

The Power of Evolution: How Disney and Marvel Incorporate Evolution into Their Stories

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Word Count = 2, 320

HON 207-01

Darwin's Evolutionary Theory: The Science and the Controversy

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05 November 2013

Introduction

The concept of evolution has permeated into mainstream consciousness since Charles Darwin discussed his scientific findings in *On the Origin of Species Or the Preservation of Favoured Races in the Struggle for Life*. The ability for a species to adapt to its environment to be better suited to survive and procreate has been a controversial issue, most specifically between the scientific and theistic arenas. However, whether one is considering Darwin's idea of natural selection, Jean-Baptiste Lamarck's progressive evolution, Herbert Spencer and William Sumner's Social Darwinism, or Richard Dawkin's memes, popular culture has integrated evolution and molded the scientific and/ or social notions to fit into fictional stories and the personalities or physical abilities of characters. As proponents of American media, both Disney and Marvel utilize evolution whether in loosely literal or metaphorical ways.

Darwin and Lamarck on Evolution

Though Charles Darwin never initially used the term evolution, his concept of natural selection has been generalized under the term. Evolution brings about an image of birth and rebirth with the prefix "evo". Accordingly, through the passing of genes and mutations, the offspring of a particular organism can, in a way, experience rebirth as dominant of its species depending on how successful its genes and mutations prove to be in its given environment. For example, with HIV/ AIDS in the United States and in Europe, patients taking drugs to combat the illness created an environment in their bloodstream for some of the virus that had a mutation for drug resistance to be able to reproduce successfully, rapidly outnumbering the faction of the virus that were not drug resistant; also called the "Wild Type" (Espar 2002). However, when a patient stopped taking the HIV drugs, the environment altered to become more suitable for the

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“Wild Type” to successfully procreate because of its, now, advantageous mutation (Espar 2002). Thus, Darwin’s theory most firmly relies on genetic variability, mutation, the environment, survivability, reproduction, and random variation all through the mechanism of natural selection.

While Darwin believed in his theory of natural selection, and that evolution or the utilization of advantageous adaptations would take thousands, if not millions of years, Jean-Baptist Lamarck thought otherwise. As a precursor to Darwin, Lamarck asserted that evolution could occur in an organism’s lifetime. A common example of Lamarckian evolution is that a giraffe possesses its long neck because one, long ago, stretched and stretched its neck in an attempt to reach and eat the leaves of a tree (PBS 2001). Now, because of the efforts of that single giraffe, all giraffes retain their signature long neck (PBS 2001). The Lamarckian understanding of evolution is, at times, misunderstood from Darwin’s theory of natural selection. A grand distinction between the theories of the two is that Lamarck believed in progression from a simple to a complex form achieved through evolution. Darwin, on the other hand, was keen on acknowledging that adaptations need only be determined by what better suits the organism to survive in its environment. That is, if it is advantageous for a species to remain in a simplistic form so that it may eat, live long enough to reproduce, survive attacks from predators and pass on its genes to its offspring, then it will maintain in a simplistic form.

Since Lamarck and Darwin, evolution has been used as a foundational formula to explain social and cultural classifications or even man-made phenomena.

Social Darwinism, Artificial Selection, and Memes

When Herbert Spencer coined the phrase “survival of the fittest” he did so in junction with Social Darwinism. As an economist and philosopher, Spencer, along with William Sumner,

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proposed that human culture saw a parallel evolutionary trend. Although, Social Darwinism is arguably less Darwinian than it is Lamarckian in that a particular religion, race, class, gender, and/ or simply a group is preferred because of its superiority in the culture and society. The progression of a culture, trait either physical or moral, or group of people from a simple, primitive and inferior level to what is perceived as complex, civilized and superior rings back to Lamarck's evolutionary theory of life forms evolving in a hierarchy from basic and unsophisticated to "perfection" (PBS 2001). Through Social Darwinism, eugenics and sociobiology are models that use evolution as an explanation for systems, lifestyles and social constructs created by humans. Social Darwinism replaces the unconscious and unbiased favoring of mutations in nature to the synthetic selections of certain traits, cultures, economic and social structures consciously asserted by humans within a frame of hierarchical progression.

Correspondingly, Artificial Selection explains just that: the artificiality of evolution by humans. Darwin, himself, studied Artificial Selection through pigeons and dogs which he noted were bred by humans for certain characteristics.

