Linguistics: Morphology

MSc Bridge Course, October 2011

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Preliminaries

What is linguistics?

✦ systematic study of the principles governing the use of language

✦ theoretical lxcs: attempt to formalize the rules and structures behind language use

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When we talk about language:

- descriptive vs. prescriptive approaches
- diachronic vs. synchronic study
- competence vs. performance

Human language

What makes something human (natural) language?

- ✦ creativity

- ✦ recursion

- ✦ arbitrary relationship between sound & meaning

Human language

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More than 6000 languages spoken in the world:

- 1M+ speakers: ~200
- primarily (or only) spoken: more than 50%
- total # of lgs. rapidly decreasing

What does it mean to know a language?

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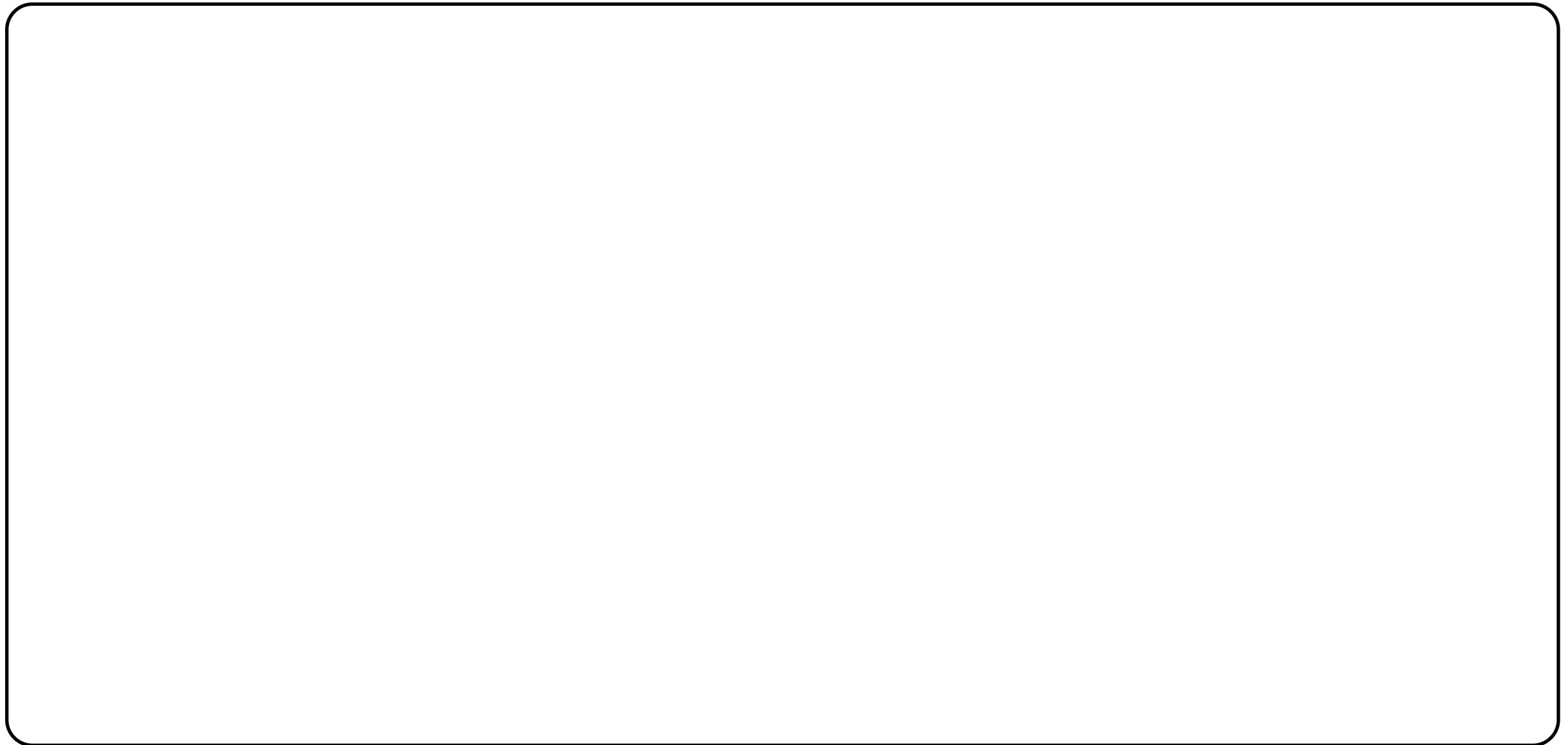
- ✦ **sound system**: possible sounds in the lg, how they can and cannot combine

- ✦ **lexicon**: associations of sounds with meanings, morphology

- ✦ **grammar**: structures and meaning

- ✦ **social/pragmatic customs**: personal and social strategies for language use

What does it mean to know a language?

