

## History, Biology, and Politics Neatly Intertwined: Lee Dugatkin's Newest Work as an Exemplar of an EvoS Education

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A review of Lee A. Dugatkin, *Mr. Jefferson and the Giant Moose: Natural History in Early America*. University of Chicago Press: Chicago, 2009, 184 pp., US\$26.00, ISBN 978-0-226-16914-9.

Life is interdisciplinary. When you're walking to the office in the morning, physiology and anatomy play a role. Without your body, good luck getting there. The economic climate plays a role too (the economy may well affect whether you have an office to walk to in the first place). Historical context plays a role too. Your office of today, likely equipped with computers, printers, and the like, differs markedly from Thomas' Jefferson's *cabinet* (i.e., office) at Monticello, which included a grandfather clock and a globe, among other things that are probably not in your office.

Colleges and universities often miss the boat when it comes to how essential interdisciplinarity is to a quality college education. In a recent analysis of the affiliations of article authors across different academic fields, Garcia, Geher, Crosier, Saad, Gambacorta, Johnsen, and Pranicita (in press) found that journals dedicated to evolutionary topics are much more likely to reflect authors from varied fields. These authors argue that such interdisciplinary scholarship benefits students by allowing them to see applications of concepts in a relatively broad manner.

Most interdisciplinary programs at colleges and universities connect by shared content (e.g., religious studies), as opposed to a shared set of intellectual principles. Such programs may be limited in terms of how well they underscore actual connections among academic fields. The interdisciplinary nature of Evolutionary Studies (EvoS) has demonstrated a strong ability to connect "islands of the Ivory Archipelago" (Wilson, 2007) by teaching the basic principles of evolution and having students learn about applications of these principles across varied academic areas (Wilson, Geher, & Waldo, 2009). Lee Dugatkin's recent visit

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to New Paltz, which included an outstanding presentation on his newest book, *Mr. Jefferson and the Giant Moose*, represents the kind of interdisciplinary scholarship that typifies the best that an EvoS education has to offer – and, we believe, the best that higher education writ large has to offer.

*Mr. Jefferson and the Giant Moose* (Dugatkin, 2009) brings us back a few hundred years to the advent of the 19<sup>th</sup> century - before the time of Darwin – when the word of God was the ultimate word. Nature and science were still frowned upon – or dismally understood – and scholars were often forced to relate to God’s creation. Among the naturalists of the day, George-Louis Leclerc (September 7, 1707 – April 16, 1788; later, Count of Buffon) worked to develop conceptual frameworks for understanding the nature of life from a scientific angle. In his pre-Darwinian attempts to understanding the nature of life, he articulated his “theory of degeneracy” – an early theory of evolution, proposing that the species in the New World had evolved into smaller “lesser” beings due to their inferior environment. The degeneracy theory was ultimately used as a tool against the United States, claiming that nature provided sufficient evidence that Americans were lesser people living in a lesser land.

Dugatkin colorfully details the anti-American sentiments of Europe through Buffon’s degeneracy argument, an argument that, in many ways, challenged beliefs about God and nature and that also had political, economic, and social ramifications, none of which were good for the newly formed United States of America. In *Natural History*, a massive encyclopedia published in pieces over four decades, Buffon details species from all over the world, through descriptions and comprehensive drawings. Before Darwin (1859), Buffon’s work was considered seminal among naturalists worldwide.

More than a catalogue of species, however, *Natural History* had a political agenda. In light of its high-profile status, *Natural History* was the perfect forum for the American Degeneracy argument. The picture that Buffon paints of the New World is the antithesis of the Old World’s majestic landscape; instead of the “king of the beasts,” the lion, the Americas produced deficient, smaller and less hearty beasts. The New World could claim only insects, snakes, and frogs. According to Buffon, this degeneracy resulted from the ways of Native Americans, who, he claimed, were “cold, lazy, without feeling, stupid, and lacking in sexual drive” (Dugatkin, 2009, p. 10). Buffon claimed the Native Americans should have eliminated the swamps in order to thrive, blaming this lack of foresight for the abundance of amphibians, insects, and reptilian creatures.

