Einsteinian science versus Newtonian science: The challenges of Polanyi's premise of science

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Abstract Einsteinian science and Newtonian science are two sciences that seek a theory of the universe. Here, we use Einsteinian science to refer to Einstein's later achievements in principle theory and the cosmos rather than focusing on special and general relativity. Newtonian science refers to concepts found within Weinberg's *Dreams of a Final Theory* and Feynman's *The Character of Physical Law.* Recently, we requested an editor of a respectable Science Citation Indexed journal to disseminate our extension of Einsteinian science for continued research and we are currently waiting. However, there may be some scientists who question our two discoveries—the success/failure system and cosmic inertia—and completely deny our extension of Einsteinian science. Nevertheless, in this paper we justify Einsteinian science and refute Newtonian science. Thus, we introduce the challenges of Polanyi's premise of science that we then use to contrast the two sciences. Whereas Einsteinian science is based on the inertial universe, Newtonian science is based on the mechanical universe. This simple change in premise leads to a significant difference between the two sciences regarding collective research tasks, the methods of science, the laws of nature to be discovered and those already found, and their future findings. The scientific community must immediately embrace our extension of Einsteinian science and develop from it. **Cosmic inertia prevails eternally.**

Keywords Einsteinian science, Newtonian science, The premise of science

1 Introduction

A theory of the universe is intended to uncover all the laws of nature. Newtonian science, also called the mechanical universe approach, was developed by Newton in the late seventeenth century. Today's scientific community is mainly concerned with the mechanical universe, and thus is still ensconced in Newtonian science.[1,2] Einsteinian science[3,4] which includes principle theory and the cosmos, was developed by Einstein in the early twentieth century. Einsteinian science refers to a comprehensive approach to a theory of the universe, not simply special and general relativity. In an effort to expand Einsteinian science and disseminate our theories, we have developed thus far thirteen papers[5–17] on Einsteinian science with two new scientific discoveries: the success/failure system and cosmic inertia.

Based on an erring universe, the success/failure system reveals the mesoscopic structure of the universe.[5–11] By feeling the universe as a whole as an oscillating universe (i.e., an endlessly expanding and contracting universe), we discovered cosmic inertia.[12–17] The two laws of nature address some problems of a scientific nature mentioned in Einsteinian science.[3,4] To review and comprehend the two laws of nature and what we mean by Newtonian science and Einsteinian science, we suggest examining the predecessors[5–17] of this paper.

We have used these two new laws of nature to contrast Einsteinian science with Newtonian science under such concepts as the antithesis between empiricism and rationalism,[15] the laws of nature,[16] and the aim of science.[17] However, some scientists may question our two new discoveries, completely deny our extension of Einsteinian science, and continue to embrace Newtonian science. What are the possible reasons behind this behaviour? Is the acceptance of Einsteinian science justified and on what grounds? We are inspired by Polanyi's premise of science[18–21] as a guide to answer such questions.

Any effort towards understanding something must be sustained by the belief that **there is something there** that can be understood, that is, **the premise**.[18] Polanyi considered that the general nature of knowledge is based on an incorrect premise that assumes that all knowledge is objective. Thus, he modified the premise of objective knowledge by conceptualizing a theory of knowledge called *Personal Knowledge* to incorporate the aspect of personal coefficients into almost all kinds of knowledge in general, except objective science.[19] It is the premise of objective science,[18] as opposed to personal knowledge,[19] that concerns a theory of the universe, whether Einsteinian

science or Newtonian science.

2 Polanyi's premise of science

According to Polanyi,[18] the traditions of science foster and develop the premises of science. As regards a theory of the universe, there are two traditions of science: the currently practiced Newtonian science and Einsteinian science, our extension of which is emergent and currently not well known. Whereas the premise of Newtonian science is the mechanical universe, that of Einsteinian science is the inertial universe, which means that the universe (as a whole) has nothing acting on itself and is autonomous.

