Albert einstein essay sample

Einstein was not comfortable with statistical reality, a shortcoming which cost him much happiness, and may have deprived the world of many discoveries. His youthful breakthrough is well known. It consisted not only in giving the equation linking mass and energy (the famous $e = mc^2$), but in showing the statistical nature of quantum mechanics. Few meteors have more memorably decorated the mathematical sky. He began working in the Swiss Patent Office in 1902. In 1905, his “ annus mirabilis,” he submitted to Annalen der Physik fundamentally important papers on light quanta (March), molecular dimensions (April), the statistical analysis of Brownian movement (May), the special theory of relativity and the space-time continuum (June), and the famous equivalence between mass and energy (September). In 1909 he left the Patent Office for a modest academic post in Switzerland. In 1915, he published a more general theory of relativity, and in 1917 (relying on work done in 1911) a paper which predicted the amount by which light would be bent in a gravitational field. The solar eclipse of 29 May 1919, observed at the end of WW1 by a British team, showed that Einstein’s prediction was closely fulfilled. That eclipse was for him what the orbit of Ceres had earlier been for Gauss. Nature had done what he had predicted it would do. He won the Nobel Prize in 1921. [pic]

Scarcely less well known than Einstein’s leadership in relativity theory is his renunciation of that leadership, due to his revulsion at the “ statistical” nature of the reality which his own discoveries suggested. The Solvay Conferences had been one of his major forums. But at the 5th Conference in 1927, he read no paper, and was silent except for objecting to the statistical implications of the papers by Bohr and Heisenberg. It grieved him to find

chance at the heart of nature. The dictum of his renunciation was “ the good God does not play dice with the universe.” In the days of his glory, like Laplace, he had had “ no need” of a God hypothesis. Now, that hypothesis crowded in upon him. He began in 1928 to seek a unified field theory that would explain nature at a deeper level, and restore a sense of purpose to the universe. The comment of Max Born at this time has lost none of its poignancy: “ Many of us regard this as a tragedy, both for him, as he gropes his way in loneliness, and for us, who miss our leader and standard bearer.” His unified field theory, published in 1929, was not warmly received. A second “ annus mirabilis” of physics occurred in 1932. But it did not happen to Einstein. It consisted of three laboratory events: the discovery of the neutron by Chadwick, the discovery of the positron by Anderson, and the first artificial disintegration of the atomic nucleus by Cockcroft and Walton. All this gave further impetus to the theory and application of the new physics. Einstein’s isolation from the future of his subject was complete. [pic]

His long last years (1933-1955) were spent fruitlessly at the Institute for Advanced Study, whose reputation he nevertheless made. Those years were spent in a continued search for the unified field theory. A revised version published in 1950 aroused no response, other than embarrassment, from the scientific community. The universe does indeed play dice with men. At least Pascal, the philosopher of dice, bravely grasped his chance of winning. Einstein took one long anguished look, and walked out of the casino. What good is brain, if not seconded by nerve?

4 Sept 2004 / Contact The Project / Exit to Reference Page born March 14, 1879, Ulm, Württemberg, Ger.—died April 18, 1955, Princeton, N. J., U. S.)

German-born physicist who developed the special and general theories of relativity and won the Nobel Prize for Physics in 1921 for his explanation of the photoelectric effect. Einstein is generally considered the most influential physicist of the 20th century. Education

Einstein’s parents were secular, middle-class Jews. His father, Hermann Einstein, was originally a featherbed salesman and later ran an electrochemical factory with moderate success. His mother, the former Pauline Koch, ran the family household. He had one sister, Maja, born two years after Albert. Einstein would write that two “ wonders” deeply affected his early years. The first was his encounter with a compass at age five. He was mystified that invisible forces could deflect the needle. This would lead to a lifelong fascination with invisible forces. The second wonder came at age 12 when he discovered a book of geometry, which he devoured, calling it his “ sacred little geometry book.” Einstein became deeply religious at age 12, even composing several songs in praise of God and chanting religious songs on the way to school. This began to change, however, after he read science books that contradicted his religious beliefs. This challenge to established authority left a deep and lasting impression.

