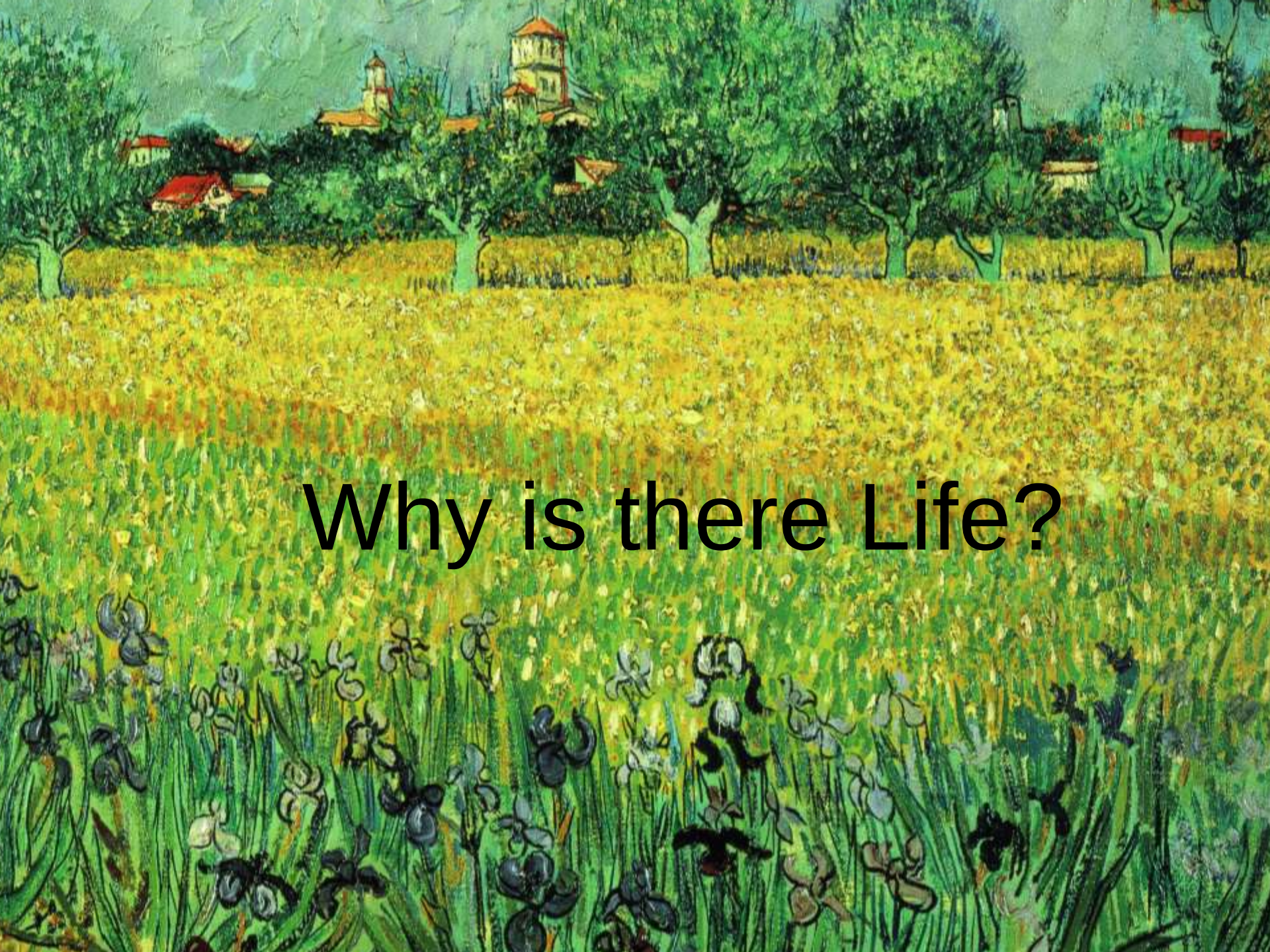


Thermodynamics of Integration

- Thermodynamics (TD) orders the advancement of complex matter throughout the universe. Complexity, including life, can advance under TD unfavorable conditions through dynamic kinetic non-equilibrium conditions. Life's teleonomic character and unique characteristics can be approached from this a-biological perspective.

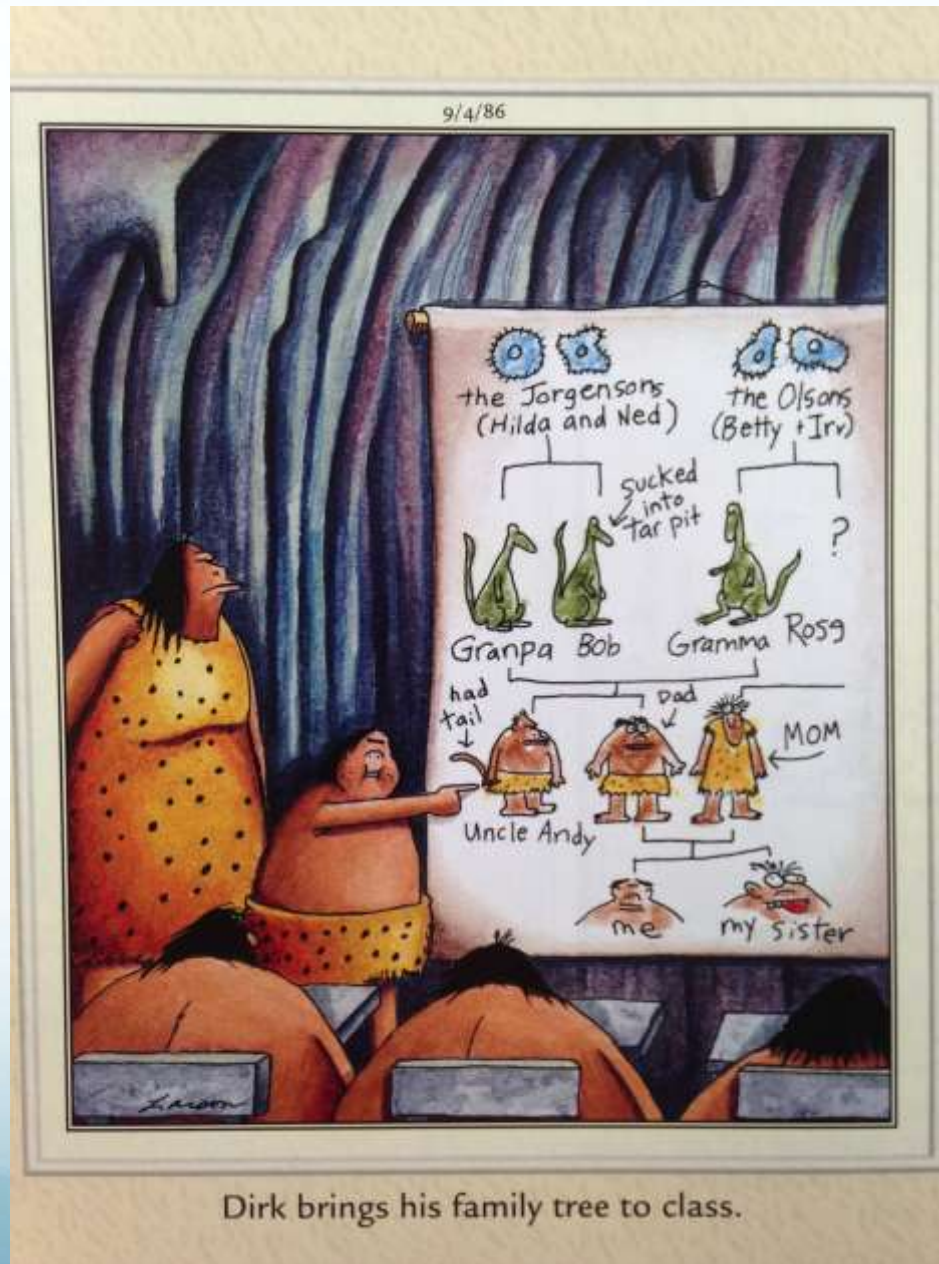
A painting of a landscape. The foreground is a field of yellow flowers, possibly daisies, with green grass. In the middle ground, there are several green trees. In the background, a village with red-roofed houses and a church with a bell tower is visible on a hill. The sky is a pale blue-grey.

