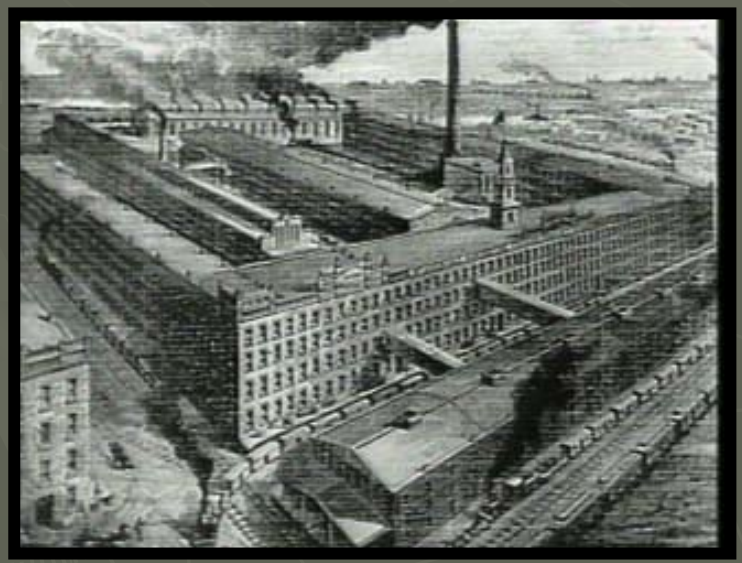
energy and computation
5/10/06

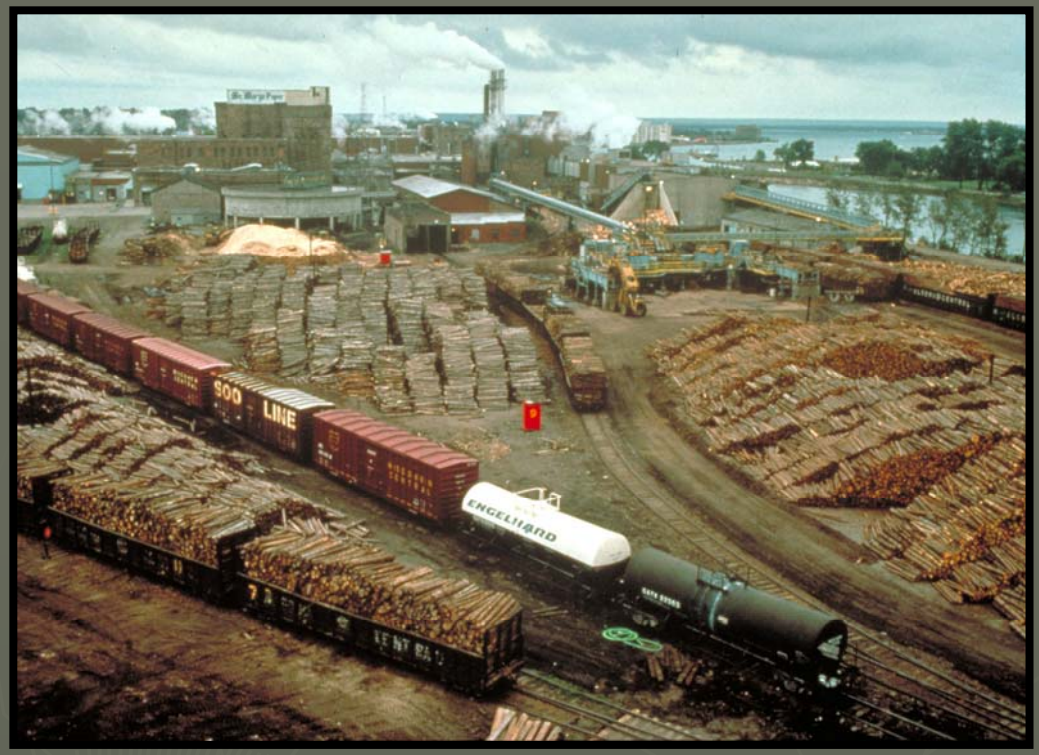
Amy Sun
Center for Bits and Atoms
[amys@cba.mit.edu]

