11 Facet analysis

Facet analysis is useful in generating hierarchies that conform to the rules for hierarchical relationships, as set out in 10.2, because these relationships are valid only for concepts belonging to the same general category.

The choice of facets can vary depending on the subject field, but at the highest levels it is usual to use fundamental categories such as objects, materials, agents, actions, places, times, etc. Where it is helpful to do so, these fundamental facets may be analyzed into subfacets down to the level required; for example, actions may be subdivided into intransitive *processes* such as "ripening" or "deterioration" and transitive *operations* such as "cutting" or "repairing".

NOTE   An action is said to be intransitive when the "actor" does not act upon any object; whereas the actor of a transitive action does act upon an object. Thus an apple ripens by an internal process, but in cutting an apple, a knife acts upon an external object.

An example of applying facet analysis in a classified arrangement appears in Figure 4. This shows some terms from the general subject of "industries". Directly under this term are the two narrower terms "agricultural industries" and "engineering industries". One of the facets shown under "agricultural industries" is **products**. Within this facet, only two levels of hierarchy are shown, except for the term "milk", which has been expanded to show how its narrower terms have been grouped into arrays, each preceded by a node label showing the characteristic of division. These arrays each represent a different way of subdividing the concept of milk, by fat content, by source animal, etc., and the word "by" occurs in each of these node labels. The node labels that introduce new facets, such as (*people*) and (*products*) do not contain the word "by".

It is important to note the pattern of hierarchical relationships around the node labels. Where the label shows the characteristic of division of the superordinate term, all the terms in the array following it are true narrower terms of the superordinate term. Thus, in Figure 4, "whole milk", "buffalo milk" and "sterilized milk" are all narrower terms of "milk". In contrast, where the label introduces a new facet, the terms that follow are typically not narrower terms of the preceding term. For example, "farm managers" and "cereal products", etc., are not narrower terms of "agricultural industries".

Node labels are not thesaurus terms. They are present only for the purposes of systematic display, and they do not qualify for any of the relationships described in Clauses 8 to 10. To avoid confusion, node labels should be distinguished typographically from the thesaurus terms. Generally, italics and parentheses or angle brackets are used, as shown in Figure 4. Some alternative ways of applying facet analysis are illustrated in 12.2.4 and 12.2.5.

The terms representing concepts in an array may be arranged either alphabetically or systematically. Alphabetical sequence should be used when there is no other obvious way to arrange a group of concepts. Systematic sequence should be used when it is likely to be familiar to most users, or when the arrangement helps to clarify the scope of the terms. In the example for electromagnetic radiation, the types of radiation are presented in order of increasing wavelength, as this might help some indexers in selecting the correct term(s).

EXAMPLE

```
electromagnetic radiation
    <by wavelength>
    ultraviolet radiation
    visible radiation
    infrared radiation
    microwave radiation
    radio waves
```

NOTE   This example uses slightly different but equally acceptable conventions in the node label: angle brackets instead of round brackets, and the parent term is not spelt out at the start of the node label. The presence of the word "by", however, indicates that the node label specifies the characteristic of division by which the types of radiation are differentiated.