Why is there Life?

Why is there Life?



Why is there Life?

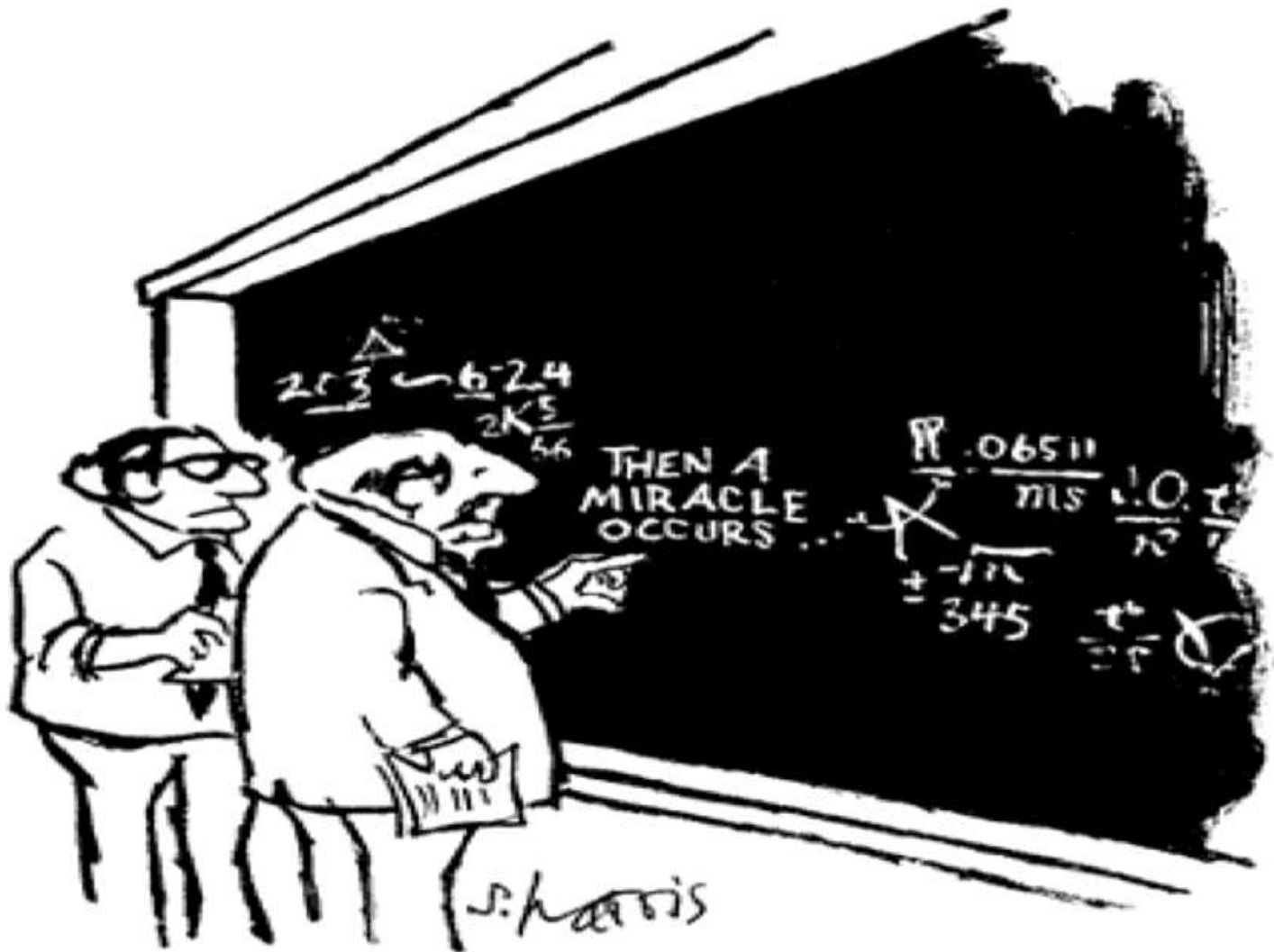


Why is there life?



Shrodinger What is Life?

Why is there life?



"I think you should be more explicit here in step two."

Why is there life?

