The Great Existential Problem of Albert Einstein, Understanding his Difficult Religious Position

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Philosophy and Religion Book.

Clarification: The author does not necessarily agree with the points of view expressed in all the books and documents mentioned in the bibliography.

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I. INTRODUCTION

Too much has been said and written about the German, Swiss, Austrian and American inventor, mathematician, philosopher, physicist, political activist, researcher, scientist, university professor and writer, descendant of Jews, Albert Einstein (1879-1955), considered as the best scientist of humankind, and widely known for the formulation of the General Theory of Relativity. His academic achievements were exceptional, overcoming Newtonian physics and setting the foundations for the development of atomic energy and space travel.

In addition to his extraordinary intelligence, he had a controversial personality, extended to his family and professional relationships. However, he became a celebrity (in 1919, there was a partial verification of the General Theory of Relativity, and in 1922, he was awarded with the Nobel Prize in Physics 1921), being more cautious, careful and moderate with his opinions (also he was tired of so many confrontations with relatives and colleagues).

Although his ideas, axioms and theories have been the subject of exhaustive analysis, innumerable debates and subsequent investigations (being Einstein a synonym of genius and his face a well-known symbol in contemporary culture), standing out for sensational discoveries in the area of physics, and having changed the way scientists understand the universe and the relation between space and time,

it is relevant to emphasize that there is an aspect of his life, which has aroused the curiosity of some academics and researchers:

What were his religious beliefs?

This question is difficult to answer and it leads to glimpse another question:

What was Einstein's great existential problem?

In general terms, Einstein assumed a diffuse religious position, stemming from childhood and adolescence, that moves between atheism, agnosticism and Judaism, which was motivated by his doubts about the existence of God.

While the English scientist Sir Isaac Newton (1642-1727), the best modern physicist before the establishment of Einstein's paradigms, had a precise religious vision: he was a faithful Christian who didn´t doubt about the existence of the Creator.

Paradoxically, these antagonistic positions constitute the great difference between Newton and Einstein, and in a certain way, they accentuated the serious existential problem of Einstein, which didn´t find a definitive answer during his life. Rather, the famous Einstein, cautious before the eyes of public opinion, mainly adopted an agnostic approach

and accepted the pantheistic God, proposed by the Dutch modern philosopher Baruch Spinoza (1632-1677), although on several occasions, he avoided talking about religious matters.

Certainly, Einstein's great existential problem is directly related to his belief in God.

In order to analyze and reveal this enigma, and at the same time, provide relevant information about the life and achievements of Einstein (without presenting a detailed biography), this publication contains three main chapters: a) the extraordinary life of Albert Einstein, b) the great difference between Newton and Einstein, and c) the great existential problem of Albert Einstein.

The Chapter II. The Extraordinary Life of Albert Einstein reflects an overview of his professional life, in two major stages (researcher and scientist, 1905-1938, and political activist for peace, 1938-1955). It is divided into the following sections: a) II.1 His First Years (professional career before winning the Nobel Prize), b) II.2 The Nobel Prize of Physics (the unprecedented situation that raised during the delivery of this award), c) II.3 The Post-Nobel Period (his career after this award), d) II.4 The Less Productive Political Stage (his new role as a political activist), and e) II.5 Conclusions on The Extraordinary Life of Albert Einstein.

While the Chapter III. The Great Difference between Newton and Einstein presents relevant parallelisms and discrepancies that allow to deduce the fundamental difference between both scientists. Its sections are: a) III.1 Similarities between Newton and Einstein (What are these?), b) III.2 Differences between Newton and Einstein (likewise, what are these?), and c) III.3 Conclusions on The Great Difference between Newton and Einstein.

And the Chapter IV. The Great Existential Problem of Albert Einstein (central theme of this book) analyzes his supposed religious perspectives, in order to reveal the immense existential problem that constantly worried him. It contains these sections: a) IV.1 The Atheist Einstein (Was he an atheist?), b) IV.2 The Agnostic Einstein (Was he an agnostic?), c) IV.3 The Judaist Einstein (Was he a Judaist or supporter of Judaism?), and d) IV.4 Conclusions on The Great Existential Problem of Albert Einstein.

Finally, despite his doubts about the existence of the Creator, Albert Einstein, a rebel, liberal, agnostic and post-modern scientist, supporter of making principles and moral values more flexible, who denied the God of the Bible, but respected the Judeo-Christian beliefs and expressed his great admiration for Jesus Christ, defended the idea of a pantheistic God (he couldn´t prove nor reject his existence), without giving importance to religion, and lived under the shadow of a great existential problem.

II. THE EXTRAORDINARY LIFE OF ALBERT EINSTEIN

Albert Einstein is the best scientist of the 20th century and one of the brightest in history. His intelligence, imagination, creativity and ability to learn and solve inconceivable issues were truly exceptional.

