

Charles Darwin On the Origin of Species Example Essay

Charles Darwin is considered to be the founder of evolutionary theory and the theory of natural selection. He was born in 1809 in Shrewsbury, England. His parents were well known and very wealthy from his father's work as a doctor and his mother's family pottery business. He went to college at Cambridge University where he studied theology and became close with J.S. Henslow, a theologian and professor of botany. After graduating, Darwin was unsure as to what career he would pursue, so with his father's money and a recommendation from Henslow, he embarked on a five year voyage around the world aboard the H.M.S. Beagle. It was on this trip that he developed his evolutionary theories based on data he collected from specimens in places he visited such as the Galapagos Islands. His specific study of the Finches on the Galapagos Islands and the differences present in them, led to his most famous theory of natural selection. He eventually presented this theory in his book, *On the Origin of Species by Means of Natural Selection*, in which he discusses the definition of natural selection and its differences between domestic selection. Moreover, this essay will discuss the characteristics of natural selection and domestic selection, and how they greatly differ from one another.

The major theme in Darwin's book is the theory of natural selection, the idea that variation in species occur at random, and only those that are beneficial remain in the species. He says the natural selection is an extremely slow process that occurs over a long period of time and is described as a series of creeps. "I have called this principle, by which each slight variation, if useful, is preserved, by the terms of Natural Selection." (147) Furthermore, this quote shows he believes that while useless variations can occur in organisms, natural selection only passes variation on to future generations that are useful. Natural selection is chance because nothing can be done to influence it. The natural evolution of species takes place in nature and is completely random toward where and when it will happen. Things such as competition, environment, and population size are contributing factors to natural selection. Another characteristic of natural selection is the ruthlessness of its process. A species with different variants may have one of the variants completely wiped out due to inefficiencies within a particular variant. Natural selection doesn't have sympathy for creatures that are weak and haven't evolved to utilize their surroundings. Creatures that are not fit, being they cannot effectively reproduce will not survive.

While natural selection is all about chance and gradual change, domestic selection is governed by man and focuses on breeding for specific characteristics. Domestic selection is demonstrated when men breed animals in a controlled environment in an attempt to produce a specific adaptive variant. "We have seen that man by selection can certainly produce great results, and can adapt organic beings to his own uses, through the accumulation of slight but useful variations, given to him by the hand of Nature." (148) Darwin demonstrates that while man can produce specific characteristics in organisms, man still relies on nature for the original changes. Domestic selection only lets man tweak the characteristics of beings, whereas natural selection can create new variants and adaptations within the species. Consequently, domestic selection has never created a new species.

The motivation behind domestic selection and natural selection differ greatly and are clearly demonstrated through the purpose of each. Natural selection is a natural process that occurs in nature and is constantly causing species to evolve and adapt to their ever-changing environment. In contrast, domestic selection is produced by man to create a specific species variant and is always end driven. Darwin provides an example of breeding for an end through a description of horse characteristics. He says that one man may have sought swifter horses while another valued stronger horses. The early differences would be small, but eventually the continued selection of swifter horses by one breeder, and stronger horses by the other would produce two breeds of horses. This example of domestic selection reveals that it is constantly focused on the end. However, natural selection is worried about the overall constant success of a species. "I cannot doubt that in the course of many thousands of generations, the most distinct varieties of any species of grass would always have the best chance of succeeding and of increasing in numbers." (182) There isn't a specific ends being sought in this quote, rather he points out that natural selection tries to create variety within species to make it sustainable and successful.

Another area where domestic selection and natural selection differ is how much time is required and needed to produce changes. Natural selection moves extremely slowly and takes thousands of generation for it to affect a species. Domestic selection moves much quicker as changes have to happen within a breeder's lifetime. Because of this difference in time, domestic selection tends to focus on a specific characteristic where natural selection affects the species as a whole. "How fleeting are the wishes and efforts of man! how short his time! and consequently how poor will his products be, compared with those accumulated by nature during whole geological periods." (162) Furthermore, Darwin argues that because of the vast amount of time associated with natural selection, it is far more effective for producing permanent and valuable adaptations in species.

In addition to the difference in time, natural selection and domestic selection have two completely unique environments. Domestic selection has a controlled environment in which a breeder is working toward producing a specific trait. Keeping the environment in check is essential for guaranteeing individuals of a species only reproduce with organisms that our part of the same variant in a species. While this allows the breeder to acquire a desired characteristic, it limits the capabilities of a species to gain the benefits of natural selection produced by environmental interaction. Natural selection is the result of an environment that is constantly changing which causes species to evolve in order to survive. Species are made stronger by natural selection, which can only take place in an uncontrolled environment.

Competition is a key element within natural selection, yet it practically doesn't exist in domestic selection. Everything is simply provided to the organisms involved in domestic selection, which keeps the species stagnant and inhibits their overall evolution. Competition is essential for eliminating species that fail to adapt, thus leaving only the strongest and fittest species alive. "So again with the varieties of sheep: it has been asserted that certain mountain-varieties will starve out other mountain-varieties, so that they cannot be kept together." (157) This quote represents the competition that is present within natural selection that causes species to migrate and henceforth adapt to new surroundings. The competition in natural selection creates stronger and more diverse species in the environment.

Although natural selection can make external changes to a species, it also can affect a species mental, reproductive, and character traits. In contrast domestic selection is only concerned with external characteristics of species. Because of this, natural selection can have a far greater effect on the overall outcome of the species ability to succeed. "Man can act only on external and visible characteristics: nature cares nothing for appearances, except in so far as they may be useful to any being. She can act on every internal organ, on every shade of constitutional difference, on the whole machinery of life." (161) Therefore Darwin exclaims that natural selection is far more encompassing and can have a greater effect on a species as it is able to produce deeper adaptations than domestic selection.

Population size, and sexual selection are two other characteristics in which domestic selection and natural selection differ. The ability of a species to adapt through natural selection hinges on the size of the population. If the species population is too small their gene pool won't be able to adapt fast enough to the changes in their environment. In domestic selection population size doesn't matter because the controlled environment eliminates the challenges associated with competition and species variants. Moreover, domestic selection provides a sexual mate for the organisms in order to gain the characteristic the breeder is looking for. Whereas, in natural selection, a major part of the chance involved is related to when and who organisms reproduce with.

Finally, both natural selection and domestic selection can cause organisms to change and gain new characteristics. However, the degree to which domestic selection can produce adaptations is far smaller than natural selection's ability to change species over a long period of time. Natural selection does not choose, seek, guide, or care about the effect it has on a species, while domestic selection is done by man with a specific task in mind. Therefore natural selection is much wider encompassing and can create a new species through gradual evolution producing numerous variants within a species. Although domestic selection can effectively acquire a desired trait in a group of organisms through controlled breeding, it is unable to focus on anything except external characteristics, and is limited to the breeder's lifespan. Overall, natural selection and domestic selection have many different characteristics that determine how successfully they can alter a species over the course of time.

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