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tools for vocabulary research

A Note on Passive Vocabulary

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Some recent work on vocabulary in an L2 (notably Melka Teichroew 1982, 1989) has discussed the nature of the relationship between active and passive vocabulary. It is widely accepted (e.g. by Faerch et al. 1984:100; Tréville 1987: 165; Palmberg 1987:201) that the active/passive distinction is really a gradual cline, not a clear dichotomy: i.e. the distinction between knowing a word actively and knowing a word passively is a gradual one, rather than a clear-cut one. This note dissents from this widely held view. Clearly, there *are* different ways of 'knowing a word'. Nevertheless, it seems to me that it is possible to argue that passive vocabulary is qualitatively different from active vocabulary.

In order to explain this position more clearly, I need to use a formal framework of ideas. The framework I will use is a mathematical model known as Graph Theory (cf. Wilson and Beinke 1979). Graph theory is widely used to describe and analyse an enormous range of real phenomena, and it has some very important practical applications. The basic idea is that certain relationships and processes can be represented as a system of points (known as nodes) connected together by lines (known as arcs). An example of a graph of this sort will be found in Figure 1. This figure is a graph of the main airline connections in Sweden (in 1990). Each node represents a major city, and the arcs joining the nodes represent connecting services between the major cities. This basic graph could, however, also represent a set of quite different physical realities with the same underlying mathematical structure. For example, the graph in figure 1 could represent the architectural structure shown in figure 2, where each node stands for a room, and each arc is a connecting door between the rooms. Or, again, the graph might represent transitions between certain keys in a piece of music, and so on.

One obvious, but largely unexplored application of graph theory is the description of vocabularies. During the 1960s and 1970s, a great deal of work was done by psychologists (notably Deese) into the associational structure of English vocabulary (cf. Clark 1970 for a summary). We know from this work that most words in English produce characteristic word association patterns, which native speakers exploit in a number of interesting ways. It seems likely that these association patterns play an important part in the way we normally process text and spoken language.

Figure 3 shows the sort of network that arises in word association data. What is important from our point of view is that association patterns form networks that can easily be described in terms of graph theory. All we need to do is to represent each word as a node, and each associational link as an arc, and we have a complex, but tractable graph.

What does this have to do with passive vocabulary? Consider the hypothetical graph structure shown in figure 4. This figure shows a set of words (nodes) linked together by

Figure 1:
Direct intercity air routes in Sweden (in 1990)

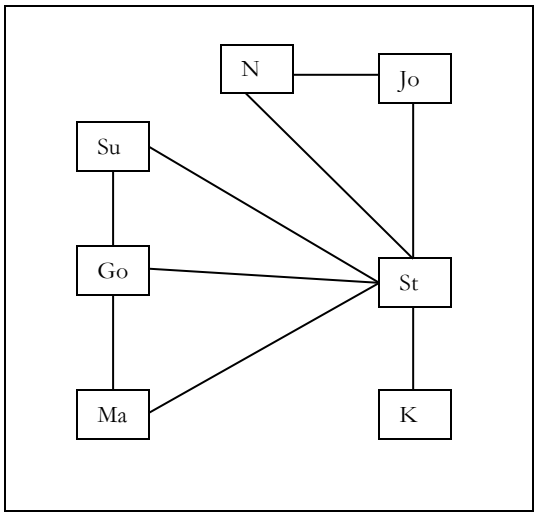
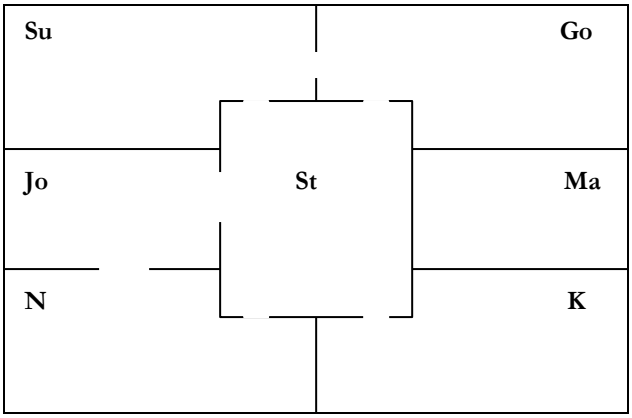


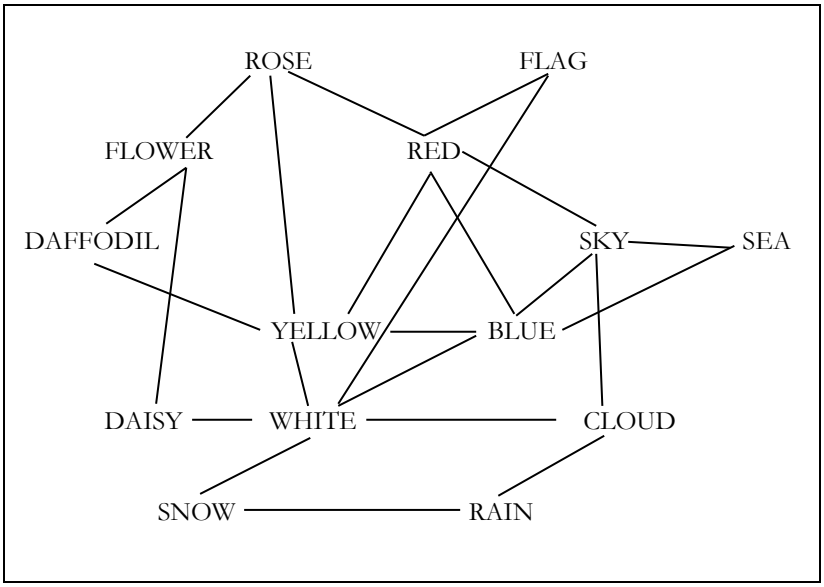
Figure 2:
An architectural design with the same graph structure as Figure 1.