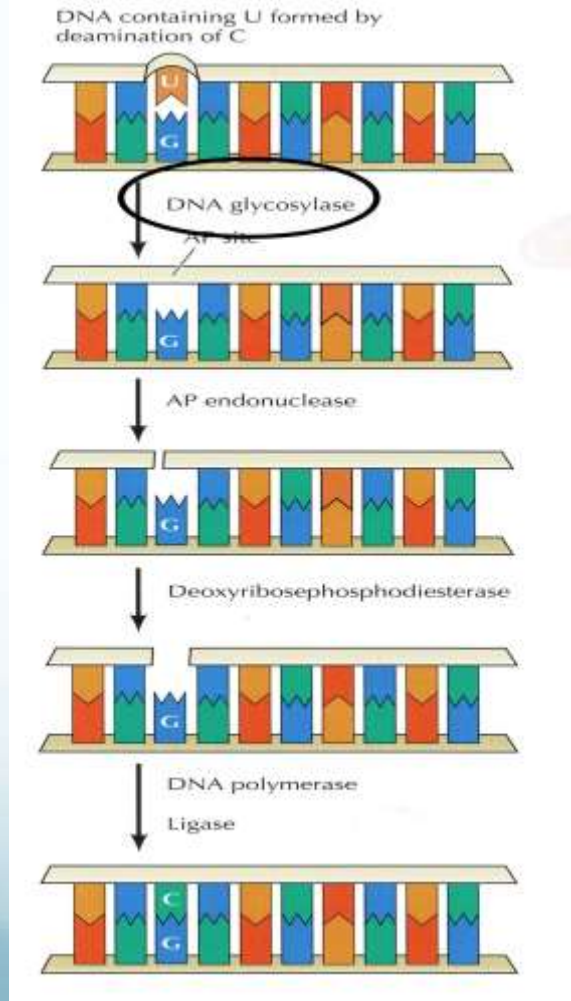


Differentiating Animate and Inanimate Matter (Complexity and Teleonomy)

