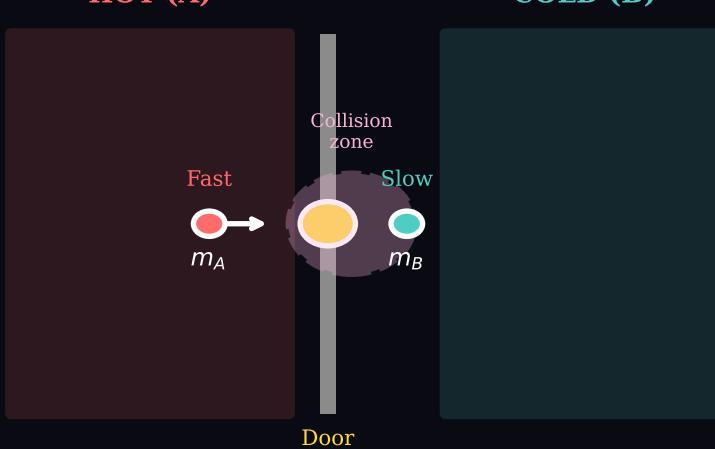
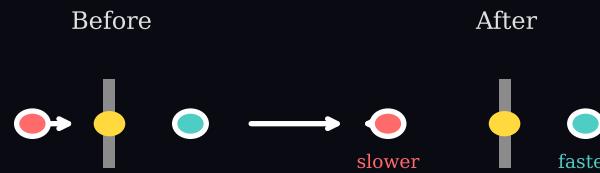


Heat-Entropy Decoupling: Why the Demon Attacks the Wrong Quantity

A. Door Collision Scenario

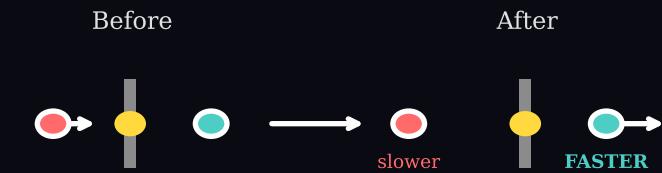


B. Case 1: Bounce Back



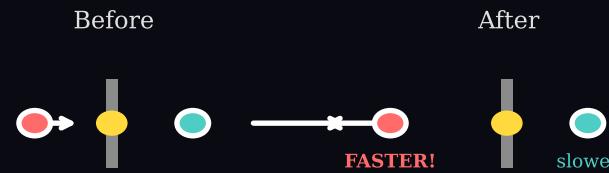
Molecule returns to source
Heat: HOT \rightarrow COLD
Entropy: INCREASES

C. Case 2: Cold Accelerates



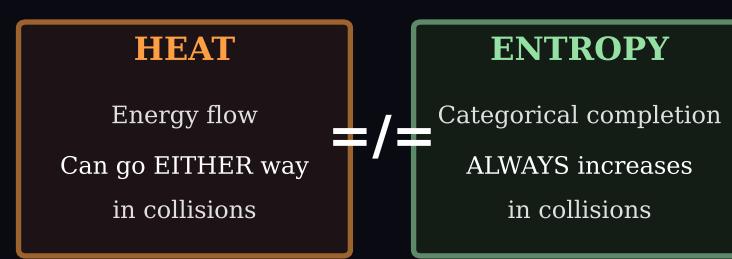
Standard energy transfer
Heat: HOT \rightarrow COLD
Entropy: INCREASES

D. Case 3: Cold Decelerates (!)



Hot returns with MORE energy!
Heat: COLD \rightarrow HOT
Entropy: STILL INCREASES

E. Fundamental Decoupling



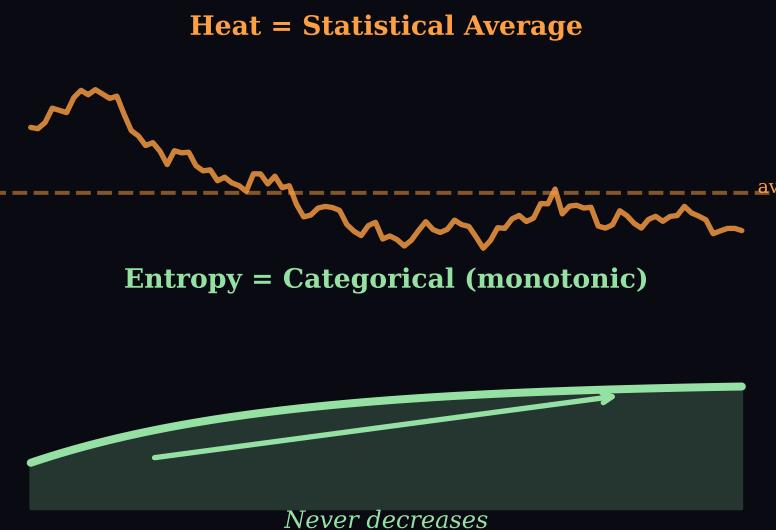
The Second Law constrains
ENTROPY (categorical)
not HEAT (statistical)

F. Maxwell's Conflation

Maxwell assumed:
 $\Delta Q > 0 \Leftrightarrow \Delta S > 0$ **X**
(heat flow = entropy change)

Reality:
 ΔQ fluctuates, $\Delta S \geq 0$ always
Microscopic: heat direction random
Macroscopic: entropy always increases

G. Statistical vs Categorical



H. Demon's Misdirection



Wrong target = inevitable failure

I. The Insight

Case 1: **Heat \rightarrow cold** **Entropy UP**
Case 2: **Heat \rightarrow cold** **Entropy UP**
Case 3: **Heat \rightarrow HOT** **Entropy UP**

Heat direction: variable
Entropy direction: ALWAYS UP

*The demon manipulates the wrong quantity
HEAT is not ENTROPY*