this is a factory





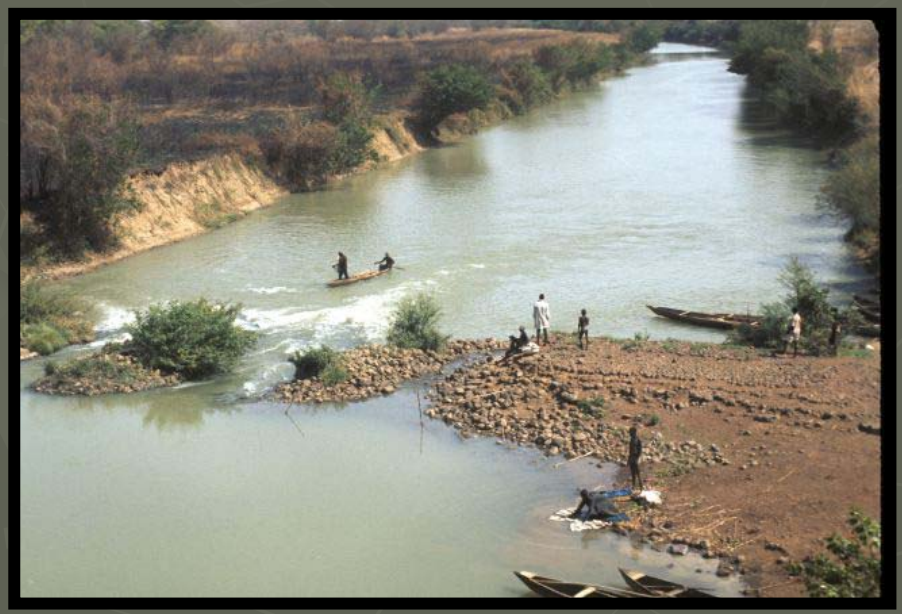



900 LINE
ENGELHARD

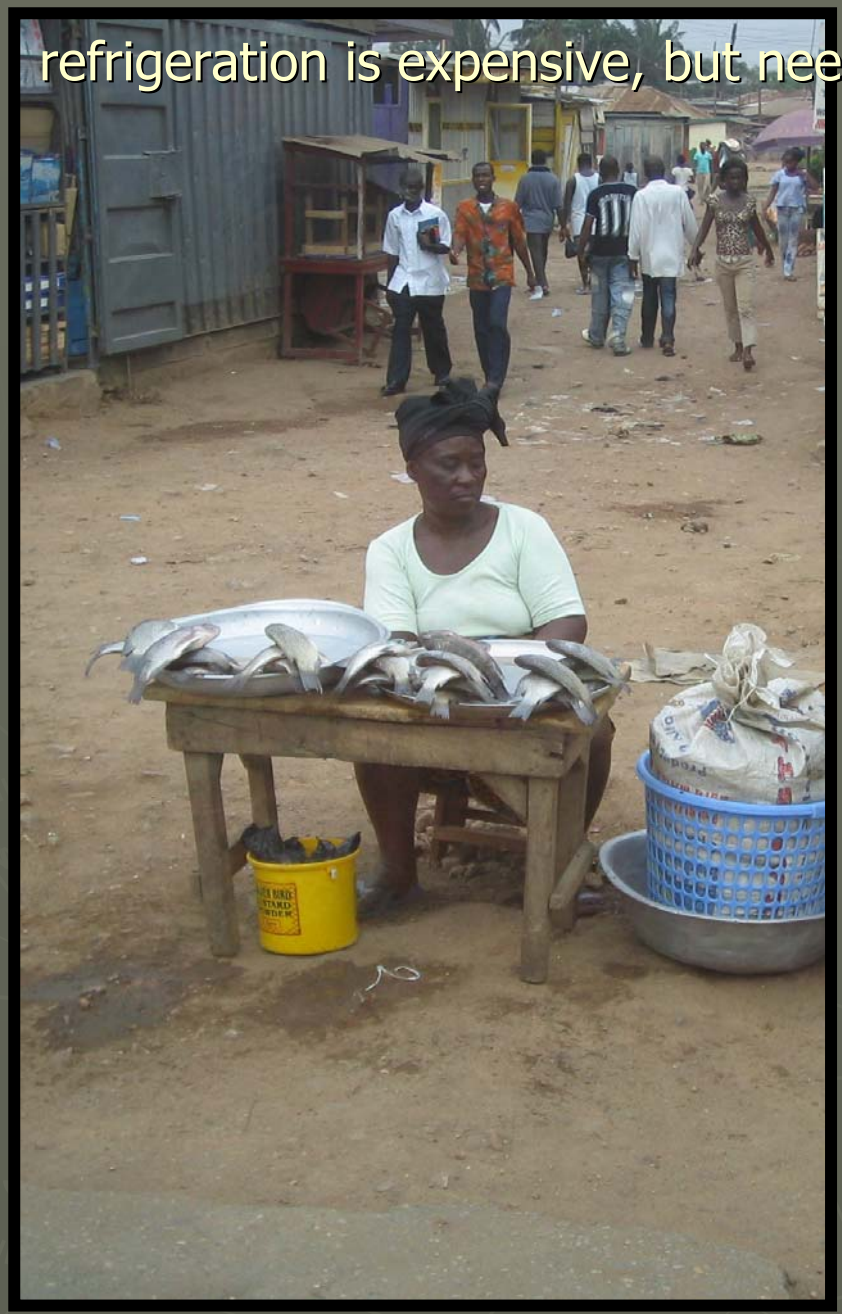
this is a factory in the field

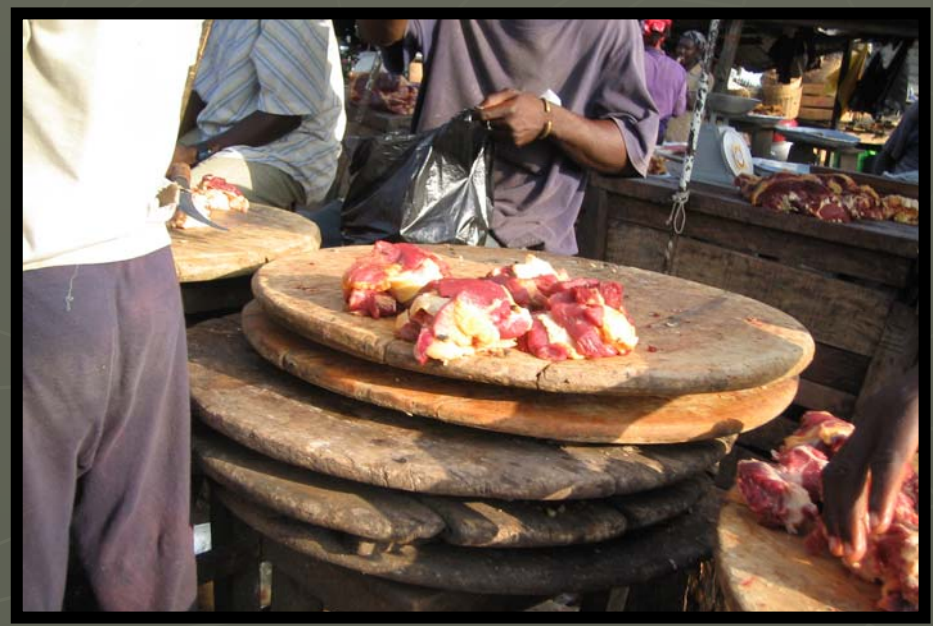
this is how I plug in my computer in the field
(this is stupid)

abundant local energy exists, but how to harvest?