The influence of these premises in the pursuit of scientific discovery is great and indispensable.[18] First, they indicate to scientists the kinds of questions which seem reasonable and interesting to explore and thus endorse or discredit contributions.[18] This may explain why some scientists ensconced in Newtonian science still question our two new discoveries and completely deny our extension of Einsteinian science, since they prefer to align with the premise of Newtonian science.[15-17]

Second, they indicate to scientists the kinds of discoveries that should be upheld as possible, even when some evidence seems to contradict them.[18] For example, we[15,16] claimed that our discovery of cosmic inertia reveals that the universe is oscillating, disregarding the evidence for an accelerating expanding universe.[15,16]

Third, they indicate to scientists, on the contrary, the kinds of discoveries that should be rejected as unlikely, even though there is evidence which would favour them.[18] For example, we reject the invention of dark energy to explain the accelerating expansion of the universe in Newtonian science, since we consider the concept of cosmic inertia to dominate the concepts of a mechanical universe.[16,17]

Polanyi[18–21] posed five challenges of the premise of science. We identify a concept from these challenges called **the structure of science**, since Polanyi's premise of science lets us sharply contrast the structure of Einsteinian science with the structure of Newtonian science. As the comprehensive premise of science is the inertial universe, Einsteinian science meets the challenges of Polanyi's premise of science perfectly, while Newtonian science does not, as we will show later in this paper.

Challenge 1: Scientific discovery is accomplished by the knowledge, whether implicit or explicit, that the laws of nature are founded on **the premise of science** concerning **the structure of the universe**.[18]

Challenge 2: The laws of nature, which may still be discovered, are revealed in the collective task, and uncovered through scientific discovery.[18]

Challenge 3: The scientific method reveals the objective laws of nature, which give insight into nature, and must overcome the relationship between the experience and understanding of a person, which is subjective.[20,21]

Challenge 4: Besides the mechanical universe, some sort of **intelligible directional tendencies** may be operative in the universe, **without our having to suppose that they determine all motions.**[20,21]

Challenge 5: A discovery is fraught with further findings of yet-to-be-determined phenomena.[20,21]

3 Einsteinian science

Meeting Challenge 1: A theory of the universe seeks a true picture of the universe. We know that the universe is *a priori* the inertial universe which has nothing acting on it and is autonomous,[15,16] with no need of empirical enquiry and independent of any tradition of science. **Uncovering the laws of nature that reveal the well-defined inertial universe is the primary task, or else humanity will be unable to grasp a theory of the universe, as described later.**

Since the inertial universe bears all kinds of the universe such as the mechanical universe,[15,16] an erring universe,[7,8] and an inflationary universe[12] and thus all the laws of nature, if scientists can uncover them, the inertial universe is the comprehensive premise of science.

The laws of nature are manifested in the universe and revealed by humanity. As Einstein said, “The most incomprehensible thing about the universe is that it is comprehensible”[3:423] and “a great, eternal riddle,”[3:338] he implicitly considered that the premise of science is the inertial universe. Empirically and with symmetry-based logic, we explicitly revealed that the inertial universe is based on **cosmic inertia**.[15–17] Thus, we are qualified to contrast Einsteinian science with Newtonian science using the

concept of the premise of science.

Meeting Challenge 2: The collective research task of Einsteinian science is a single logical system of the universe as a whole or simply of the cosmos.[15] The comprehensive premise of science leads to this extensive research task, which aims to reveal all the laws of nature in the universe and the relations between them.

The method of Einsteinian science is called the principle theory approach[3,4,7,8] that guides scientists to define the structure of the empirical universe in union with a final product called a principle theory or law of nature.

Meeting Challenge 3: Polanyi[19,21] defined science as an insight into nature that is itself simply our meaningful integration of the parts of the complex universe for an objective structural understanding of the empirical universe. This is consistent with the aim of science[3–5,17] as defined by Einstein and achieved by the principle theory approach[3–17] to obtaining the laws of nature.

