

# Language and its Applications

## LT5903



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Lecture 4: Morphology

# HW3 Q3

Nominative	Dative	Gloss
son	sona	end
kalem	kaleme	pen
el	ele	hand
ip	ipe	rope
kap	kaba	container
saɰ	saɰa	hair
gɣɰ	gɣɰe	power
bit	bite	louse
kurt	kurda	worm
koepek	koepeke	dog
renk	renge	colour

- Describe the phonological environments where the alternating stems and the dative suffixes [e, a] occur.  
[e] after front and non-low vowels, [a] elsewhere
- Propose an underlying form for the stems and the dative suffixes.  
stems: /b/, /dʒ/, /d/, /g/  
dative suffix: /a/
- State the rule that derives the surface forms of the stems, expressing them using (i) phonemes and (ii) features.  
/b/, /dʒ/, /d/, /g/ → [p], [tʃ], [t], [k] / \_\_\_ #  
C[-sonorant, +voice] → C[-voice] / \_\_\_ #
- State the rule that derives the surface forms of the dative forms, expressing them using (i) phonemes and (ii) features.  
/a/ → [e] / [e, ɪ, ʏ, i] \_\_\_  
V[+back, +low] → V[+front, +mid] / V[+front, -low] \_\_\_

# Lecture plan

- Phonology review
- Elements in morphology
- Morphological processes
- Morphological types of language
- Hierarchical structure of derived words
- Short break (15 mins)
- Group discussion on HW4

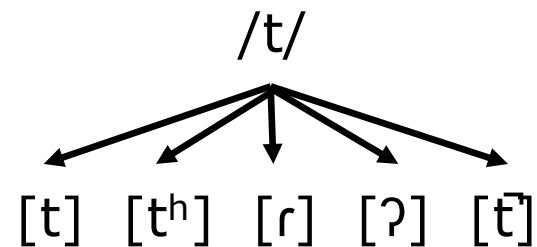
# Phonology review

The study of **how sounds are organized** within a language and how they interact with each other.

## Phonotactic constraints

- borrowing words: **Ptolemy** [ptaləmi] → [taləmi], **knish** [kniʃ] → [kənɪʃ]
- foreign accents: Spanish learner: student: [estudent], French learner: [dʒis]: [zis]

## Phonemes and allophones



contrastive distribution  
complementary distribution  
free variation

## Phonological rules

- assimilation, dissimilation, insertion, deletion, metathesis, strengthening, weakening
- multiple rule application

# What is morphology?

The study of words and how words are formed out of smaller pieces.

home v.s house → different form, similar meaning

home v.s Homer → similar form, different meaning

home v.s homely → similar meaning, different lexical category

hometown, homework, homepage, homesick, homeless, homelessness, homie...

# Word and word formation

**Form:** what a word sounds like when it is spoken

**Meaning:** the idea that the word represents

**Lexical categories (parts of speech) tend to associate with morphosyntactic features**

**noun, pronoun, adjective:**

- Number (cats), Case (she/her), Gender (masculine, feminine)

**pronoun:**

- Person (I/you/she/he/it)

**adjective, adverb:**

- Comparative (bigger), Superlative (biggest)

**verb**

- Number (eats), Person, Tense (ate), Aspect ('zhe', 'le', 'guo' in Mandarin), Mood (indicative, imperative, subjunctive,...)

# Open and closed lexical categories

**Open lexical categories:** can always add new members

- noun: *iPhone*
- verb: *tweet*
- adjective: *instagrammable*
- adverb: *ish*

→ content words

**Closed lexical categories:** relatively fixed membership

- pronoun: *she, he, it, they*
- determiner: *a, the, this*
- preposition: *on, of, under, for*
- conjunction: *and, or, but*

→ function words

# Inflection and derivation

<b>Form</b>	<b>home</b> /hoʊm/	<b>homes</b> /hoʊmz/	<b>homely</b> /hoʊmli/
<b>Meaning</b>	'the place where a person lives'	'the places where people live' (plural)	'like home; plain, simple, unattractive'
<b>Lexical category</b>	noun	noun	adjective
		<b>inflection</b> same lexeme	<b>derivation</b> different lexeme

**root/stem:** *home*    **free morpheme**  
**affix:** *-s, -ly*    **bound morpheme** } **morpheme**



# Inflectional affixes

**Inflection:** Process of creating different grammatical forms of words without changing the lexical category by adding an affix to a root.

