

3 main types of morphological relations, again

- Inflection, derivation, and compounding
- Inflectional morphology modifies properties of LEXEMES, while maintaining the basic meaning of the LEXEME.

mor-iksel'-i-ń

sing-DES-PAST-ISG

`I wanted to sing'

(Erzya Mordvin)

mor-iksel'-i-t'

sing-DES-PAST-2SG

`you wanted to sing'

Inflection

- There is a theoretical tendency to distinguish between derivation and inflection, but what's really the difference?
- Linguists have identified a number of criteria, but none are definitional

Prototypical differences between inflection and derivation

Derivation

1. Encodes lexical meaning
2. Not syntactically relevant
3. Occurs close to the root & inside other derivation
4. Often changes lexical category
5. Often semantically opaque
6. Often shows restricted productivity
7. Optional

Inflection

- Encodes grammatical meaning
- Syntactically relevant
- Occurs outside all derivation
- Does not change lexical category
- Usually semantically obvious
- Fully productive
- Obligatory

Recursion

- Derivational operations are recursive i.e., the property whereby a single element can appear again and again with additional effect on a structure, but not inflectional ones:

- What's the longest English word?

antidisestablishmentarianism
antidisestablishmentarianistic
antidisestablishmentarianistically
anti-antidisestablishmentarianistically
anti-antidisestablishmentarianisticality
pseudo-anti-antidisestablishmentarianisticality

- Repeated morphs:

English: industrializational

German: Einheitlichkeit 'unitarity'

Dutch: kleurloosheidloos 'without colorlessness'

Order

- Derivational rules can apply in more than one order

idealistic

semanticist

- Inflectional rules have a fixed order

German: lieb + te + t 'love + PAST + 2.PL'

Basque: z-inez + te + n 'be + 2.PL + PAST'

- Order varies between languages, but there are strong cross-linguistic tendencies for invariable ordering.

Inherent versus Contextual Inflection

- Templatic (position class) morphology

Bemba (Bantu):

Negation - Subject - Tense - Aspect - Object - Stem - Final V

ta -	tu-	aku-	laa-	ba-	bombel-	a
NEG	I.PL	FUT-	PROG-	3.PL-	work	

‘We will not be working for them’

- Inherent: a morphosyntactic category not required by the syntactic combination of words - choice of the speaker
- Contextual: a morphosyntactic category that reflects syntactic combination with another element - obligatory relative to context.

Syntagmatic and Paradigmatic, again

- A syntagmatic perspective aims to get the structures of words with the same morphosyntactic feature values right
- Constructs complex words from small, meaningful bits
- Avoidance of redundancy, so that complex, productive and semantically transparent words are not stored in the morphological component, but are produced by applying the right rules and the appropriate times.

Syntagmatic and Paradigmatic, again

Infinitive: *parl-a-re* 'to speak'

present indicative		present subjunctive		imperfect indicative		
Sg.	Pl.	Sg.	Pl.	Sg.	Pl.	
1	parl-o	parl-i	parl-iamo	1	parl-a-v-o	parl-a-va-m.o
2	parl-i	parl-i	parl-i-ate	2	parl-a-v-i	parl-a-va-te
3	parl-a	parl-i	parl-i-no	3	parl-a-v-a	parl-a-va-no

Root - Position 1 - Position 2 - Position 3

a

va

o

i

∅

i

∅

mo, iamo

te

no

What's missing in a solely syntagmatic approach

- Even though wordforms are arrayed into paradigms, the paradigms have no theoretical status, they're just (pedagogically) convenient displays, i.e., epiphenomenal w/ the primary phenomenon being the construction of (classes of) individual wordforms, rather than relatedness between them.
- Apply rules to roots/stems to create individual words:
Lexicon: parl `speak'; o `ISG' [V + TNS ___]
- There are no representations of whole words, let alone, networks of related words.

A theoretical role for paradigms?

- Without paradigm organization,

“it would be impossible to learn and memorize such huge amounts of data. Besides, if there are more moods, more voices, and distinct subject-object marking for combinations of persons in the transitive verb, the complexity of data increases accordingly.” Itkonen 2005:84

- A typical transitive verb in Georgian has upwards of 200 forms, whose inflectional patterns identify the verb as belonging to one of four major conjugation classes (Tschenkéli 1958). Even Georgian is relatively conservative in comparison with descriptions of verb paradigms in Archi, which, according to one estimate (Kibrik 1998: 467), may contain ‘more than one and a half million’ members.

The Paradigm Cell Filling Problem

(Pauonen 1976; Thymé 1994, Thymé, Ackerman & Elman 1994, Pirrelli 2000, among others in WP tradition)

- Paradigm Cell Filling Problem: Given exposure to a novel inflected wordform, what licenses reliable inferences about the all the other wordforms in its inflectional family?
- Speakers of languages with complex morphology and multiple inflection classes must generalize beyond direct experience, since it's implausible to assume they will have encountered each form of every noun.

