

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 mor-iksel'i-t'
 - sing-des-past-1sg sing-des-past-2sg
 - 'I wanted to sing'
sing 'you wanted to
 - (Erzya Mordvin)

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	Inflection
1. Encodes lexical meaning	Encodes grammatical
2. Not syntactically relevant	Syntactically relevant
3. Occurs close to the root & derivation	Occurs outside all
inside other derivation	
4. Often changes lexical category	Does not change lexical category
5. Often semantically opaque	Usually semantically obvious
6. Often shows restricted productivity	Fully productive
7. Optional	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-antidisestablishmentarianisticity
 - pseudo-anti-antidisestablishmentarianisticity
- Repeated morphs:
 - English: industrializational
 - German: Einheitlichkeit 'unitarity'
 - Dutch: kleurloosheidloos 'without colorlessness'
 - Italian: storicistico 'historicistic'

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 1.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 identify the 'right' structure of words with the same morphosyntactic feature values
- Constructs complex words from small, meaningful bits
- Avoids 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-iamo	parl-i	parl-iamo	1 parl-a-v-o	parl-a-va-ri:o
2 parl-i	parl-a-te	parl-i	parl-i-ate	2 parl-a-v-i	parl-a-va-te
3 parl-a	parl-a-ro	parl-i	parl-i-no	3 parl-a-v-a	parl-a-va-no

a	va	o
i	∅	i
∅		a
		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 `1sg' [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 -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, the 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 O1:

- 1 O1
- 2 $T \vdash O1$ [T entails O]
- 3 T

Confirmation of theory T via prediction of observation O2:

- 1 $T \vdash O2$ [new prediction]
- 2 O2 [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 ($= T \vdash O1$), 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 O1 & O2
- 2 $T \vdash O1 \sim O2$
- 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

Partial Latin Paradigm

	Present Indicative		Future Indicative		
	Active	Passive	Active	Passive	
1st Person					
Singular	porto	portor	portabo	portabor	carry
Plural	portamus	portamur	portabimus	portabimur	
Singular	duco	ducor	ducam	ducar	lead
Plural	ducimus	ducimur	ducemus	ducemur	

- How many dimensions/properties does any one form have?
- What are the minimal number of contrasts needed to acquire these 16 forms via abductive analogy? [Hint: consider each set of active/singular; passive/singular; active/plural; passive plural, etc.]
- How many distinct suffixes are needed to acquire all the forms?