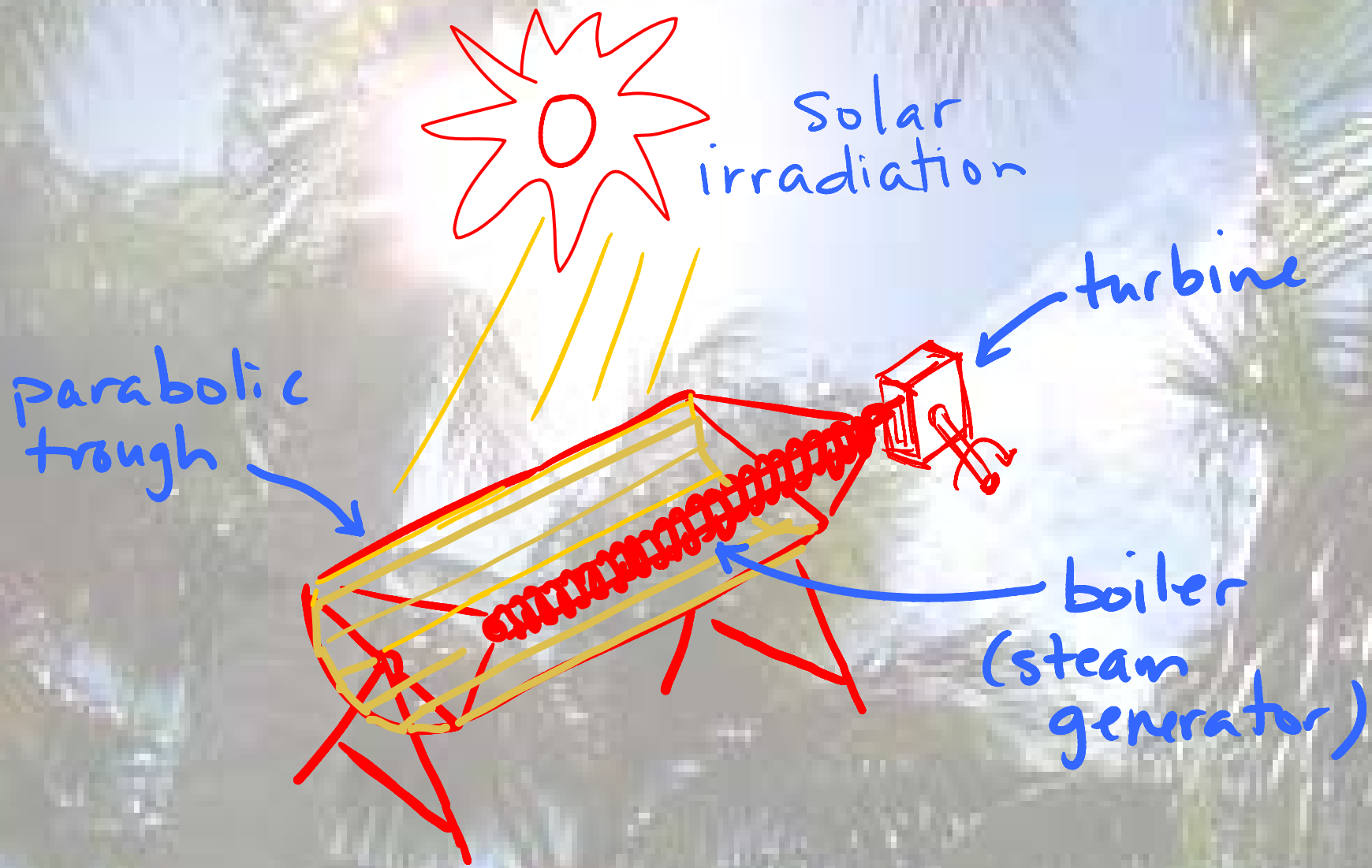


refrigeration is expensive, but needed

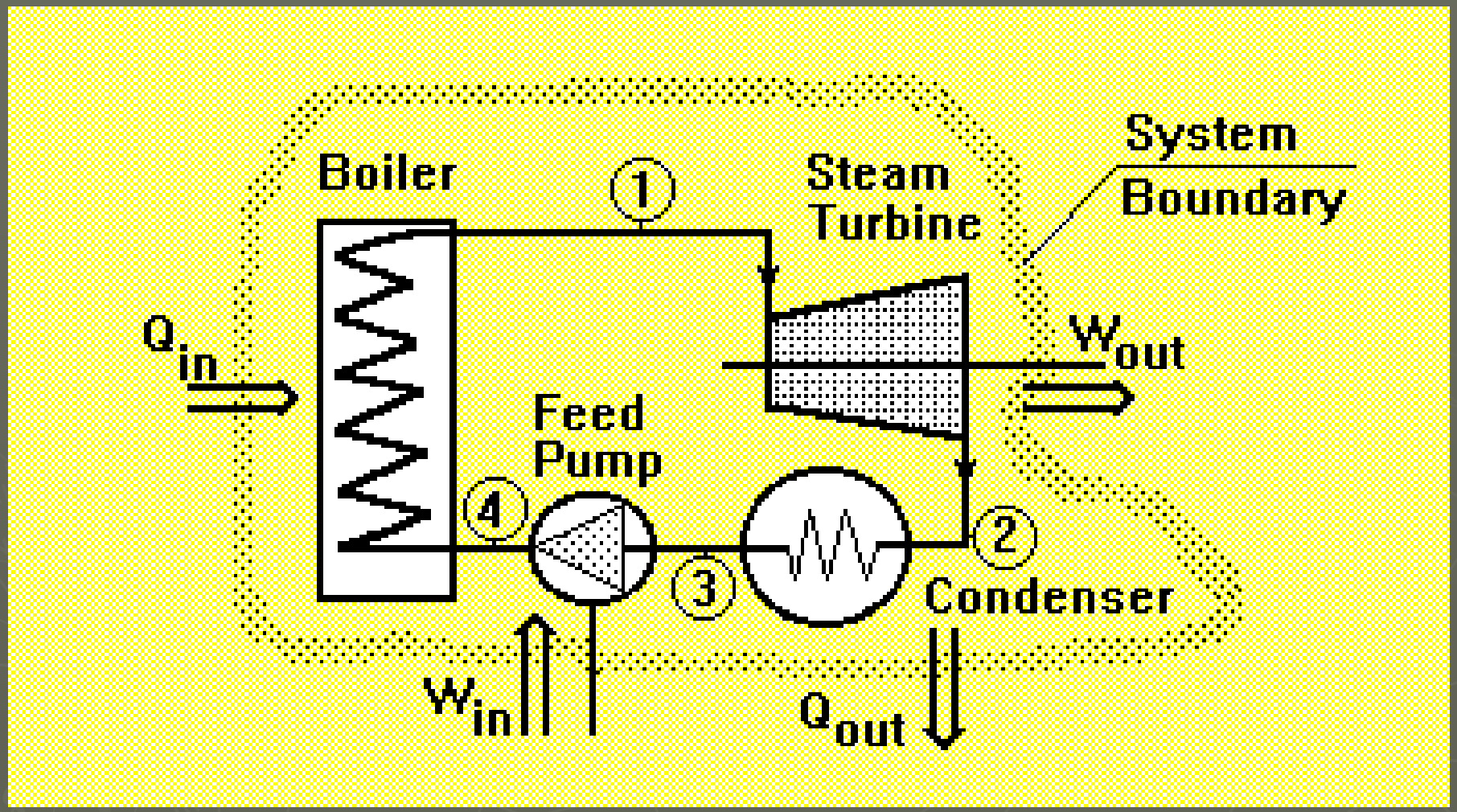




