**Words**

PSY 200

Greg Francis

Lecture 27

*What is the plural of walkman?*

**Grammar**

- The rules of phrases
  - rules for combining phrases
  - universals for all languages
- So why do we have so difficult a time communicating with people that speak other languages?

**Words**

- Even if all languages have similar rules for combining phrases, they use different words
- Words are *symbols* that are arbitrary in many respects
  - “dog” is nothing like a dog
  - is it rote memorization?
    - partly, but it is also more than that

**Words are special**

- Words are not just a collection of letters
  - Word superiority effect
  - Judge a pair as being the same or different

**Words are special**

- The judgment does not require you to *read* the words
  - Visual inspection is sufficient
- Knowing an item is a word should not even help you do the task

**Words are special**

- But words are faster (around 100 ms) and more accurate than nonwords
- CogLab data (74 participants)
Word rules

- Part of linguistics identifies the rules for working with words (morphology)
  - Show this page to a preschooler
- The child will say wugs even though he has never seen a wug before
  - This implies that there must be a rule for pluralizing nouns

Morphology

- The rules of word formation
- In many respects English has a very limited morphology
  - Nouns have two forms
    - duck
ducks
  - Verbs have four forms
    - quack
    - quacks
    - quacked
    - quacking

Morphology

- Other languages have many more variations
  - Italian and Spanish have 50 forms of each verb
  - Classical Greek has 350 forms of each verb
  - Turkish has 2 million forms of each verb
  - Some languages build entire sentences around one complex verb
- There are rules for these forms

Morphology

- English can convey this information in as many ways as other languages, but we use grammatical phrases to do so
  - Simple present tense
    - General truths: Ducks quack.
    - Habitual action: I quack like a duck when I wake up.
  - Present Perfect Progressive
    - To express duration of an action that began in the past, has continued into the present, and may continue into the future:
      - The duck has been quacking for two hours, and he hasn’t finished yet.
  - Other languages have different verb forms to indicate these conditions

Morphology

- On the other hand, English morphology allows one to easily create new words from old words
  - Add suffixes and prefixes
  - teach teachable teachable
  - teacher unteachable teachableness

Suffixes

- English has lots of these derivational suffixes
  - -able -ify -ance -ism -ous
  - Examples of morphemes
  - -age -ion -ary -ist -y
  - -al -ish -er -ery
  - -ate -ize -ful -ive
  - -ed -an -hood -ness
  - -en -ant -ic -ory

You probably do not consciously know what some of these mean, but your language system does.
Compounding

- English also allows new words to be created out of other words
  - and combinations can be combined

![Image showing compounding examples: toothbrush, unimicrowaveability, bootilicious]

Rules

- So what are the rules?
  - One looks to be easy
    - to pluralize a noun, add -s

![Image showing rules examples: dog -s → dogs, wug -s → wugs]

Rules

- The creation of compound nouns also follows a simple rule

![Image showing rules examples: tooth - brushing, boot - ilicious]

More detail on rules

- Consider a rule that creates an adjective out of a verb
  - or a noun out of a verb

![Image showing more detail on rules examples: crunch - able, crunch - er]

Root

- Some morphemes can only be attached to certain types of words
  - a root is a word that cannot be split into smaller parts
  - some morphemes attach only to roots
  - thus, Darwinianisms is a word, but Darwinismsians is not
  - -ian must attach to a root

![Image showing root examples: Darwin - ian, Darwinism - ians]

Lexicon

- To keep track of what can attach to what, there must be a mental dictionary of morphemes
  - -able
    - adjective stem affix; means "capable of being X's"
  - -er
    - noun stem affix; means "one who X's"
  -...

![Image showing lexicon examples: crunch - able, crunch - er]
Exceptions

- You can probably think of lots of exceptions to these types of rules
  - many words seem to follow arbitrary rules
- Pluralization, past tense
  - mouse, mice
  - leaf, leaves
  - man, men
  - The exceptions are related to relationships between different languages

Exceptions

- The exceptions generally come from other languages (with appropriate rules)
  - English adopts the words but not the rules
- These exceptions tend to be very common words
  - drink-drank
  - throw-throw
  - sit-sat
  - All derive from a proto-Indo-European language that formed past tense by replacing one vowel with another

Language families

- Many languages are related to each other and have broad families
  - Which is why you see so many similar words across languages

Very special cases

- What is the plural of walkman?
  - walkmans?
  - walkmen?
  - Neither feels quite right
  - To answer this question we have to understand how the word walkman is formed and what it is about
  - this tells us how to pluralize the word

Heads

- Most words have a head that indicates what the word is “about”
- In English it is always the rightmost morpheme
  - crunchable
  - cracker
  - workman
  - sawtooth
  - a thing that can be “x”ed
  - a thing that does “x”
  - a type of person
  - a type of tooth

Heads and compounds

- The plural form of a compound word is based on the plural form of the head of the compound word
  - toothbrush --> toothbrushes
  - sawtooth --> sawteeth
  - snowman --> snowmen
- Is walkman a compound noun?
  - yes, but it is not normal
Headless compounds

- Some compound words are headless
- How can you tell?
  - a walkman is not about a type of man
  - thus, the “head” is not what the word is about
  - this tell us that walkman is more like a new word than a compound word (e.g., electricity)
- For headless compounds the irregular plural form is not appropriate
  - no plural form “feels” correct because the word has no head

Headless compounds

- Sony corporation suggests that the plural of walkman is
  - Walkman Personal Stereos
- A similar analysis explains the plural form of names
  - Toronto Maple Leafs (not Leaves)
  - Florida Marlins (not Marlin)
- I am sick of all the Mickey Mouses in this administration. (not Mickey Mice)

Conclusions

- Words follow rules
- Morphology / morphemes
- Lexicon
- Explains characteristics of language

Next time

- Interpreting language
- Parsers
- More ambiguity
- Computers vs humans
- CogLab on Lexical decision due!
  - This is a valid sentence: "Buffalo buffalo buffalo buffalo buffalo buffalo buffalo buffalo buffalo buffalo buffalo."