- ✦ sound system

- ✦ lexicon

- ✦ grammar

- ✦ social/pragmatic customs

Our topic for today is morphology

- words & how they're formed

- internal structure of word forms

- performing morphological analysis

On Morphology

Fundamentals:
Word classes I
Morphemes, affixation, terminology
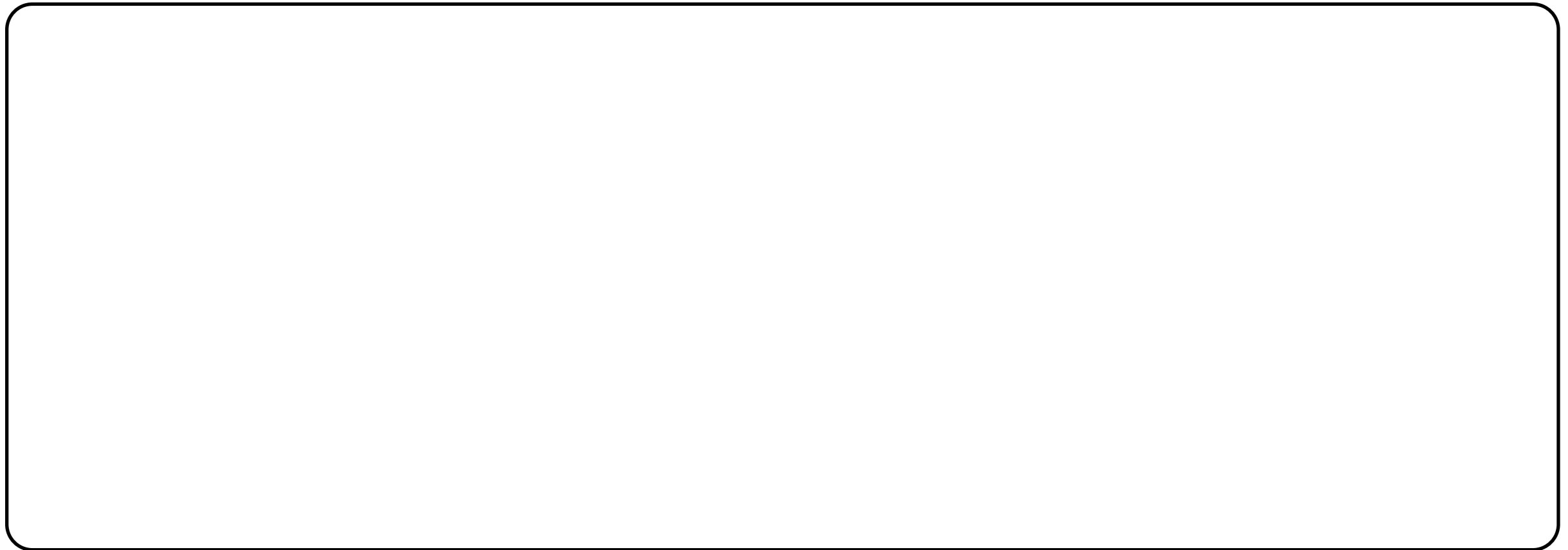
Inflectional morphology:
Morphological paradigms
Regular and irregular forms

Derivational morphology:
Internal structure of words
Productivity, compounds, etc.

What does it mean to know a WORD?

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- ✦ **sound**

- ✦ **meaning**

- ✦ **syntactic category / POS**

- ✦ **orthography (maybe)**

What does it mean to know a WORD?

✦ sound

✦ meaning

✦ syntactic category / POS

✦ orthography (maybe)

Mental lexical representation:

• associates sound with meaning

• includes information about grammatical status

• includes irregular forms

On Morphology

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Inflectional morphology:

Morphological paradigms

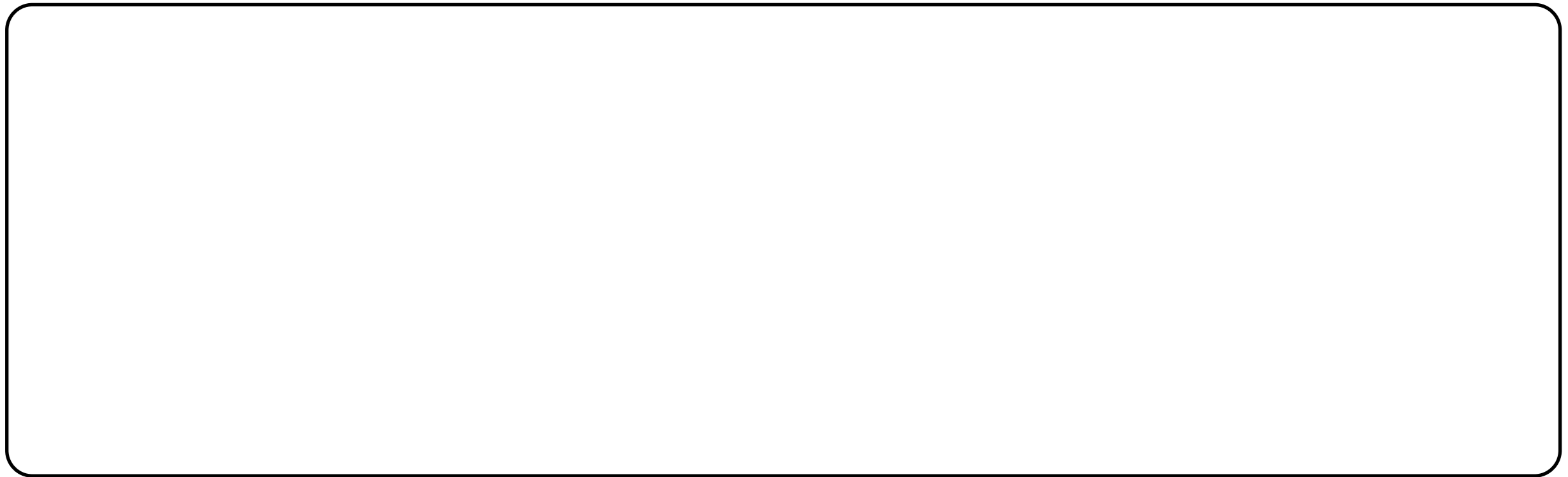Regular and irregular forms

Derivational morphology:

Internal structure of words

Productivity, compounds, etc.

Word classes I

Content words

Function words

Word classes I

Content words

Function words

- play different roles in language
- open vs. closed classes
- function words in CoLi: stop words, author ID, etc.
- POS categories (e.g. N, V, Prep, Adverb)
- Q: are POS categories universal?

Morphemes

Morphology is the study of

- Internal structure of words
- Processes by which words are formed

morphe = Greek "form"

-ology = "science of/branch of knowledge concerning"

[Morphology is not etymology, lexicography, historical linguistics]

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Internal structure of words is rule-governed

| uneaten | *eatenun |
| unintentional | *intentionalun |

Morphemes

Same form, different meanings

happi**er**, dark**er**, fanci**er**

walk**er**, rid**er**, open**er**

Morphemes

Same form, different meanings

      comparative -er   e.g. happier, darker, fancier

      agentive -er   e.g. walker, rider, opener

cf. finger (not fing + -er!)

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note changes in spelling

allomorphy: same morpheme, different forms (e.g. actor)

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Same meaning, different forms

singer, songster   "one who sings"

cf. monster (not monst + -er!)

** mental lexicon contains morphemes as well as words **

Morphemes

Morpheme = minimal unit of linguistic meaning

- arbitrary union of sound and meaning, or of sound and grammatical function

- cannot be further analyzed

- morphological knowledge has two components: individual morphemes & rules for their combination

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Free vs. bound morphemes

free = able to stand alone

bound = unable to stand alone, mostly affixes

Affixation

Morphologically complex words = root plus 1+ affix

- roots do not always stand alone as words

  painter, reread, conceive, linguist

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- bound roots cannot occur in isolation

    ungainly/*gainly, downhearted/*hearted

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- root + affix = stem/base/word

- affixes precede, follow, interrupt, or envelope the roots, stems/bases they attach to

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Types of affix (by position)

- prefix
- suffix
- infix
- circumfix (aka discontinuous morpheme)

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Types of affix (by position)

- prefix   *premeditated, prejudice; bipolar, bisexual*

- suffix   *sleeping, eating, running, climbing; typist, pianist, novelist; manly, sickly*

- infix   *abso-freakin-lutely, Kalama-freakin-zoo*

- circumfix (aka discontinuous morpheme) *geliebt [German]*

Types of morphology

Languages differ in type & extent of morphology

> analytic
>
> inflectional/fusional
>
> agglutinating

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analytic   Chinese

inflectional/fusional

                  Latin, German, Mayan lgs, Semitic lgs

agglutinating   Turkish, Ojibwe, many Native American lgs

Ojibwe example

(6a)   *ininiw   ogi:baʃkizwa:an*
        ininiw   o- gi:-   baaʃkizw -aa   -an
        man   3p PST   shoot 3p th-dir   OBV
        'The man shot him/her.'