associations (arcs). The associations are directional; even though all the words are connected to the network as a whole, you can only move from one word to another in the directions indicated by the arrows. In real life, this corresponds to the fact that associations are not generally symmetrical: for instance CABBAGE will often elicit **white** or **green** as associations, but not vice versa.

The interesting case for us is node H in Figure 4. This node is clearly part of the overall network structure, but its place in the network is very different from that of all the other nodes. The other nodes are connected to the network by two kinds of arcs: each node has arcs which lead to it, and other arcs which lead away from it. Node H only has nodes

Figure 3: A simple word association network



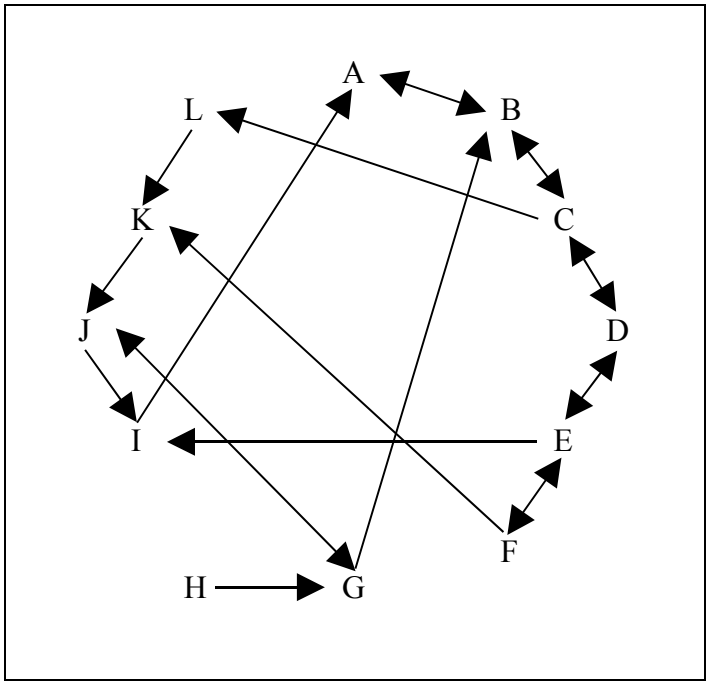
which lead away from it. This means that if you start off at node H it is possible for you to reach all the other nodes in the system. On the other hand, if you start from anywhere else in the system, then node H is completely inaccessible.

Node H corresponds to my idea of a passive vocabulary item. Active vocabulary is vocabulary which is easily accessed from anywhere in the vocabulary network, and in its turn allows easy access to other parts of the system too. Passive vocabulary, on the other hand, comprises vocabulary items that *are* part of the overall system, but which cannot be reached from other parts of the network. In effect, they can only be accessed if an appropriate external stimulation is available. You can recognise passive vocabulary when you see it, or when you hear it, but you are unable to bring it to mind without this external support.

This description suggests that the distinction between active and passive vocabulary is a clear one, not a gradual one. Passive vocabulary consists of items which respond only to external stimuli; active vocabulary does not require an external stimulus, but can be activated by other words. Of course, active vocabulary may come in many shades of activity level - some words may be absolutely key words, central to the entire network of associations; others may be more peripheral, activated only in the context of other closely related words. Active vocabulary clearly exists on a continuum of some sort; passive vocabulary, according to the view put forward here, is qualitatively different.

Readers who have grasped the basic idea of graphs, and the way they can be used to describe relations between words, may now be wondering what happens if you have a node where all the arcs point inwards, but no arcs emerge from it. Such a point is technically known as a sink. Interestingly, this sort of thing does seem to occur in a real-

Figure 4:
a hypothetical association network



life condition known as Gille de la Tourette's syndrome (cf. van Lancker 1987). Patients suffering from this condition have a limited expressive vocabulary, largely consisting of obscene words and curses. It would be interesting to know whether there are any recorded instances of L2 speakers with this syndrome, and whether it affects both the L1 and the L2 in the same way.

Finally, it might be worth adding a few words about how passive vocabulary becomes active. Traditional methods of teaching vocabulary rely very much on teaching single words, and providing active practice for words that are not well known. The sort of model I have outlined here suggests that this methodology might not be an efficient way of converting passive vocabulary into active vocabulary. Passive vocabulary may already have good links with the active parts of the network; merely supplying the word and asking for it to be used appropriately reinforces these already existing links, but does nothing to create the new inward-pointing links that an active word requires. This suggests that exercises which deliberately stress the association links leading *from* already known words *to* newly learned words might be a more effective way of activating a passive vocabulary.

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