Buffon’s theory of Degeneracy was purportedly evidenced by the smaller size of animals in the New World. Dugatkin explains that the New World’s closest animal to an elephant, the epically sized beast of the Old World, was a tapir, a mere sixth of the size. The wet and cold environment contributed to the smaller life forms found in America, which by Buffon’s definition, meant they were sub-par, “Buffon was relentless when it came to the degeneration in New World animals: he saw no exceptions to the law of nature he had discovered” (Dugatkin, 2009, p. 21).

The theory of New World Degeneracy was something that, as children, we likely never heard before, yet it was the center of many people’s lives (European or American) in the 18<sup>th</sup> and 19<sup>th</sup> century. This theory could have been the single most eradicating social force for the newly formed United States of America. Though

Buffon's ideas were apparently centered around "natural history," Dugatkin discusses degeneracy as having a different essence – framing this theory as a highly motivated and politically charged misuse of the scientific approach.

Thomas Jefferson was among the many leaders in the New World who was particularly disturbed by Buffon's degeneracy theory, and dedicated a good portion of his life attempting to dispel the theory. Jefferson was not only trying to combat the theory because it was absolutely ridiculous, but he was doing it for the survival and future of the fledgling United States (particularly in the case of trade relations). Because Buffon's theory was based primarily on the idea that there were no large animals located in America, Jefferson decided that he would try to meet Buffon's claims head-on with physical proof: A giant moose (hence the title of the book). What seemed like a simple story about Mr. Jefferson obtaining a moose to prove Buffon's claims about American Degeneracy wrong, turned out to be a book of epic proportions that was filled with numerous historical accounts (including images of the key people during that time as well as letters that were exchanged). Dugatkin paints a vivid picture of an intellectual battle between science and absurdity—in fact, most of Buffon's outrageous claims were from travelers who had visited the states—Buffon himself never stepped foot on American soil. In the beginning of the book, we expected to hate Georges-Louis Leclerc de Buffon from the moment he was mentioned, but Dugatkin (and Jefferson) actually praise Buffon's natural history skills and show the reader that Buffon was actually a quite smart and intriguing Naturalist (with the exception of his theory of American Degeneracy...). Jefferson is even quoted as saying that Buffon was a "celebrated Zoologist, who has added and is still adding, so many precious things to the treasures of science" (Dugatkin, 2009, p. 57).

Surprisingly enough, Jefferson had actually admired Buffon for his contribution to natural history, and even mentions that the Theory of American Degeneracy wasn't really Buffon's fault, but resulted from exaggerated accounts from travelers. According to Jefferson, these travelers were not Naturalists like Buffon and Jefferson, so their accounts should have been taken with a grain of salt because they had no understanding of natural history: "Did they measure or weigh the animals they speak of? Or did they not judge of them by sight, or perhaps even from report only? Were they acquainted with the animals of their own country, with which they undertake to compare them? Have they not been so ignorant as often to mistake the species?" (Dugatkin, 2009, p. 58). Jefferson's quizzical scientific nature caused him to find fault in Buffon's data: he statistically criticized Buffon, mentioning that he had a very small sample size (and even the numbers from the small sample size were questionable), which in turn, caused Jefferson to question the validity of Buffon's data as a whole. Again, Jefferson blamed others, and not Buffon directly, "Indeed, Jefferson was convinced that if he could obtain honest answers to the myriad of questions he posed, that 'would probably lighten their authority, so as to render it insufficient for the foundation of an hypothesis'" (Dugatkin, 2009, p. 58).

One of the most exciting things by far is that Dugatkin shows us a side of Thomas Jefferson that many don't have the pleasure of seeing—Mr. Jefferson the Naturalist. Jefferson was quoted as saying to his many friends that science was his passion, while politics was his duty—which is saddening because most know him

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for politics (namely his presidency). In fact, Jefferson spent a good portion of his day taking notes in his garden book, weather memorandum book, and farm book—constantly noting the natural differences in the world around him—some say even at a slightly obsessive level. “As president, he would keep a schedule of when thirty-seven different vegetables appeared at the market, and took notes on when this or that species of birds appeared, as well as when frogs started croaking” (Dugatkin, 2009, p. 55). Jefferson’s only book, *Notes on the State of Virginia*, includes many of his own personal tables regarding American animal size in which he compares and contrasts them with animals found in Europe (there was no big difference found here). After many attempts on Jefferson’s behalf to debunk degeneracy (over the course of years) the reader is finally convinced that the seven-foot moose Jefferson was able to present Buffon with would finally crush the theory of American Degeneracy. To Jefferson’s (and the readers’) dismay, Dugatkin explains that Buffon agrees with Jefferson, yet dies six months later, unable to make any type of revisions to Buffon’s public word on the subject of life, *Natural History*.