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inflectional/fusional	
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Nearly all lgs have two types of affixes (by function)

inflectional	change words wrt grammatical status
derivational	form new words

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Inflectional morphology:

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Derivational morphology:
Internal structure of words
Productivity, compounds, etc.

Inflectional morphemes

- bound morphemes, strictly grammatical function!
- add no lexical meaning
- never change POS (grammatical category) of stems
- are highly productive

Inflectional morphology

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Morphological paradigm

- set of related inflectional morphemes
- relevant for single grammatical category

      case paradigm   [der, den, dem, des +s]

      verb agreement paradigm   [walk, walks]

      verb tense paradigm   [walk, walked, has walked]

English inflectional morphology

Relatively impoverished wrt inflectional morphology

-s	3rd person singular present	Verb
-ed	past tense	Verb
-ing	progressive (aspect)	Verb
-s	plural	Noun
-'s	possessive	Noun
-er	comparative	Adjective
-est	superlative	Adjective

Regularity, exceptions, and suppletion

Inflection is quite regular in English

- with regularity, rules rather than forms stored in lexicon
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Some irregular forms

- plurals: goose-geese, moose-moose, mouse-mice
- past tense verb forms: go-went, think-thought, bring-brought, sing-sang, is-was
- ** also variation ** : thin-thinner, right-more right

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- new words entering lg generally inflect regularly

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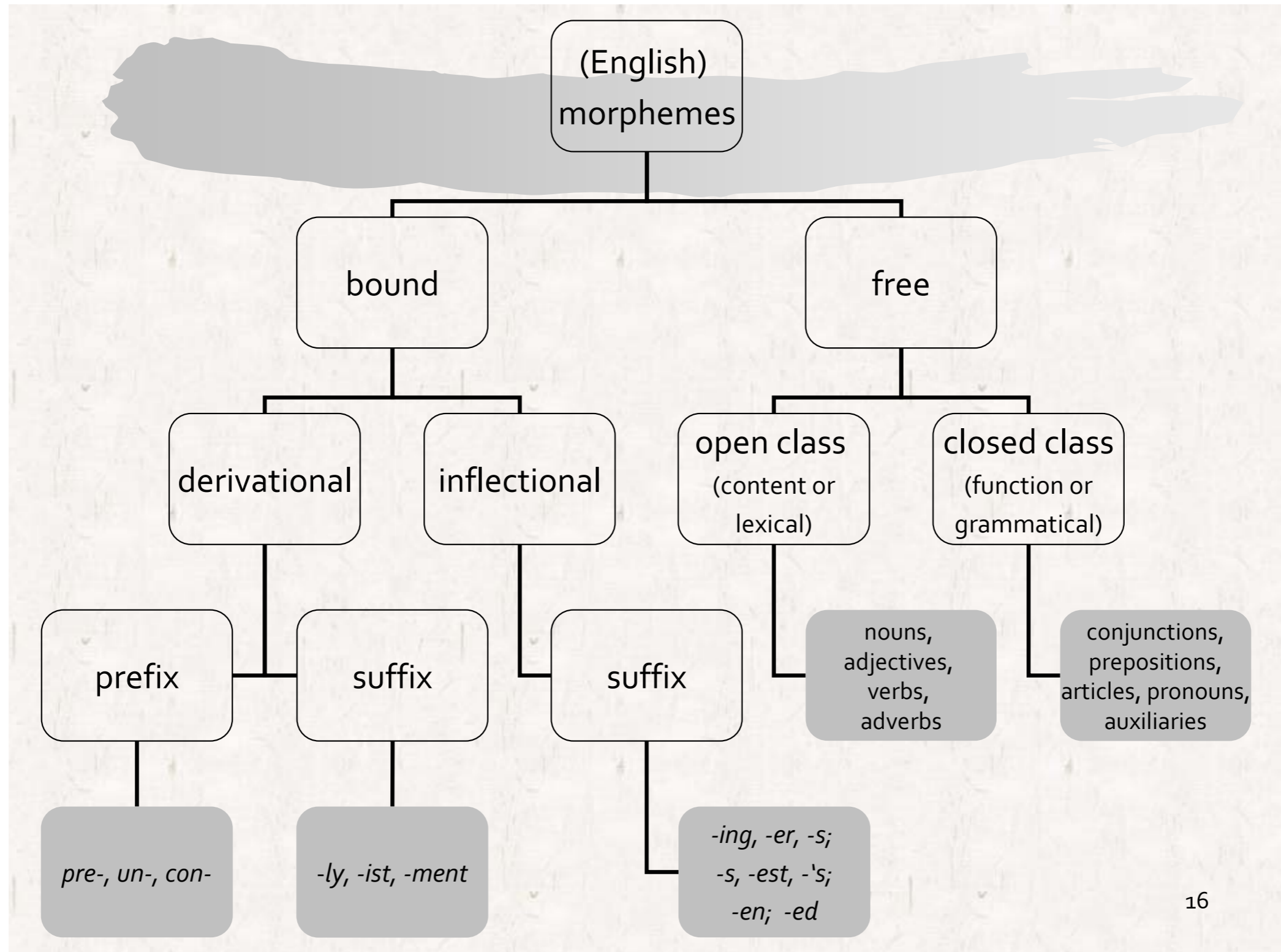
Derivational morphology