The Paradigm Cell Filling Problem

- The analogical task of predicting or inferring the correct shapes of words on the basis of limited experience with “similar” patterns of words becomes increasingly crucial as languages depart from the simple content/form mappings associated with what Lounsbury (1953) refers to as the “fictive agglutinative ideal” (morpheme-based) which serves as the basis for most familiar approaches to morphology.
- Word-based proposals offer a simple solution: paradigms are networks of implicative relations among related wordforms and inflectional classes are patterns of wordforms displaying distinctive implicational relations.

Finnish

(following the classification in Pihel & Pikamäe 1999:758-771)¹

Nom Sg	Gen Sg	Part Sg	Part Pl	Iness Pl	
ovi	oven	ovea	ovia	ovissa	'door' (8)
kieli	kielen	kieltä	kieliä	kielissä	'language' (32)
vesi	veden	vettä	vesiä	vesissä	'water' (10)
lasi	lasin	lasia	laseja	laseissa	'glass' (4)
nalle	nallen	nallea	nalleja	nalleissa	'teddy' (9)
kirje	kirjeen	kirjettä	kirjeitä	kirjeissä	'letter' (78)

- To confidently deduce the Finnish nominative for **rasti** 'checkpoint' it is enough to know the partitive singular **rastia** on analogy with what occurs with **lasi** 'cup'; less confidence resides in knowing the partitive plural **rastejä**, since this restricts class membership to either 4 or 9.²

1. There are numerous phonological and morphological cues that lead to fairly deterministic identification of class membership, i.e., nominals that end -aus, e.g., kiusaus 'temptation' or C-us, e.g., kuljetus 'carrying' are class 64, while those ending -eus, e.g., korkeus 'height' or -uus, e.g., lujuus 'firmness' are class 65, but their plural partitive and inessive and one allomorph of the genitive are non-diagnostic.

2. It also helps to know that **lasi** is a loan word and that class 4 is a basin for such words.

Deduction and Induction

(following discussion in Itkonen 2005)

- **Deduction:** Reasoning from general laws, where the major premise contains all the conclusions:

Assume that for all X if X is an apple, then X is edible, then if we encounter a new apple, we know, by the logic of deduction that that apple is edible.

- **Induction:** Reasoning toward a generalization on the basis of multiple examples:

Assume that X is an apple and is edible; assume that Y is an apple and edible, then one can posit that if any X is an apple, it is edible.

Abduction and Analogy

(following discussion in Itkonen 2005)

- Abduction of theory T from observation O_1 :

- 1 O_1
- 2 $T \vdash O_1$
- 3 T

- Confirmation of theory T via prediction of observation O_2 :

- 1 $T \vdash O_2$ [new prediction]
- 2 O_2 [true prediction]
- 3 T

- “The idea is that if, confronted by some phenomenon, you find one explanation (perhaps with some initial plausibility) that makes sense of what is otherwise inexplicable ($= T \vdash O_1$), then you should conclude that the explanation is probably right.”
Hacking 1983:52 cited in Itkonen 2005:30)

Abduction and Analogy

(following discussion in Itkonen 2005)

- Abductive analogical inference

- 1 $O_1 \ \& \ O_2$
- 2 $T \vdash O_1 \sim O_2$
- 3 T

- Learning a grammatical rule: where \sim = exemplifications of common structure, rather than two independent phenomena

- 1 dog/dogs & cat/cats
- 2 $(N \rightarrow N-s) \vdash \text{dog/dogs} \sim \text{cat/cats}$
- 3 $(N \rightarrow N-s)$

- Applying a grammatical rule to new data

- 1 $(N \rightarrow N-s)$
- 2 horse
- 3 horse-s

Periphrasis and inflectional paradigms

- So far, the morphosyntactic information associated with cells have only been occupied by synthetic wordforms/
- Can the occupants of cells be periphrastic expressions?
- If so, then morphology must deal with synthetic and periphrastic expressions: this brings us back to the question concerning what a word is:

Synthesis

Clisis

Independent elements

Bulgarian verbal morphology

(From Stump 2001:37)

Feature: grammatical attribute such as PERSON, NUMBER, TENSE...

Value: a specification of an attribute such as 2ND, SINGULAR, PAST...

Property: a feature-value pairing such as 2ND PERSON, PAST TENSE...

Property bundle: a set of grammatical properties such as {2ND PERSON; PAST TENSE; PASSIVE VOICE}

FINITE FORMS:				
MOOD:	INDICATIVE			IMPERATIVE
TENSE:	PRESENT	IMPERFECT	AORIST	
1SG				}
2SG				
3SG				
1PL				
2PL				
3PL				
ACTIVE				
PARTICIPIAL FORMS:				
TENSE:	PRESENT	IMPERFECT	AORIST	
FEM/SG				}
MASC/SG				
NEUT/SG				
PLURAL				
		FEM/SG		
		MASC/SG		
		NEUT/SG		
		PLURAL		
PASSIVE				

Bulgarian verbal morphology

(From Stump 2001:39)

- The inflected wordforms of 4 LEXEMES.
- LEXEME: The abstract element common among related elements.
- Morphosyntactic/ Grammatical word: The meaning associated with the lexeme (lexical) and the morphosyntactic properties (grammatical).
- Wordform: The formal realization or exponence of the grammatical word.

