



Is the PhyloCode now roughly analogous to the actual codes? A reply to Laurin *et al.*

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Laurin *et al.* (2005) take issue with my recent report of the First International Phylogenetic Nomenclature Meeting (Pickett, 2005). When I attended the conference, I was surprised at many of the comments made by the organizers. Some of these comments revealed a shift in the direction of the movement to establish a code of nomenclature that reflects phylogenetic principles. Laurin *et al.* deny that these comments reflect any shifts. Rather than deny the specifics of what I reported, however, which was largely simple quotation, they have sought to deny my interpretation of those words, and explain what those words really mean and why they do not actually imply what they seem to imply. Their arguments range from hair-splitting to outright inaccuracy.

Paraphyly, but only in theory

In addressing my statement that the PhyloCode now “will be agnostic on the issue of monophyly just as our standing nomenclatural rules are”, Laurin *et al.* explain that, “phylogenetic nomenclature could *in theory* be used to define names of paraphyletic or polyphyletic groups,” however, “This statement does not imply that the names of paraphyletic groups could be established under the PhyloCode...” This does not accurately represent what de Queiroz said at the PhyloCode meeting (as quoted in Pickett, 2005), such as, “...*the methods* of Phylogenetic Nomenclature can, at least in principle be adapted to name paraphyletic and polyphyletic groups.” (emphasis added). Further, de Queiroz said, “The point is that *the approach* of stating the

references of taxon names in terms of common descent is a very general approach.” (emphasis added). What are these “methods”, and “the approach” to nomenclature discussed here? Clearly, de Queiroz was speaking of a system of nomenclature; I naturally concluded that he was speaking of the PhyloCode, as we were at the PhyloCode meeting. Perhaps he was not.

Rank arguments

Laurin *et al.* claim “Contrary to Pickett’s view, the rejection of categorical ranks has never been a fundamental principle of phylogenetic nomenclature.” Whether the rejection has been *fundamental* or not is a subjective consideration, I admit, but there certainly has been rejection. There are ample examples of this shift from rejection to permissiveness in the associated literature (as cited in Pickett, 2005), but iterations of the PhyloCode (available at the PhyloCode website: <http://www.ohiou.edu/phylocode/>) also provide evidence. Below I present a few examples of changes in the PhyloCode itself that illustrate the former rejection of rank, which has given way to acceptance:

1. The 8 April 2000 draft of the PhyloCode states (p. 4): “*Properties of Phylogenetic Nomenclature*: The phylogenetic system of nomenclature embodied in the PhyloCode has the following properties: 1) The system is rankless.” The current draft (2b; 17 June 2004), however, is far more nuanced (p. 4): “*Properties of Phylogenetic Nomenclature*: The phylogenetic system of nomenclature embodied in the PhyloCode exhibits both similarities to and differences from the rank-based systems embodied in the traditional codes.” and “2) Neither system infringes upon the judgment of taxonomists with respect to inferring the composition of taxa

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or to assigning taxonomic ranks.” Earlier, the system was rankless; now it has similarities to rank-based systems, does not prohibit rank assignment, and “is not to be confused with rank-free taxonomy.” (K. de Queiroz, as quoted in Pickett, 2005).

2. The 2000 draft of the PhyloCode (p. 5): “Another benefit of the phylogenetic nomenclature is that abandonment of ranks eliminates the most subjective aspect of taxonomy.” The current draft of the PhyloCode (2b) differs (p. 5): “Another benefit of phylogenetic nomenclature is that it permits (though it does not require) the abandonment of categorical ranks, which would eliminate the most subjective aspect of traditional taxonomy.

3. In Article 3.1 of the 2000 draft PhyloCode: “3.1. The system of nomenclature described in this code is rankless.” But the current draft (2b) states: “3.1. The system of nomenclature described in this code is independent of rank.” Clearly, “rankless” means ranks are prohibited, whereas the softened “independent of rank” indicates that the system does not require, nor prohibit, ranks.

These examples demonstrate that Laurin et al. (2005)—all of whom (save Cellinese) were involved in both drafts of the PhyloCode quoted above—are simply wrong. The PhyloCode has indeed shifted from a prohibition on rank to one that is permissive of ranks, as asserted in Pickett (2005), *contra* Laurin et al. (2005).

Specifying types

First, I did not argue, as Laurin et al. state, that specifiers are essentially types. I paraphrased what de Queiroz said. Laurin et al. quibble that “essentially” is not the same as “analogous to”. They continue that “roughly analogous” does not mean that types and specifiers are the same. That is, similar is not same, so I misrepresented. My point in Pickett (2005) was simply that I was under the impression that specifiers were fundamentally different than types, and I was shocked to hear de Queiroz say otherwise.

Again, we can turn to changing iterations of the draft PhyloCode itself. In the 8 April 2000 version of the draft PhyloCode, page 4 reads, “In contrast to the preexisting codes, supraspecific names do not have types in the sense that this term is used in the preexisting codes...” The same section of the current version (2b), however, reads “In contrast with the rank-based codes, which use (implicit) definitions based on ranks and types to determine the application of names, phylogenetic nomenclature uses explicit phylogenetic definitions.” So, originally, the PhyloCode did not have types, but now this phrase has been omitted. Yes, both versions point out that specifiers are “somewhat like types”, because they provide reference points for names, but the

current draft (p. 5) points to the distinction between type and specifier as a “fundamental difference between the phylogenetic and rank-based systems in how names are defined.”

