That was the name thereof

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The Variety of Life: a survey and celebration of all creatures that have ever lived

by Colin Tudge

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I quickly established a love-hate relationship with this book as it represents the good side as well as the dark side of evolutionary biology. The subtitle a 'celebration of all creatures that have ever lived' gives the good and exciting part, which is the challenge and the opportunity for molecular biologists to explain evolution. As more and more complete genomes are becoming available, researchers are increasingly finding links between these genomes in order to explain the survival strategies of real organisms that function outside the laboratory. These comparative methods certainly help us to understand the complex linkages between genomes and organisms. Thus, it is exciting to open a book that claims to be a celebration of the full diversity of life, both in the past and in the present.

The *Variety of Life* is a good place to start examining diversity during the last 500 million years. The careful and loving survey of all creatures that ever lived is the 'good side of the force'. It would be

nice to have only the good side, but often we must accept the dark side as well. There is still a small group of biologists who think that Adam's task of naming creatures is the main purpose of biology. 'The Lord God ... brought them unto Adam to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof.' (Genesis 2:19). And that is it, pure and simple—describe and name, describe and name, and so on, *ad infinitum*. Some early classifiers in the 17th century did consider their role as simply finishing Adam's task. The rules became obsession; there was no need to understand processes in nature. To modern biologists this obsession with describing and naming is the dark side, and I will venture the opinion that this would be the view of the organism as well. They do not care what they and their relatives are called. But they do care about food, shelter, mates, offspring, danger, survival, and so on. Names and their rules, and rules about rules, can be left to Adam.

Thus, the book would be much better off by omitting the first 80 pages or rather condensing them into maybe five pages. This first section describes classical cladistics, which is then largely abandoned for the rest of the book. Under this classical paradigm, species should apparently order themselves into a strictly bifurcating tree, and each group or clade obligingly retains derived features that uniquely identify its members as belonging to that group. Indeed, would be very intelligent of them. But, experimental work is now finding examples, such as several new species arising independently from within one widely dispersed species that remains unchanged. Nature does not limit itself to bifurcations, nor is there any biological reason for them. The rules are an arbitrary logic, unrelated to the real processes of evolution.

However, after the introductory 80 pages, the author advocates a very sensible view he calls 'neoLinnean Impressionism'. Logic is now tempered with pragmatism; phylogeny is separated from nomenclature.

Certainly, nomenclature—librarianship—needs to be consistent with the phylogeny but it could, for example, have two versions: one for the specialist and a user-friendly one for the rest of humankind. In fact we do not even need the first specialist version, because the resulting tree (or 'graph' when there is lateral transfer) is needed only for computer storage and retrieval. The author's solution is to identify groups with an asterisk if they are not strictly monophyletic, which means they have a single ancestor, but some descendants are now in another group. Reptilia* is the classic example, as birds and mammals are descendants of the ancestors of reptiles, but are no longer included in that group. Names can be used without implying any phylogenetic statement. Fish* is another example. Great, we did not need those 100 pages to understand this concept either.

Thereafter, the book was really fun to read for those interested in life's diversity and a fine example of some interesting and entertaining aspects of biology. The book is excellently produced and it is interesting to browse through it, perhaps thinking of a good experimental organism, or wondering what set of developmental genes could lead to that organism. It does not, and cannot, claim to be the last authority in any particular area, but that is not its role. I found that it excels in allowing an overview of a group, whether living or fossil, and often identifies some of the biologists currently working in this field. Given this background knowledge, the reader can then tackle the more specialised literature armed with the esoteric terminology each taxonomic group possesses.

By the end of the book, the good side of evolutionary biology has clearly won.

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