

An invitation to experience Einstein's scientific thoughts: Principle theory, the success/failure system, and the cosmos

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Abstract It is well-known that Einstein was most satisfied with his scientific discovery of general relativity. For this famous discovery, when he visited the Grand Canyon of the United States in 1931, the Hopi Indians praised him with the name of the "Great Relative." However, do we really understand all of Einstein's scientific thoughts? Herein, we introduce Einstein from the unfamiliar perspectives of principle theory, the success/failure system, and the cosmos, and we summarise our related series of work. The aim of this paper is to direct the general public and the scientific community to personally experience the scientific discovery of the mesocosmos as a solution to the problem of the cosmos, and to recognise this proposed new twenty-first century science. In an academic market where scientists and humanity sell and buy a great volume of bewildering scientific data, language, and mathematics without feeling amazement and awe at new fundamental and significant scientific discoveries, we suggest personally experiencing Einstein's scientific thoughts, spreading this experiential gospel, and researching the cosmos in the era of the experience economy.

Keywords Einstein, Principle theory, Success/failure system, The cosmos, The macrocosmos, The mesocosmos, The microcosmos

1 An introduction to Einstein's scientific thoughts

Einstein said, "A human being is a part of the whole, called by us 'Universe,' a part limited in time and space."^{1:339} That is, the greatness of the universe (the totality of existence) concerns all of us: the general public and the scientific community. It was Einstein, "the Great Relative,"^{1:510} who originated scientific achievements on the scale of the universe, which formed a great divide between him and us, the rest of humanity. Einstein expressed, "When we say that we understand a group of natural phenomena, we mean that we have found a constructive theory that embraces them."^{1:366} Thus, Einstein proposed the principle theory approach, which is a constraining method for analysing the universe, that resulted from Einstein's philosophical and methodological reflections on his scientific achievements, including general relativity.^{1,2}

Through principle theory, we can begin to see how Einstein's scientific thoughts may inspire us beyond the commonly considered general relativity.³⁻⁶ For instance, we can compare the principle theory approach with disciplinary methods, such as analogy, deduction, induction, mathematics, and axiomatic systems. Disciplinary methods can produce domain expertise, which is human-dependent knowledge, but are not necessarily adequate to comprehend first-order scientific discoveries⁶. Further, such methods allow an individual equipped with a complex mind to explore as desired, for example, by creating unclearly bounded problems, diversifying the solutions of a problem, or unifying one solution for different problems. Conversely, principle theory is a highly constrained method which is easy to understand experientially and which guides us to seek the uniquely logical structure of the empirical universe.³⁻⁶ Einstein said, "All physical theories, their mathematical expressions notwithstanding, ought to lend themselves to so simple a description that even a child could understand them."^{1:380} General relativity is a case of interest. Mathematical difficulties obscure its logical simplicity, creating the impression that general relativity, which can be viewed as an understanding of the macrocosmos, is inscrutable.

By contrast, the success/failure system, which captures the mesocosmos using the discrete mathematical structure, $PO_{conditions\ for\ success} = PO_{causes\ of\ failure}$, where PO represents partial ordering, is easy to understand.³⁻⁶ Humanity lives in the universe at the mesocosmic level generation-by-generation but, paradoxically, never experiences the mesocosmos. Therefore, to raise the level of science to the scale of the universe, we cordially invite the general public and the scientific community to experience the mesocosmos through Einstein's principle theory.

Einstein said, "The most beautiful thing we can *experience* [emphasis added] is the mysterious,"^{1:331} and that "The eternal mystery of the world is its comprehensibility...The fact that it is comprehensible is a miracle."^{1:423} Thus, from Einstein's point of view, understanding the mesocosmos would be among the most mysterious experiences in the universe. **Indeed, based on our personal experience with the success/failure system,³⁻⁶ understanding the mesocosmos as Einstein's principle theory can result in a new understanding of the universe, scientific discovery including the rigorous creation of new scientific concepts directly connected with the empirical world, and**

also of a particular problem of science (i.e. the lack of concern with the universe as a whole)⁶

Einstein said, “In guiding us in the creation of such an order of sense experiences, success alone is the determining factor,”^{2:292} and that “It is always a blessing when a great and beautiful conception is proven in harmony with the reality.”^{1:388} With the success/failure system, we can orient ourselves before the mesocosmos into which we were born and forever wander like curious children in the labyrinth of sense-experiences that the mesocosmos provides.^{1,2} The mesocosmos is nothing but an entwined cosmic dance of success, failure, part, and whole in all concrete systems in the universe.³ From our understanding, the success/failure system is the only knowable theory for the mesocosmos.⁵ However we welcome and encourage the proposal of competing theories for the mesocosmos.⁵

Einstein said, “By academic freedom I understand the right to search for truth and to publish and teach what one holds to be true. This right also implies a duty: one must not conceal any part of what one has recognised to be true [especially for those fundamental and significant scientific discoveries].”^{1:108} We were among the first to approach the problem of the mesocosmos and to ponder the exceedingly delicate threads that connect impressions in their totality at the mesocosmic level of the universe.⁶ Satisfyingly, this new discovery leads to a new science. The discoveries of quantum mechanics and general relativity in physics and of DNA in molecular biology constitute multiple discoveries of modern science, the scientific paradigm in the twentieth century. However, in 2019, we remain ignorant of the cosmos. Einstein said, “I want to know how God created this world...I want to know his thoughts. The rest are details,”^{1:324} with “cosmic religious feeling.”^{1:329} Since the empirical universe was created, and indeed continues, as a unified whole (in the empirical sense), the universe as a whole can rationally be comprehensible to humans as a single logical system: the cosmos with three cosmic components, the microcosmos, the macrocosmos, and the mesocosmos, respectively defined by quantum theory, general relativity, and the success/failure system.⁶

In fact, Einstein, and not the rest of humanity, originated the problem of the cosmos.⁶ Current solution strategies, such as quantum gravity and string theory from disciplinary physical research, tend to only partially address the problem of Einstein’s cosmos, without considering the mesocosmos.⁶ We warmly invite the scientific community to research this modern twenty-first century science: the problem of the cosmos. Perhaps, another cosmic component beyond the microcosmos, the macrocosmos, and the mesocosmos will be proposed, although the three main streams of scientific progress since the dawn of humanity—matter, the starry heavens, and life—suggest there are only these three cosmic components.⁶

2 Our work on Einstein’s scientific thoughts

Our series of work on principle theory, the success/failure system, and the cosmos includes

- (1) The success/failure system hypothesis,³
- (2) The cosmos with the success/failure system,⁴
- (3) The logic of the success/failure system,⁵ and

(4) The mesocosmos: The success/failure system.⁶

We believe that this series of work can help bridge the great divide between us and Einstein, the Great Relative. Thus, it deserves widespread attention, investigation and experience. Dodd stated in 1955 that “The contributions which Dr. Einstein made to man’s understanding of nature are beyond assessment in our day. Only future generations will be competent to grasp their significance.”^{1:499} Thus, our series of work forms an unfamiliar but important part of the whole for grasping the significance of Einstein’s contributions. Without it, the scientific community will continue to postpone researching “God’s thoughts”^{1:324}, that is, Einstein’s cosmos and his conception of the foundation of the whole of science.⁶

We expect the near future to bring scientific interest in and personal experience of the logical inevitability and novel discovery of the mesocosmos.³⁻⁶ When the scientific community eventually begins to research the cosmos, we will be happy to accept credit for the prophetic calling to research the cosmos.

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