He stood out for his unusual ideas, discoveries and theories, collaborating with the most outstanding academics and researchers of that time. He won the Nobel Prize in Physics 1921, and received several honorary doctorates and recognitions from scientific institutions.

However, throughout his life, he was an extremely difficult person, with a controversial character. Sometimes he was cautious and prudent, while at other times, he reflected an arrogant and rebellious spirit. Although after becoming a public figure (famous for the success of the General Theory of Relativity and having won the Nobel Prize in Physics 1921), he assumes more moderate and respectful attitudes.

II.1 HIS FIRST YEARS

He was influenced by various experiences from a very young age (his father gave him a compass, he received some science books from his uncle, a medical student gave him scientific and philosophy books, and in his house there was a workshop of repairing and manufacturing artifacts, in which also technological experiments were carried out), and in spite of being timid and reserved, he was fascinated to discover the reality of how the phenomena of nature work, and at the same time, he questioned the religions and the authority of the governments. He also felt a deep interest in the ideas of several modern philosophers (especially those of Spinoza).

He tried to enter the prestigious Federal Polytechnic School in Zurich, but he hadn´t finished high school, presented an additional exam and was rejected.

In 1896, already with the bachelor's degree, he was admitted in this university institute, and graduated in 1900 as a professor of mathematics and physics, along with his first wife, Mileva Marić (1875-1948).

In the year 1905, he published four relevant articles:

a) On a Heuristic Point of View about the Creation and Conversion of Light (the photoelectric effect, the light is composed of energy and quantifiable particles, which is a basis of quantum mechanics),
b) On the Movement of Small Particles suspended in a Stationary Liquid demanded by the Molecular Theory of Heat (from the Brownian or random movement of particles in fluids or gases, it is concluded that matter is composed of atoms),
c) On the Electrodynamics of Moving Bodies (introduces the Theory of Special Relativity, indicating that the speed of light is constant and doesn´t depend on the movements of the observers),
d) Does the Inertia of a Body depend upon Its Energy-content? (deduces the equivalence between matter and energy, developing his famous formula: $E = m \times c^2$)[1].

[1] The year 1905 is considered as the miraculous year of Einstein.

These articles were extremely impressive. So much so that they gave Einstein a name in the academic world, helping him to obtain: a position as professor at the University of Bern and an honorary doctorate from the University of Geneva, in 1909, the distinction of being Director of the Institute of Physics Kaiser Wilhelm and member of the Prussian Academy of Sciences (Berlin), in 1913, and the Nobel Prize in Physics 1921.

Between the years 1902 and 1909 he worked at the Federal Office of Intellectual Property of Switzerland (Bern), reviewing patents. Although his relationships with his supervisor were conflicting.

In 1906, he received his PhD in Physics from the Faculty of Mathematics and Natural Sciences of the University of Zurich.

In 1909, he obtained a position as professor at the University of Bern, and in 1913, he was appointed Director of the Kaiser Wilhelm Institute of Physics and member of the Prussian Academy of Sciences.

In the years 1915 and 1916, he presented his General Theory of Relativity and explained it at conferences of the Prussian Academy of Sciences. It was published in 1916 and satisfactorily explained why Mercury's orbit is irregular[2].

However, the emotional and family life of Albert Einstein was traumatic: his first daughter of one year died, his third son was born ill, suffered from schizophrenia and required special care, and he started an extramarital relationship with his cousin Elsa Löwenthal (1876-1936).

In the year 1919, Albert Einstein divorced his first wife, although with the commitment to give her a part of the corresponding economic benefit, in case of winning the Nobel Prize. That same year, he married Elsa Löwenthal.

[2] It slightly changes after each cycle around the Sun.

In addition, during that year 1919, Einstein attracted world attention (becoming a celebrity), since part of the General Theory of Relativity was endorsed by the British astrophysicist Sir Arthur Eddington (1882-1944), who in May 1919, on the Island of Principe, took pictures of a solar eclipse and found that nearby stars (dark spots) were in different positions, in accordance with their deviations of light, predicted by the aforementioned General Theory of Relativity.

In 1921, he traveled to the US for the first time, and in the next year, he visited Japan.

II.2 THE NOBEL PRIZE OF PHYSICS

In the year 1921, this Nobel Prize was involved in a controversy, which forced to defer its result and announce the winner, in November 1922.

On the one hand, there was strong support to Einstein from the public and many physicists, and on the other hand, there were some questionings to the General Theory of Relativity (which was not fully understood and had not been satisfactorily proved[3]).

Even more, to-date prevails the norm of not granting the Nobel Prize in Physics by theories (whose main axioms had not be proven[4]).

