Focusing on the Case: Workshop 1: Classification

Dave Byrne

July, 2004

dave.byrne@durham.ac.uk

Please cite as:

Byrne D. 2004 Classification. Paper presented as part of the Focusing on the Case workshop series, July, 2004.

What is a case?

- A member of one or more categories
- A configuration
- A complex system
- A dynamic entity
- An entity capable of undergoing meta-morphosis – phase-shift
- An entity belonging to an ensemble of entities – a category but capable of changing category membership

Configuration

The idea of configuration is associated with the work of Ragin but can be found earlier in Norbert Elias' proposal of a figurational sociology. For us what matters is that the condition of a case at a given point in time – in complexity language its co-ordinates in multi-dimensional state space – is the product of a whole set of factors acting together in interaction.

More than one way to skin a cat

A crucial implication of the idea of configuration is that a given condition may be the product of **DIFFERENT** combinations of causal factors. Multiple and complex causation is possible.

categorize ("k&tlg@ralz), *v.*

[f. category + -ize; cf. F. *catégoriser*.]

trans. To place in a category or categories; to classify.

Oxford English Dictionary

taxonomy (t&k"sQn@ml).

1. Classification, esp. in relation to its general laws or principles; that department of science, or of a particular science or subject, which consists in or relates to classification; *esp.* the systematic classification of living organisms.

Classes of Classification

- Monthetic – the first Aristotelian method – all must fulfil a single condition to be in the class – think a frequency count.
- Polythetic – as above but must fulfil multiple conditions – think a cell in a multi-dimensional contingency table.
- Prototypical – compares with a representative example – think clustering.

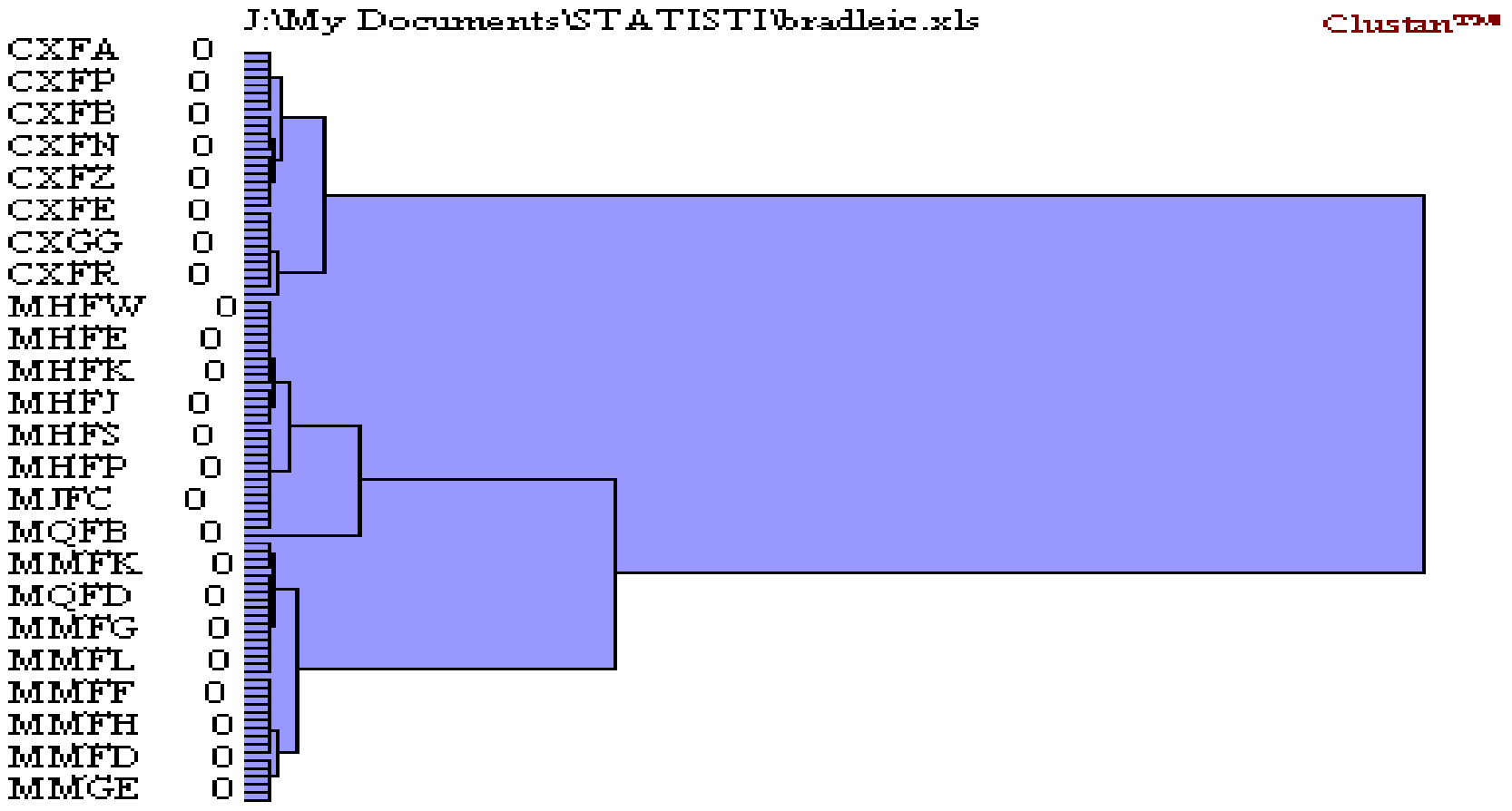
Cluster Analysis

A set of techniques in which quantitative information measured at either a categorical or continuous level is managed by one or more of a set of algorithms in order to generate a set of clusters – categories – in which members of the categories are closer to other members of the same category than to cases outside their own categories.

Hierachical Cluster Analysis

A clustering method in which the procedure starts with all individual and separate cases and fuses the two which are most alike. It then proceeds with the resultant cluster treated as a new case at the next level of fusion and continues the process until all cases are fused into a single cluster.

The Dendogram resulting from hierarchic fusion of wards in Bradford and Leicester



Principles of using Clustering

- It is an exploratory approach. There is no right set of clusters but patterns can be observed and may be very significant.
- Different algorithms produce different results i.e. output cluster sets.
- Choice of variables is crucial – but then as Cilliers' suggest the boundaries of real complex systems are determined by our investigative and other actions.

Machine Shop Imagery

- The machine shop metaphor (with thanks to Dyer and Williams) is crucial for us.
- Clustering is one tool in our machine shop.
- SPSS, Clustan Graphics etc. are various clustering tools which do slightly different things – various grinders.
- Other tools will take us farther – QCA is the lathe.