

Determinants of Affix Order

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Systematicity of Affix Order: Albanian

	Present	Imperfect	Aorist
1sg	puno- \emptyset -j	puno- j -a	puno- v -a
2sg	puno- \emptyset -n	puno- j -e	puno- v -e
3sg	puno- \emptyset -n	puno- n -te	puno- \emptyset -i
1pl	puno- \emptyset -jmë	puno- n -im	punua- \emptyset -m
1pl	puno- \emptyset -ni	puno- n -it	punua- \emptyset -t
3pl	puno- \emptyset -jnë	puno- n -in	punua- \emptyset -n

Verb	Tense	Person/Number
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Conceivable Orders

puno	j	a
puno	a	j
a	puno	j
a	j	puno
j	a	puno
j	puno	a

→ Why is affix order systematic?

Theories on Affix Order

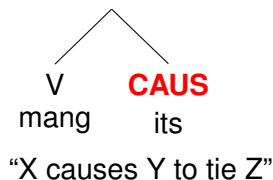
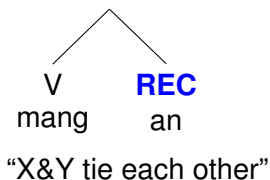
- ▶ MirrorTheory (Baker, 1985,1988; Rice, 2000)
- ▶ Onion Theory (Bybee, 1985; Wunderlich & Fabri, 1994)
- ▶ Left-Right-Theory (Hawkins et al., 1985,1988)
- ▶ Combined Theories
 - ▶ Julien (2000)
 - ▶ Trommer (2003,2008)

Mirror Theory (Baker, 1985,1988; Rice, 2000)

Affix Order reflects semantic composition

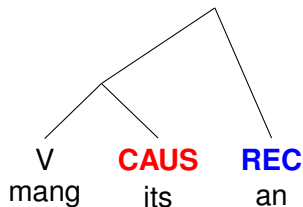
(syntactic structure)

Mirror Theory: Causative & Reciprocal in Chichewa

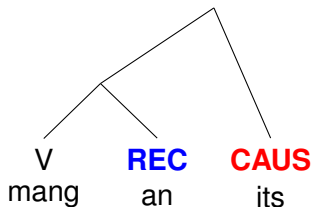


(Hyman, 2003)

Mirror Theory: Causative & Reciprocal in Chichewa



“X&Y cause each other to tie Z ”



“X causes Y&Z to tie each other”

(Hyman, 2003)

Problems: Causative & Applicative in Chichewa

alenjé a-ku-líl-**íts-il**-a mwaná ndodo
 hunters 3pl-PROGR-cry-CAUS-APPL-a child sticks
 “The hunters are making the child cry with sticks”

alenjé a-ku-tákás-**íts-il**-a mkází mthíko
 hunters 3pl-PROGR-stir-CAUS-APPL-a woman spoon
 “The hunters are making the woman stir with a spoon”

(Hyman, 2003)

→ Affix Order constant despite semantic difference

Evidence for Mirror Theory

- ▶ Intuitive
- ▶ Analogous to syntax
- ▶ Prima facie evidence

Problems with Mirror Theory

- ▶ Predictions difficult to test typologically
- ▶ Semantic compositionality often unclear
- ▶ No predictions for prefixation/suffixation
- ▶ Templatic restrictions on affix order

Onion Theory (Bybee, 1985; Wunderlich & Fabri, 1994)

Person \succ Number \succ Tense \succ Aspect (\succ Verb)

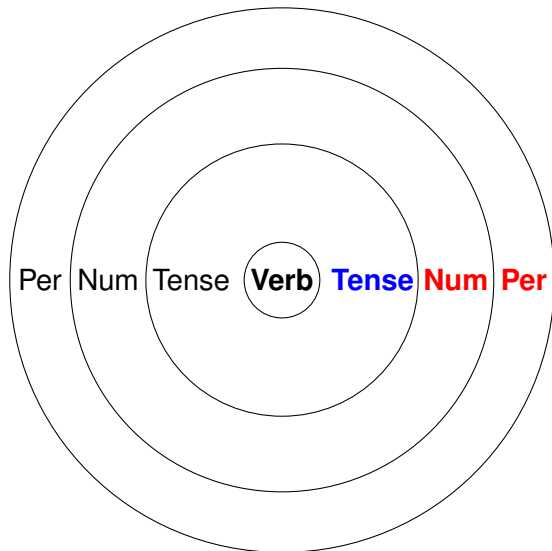
The order of affixes must conform to the hierarchy, i.e. no affix can be attached if it expresses a category that is lower ranked than any of those already instantiated. (Wunderlich & Fabri, 1994: 247/249)

Onion Theory



Onion Theory and Albanian

puno **j** **a**



Motivation for Onion Theory

“If there is a correspondence between what can be derivational or lexical and its relevance for the root meaning, then we might also expect the degree of relevance in general to predict the order of occurrence of morphemes with respect to a root or stem.” (Bybee, 1985:33)

Typological Evidence for Onion Theory

Sample: 50 Languages

closer to stem than		✓	*	Sum
Aspect	Tense	8	0	18
Aspect	Mood	10	0	23
Aspect	Person	12	1	21
Tense	Mood	8	1	20
Tense	Person	8	1	17
Mood	Person	13	5	26

(Bybee, 1985)

Problems with Onion Theory

- ▶ No predictions for prefixation/suffixation
- ▶ Results potentially skewed by largely suffixing sample

Equivalent Hypotheses:

- ▶ Tense is outside of aspect
- ▶ Tense is on the right of aspect

Left-Right Theory (Hawkins et al., 1985,1988)