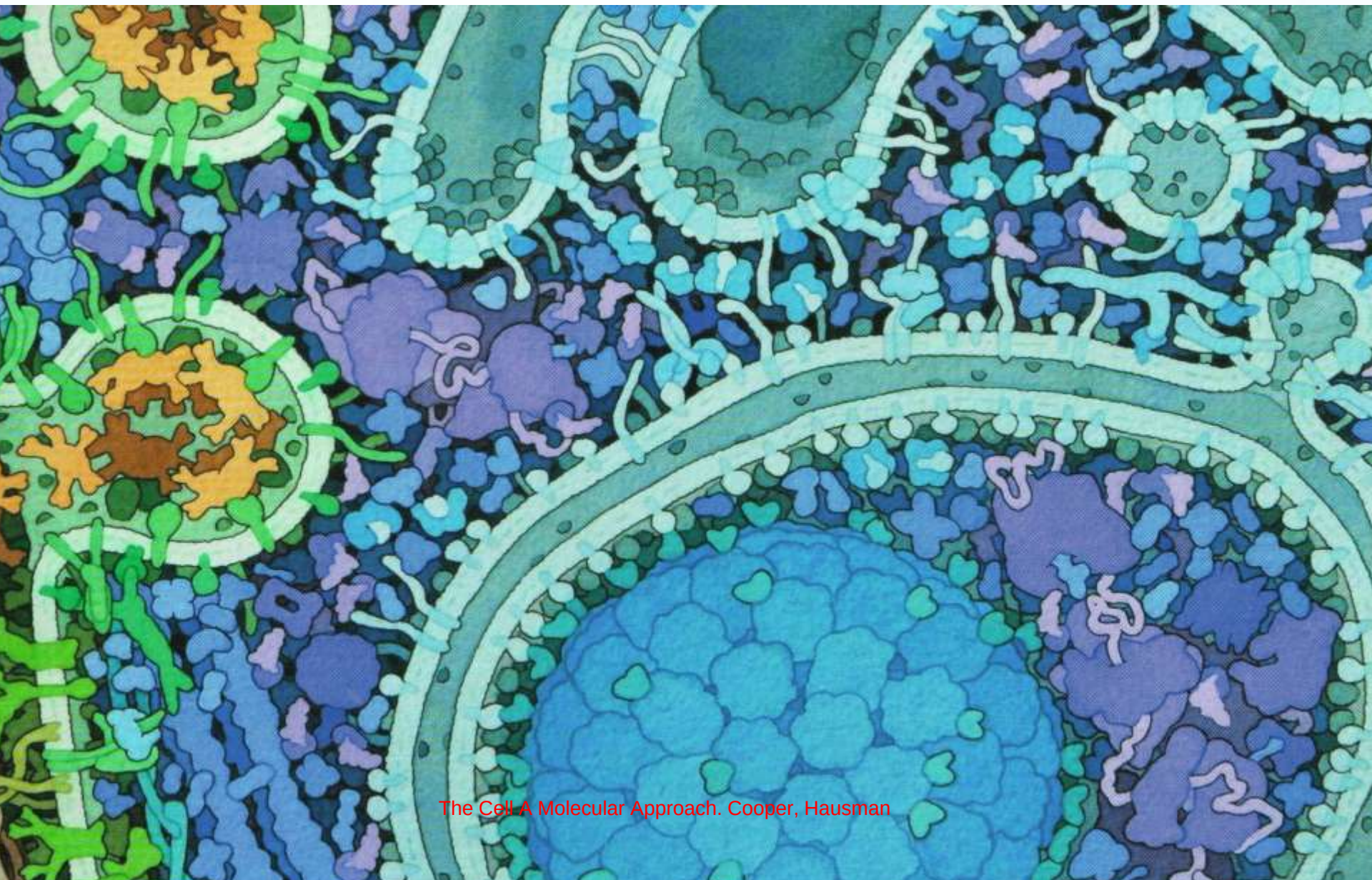


*THE 5,000 YEAR OLD METHUSELAH
TREE*

Differentiating Animate and Inanimate Matter



Defining Complexity



The Cell: A Molecular Approach. Cooper, Hausman

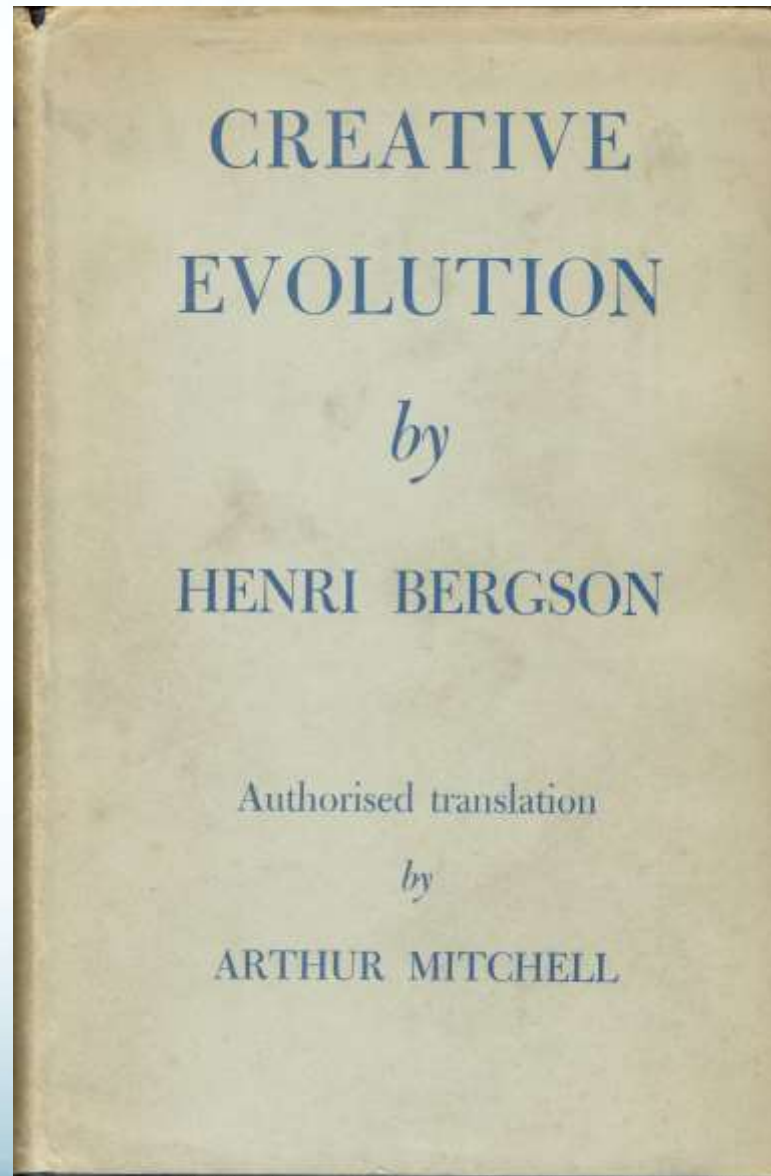
Defining Complexity of Inanimate and Animate Matter

- The creation of molecules with increasing numbers of atoms and their potential arrangements
- The creation of increasing systems chemistry complexity by increasing numbers of interactions between molecules and increasing numbers of chemical pathways and their interactions

