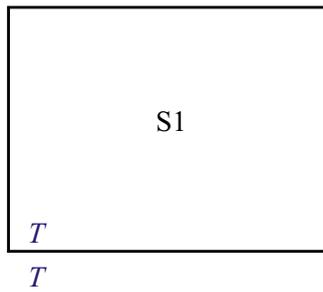


### 3.15 Thermodynamic Contacts: A system in thermal equilibrium



**S2: The world, a heat bath, ...**

Exchange of heat energy  $\Delta Q$

- $T_1 = T_2 = T$
- fixed volume  $V$
- fixed particle number  $N$

Established by the system:

- $p$ : pressure
- $\mu$ : chemical potential
- $S$ : entropy

- Examples:
- many solids ( $V$  fixed)
  - gas in a fixed volume