The technical and political solution of the Nobel Prize committee was to give this award to Einstein for the photo-electric effect, which also opened the way for the Danish physicist Niels Bohr (1885-1962) to win the Nobel Prize in Physics in 1922 (taking into account that his atomic model is based on the laws that explain the referred photoelectric ef-fect).

Anyway, Albert Einstein did not agree with the way this situation was handled and didn´t go to receive his Nobel Prize.

[3] The explanation of Mercury's irregular orbit and the results of Eddington's experiment were not enough to check the General Theory of Relativity.

[4] Indeed, the British physicist Stephen Hawking (1942-2018) could not win a Nobel Prize, considering that he didn´t formulate a physical law or a partially proved theory, nor did he make an important discovery that could be verified.

II.3 THE POST-NOBEL PERIOD

In 1923, Einstein traveled to Denmark, Palestine, Spain and Sweden.

During the year 1925, he spoke in conferences (Argentina, Brazil and Uruguay).

In the year 1926, he published Investigations on the Theory of the Brownian Movement.

In 1932, he was appointed professor of the Institute of Advanced Studies of Princeton, and in December of that year, due to the new Nazis government, he decided to emigrate to the United States.

While in 1938, Einstein and the Polish physicist Leopold Infeld (1898-1968) published the book The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta.

II.4 THE LESS PRODUCTIVE POLITICAL STAGE

Although since 1905, Albert Einstein wrote several opinion articles and participated in many research projects (even complaining about his ailments, exhaustion and health problems, as he grew older), and he was always a political activist, promoter of peace, from the year 1938, he didn´t obtain a significant academic or scientific achievement. Likewise, it is considered that the book The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta was his last relevant publication.

A part of this final stage of Einstein's life coincides with World War II.

In addition, he sent three letters to the American President Franklin Roosevelt (1882-1945), in the years 1939, 1940 and 1945, warning about the danger that the Nazis could develop the atomic bomb first, was unjustly considered as the father of this nuclear weapon, and in 1952, he rejected the Presidency of Israel.

On the other hand, the American electrical engineer Scott Thorpe, MBA of the University of Berkeley, designer of computers, medical devices, robots, military flight simulators, and technology consultant, in his book How to Think Like Einstein: Simple Ways to Break the Rules and Discover Your Hidden Genius (2015), he poses an innovative theory that explains the secret of Einstein's creativity and why in this last period of his life, he was not so prolific (despite having more

knowledge and experience).

The researcher argues that the key to solving these questions is not in Einstein's intelligence; rather it is in his unconventional rebellious attitudes.

According to his analysis, Albert Einstein was an extraordinary student, teacher and researcher with a controversial behavior. In this regard, he was:

a) an organized scientist who applied certain strategies: a.1) formulated clear and precise ideas, a.2) correctly defined the problems, a.3) visualized the processes, in all their stages, a.4) detected the inconveniences in postulates, theories and laws, a.5) used previous works to validate or refute his approaches, and a.6) looked for impressive alternative solutions,
b) also an expert detesting, questioning and breaking the rules. This caused him innumerable difficulties, including multiple criticisms of the scientific community.

This is the relevant matter: during his studies and approximately in the first thirty years of his career, Einstein sought to break the scientific paradigms (his hostile behavior was transferred to the academic field, which helped him to develop a sensational creativity).

For example, masterfully Einstein contradicted an unquestionable scientific principle at that era (the time is absolute), designing the General Theory of Relativity:

1. In 1887, two American physicists, Albert Michelson (1852-1931), winner of the Nobel Prize in Physics 1907, and Edward Morley (1838-1923), attempted to demonstrate the existence of the ether, assuming that when light moves in the direction of the Earth, it has a speed different from the one that moves perpendicular.
2. This assumption was intuitive and should be true. If there are two hypothetical observers (one traveling with the light and another stationary), each one must see the light travel a path of different length.

3. Contrary to common sense, physicists could not achieve variations in the speed of light; rather they confirmed that it is constant.
4. The researchers made other attempts to refute this fact and failed.
5. Einstein decided to solve a different problem: his purpose was to analyze the implications of the Michelson-Morley experiment.
6. He emphasized a situation that had not been carefully examined, that of the first hypothetical traveler: he imagined himself riding in a ray of light, and asked these questions:

   How would he observe the other rays of light?
   What happens if he also looks at a mirror?
   Would his image disappear or would he see the reflection?

7. After arduous visualization exercises, he concluded that the speed of light must be constant, and therefore the research problem of Michelson & Morley is not well-defined.

8. In that sense, Einstein decided to deny an axiom, ignoring possible criticisms:

   What happens if the speed of light is constant, but the time varies?