Defining Complexity of Inanimate and Animate Matter

- Maximizing the net amount of complex matter
- Maximizing the variety of molecules and systems chemistry
- Maximizing the degree or level of molecules and systems chemistry
- Maintaining complexity at a level permitted by the environment where both thermodynamic and kinetic control of reactions occur

Is There Teleonomy?

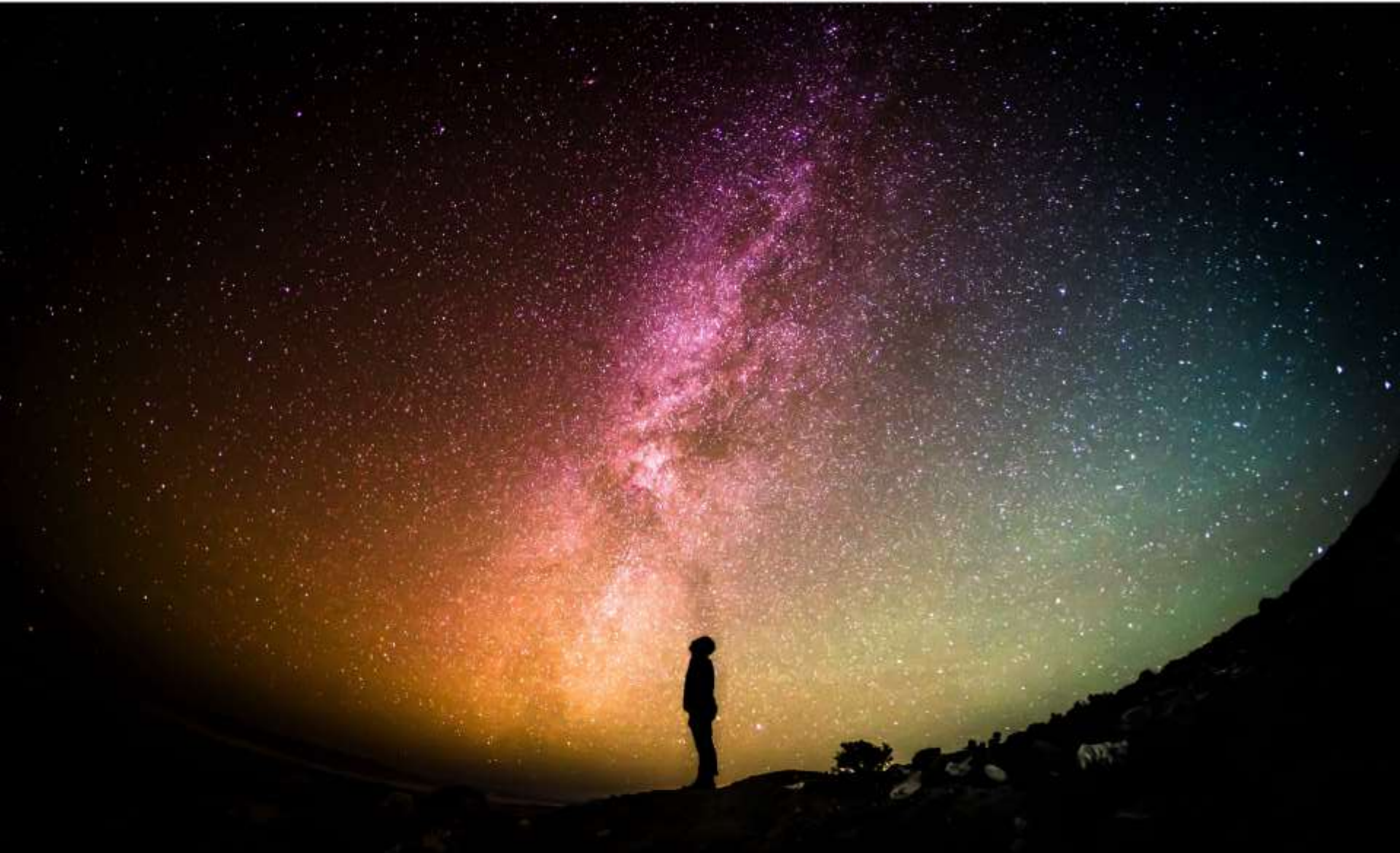


Is There Teleonomy?