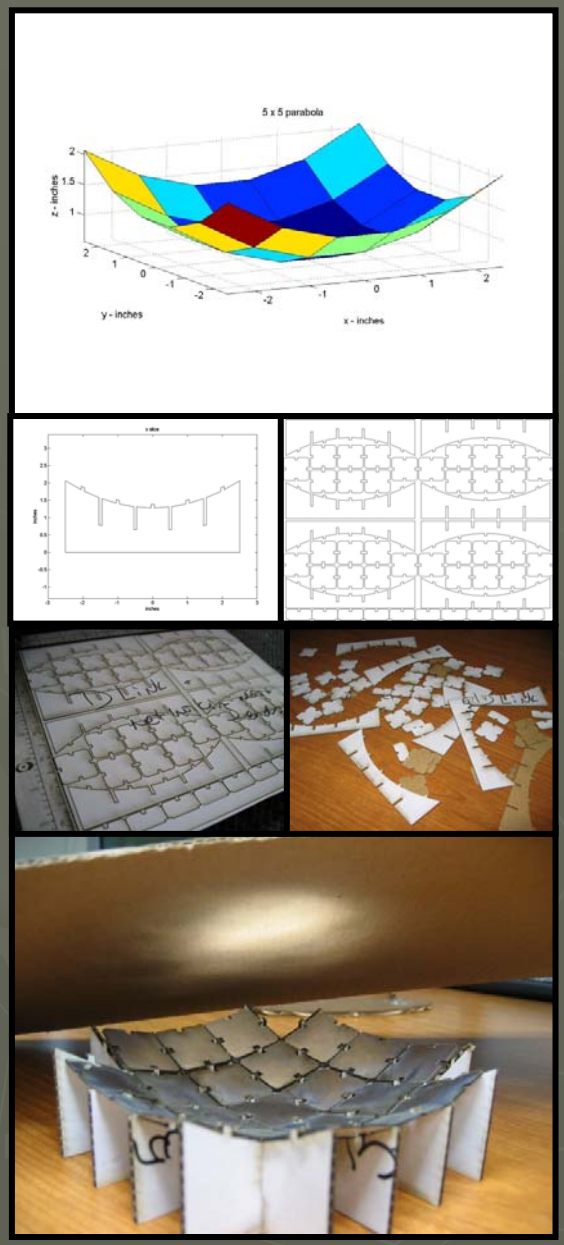
converting solar power to mechanical energy using a turbine

