

# Good essay on charles darwin and the theory of natural selection

[Sociology](#), [Population](#)



Charles Robert Darwin was an English geologist and naturalist who lived between 1809 and 1882. He was born in a city called Shrewsbury, England in Shropshire County. Darwin was the fifth child in their family that had six children. His father, Robert Darwin, was a wealthy society doctor and also worked as a financier while their mother was known as Susannah Darwin. His grandfathers, Erasmus Darwin, from his father's side and Josiah Wedgwood from his mother's side were both prominent abolitionists (EGS 1). The two families were mainly Unitarian, although the Wedgwood's family slowly started adopting Anglicanism. Darwin's father quietly took Charles to an Anglican church where he was baptized, in 1809, although they used to attend the Unitarian chapel together with their mother and the other siblings.

In 1827, he made his own presentation to the Plinian Society on the findings of black spores that were being seen in the oyster shells to be the eggs belonging to a skate leech. As he learned plant classification Charles assisted the University Museum in their collection processes. One day, Grant expressed appreciations on the evolutionary ideas that were presented by Lamarck. This audacity by Grant astonished Darwin although he had read similar ideas in journals belonging to his grandfather Erasmus. Darwin later became bored by the natural history course that was being taught by Robert Jameson and covered geology and the debate between Plutonism and Neptunism (Browne 78).

Natural selection refers to the gradual process through which biological traits are rendered either more popular or less popular in a given population. This occurs due to the effect that the inherited traits have on the successive

differential reproduction of organisms through their interaction with the environment. Through these effects, natural selection has played a crucial role in explaining the evolution process. Natural selection is a term that was publicized by Charles Darwin as a comparison with the artificial selection (Andersson 60).

In any given population, there are variations that occur within the organisms making up the population. These variations occur due to random mutations that take place in the genome of the individual organism. These mutations are then passed to the offspring creating a permanent change in the population traits. Throughout the live of an individual, the genome makes a continuous interaction with the environment surrounding the individual. Some of the environmental aspects that have an interaction with the genome include the other cells, molecular biology of the individual cell, other individuals in the population, other species and the abiotic environment (Berkeley).

People who have certain variants of a given trait may have better chances of survival and reproduction compared to those who have different variants. The added advantage in such a group results, in the group reproducing more than the other groups resulting in a new population being evolved. As indicated by Darwin, factors that determine a successful reproduction also play a part in the natural selection process. The natural selection affects mainly the observable features or phenotypes of an organism. However, the genetic basis that leads to the specific phenotype that has a reproductive advantage may end up dominating the population. Over several generations, the process results in a population that is best fit for a given environment

and eventually emergence of a new species. This indicates that natural selection is a very fundamental process and can be used to explain the evolution of the species from a single population of organisms.

The natural selection phenomenon contrasts the artificial selection where humans select specific traits intentionally. Unlike the natural selection where the traits selected are the ones that enable the organism to survive and reproduce better, through artificial selection the targeted results are not always the ones that are realized. Artificial selection has also resulted in populations that are less fit compared to the original populations. During the development of the natural selection concept, there was no valid theory that could explain heredity, and the concept has remained to be the main explanation of the adaptive evolution (Andersson 123).

Although some differences in an individual may enhance the chances of survival of the individual, many of the differences have no effect on the survival rate. For instance, a rabbit that is faster in running than the others may be better placed in escaping from their predators and thus increasing the chances of survival. Similarly, algae that have more efficient pathways for energy extraction from the sunlight may have better chances for a faster growth compared to those that do not extract energy effectively. Most of the things that have a chance of increasing the survival chances have been shown to also have an effect on the survival of the individual. However, there are cases where those individuals that have a better chance of survival are not able to reproduce at a faster rate compared to those that have a lower chance for survival. This results in a trade-off between current reproduction and survival and ultimately it is the total reproduction in a lifetime that

matters most (Andersson 23).

