

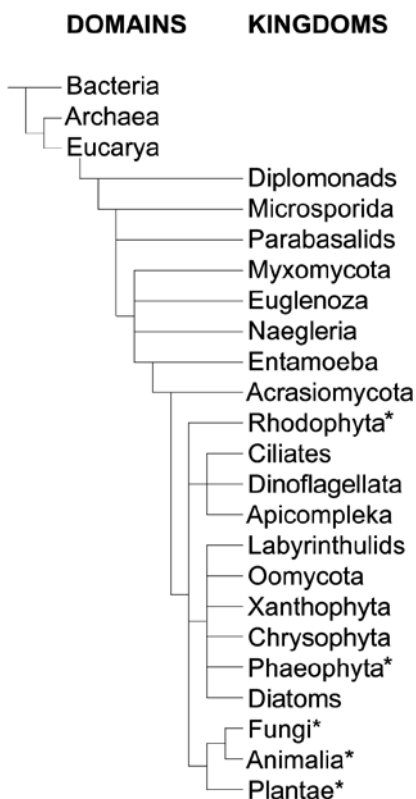
Adam's first task

A review of
The Variety of Life:
A survey and a celebration
of all the creatures that
have ever lived
 by Colin Tudge
 Oxford University Press, 2000

Derel Briarley

Throughout the '60s, '70s and '80s, the author laments, the classification of living things was generally eclipsed by other topics in the field of biology, such as ecology, animal behaviour, evolutionary theory, molecular biology and genetics. This book was written with the aim of restoring the art, craft and science of taxonomy to its proper place at the centre of biology.

An evolutionist, he asserts that



Grand Cladogram on p. 102 (Indicates the metazoan kingdoms; the others are unicellular or live in colonies).*

'With Darwin's idea of natural selection the modern age of biology truly began', quoting Dobzhansky in saying 'Nothing in biology makes sense except in the light of evolution.' Commendably, though, he agrees that 'nature is wonderful, and ... much of the wonder lies in its variety'.

Although fewer than two million living species have been identified, he suggests that maybe four million million forms of life—in a footnote he excludes viruses from this estimate—have existed throughout Earth's history; even if the true number were only a fraction of this, it 'would still be vast; and far too great for any human mind to grasp' (Romans 11:33).

Taxonomy, as we know, started with Carl von Linne (or Linnaeus), whose binomial system for identifying plants and animals is still used to a large degree; and he divided life into two 'kingdoms', plants and animals. This division sufficed for the forms of life we can see, but

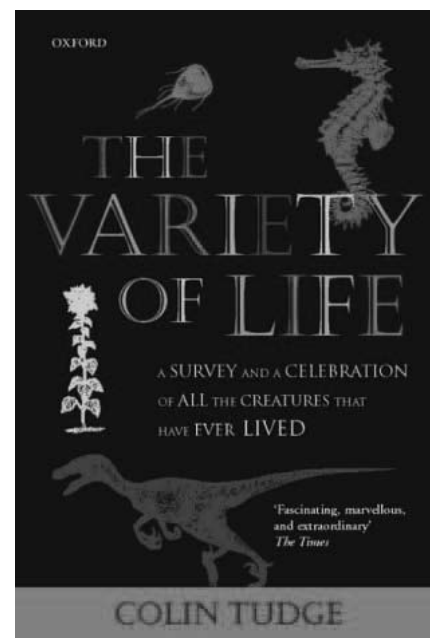
'in Linnaeus's time until well into the twentieth century Leeuwenhoek's [microscopic] animalcules, in all their extraordinary variety, have generally been rammed into the Linnaean kingdoms of Animalia and Plantae.'

Haeckel, whose mendacity readers of this journal will be well acquainted with, proposed Protista.

'He shifted the boundaries of the "Protista" from time to time, but, in general, his new kingdom largely coincided with Leeuwenhoek's conception of "animalcule" ... Haeckel quite consciously put those [organisms] without a nucleus [bacteria or his Monera], and those with, in the same taxon'

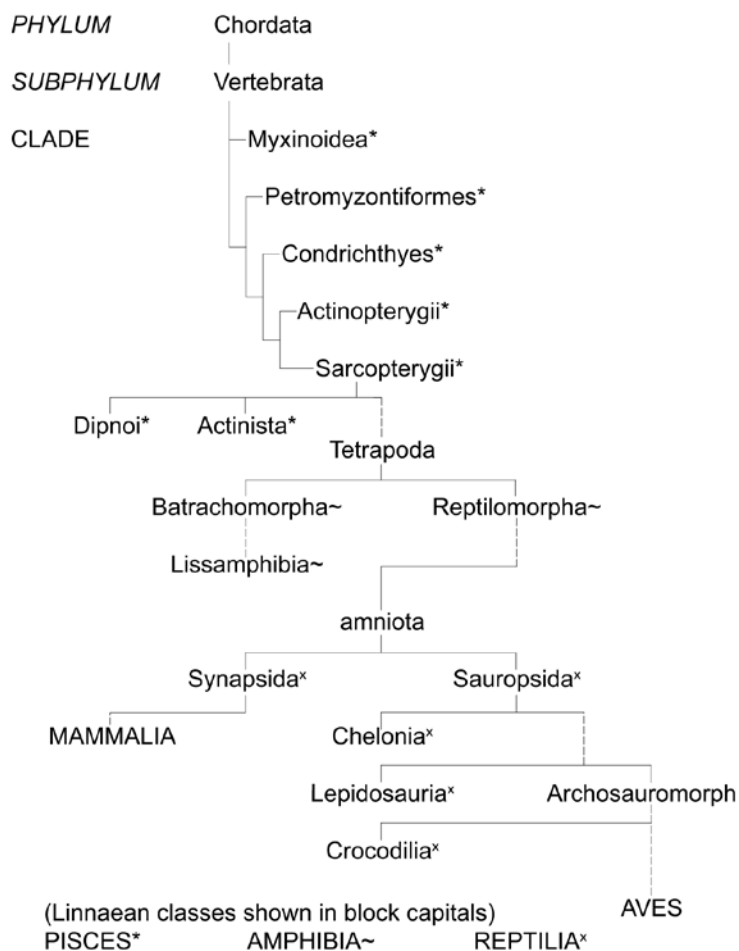
The possession of a cell nucleus or not is now held to be the greatest difference between varieties of life.