Cultural characteristics, understandings, symbols, ideas, behaviors, and language have, too, been studied through the frame of evolution. Richard Dawkins explains that memes are units of culture, interpretations, or perceptions that are passed down like genes. Memes can constitute for a cultural comprehension of common sense, certain archetypes and universalities.

Through both the scientific and the sociocultural theories of evolution, Disney and Marvel have integrated evolution into characters and storylines.

Disney and Adaptations

The cultural muscle and influence of Disney is undeniable. Whether one is accounting for childhood socialization of societal values and beliefs through Disney animation films, or the myriad of conglomerates, partnerships, and industries Disney participates in, we are exposed to Disney on a daily basis. Disney characters, especially those from their animation films, allude to evolution whether metaphorically or literally. Most of the animation films revolve around a general premise of transformation. This common thread of alteration in their cinematic stories can strongly relate to the concept of adaptations in evolution.

The story of Cinderella is commonly known among Americans, most notably the Disney version of the tale. Within the famous fictional account, Cinderella begins as, most simply put, an indentured servant to her step-mother. The young Cinderella is depicted in brown, black and gray rags, sweeping, cleaning and polishing her step-mother's mansion. In an effort to experience instantaneous social mobility to attend a ball, a fairy godmother changes Cinderella's outer appearance with a swish of a wand. This transformation from rags to a glittering blue gown and glass slippers provides Cinderella a temporary advantage to adapt to the Royal Ball's societal and class expectations. The external adaptation to social standards only lasts several hours, when at midnight, Cinderella reverts back to her ragged clothing and penniless appearance. Similarly, the character of Aladdin, in the 1992 Disney film, experiences a transformation from peasant to sultan. This alteration of the outer self provides the male character with the ability to experience the benefits of a lavish and comfortable lifestyle, including being wealthy, fed, clothed, acknowledged, and being eligible to marry the princess. Again, the instantaneous evolution from poor to rich—facilitated by another magical mediator,

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the genie—allows for the protagonist to successfully blend in with the group and the environment that is most beneficial to him.

The need to exude wealth and be perceived as upper-class in both *Cinderella* and *Aladdin* in order to avoid ridicule, imprisonment or death reiterates both Social Darwinism, and Dawkin's idea of memes. The necessity to reach social "perfection" that has been molded by Social Darwinism as the epitome for evolutionary advancement of the culture is embodied by the transformation seen in *Cinderella* and *Aladdin*. At the same time, this understanding of suitable upper-class behaviors, way of speaking, etc. by the rags-to-riches characters is congruent to Dawkin's memes. However, Disney uses a half-human, half-fish character as a manifestation of both the social and scientific understandings of evolution.

Disney gives us a loosely biological example of evolution in the film, *The Little Mermaid*. Ariel, the youngest daughter of King Triton who rules over merpeople, spends the first sixteen years of her life as a mermaid. Ariel is most human from head to torso, but fish from bellybutton down. In an effort to experience and participate in the human world, Ariel gives up her fish tail and voice. With magic, Ariel's fish tail is immediately altered to human legs. It is assumed that if Ariel maintained her fish tail and proceeded to go out of the ocean that she would unsuccessfully blend in with the human world or otherwise, perish. Thus, Ariel, despite having lost her voice, can physically amalgamate herself among *Homo sapiens*.

Magic, in many of the Disney hand-drawn animation films, seems to take the place of natural selection and the long periods experienced by many mammalian species to successfully acquire advantageous adaptations through mutation occurring via the generations and generations of an offspring's inheritance of subtle variations from their parents.

Yet, in more recent times, the passing down of mutations from parents to offspring can be seen in the Disney/ Pixar film *The Incredibles*. In the film, two superheroes get married and have three children, all of whom inherit superpowers. Though the children's powers defy the evolutionary process—Mr. Incredible's power is superhuman strength and Mrs. Incredible's is physical elasticity and yet, the offspring possess a sundry of superpowers that are radically different from their parents—the parental gene of merely *having* a superpower is passed on. In this way, each Incredible character can control their own physicality to benefit them in their environment while maintaining superpowers that are metaphors for their personalities.