Table 2.2 *Indicative paradigms of four imperfective verbs in Bulgarian (Scatton 1984:211ff.)*

		KRAD 'steal'	IGRÁJ 'play'	KOVA 'forge'	DÁVA 'give'
Conjugation:		-T,+C	+T,+C	+T,-C	-T,-C
PRESENT	1SG	<i>krad-ǎ</i>	<i>igráj-ǎ</i>	<i>kov-ǎ</i>	<i>dáva-m</i>
	2SG	<i>krad-ǎ-š</i>	<i>igrá-e-š</i>	<i>kov-ǎ-š</i>	<i>dáva-š</i>
	3SG	<i>krad-ǎ</i>	<i>igrá-e</i>	<i>kov-ǎ</i>	<i>dáva</i>
	1PL	<i>krad-ǎ-m</i>	<i>igrá-e-m</i>	<i>kov-ǎ-m</i>	<i>dáva-me</i>
	2PL	<i>krad-ǎ-te</i>	<i>igrá-e-te</i>	<i>kov-ǎ-te</i>	<i>dáva-te</i>
	3PL	<i>krad-ǎt</i>	<i>igráj-ǎt</i>	<i>kov-ǎt</i>	<i>dáva-t</i>
IMPERFECT	1SG	<i>krad-'á-x</i>	<i>igrá-e-x</i>	<i>kov-'á-x</i>	<i>dáva-x</i>
	2SG	<i>krad-ǎ-š-e</i>	<i>igrá-e-š-e</i>	<i>kov-ǎ-š-e</i>	<i>dáva-š-e</i>
	3SG	<i>krad-ǎ-š-e</i>	<i>igrá-e-š-e</i>	<i>kov-ǎ-š-e</i>	<i>dáva-š-e</i>
	1PL	<i>krad-'á-x-me</i>	<i>igrá-e-x-me</i>	<i>kov-'á-x-me</i>	<i>dáva-x-me</i>
	2PL	<i>krad-'á-x-te</i>	<i>igrá-e-x-te</i>	<i>kov-'á-x-te</i>	<i>dáva-x-te</i>
	3PL	<i>krad-'á-x-a</i>	<i>igrá-e-x-a</i>	<i>kov-'á-x-a</i>	<i>dáva-x-a</i>
AORIST	1SG	<i>krád-o-x</i>	<i>igrá-x</i>	<i>ková-x</i>	<i>dáva-x,</i> <i>davá-x</i>
	2SG	<i>krád-e</i>	<i>igrá</i>	<i>ková</i>	<i>dáva, davá</i>
	3SG	<i>krád-e</i>	<i>igrá</i>	<i>ková</i>	<i>dáva, davá</i>
	1PL	<i>krád-o-x-me</i>	<i>igrá-x-me</i>	<i>ková-x-me</i>	<i>dáva-x-me,</i> <i>davá-x-me</i>
	2PL	<i>krád-o-x-te</i>	<i>igrá-x-te</i>	<i>ková-x-te</i>	<i>dáva-x-te,</i> <i>davá-x-te</i>
	3PL	<i>krád-o-x-a</i>	<i>igrá-x-a</i>	<i>ková-x-a</i>	<i>dáva-x-a,</i> <i>davá-x-a</i>

Syntagmatic & Paradigmatic

(image from Stump 2001:39)

- Syntagmatic: The linear arrangement of elements (morphotactics)
- Paradigm: The set of wordforms sharing the same lexeme; The abstracted schema for wordforms sharing the same lexeme; the selection of one wordform excludes the selection of another wordform for the relevant property set.
- Syncretism: Identity in wordform, but difference in property set.

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	3SG	<i>krad-é</i>	<i>igrá-e</i>	<i>kov-é</i>	<i>dáva</i>
	1PL	<i>krad-é-m</i>	<i>igrá-e-m</i>	<i>kov-é-m</i>	<i>dáva-me</i>
	2PL	<i>krad-é-te</i>	<i>igrá-e-te</i>	<i>kov-é-te</i>	<i>dáva-te</i>
	3PL	<i>krad-ǎt</i>	<i>igráj-ǎt</i>	<i>kov-ǎt</i>	<i>dáva-t</i>
IMPERFECT	1SG	<i>krad-'á-x</i>	<i>igrá-e-x</i>	<i>kov-'á-x</i>	<i>dáva-x</i>
	2SG	<i>krad-é-š-e</i>	<i>igrá-e-š-e</i>	<i>kov-é-š-e</i>	<i>dáva-š-e</i>
	3SG	<i>krad-é-š-e</i>	<i>igrá-e-š-e</i>	<i>kov-é-š-e</i>	<i>dáva-š-e</i>
	1PL	<i>krad-'á-x-me</i>	<i>igrá-e-x-me</i>	<i>kov-'á-x-me</i>	<i>dáva-x-me</i>
	2PL	<i>krad-'á-x-te</i>	<i>igrá-e-x-te</i>	<i>kov-'á-x-te</i>	<i>dáva-x-te</i>
	3PL	<i>krad-'á-x-a</i>	<i>igrá-e-x-a</i>	<i>kov-'á-x-a</i>	<i>dáva-x-a</i>
AORIST	1SG	<i>krád-o-x</i>	<i>igrá-x</i>	<i>ková-x</i>	<i>dáva-x.</i> <i>davá-x</i>
	2SG	<i>krád-e</i>	<i>igrá</i>	<i>ková</i>	<i>dáva, davá</i>
	3SG	<i>krád-e</i>	<i>igrá</i>	<i>ková</i>	<i>dáva, davá</i>
	1PL	<i>krád-o-x-me</i>	<i>igrá-x-me</i>	<i>ková-x-me</i>	<i>dáva-x-me,</i> <i>davá-x-me</i>
	2PL	<i>krád-o-x-te</i>	<i>igrá-x-te</i>	<i>ková-x-te</i>	<i>dáva-x-te,</i> <i>davá-x-te</i>
	3PL	<i>krád-o-x-a</i>	<i>igrá-x-a</i>	<i>ková-x-a</i>	<i>dáva-x-a,</i> <i>davá-x-a</i>