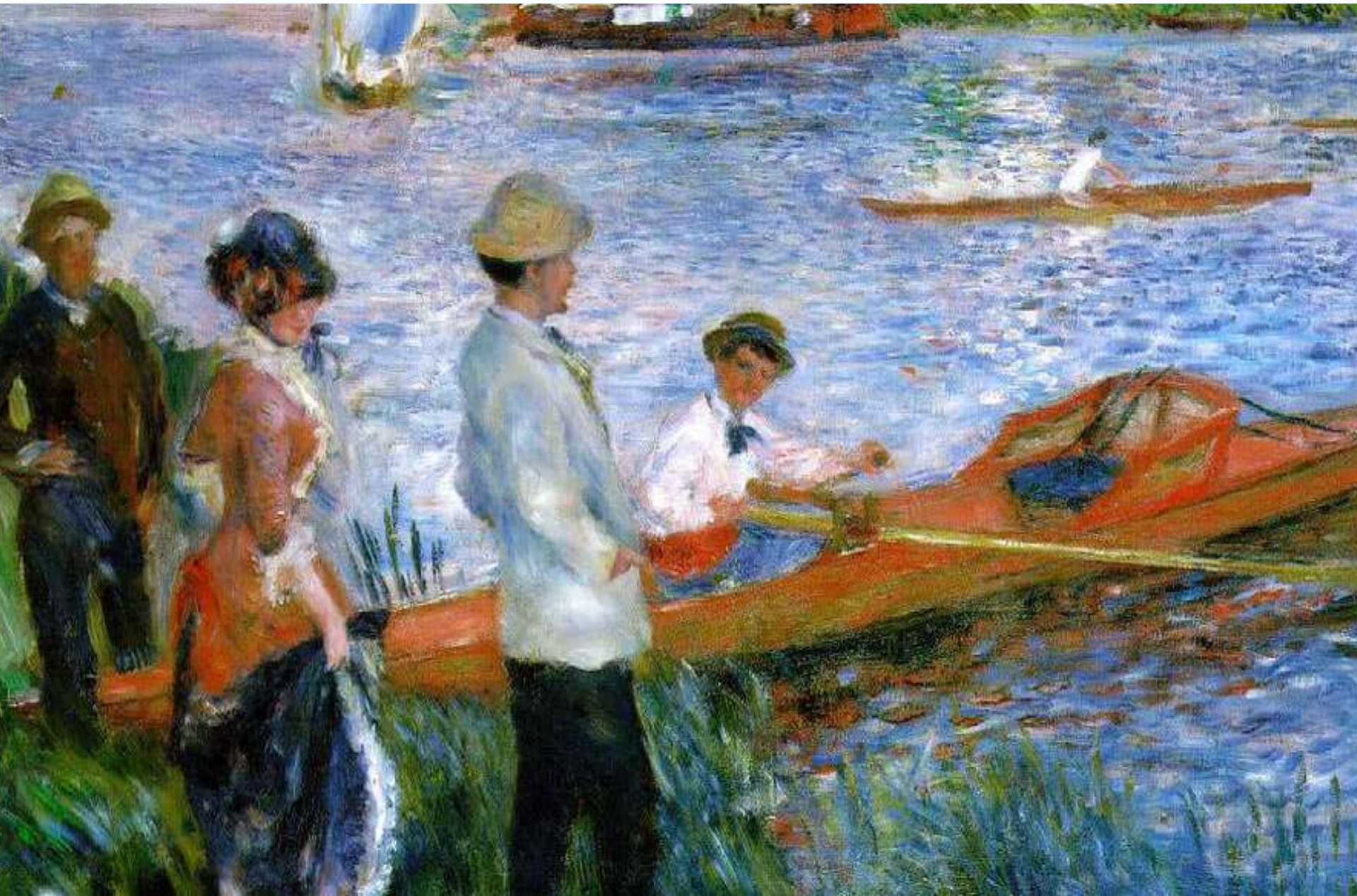


Smith and Szathmary. The origins of life

Exploring Why There is Life



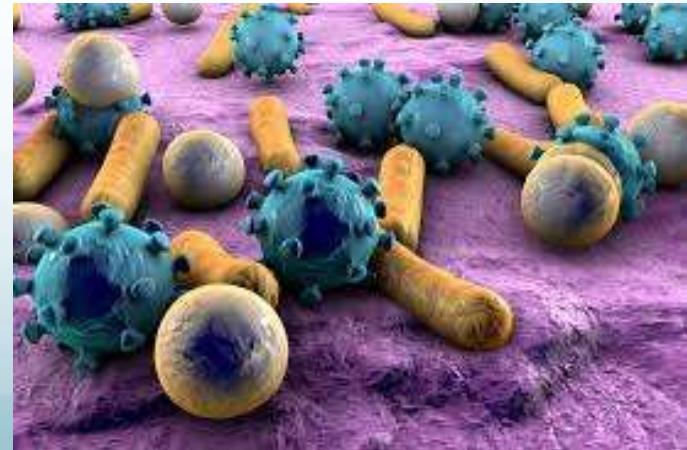
Exploring Why There is Life



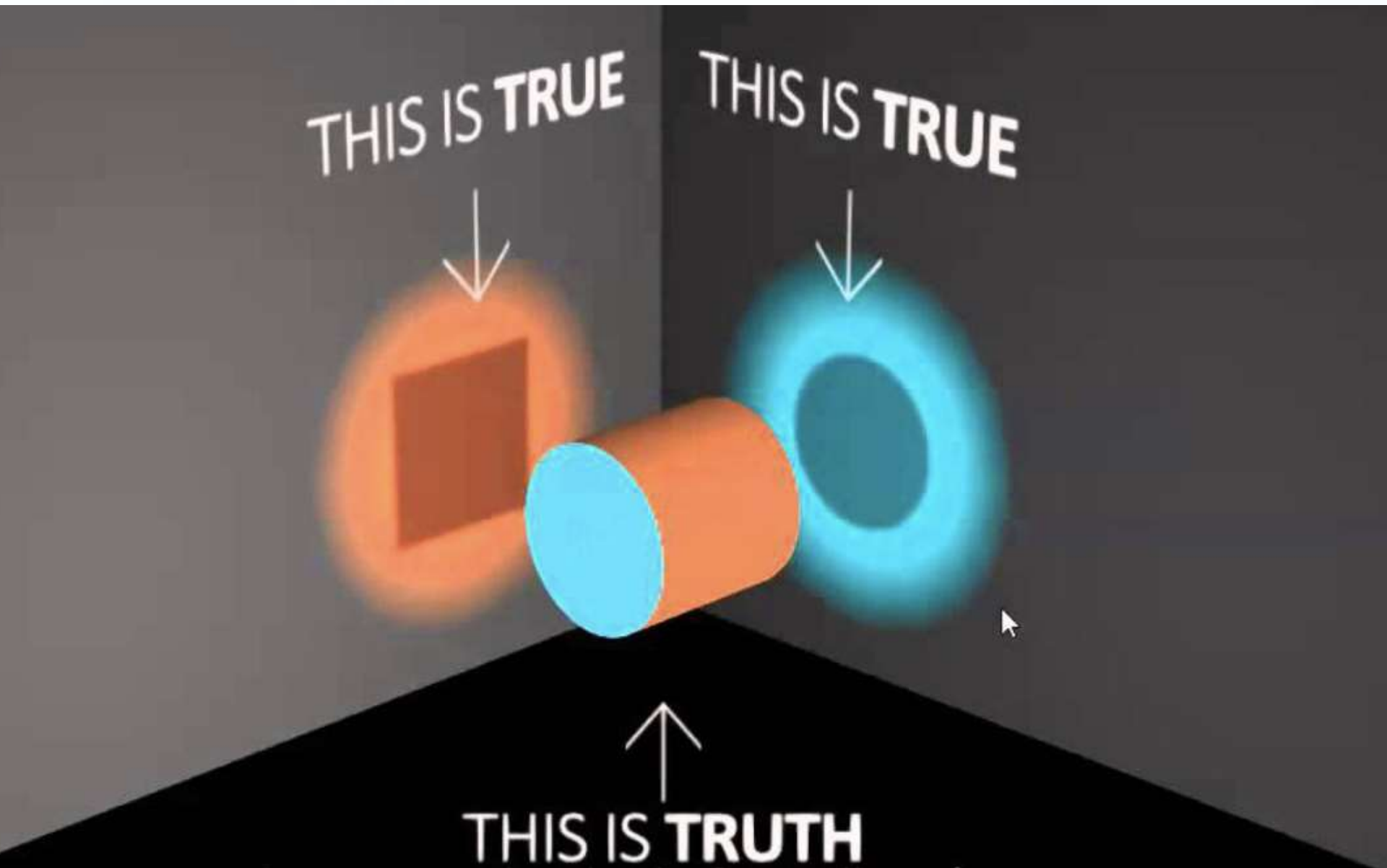
What is Life?

	Plasma Membrane	Metabolism	Growth and Reproduction	Evolution
Eric Chaisson	+	+	-	+
Steen Rasmussen	+	+	+	+
Erwin Schrodinger	+	+	+	+
Manfred Eigen	+	+	+	+
Stuart Kaufman	+	+	?	?
Freeman Dyson	+	+	-	+
Tibor Ganti	+	+	+/-	+/-
Geoffrey Zubay	?	+	+	+
Pier Luigi Luisi	+	+	+	+
Humberto Maturana & Francisco Varela	+	+	+	?
John Oro	+	+	+	+
Clifford Grobstein	+	+	+	?
Addy Pross	+	+	+	+

What is Life?



