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**REVIEW OF E. O. WILSON'S  
*TALES FROM THE ANT WORLD***

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**REVIEW OF E. O. WILSON'S *TALES FROM THE ANT WORLD***

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**Abstract.** This is a positive review of Wilson's (2020) *Tales from the Ant World*.

**Review.** The audience for Wilson's new book is, essentially, everybody. But that huge population contains a few special subdivisions. Certainly, it is aimed at young readers, maybe 10 to 18 years old, in hopes that they will learn to understand and appreciate science (and ants). By extension, it addresses amateur naturalists many of whom may be "citizen scientists" who collect and analyze data in collaboration with professional scientists. In academia, it addresses undergraduate biology majors who can gain an appreciation of possible future careers. Likewise, it addresses graduate students and professional biologists who can extract fascinating and useful technical snippets from the 26 short chapters based on Wilson's lifelong collection of index cards.

Wilson's joyful independence as an unrestricted precocious child growing up in rural Alabama in the 1940s and 50s is inspirational, as described in this book and perhaps even better in his 2010 autobiographical novel entitled *Anthills*. But it would be difficult for a young person to duplicate that experience while growing up in an urban or suburban setting in 21<sup>st</sup> century America.

While focusing primarily on ants throughout his career, Wilson has sought to "bring the biological and social sciences together so that we could better understand human nature" (Dreifus 2019). This was his objective in the last chapter in *Sociobiology* that was resoundingly misunderstood by many anthropologists when he published it in 1975. Although the new book aptly begins with clear warnings that humans should not mistakenly use ants and their societies as role models, the topics that he addresses often are not unique to ants but have analogies within the sociality of many species including humans.

The book is primarily descriptive rather than theoretical, but the descriptions are based on sound theory without excessive discussion of theoretical issues. Specifically, it is based on Darwinian evolutionary theory focusing on 150 million years of ant history. Rachel Carson makes a cameo appearance with her powerful arguments against pesticides in *Silent Spring*, but the book does not dwell at length on contentious issues such as the design argument, climate change, or mass extinctions.

Wilson provides a strong introduction to research methods in almost every chapter. He describes

field methods that include making and documenting detailed behavioral observations and collecting ecological samples at sites all over the world; library methods that include conducting literature reviews and processing historical data at Harvard's museums and libraries; and performing experimental research and mathematical modeling at laboratories and computer facilities.

Among the many research methods that Wilson has used during his long career, data collection based on instantaneous scan sampling and data analysis based on unsupervised pattern detection have been quite productive. Both methods rest on elementary mathematical foundations.

Instantaneous scan sampling is a data collection methodology with which an observer records the current activity of a person (or a nonhuman animal such as an ant or a primate) at preselected points in time. Often it is used to obtain data from many group members by observing each in turn. The data may be coded numerically or recorded in spoken or written plain English. If the behaviors of all visible group members are sampled within a short time the record approaches a simultaneous sample of all individuals. The results can be used in many ways; for example, to estimate the frequency or percent of time the individual spent in various activities, with various other individuals, at various times of day, etc. Such data are almost impossible to obtain by most other sampling techniques (paraphrased from Altmann 1974:258-59).

Unsupervised pattern detection is an analytical methodology that can be used to detect patterns in data such as those generated by instantaneous scan sampling. The currently popular topic of data mining can be subdivided into modeling that uses traditional statistics to generate a global summary of the data, and pattern detection that uses nontraditional procedures to search for local structure in the data (Bolton et al 2004:67). Pattern detection may be performed manually when analyzing plain English data records or automatically by machine learning algorithms. The combination of Artificial Intelligence software and supercomputers can quickly detect complex patterns in numerically coded data.

Wilson uses these methodologies together, unlabeled and implicitly, to describe extraordinarily complex ant behavior in this book and in *Anthill: A Novel*, Part IV, The Anthill Chronicles. I followed that precedent in my *Aboriginal Men Coming of Age in Central Australia*, Part 2, Narrative Summary: Make Him a Man and Part 3, Tabular Summary.

Wilson distributes his discussion of mathematical methods and collaboration with mathematicians across multiple chapters throughout the book. These have been key ingredients of his lifelong research, but this book touches only gently on measurements, statistics and simulations and contains no mathematical equations or arguments, presumably in deference to the diversity of its audience. Since this is not a place to review his other publications, I have included, at the end of this review and in chronological order, a short list of relevant references to his mathematical works.

The book devotes one or more thematic chapters to topics of special interest to Wilson. Among his favorites are competition and combat; cooperation and eusociality; multimodal communication systems; and the architecture and urban planning of superorganisms such as leafcutters whose societies are intricate masterpieces of social engineering.

Key relational issues that he discusses in multiple chapters include taxonomic classification of social insects including ants, bees, wasps and termites; the structure and operation of complex biologically based caste systems within societies; symbiotic relations between various ant species and other kinds of animals and plants upon which they rely for their survival; and predator-prey relations *passim*.

Most chapters are free standing entities that you can read in any order, but some are linked together. For example. Chapters 12 and 20 are a linked pair but the thread that links them is elusive. At the beginning of Chapter 12, entitled “Speaking Formic” – the Latin word for ant is *formica* - Wilson notes that the language of the ants is “an array of pheromones used by ants to order their social life”. And a footnote says that “Formic is the name Robert Frost used for ant language in his splendid little poem ‘Departmental’”. The Frost poem from 1936 deals satirically with the “departmental” operation of the caste system when a member of an ant society dies.

Chapter 20, entitled “The Walking Dead”, also concerns some of the ways in which ants deal with injuries, deaths and odors of death that occur within their societies. As such it seems to be just another topic that deserves a bit of description. However, a revised version entitled “The Zombie Ants” appeared in the *New York Times* on 21 August 2020, right between the 2020 Democratic and Republican presidential nominating conventions. Was the timing of the *NYT* version purely coincidental? I am not sure how to interpret what may be a parable. Similar threads interconnect other chapters and contribute to the fun of reading the book.

Young readers who expect glossy color photographs wherever they look may be disappointed by Kristin Orr’s fascinating black-on-white line drawings of many species of ants, but they can see gorgeous color illustrations of ants online or in some of Wilson’s other books such as *The Superorganism: The Beauty, Elegance and Strangeness of Insect Societies* co-authored with Bert Hölldobler.

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