As is clear from a simple comparison of two texts, before, the PhyloCode drew a sharp distinction between types and specifiers—actually going as far as saying that types did not exist—but the current draft softens this. I was not aware of the softening, and so was indeed perplexed when de Queiroz called types and specifiers “roughly analogous”, especially given that the current version considers the distinction to mark a “fundamental difference.” Clearly, the objection raised by Laurin et al.—that “roughly analogous” is not “the same as”—only serves to obfuscate the core issue of the PhyloCode’s changing views on types.

Specifiers *are* quite different from types. In the ICZN and the ICBN, for example, types are intimately associated with ranks; indeed, this association is a fundamental characteristic of types. This will (presumably) not be the case in the PhyloCode, even though the newest iteration of the PhyloCode is now permissive of rank designation. Another fundamental difference is that under the PhyloCode, specifiers can be “synapomorphies” (2000 version) or “apomorphies” (current version), which need only be listed, but need not be represented in any depository. There is nothing analogous to this under either the ICZN or the ICBN. Such a system would be disastrously unstable, as changing phylogenetic hypotheses and character delimitation would, over time, inescapably alter the interpretation of listed apomorphies. These are real differences. Softening this distinction is just one of the many ways that PhyloCodists have sought to evade criticism, and thus entice more into their fold. As Flann (2005, p. 10), who was mistakenly assumed to be pro-PhyloCode by those in Paris, put it: the PhyloCodists told her that “it was important to make sure the code [is]n’t too controversial so that [they] could sneak it past the critics and then do whatever [they] wanted with it.”

Are systematists lazy?

While Laurin et al. are correct that I did not detail the context of the comment, “Systematists are lazy”, they do not deny Cellinese did indeed make it. When “out-of-context” arguments are raised, it is usually to imply that, were the entire context presented, the comment would not appear as damning as when presented absent that context. In this case, the context, I felt, was irrelevant, because no context can justify such a sweeping, condescending and dismissive indictment. As they have forced the issue, and in doing so have implied that I have deliberately perverted the comment so as to misrepresent an innocent statement as dastardly, I will clarify the context entirely. This is

required because although they criticize me for not detailing that context, Laurin et al. are curiously circumspect about it themselves.

During her talk, Cellinese explained how at Yale, the Peabody Herbarium has abandoned alphabetical organization of specimens in favor of “phylogenetic” organization. Each cabinet has affixed to its door a cladogram displaying the clade or clades contained therein. Cellinese did not explain how a hierarchy of nested clades could be arranged linearly and still be “phylogenetic”, although a question related to this was raised (by D.A. Baum), but no final solution was reached. After she explained her view that alphabetical order is a poor system of organization, she asserted the superiority of her “phylogenetic” organization scheme. Cellinese then asked (rhetorically) why her new scheme has not been more widely adopted by collections. Her answer: “Systematists are lazy”. To her, apparently, all systematists would, of course, prefer to reorganize their collections according to her “phylogenetic” system, and so the lack of its adoption must imply general sloth (rather than disagreement) on the part of practicing systematists. At least one other participant agreed with and repeated her statement. No consideration was given, however, to the possibility that alphabetical order allows systematists to locate specimens more easily than a system that requires a taxonomist to run up and down rows, glancing at cladograms on cabinets until the sought-after group is located. This view, held by many collection curators, is the reason why alphabetical order is common in collections. Cellinese’s statements elicited no controversy among the attendees. That Laurin et al. (2005) would defend this view, rather than distancing themselves from it, speaks volumes.

Science and the media

In Pickett (2005), I offered two ideas for why the PhyloCodists have changed their views. First, I wondered if this was a not-so-subtle ruse designed to “invite an exodus from the current Codes to a new scheme.” I also offered that, “Perhaps they have been swayed by cogent argument.” The reply by Laurin et al., and the insights offered in Flann (2005), clearly rejects the latter possibility.

Not unlike the current Intelligent Design creationist movement, PhyloCodists have not been able to convince

many scientists of their view, and so they have tried to create the illusion that their positions are not as different as they actually are. They have also taken their argument to the popular media. Laurin et al. criticize me for stating “...the substantive arguments against the PhyloCode are being ignored...,” and attempt to counter by citing replies to published criticisms of the PhyloCode. Unlike my quotation of Cellinese, this out-of-context quotation gives a false impression—namely, that I was criticizing PhyloCodists for not defending their scheme. This is inaccurate; the full quote is “However, that the substantive arguments against the PhyloCode are being ignored, both by the press and by large portions of the systematic community, is of great consequence.” My point was that the press and many scientists ignore anti-PhyloCode arguments. The fact that some of the scientific community (namely, the few supporters of the PhyloCode) have addressed some of the concerns does not negate my claim that “large portions of the systematic community” are ignoring the debate. They are, and I was essentially calling for more attention to the potential consequences of the PhyloCode. Most scientist are ignoring the debate, I suspect, because they do not think the PhyloCode poses any serious threat to the system of nomenclature upon which all of biology has relied for some time.

The launch of the PhyloCode does indeed pose such a threat. It poses a threat to taxonomic stability, to accurate scientific communication, to species inventories and biodiversity efforts, to important legislation such as the Endangered Species Act, and to the lone discipline practiced by all who called themselves biologists during the time of Darwin. In short, the PhyloCode threatens the foundations of biology, and so I reiterate my call for more attention to this movement.

References

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