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p. 221:

**Questioning Quartets: Breaking up Is Not Just Hard to Do.** J. E. De Laet. American Museum of Natural History, Division of Invertebrate Zoology, Central Park West at 79th Street, New York, New York 10024-5192.

In recent years, many different methods for phylogenetic reconstruction have been proposed that are based on analyses of only four taxa at a time. One of the stated advantages of this quartet approach is that it allows using optimality criteria, such as ML, that are so computationally intensive that they cannot be used with data sets of even only moderate size. This pragmatic observation is obviously true, but it leaves open the fundamental question if breaking up a data set into its quartet sub-datasets is in itself a good thing to do. It is shown that in general, whatever optimality criterion is used, it is impossible to reduce an n-taxon problem to a set of quartet problems without losing information that is present in the original data. Focusing on the method of likelihood mapping, examples (both with hypothetical and empirical data) are provided in which this loss of information leads to misleading answers.