Function	Affix	Attaches to	Example
3rd per. sing. present	-s	verbs	She waits <b>s</b> there at noon.
past tense	-ed	verbs	She waited <b>ed</b> there yesterday.
progressive aspect	-ing	verbs	She is waiting <b>ing</b> there now.
past participle	-en, -ed	verbs	Jack has eaten <b>en</b> the cookies. Jack has tested <b>ed</b> the cookies.
plural	-s	nouns	The chairs <b>s</b> are in the room.
comparative	-er	adjectives, adverbs	Jill is taller <b>er</b> than Joe. Joe runs faster <b>er</b> than Jill.
superlative	-est	adjectives, adverbs	Ted is the tallest <b>est</b> in his class. Michael runs fastest <b>est</b> of all.

# Derivational affixes

**Derivation:** Process of creating words out of other words, typically changes the lexical category

Function	Affix	Attaches to	Example
noun → adj	<i>-ly</i>	nouns, adjectives	This is a <b>homely</b> dress.
adj → adv			Mary left <b>quickly</b> .
adj → noun	<i>-ness</i>	nouns	Tom sat in the <b>darkness</b> .
verb → noun	<i>-tion</i>	verbs	John is a man of <b>action</b> .
verb → noun	<i>-ment</i>	verbs	She has connections in the <b>government</b> .
'without'	<i>-less</i>	nouns	Jill was a <b>homeless</b> girl.
'agent'	<i>-er</i>	verbs	He is a <b>fast speaker</b> .

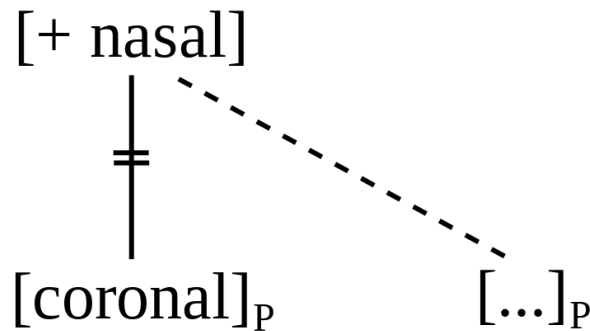
'-er' inflectional: comparative  
derivational: agent } **homophonous**

# Allomorphy

**allomorphs:** different forms of a same morpheme

**int**olerable [n]  
**in**adequate [n]  
**im**precise [m]  
**in**complete [ŋ]  
**int**ernet [n]  
**in**put [m]  
**in**k [ŋ]

nasal place  
assimilation rule:



**allomorph:**  
applies only to **morphemes**  
'in-': not  
**allophones:**  
applies to **any sounds**  
affected by the rule

## phonological allomorphs:

allomorphs derived from a phonological process

# Suppletion

**suppletion:** allomorphs that cannot be derived from a phonological rule

**weak suppletion:**  
the forms are somewhat similar

**strong suppletion:**  
significant difference in form

## *Present/Root*

bring [brɪŋ]

teach [ti:tʃ]

seek [si:k]

keep [ki:p]

deal [di:l]

mean [mi:n]

lose [lu:z]

## *Past Tense*

brought [brɔ:t]

taught [tɔ:t]

sought [sɔ:t]

kept [kept]

dealt [delt]

meant [ment]

lost [lost]

## *Present*

is [ɪz]

go [gou]

## *Past*

was [wʌz]

went [went]

# Quiz

- What is the difference between a free and a bound morpheme?
- What is the difference between an inflectional and a derivational affix?
- What is the difference between allophones and allomorphs?
- What is weak suppletion and what is strong suppletion?