In the chapter entitled, “Thirty-Seven-Pound Frogs and Patagonian Giants” Dugatkin discusses the fueling of the theory of American Degeneracy after Buffon’s death, painting an even more bleak picture for the reader. Many renowned scholars, including Voltaire, Immanuel Kant, and John Keats supported the idea of American Degeneracy. Even famed Jean-Baptiste Lamarck turns out to have been mentored by Buffon, and used his theory of the inheritance of acquired characteristics to add a heritable component to the Theory of American Degeneracy (claiming that parents that lived in such climates would give birth to degenerate children). Dugatkin then brings up Darwin (to our delight). Unfortunately, he argues that Darwin’s mind had been tainted by the theory of degeneracy and that during his trip on the Beagle, Darwin expects to see degenerate animals in his travels. On an interesting side note, Darwin argued that degeneracy could perhaps exist via the force of Natural Selection. The Evolutionists in us were excited, yet we craved more from Dugatkin regarding Darwin. But the book wasn’t entitled *Mr. Darwin and the Giant Moose*, so we can’t really complain.

In general, the book is organized beautifully—each chapter has an enticing title, and is broken up in a thought-provoking way. The captivating language Dugatkin uses, coupled with historical accounts from each side, bring the reader into a world where the fledgling United States is fighting an intellectual war on degeneracy. The last chapter, entitled, “Extracting the ‘Tapeworm of Europe’ From Our Brain” gives the reader a sense of relief. During the majority of the book, Dugatkin makes the case that the Theory of American Degeneracy began to permeate all aspects of life and was spreading like a plague throughout Europe, yet in the end, he wraps everything up perfectly. This chapter was dedicated to how American’s countered these theories and fueled the growth of the United States. He mentions Reverend Jedidiah Morse who wrote a book for children that was used in classrooms all over the United States. *The History of America in Two Books* was a history textbook, but also discussed how absurd the theory of American Degeneracy was. American children, at a young age, were taught that the theory existed, but that it was absurd. Joel Barlow (an American poet and friend

to Thomas Jefferson) used poetry to counter the theory of American Degeneracy, while others like Hartford Wits wrote plays. Henry David Thoreau wrote essays on the beauty of America and even went as far to take part of the Theory of American Degeneracy (that climate has an affect on humans) and apply it in a positive way (claiming that the climate in the United States was beneficial to the inhabitants). America was fighting the Theory of Degeneracy in every way possible, and pop culture was at the forefront of the battle. Dugatkin puts the reader at ease—though he spent a good portion of the book convincing the reader of the impact and irreversibility of the Theory of American Degeneracy—he successfully unwinds it all in a short chapter at the very end of the book. By the last page, Dugatkin convinces the reader that through the synthesis of many great thinkers in the United States during that time (especially Thomas Jefferson), the United States was able to dispel the Theory of American Degeneracy and successfully extract the tapeworm of 18<sup>th</sup> century Europe from our ethos.

Lee Dugatkin's work here exemplifies the interdisciplinary nature of Evolutionary Studies (EvoS) extremely well. A world-class biologist with an undergraduate background in history, Dugatkin's work on this book integrates multiple academic fields seamlessly.

The masterful product that is *Mr. Jefferson and the Giant Moose*, is partly the result of Dugatkin's razor-sharp mind, but we believe, it is also the product of the interdisciplinary EvoS approach that characterizes his academic background. Readers of *EvoS Journal* should not be surprised that Dugatkin was David Sloan Wilson's first doctoral student at Binghamton – the birthplace of EvoS. In Spring 2010, the SUNY New Paltz community was fortunate to have Dugatkin visit our campus and speak on this work in our EvoS seminar series. We encourage you to check out the streaming video at <http://evostudies.org> where we are, with the help of NSF award (#0817337), developing a free, open-access online library of EvoS videos. Currently, more than 20 videos from the Binghamton and New Paltz EvoS programs are available at this site. Interested in joining the EvoS Revolution? Please contact the authors – we can help!

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