

On the Philosophy of Creation in Physics and Cosmology

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*Philosophy has produced many dazzling blossoms over the years.
Unfortunately, most of these blossoms have proven to be barren*

The philosophy of physics should be a philosophy of nature and should be distinguished from metaphysics¹ The current idea of *Creation from Nothing* is an idea that contradicts the conservation laws of physics. While the 19th century was a century of enlightenment in science and technology, the 20th century was a century of the restoration of metaphysics. With the theory of relativity and quantum theory, physics in the 20th century, based on its mathematically formulated theories, shook the previously firmly established beliefs about the structure of nature, such as the universal concept of time and the determinism of classical physics². It is time to create a solid foundation for physics again. Let's look at the history of philosophy. We find basic beliefs in different cultures that have remained unchanged over the centuries and that we can put together like a puzzle to form an overall picture of natural philosophy.

One of the fundamental concepts of philosophy is the concept of creation. As a theological term, creation in the Christian view means nature and its relationship to God, or the relationship of God to nature and man. In most religions, the gods are personified. The Christian view separates God from nature. Another view is the integration of creation into nature through the personified Sun.

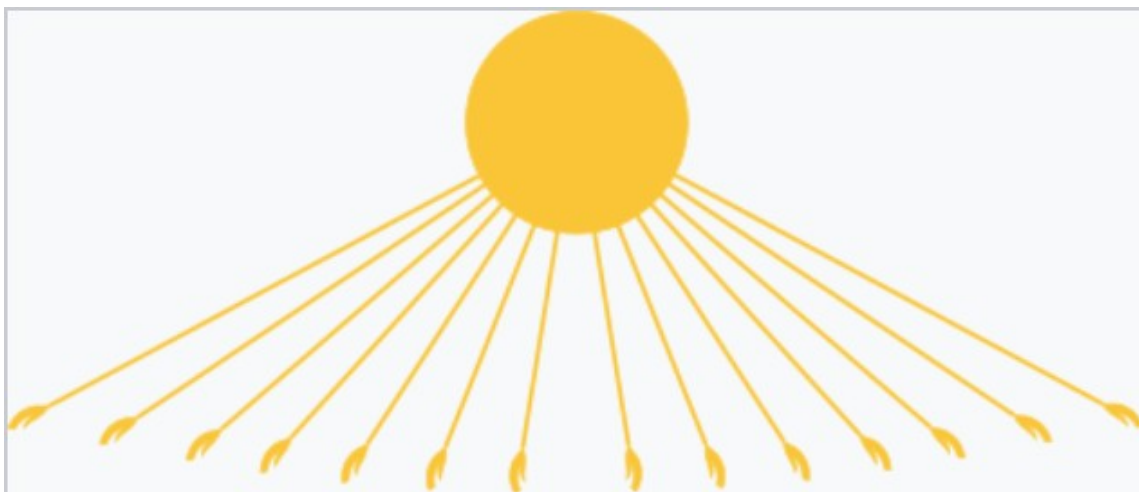


Figure 1: Aton - Sun representation of Akhenaten

The list of cultures with names of the personified Sun God is long. Only the religion of Akhenaten in ancient Egypt dispenses with a personification of the deity Aton. (Fig. 1)

1 Metaphysik meint das Geistige, den Anspruch, Erkenntnisse außerhalb der Grenzen der sinnlichen Erfahrung formulieren zu können.

2 D. E. Reinhard – *Modern Physics and the Philosophy of Science*;
https://www.academia.edu/29689867/Modern_Physics_and_the_Philosophy_of_Science

An insightful conversation about the different views regarding God's position in nature occurred between Albert Einstein and the Indian philosopher Rabindranath Tagore in Caphut in 1930.³ For Tagore, nature was the universal spirit with which man is in a relationship. Hindu philosophy describes the cosmic functions of natural processes with creation, preservation, and destruction, represented by its three main deities, Brahma, Vishnu, and Shiva. The AUM symbol (Sanskrit: ॐ) of Hinduism is seen in a nature-related interpretation as an allusion to the Trimurti, with the phonemes A, U, and M of the word indicating creation, preservation, and destruction and together representing Brahman. In a human-related interpretation, the sound "A" represents the waking state of consciousness, "U" represents the dream state, and "M" represents the deep sleep state. The silence that follows the chanting of AUM represents the state of pure consciousness or transcendence. Together, these syllables symbolize the entire spectrum of human experience and the path to self-realization. But here, like all religions, Hinduism slips into mysticism.