Periphrasis and inflectional paradigms

(8a)		(8b)		(8c)		
TENSE: <i>PRESENT</i>		<i>AORIST</i>		<i>IMPERFECT</i>		
POL	<i>affirmative</i>	<i>negative</i>	<i>affirmative</i>	<i>negative</i>	<i>affirmative</i>	<i>negative</i>
1SG	piša	ne piša	pisax	ne pisax	pišex	ne pišex
	,I write‘	,I don‘t write‘	,I wrote‘	,I didn‘t write‘	,I was writing‘	,I wasn‘t writing‘
2SG	pišeš	ne pišeš	pisa	ne pisa	pišeše	ne pišeše
3SG	piše	ne piše	pisa	ne pisa	pišeše	ne pišeše
1PL	pišem	ne pišem	pisaxme	ne pisaxme	pišexme	ne pišexme
2PL	pišete	ne пишete	pisaxte	ne pisaxte	pišexte	ne pišexte
3PL	pišat	ne pišat	pisaxa	ne pisaxa	pišexa	ne pišexa

(12a) TENSE: *FUTURE PERFECT*

POL *affirmative*

1.	2.
1SG šte sām pīsal	šte bāda pīsal
,I will have written‘	,I will have written‘
2SG šte si pīsal	šte bādeš pīsal
3SG šte e pīsal	šte bāde pīsal
1PL šte sme pīsali	šte bādem pīsali
2PL šte ste pīsali	šte bādete pīsali
3PL šte sa pīsali	šte bādat pīsali

(12b)

POL *negative*

1.	2.	3.	4.
1SG ne šte sām pīsal	njama da sām pīsal	ne šte bāda pīsal	njama da bāda pīsal
,I won‘t have written‘	,I won‘t have written‘	,I won‘t have written‘	,I won‘t have written‘
2SG ne šte si pīsal	njama da si pīsal	ne šte bādeš pīsal	njama da bādeš pīsal
3SG ne šte e pīsal	njama da e pīsal	ne šte bāde pīsal	njama da bāde pīsal
1PL ne šte sme pīsali	njama da sme pīsali	ne šte bādem pīsali	njama da bādem pīsali
2PL ne šte ste pīsali	najma da ste pīsali	ne šte bādete pīsali	njama da bādete pīsali
3PL ne šte sa pīsali	njama da sa pīsali	ne šte bādat pīsali	njama da bādat pīsali

Composing wholes from pieces doesn't always work

Udmurt imperfective past tense

sg.	1	mīno 'I will go'
	2	mīnod
	3	mīnoz
pl.	1	mīnom(i)
	2	mīnodī
	3	mīnozī

TABLE 4. Affirmative future-tense realizations of Udmurt MĪNI 'go'
[data from Csúcs (1988:142)]

Realized by the periphrastic combination of a future-tense form (inflected for subject agreement) with the invariant past form **val** of the copula

sg.	1	mīno val 'I used to go (long ago)'
	2	mīnod val
	3	mīnoz val
pl.	1	mīnom(i) val
	2	mīnodī val
	3	mīnozī val

TABLE 3. Affirmative imperfective past-tense realizations of Udmurt MĪNI 'go'
[data from Suihkonen 1995:302²²]

Inflection: Distributed exponence

Hungarian: Ackerman 1987 (from Kálmán et. al. 1984)

a holló énekel/énekelt egy dalt a rókának
the raven sing.3sg/sing.3sg.past a song.acc the fox.dat
'the raven is singing/was singing a song to the fox.'

a holló énekelhet egy dalt a rókának
the raven sing.mod.3sg a song.acc the fox.dat
'the raven can sing a song to the fox.'