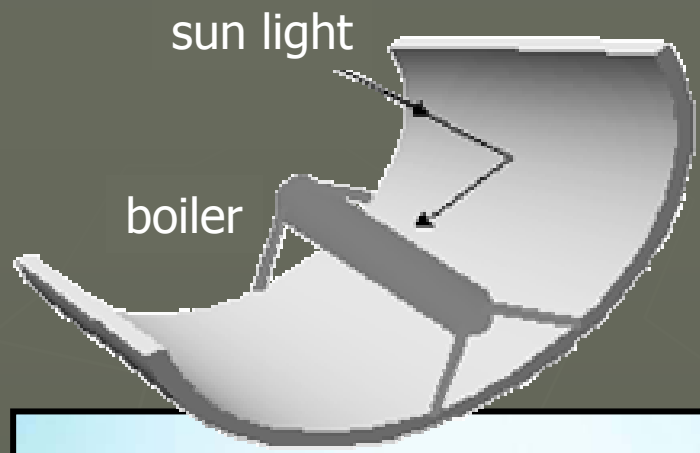


a steam plant

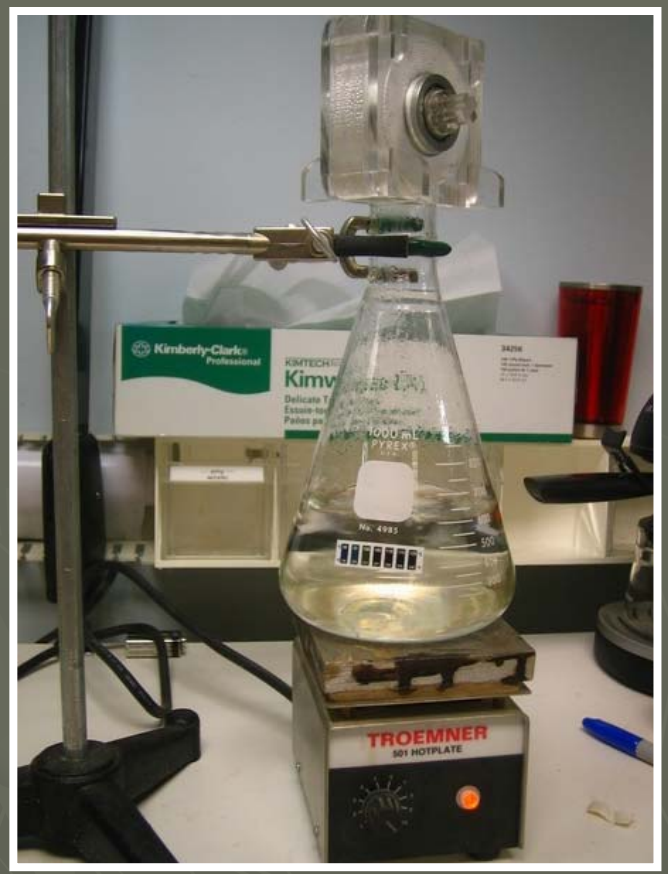


focusing solar energy using a parabolic trough

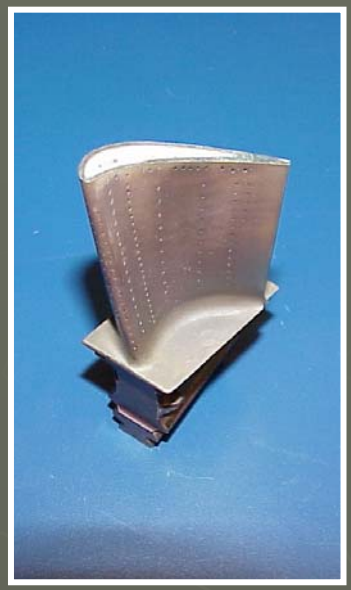




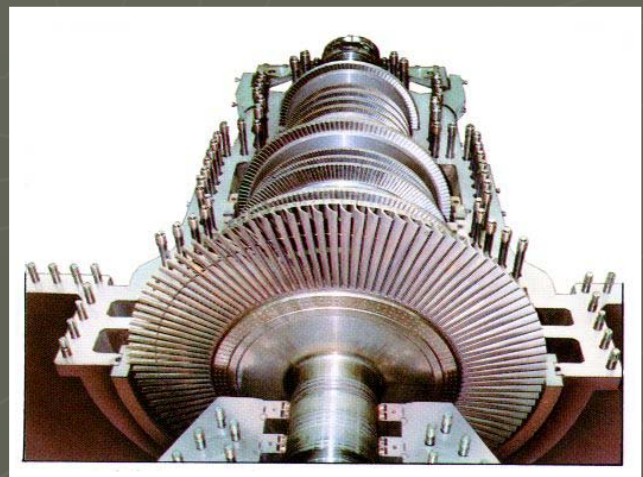
making steam with a boiler