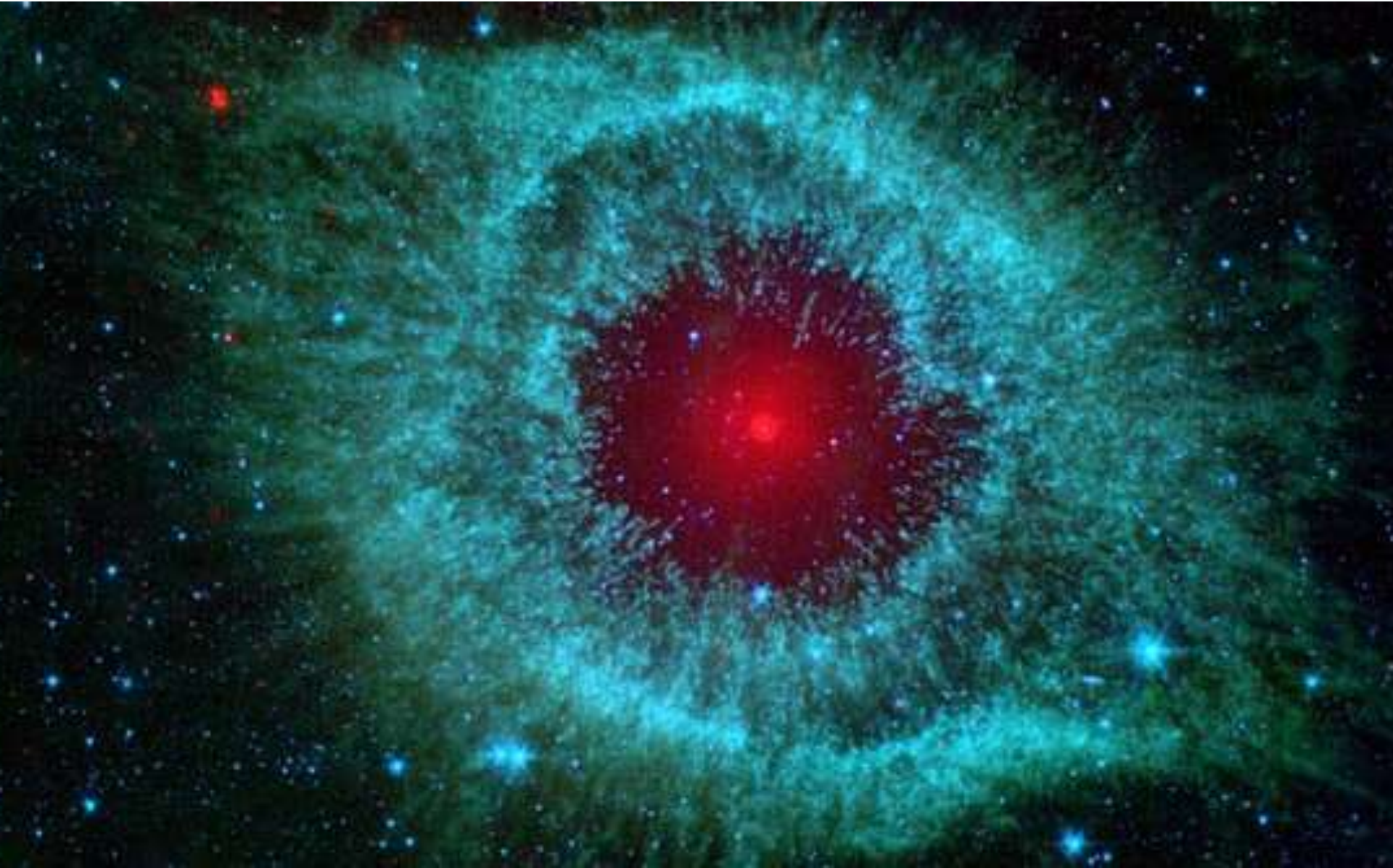
A Different Perspective on Life



Why Does Matter Complexify?

Observations on the creation and evolution of complexity of the inanimate universe