Einstein said, "**The aim of science** is, on the one hand, a comprehension, as *complete* as possible, of the connection between the sense experiences in their totality, and, on the other hand, the accomplishment of this aim by the use of a *minimum of primary concepts and relations.*"[3:388;4:293]

Since the premise of Einsteinian science is the inertial universe, nature dictates the method of Einsteinian science and the laws of nature to be obtained, which are objective. The principle theory approach[3–17] provides some concepts, such as general facts, free creation of concepts and relations, the antithesis between empiricism and rationalism, a single theory, and symmetry-based logic (overcoming the from-to structure between the experience and understanding of personal knowledge), to guide the achievement of objectivity in the laws of nature.

Meeting Challenge 4: We have applied the principle theory approach[5–17] to uncover two laws of nature with a non-mechanical view of the universe: the success/failure system and cosmic inertia. We only focus on cosmic inertia below.

To experience and understand the inertial universe as a theoretical principle, Einstein's principle theory[3,4] tells us that we know that we need to answer two questions.[15–17] First, what does the empirical universe look like? We argue that as a great, eternal riddle, the inertial universe is an endlessly oscillating universe. Second,

what exactly was exploding and is now still expanding? The formal principle $E = mc^2$ gives a comprehensible relationship of mass and energy. As the empirical universe oscillates, the total quantity of mass-energy is distributed, redistributed, and transformed while maintaining its overall **quantity *α*.** Cosmic inertia is a theory of everything that accounts for everything and every event (everywhere the same) in the universe.[17] Thus, even the psychological events (of the self), like stars, have their physical foundations, accord with a theory of everything, and manifest as mass-energy distribution, redistribution, and transformation.

With a pure and profound mind, Einstein felt that "It's enough for me… to try humbly to comprehend even an infinitesimal part of the intelligence manifested in nature."[3:330] He considered that laws of nature reveal the intelligence manifested in nature, saying, "The scientist is possessed by a sense of universal causation….His religious feeling takes the form of a rapturous amazement at the harmony of natural law, which reveals an intelligence of such superiority that, compared with it, all the systematic thinking and acting of human beings is an utterly insignificant reflection."[3:333;4:40] Thus, Einstein felt the existence of cosmic inertia. We believe that cosmic inertia is a reason for seeking the cosmos.

Since we have developed our primary law of nature, cosmic inertia,[15–17] which presents the most vivid and comprehensive cosmic scene that humanity can experience and understand and bears all kinds of the universe, **we reject all mathematical cosmological models of the universe that do not reference cosmic inertia, including those based in Newtonian science.**

Meeting Challenge 5: The discovery of cosmic inertia or a theory of everything is the starting point in Einsteinian science rather than the ending point in Newtonian science. The universe has further findings that require the scientific community's collective efforts and the partnering of theoretical science and empirical science to uncover them.

4 Newtonian science

Facing Challenge 1: The mechanical universe is the premise of Newtonian science, which is the human-uncovered premise of science, as opposed to the *a priori* inertial universe premise of science.

Moving from the teleological universe premise of Aristotelian science to the mechanical universe premise of Newtonian science was a scientific advancement.[1,2]

The mechanical universe premise of Newtonian science is a partial premise of science and is not comprehensive to bear all kinds of the universe and thus all the laws of nature.[1-4] We note that we do not need the discovery of cosmic inertia to show this fallacy of Newtonian science.

Facing Challenge 2: The collective research task of Newtonian science is a unified theory of the mechanical universe.[15] A premise of science that is not comprehensive limits the effectiveness of this task. The mechanical universe focuses on four forces: gravity, the electromagnetic force, the strong nuclear force, and the weak nuclear force, which are embodied in such theories as general relativity and the Standard Model.[12,15–17] Newtonian science seeks a unification of theories, mainly of quantum gravity and string theory.[12,15–17]

To understand why we consider general relativity to be a core part of Newtonian science or the mechanical universe approach as well as Einsteinian science, we suggest carefully examining Newtonian science,[1,2] Einsteinian science,[3,4] and our thirteen earlier papers[5–17] in this area. We also note that Newton's theory of gravitation and Einstein's general relativity account for the same macroscopic structure of the present universe in the context of an oscillating universe.

The method of Newtonian science can be called the mechanical universe approach,[15–17] which is not as rigorous as the principle theory approach, that is, the method of Einsteinian science.