Numeral classifiers in Malto (North Dravidian)

a holló énekelni fog egy dalt a rókának
the raven sing.inf. will.3sg a song.acc the fox.dat
'the raven will sing a song to the fox'

a hollónak énekelnie kellett egy dalt a rókának
the raven.dat sing.inf.3sg must.past a song.dat the fox.dat
'the raven had to sing a song to the fox'

Inflection: Periphrasis in paradigms

TABLE 20. Declension of *ti* 'reindeer' in Tundra Nenets
(Data from Salminen 1997)

		Singular	Dual	Plural
Grammatical cases	Nominative	<i>ti</i>	<i>tex^oh</i>	<i>tiq</i>
	Accusative	<i>tim</i>	<i>tex^oh</i>	<i>tí</i>
	Genitive	<i>tih</i>	<i>tex^oh</i>	<i>tíq</i>
Local cases	Dative	<i>ten^oh</i>	<i>tex^oh nyah</i>	<i>tex^oq</i>
	Locative	<i>tex^ona</i>	<i>tex^oh nyana</i>	<i>tex^oqna</i>
	Ablative	<i>tex^od^o</i>	<i>tex^oh nyad^o</i>	<i>tex^ot^o</i>
	Prosecutive	<i>tew^ona</i>	<i>tex^oh nyamna</i>	<i>teqm^ona</i>

- Note the relation between morphosyntactic markedness and surface realization: the most marked morphosyntactic values for the number and case categories, i.e., dual and local cases, are expressed periphrastically.
- If periphrasis were not a possible form of expression within morphological paradigms, how would this evident relation between content and form be captured transparently and simply?

Numeral classifiers in Malto (North Dravidian)

TABLE 1. Malto numeral classifiers

Classifier	Reference of associated noun class	Examples
<i>jen</i>	humans	<i>t̄ini jen maler</i> 'three men' <i>t̄ini jen qalwer</i> 'three thieves'
<i>maq</i>	animate nonhumans	<i>t̄ini maq goṛo</i> 'three horses' <i>t̄ini maq puḃdu</i> 'three birds' <i>t̄ini maq būte</i> 'three ghosts'
<i>ḃara</i>	long, large objects	<i>t̄ini ḃara qeḃdu</i> 'three legs' <i>t̄ini ḃara nadi</i> 'three rivers'
<i>kaṭi</i>	long, small objects	<i>t̄ini kaṭi tāli</i> 'three hairs' <i>t̄ini kaṭi cabi</i> 'three keys'
<i>panda</i>	long, flexible objects	<i>t̄ini panda dawṛa</i> 'three ropes' <i>t̄ini panda pāwdu</i> 'three roads'
<i>paṛa</i>	long pods/fruits	<i>t̄ini paṛa kalḃi</i> 'three bananas' <i>t̄ini paṛa simbi</i> 'three string beans'
<i>paṭa</i>	flat, broad objects	<i>t̄ini paṭa baḃli</i> 'three clouds' <i>t̄ini paṭa taṛte</i> 'three tongues'
<i>pata</i>	flat, broad, thin objects	<i>t̄ini pata āṭye</i> 'three leaves' <i>t̄ini pata ciṭi</i> 'three letters'
<i>kaṇḃa</i>	flat, broad, cotton objects	<i>t̄ini kaṇḃa komle</i> 'three blankets' <i>t̄ini kaṇḃa moja</i> 'three socks'
<i>goṭ</i>	round, heavy objects and miscellaneous objects	<i>t̄ini goṭ qāndu</i> 'three eyes' <i>t̄ini goṭ caku</i> 'three wheels' <i>t̄ini goṭ tumḃḃu</i> 'three dreams'
<i>pula</i>	round, light objects	<i>t̄ini pula pūpdu</i> 'three flowers' <i>t̄ini pula oṣdu</i> 'three mushrooms'
Repeaters:		
<i>qep</i>	'village'	<i>t̄ini qep qep-du</i> 'three villages'
<i>man</i>	'tree'	<i>t̄ini man mandu</i> 'three trees'
<i>kīṛ</i>	'grass'	<i>t̄ini kīṛ kīṛdu</i> 'three (blades of) grass'
<i>kaṛi</i>	'hole, den, cave'	<i>t̄ini kaṛi kaṛi</i> 'three holes'
<i>kuji</i>	'shadow, reflection'	<i>t̄ini kuji kuji</i> 'three shadows'

Numeral classifiers in Malto (North Dravidian)

The basic constraint: A noun phrase consists of a noun and a numeral phrase and the numeral phrase must exhibit a classifier

(1) NP → NumP N'
[NOUN CLASS: α] [NOUN CLASS: α] [NOUN CLASS: α]

- The periphrastic pattern:

(2) NumP → Num Classifier
[NOUN CLASS: α] [NOUN CLASS: α]

(3) a. *tīni jen maler* b. *tīni maq ōydu*
three CLASSIFIER men three CLASSIFIER cow
'three men' 'three cows'

5. But, no periphrasis with 1 and 2:

(4) a. **eike maq ōydu* b. **dūye maq ōydu*
one CLASSIFIER cow two CLASSIFIER cow
'one cow' 'two cows'

Numeral classifiers in Malto (North Dravidian)

A synthetic pattern:

(5)		NumP	→	Num		
		[NOUN CLASS: α]		[NOUN CLASS: α]		
(6)	a.	<i>maq-ond</i>	<i>ōydu</i>	b.	<i>maq-s</i>	<i>ōydu</i>
		CLASSIFIER-one	cow		CLASSIFIER-two	cow
		'one cow'			'two cows'	

Another synthetic pattern: 1 or 2 humans

(7)	a.	<i>*eike jen</i>	<i>maleh</i>	b.	<i>*dūye jen</i>	<i>maler</i>
		one CLASSIFIER	man		two CLASSIFIER	men
		'one man'			'two men'	
(8)	a.	<i>*jen-ond</i>	<i>maleh</i>	b.	<i>*jen-s</i>	<i>maler</i>
		CLASSIFIER-one	man		CLASSIFIER-one	men
		'one man'			'two men'	
(9)	a.	<i>ort</i>	<i>maleh</i>	b.	<i>irw</i>	<i>maler</i>
		CLASSIFIER:one	man		CLASSIFIER:two	men
		'one man'			'two men'	

Representations and Summary

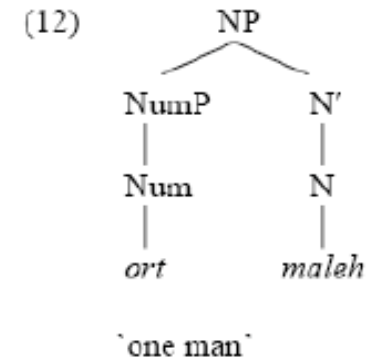
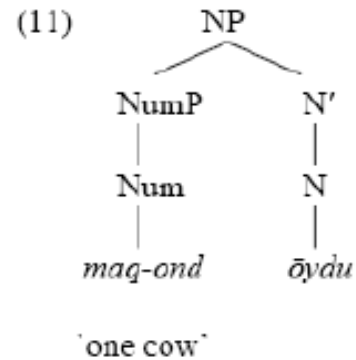
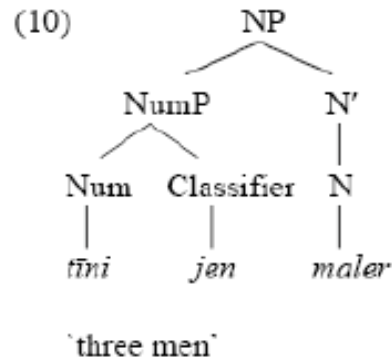


TABLE 2. Use of Malto numerals and classifiers in references to quantities of various types

NOUN CLASS	NUMERAL CLASSIFIER	The theoretical challenge		
		QUANTITY		
		1	2	3 or more
<i>jen</i> class (= nouns with human reference)	<i>jen</i>	Portmanteau form: <i>ort</i>	Portmanteau form: <i>irw</i>	Analytic combination of numeral + classifier
<i>maq</i> class (= nouns with animate nonhuman reference)	<i>maq</i>	Bound numeral stem <i>-ond</i> with classifier's prefixal form	Bound numeral stem <i>-s</i> with classifier's prefixal form	
<i>ḍaṛa</i> class (= nouns referring to long, large objects)	<i>ḍaṛa</i>			
etc.	etc.			

The theoretical challenge

- Can one define a single mechanism/principle that can relate different types/degrees of synthetic expression with periphrastic expression?
- The default realization of a lexeme and its morphosyntactic property set is periphrasis and this occurs unless there is a “rule” (pattern) which specifies that some value(s) for some morphosyntactic property must be realized in a particular way and where the content cells with the most highly specified values “block” the type of realization associated with a less specified cell.

Realization rules for Malto numeral inflection (realizational approach)

Rule:	The realization of $\langle Y, \sigma \rangle$ is:	Conditions:
a.	“Y X”, where X is the σ -classifier.	$\langle Y, \sigma \rangle$ is a cell in a Numeral paradigm.
b.	<i>Xond</i> , where X is the σ -classifier's prefixal form.	$\langle Y, \sigma \rangle$ is a cell in a Numeral paradigm; Y is <i>eike</i> .
c.	<i>Xs</i> , where X is the σ -classifier's prefixal form.	$\langle Y, \sigma \rangle$ is a cell in a Numeral paradigm; Y is <i>diŋw</i> .
d.	<i>ort</i> .	$\langle Y, \sigma \rangle$ is a cell in a Numeral paradigm; Y is <i>eike</i> ; σ is {NOUN CLASS:jen}.
e.	<i>irw</i> .	$\langle Y, \sigma \rangle$ is a cell in a Numeral paradigm; Y is <i>diŋw</i> ; σ is {NOUN CLASS:jen}.

Interaction of (regular) inflection with derivation

- Since, by hypothesis within the generative tradition, words with regular inflection are not stored in the lexicon and inflection occurs external to derivation, this should have consequences for how inflection interacts with derivation.
- In the **weak lexicalist hypothesis** all irregular inflection and derivation occur in the lexicon, while regular inflection occurs in the syntax: there is a split concerning the domains in which morphology occurs.
- In the **strong lexicalist hypothesis** all morphology occurs in the lexicon.