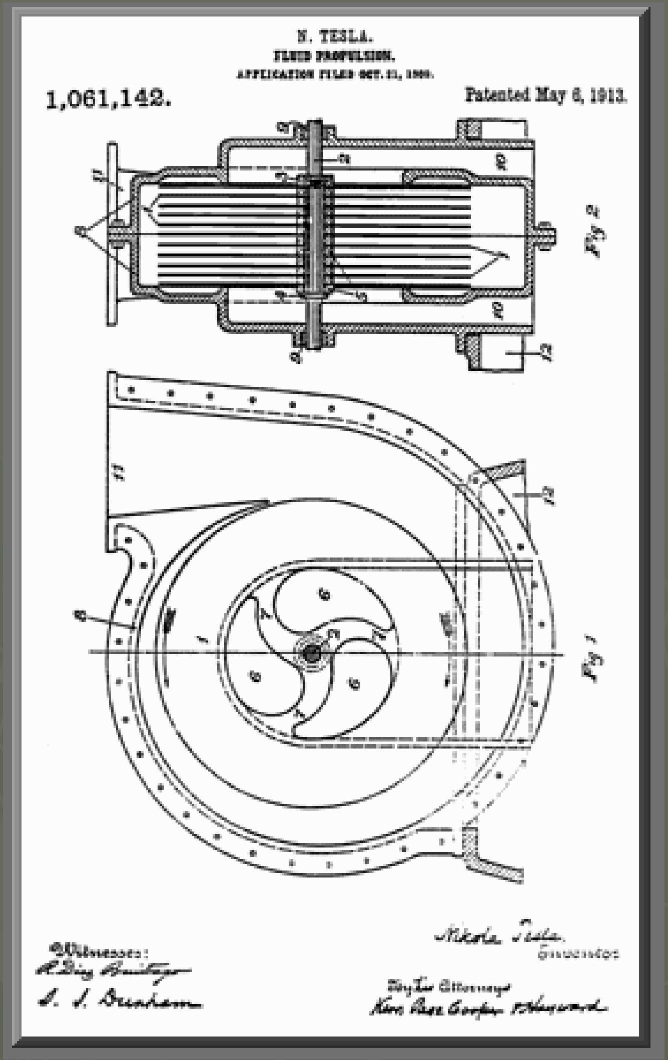
turbines can be pretty complex

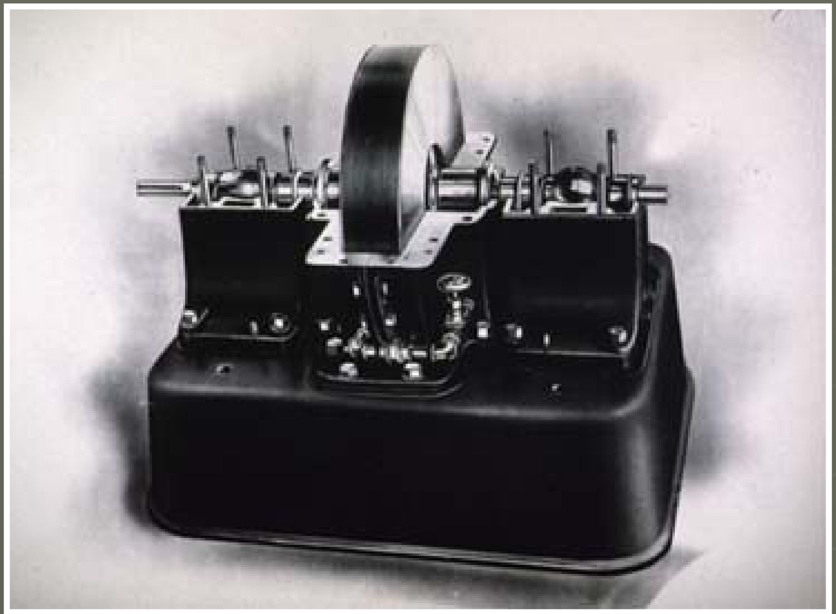





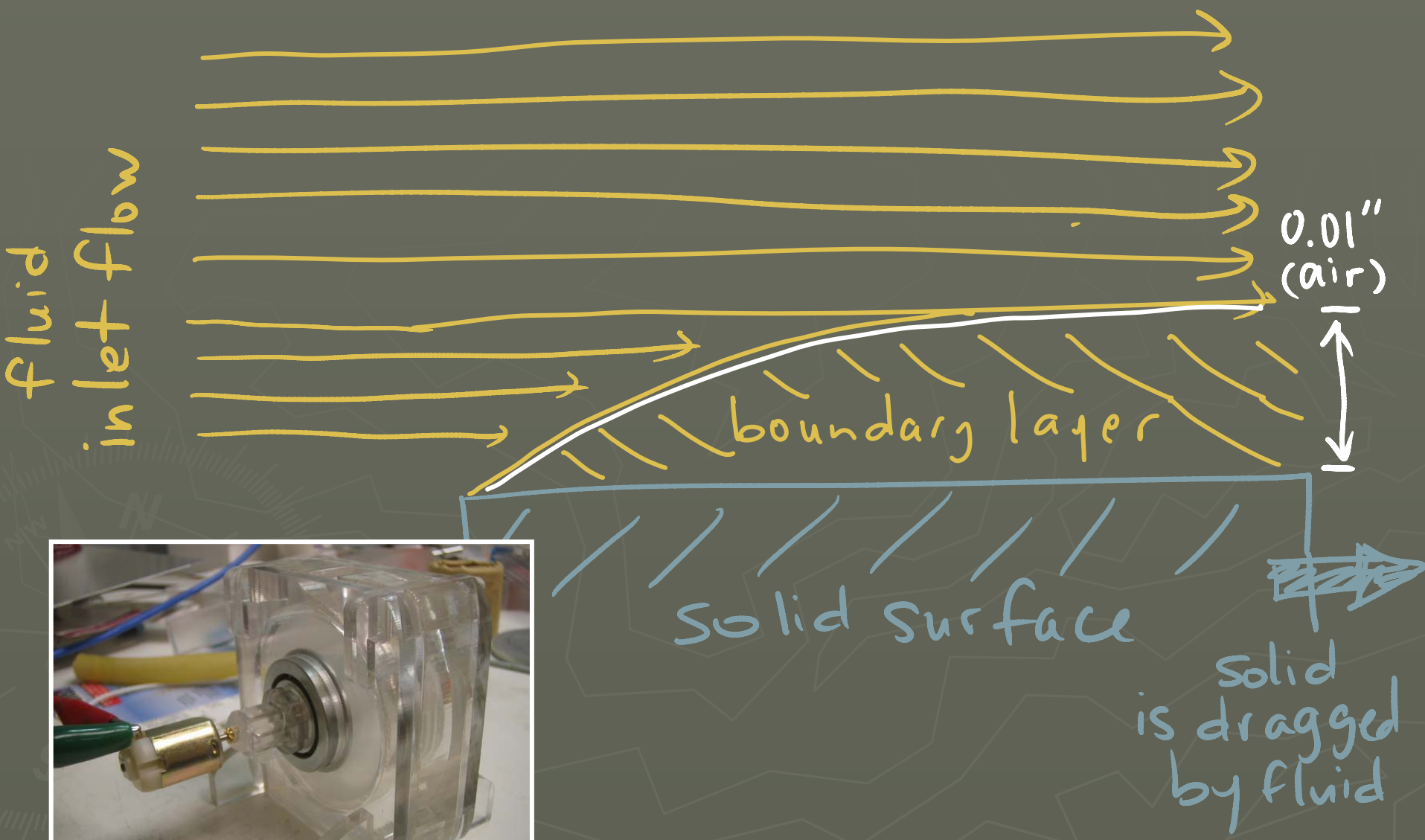



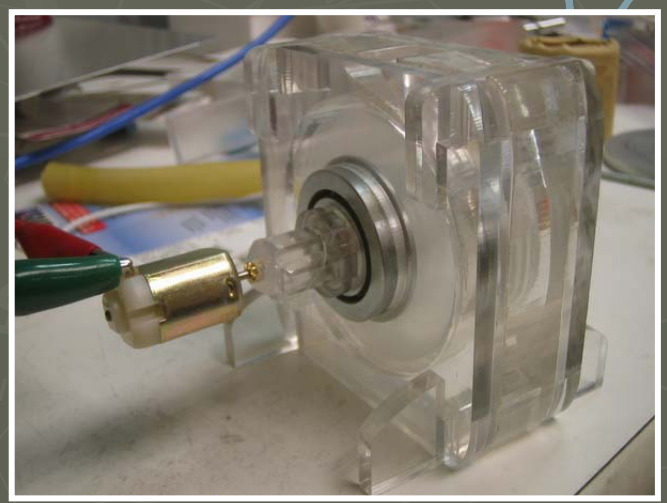
boundary layer turbine – friction instead of impingement