Creation, preservation, and destruction determine a sequence of events and this sequence of events runs cyclically. Contemporary Western philosophy, on the other hand, has a problem with a cyclic time as Stephen Hawking's *Brief History of Time* reveals.⁴ There, time begins with an explosion a detonation, the effect of which is the expansion of cosmic volume. Although he wrote an entire book about time, questions remain unanswered. What is time? Is time absolute or relative? Can time run backward? Does time have a physical meaning?

In Indian philosophy, time is a cycle with no known beginning and no end, like the movement of the Earth and the Moon around the Sun. Our time is an ordering relationship between this cosmic movement and our clocks. For Immanuel Kant, time, like space, was a "pure form of perception," namely that of the inner sense. It is our access to the world and is therefore one of the subjective human conditions of knowing the world, and is thus the special form that human consciousness gives to sensory impressions. Consequently, time is relative, dependent on location and direction, regardless of what other opinions about time have been held over the last century. Physically, it is realized by a timed flow of energy, which means that it is the duration between two constantly repeating events or states that are counted. Thus it forms the basis for a binary information system, such as we use in every computer. The change of events or states can be sensed and represented in consciousness, which makes time an ordering relationship between the outside world and consciousness. In a society, time is subject to general agreement, like any physical unit of measurement.

Greek philosophy provided the substance that changes in time. Heraclid identified fire (ionized matter) as the primary substance and - he said: Panta rhei - everything flows. This everything was specified in the 5th century BC by the "four elements theory" of the Greek natural philosopher Empedocles of Acragas. Even today we understand this idea as the four phases of *matter* and according to it, matter is *mass in motion*, whereby mass is another physical relation that has a reference to a defined solid body called the prototype kilogram. The term *mass* means something uncountable in comparison with the countable quantity. The prototype kilogram makes mass weighable. Mass is divisible up to the order of atoms and elementary particles. Mass is often confused with weight. Weight is caused by a force that is the result of the effect of atomic charges.

3 "Note on the Nature of Reality", <https://www.organism.earth/library/document/nature-of-reality>

4 St. Hawking – *A Brief History of Time*; Bantam Books.(1988) ISBN 978-0-553-38016-3.

Atomism emerged in Greece in the fifth century BC, primarily through Leucippus and Democritus (460 or 459 – 370 BC). Leucippus was the first representative of the philosophical school of Abdera. Democritus was the student of Leucippus, who founded atomism, and their contributions are difficult to separate. Democritus' central statement on this is:⁵

„A thing only appears to have a color, only appears to be sweet or bitter; in reality, there are only atoms and space.“

Democritus believed that atoms are too small to be perceived by the human senses, that they are infinitely numerous, that there are infinitely many types of atoms, and that they have always existed, moving in a vacuum that Democritus called the "void."⁶ This concept has essentially proven true. Only the void has to be replaced by the force field between the positive and negative charges of the protons and electrons and the types of atoms are limited. The flow expresses the three aspects of the movement of matter: the source of force, the impulse conductor and the energy sink. There is structure and order in energy and this brings us back to the divine Brahman.

In physical terms, this Brahman is nothing other than the concept of *entropy*, which was first used by Rudolph Clausius in thermodynamics. While the first law of thermodynamics includes the conservation of energy, the second law of the thermodynamics of closed systems states that entropy can only increase over time.

$$\frac{dS_{int}}{dt} \geq 0 \quad (1)$$

To put it bluntly: Disorder can only increase in a closed system. That would be the Shiva principle. If entropy says something about the order in a real system, its reflection in the mind is information, as can be seen from the comparison of Ludwig Boltzmann's and Claude E. Shannon's definition of entropy.⁷ The second law of thermodynamics is the law that has always caused physicists great difficulties by breaking the beautiful symmetry, and now it turns out that it is also incomplete because it only applies to closed systems. But every evolving system is an open system. Unlike a closed system, which strives for a stable equilibrium, an open system usually achieves a dynamic equilibrium between incoming and outgoing flow. In the 1970s, the physical chemist Ilya Prigogine (Илья Романович Пригожин) made a few basic statements about the thermal behavior of open systems, unnoticed by physicists.

