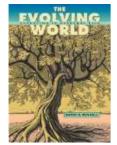


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## **GENETICS AND EVOLUTION**



Review - The Evolving World Evolution in Everyday Life by David P. Mindell Harvard University Press, 2006 Review by Jelle De Schrijver Nov 27th 2007

The influence of Darwin's theory of evolution can hardly be underestimated. Yet, its immediate impact on the way we live seems not as profound as for instance the discovery of electricity or the steam engine. Nevertheless, Darwin's impact on our understanding of humans, life and the world is paramount. Since Darwin, the wonders of natural design and the meticulous construction of organ machinery, need no longer be regarded as the creation of a good-natured god, but are recognized as the result of a mindless process of variation and natural selection. However, for some fervent religious thinkers, this is a fact hard to reconcile with their theological framework. Their resistance results in a frontal assault on Darwinian evolutionary theory under the flag of creationism or intelligent design. In The Evolving World, David Mindell takes the sting out of the creationist's argument by illustrating the ubiquity of natural selection. The author illustrates that natural selection is not only a concept explaining the diversity of life, but is in itself useful in everyday life.

Rarely the acceptance of a scientific theory takes place without struggle. In a first chapter David Mindell traces the history of three initially unpopular discoveries. Just like evolution, heliocentrism and germ theory of disease each faced superstition and petrified religious beliefs, preventing its acceptance. Ultimately, a long journey from supernatural to natural explanations resulted in the acceptance of the scientific theories. Demonstration of the explanatory power of the theory was one of the determining factors in the process of acceptance of the theories. In the hope of speeding up the general acceptance of the theory of

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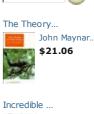
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evolution, Mindell demonstrates in the following chapters the explanatory power of Darwin's theory. For his main premise is that evolution has many applications that are deeply integrated in our lives and societies, often in ways we do not

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realize, ranging over topics in individual health, public health, agriculture or cultural studies.

The example of dogs can show this. These domesticated animals are the product of a process of selection, albeit 'artificial' selection as it is driven by human preferences. Humans preferred to breed the animals with favorable qualities and thus created a whole range of dogs in a relatively short time span (a few thousand years). Similarly horses and cattle and certain crops such as corn and wheat are selected to suit human needs. Thus artificial selection as an instance of natural selection has been of great use.

But also in the development of several pathogens, the west Nile virus, the influenza A virus, Anthrax or HIV, we see natural selection at work. These pathogens spread across human populations with a small number of founders that subsequently differentiate and adapt to the human hosts. Once they develop resistance to medical treatment, these resistant pathogens spread rapidly and easily across the human population. Resistance can develop quickly as a consequence of the high variability and rapid reproduction of many pathogens. An evolutionary view underscores therefore the need for the wise deployment of antibiotics and the careful adherence to antibiotic prescriptions. After all, if you only take a small amount of antibiotics that kills some but not all pathogenic bacteria, resistant bacteria will survive and spread. A profound grasp of evolution and natural selection may help us curtail epidemics.

Evolution has even more applications. It may even form a fruitful metaphor for explaining cultural diversity. Cautious about the use of his metaphor, Mindell observes, we can explain cultural phenomena within an evolutionary framework. Though culture is spread by words rather than genes, the history of cultures can be read from an evolutionary perspective. Mindell focuses on the diversity of religions. Just as one ancestor (a type of wolf for instance) may give rise to many different (sub)species (dogs), we can find analogous patterns of shared origins, followed by a series of changes in religious groups. Religions originate in the course of human history and, after initial periods of identity formation, they may experience varying degrees of dissent, reform, or differentiation. Judaism, Christianity and Islam all claim Abraham as their religious and cultural patriarch. We can speak of a family of related religious cultures. A cultural genealogy, analogous to organism phylogeny, can be drawn depicting historical relationships among the cultures. Thus Mindell not only demonstrates why certain religiously inspired thinkers lack proof in refuting Darwin's theory, he even rocks the very foundation of the religions themselves by approaching them as evolved phenomena.

Yet, despite all the good evidence a surprisingly large amount of people is not convinced by Darwin's evolutionary theory and fall back on creationist accounts of the origin of life. Though Mindell does not delve into this topic, he identifies the real promise of evolutionary theory as the application of biological evolution to study the origins of common cultural features. He believes breakthrough advances will come from the study of the evolution of the form and function of the brain, and the particular constraints they place on cognition and social behavior.

Perhaps, it is here that a reason can be found why people adhere to scientifically unsound creationst ideas. For it is remarkable that resistance towards scientific theories generally occurs when the scientific insight does not correspond with everyday experience. We know the earth revolves around the sun, yet we don't see it. Nor do we see germs spreading disease. Nor do we see animals change into new species. It does not correspond to our primary experience. And because we don't experience it, we may have difficulty accepting the theory. Still, scientific theories may not only contradict our primary experience, they may go against certain cognitive preferences that are innate in the human mind. For it is more and more accepted that humans possess intuitive biological knowledge about animals and plants in their environment. Across cultures children make similar folk taxonomies. They make a difference between humans and non-humans, plants and animals, trees or bushes. In fact children posses common ontological assumptions about what exists on earth. A zebra is the parent of other zebras, but can never give birth to a horse for instance, as the natural categories are regarded as fixed. These intuitive ontological assumptions entail that animals have essences (essential characteristics) which prevent them from evolving in other species. Assuming animals have essences, may be a valuable tool in the savannah. For the immediate and intuitive identification of the lion as that dangerous yellow cat, prompts a quick response to run away. A fast inference mechanism may help our ancestors to make quick decisions and take rapid actions in their original

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You can comment on some of the reviews on Metapsychology at our **Blog** or become a Metapsychology fan on environment, providing humans with this type of cognition with a significant evolutionary advantage. However, today these same ontological intuitions may form the very cognitive barriers for acceptance of the Darwinian theory of evolution. A mind equipped to think about essences, will have difficulty to grasp the gradual transformation of species. Even though evolution may sound plausible, it may not feel all right because of the innate intuitions about what organisms are.

The advantages of understanding evolutionary theory range from court to classroom, Mindell concludes. Thus it should remain an ongoing challenge for educators to communicate the values, excitement and significance of science. And this is exactly the book that will help teachers to highlight the merits of Darwin's theory. It is easy to understand, well documented and covers a lot of convincing examples and arguments. Mindell's premise was that evolution can be useful in everyday life. It is. But most of all, the theory of evolution is a beautiful explanatory instrument. Let's hope that this book may help to fight the cognitive intuitions preventing some to accept the theory and admire its simple beauty.

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