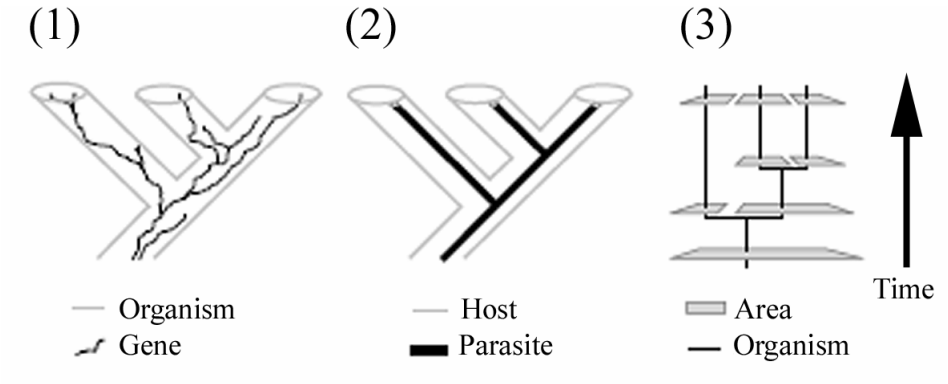

Fig.1 *The three types of historical associations found in the biological world:* **(1)** *Organism-gene,* **(2)** *host-parasite and* **(3)** *clade-area relations. Adapted from Page and Charleston (1998:356)*

	Equivalent	Examples from Gamble *et al.* (2005) > *this paper*
ATU1	Period	Palaeolithic, Mesolithic, > *Early Modern European*
	Sub-period	Early Mesolithic, > *16th Century*
ATU2	Techno-complex / Culture	Aurignacian, > *Table Cutlery*
	Culture / Industry	Upper Magdalenian, > *Northern European Table Cutlery*
	Industry / assemblage	Magdalenian IV, > *Sheffield Industrial Tradition*
ATU3	Artefacts / type fossils	Navettes, Mouilah points, > *Knives, forks*
	Attribute	Scalar retouch, truncation, > *Scimitar blades, rivetting, handle termination*

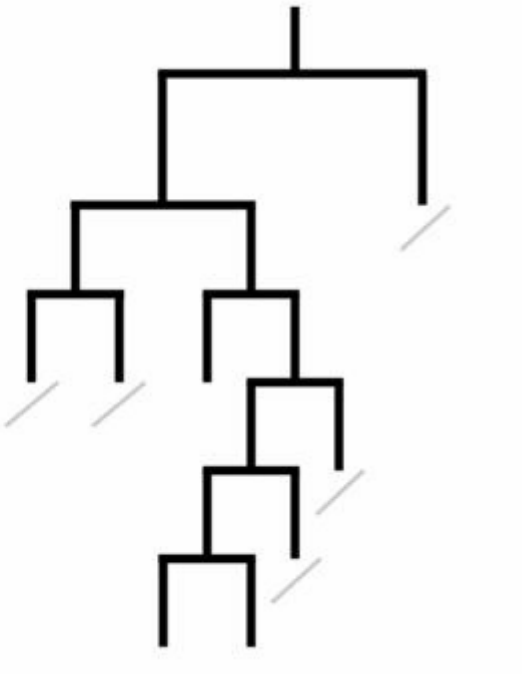

Fig.2 *Gamble et al.'s (2005) list of archaeological taxonomic units juxtaposed to a cladogram with examples from Gamble et al.'s original discussion and potential candidates for ATUs of the present study. Although these recent discussions of ATUs are useful, it is not sufficiently made clear that the higher-order taxonomic units emerge out of lower-order constituents: The taxonomy* must be read from bottom to top*, rather than from top to bottom. If a phylogenetic rationale is adopted, higher order ATUs can be defined as monophyletic clades along the cladogram or as 'components' (see text).*

