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# How are words stored?

## Data from production errors

Have a look at these errors. How/why have they occured?

1. They misunderestimated me
2. They can refudiate what this group is saying
3. I’m on my way to the lection
4. I don’t expose anyone will eat that

These errors are known as ‘blends’. Two words are activated, and combined into one, e.g. *expect* + *suppose* -> *expose* / *misunderstand* + *underestimate* -> *misunderestimate*. Note that when this happens there is often a phonological ‘pivot’ (my terminology) in the middle of word, i.e. material shared across both words. For exampel, the *p* in *expect* / *suppose*

Characteristics: (1) Multiple Semantic Activation: overlapping meanings (2) Phonological processes in selection: similar word-internal phonology.

Process by which blends are formed combines **opportunistic** activation / assembly with **rigorous** monitoring

What does it tell us about words? They are stored in **semantic and networks** (activation of multiple words with overlapping meanings). There is **activation across domains**: **semantic** activation of multiple competitors, and **phonological** processes involved in blending (the use of a ‘pivot’). The system **biases speed over accuracy**, but recovers from error due to a **monitoring system**.

# Meaning-related sense-relationships

## Hyponymy

‘Hypo’ = under, ‘nym’ = word

Plant > Tree > Sycamore / Plant > Flower > Daisy / Furniture > Chair > Stool

A subset relationship. As you go upwards, **extension** (potential referents) expands, **intension** (list of definitional properties) narrows.

Tree is a **hyponym / subordinate** of Plant

Plant is a **hyperonym / superordinate** of Tree

Mid-level categories are (a) more rapidly named, (b) more easily visualised, (c) acquired earlier

Words which exist at the same level are called **co-hyponyms** or **coordinates**, e.g. daisy, begonia, Tulip / flower, bush, tree / chair, sofa, wardrobe.

## Synonmy

‘Syn’ = together, ‘nym’ = name/word

Words with identical meanings.

Very few genuine synonyms. When words are identical in *denotation* (event or thing they refer to), they differ in *connotation* (set of associations they trigger), e.g. *chap / bloke / geezer* (who would you buy a used car from?) , *fiesta / knees up / bash / soirée* (which would you prefer to go to?)

There are very few genuine synonyms, i.e. where denotation and connotation are teh same. Some examples are words differing across dialects or varieties of a language, e.g. *tap / fawcett, pavement / sidewalk*, and some grammatical words, e.g. *however / nonetheless*

## Antonmy

‘Anto’ = opposite, ‘nym’ = name/word

Words with opposite meanings. Can be gradable (e.g. *slightly hot*, *very cold*) or non-gradable (e.g. \**very dead*)

Sometimes there is no obvious opposite, e.g. the opposite of *virgin*. There is a ‘lexical gap’

## Homonymy

‘Homo’ = same, ‘nym’ = name/word.

Same form, but no *obvious* meaning relationship. Words have similar forms due to ‘**historical accident**’.

May have same root (in which case there is a tenuous meaning relationship), e.g. a *table* of numbers, versus the kitchen *table*

Or may have a different root, e.g. *bay* tree [LATIN baca], the ship entered *the bay* [OLD FRENCH baie], the dogs *bayed* [OLD FRENCH abai]. The fact that these words, with different an unrelated meanings, have the same pronunciation is a historical accident.

## Polysemy

‘Poly’ = multiple, ‘sem’ = meaning.

Same form, and **different but related** meanings. The meaning relationship is *mentally represented*

Prepositions are notoriously polysemous, e.g. *over* = straight movement in contact with a plane, e.g. *he ran over the field*, or *over =* two dimensional movement across a bounded plane, e.g. *the balloon floated over the city* (or possibly there is no movement at all), or *over* = random movement covering a plane\_, e.g. he poured ketchup over the chips\_.

Other polysemous words;

1. He went to *bed*, a river-*bed*, flower *bed*, the steak was served on a *bed* of lettuce
2. The cup was *full*, the room was *full*, she has a *full* schedule, she leads a *full* life.

Are meaning relationships systematic or random? According to Charles Fillmore (e.g. Fillmore & Atkins, 2000), there is a central sense, with all meanings radiating from this central sense, e.g. all meanings of *over* share the idea that the ‘figure’ (smaller object) is, at some stage, above the ‘ground’ (larger object). All meanings of *bed* involve a flat surface made of a relatively soft material. When teaching a polysemous word, it may be best to start with the central meaning (or ‘sense’) of the word, and later teach the more peripheral meanings (e.g. Tyler & Evans, 2004)

### Homonyms versus Polysemes

Both describe words with same form, but different meanings. The only difference is whether the meaning relationship is **mentally represented**. Moreover, according to Fillmore’s approach meaning relationships among polysemous words are *structure / systematic.* The only way to test this is via personal intuition.

# Lexical gaps

A language lacks a word where there should be one. Easily demonstrated with antonyms

* Opposite of bald?
* Opposite of virgin?

Many English kinship terms are vague, e.g. English *cousin* can be used for a variety of different relations, while Sudanese has different words for every type of cousin.

Loan words, e.g. *kitsch* & *schadenfreude*, are used to fill lexical gaps. A recent load word is *hygge*.

# Form-related relationships

## Homophony

Same spoken form, different written forms (with different meanings)

e.g. might / mite, leak / leek

## Homography

Same written form, different spoken forms (with different meanings)

e.g. bow, minute

# Exploring semantic networks

1. Word association norms

* A says a word, and B says the first word that comes into their heads
* Coordinates are the most frequent category, e.g. if the prime is *cat*, the participant says *dog*. Next are collocations (words which tend to co-occur, e.g. *fish and chips*, *cats and dogs*). Then come superordinates, e.g. *cat* primes *pet*, and finally subordinates (*cat* primes *Siamese*).
* Word association tasks conducted with children with Developmental Language Impairments find tentative evidence for reduced semantic networks, e.g. large number of responses which are very odd, e.g. *Spoon* -> Disney, or based on phonological similarity, e.g. *cow* -> *how* (Sheng & McGregor, 2010)

1. Semantic fluency tasks

* A asks B to say as many words as possible from a single category, e.g. animals, things you take on holidays. When asked to list animals, a typical response might be
* Dog, cat, rabbit – lion, tiger – fish, whale, dolphin
* Responses tend to be grouped into clusters, e.g. the above response contains a DOMESTIC ANIMAL cluster, then a WILD ANIMAL cluster, then a SEA MAMMAL cluster.
  + Poorer semantic fluency in developmental language disorders and autism (Kail & Leonard, 1986; Bishop & Norbury, 2005). For example, they produce fewer words and clusters
  + Some have suggested that semantic fluency tasks can be used to predict onset of Alzheimmers: few clusters, cluster members and switches between clusters (Gomez & White, 2006)

1. Lexical priming task

* e.g. does hearing word X spead up recognition / recall of word Y?

# Exploring word production using speech errors

Types of error:

1. Blend, e.g. *lection*
2. Phonological substitution (malapropism), e.g. The Chinese emperor had many concubines -> porcupines, Brexit means Brexit -> breakfast.
3. Lexical substitution, e.g. Give me the hammer -> screwdriver.
4. Tip of the tongue effects = we know the meaning of the word we want, but phonological access is partial

Available evidence suggests 2-stage model: (1) Activation of meaning, (2) Activation of form. The meaning level is called the ‘lemma’ level. We will revisit this concept in week 10.

# 5-minute Exercise

How many ‘units of meaning’ in the following words:

1. Dogs
2. Laughed
3. Working
4. Believe
5. Unbelievable
6. Sang

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