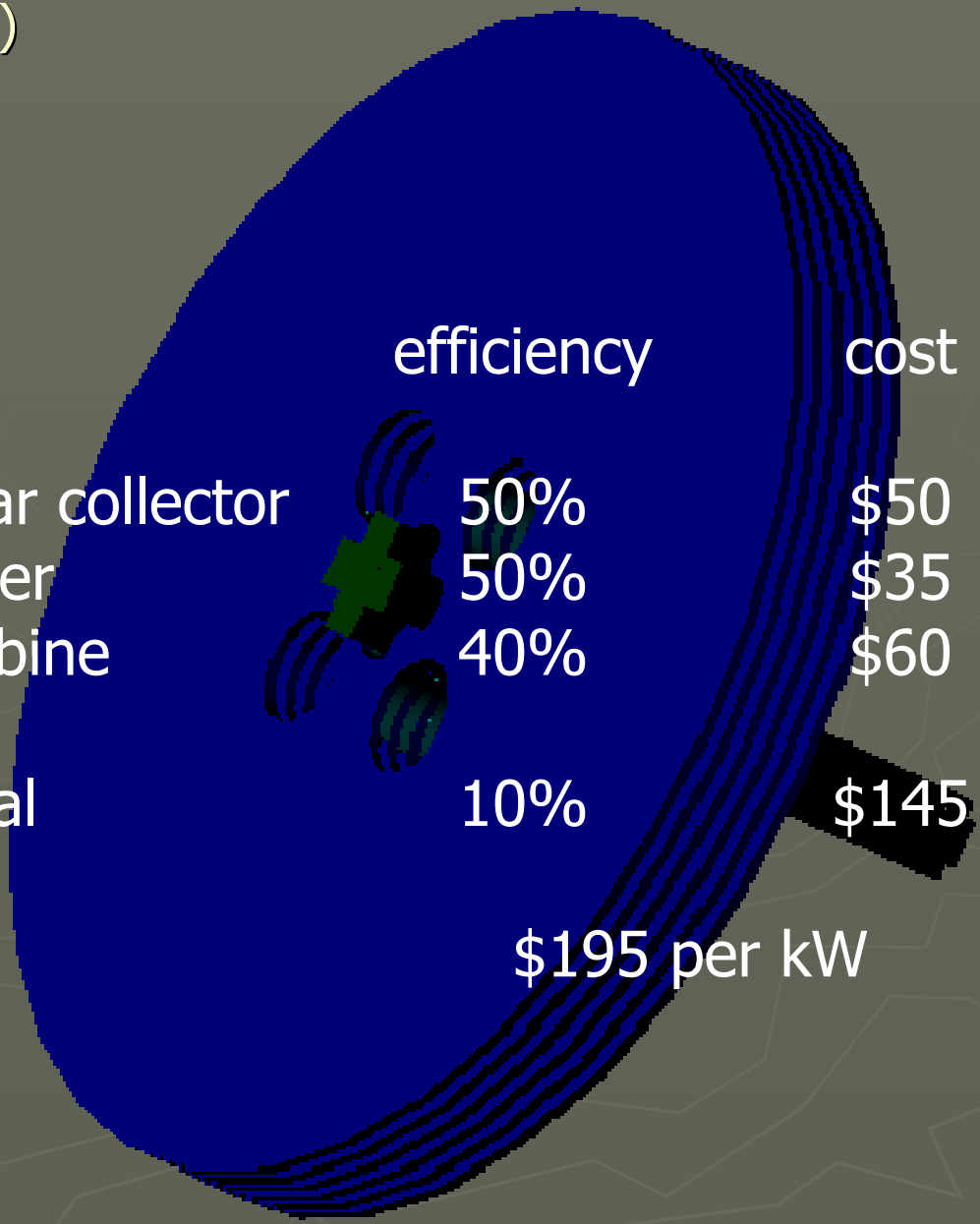


boundary layer at intersection between flowing fluid and solid surface





my turbine
(see also, demo!)



	efficiency	cost
Solar collector	50%	$50
Boiler	50%	$35
Turbine	40%	$60
Total	10%	$145