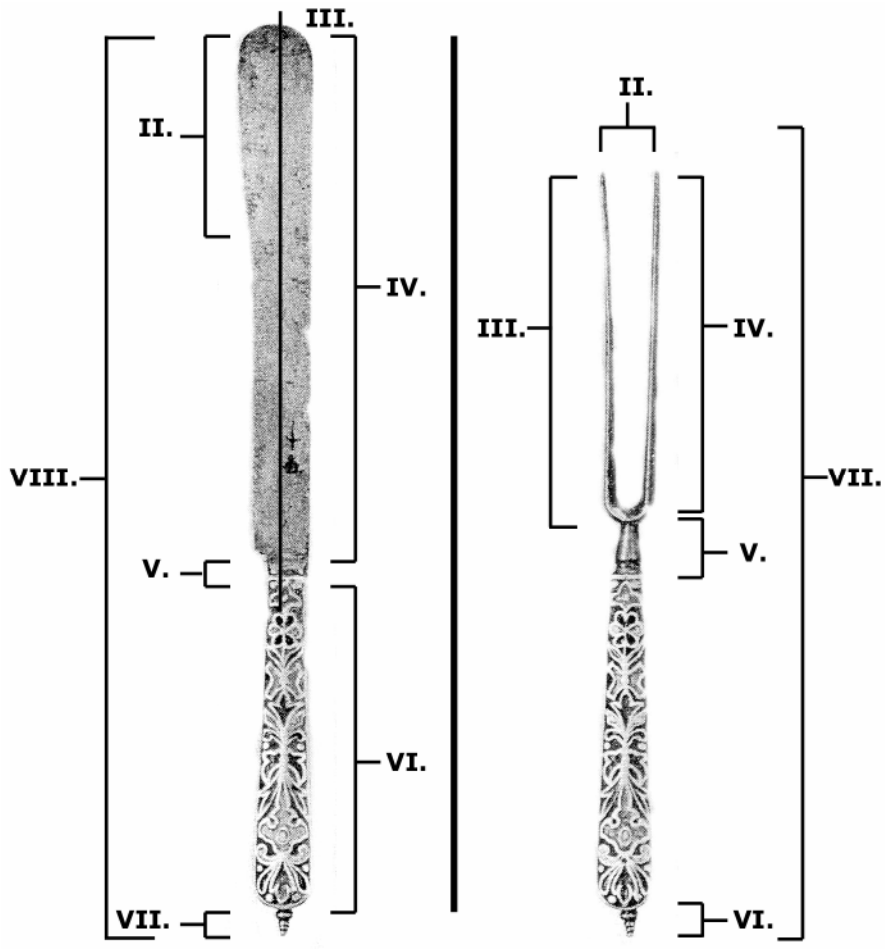

Fig.3 *The characters selected for this analysis. The Roman numeral correspond to the characters listed in* Tables 1 *and* 2. *The knife and fork pictured are specimens from around 1670 and adapted from (Singleton 1973).*

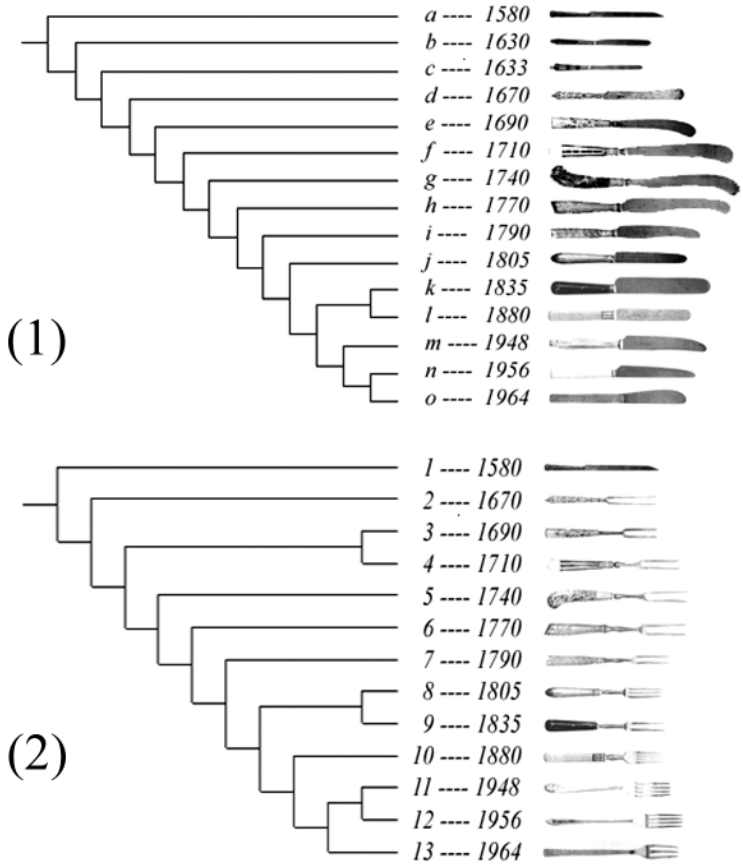

Fig.4 *The most parsimonious cladogram for European table knives* **(1)** *and one of the two most parsimonious cladograms for the associated forks* **(2)**. *The labelling conventions follow Page and Charleston 1997b), denoting the host taxa with small letters and the associate taxa with Arabic numerals. Behind each taxon label the year of manufacture for each specimen is given (after Singleton 1973). The cladograms are rooted using the oldest specimen; note that the forks outgroup is actually a knife as these were used for spearing prior to the invention of forks (i.e. they acted as single-pronged forks) and were also often sold in pairs (Mitchell 2002).*

The topologies of the two trees reflects well how the evolution of forks (the associate) tracks the evolution of knives (the host), which in turn reflects – at least to a degree – the general accounts given of the change in table cutlery design during this period (Brown 2002c). The increasing structure in both trees at around 1800 may be related to the introduction of electrolysis, which made cheaper silver-like raw material available to many manufacturers and stimulated a diversification in production and design. As Brown 2002c:16) notes "throughout the nineteenth century the market for cutlery…expanded greatly, with services becoming larger and more varied in the number of items" and this is reflected in the greater diversity of raw materials and design templates used. Around the same time, dining habits also changed and the use of cutlery became more widespread amongst the middle-classes of Europe (Brown 2002b; Day 2001; Moore 1999). In addition, more specialized forms of knives and forks for particular dishes began to be marketed and used.

