

# Albert einstein biography inventions philosophy essay

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## **INTRODUCTION**

An invention is a unique or novel device, method, composition or process. It may also be an improvement upon a machine or product, or alternate means of achieving a process. An invention that achieves a completely unique function or result may be a radical breakthrough. Such works are novel and not obvious to others skilled in the same field. Without inventions, the world would have being on stand still and perhaps life wouldn't be this interesting too. When invention is mentioned, the first person that comes to mind is Albert Einstein. The man has thought deeply, and his thoughts have translated into the luxury and comfort the world enjoys today.

### **Albert Einstein - Biography**

Albert Einstein was born in Germany in 1879. He enjoyed classical music and played the violin. One story Einstein liked to tell about his childhood was of a wonder he saw when he was four or five years old: a magnetic compass. The needle's invariable northward swing, guided by an invisible force, profoundly impressed the child. The compass convinced him that there had to be " something behind things, something deeply hidden." Albert Einstein's first job was that of patent clerk. In 1933, he joined the staff of the newly created Institute for Advanced Study in Princeton, New Jersey. He accepted this position for life, living there until his death. Einstein is probably familiar to most people for his mathematical equation about the nature of energy,  $E = MC^2$ . Albert Einstein wrote a paper with a new understanding of the structure

of light. He argued that light can act as though it consists of discrete, independent particles of energy, in some ways like the particles of a gas. A few years before, Max Planck's work had contained the first suggestion of discreteness in energy, but Einstein went far beyond this. His revolutionary proposal seemed to contradict the universally accepted theory that light consists of smoothly oscillating electromagnetic waves. But Einstein showed that light quanta, as he called the particles of energy, could help to explain phenomena being studied by experimental physicists. For example, he made clear how light ejects electrons from metals.

## **EINSTEIN'S INVENTIONS**

1. Photoelectric Effect: It was known that when light was shone on certain substances, the substances gave out electrons, but that only the number of electrons emitted, and not their energy, was increased when the strength of the light was increased. According to classical theory, when light, thought to be composed of waves, strikes substances, the energy of the liberated electrons ought to be proportional to the intensity of light. In other words, the energy emitted by the irradiated substance is changing in discrete quantities rather than in a continuous manner. Einstein proposed that under certain circumstances light can be considered as consisting of particles, but he also hypothesized that the energy carried by any light particle, called a photon, is proportional to the frequency of the radiation. This proposal that the energy contained within a light beam is transferred in individual units, or quanta, contradicted a hundred-year-old tradition of considering light energy a manifestation of a continuous processes or of its wave nature. Virtually no one accepted Einstein's proposal until a decade later when the American

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physicist Robert Andrews Millikan experimentally confirmed the theory. This Einstein's efforts helped out with the development of the quantum theory (mechanics). For this contribution, Einstein was awarded the Nobel Prize in physics for 1921 (see below).

2. Special Theory of Relativity; This theory provides a consistent explanation for the way radiation (light, for example) and matter interact when viewed from different inertial frames of reference, that is, an interaction viewed simultaneously by an observer at rest and an observer moving at uniform speed. Einstein based this theory on two postulates: the principle of relativity, that physical laws are the same in all inertial reference systems, and the principle of the invariance of the speed of light, that the speed of light in a vacuum is a universal constant for all observers regardless of the motion of the observer or of the source of the light. He was thus able to provide a consistent and correct description of physical events in different inertial frames of reference without making special assumptions about the nature of matter or radiation, or how they interact. Among the theory's main assertions and consequences are the propositions that the maximum velocity attainable in the universe is that of light; that objects appear to contract in the direction of motion and vice versa; that the rate of a moving clock seems to decrease as its velocity increases; the results of observers in different systems are equally correct; and that mass and energy are equivalent and interchangeable properties according to Einstein's famous formula:  $E = mc^2$  Though Einstein did not invent the atomic bomb, this equation laid the theoretical background for it.