$195 per kW

microns and microseconds


GRAINGER
GRAINGER
GRAINGER
Perma Products

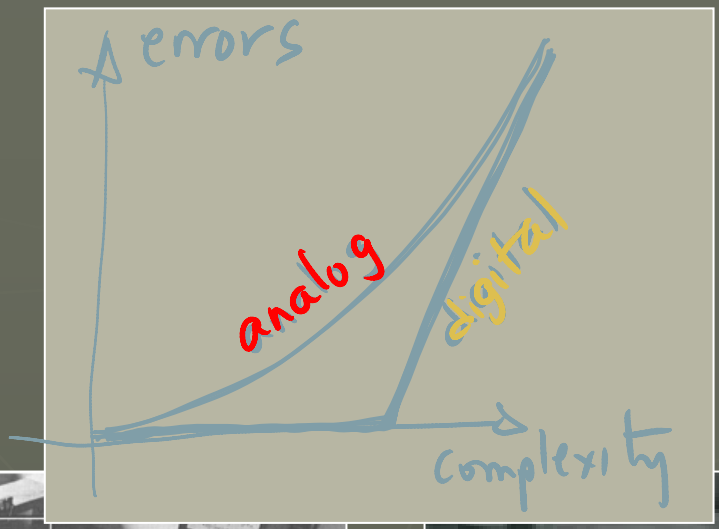
don’t forget to see the demo
3:00-4:00 pm today

amys@cba.mit.edu

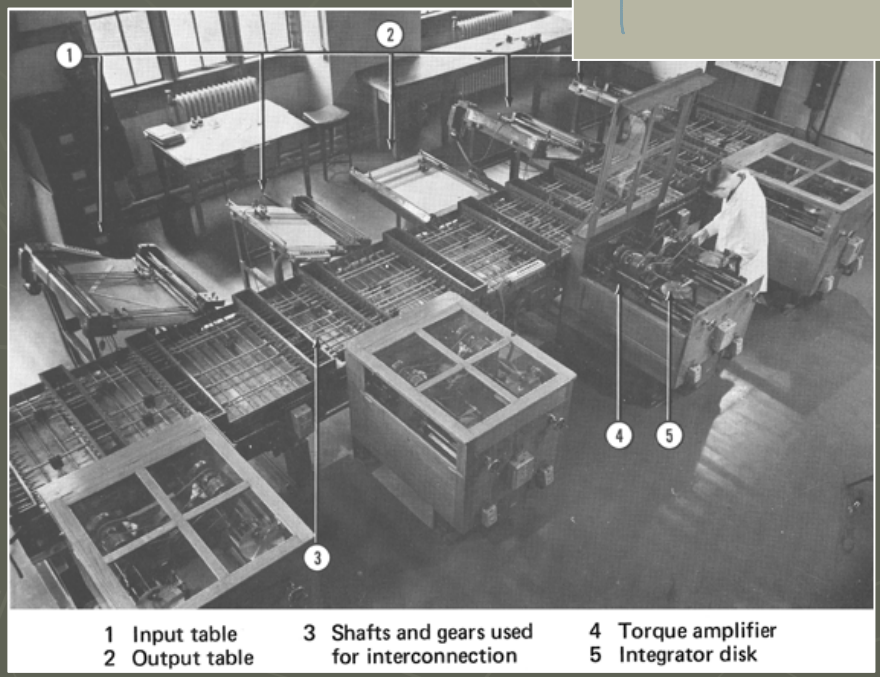
replicators: factories of the future

amplification of tiny errors become big problems

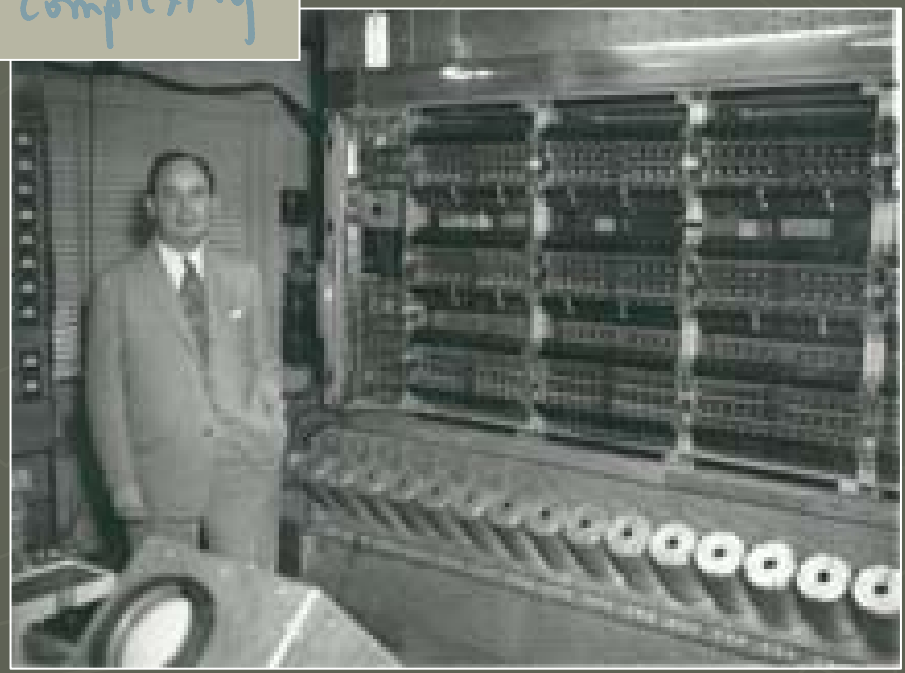
digital approach allows errors to be predicted as thresholds
digital systems can be more complex



Differential Analyzer
1927



ENIAC Digital Computer
1946




this is a factory
hybrid
medical animation