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SHADED GRAPHS OF SKELETONS: A PLEA FOR STANDARDISATION

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Every now and then analyses of archaeological material include chapters on the faunal assemblages of the sites. It is common standard to provide a table which lists all animal species identified and the types of bones recovered. This table is an absolute necessity for documenting the material. However, even for a trained archaeo-zoologist the mental processing of these data when comparing those tables is somewhat slow.

As psychological research has shown at length, graphic information is far more easily and rapidly perceived than information in numerical or table form. This has been used to some extent in providing outline drawings of animals or their skeletons and marking the frequency of the occurrence of certain bones by different shadings (e.g. Shawcross, 1967; Vanderwal and Horton, 1984:60).

However, this potential is still neglected. No quick regional and inter-regional comparison can be made, as long as everybody uses their own classes, and quite often change their proportions within the same publication when applied to different species (e.g. Vanderwal and Horton, 1984:59, and 60 Fig. 14). The shading, however, remains the same, consequently waylaying and foottrapping the reader.

The major problem is the number of classes involved. The more classes, the less perceptible the figure, the less classes, the more crude the presentation and analysis. It appears the best solution is to use five classes. This gives three different shadings between white as null and black as the highest class (Spennemann, 1985).

The second major issue is the determination of the class boundaries. Though it would be the easiest solution, using 25% steps, this is not desirable as more emphasis should be laid on the smaller frequencies. The larger the frequencies are, the less they are of interest; i.e. it makes almost no difference whether a skeletal part is represented up to 60 or 80%, but it certainly makes a huge difference if this very same part is represented by 4 or by 15%.

Thus it seemed wise to use progressing class boundaries favouring the smaller frequencies. The system employed is the assessment of values by square root-transformation. The method is set out in detail in the Appendix where a hypothetical example is provided.

The boundaries are based on the number of specimens (number of non-joining fragments) of the most frequently occurring bone. While the absolute values of the boundaries differ from species to species within a site, and from site to site within a species, the general proportions remain identical. That is, it is of almost no consequence at all, whether the animal species A is represented by 15,000 bones, while species B only by 300; the bone distribution of both species remains comparable. The same goes for comparing the same species within different sites.

The class boundaries have to be calculated anew for every species to be analysed within every site. The same boundaries cannot be applied for one site or species and for another, except when the highest frequency is absolutely identical (which is highly unlikely).

This proposed system is definitely not designed to replace the summary tables. It is solely designed to supply standardised additional graphic data for rapid comparison. The required additional publication (printing) space is minimal compared with the output of information.

Employing this system does not only facilitate analyses of the state of preservation of materials, but gives clear evidence for off-site slaughtering and selected meat transport to the site, and slaughtering techniques in general and within animal species. Of course, factors as bone recycling in form of artefacts and ornaments has to be taken into account as well. But in every thorough and complete faunal analysis of assemblages, the bones used for bone artefacts are included.

References

Shawcross, W. 1967 An investigation of prehistoric diet and economy on the coastal site at Galatea Bay, New Zealand. Proceedings of the Prehistoric Society, 33:107-131.

Spennemann, D.H.R 1985 Vorschlag für ein neues ergänzendes System zur Präsentation zoo-archäologischer Daten. Archäologisches Korrespondenzblatt, 15 (in press).

Vanderwal, R. and D.Horton 1984 Coastal south-west Tasmania. Terra Australia, 9. Canberra, Department of Prehistory, Research School of Pacific Studies, Australian National University.

The procedure for setting up classes with root-transformed boundaries:

STEP 1: Select bone with highest frequency of occurence (=N) Bone fragment count !!

STEP 2: Take square root (= M)

STEP 3: Divide M by the number of classes required minus one (i.e. four in these cases). This gives value "a".

STEP 4: Set out following line: a - 2a - 3a - 4a (4a = M)

STEP 5; Square the individual segments of the line:

a^2, $(2a)^2$, $(3a)^2$, $(4a)^2$, whereas $(4a)^2$ gives N.

STEP 6: Set up the five classes:

CLASS A = 0

CLASS B = $0.01 - a^2$

CLASS C = $a^2 + 0.01 - (2a)^2$

CLASS D = $(2a)^2 + 0.01 - (3a)^2$

CLASS E = $(3a)^2 + 0.01 - N$

An example of application:

For exemplifying this procedure the data of a predominant animal species X of a hypothetical site Y shall be processed. The most frequent occuring bone is the humerus with 3718 specimens. Thus :

STEP 1: Humerus, N = 3718

STEP 2: Square root = 60.9754

STEP 3: Divided by 4 = 15.24385

STEP 4: Line: 15.24385 - 30.4877 - 45.73155 - 60.9754

STEP 5: Squared : 232.37496 - 929,49985 - 2091.3746 - 3718

STEP 6: Set up the five classes:
CLASS A = 0
CLASS B = 0.01 - 232.37
CLASS C = 232.38 - 929.50
CLASS D = 929.51 - 2091.37
CLASS E = 2091.38 - 3718