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## Principles Of Natural Selection As a Metaphor

### **“Knowledge within a discipline develops according to the principles of natural selection.” How useful is this metaphor?**

Charles Darwin defined natural selection in 1858 as involving the differential survival and subsequent reproduction of organisms based on their inherited traits (Zimmer, 2013). The principles of natural selection serve as the basis for the evolution theory, a theory that, while accepted almost universally by biologists, is still the source of controversy to this day. The theory suggests that those organisms whose genetic traits have rendered them “most fit” to survive in their respective environments will survive long enough to reproduce, passing on said traits to their offspring. Meanwhile, those organisms whose genetic traits render them “less fit” to survive in their respective environments will die before reproduction is viable, preventing the continued heritage of those less fit traits. A popular example of this within biology is that of the peppered moth (Miller, 1999). Prior to the industrial revolution, both light colored and dark colored variations of the peppered moth (*Biston betularia*) existed in the United Kingdom. In wake of the industrial revolution, many of the trees that the peppered moth called its home became blackened by soot. Biologists began to see a decrease in the population of lighter colored moths and an increase in the population of darker colored moths. This, they deduced, was a result of natural selection. The light colored moths became more visible when resting on the newly prevalent dark colored trees, making them more susceptible to capture by predators. Meanwhile, the dark colored moths were able to blend in with the soot-covered trees, evading capture and ultimately reproducing more frequently. The reverse of this was seen following the enactment of the Clean Air Act in 1956, which led to a restoration of the trees’ original hues. Suddenly, an increase was seen in the population of light colored moths and a decrease was seen in the population of dark colored moths.

When applied to the development of knowledge within a discipline, the principles of natural selection become a useful metaphor, but one with some flaws. The metaphor, of course, suggests that knowledge which is “most fit” to exist within its respective discipline will become more prominent within said discipline while “less fit” knowledge will become obsolete. There are multiple obvious problems with this analogy. For example, how do we qualify which knowledge is “most fit?” In biology, those organisms whose traits allow them to overcome the pressures of their environment and survive to reproduce are considered by biologists to be “the fittest” organisms. How do we measure the “survival” of a certain doctrine, theory, or belief? Is it the accuracy of the knowledge? Is it the popularity of the knowledge? Is it the authority upon which the knowledge is based? How do we measure any of this?

From an empirical standpoint, the accuracy of information is ultimately based on the extent to which it is observable. A theory or belief is considered more accurate if there is a wide breadth of observable evidence to support it, especially within the Sciences. This is often the result of repeated experimentation. Sigmund Freud's theory of psychoanalysis is an example of a doctrine that has gradually dissolved over time as a greater and greater number of scholars argue that the empirical evidence to support it simply does not exist. Psychologist Paul Kline writes of two other scholars who had tested the empiricism of Freud's work on multiple occasions that they “accept results at their face value with almost no consideration of

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methodological adequacy” (Kline, 1981). While Kline wrote this in response to studies which supported the empiricism of Freud’s work, even the two scholars in question had previously conducted research concluding that many aspects of Freudian psychoanalysis were either refuted or not supported by empirical evidence (Fisher, 1996). Existentialist philosopher Simone de Beauvoir attacks Freud from a feminist standpoint, claiming that his entire theory exists on the basis of an “original superiority” of males, which in reality is socially induced, not the result of any sort of empiricism (Mitchell, 2000). As a result of claims such as these, Freudian psychoanalysis plays a much less prominent role in modern psychology than it did during Freud’s heyday. This is just one example of the evolution of human knowledge in the scientific fields as a result of scientific criticism and repeated experimentation.

The popularity of a doctrine or idea, or how widely accepted said doctrine or idea is within a population, often dictates its prevalence within a discipline. The popularity of certain truths tends to vary from population to population, often as a result of geography or local culture. One might also argue that the more accurate an idea is, the more popular it will be, but this is not necessarily always the case. Just as often, the popularity of a doctrine might be based solely on its palatability, or perhaps even its status as a pre-existing tradition-based truth. This is especially true for Religious knowledge, much of which is faith based and sourced unquestioningly from established religious texts. Sunni Islam, an Islamic denomination that recognizes the prophet Muhammad’s (pbuh) successor as Caliph to be his father-in-law Abu Bakr as opposed to his cousin Ali ibn Abi Talib, constitutes 87-90% of the Muslim population (Pew Research Center, 2009). The remaining 10-13% are Shiites, those who believe Ali ibn Abi Talib was the rightful heir to the caliphate. The prominence of Sunni Islam is a result of the political power that the Sunnis have held in the Islamic world for centuries. It was ultimately Abu Bakr who gained control of the religio-political caliphate after Muhammad’s (pbuh) death in 632 C.E., while Ali ultimately became his fourth successor (Tristram 2014). Despite Ali’s eventual inheritance of the caliphate, the divide between Sunnis, who supported Abu Bakr’s original inheritance of the caliphate, and Shiites, who believe Ali should have inherited the caliphate immediately due to his blood relation to The Prophet (pbuh), has lasted for centuries and caused an excessive amount of violence on both sides. The fact is, though, that the longstanding prominence and popularity of Sunni Islam in powerful nations like Saudi Arabia has resulted in deeply held anti-Shia sentiments the world over, further marginalizing the denomination.

Over the course of history there is one factor that has influenced both the popularity and perceived accuracy of doctrines, ideas, and beliefs. That is, of course, authority. Authority is arguably the most important factor contributing to the metaphorical “survival” or “extinction” of a belief or idea. Human populations bestow great trust upon those they place in authority, whether it be intellectual authority (i.e. scholars, professors), political authority (i.e. politicians, heads of state), or religious authority (i.e. religious texts, religious leaders) and knowledge is often taken for granted en masse when conveyed by an individual or entity in a position of authority. A useful example of this can be communicated using the popular adage; “the victors write the history books.” Oftentimes, those who are victorious in war or conflict and can shift a power dynamic in their favor will manipulate accessible knowledge in a way that suits their agenda. This paradigm makes History an area of knowledge in which there emerges a notable degree of “genetic diversity,” so to speak. An example of this is the dichotomy of attitudes that exists in the United States surrounding the American Civil War, even 150 years after the conflict’s resolution. The very use of the term “American Civil War” herein speaks to the overwhelming support for the convictions of the victorious Union Army in the U.S. today. Despite

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this, there still exists a visible culture of opposition in the Southern United States consisting of Confederate sympathizers often referring to the conflict as “The War of Northern Aggression,” displaying clear anti-Union bias. The majority of Americans, though, do align themselves with the Union as a result of the authority vested in it as the victorious power in the Civil War. One might argue that there is an element of ideological righteousness contributes to the popularity of Union alignment as well; they fought for unity and equality for all persons regardless of race or ethnicity, values which many people consider infallibly virtuous. This is perhaps an example of authority granted solely on the basis of ethical virtue, if such a thing exists.

These are just a select few of the instances in which the development of knowledge in a discipline has mirrored the evolution of organisms in an ecosystem. At the end of the day, thoughts and ideas are not organisms and the aforementioned metaphor leaves certain things to be desired; for example, a concrete method with which to determine the “fitness” of a doctrine and/or the extent to which it “survives.” Still, though, no metaphor is perfect, and the usefulness of metaphors is valid only insofar as they help us to understand a certain concept. When considering the development of knowledge within disciplines, the Natural Selection Metaphor is certainly useful in developing one’s own understanding.

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