3. Why Is The sky Blue? The case, " Why is the sky blue?", was finally settled by Einstein in 1911, who calculated the detailed formula for the scattering of

light from molecules; and this was found to be in agreement with experiment<sup>4</sup>. General Theory of Relativity: Einstein expanded the special theory of relativity into the general theory of relativity that applies to systems in non-uniform (accelerated) motion as well as to systems in uniform motion (like in the special theory of relativity). The general theory is principally concerned with the large-scale effects of gravitation and therefore is an essential ingredient in theories of the universe as a whole, or cosmology. The theory recognizes the equivalence of gravitational and inertial mass. It asserts that material bodies produce curvatures in space-time that form a gravitational field and that the path of a body in the field is determined by this curvature. In other words, according to this theory, space becomes curved in the vicinity of matter (this is the meaning of gravity); the greater the concentration of matter, the greater the curvature and the greater the gravity. The geometry of a given region of space and the motion in the field can be predicted from the equations of the general theory. 6. Einstein Refrigerator: Only few know that Albert Einstein was also a practical man and invented a refrigerator. The Einstein refrigerator is an absorption refrigerator which has no moving parts and requires only a heat source to operate - it does not require electricity to operate, needing only a heat source, e. g. a small gas burner, suitable for poor countries and outdoor activities. It was jointly invented in 1926 by Albert Einstein and his former student Leó Szilárd and patented in the US on November 11, 1930 (U. S. Patent 1, 781, 541).

## **EINSTEIN'S INVENTIONS AND SOCIETAL CHANGE**

One of the more interesting characters out of history that most of us are familiar with in some way or another is Albert Einstein. Although most of us would think that there would be plenty of Albert Einstein inventions that were in existence, the fact of the matter is that only one of the inventions of Albert Einstein ever made it to the patent office. Since this man is such a notable figure out of history and science, however, why wouldn't it be thought that he was an inventor? Although this is one of the more notable things that the man took part in, the inventions of Albert Einstein actually only amounted to a refrigeration unit that he co-invented with another individual. Interestingly enough, he was not necessarily interested in building his life around refrigeration but this is the invention that helped to fund his lifestyle and allowed him to continue his research into such things as kinetic energy. Although it cannot really be counted as one of Albert Einstein's inventions, something that is rather interesting that he came up with is a theory as to why the sky is blue. This has long been a question that many individuals have pondered over but it wasn't until he came up with the idea that light particles scatter as a result of the atmosphere, allowing the blue spectrum to show through in which the question was answered. So, the next time you look up at the sky, you can thank Albert Einstein for understanding why it is such a beautiful color. Many people associate Einstein with the development of the atomic bomb or nuclear energy. In 1905, Einstein was indeed the first person to prove that atoms actually do exist, not just hypothetically. And in his most famous formula,  $E = mc^2$ , he showed that the mass of atoms contains enormous quantities of energy. But this theory was

only of indirect importance for the atomic revolution. Einstein's ideas had a much more direct influence on inventions such as the television, for example. It is thanks to his Special Theory of Relativity that we are able to receive such sharp images today. Electrons are accelerated in a television and, according to the Theory of Relativity, the mass of electrons thereby increases measurably. If one did not take this increase in mass into account, the electrons on the screen would show divergences in the millimetre range. All the images would be blurred. Another type of picture would not be possible without Einstein's theories, either. Digital cameras can only take pictures because they contain a small sensor which converts light into electricity. The principle can be traced directly back to Einstein, who explained the Photoelectric Effect in 1905. Not only does this work form the basis for the development of all equipment which converts light into electricity – from digital cameras to solar cells – it also earned him the Nobel Prize in November 1921 (awarded 1922). All technologies which involve the use of laser beams are based on Einstein's theories. In 1924, Einstein was the first person to recognize the principles of monochrome, bundled laser light. Satellite-assisted positioning systems on earth, so-called GPS, make use of Einstein's ideas. Pieces of equipment which can relay their position with an accuracy of less than 30 metres divergence take into account the effects of relativity on time measurement by atomic clocks when these circle the earth at great speed in satellites. Einstein's influence on present-day inventions is still huge even 50 years after his death. Physicists are already dreaming of quantum computers. Einstein also played a key role in this technological revolution. In 1935, he recognized that particles can be in

different states at the same time. This observation developed into a future-oriented research area, and it is possible that quantum.

## **CONCLUSION**

Haven X-rayed Einstein`s inventions and how it transformed the society, the question is; are we ever going to have another Einstein in this generation? I ask this question in view of the way the government of this country gives less credit or no credit at all to people who embark on similar exercise. We can have another Einstein with wonderful inventions if the Government supports the innovations and brilliant ideas of the youths.