What can we say about the entropy in such a system? The entropy change of an open system is the sum of the entropy change introduced and the internal entropy change minus the entropy released. We summarize the difference between the entered entropy change and the released entropy change as the external entropy change. Then we can write: (see Fig. 2 too)

$$dS_{system} = dS_{inp} + dS_{int} - dS_{out} = dS_{ext} + dSi_{nt} \quad (2)$$

5 W. Capelle - *Die Vorsokratiker*, Fragmente und Quellenberichte - Leipzig: Kröner, 1935. (Kröners Taschenausgabe Band 119) - S. 135

6 A. Kenny - *Ancient Philosophy. A New History of Western Philosophy. Vol. 1.* Oxford University Press, Oxford, England 2004, ISBN 0-19-875273-3, S. 26–28

7 C. E. Shannon - *A Mathematical Theory of Communication*. In: *Bell System Technical Journal*. Band 27, Nr. 3, 1948, S. 379–423 <https://ieeexplore.ieee.org/document/6773024>

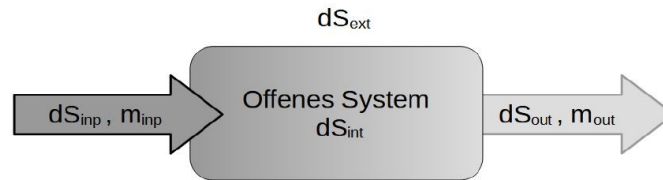


Figure 2: Model of an open system

For this, Ilya Prigogine received the Nobel Prize in Chemistry in 1977⁸, because he was able to explain why a higher order can arise in open systems under certain external conditions, because although $dS_{int} \geq 0$, dS_{ext} is arbitrary. Thus, one can distinguish three cases in the model of the open system:

Creation – The order in the open system is built.

More entropy is removed from the system than is generated internally.

$$dS_{ext} < 0, \quad dS_{int} < |dS_{ext}| \rightarrow dS_{system} < 0$$

Maintenance – A dynamic flow equilibrium is reached.

$$dS_{ext} < 0, \quad dS_{int} = |dS_{ext}| \rightarrow dS_{system} = 0$$

Destruction – The order in the open system disintegrates.

There is an internal and an external reason for this

a) Less entropy is removed from the internal system than is produced by it.

$$dS_{ext} < 0, \quad dS_{int} > |dS_{ext}| \rightarrow dS_{system} > 0$$

b) The internal entropy cannot be removed because the external entropy is already larger than the internal entropy.

$$dS_{ext} > 0, \quad dS_{int} < dS_{ext} \rightarrow dS_{system} > 0$$

The ancient cultures were right when they worshiped the Sun as a Creator God. The realization that creative processes take place on the Sun has not yet been fully realized by today's builders of nuclear fusion power plants. They think of the Sun as a closed thermodynamic system, like a furnace filled with fuel you have to light. But the Sun is an open system, floating in a stream of hydrogen, the most common element in the cosmos, and various other gases, as can be seen from the spectra of countless galaxies. Nuclear fusion is an act of creation. Since the first experiments with the Russian Tokamak principle, they have only heated the plasma to higher temperatures in the hope that fusion would then set in.

They should understand that as the plasma temperature increases, its entropy increases and that this entropy must be dissipated so that protons can fuse with electrons to form larger atomic nuclei. This does not happen in the interior of the Sun, but at the boundary between the solar corona and the chromosphere, where the extreme drop in temperature of several orders of magnitude occurs, because this is where entropy is dissipated when there is a lack of electrons as a result of the Sun's positive field in order to build a higher order. The faster electrons are first slowed down in the denser photosphere and then fed back into the freshly formed ions to build up the electron shell. The fused material then collects in the interior of the Sun. Only the

8 I. Prigogine – *Time, Structure and Fluctuations*; Nobel Lecture, 8 December, 1977 ; <https://www.nobelprize.org/uploads/2018/06/prigogine-lecture.pdf> (abgerufen am 20.02.2023)

SAFIRE experiment led by Montgomery Childs⁹ has so far been able to recreate the function of the Sun in the laboratory according to the theory of the thermodynamics of open systems.

