The Epistemic Sandwich

Abstract: a clear argument that a non-entropic arrow of time is real.

Where considering the following as distinct, inseparable, and non-interchangeable:.

- **Layer 1**; The scale of the Mesoscopic is described by Newtonian Mechanics, Electromagnetism (Maxwell equations) and Thermodynamics, in generally epistemic terms.

- **Layer 2**; The scale of the Macroscopic is described by the theory of General Relativity in generally cosmological terms.

- **Layer 3**; The scale of the Microscopic is described by the theory of Quantum Mechanics in generally ontological terms.

That the interesting questions are about the inter-relationships of the following concepts:.

Layer **2**	Meaningless	**Information**	Meaningful
Layer **1**	Causality	**Change**	Choice
Layer **3**	Determinism	**Relation**	Random

Where listing some known relations between these three layers:.

- That Science defines the ontology of layer 2 and layer 3 in terms of the epistemology of layer 1 (ie, that there is no other epistemic basis corresponding mathematics to the real).

- That the epistemology of layer 1 is bound to the entropic arrow of time at layer 1 (these concepts cannot not co-occur).

- That the Strong Free Will Theorem asserts that either 'the entropic arrow of time' at layer 1 is co-occurring with a 'non-entropic arrow of time' at layer 3, or that neither occur (ie, either perfected hard determinism is real or instances of perfected hard random are real).

- That any form of 'non-entropic time asymmetry' at layer 3 is/becomes the orienting basis of any form of 'entropic time asymmetry' at layer 1 or 2 (via domain/scale embedding).

That therefore, we either accept that we know that a non-entropic arrow of time (hard asymmetry) is established as real at all three layers, or we accept that we know nothing at all.