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Letter to the editor

## On the terminology of polytomies

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Greek has long ago lost its status as a scientific language, and modern natural science barely ever requires anybody to know more Greek than the letters of the alphabet. However, history has left its traces in many technical terms, and even in young fields of research Greek vocabulary is used not only in traditional but also in relatively newly crafted terms. Phylogenetics (φυλή [phyle]; γένεσις [genesis]) is no exception, nor is cladistics (κλάδος [kladós]) with all that goes with it (synapomorphies, plesiomorphies, mono- and polyphyly, etc.). One set of terms that is particularly ubiquitous refers to the number of distal branches connected to a node in a tree or cladogram: in dichotomies the basal branch divides into two and in trichotomies into three branches. But what is the appropriate term for higher-degree polytomies? These are often referred to simply by the term “polytomy” and not by explicit names, but a review of recent publications reveals a plethora of terms, including “four-tomy” (Wiley and Mayden, 2000a), “four-otomy” (Mishler and Theriot, 2000), “quadchotomy” (Wiley and Mayden, 2000b), “tetratomy” (Grafen and Ridley, 1996; Holder, 2000), and “tetrachotomy” (Ramirez, 1999; Soltis et al., 2000). I will not argue that any of these terms is wrong or bad nor that the creation of new terms necessarily has to follow any logic, but given the derivation of the terms dichotomy and trichotomy from Greek, it seems reasonable to suggest a unified terminology following the same pattern as in the terms already in use. By using particles such as “quadcho-” and “-tomy,” the authors cited above reveal a widespread but sometimes misguided attempt to follow an existing pattern.

Dichotomy is easily derived from διχοτομεῖν [dichotomein] (verb *to cut into two halves*). This verb is composed of δίχα [dicha] (adverb *in two, apart*) and τέμνειν [temnein] (verb *to cut*), which is related to τομή [tome] (noun *cutting*). Trichotomy is constructed exactly the same way, in this case using the adverb τρίχα [tricha] (*in three parts, threefold*). The equivalent Greek adverb for the number four is τέτραχα [tetracha] (*divided into four parts, fourfold*), and the resulting term following this pattern is tetrachotomy. The same applies for higher polytomies: πένταχα, έξαχα, and έπταχα [pentacha,

hexacha, and heptacha] result in pentachotomy (five), hexachotomy (six), and heptachotomy (seven). The pattern is misapplied in multichotomy (e.g., Kuhlman, 2001), an unnecessary homonym of polytomy. What is all this good for? Would not “four-tomy” be good enough and we could return to more relevant questions? Sure, but using the same language may help.

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