However, this cladistic view of European knife evolution also diverges in some respects from art historical accounts. The knife tree in **(1)** *appears to document a*

relatively gradual and incremental change in design and technology, whereas Brown (2002c:16) states that "after the middle of the eighteenth century, an abrupt change occurred in the evolutionary chain of the English knife due to the introduction of the French fashion in furniture and decoration". It is possible that the (relatively small number of) characters chosen for this analysis are not suited for showing this 'abrupt change' or alternatively, that it in fact was a superficial change that did not substantially affect traditional design elements in the Sheffield cutlery industry.

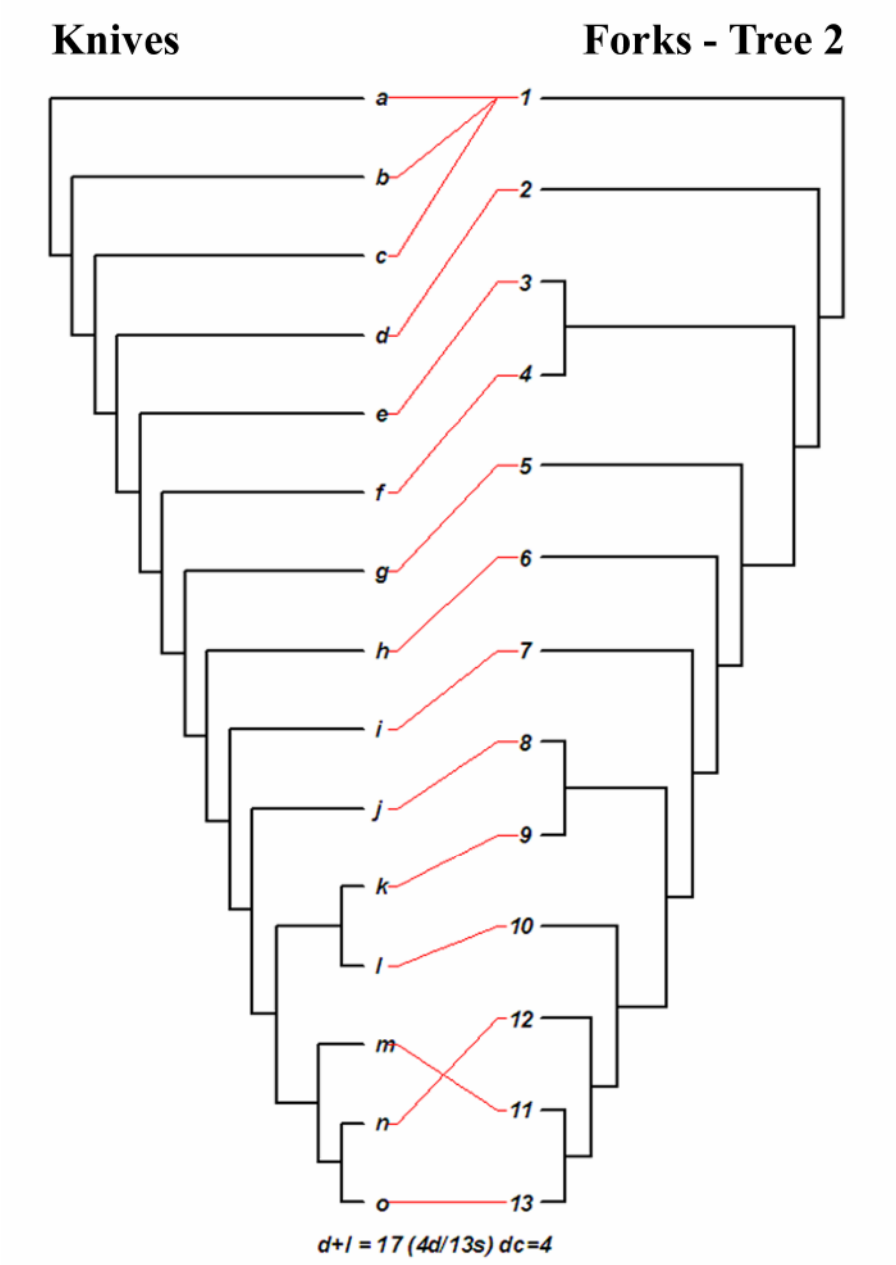

Fig.5 *The 'tanglegram' output produced by* GENETREE *(PAGE 1998), using the most parsimonious knife tree and the second of the two equal-cost fork trees. Different tree combinations can be evaluated using duplications (**d**) and losses (**l**) as cost*

*parameters. The total cost (**d**+**l**) of the reconciliation is 17 and it requires four deep coalescences (**dc**).*