In cases where the traits that provide certain individuals in a population the reproductive advantage are heritable, the next generation ends up having a higher number of individuals with the preferred traits than the previous generation. This form of reproduction is referred to as differential reproduction. Even in cases where there is only a slight reproductive advantage the heritable advantage will eventually become dominant over many generations. The natural environment surrounding a population is thus able to select those individuals with traits that give those individuals a reproductive advantage. This eventually leads to a gradual evolution or changes in life (Beddall 280).

Darwin got the inspiration for the natural selection through the observations he made on the Beagle voyage, as well as from the work that was done by Reverend Thomas, a political economist. In his work, Thomas noted that populations may increase exponentially if their growth is not checked. On the other hand, life necessities such as food only increase arithmetically causing demographic implications where individuals start struggling for the limited resources. This results in a struggle for existence. Reading the work by Thomas and the fact that Darwin by then was already primed as a naturalist by the work he had done, he was in a better position to recognize and appreciate the phenomenon that was being referred to as the struggle for existence and how it can occur in nature. This made him get the idea that individuals with the favorable traits or variations would be preserved in such situations while those with unfavorable variations would be destroyed.

Eventually, individuals with the favorable traits would remain leading to the

formation of new species (Beddall 318).

Once Darwin had developed his theory that he could work with, he became meticulous concerning how he would gather and refine valid evidence to back up his theory. He made the process of collecting the evidence his major hobby and used the information he collected to writing his ideas privately before he could make them public (Van Wyhe 180). In the process of writing the book that he intended to present his works, he was sent an essay by Alfred Russel Wallace, another naturalist, describing the principle similar to one Darwin was working on (University of Cambridge 1). Darwin was to forward the essay to Charles Lyell. Together with Joseph Dalton Hooker, Lyell decided to present the essay sent by Wallace together with the unpublished writing done by Darwin without the knowledge of Wallace. The essay and Darwin's work were presented to the Linnaean Society where the two were announced to have co-discovered the principle. This was done in July 1858. In 1859, Darwin published a book titled " On the Origin of Species" detailing the accounts of the evidence he had collected and the conclusion he made (Berkeley 1).

In the third edition of the book, which was released in 1861, Darwin acknowledged that there were other people who had proposed a similar principle, but they never developed the ideas or resented them in any recognized scientific publication. Some of those people include William Charles Wells who proposed the idea in 1813 and Patrick Matthew who proposed the idea 1831 (Browne 55).

While working on the natural selection theory, Darwin thought of the theory using the analogue of the way farmers select those crops or livestock that

have the desired characteristics and using them to breed better crop or livestock. After the book was published, most people accepted that due to natural selection some forms of evolution had taken place. However, the mechanism of natural selection remained controversial partly due to the fact that the principle was considered too weak to offer explanations to the various characteristics that are observed in different living organisms. The theory was seen to be controversial due to the fact that even other supporters of evolution balked at the principles involved referring it as one that is not guided with a non-progressive nature (University of Cambridge). This response by the evolution supporters has been characterized as the main single impediment that has significantly affected the acceptance of the theory (Kuhn)

There are, however, some thinkers who enthusiastically embraced the natural selection as described by Charles Darwin. Some of these thinkers were Herbert Spencer who after reading the work brought in the term survival of the fittest, a term that has been popularized as the summary of the natural selection theory. This resulted in the phrase given by Spencer being introduced in the 5th edition of the *On the Origin of Species* book, which was published in 1869 (Coyne 35). The phrase was used as an alternative to the term natural selection, and the credit was given Spencer (Sober 122)

In conclusion, Charles Darwin came up with an explanation for the speciation and adaptations by linking these aspects with natural selection. According to Darwin, natural selection is the principle where slight variations that may enable an individual to survive better or reproduce more are preferred. This

makes the individuals possessing these traits able to survive more and hence more chances to reproduce. Any difference or variation between two individuals will result in an inevitable selection of the one who has the most advantageous variation. If the advantageous variations are inheritable, the traits will be a progressive evolution due to the differential reproduction of that particular group. This eventually results in a population that is sufficiently different for it to become a separate species.

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