In some thesauri, facet names are included as preferred terms and treated as top terms, under which complete hierarchies may be shown (see 12.2.4). Alternatively there may be no explicit display of complete facets and the facet names appear only in node labels, as in Figure 4, or as the names of concept groups (see 15.2.18). See also 15.2.19.

```
                    industries

                agricultural industries

                    (people)
                    farm managers
                    dairy personnel
                    shepherds

                    (products)
                    cereal products
                    dairy products
                            butter
                            cheese
                            cream
                            ice cream
                            milk
                                    (milk by fat content)
                                    whole milk
                                    low fat milk
                                    skim milk
                                    (milk by form)
                                    dried milk
                                    liquid milk
                                    (milk by source animal)
                                    buffalo milk
                                    cow milk
                                    goat milk
                                    sheep milk
                                    (milk by treatment type)
                                    condensed milk
                                    evaporated milk
                                    homogenized milk
                                    pasteurized milk
                                    sterilized milk

                engineering industries
                    (people)
                    engineers

                    (products)
                    bolts
                    wheels
                    etc
```
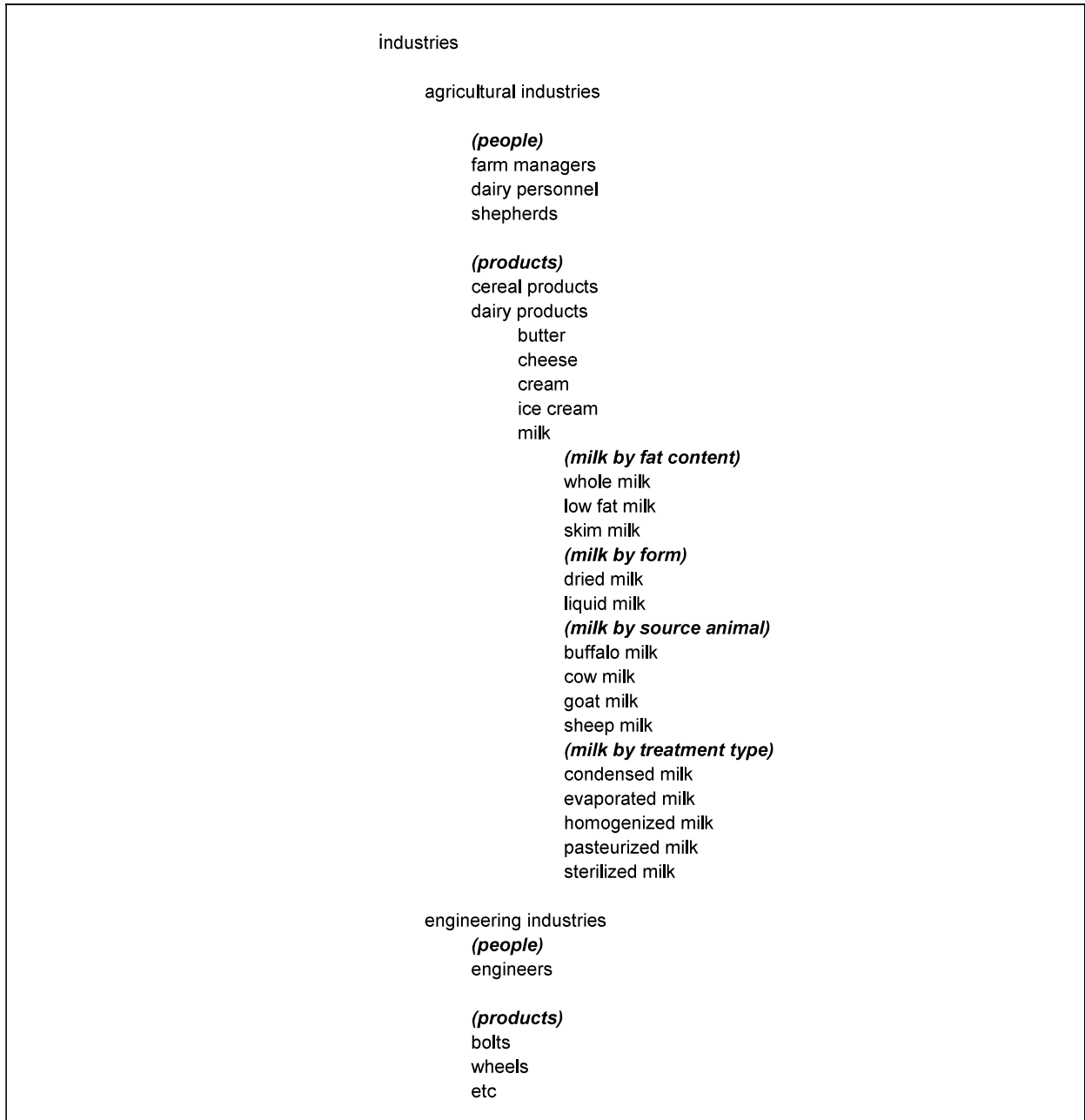
Figure 4 — Partially expanded classified display of an "industries" class, with node labels indicating changes of facet and characteristics of division of arrays