

## **A New INSClght of INformational SCience**

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Until now the scientific paradigm of reductionist materialism has maintained that mind somehow arises from matter, that reality is solely physical and that its appearance of separation is real.

Instead, growing evidence is now revealing that the reality of our Universe emerges from more fundamental realms of unified reality and that separation is an illusion.

Reverting to the primacy of mind and consciousness, as espoused by Planck and many other pioneering scientists, it is showing is that universal mind, articulated as digitised information and represented as dynamic and relational patterns and processes of semiotic in-formation, literally in-forms the formation of our Universe.

In addition to increasing indications at all scales of existence and across numerous fields of research that our Universe is innately in-formed, evidence that its appearance is also holographically manifested is mounting too.

When key cosmological attributes are allied with this emerging understanding of the fundamental role of information and the holographic principle, an integral model can be developed in which the 'Big Breath' of space expanding and time flowing embodies ever-increasing entropic information and individuated evolutionary complexity and diversity through the finite life-cycle of our Universe.

Contextualised by this perspective, this paper focuses on a new INSClght of INformational SCience.

Restating two laws of thermodynamics in terms of information (infodynamics), thereby provides general statements of Quantum and Relativity Theories and points to their consequential reconciliation; with emergent energy-matter and space-time being complementary informational expressions, conserved and entropic respectively, and so enabling our Universe to exist and evolve as a unified entity – a finite 'thought form' and likely one of many, in the infinite and eternal mind and consciousness of the Cosmos. In so doing, it explains how the dualistic appearance of our Universe arises from its nondual ground of being.

A correlate to this approach is that acceleration is informationally entropic and three key predictions are that:

- Expansion of space is through acceleration or deceleration - never at constant velocity
- All forces (including gravity) are informationally entropic
- Gravity is not quantized

This paper deliberately excludes any mathematical notation as the mathematical formalism of the laws of physics are already articulated. The new INSClght of INformational SCience, the restatement of thermodynamics to infodynamics and the consequential opportunity to reconcile Quantum and Relativity Theories as Marcel Proust describes the process of discovery is rather to 'see with new eyes'.

## **Information is physically real**

Scientific evidence at all scales of existence and across numerous fields of research is discovering that our Universe is fundamentally interconnected, interdependent and ultimately unified<sup>1, 2, 3, 4, 5, 6</sup>

Whilst apparently solid, physicists have realised for many years that the physical world is incredibly ephemeral. And an experiment reported in 2012 demonstrated the fundamental nature of information by showing that deleting one digitised bit, releases actual physical heat and in line with theoretical predictions<sup>7</sup>.

This and many other examples of increasingly compelling evidence<sup>1</sup> are showing that such digitised information, the basis for all our technologies, is exactly the same as universal information, also articulated as digitised bits, that underpins and literally makes up all physical reality.

## **Key attributes of our Universe**

The following key attributes of the physical reality of our Universe are being progressively supported by cosmological and other evidence.

Spatially, it is geometrically flat<sup>8</sup> and otherwise mathematically the equivalence of energy and matter would be violated<sup>9</sup>.

It is finite<sup>10</sup>. Beginning as a finite event 13.8 billion years ago, the WMAP analysis of CMB wavelength distribution has a finite cutoff<sup>11</sup> and on a logical basis there are no infinite physical quantities within space-time. In addition, the great majority of hydrogen in our Universe has already been processed into stellar nucleosynthesis<sup>12</sup> and the reducing temperature of ambient space (currently at 2.7° K) both suggest a finite end.

It is closed/isolated in space-time otherwise universal conservation of energy-matter would be violated.

Space expands and time flows from their finite origin.