# Morphological processes

## **The processes of forming words**

- Affixation
- Compounding
- Reduplication
- Alternation
- Metathesis
- Templatic morphology
- Suprasegmental morphology

# Affixation

Attaching affixes to a stem

**prefix** (derivational affix)

`in-' not: *incomplete*, *imprecise*, *intolerant*

`un-' not: *unable*, *unwed*, *uncomfortable*, *unemployment*

**suffix**

`-er' comparative: *faster*, *stronger*, *darker*

`-er' agent: *speaker*, *writer*, *teacher*

**infix**

Tagalog: -*um*- infinitive: *lakad* 'walk' → *lumakad* 'to walk'  
*bili* 'buy' → *bumili* 'to buy'

# Compounding

Combining two or more words

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## Compounding of Free Morphemes

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girlfriend

blackbird

textbook

## Compounding of Affixed Words

air-conditioner

ironing board

watch-maker

## Compounding of Compounded Words

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lifeguard chair

aircraft carrier

life-insurance salesman

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**compounds v.s phrases:** different stress patterns

### *Compounds*

bláckbird

mákeup

### *Phrases*

bláck bírd

máke úp



# Reduplication

Doubling a free morpheme or part of it

## total reduplication Indonesian

### *Singular*

rumah	'house'
ibu	'mother'
lalat	'fly'

### *Plural*

rumahrumah	'houses'
ibuibu	'mothers'
lalatlalat	'flies'

## partial reduplication Tagalog

### *Verb Root*

bili	'buy'
kain	'eat'
pasok	'enter'

### *Future Tense*

bibili	'will buy'
kakain	'will eat'
papasok	'will enter'

# Alternation

Changing morpheme-internal sounds

## inflection

<i>Singular</i>	<i>Plural</i>			
man	men	[æ]	~	[ɛ]
woman	women	[ʊ]	~	[ɪ]
goose	geese	[u]	~	[i]
tooth	teeth	[u]	~	[i]

## derivation

<i>Noun</i>	<i>Verb</i>			
grief	grieve	[f]	~	[v]
teeth	teethe	[θ]	~	[ð]
use	use	[s]	~	[z]
house	house	[s]	~	[z]

**suppletion**

# Metathesis

Switching the order of two sounds

## Straits Saanich:

<i>Underlying Form</i>	<i>Non-actual</i>	<i>Actual</i>	
/tʃk <sup>w</sup> ut/	[tʃk <sup>w</sup> ut]	[tʃuk <sup>w</sup> t]	‘shoot’
/xtʃit/	[xtʃit]	[xitʃt]	‘scratch’
/qqit/	[qqit]	[qiqt]	‘restrain’
/ttʃet/	[ttʃet]	[tetʃt]	‘shatter’

# Templatic morphology

Adding vowels to roots which only contains consonants

## Arabic:

### *Form*

### *Gloss*

[**kataba**]

'he wrote'

[**yaktubu**]

'he is writing'

[**maktu:b**]

'written'

root: /ktb/ 'write'

[**katb**]

'writing' (noun)

[**ka:tib**]

'writer'

[**kita:b**]

'book'

[**maktab**]

'office'

[**maka:tib**]

'offices'

# Suprasegmental morphology

Using suprasegmental features

## Tlaltepuzco Chinantec:

<i>Aspect/Mood</i>	<i>1st Singular</i>	<i>1st Plural</i>	<i>2nd Person</i>	<i>3rd Person</i>
Completive	[tiu <sup>1</sup> ]	[tiu <sup>3</sup> ]	[tiu <sup>32</sup> ]	[tiu <sup>1</sup> ]
Incompletive	[tiu <sup>12</sup> ]	[tiu <sup>2</sup> ]	[tiu <sup>2</sup> ]	[tiu <sup>12</sup> ]
Irrealis	[tiu <sup>13</sup> ]	[tiu <sup>3</sup> ]	[tiu <sup>3</sup> ]	[tiu <sup>1</sup> ]

## English:

	<i>Noun</i>	<i>Verb</i>
extract	[ɛk <u>st</u> rækt]	[ɛk <u>st</u> rækt]
increase	[ɪn <u>k</u> rɪs]	[ɪn <u>k</u> rɪs]
permit	[pɹ <u>ɪ</u> mit]	[pɹ <u>ɪ</u> mit]
record	[rɛ <u>k</u> rd]	[rɛ <u>k</u> rd]
produce	[pɹ <u>ɒ</u> ʊdʌs]	[pɹ <u>ɒ</u> ʊdʌs]

