

Books

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Review of Thomas McCabe (ed.) 2021, *Descent and Logic in Biosystematics*. Juneau: Perseverant Publishing

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Who cares about biological taxonomy these days? To the layperson, a taxonomist belongs to the past and is an eccentric and slightly absent-minded scientist: he goes around the world obtaining biological specimens (preferably insects), transfers them to his laboratory, performs careful analyses, and hopes to find a new species to leave a mark in history. To the average biologist, taxonomy is embedded into a software which, by analyzing the DNA in a sample, will produce ‘metagenomics’ data (preferably relative to microbiota). Here, the fingerprint sequences act as a kind of barcode for each and every species.

Both the layperson and the average biologist, from two seemingly opposite perspectives, consider taxonomy as a substantially irrelevant activity.

In fact, this is not the case. We could tell the layperson that a great part of animal species (especially insects) is still unknown. Such a “dark biological matter” is abundant in ecologically crucial areas like tropical forests. It severely biases our estimation of biodiversity and, consequently, the estimation of the ecological state of our planet (Monastersky 2014; Hui *et al.* 2008). On the other hand, we could point out to biologists that obtaining consistent results when it comes to underrepresented species is especially hard. We need to shift from a purely ontological (e.g. relative abundance

of microbial species in a gut sample) to an ecological appreciation of the entire microbiota in terms of the relative abundance of species with similar metabolism. This then involves a similar ecological value for the microenvironment of the gut (Martino *et al.* 2020).

Books like *Descent and Logic in Biosystematics* are precious for generating interest among scientists and, more generally, educated readers. This can shed light on the pillar of both medicine and biology, i.e. giving a name to observed entities.

Thomas McCabe is a physician. He introduces his work by establishing a basic difference between medical and biological systematics. In fact, medicine can find concurring diseases and, therefore, a multiple determination in a single specimen. However, biology focuses more on elemental species. Such an interesting starting point allows the author to face the problem in terms of “descent”, i.e., genetics. Indeed, McCabe ascribes the fuzziness between the genetic variability of intra- and inter-species (especially for microbes) to genetics.

It is a pity that the author almost completely skipped the long and brilliant tradition of numerical taxonomy, as presented in the crucial work of Sneath & Sokal (1973). Numerical taxonomy has inspired generations of scientists from every discipline. It is

also at the base of the current interest for “species as attractors in phase space” that unites the biological and physical concepts of “species” as a “discrete and recognizable favoured configuration of features” (Kasperski & Kasperska 2021).

This book, which is hard to come by these days, is inspiring and contributes to a necessary cultural resurgence of life sciences. It is available for free at: https://www.perseverantpublishing.com/pdf/Descent_and_Logic_in_Biosystematics_-_McCabe_2021_1.2.1.pdf

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