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Evolution: Education and Outreach

BOOK REVIEW Open Access

Book Review: Rob Desalle and Ian Tattersall, Troublesome science: the misuse of genetics and genomics in understanding race, (New York: Columbia University Press), 2018

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Keeping the scientific high ground

Nothing in biology makes sense except in the light of evolution. Dobzhansky's dictum has been employed to solve some of the most difficult problems in biology including why aging, altruism, and sex exist. I have argued that one of evolution's greatest triumphs (and failures) is how it helps us to understand human biological diversity (Graves 2005a, b). The triumph is that evolutionary biology is the only way to make sense of both the origin and maintenance of our species genetic diversity, the failure is that we have not explained how evolution does this well to scholars and laypersons outside of our discipline.

The failure has allowed the proliferation of false ideas concerning our diversity to stand, even when these should have been put to rest forever by developments in both evolutionary theories of the origin of and maintenance of variation within species and the technology to test them in the later portion of the 20th century. Specifically, I refer to the ongoing confusion concerning biological theories and social definitions of race. Nicholas Wade's book entitled *A Troublesome Inheritance*: *Genes*, *Race*, *and Human History* is case in point. It was published in 2014 (Wade 2014). Wade's book misrepresented the views of many of the scientists whose work he reported on. I wrote a blog piece criticizing this book and signed a statement along with over 130 other geneticists also denouncing its claims which were published in the *New York Times* on August 10, 2014 (Why this book on race and genetics is a problem, https://evolution-institute.org/book-review-great-are-wades-errors-in-a-troublesome-inheritance-genes-race/; and Letters: a troublesome inheritance. https://www.nytimes.com/2014/08/10/books/review/letters-a-troublesome-inheritance.html?module=inline. Accessed 10 Aug 2014).

Yet and still we don't accept things because the majority of scientists say that something is true. Desalle and Tattersall's *Troublesome Science* presents solid reasons grounded in evolutionary science to reject the claims made by Wade in *Troublesome Inheritance*. The book begins with an explanation of tree and population thinking (Chapters 1–5). Chapter 6 briefly examines the history of how biology classified human beings beginning with Linnaeus. Chapter 7 addresses how early population genetic theory (beginning with Fisher and Wright) morphed into the more sophisticated analysis of human variation of the latter portion of the 20th century (Lewontin, Cavalli-Sforza, Edwards, Cann, Stoneking, and Wilson). The remainder of the book (chapters 8–14) addresses 21st century results such as the revelations of ancient DNA and the use of structure algorithms to visualize human genetic diversity. In these chapters the authors do an excellent job of explaining the strengths and weaknesses of these new methods for understanding the massive expansion of genomic data related to human variation. While I think they do an excellent job of addressing these topics, because many of them are quite sophisticated, individuals without strong scientific backgrounds may be put off by the book. However I do think that this book

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should be widely read by evolutionary biologists, geneticists, and biomedical researchers.

Their most important message is how they tie back the subjects they discuss to the resurgence of claims concerning the existence of biological races within our species. They expose the racialist argument that those who argue against the non-existence of biological races within our species anatomically modern humans are doing so for reasons of "political correctness." Specifically they demonstrate how such arguments: misrepresent the nature of hypothesis testing, are rooted in confusion concerning the nature of species and biological definitions of race; have little grasp of the rigors of taxonomic science, confuse the definitions of clustering approaches and evolutionary trees, utilize ancestry informative markers (AIMs) subjectively, conflate "racially" based genetic differences with explanations of ancestry; and finally conflate allele frequency variation and differences in adaptation. This is a compelling argument that deploying scientific reasoning properly calls into question racialist claims, as opposed to anti-racialist scientists having an equalitarian agenda. Indeed, in the epilogue they do a very good job of exposing the racialist political agenda, thus preserving the scientific high ground.

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