Resemblance matrices

Fundamental to the operation of PRIMER and (explicitly or implicitly) any fully multivariate analysis, is an appropriate definition of resemblance between every pair of samples, based on whether the suite of recorded variables (species, environmental variables, biomarkers, particle-size classes or whatever) take similar or dissimilar values. What is meant by ‘similar’ is a function of the context and purpose of the analysis, and PRIMER 7 gives nearly 50 definitions to choose from (many are covered by the general reference work Legendre P & Legendre L 2012, *Numerical ecology, 3rd English ed*, Elsevier, called L&L from now on). Within PRIMER, similarity is taken to range over 0 to 100 (perfect similarity), dissimilarity is the complement (100 – similarity), whereas distance ranges from 0 to infinity. PRIMER 7 uses the term *Resemblance* to cover all three concepts: •Similarity, •Dissimilarity or •Distance, and also a number of specialised coefficient types which are useful to distinguish separately: •Distance^2; •Correlation (which is defined over the range –1 to 1 and is therefore not directly a similarity, though it may be transformed into one in at least two different ways – see the Transform option in Section 11); •R (the pairwise ANOSIM R statistic – see Section 9); and •Rank (where similarities or dissimilarities are turned into ranks, i.e. the positive integers, with averaged values for any tied ranks – which can be used directly as a distance matrix. The unifying structure here is that these are all pairwise coefficients and they are all symmetric (the resemblance of samples 1 and 2 is the same as that of 2 and 1), so resemblances between every pair of samples form a lower triangular matrix, with no diagonal. They are displayed with the upper triangle absent and the specific Type as the second heading in the sheet window, so it should always be clear when the active window is a resemblance matrix and when it is a data sheet. (This matters because the available menu options change with the active window type).

Revision #4
Created 29 May 2024 23:39:49 by Arden
Updated 15 January 2025 00:57:17 by Abby Miller