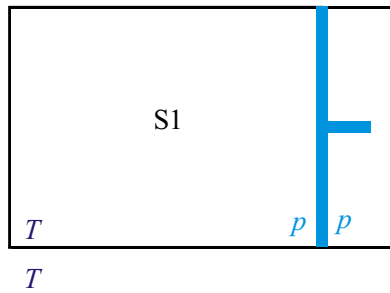


### 3.16 Thermodynamic Contacts: Temperature and pressure are defined by the surrounding area



S2: The world, a heat bath, ...  
Exchange of heat energy  $\Delta Q$   
and pressure work  $\Delta W$

Established by the system:

- $T_1$
- $p_1$
- fixed particle number  $N$
- $V$ : volume
- $\mu$ : chemical potential
- $S$ : entropy

$\Rightarrow \text{State}(p, N, T)$

Examples:

- Gas at fixed pressure
- Chemical reactions in an open chamber cooled in a heat bath