The Creation of Elements

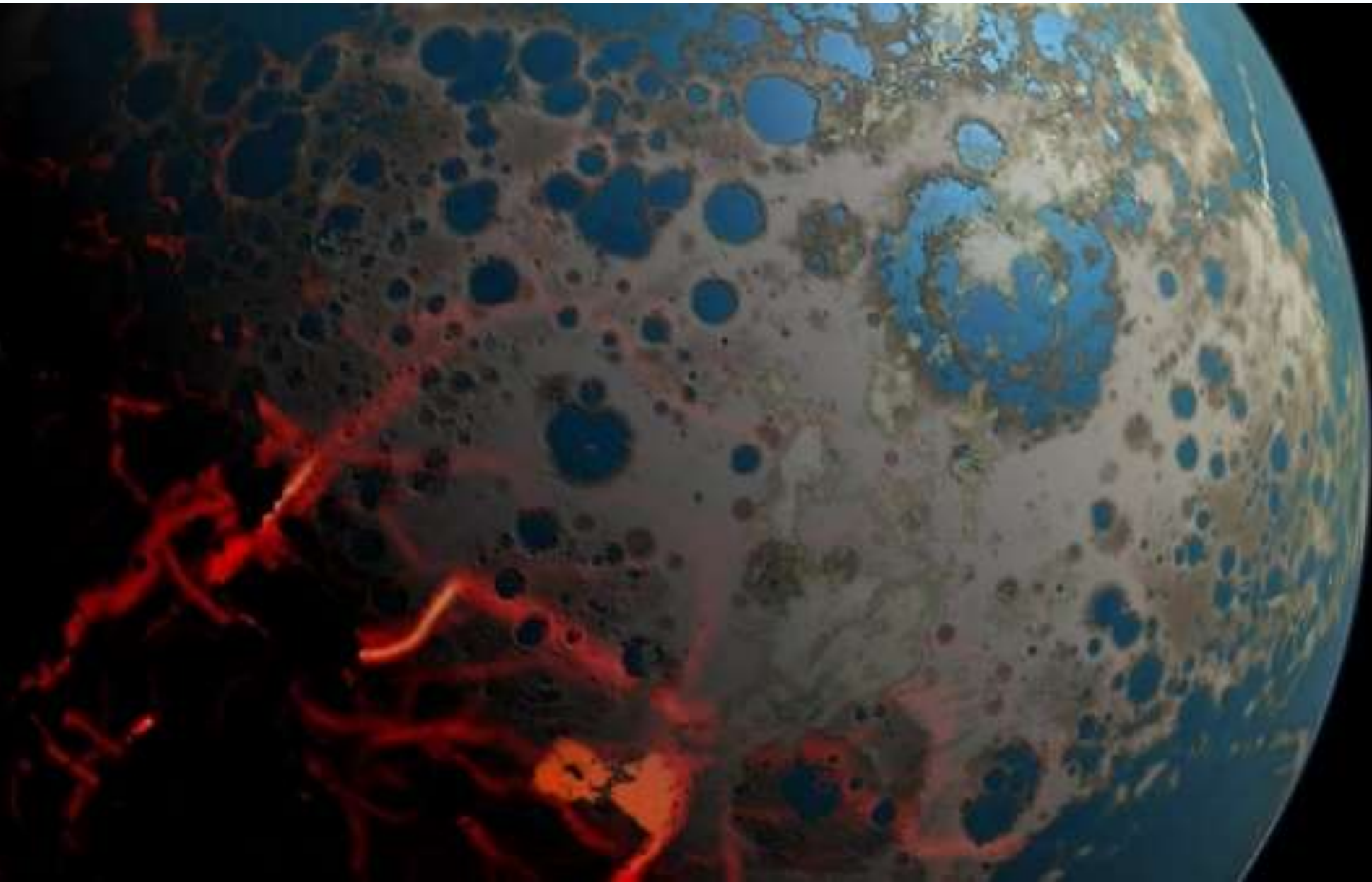


Molecular Creations

The interstellar medium and grain surface chemistry



Earth's Preanimate Organic Evolution



Earth's Preanimate Organic Evolution



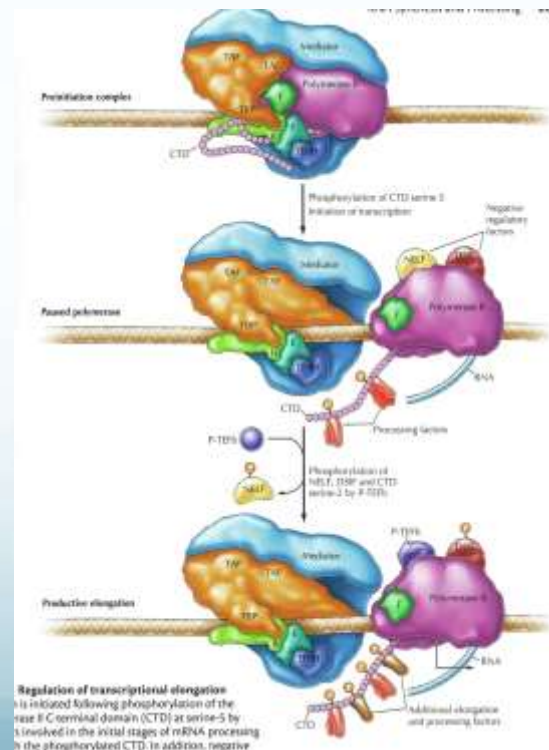
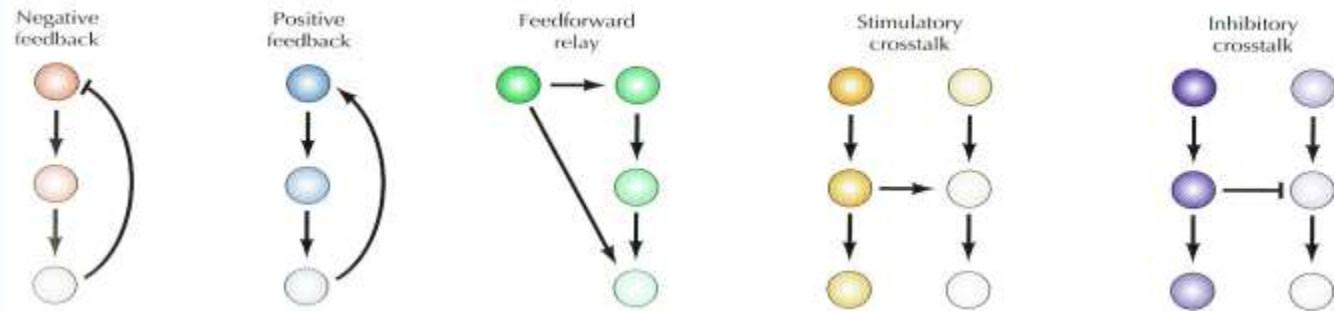
Creation of Animate Matter

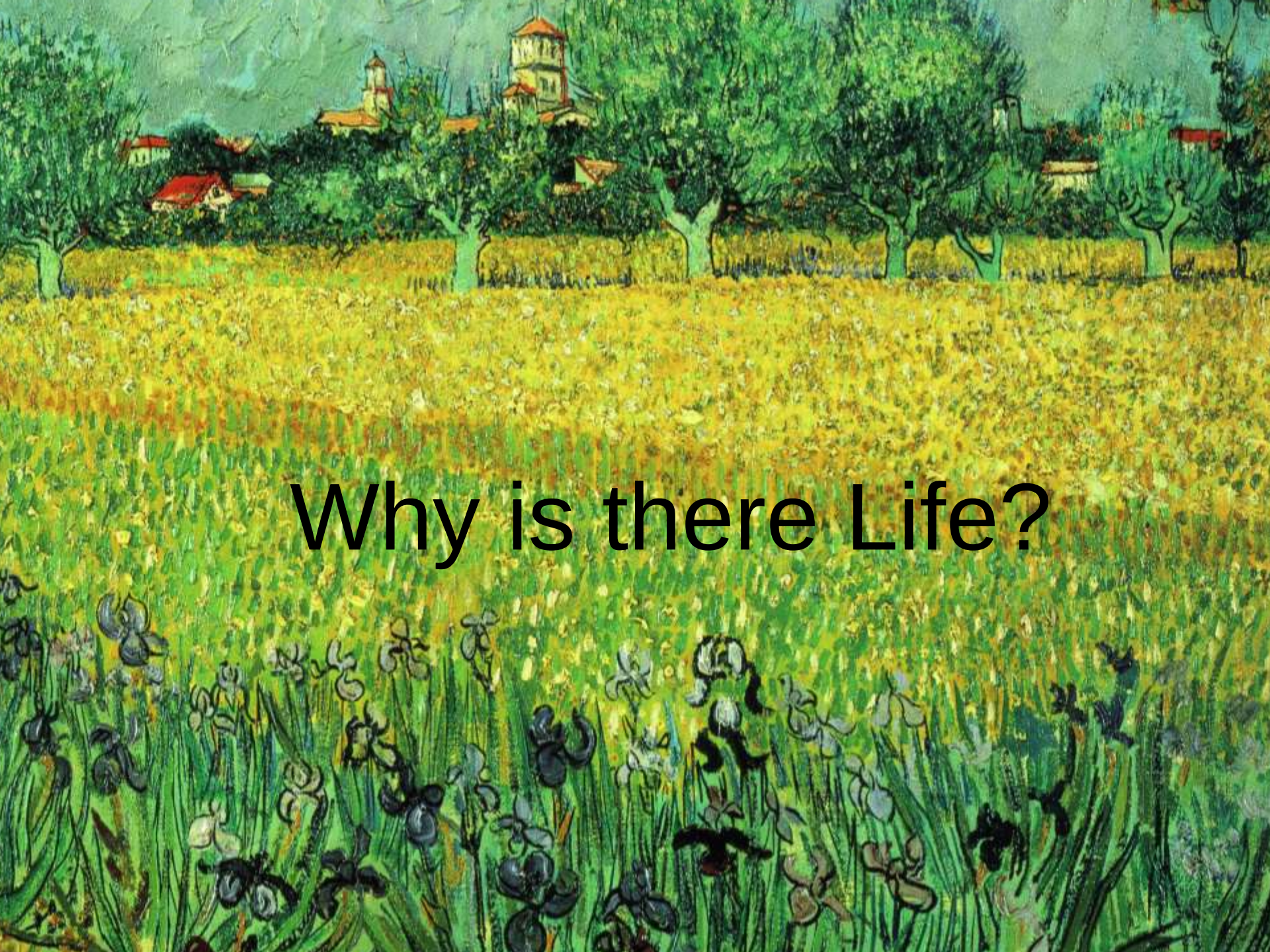


Creation of Animate Matter



The Logic of the Metabolic Machinery



A painting of a landscape. The foreground is a field of yellow flowers, possibly daisies, with green grass. In the middle ground, there are several green trees. In the background, there is a village with a church and other buildings. The sky is blue with some white clouds.

Why is there Life?