# Morphological types of language

## **Analytic languages**

organizes words and grammar by a strict word order instead of inflections

**Chinese, English, Vietnamese, Thai, Khmer, Lao, etc.**

## **Synthetic languages**

syntactic relations within sentences are expressed by inflection or agglutination

**Hungarian, Turkish, Finnish, Spanish, Swahili, etc.**

Agglutinating  
Fusional  
Polysynthetic

# Analytical languages

## Chinese

- using function words to express plurality:

[wɔ t<sup>h</sup>an kaŋtɕ<sup>h</sup>in]      [wɔ mən t<sup>h</sup>an kaŋtɕ<sup>h</sup>in lə]  
*I play piano*                      *I plural play piano past*  
'I am playing the piano'      'We played the piano'

- using word order to express **subject/object**:

[t<sup>h</sup>a ta wɔ mən]  
*s/he hit(s) I plural*  
'S/he hits us'

## English

*Girls like cats. v.s Cats like girls.*

# Synthetic languages

**Agglutinating languages:** morpheme boundaries are easy to identify

## Hungarian

*'-t' object:*

[ɒ	kucɔ	laxtjɔ	ɔz	ɛmbɛrt]
<i>the</i>	<i>dog-(subject)</i>	<i>sees</i>	<i>the</i>	<i>man-(object)</i>

'The dog sees the man'

[ɔz	ɛmbɛrt	laxtjɔ	ɔ	kucɔ]
<i>the</i>	<i>man-(object)</i>	<i>sees</i>	<i>the</i>	<i>dog-(subject)</i>

'The dog sees the man'

## Swahili

[ni-na-soma]	<i>I-present-read</i>
[u-na-soma]	<i>you-present-read</i>
[a-na-soma]	<i>s/he-present-read</i>
[ni-li-soma]	<i>I-past-read</i>
[u-li-soma]	<i>you-past-read</i>
[a-li-soma]	<i>s/he-past-read</i>
[ni-ta-soma]	<i>I-future-read</i>
[u-ta-soma]	<i>you-future-read</i>
[a-ta-soma]	<i>s/he-future-read</i>



# Synthetic languages

**Fusional languages:** affixes are fused with the stem

## Spanish

hablo [aβlo] 'I am speaking'  
habla [aβla] 's/he is speaking'  
hablé [aβle] 'I spoke'

a single affix conveys several meanings:

[-o] first-person singular present tense  
[-a] third-person singular present tense  
[-e] first-person singular past tense

# Synthetic languages

**Polysynthetic languages:** complex words formed by several stems and affixes

## Sora

[aninɲamjɔten]

[anin - ɲam - jɔ - te - n]

*he catch fish non-past do*

'He is fish-catching'

i.e., 'He is catching fish'

[ɲamkɪɖtenai]

[ɲam - kɪɖ - te - n - ai]

*catch tiger non-past do first person agent*

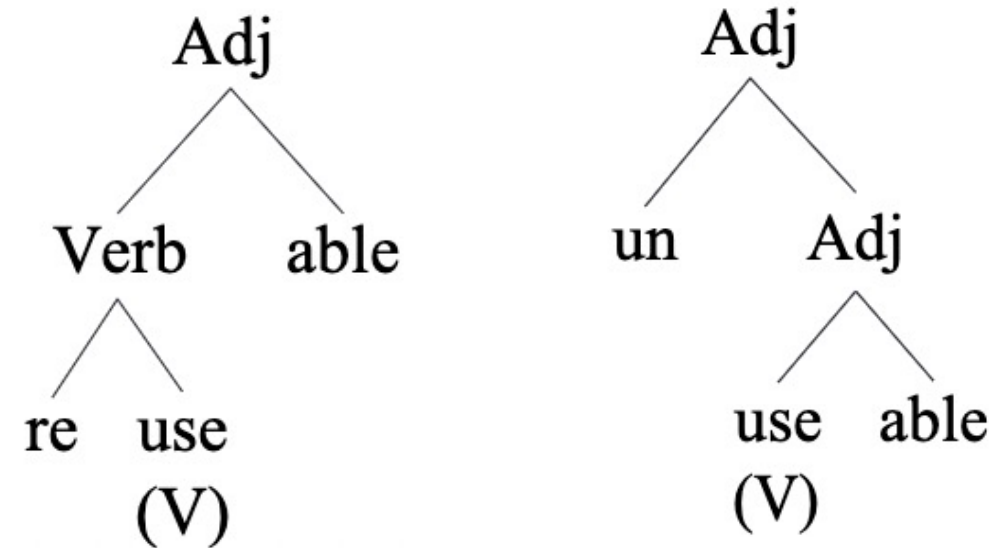
'I will tiger-catch'

i.e., 'I will catch a tiger'