Derivational morphemes

- adding to base derives new word w/ new meaning
- clear semantic content
- often change POS (grammatical category) of stems
- vary in their productivity
- may trigger phonological changes (specific/specificity)

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- may trigger phonological changes (specific/specificity)
- in Eng, derivational processes apply before inflectional

Examples in English?

- noun --> verb; noun --> adjective; noun --> noun
- verb --> noun; verb --> adjective; verb --> verb
- adjective --> noun; adjective --> adverb, adj --> adj

Recap: types of English morphemes

[Image credit: Tania Augustinova]

Hierarchical structure of words

Derivational morphemes

- morphemes are added in a fixed order
- order reflects hierarchical structure of the word
- structure to some extent determines meaning

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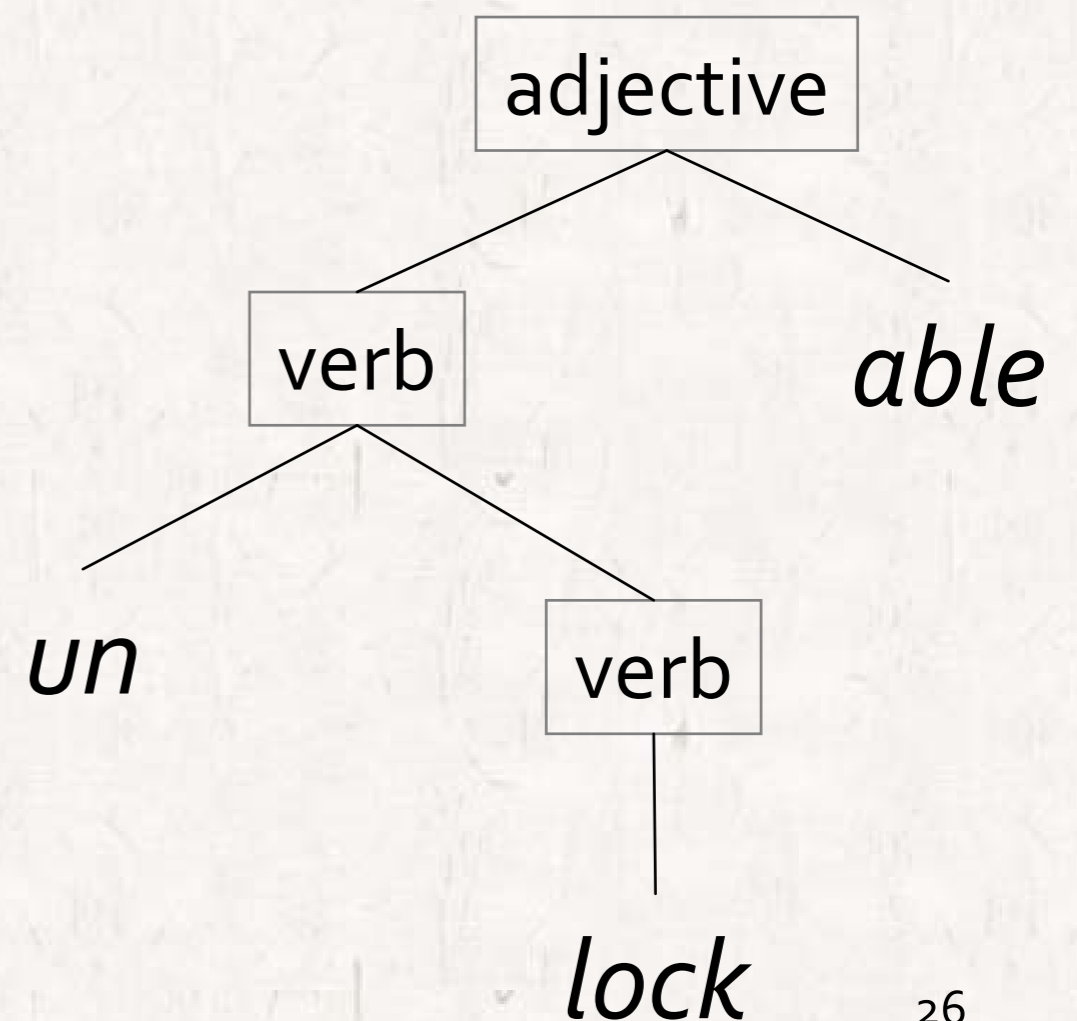

