Conceptual FrameWorks
Research papers

Empiricism and empirical information

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Modern physics is empiric science and it is beyond doubt that it is extremely successful. However, the ambition of physicists is not only to discover all the distinct phenomena and their mutual interactions, physicists want to find out the origin of the existence of our universe too. It is even hoped that the theory of everything can explain the cause behind the physics laws and the universal physical constants. In spite of the research all over the world during nearly a century, there is still no accepted theory of everything in physics. That's quite worrying so it raises a question about the suitability of the empiric method to search for the theory of everything.

Experiments

What are physicists doing when they observe the properties and mutual interactions of the phenomena in the universe?

Phenomenological reality is like a mathematical set. We can represent phenomena with the help of a Venn-diagram (figure 1). Set A and set B have properties in common and this is represented by the intersection (A∩B). That is why the intersection between set A and set B represents the outcome of the measurement.

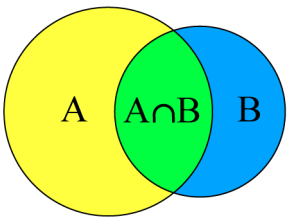

figure 1

Unfortunately, the search for the theory of everything is not the search for the relations between phenomena at the lowest scale (elementary particles, force fields). It is the search for the "hidden" reality that creates all the distinct observable phenomena in the universe.

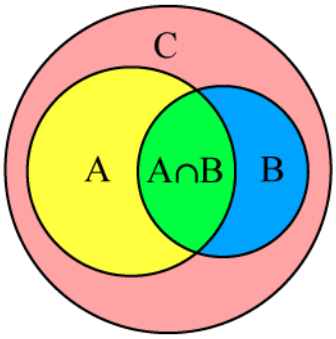

figure 2

Actually, it is the search for the not composed properties that create the composed set A and composed set B. Because set A and set B are part of an all-inclusive set that envelopes everything in the universe: set C. Therefore, the Venn-diagram in figure 2 looks nice but it is a *wrong* representation of reality. It merges the phenomenological view – set A and set B – with the all-inclusive view: set C.

Phenomenon A and B are created by set C (figure 3). The absence of the intersection A∩B in relation to the existence of set C proofs the uselessness of the results of measurements when physicists try to find the theory of everything. Because the intersection doesn't differ from the properties of A and B in relation to the basic properties of set C.

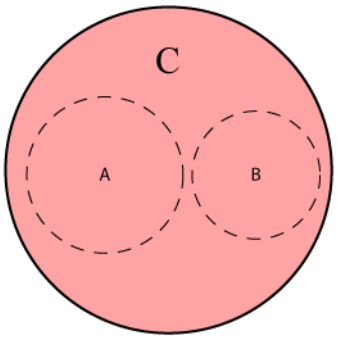

figure 3

This simple model shows the limitations of empiricism if we search for the theory of everything. Because it is impossible to deduce the properties of set C with the help of subsets (composed properties of set C). The result will always be a limited model, a simplification of reality.

The solution to by-pass these problems is simple. Research in the field of the underlying reality of the creating quantum fields (TOE) must not focus upon the observed properties of the phenomena but on the general properties that are observable everywhere in the universe, the basic properties of set C. Moreover, the description must be done with the help of correlated mathematics.

Phenomenological information

Observing is incorporating information. Actually, information is the representation of everything that exists. Unfortunately, we cannot observe all that exist because with our senses and instruments we measure only differences between phenomena. All that is equal in every point in the universe will remain undetected.

Unfortunately, all the information we have obtained originates from observation; personal observations or observations by others. We interpret the information and create a conceptual model but there is not only one interpretation so there is not one hypothetical model too.

The right model – the all inclusive concept – makes it possible to derive the universal properties of set C, the universe. Actually, universal properties are not limited to a specific category of phenomena, like set A and set B. Universal properties are existent everywhere in the universe at every level of reality so we can derive their nature.

Some observations of universal properties are:

a. The uniform structure of space and time.
b. The existence of field properties everywhere.
c. The continuous changing of all the phenomena.
d. The existence of zero point energy.
e. The non-local nature of the universe.
f. The existence of uniform proportions.
g. The law of energy conservation.
h. The constant speed of light.
i. The existence of Planck's constant.
j. The uncertainty principle of Heisenberg.
k. The equivalence of mass and energy

Phenomenological interpretation

The ancient Greek philosopher Parmenides reasoned that "*nothing*" don't exist in our universe and all the observable phenomena are created by an "*underlying reality*".[1]

Unfortunately, the empiric method cannot determine the correctness of concepts if there is no experiment that proves the hypothesis. But how can we set up experiments that prove Parmenides concept? It is impossible to examine the whole universe and the existence of an underlying reality isn't detectable by experiments, like we can detect the intersection of set A and set B.

Parmenides used other terms to describe the existence of set C. Like other philosophers – Leucippus and Democritus – probably meant that the underlying creating reality must have a universal non-destructive structure. Aristotle made a remarkable contribution because he stated that the underlying reality is in rest and all the observable changes in the sky – the celestial universe – are synchronized (the unmoved mover).[2]

One can have the opinion that these ancient scientific publications It is not difficult to show the reliability of these ancient philosophical concepts because the possibilities to describe reality are quite limited.

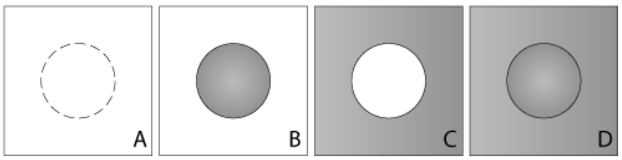

figure 4

The 4 images of figure 4 – A, B, C and D – show all the existing possibilities to describe the nature of our universe. The sphere represents all the observable phenomena in the universe. The back ground represents the surroundings of the observable phenomena. Something we cannot observe because there are no observable differences. The grey colour indicates reality, the existence of a creating origin.

- Possibility A denies reality. The phenomena and the surroundings of the phenomena don't represent a creating reality. At least both are not part of it.
- Possibility B shows phenomenological reality. Phenomena have properties or their own and these properties create the universe.
- Possibility C isn't part of our scientific culture at the moment because we cannot imagine the existence of properties without the existence of phenomena.
- Possibility D envelopes A, B and C so we have to accept that there is no difference between the object and the surroundings of the object.

Quantum field theory

The general concept of quantum field theory – phenomena are created by the underlying basic quantum fields[3][4] – is about the properties of set C. Properties that are symbolized by possibility D in figure 4.

The general concept of quantum field theory is comparable with the ideas of the ancient Greek philosophers like Parmenides, Leucippus, Democritus and Aristotle. That is why one should expect that the majority of the publications about theoretical physics in relation to the unification of all the conflicting concepts are about the basic properties of set C.

Neither the Standard model of particle physics nor the Standard cosmological model reflect the necessity to rise above the phenomenological point of view. The present paradigm we have named “the scientific method”.

References

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3. Art Hobson (2013), “*There are no particles, there are only fields*”. Am. J. Phys. 81 (3), March 2013, 211-223 DOI: 10.1119/1.4789885 https://arxiv.org/ftp/arxiv/papers/1204/1204.4616.pdf
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