It is nonlocally integrated. Bell's Theorem requires this for Quantum Mechanics to work and nonlocal entanglement has been experimentally demonstrated to 600 light years from Earth<sup>13</sup>

## **Key Premise of our Universe**

Supported by a theoretical frame-work<sup>14</sup> and evidence at all scales of existence and across numerous fields of research<sup>1</sup> with digitized information pixelated at the Planck scale area<sup>15</sup> of the 2D holographic boundary/brane of space-time, the reality of our Universe is manifested holographically. The first direct cosmological evidence for this was demonstrated in 2017<sup>16</sup>.

Whereas a hologram captures information about an object onto a 2D film, then projects it to create the holographic appearance of the 3D object – cosmologists are realising that our entire Universe takes information held on its 2D boundary and holographically projects it to create the 3D appearance of reality.

The latest scientific evidence is revealing that our Universe is a 'cosmic hologram' that exists and evolves as a unified and finite thought form in the infinite mind of the Cosmos.

## **Restating and expanding two laws of thermodynamics to laws of information (infodynamics)**

Based on these key attributes and premise the laws of thermodynamics can be restated and expanded as laws of information (infodynamics):

### ***Restating the 1<sup>st</sup> Law of Thermodynamics to a 1<sup>st</sup> Law of Infodynamics***

The 1<sup>st</sup> Law of Thermodynamics states that the total energy of a closed system is conserved.

As:

- Our Universe is a closed/isolated system
- Energy and matter are equivalent –  $E=mc^2$

The total energy-matter of our Universe is conserved.

As Quantum Theory is a description of universal energy-matter, this is its most simple and generalized statement.

- Information is physically real and can be expressed as energy-matter

Thus, information expressed as the energy-matter of our Universe is universally conserved.

Leading to the 1<sup>st</sup> Law of Infodynamics, which states that information expressed as the total energy-matter of our Universe is conserved.

### ***Restating the 2<sup>nd</sup> Law of Thermodynamics to a 2<sup>nd</sup> Law of Infodynamics***

The 2<sup>nd</sup> Law of Thermodynamics states that the total entropy of a closed system always increases over time.

As:

- Our Universe is a closed/isolated system
- Relative time and space are combined as invariant space-time
- Space-time began in a state of lowest entropy<sup>17</sup>

The total entropy of our Universe always increases over space-time.

As Relativity Theory is a description of space-time, this is its most simple and generalized statement.

- Information can also be expressed entropically as the information *content*<sup>2</sup> of a system
- Our Universe is manifested holographically with digitized information pixelated at the Planck scale and encoded on its 2D boundary/brane

Thus, time flows and space expands to entropically express ever more informational content within space-time.

The flow of time itself *is* the entropic accumulation of the informational content of our Universe.

Leading to the 2<sup>nd</sup> Law of Infodynamics, which states that the informational content/entropy of our Universe expressed as space-time always increases.

**As for their thermodynamic subset, the two laws of infodynamics are both required to describe the fundamental nature of our Universe and show how**

## **Quantum and Relativity Theories complement and so can be reconciled with each other.**

Essentially the 1<sup>st</sup> Law of Infodynamics enables our Universe to exist; the 2<sup>nd</sup> Law enables it to evolve.

Together the two reveal a Universe that essentially exists *to* evolve.

### **Nomenclature**

To reflect the expansion of the concept of entropy from its initial thermodynamic association as a measure of the microstates of (*energetic*) systems, to the *informational* content of systems, it is suggested that this expanded understanding of the concept is accordingly differentiated as *intropy*.

### **Correlates and predictions**

A correlate to this new INSClght of INformationa SCience an infodynamics approach is that acceleration is *intropic*: our Universe expresses less informational content yesterday than it does today and will tomorrow and so on from the beginning to the end of its finite life-cycle. So, acceleration and all forces are innately *intropic* through their most simple articulation of  $F=ma$ .

Given the *intropic* nature of space-time, a key prediction is that the expansion of space is thus through acceleration or deceleration - never at constant velocity.

This approach also predicts that as gravity is identical with acceleration that whilst *intropic*, it is not quantized.

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