The entropy dissipated in the form of radiation is the solar spectrum from which earthly nature draws. In this respect, nature is of divine origin and should therefore be given more respect and reverence instead of mercilessly exploiting it until it becomes unbalanced. It is our paradise and cannot be replaced by any space technology, as some techies may dream. The personification of deities also repeatedly seduces individuals into wanting to play God, although their "divine work" is usually nothing but destruction. The history of humanity is a history of wars. It is therefore wise for a society to limit the power of individuals for a certain period.

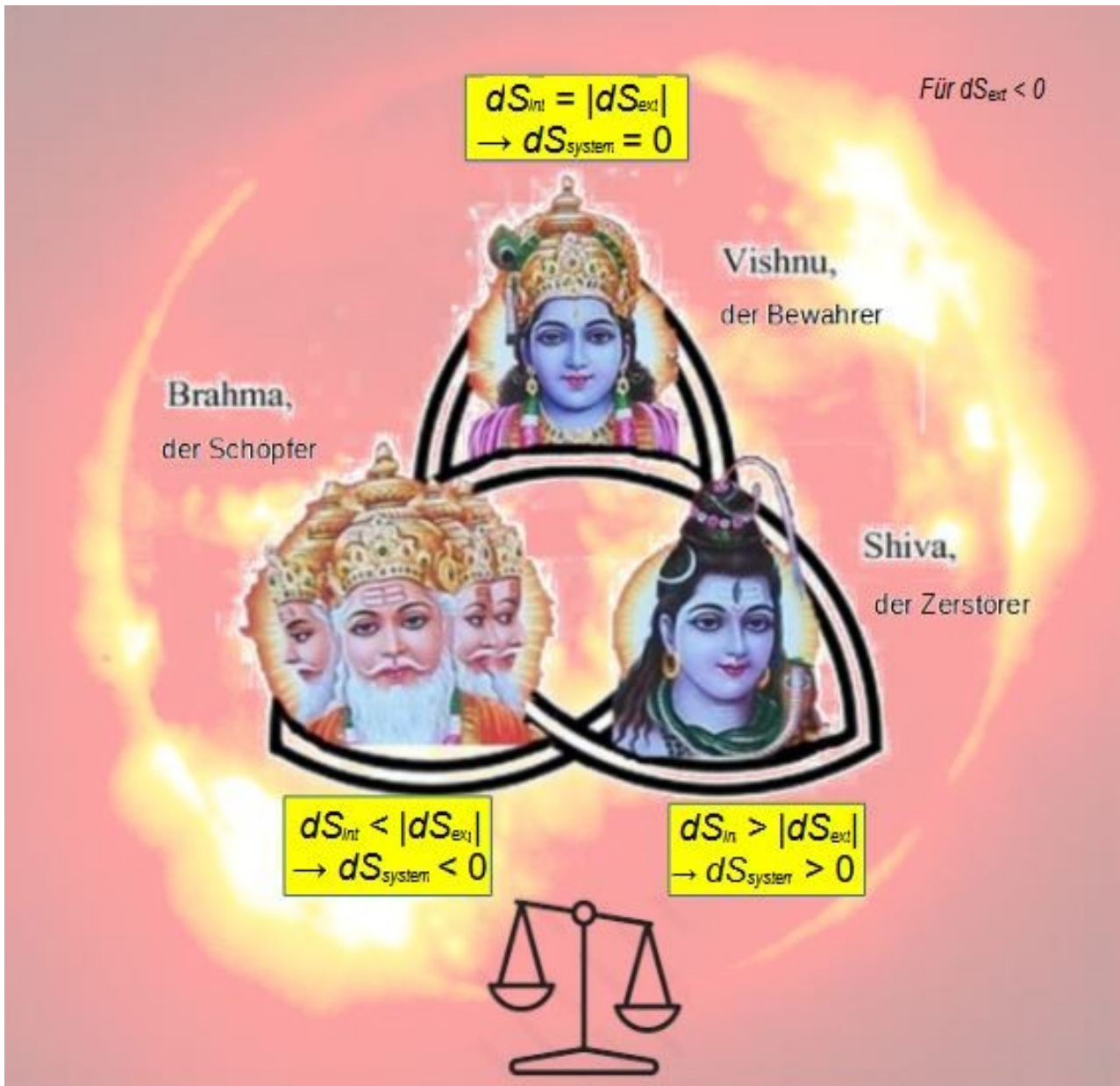


Figure 3: Reflection of thermodynamics in Indian philosophy

9 M. Childs – The SAFIRE-Projekt; <https://aureon.ca/>