

# 2nd Law Development for Closed Systems

- At least two approaches for developing mathematical form of 2<sup>nd</sup> Law for Closed Systems (i.e. Control Masses)
  1. **Entropy Approach**: start with existence of entropy as TD property, find its relation to temperature
  2. **Classical Approach**: historical, starts with observations on behavior of devices (cycles) leads to temperature definition and entropy
- Full development of 1 (see Reynolds and Perkins, Engineering Thermodynamics, McGraw Hill), briefly describe 2 (found in Black and Hartley)