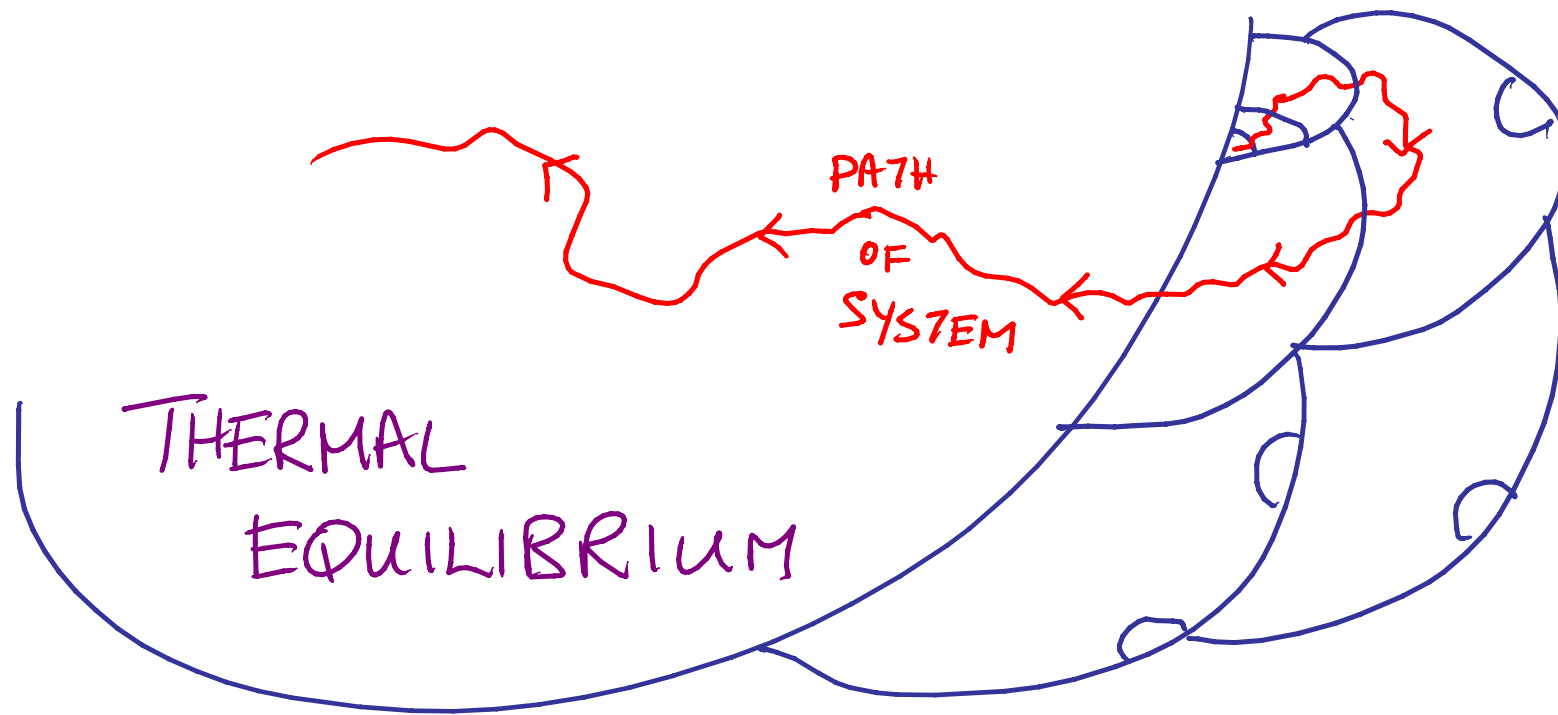


DIRECTION OF TIME



PHASE SPACE
↑
STATE OF SYSTEM
↓
VOLUME IS NUMBER OF MICRO STATES
↓

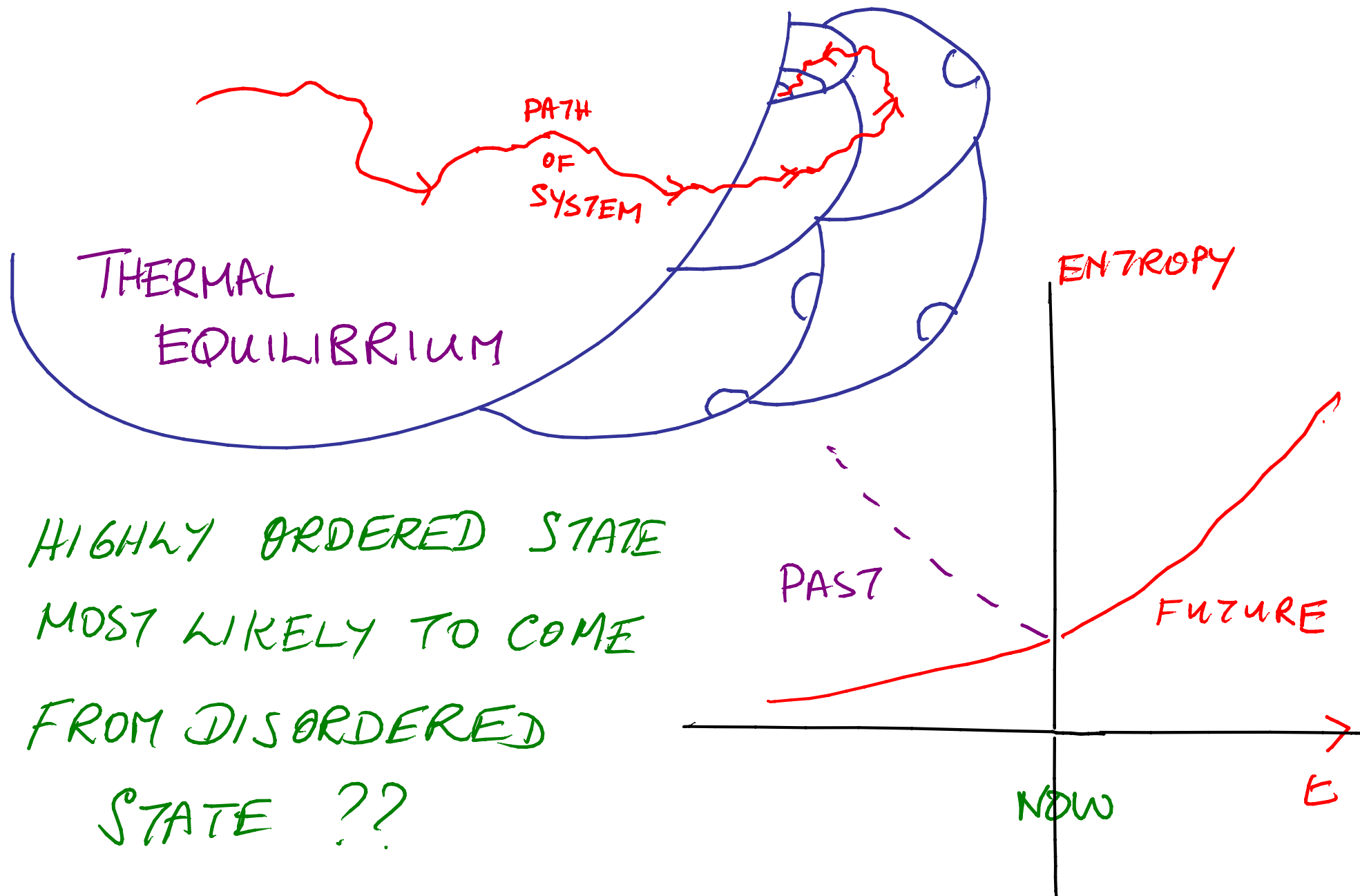
+VE TIME = ENTROPY INCREASE

- MOST OF PHYSICS IS TIME REVERSAL INVARIANT

PARTICLE PHYSICS IS NOT

INDISTINGUISHABLE

ARGUMENT SEEMS TO WORK IN REVERSE



ENTROPY & THE BIG BANG

- WHERE DID INITIAL LOW ENTROPY COME FROM? → GRAVITY FORMING STRUCTURES?
- PRIMORDIAL FIREBALL THERMAL EQUILIBRIUM
- WOULD EXPECT INITIAL STATE — MINIMUM ENTROPY
- THERMAL EQUILIBRIUM — MAXIMUM ENTROPY
- PERMITTED AMOUNT OF ENTROPY INCREASES AS THE UNIVERSE EXPANDS
- IS DIRECTION OF TIME DEFINED BY EXPANSION OF UNIVERSE?

EMPEROR'S NEW MIND
ROGER PENROSE