Derivational process

- derive 'unsystematically'
- derive 're-finalizes'

Structural ambiguity in morphology

1. *unlockable*
   "not able to be locked"
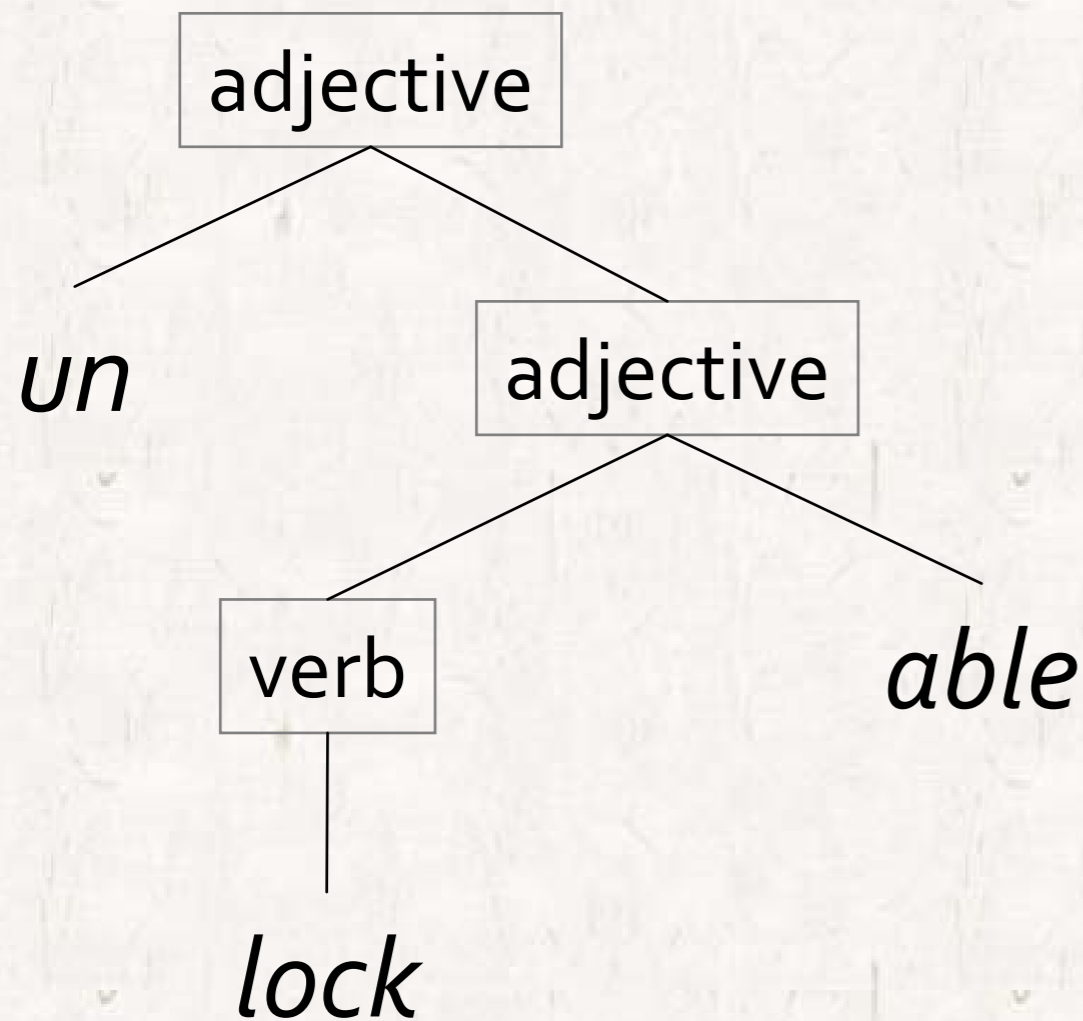
2. *unlockable*
   "able to be unlocked"