Lexical Integrity Hypothesis

- For many structuralists (e.g., Hockett), syntax was simply extended above the word.
- For many generativists (e.g., early Chomsky), morphology was simply syntax below the word.
- Lexicalist theories (Head Driven Phrase Structure Grammar, Lexical Functional Grammar) divide morphology and syntax into two distinct modules, each with its own primitives, objects, rules, etc. (Oddly even lexicalist theories are generally morpheme based.)
- **Lexical Integrity Hypothesis**
Words are syntactic atoms, i.e., pieces of words cannot be manipulated by syntactic operations and cannot be accessible to elements outside of the word.

Lexical integrity

Mari case forms (Luutonen 1997:46): DATIVE more analytic than GENITIVE/ACCUSATIVE more analytic than LOCAL CASES:

DAT > GENITIVE/ACCUSATIVE > LOCAL CASES

1. poškuđo den joltaš-lan təʋe ojləšə̃m
neighbor and friend-DAT so say-PAST-1SG
'I said so to the neighbor and friend'
2. ? škol đa klub-ən βujlatəšə̃št poyə̃neət
school and club-GEN leaders assembled
'the leaders of the school and club assembled'
3. * škol đa klub-əško pörjen-šamə̃č tolət
school and club-ILL men came
'the men came to school and club'

Lexical integrity

- Anaphoric islands

Kim baby_ksat last night. It was very cut_k.

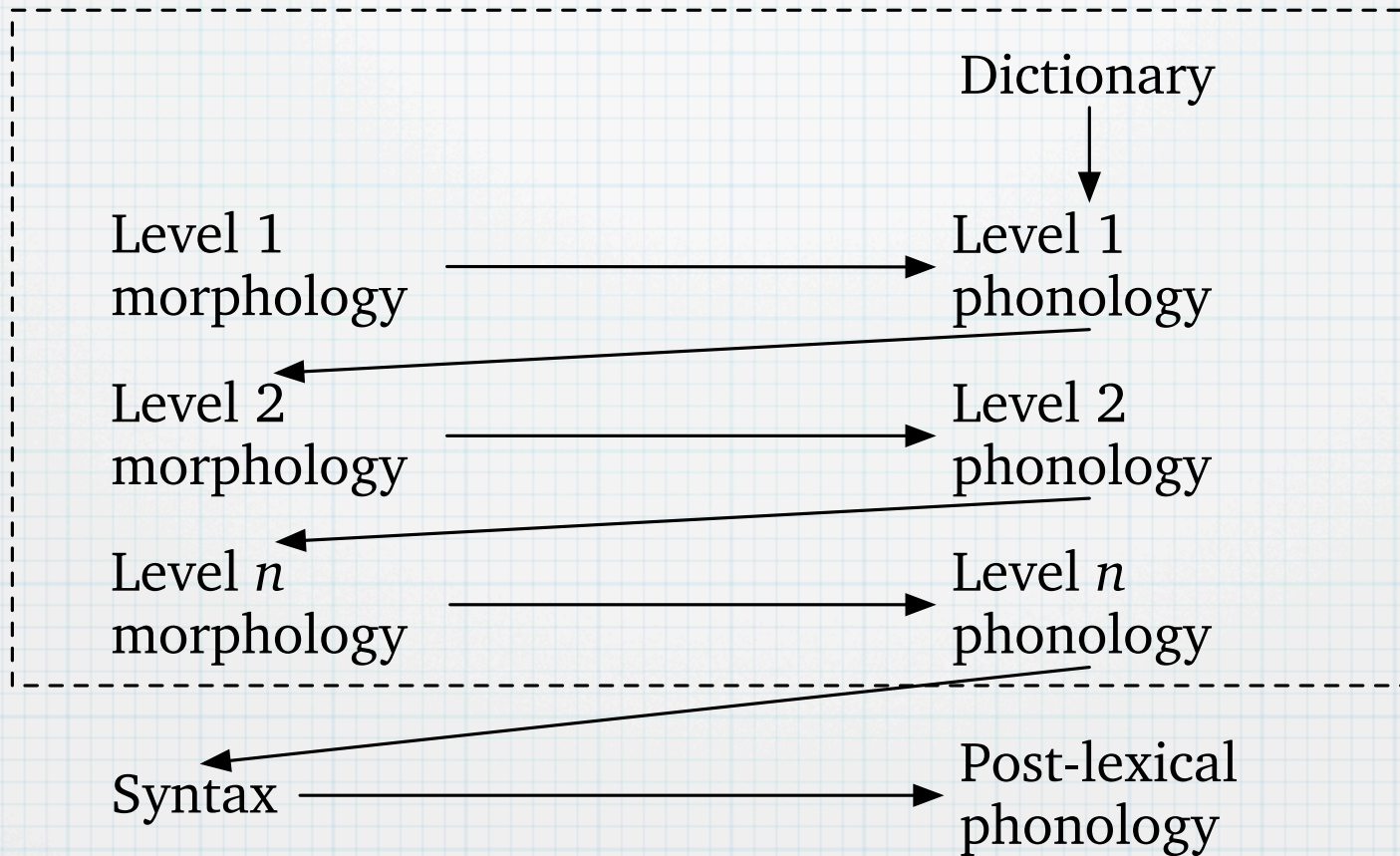
Even the staunchest Nixon_kite eventually had to repudiate him_k.