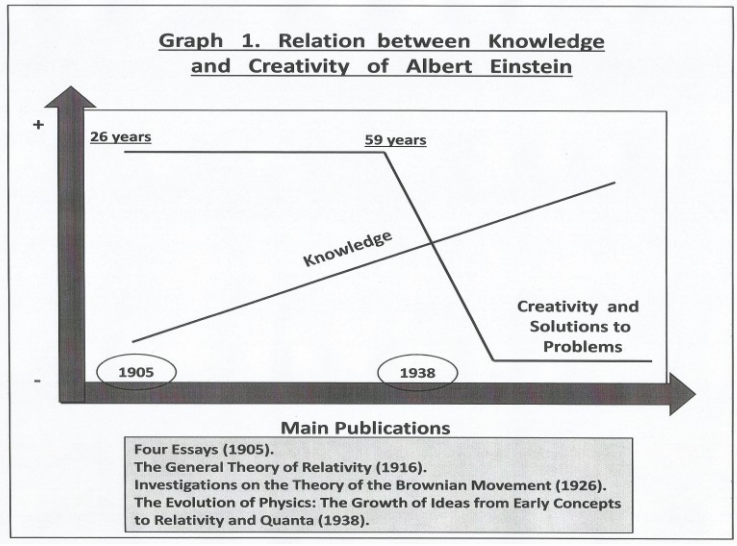
   Nonetheless, according to the logic of that age, the time was immutable. Practically, it was impossible to assume a different time for each observer.

9. He redefined formulas with a constant light speed, corroborating algebraically that by this condition, the time can be relative.
10. Einstein worked several more years to develop the foundations of the General Theory of Relativity. He didn´t give importance to the negative comments of his colleagues, made several mistakes, consulted with other scientists, did more tests, improved his ideas and triumphed spectacularly.

In this way, Einstein continued his prolific career, standing out for various works based on the rejection of some scientific foundations.

However, since 1938, tired of so many criticisms and confrontations with his colleagues, he decides to moderate and assumes more passive and respectful attitudes.

Perhaps, this prevented Einstein from continuing to exploit his immense potential, as presented in this graph:



Source: Own construction based on graph presented by Thorpe (2015).

In this sense, it seems that this last stage of Einstein's life was marked by a radical turn in his behavior, which was more oriented to take care of his image and avoid conflicts, relegating to the background the needs of making new discoveries.

II.5 CONCLUSIONS ON THE EXTRAORDINARY LIFE OF ALBERT EINSTEIN

In the year 1905, Einstein surprised by the publication of four essays (photoelectric effect, Brownian movement, Theory of Special Relativity and $E = m \times c^2$), achieving an impressive recognition of the scientific community, which allowed him to exhibit his new General Theory of Relativity, before recognized academics and researchers, and winning the Nobel Prize in Physics 1921. In addition to his conflictive personality, he stood out for being organized and methodical, and at the same time for proposing new schemes that break traditional paradigms (in concordance with the ideas of the American philosopher, Thomas Kuhn, 1922-1996, who confirmed that scientific discoveries are achieved by questioning traditional theories). However, Einstein reached the peak of his scientific career, in 1938, giving way to a political career, as an activist in favor of peace, until his death in 1955. In general terms, there are two major stages of Einstein's professional life: a) that of the conflictive and rebellious scientist (1905-1938), and b) that of the cautious pacifist (1938-1955). Although he is mainly remembered for his General Theory of Relativity.

III. THE GREAT DIFFERENCE BETWEEN NEWTON AND EINSTEIN

Like Albert Einstein, Isaac Newton is considered one of the great scientists of humanity.

Isaac Newton was an English alchemist, inventor, investor, mathematician, philosopher, physicist, politician, researcher, scholar of the Bible and Judaism, theologian and writer; widely known by the formulation of the Law of Universal Gravitation[5], the three Laws of Dynamics or Movement[6] and the infinitesimal calculus[7].

Paradoxically, there are parallels and immense differences between Newton and Einstein, which lead to deduce the great discrepancy between the two scientists.

[5] The force of gravity (F) between two objects is equal to a gravitational constant (G) multiplied by the mass of both bodies (m1 and m2), and divided by the square of the distance (r^2) that separates them:

$F = G \times m1 \times m2 / r^2$

[6] These are:

a) Inertia: a body or object maintains its state of rest or movement, if other forces don´t force to change it,
b) Interaction or Force: a body or object accelerates if certain force is applied, being the acceleration proportional to the intensity of this force and inversely proportional to its mass,
c) Action and Reaction: a body or object exerts a force of equal intensity to which it is applied, but in the opposite direction.

[7] It was also developed in parallel by the German jurist, librarian, logician, mathematician, philosopher, politician, theologian and writer Gottfried Leibniz (1646-1716).