[Image credit: Tania Augustinova]

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Productivity & lexical gaps

Rule productivity

- fully productive rules "can be used freely to form new words from the list of free and bound morphemes"

- usually can predict meaning of morphologically complex words; exceptions need individual entries in the mental lexicon (e.g. unnerve, unearth)

- back-formations are cute too! (e.g. monokini)

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Lexical gaps

- no language exhausts all logical possibilities for words in its lexicon

- some have phonological grounds (*inpossible, *imdestructible)

- others are seemingly accidental

Compounds

Compounding robust process in most lgs

- two or more words combined to form new word
- head of compound influences meaning & POS
- English compounds headed by rightmost word
- meaning is often non-compositional, even idiomatic (e.g. blackboard, looking glass, turncoat)

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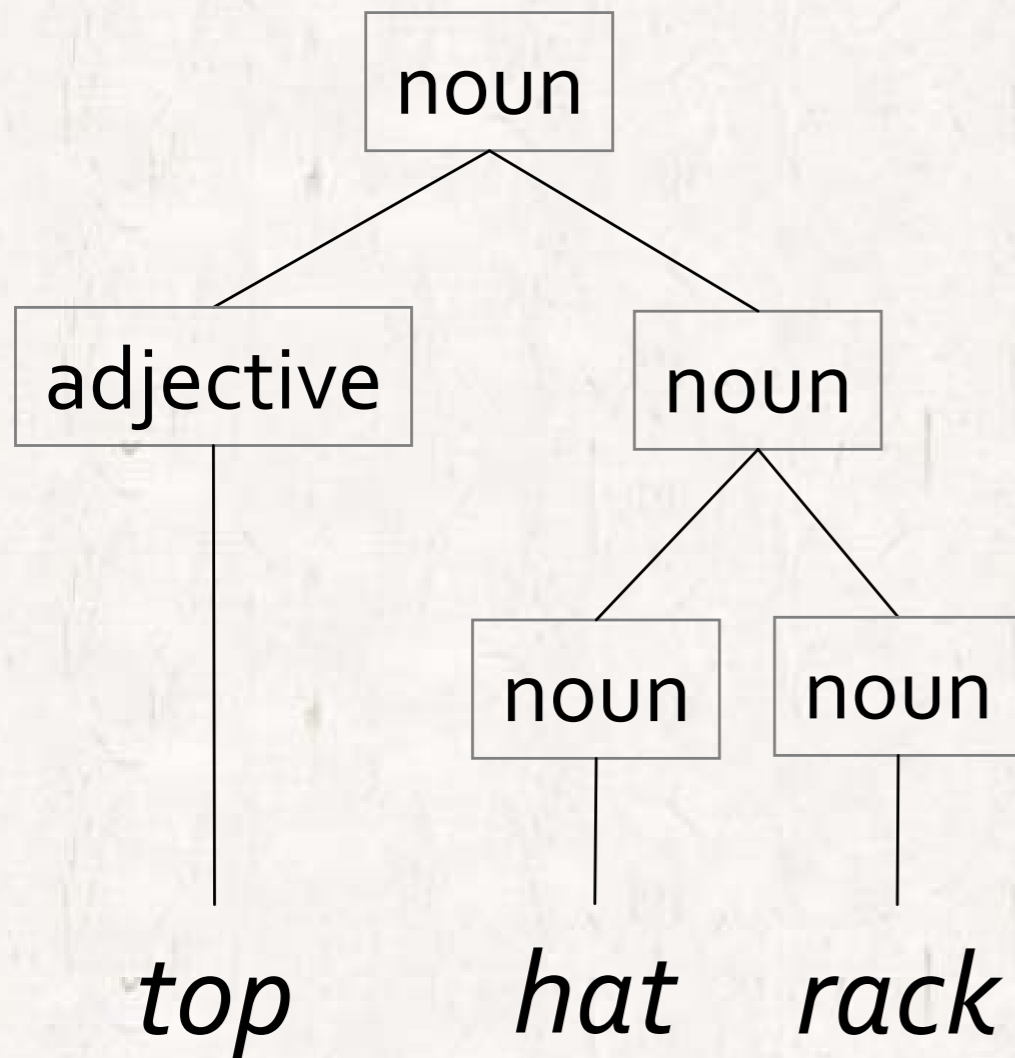- meaning is often non-compositional, even idiomatic (e.g. blackboard, looking glass, turncoat)

Examples in English?