Facing Challenge 3: A premise of science that is not comprehensive leads to the inability of the method of Newtonian science to reveal all the objective laws of nature. However, scientists can go beyond laws of nature, for example, the creation of the universe,[12,17] the heat death of the universe,[17] and the multiverse (and even the multiverse of the multiverses?).[12,17] All of these products are subjective regarding a theory of the universe and are contradictory to the premise of Newtonian science and the *a priori* inertial universe.

Mathematical scientists often base their work on the premise of pure mathematics instead of the premise of science.[3–17] This is a fallacy of an incorrect premise. An incorrect premise together with a partial mechanical view of the universe causes

misunderstandings in scientific discovery.

Facing Challenge 4: Laws of nature with a non-mechanical view of the universe, such as the success/failure system and cosmic inertia, are not allowed in Newtonian science. To know what these non-mechanical laws of nature could be, we suggest referring to Einsteinian science[3,4] and our papers.[5–17] Indeed, this knowledge is the key to distinguishing Einsteinian science from Newtonian science and will facilitate the dissemination of our extension of Einsteinian science. We focus on the effects of cosmic inertia on a unified theory of the mechanical universe.

The common goal of a unified theory of the mechanical universe is to seek a theory of everything.[17] As we know by Einsteinian science that cosmic inertia is a **single** theory of everything, the collective research task of Newtonian science can never achieve its common goal, regardless of efforts and budgets. **Quantum gravity and string theory are 'condemned to death' by cosmic inertia.**[17]

The scientific community ensconced in Newtonian science seeks a theory of everything in vain, simply because Newtonian science is based on an incomprehensive premise of science.

The central concept of Newtonian science is a mathematical unified theory. The equation $E = mc^2$ in Einsteinian science has always been considered a great success in such unification. Apart from us, no one knows its significance in illuminating cosmic inertia and, thus, a theory of the universe.[15-17]

Facing Challenge 5: Ever since its conception, a unified theory of the mechanical universe has been the goal to achieve and work towards.[1,2,5-17] The scientific community must change their premise of science from the mechanical universe to the inertial universe and embrace our extension of Einsteinian science, which subsumes Newtonian science.[15-17]

5 Conclusions

We used the challenges of Polanyi's premise of science as a guide to attempt to diagnose and cure science. Einsteinian science has supremacy over Newtonian science in its scientific premise that captures the *a priori* inertial universe. Cosmic inertia is a theory of everything, and vice versa. We found that **a theory of the universe** is not the same as **a theory of everything.**

It was the intellectual qualities of Newtonian science starting in the seventeenth century that first roused and convinced humanity.[18] Before Newton, humanity was permeated with confusion, lack of confidence, and conflicts. Looking back on the past four centuries, we see every scientific and philosophical field gradually revolutionized under the influence of Newtonian science.[18] However, few know that Newtonian science can be **a great source of dangerous fallacies today** after an avalanche of discoveries since Newton, as it adopts a partial premise of science based on a mechanical universe and has generated an increasing amount of subjective knowledge of concepts, relations, and models. These include the fallacy of incomplete axioms[12] and the fallacy of hasty generalization.[17] Worse yet, the common goal of Newtonian science is doomed, but it has been achieved by Einsteinian science.

Thus, the scientific community must embrace Einsteinian science and build from it.[15–17] We are awaiting an SCI-indexed journal to disseminate Einsteinian science. There have only been two changes of the premise of science: from the teleological universe of Aristotelian science to the mechanical universe of Newtonian science, and then to the inertial universe of Einsteinian science. We think of our lifelong struggle for the truth: with Einsteinian science and cosmic inertia, he and us can respectively achieve honours in the history of science with certainty.

Cosmic inertia is the true premise of science, on which a theory of the universe is based. We believe cosmic inertia, which we developed just recently, to be the most important discovery in science.[15–17] Thus, the field of Einsteinian science has the ultimate structure of science in the Scientific Revolution. **With the primary task of uncovering cosmic inertia being completed, it is timely and necessary to seek a single logical system of the universe (as a whole).**[12–17]

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