# Hierarchical structure of derived words

How many words can you get from combining these morphemes:

<i>use</i>	usable
<i>re-</i> 'repeat, again'	reuse
<i>un-</i> 'not'	reusable
<i>-able</i> 'capable of'	unusable
	*unuse



*re-* attaches to verbs: *rewrite*, \**rehappy*, \**rehappiness*

*un-* attaches to adjectives: *unhappy*, \**unwrite*, \**unhappiness*

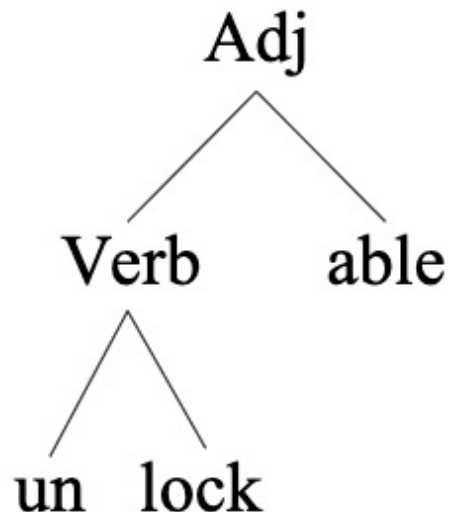
*-able* attaches to verbs: *writable*, \**happiable*, \**happinessable*

# Ambiguous morphological structure

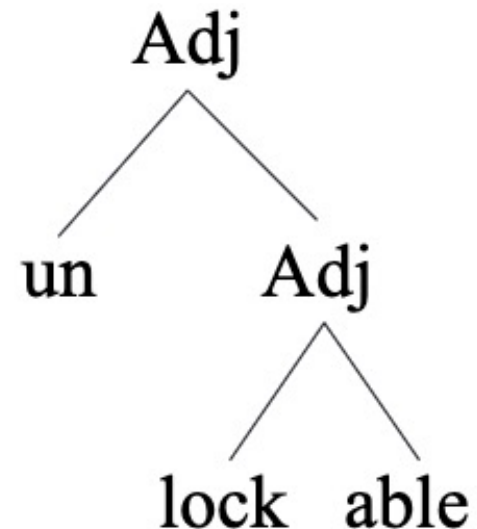
*un-* 'not' + adj: unhappy, unable, unaware  
'reverse' + verb: undo, undress, untie

*'un + lock + able'*

'able to be unlocked'



'not able to be locked'



# Morphemes that can attach to more than one lexical categories

*pre-* 'before' (**content morpheme**)

+ adj: *prehistoric, prefrontal* → adjective

+ verb: *preexist, preapprove* → verb

+ noun: *prewar, preseason* → adjective

*-ly* (**function morpheme**)

+ noun: *manly, timely* → adjective

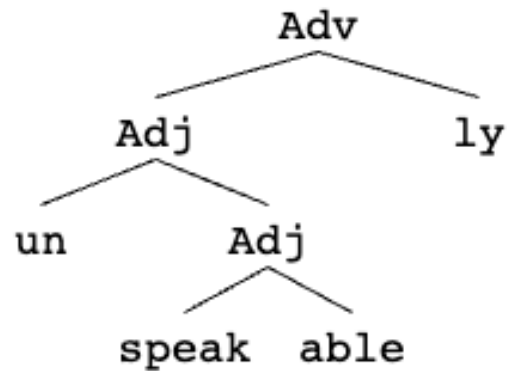
+ adj: *newly, happily* → adverb

+ verb: *seemly* → adjective

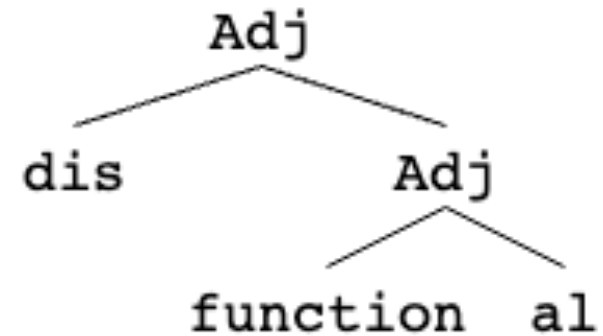
# Practice

Draw a tree diagram for each of the following words:

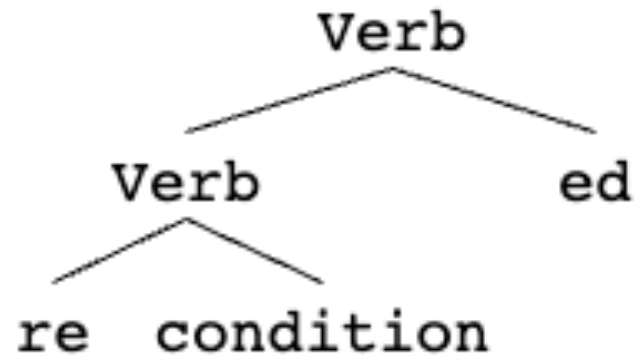
**unspeakably**



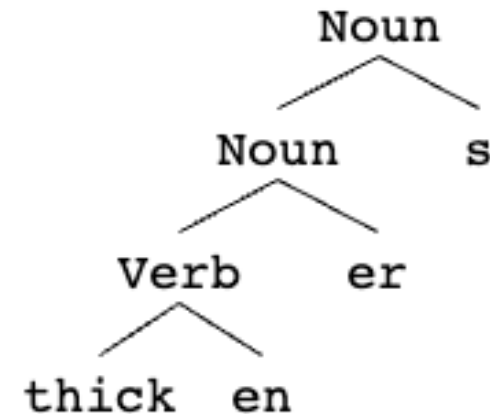
**dysfunctional**



**reconditioned**



**thickeners**



# Practice

## Turkish

Examine the following data from Turkish and answer the questions that follow.

<b>a.</b> fil	'elephant'	<b>i.</b> kaplan	'tiger'
<b>b.</b> file	'to an/the elephant'	<b>j.</b> kaplanlar	'tigers'
<b>c.</b> filden	'from an/the elephant'	<b>k.</b> cambaz	'acrobat'
<b>d.</b> sirke	'to a/the circus'	<b>l.</b> cambazımız	'our acrobat'
<b>e.</b> sirkler	'circuses'	<b>m.</b> kaplanın	'of a/the tiger'
<b>f.</b> sirkin	'of a/the circus'	<b>n.</b> cambazlarım	'my acrobats''
<b>g.</b> fillerim	'my elephants'	<b>o.</b> kaplanıma	'to my tiger'
<b>h.</b> sirklerimiz	'of our circuses'	<b>p.</b> cambazdan	'from an/the acrobat'

**i.** Give the Turkish morpheme that corresponds to each of the following translations; two blanks indicate two allomorphs:

_____	'elephant'	_____	_____	'to'	_____	_____	'my'
_____	'circus'	_____	_____	'from'	_____	_____	'our'
_____	'tiger'	_____	_____	'of'	_____	_____	(plural marker)
_____	'acrobat'						

**ii.** What is the order of morphemes in a Turkish word (in terms of noun stem, plural marker, etc.)?

**iii.** How would one say 'to my circus' and 'from our tigers' in Turkish?

# Practice

i. fil	'elephant'	e	a	'to'	im	ım	'my'
sirk	'circus'	den	dan	'from'	imiz	ımız	'our'
kaplan	'tiger'	in	ın	'of'	ler	lar	(plural marker)
cambaz	'acrobat'						

ii. noun + plural marker + determiner + preposition

iii. 'to my circus': sirkime; 'from our tigers': kaplanlarımızdan



# To do

**Assign yourself to the correct group under A4!**

Do HW4

Read:

This lecture: **File** Ch4

Next lecture: **File** Ch5