- noun-noun compound
- adj-adj compound
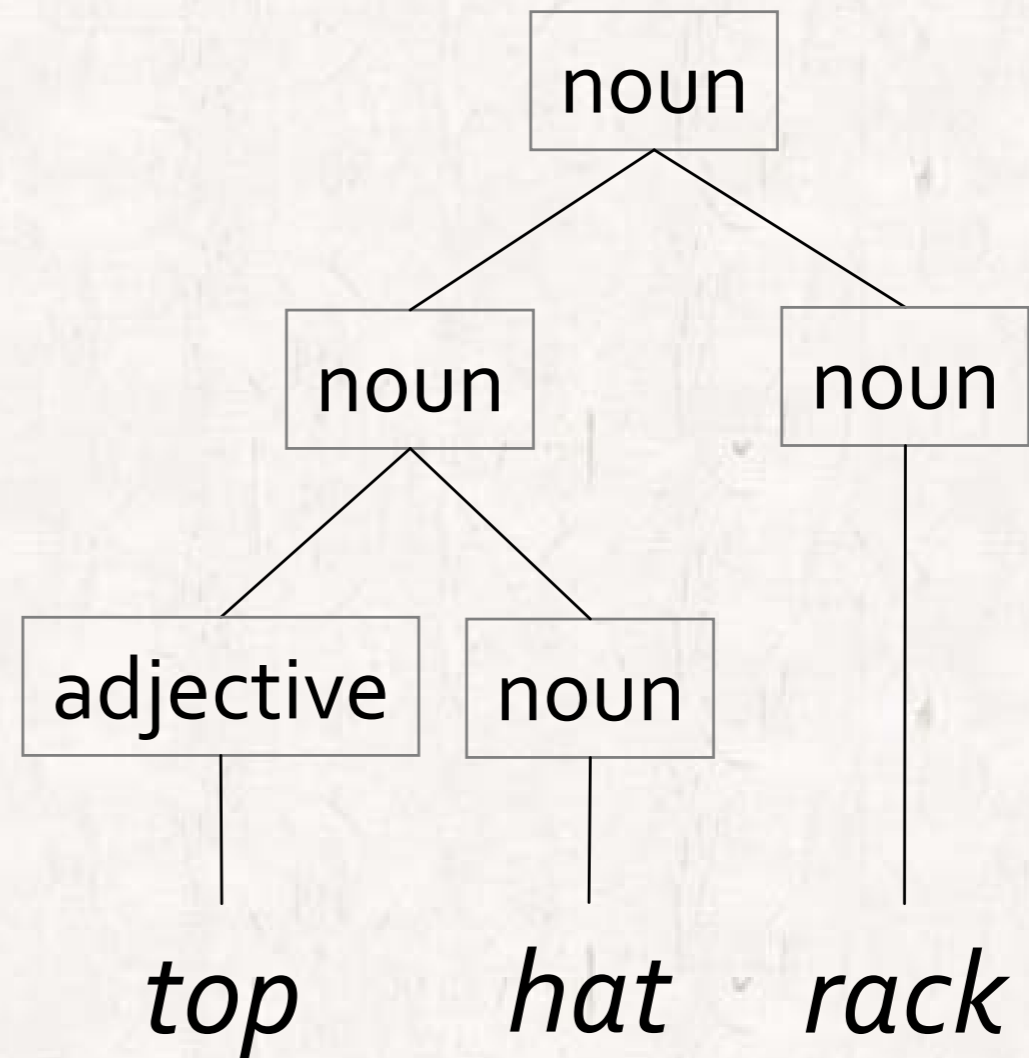- verb-noun compound

Structural ambiguity in compounds

"the highest hat rack"   vs.   "a rack for top hats"

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[Image credit: Tania Augustinova]

Morphological Analysis

Morphological analysis

Computationally, often refers to:

- morphological segmentation
- morpheme glossing/tagging/labeling

In linguistics:

- understanding morphology of new language
- identifying morphemes and their meanings
- identifying underlying morphological processes
- morphology problems!

Zulu morphology problem

umfazi	"married woman"	abafazi	"married women"
umfani	"boy"	abafani	"boys"
umzali	"parent"	abazali	"parents"
umfundisi	"teacher"	abafundisi	"teachers"
umbazi	"carver"	ababazi	"carvers"
umlimi	"farmer"	abalimi	"farmers"
umfundi	"reader"	abafundi	"readers"

fundisa	"to teach"	funda	"to read"
lima	"to cultivate"	baza	"to carve"

- what is the singular morpheme in Zulu?
- what is the plural morpheme?
- what is the process for deriving a verb from a noun?
- what is the stem meaning 'read'? 'carve'?