Understanding of biology advanced and by the '50s Robert Whittaker proposed five kingdoms—Animalia, Plantae, Fungi, Protocista [Haeckel's



Protista less his Monera] and Monera, which classification is still widely used. In the 1970s, Carl Woese of the University of Illinois observed molecular differences between types of bacteria great enough to warrant distinction into two domains, a grouping more inclusive than those of Linnaeus's kingdoms—the Archaeobacteria (later renamed Archaea) and Eubacteria (later Bacteria, though less extensive than the earlier group of that name). 'Indeed, the Archaeobacteria and the Eubacteria were more different from each other than either of them were from the eukaryotes'; so he proposed all eukaryotes, visible and invisible, as a third domain, Eucarya (the Eukaryotes).

Eukaryotes, in turn, are grouped into a tentative and approximate 20 kingdoms, five of which are mainly metazoan (animals, plants, fungi, red seaweeds and brown seaweeds); three of slime moulds and slime nets are unicellular part of their lives and at other times form 'multicellular and macroscopic' colonies; the remaining 'dozen or so' kingdoms are predominantly unicellular. Fungi 'now seem to be closer to animals than either group is to plants'. Still, 'These are early days ... organisms that on the face of things seem to be obviously different are actually largely similar, and clearly shared



In this partial cladogram of the classes of vertebrates, the extinct classes are omitted for simplicity. Its purpose is to demonstrate the difference between cladistics and traditional classification.

a common ancestor only (relatively) recently’.

Tudge follows the discipline of cladistics, proposed in the 1960s by Willi Hennig, who, he holds, in the field of taxonomy ‘deserves to be placed alongside the giants, Linnaeus and Darwin’. Cladistics is a method of classifying living things based on their similarities. However, ‘Shared primitive features merely show that the creatures in question are all members of some much bigger, more general group’. They do not necessarily imply common ancestry.

In the second part of this book he lists the different forms of life. Most of life on Earth, he notes—most of the mass, and most of the variety—is prokaryotic. *Escherichia coli* is cited as an example of prokaryotic fecundity; in ideal conditions, this organism can replicate every twenty minutes, ‘and

if such conditions could be sustained could produce a mass greater than that of the Earth within 3 days’. He briefly describes the different forms of bacteria; branching from near the base of the cladistic tree are the Thermotogales—one of which, *Thermotoga maritima*, has unique lipids and rRNA so different from that of other bacteria, that Tudge, for one, feels it deserves an entire kingdom to itself, as the sister group of all the rest, representing ‘a vast unexplored world of thermophilic bacteria’.

The popular tale that the first eukaryote (and ancestor of all the rest) arose from a group of prokaryotes living symbiotically is mentioned to link the domains.¹ The new taxonomy ‘has profoundly changed our conception of ourselves Ecologically and individually, human beings are, of course, wonderful,

just as planet Earth is wonderful. But phylogenetically we are an outpost, a tiny figment of life, just as Earth is a cosmological nonentity that no other intelligent life-form in the Universe would bother to put on their celestial maps.’

Unfortunately, while this may have a profound effect on some biologists, it certainly has not induced humility in mankind generally! It is also in stark contrast to the importance of man in God’s eyes (Psalm 8:4–8).

While the glory for life’s grandeur is still withheld from Him to whom it is due (Romans 1:20–23), evolutionary thought has come a long way from when the rabid disciple of Thomas Huxley, H.G. Wells, wrote in *The Outline of History* (1931 edition):

‘It is difficult to see why a slug or a toadstool, a louse or a parasitic growth on the bark of a tree, should be treated as though it and the process of its existence were in some mysterious way “higher” than, for example, the beautifully marshalled elements in a crystalline group, or in a gem, or in a slab of patterned marble, or in the lovely patterning of rippled water in the sunlight, or the undulations of wind-blown sand. Why should the maker of the universe take sides between the almost inanimate and the altogether inanimate?’

Tudge, at least, displays a sense of wonder at the grandeur in nature, closing his book by acknowledging ‘that it is a privilege to be conscious in this universe, to live on this particular planet, and to share it with so many goodly creatures’.

References

1. But this is now being challenged by a new theory arguing that ‘the three fundamental types of cells that [are thought by evolutionists to] form the building blocks of present-day life actually evolved independently, not in an orderly succession from a common ancestor’. Coghlan, A., Power of three: life on earth emerged from more than just a single cell, *New Scientist* 174(2348):10, 2002.