Marvel and Mutations

As a corporate acquisition of The Walt Disney Company, Marvel Worldwide, Inc. / Marvel Entertainment Inc. are a comic book publisher, licensing, and movie production which have created thousands of fictional characters with superpowers, many of which were gained through mutations and/ or a freak accident (Marvel 2009). Evolution plays a key role in the inheritance, maintenance, or attainment of superpowers.

A popular comic book series in the Marvel Universe that focuses on a diverse team with superpowers acquired through mutation is the X-Men. An X-Men anti-hero, in particular, is Magneto who gained his power to “control all forms of magnetism” through inheritance of a mutation from his parent's DNA (Marvel 2013). In fact, Magneto believes that mutants are the highest form of humanity calling them “homo sapiens superior” (Marvel 2013). While a seemingly Darwinian process of Magneto's inheritance of his mutant abilities occurred, Magneto himself believes in a Lamarckian model of progressive evolution. Mystique, another X-Men, has the ability to “shift the atoms of her body to duplicate any humanoid of either sex, wearing any

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kind of clothing [...] duplicat[ing] another person's retina pattern, finger, palm and skin-pore patterns, and vocal cords" (Marvel 2013). Thus, Mystique's mutation allows her to stealthily elude threats or danger by physically impersonating another. Another notable X-Men character is Armando Muñoz whose alias is Darwin, or "The Evolving Boy". Muñoz has the superpower of "reactive evolution"; i.e., his body automatically adapts to any situation or environment he is placed in, allowing him to survive possibly anything" (Marvel 2013). Some of Muñoz's adaptations include night vision, developing gills to breathe underwater and fireproof skin in the presence of a flame or explosion (Marvel 2013). "The Evolving Boy" is perhaps the greatest direct fictional incarnate and reference to Darwin and his evolutionary theory, though without the accuracy of natural selection as the mechanism for evolution or the unconscious preservation of advantageous mutations to offspring. Yet, Armando Muñoz's superpower is directly related to Charles Darwin's acknowledgment of local adaptation to a changing environment as part of evolution.

Some Marvel characters have also gained their superpowers through freak accidents, and inherited advantageous traits of another organism through a bite or of the radioactive chemicals they were exposed to that altered their genes by mutating their DNA. Spider-Man, the Hulk, Sandman, and The Fantastic Four are a few of several characters who have obtained useful physical abilities to manipulate and/ or better control their environment. Peter Parker, through the bite of a radioactive spider, gained the proportional capability of a spider's strength, dexterity, and the ability to cling to surfaces to later become Spider-Man. Bruce Banner, too, through radioactive exposure of gamma-rays gained incredible strength as the Hulk; a manifestation of Banner's immense anger. Again, through exposure to a radioactive explosion, a criminal becomes Sandman who is able to manipulate his physicality by altering his atoms from

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organic to sediment. Lastly, the Fantastic Four were unprotected in the presence of “intense cosmic rays” that allows them to respectively gain superpowers including invisibility, manipulation of fire, elasticity, and the permanent physical form of rock (Marvel 2013). Though these characters with superpowers have less to do with either Lamarck or Darwin’s evolutionary theory and more with somatic mutations (modifications in the DNA that befall after conception and that do not affect germ cells), the interesting posit of these fictional individuals and their maintaining of special abilities is that if one is exposed to radioactive chemicals or gamma rays, a human may not experience necessarily harmful effects like cancer, which many families have experienced in Hiroshima and Nagasaki by atom bomb radiation, but instead will enjoy the capability to completely alter and rearrange their atoms to be something essentially un-human.

Conclusion

While Disney and Marvel fit in elements of evolution into their fictional stories, what is taken from Darwin’s theory is very little. In fact, most of the characters that utilize advantages gained through mutation rely more heavily on Lamarckian evolution. What can be said, then, about the cultural understanding of evolution as filtered through Disney and Marvel?

Additionally, rudiments of Social Darwinism, Artificial Selection and Memes are boldly present in metaphors of transformation and alter egos in Disney and Marvel as well; but the social and cultural interpretation and integration of adaptations, progressive evolution, and the perpetuation of memes from generation to generation carries more weight in characters and stories within Disney films and Marvel comic books. Thus, the accurate science of evolution has been given little screen time, but should that change? What is the scientific responsibility of Disney and Marvel, especially as cultural sinks and storehouses?

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