At the Luitpold Gymnasium, Einstein often felt out of place and victimized by a Prussian-style educational system that seemed to stifle originality and creativity. One teacher even told him that he would never amount to anything. Yet another important influence on Einstein was a young medical student, Max Talmud (later Max Talmey), who often had dinner at the Einstein home. Talmud became an informal tutor, introducing Einstein to higher mathematics and philosophy. A pivotal turning point occurred when

Einstein was 16. Talmud had earlier introduced him to a children’s science series by Aaron Bernstein, Naturwissenschaftliche Volksbucher (1867–68; Popular Books on Physical Science), in which the author imagined riding alongside electricity that was traveling inside a telegraph wire. Einstein then asked himself the question that would dominate his thinking for the next 10 years: What would a light beam look like if you could run alongside it? If light were a wave, then the light beam should appear stationary, like a frozen wave. Even as a child, though, he knew that stationary light waves had never been seen, so there was a paradox.

Einstein also wrote his first “ scientific paper” at that time (“ The Investigation of the State of Aether in Magnetic Fields”). Einstein’s education was disrupted by his father’s repeated failures at business. In 1894, after his company failed to get an important contract to electrify the city of Munich, Hermann Einstein moved to Milan, Italy, to work with a relative. Einstein was left at a boarding house in Munich and expected to finish his education. Alone, miserable, and repelled by the looming prospect of military duty when he turned 16, Einstein ran away six months later and landed on the doorstep of his surprised parents. His parents realized the enormous problems that he faced as a school dropout and draft dodger with no employable skills. His prospects did not look promising. Fortunately, Einstein could apply directly to the Eidgenössische Polytechnische Schule (“ Swiss Federal Polytechnic School”; in 1911, following expansion in 1909 to full university status, it was renamed the Eidgenössische Technische Hochschule, or “ Swiss Federal Institute of Technology”) in Zürich without the equivalent of a high school diploma if he passed its stiff entrance examinations.

His marks showed that he excelled in mathematics and physics, but he failed at French, chemistry, and biology. Because of his exceptional math scores, he was allowed into the polytechnic on the condition that he first finish his formal schooling. He went to a special high school run by Jost Winteler in Aarau, Switz., and graduated in 1896. He also renounced his German citizenship at that time. (He was stateless until 1901, when he was granted Swiss citizenship.) He became lifelong friends with the Winteler family, with whom he had been boarding. (Winteler's daughter, Marie, was Einstein's first love; Einstein's sister Maja would eventually marry Winteler's son Paul; and his close friend Michele Besso would marry their eldest daughter, Anna.) Einstein would recall that his years in Zürich were some of the happiest years of his life. He met many students who would become loyal friends, such as Marcel Grossmann, a mathematician, and Besso, with whom he enjoyed lengthy conversations about space and time. He also met his future wife, Mileva Maric, a fellow physics student from Serbia. Independent scholar and special relativity

After graduation in 1900, Einstein faced one of the greatest crises in his life. Because he studied advanced subjects on his own, he often cut classes; this earned him the animosity of some professors, especially Heinrich Weber. Unfortunately, Einstein asked Weber for a letter of recommendation. Einstein was subsequently turned down for every academic position that he applied to. He later wrote, I would have found [a job] long ago if Weber had not played a dishonest game with me. Meanwhile, Einstein's relationship with Maric deepened, but his parents vehemently opposed the relationship. His mother especially objected to her Serbian background (Maric's family was

Eastern Orthodox Christian). Einstein defied his parents, however, and he and Maric even had a child, Lieserl, in January 1902, whose fate is unknown. (It is commonly thought that she died of scarlet fever or was given up for adoption.)

In 1902 Einstein reached perhaps the lowest point in his life. He could not marry Maric and support a family without a job, and his father’s business went bankrupt. Desperate and unemployed, Einstein took lowly jobs tutoring children, but he was fired from even these jobs. The turning point came later that year, when the father of his lifelong friend, Marcel Grossman, was able to recommend him for a position as a clerk in the Swiss patent office in Bern. About then Einstein’s father became seriously ill and, just before he died, gave his blessing for his son to marry Maric. For years, Einstein would experience enormous sadness remembering that his father had died thinking him a failure. Its believed that Einstein has INTP (introversion, intuition, thinking, perception) personality.