Lexical Phonology

- The lexicon is organized into levels for the creation of complex wordforms.
- Each level has its own morphological and phonological operations.
- (Sets of) affixes or other morphological operations are assigned to specific levels and after morphological rules have applied the form created by them is submitted to the phonological operations associated with that level.
- In this way, each earlier level in the lexicon feeds subsequent levels and one arrives at fully inflected and derived words (outfitted with all the relevant phonological adjustments.
- After the lexical component does its job, postlexical operations deal with e.g., clitics.

Lexical Phonology: Level ordering

LEXICON



Level ordering

- English

Level 1: integrated affixes (cohering), irregular inflection, V-N conversion

Level 2: neutral affixes, compounding, N-V conversion

Level 3: regular inflection

Post-lexical: clitics, external sandhi, i.e., across words.

- Generally, the lower the level, the less regular and productive the operations.
- Hypothesis is that all languages are organized similarly into levels, though they naturally differ with respect to how many and what is contained in each.

Lexical phonology

- Different kinds of derived environments trigger different phonological rules
- Phonological processes distinguish two types of rules:
 - Type 1: -ity, in-, -ical, -ion, -ian, -al, -y, -ous, ive
 - Type 2: -ness, un-, -ly, re-, -ize, -able, -ful, -y, -ism
- Primary vs. secondary, cohering vs. non-cohering, integrated vs. neutral

Lexical phonology

- Class 1 affixes triggers stress shift, class 2 doesn't

Class 1

réal réalité
cómedy comédian
pseúdonym pseudónymy

Class 2

nátural náturalness
accómpany accómpaniable
bóunty bóuntiful

- Class 1 affixes trigger assimilation, class 2 doesn't

Class 1: intolerable, impossible, illegal, irregular

Class 2: untenable, unpardonable, unlawful, unreal

Lexical phonology

- Type 1 affixes can apply to stems, while Type 2 affixes apply to words

submit, deduce, friction

rewash, subhuman, kindness

- Type 1 affixes occur inside Type 2 affixes

*hopefulness

*unfriendly

*kindnesses

naturalness

unproductive

Rastafarianism

- Level Ordering hypothesis (Kiparsky 1982)

Level ordering

- English stress depends on category
 - Verbs have stress on the last syllable

usúrp, cavórt

- Nouns have stress on the second-to-last syllable

cárrót, dónkey

- V to N conversion: Level 1, since it alters stress assignment

tormént_V → tórment_N

recórd_V → récord_N

- N to V conversion: Level 2, since it doesn't alter stress

páttérn_N → páttérn_V (*pattérn_V)

Level ordering

- According to stress assignment:
 - V to N conversion is at level 1
 - N to V conversion is at level 2
- N to V conversion is much more productive than V to N conversion (“verbing weirds language”)
- Given that N to V conversion is level 2, it will always have regular inflection, since, by hypothesis, retreating to a lower level is prohibited and inflection, therefore, can only be on level 3.

Basic verbs ending in *-ing/-ink* are usually irregular, but not if derived from a noun

fling/flung, sting/stung, wring/wrung, ring/rang, sing/sang
ring/ringed, wing/winged, ink/inked

Level ordering

- Noun compounds can become verbs at level 2, since both noun compounds and N-V are on level 2.

to grandstand, to wallpaper, to snowball

- Verb compounds can't become nouns, since that occurs at level 1: *an aircondition, *a stagemanage
- Regular vs. irregular inflection

grandstanded	withstood	
stand _V → stand _N	stand _V → stood _V	1
grand + stand _N	with + stood _V	2
grandstand _N → grandstand _V		2
grandstand _V + ed → grandstanded		3

Level ordering

- Lexical phonology accounts for many facts about English morphology
- Irregular (but not regular) inflection occurs inside compounds

mice infested, *rats infested

teethmarks, *nailsmarks

- Endocentric compounds take irregular inflection, but not exocentric compounds

milk teeth, *saberteeth

field mice, *Mickey mice, ?computer mice

Mice

Wired Style: Principles of English Usage in the Digital Age (ed. Constance Hale, HardWired, 1996) says: “What’s the plural of that small, rolling pointing device invented by Douglas Engelbart in 1964? We prefer *mouses*. *Mice* is just too suggestive of furry little creatures. But both terms are common, so take your pick. We actually emailed Engelbart to see what he’d say. His answer? ‘Haven’t given the matter much thought.’

The Microsoft(R) Manual of Style for Technical Publications (ed. Amanda Clark, Microsoft Press, 1995) says: “Avoid using the plural *mice*; if you need to refer to more than one mouse, use *mouse devices*.”

<i>computer mice</i>	458,000
<i>computer mouses</i>	44,000