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The Advent of PhyloCode: The Continuing Evolution of Biological Nomenclature. By Michel Laurin. 2024. CRC Press, Taylor and Francis Group, Boca Raton. 209 pp.

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In this book, Michel Laurin's goal is to review the existing and historic problems of rank-based taxonomic classification and nomenclature (RN) and to promote instead phylogenetic inference and nomenclature (PN). While RN is based on overall similarity in which evolutionary relationships are formally at least irrelevant (as they were for Linnaeus), PN is increasingly undermining the logic of RN through a rigorous application of cladistical methods. Concerned only to establish evolutionary relationships through demonstration of shared inheritance of characters, cladistics though now normalized was once regarded dangerous. In cladistics, all taxa are 'clades' defined through the most parsimonious tree of character traits, with good delimitation and a stronger relationship between name and content. Laurin is an advocate of PhyloCode (The International Code of Phylogenetic Nomenclature) as a necessary if imperfect solution to the current impasse in biological nomenclature. He argues its relevance in both evolutionary sciences, and in conservation policy where political arguments around biodiversity loss have required better ways of measuring it.

Apart from the lack of an ultimate objective basis for Linnaean categories, the main challenge for systematics has been the sheer numbers of new taxa reported. This latter results especially from the use of molecular methods for micro-organisms, and the extension of RN conventions to bacteria, archaeans and viruses. Many taxa remain un-named as the backlog is so overwhelming. The speed of recent

developments has arguably turned this into a crisis, where we can only describe effectively a small fraction of the total. Greater knowledge of biodiversity has led to more taxonomic instability, cladistics revealing ever more taxa as paraphyletic rather than monophyletic. The ontological status of the species concept seems no nearer to resolution, being inapplicable to many organisms. What are the disadvantages of using 'species' as a shorthand unit for measuring biodiversity? Do we overstate or understate the number because of confusions in delimiting them, or in differentiating 'chrono-species' at arbitrary transition points? Computerized information retrieval and AI has permitted experimentation with sophisticated methods, although numerical taxonomy has only compounded the problems. The establishment of international codes of biological nomenclature designed to produce agreement on various meta-groups of organisms has similarly led to further confusion through failure to agree basic concepts, while attempts to produce a single code have met resistance from opposing groups of specialists. The ultimate objective of this book is to find a more workable naming system compliant with evolutionary pathways, which avoids continual name changes due to ranking shifts and new discoveries. But if there is a compelling validity in aligning phylogeny with classification and nomenclature, then cladistics too faces problems: in defining clades, multiple nesting through inexplicit delimitation of taxa and 'cascades of name changes.' In dealing with eukaryote hybridity, and with lateral gene transfer,

evolution seems somehow less predominantly divergent than once assumed.

What makes this book important for ethnobiologists is Laurin's explicit and sympathetic engagement with the literature on folk classification, and its use to interrogate scientific taxonomy. Perhaps we should not be surprised that these specialisms seek to converse. Taxonomy is among the most scholarly, literary, and complexly Byzantine branches of biology, passionate about its underlying philosophy, about the precise use of words and the interpretation of codes, with much in common with black-letter law, and forever reflecting on its own history. More pragmatically, taxonomists have found in local ethnobiological knowledge evidence helpful in their empirical work. For these reasons, we might have expected something on the influence of European 'indigenous' knowledge on the development of taxonomy, and on the impact other pre-Linnaeans such as G. E. Rumphius, who borrowed and Latinized binomial nomenclature from Ambonese Malay (Ellen 2024; Peeters 1979). Laurin does not cover the fundamental ways in which literacy has shaped and radically changed how classification works, whether in Chinese characters, Egyptian hieroglyphs or in the alphabetic languages of the ancient Mediterranean (Pommerening and Bisang 2017), which might go some way in explaining the 'rank inflation' he notes in Roman natural history (e.g., pp. 15, 22, 31). Some have even suggested that writing itself 'silences' the Indigenous experience: it certainly simplifies and deforms it. Laurin suggests that there might be more 'stability' in the use of implicit ethnobiological ranks and vernacular names for macro-organisms than in scientific taxonomy. He approves of the pragmatic flexibility of 'core and peripheral ranges', a system that is workable because local populations sufficiently share a lived familiarity with delimited taxa.

But what have ethnobiologists sought from scientific taxonomy? Firstly—and somewhat ironically in the context of this review—they have imagined a convenient and stable framework for reliable identification (Ellen 2023), one that might also serve as a basis for cross-cultural comparison. The preference has been for RN rather than PN simply because this follows the general practice of the herbaria, labs and experts upon which they depend. But biological ranks are looking less-and-less secure while PN will take some time to filter through. Underpinning this reliance is the idea that scientific

taxonomy is somehow more 'real,' suggesting that some ethnobiologists have profoundly misunderstood the ontology of taxa. But for others, and for cognitive anthropologists, scientific taxonomy has itself become an object of scrutiny: inviting interrogation as to whether levels and mandatory categories (generic or generic-specific) actually exist. This has a bearing on debates around possible evolved universal features relevant to classifying the natural world. We want species to be absolute units because the human mind works with a concept of natural kind that assumes uniformity. Additionally, folk biology has been employed as a way of understanding the cultural origins of scientific taxonomy, providing new perspectives on the history of science. For many, ethnobiological classifications and scientific taxonomy share the same cognitive infrastructure.

While *The Advent of the PhyloCode* chiefly aims to introduce its subject to a broad readership, there remain sections where abstruse technicalities still require stamina from the reader. Neither RN nor PN are theory-free, though in PN there seems more coherence between ontology and nomenclatural practice, and better preservation of the link between names and taxa when phylogeny or rank changes. Both RN and PN remain, however, a chaotic tangled web, with their rule complexity, proliferation of named categories, litany of acronyms (LITUs, DONs, MOTUs, BINs ...): an intellectual edifice reminiscent of Borges' Library of Babel or Escher's impossible architecture. Inevitably, PN will make nomenclature even more of an impenetrable specialism, less a stable anchor than an annoying mirage.

How widespread adoption of PN in biology will pan-out and what its consequences for ethnobiology might be remain to be seen. DNA barcodes have already made an appearance, though what of molecular operational taxonomic units, and what of archived types (a working practice mostly unknown in folk classification) based on nucleotide sequences rather than physical specimens, let alone the RegNum database? There is still much resistance in the taxonomy community to PhyloCode, especially in institutions that are built around the convenience of well-established practices. If the shift from RN to PN is to progress it will be interesting to see how ethnobiologists grapple with the fallout. I think it unlikely that ethnobiologists, especially those concerned with folk classification and the diverse uses of different organisms, could undertake their work of



analysis and comparison without the framework that scientific taxonomy and nomenclature can supply. Maybe we will just fudge the issues and find workarounds. While this book is a useful summary of debates, and a reference work for the broader audience that comes into contact with the issues surrounding scientific naming practices, PhyloCode in particular remains controversial, and the author may face difficulty in converting its many ardent opponents.

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