Prefixation vs. suffixation follows 2 principles:

- ▶ General preference for suffixing due to processing ease
- ▶ Homogeneity of morphology and syntax

Affixation Preferences

- ▶ Suffixes are more frequent than prefixes

- ▶ Prefixes are more frequent than infixes

(Greenberg, 1966)

Greenberg's Language Sample

Languages with...

only prefixes	only suffixes	both
1	12	17

→ Clear preference for suffixing

More Affixation Preferences

- ▶ Case affixes are always suffixes
- ▶ Valence affixes
are suffixes with more than chance frequency
- ▶ Object agreement affixes
are prefixed with more than chance frequency
- ▶ If a language has prefixes on nouns
it will also have prefixes on verbs

(Hawkins et al., 1985)

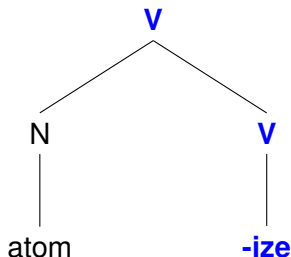
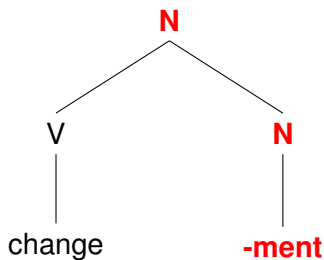
The Suffix Preference: Explanation I

- ▶ Stems are important for processing
- ▶ Left edges of words are important for processing
- Stems tend to occur at left edges of words
- Affixes tend to occur at right edges of words

(Hawkins et al., 1985)

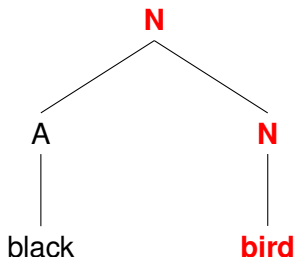
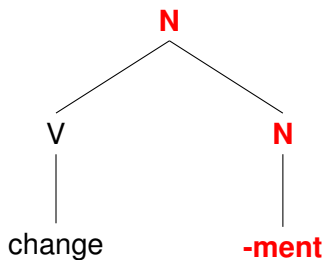
The Suffix Preference: Explanation II

Righthand Head Rule: Morphological heads are on the right
(Williams, 1981)

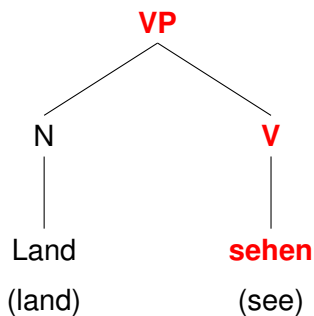
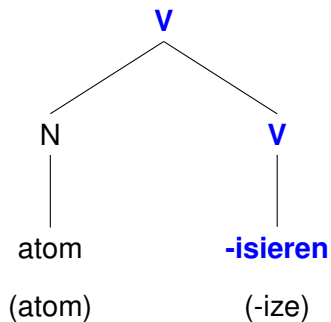


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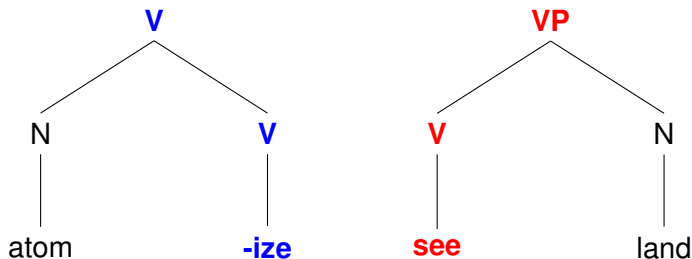


Syntactic und morphological heads: German



- Syntactic & morphological heads
on the **same** side of the complement

Syntactic und morphological heads: English



- Syntactic & morphological heads
on **opposite** sides of the complement

The Head Ordering Principle

The affixal head of a word
is ordered on the same side of its base
as the verb relative to its direct object
(as adpositions relative to their complements)

Possible Motivation for the Head Ordering Principle (I)

Syntax and Morphology are essentially

the same grammatical subsystem (Julien, 2000)

Possible Motivation for the Head Ordering Principle (II)

Morphology is fossilized syntax:

Postpositional (prepositional) function words

grammaticalize into postpositional (prepositional) affixes

(Bybee, et al., 1990)

Evidence for the Head Ordering Principle

Greenberg's Sample **according to word order types:**

Word Order	only prefixes	only suffixes	both
Verb Object	1	16	2
Object Verb	0	1	10

	Affix-Stem	Stem-Affix
VO	✓	✓
OV	*	✓

Evidence for the Head Ordering Principle





	Affix-Stem	Stem-Affix
V O	✓	✓
O V	*	✓

Morphology

Syntax

	Head left	Head right
Head left	✓	✓
Head right	*	✓

Head Ordering Principle and Suffix Preference

	Head Ordering Principle	Suffix Preference	
 OV + Suffixes	✓	✓	16
 VO + Suffixes	*	✓	1
 VO + prefixes	✓	*	1
 OV + prefixes	*	*	0

Problems with the Left-Right Theory

- ▶ No restrictions on relative distance of affixes to stems
- ▶ no restrictions on the order of affixes on different sides of a stem
- ▶ Agreement (cf. object agreement)

Julien (2000) on Tense and Aspect

- ▶ If Tense and Aspect are on the **same** side of the verb, aspect is closer to the stem
- ▶ If Tense and Aspect are on **different** sides of the verb, the order is Tense Verb Aspect

	both prefixes	mixed	both Suffixes
T > A	Tense Aspect Verb	Tense Verb Aspect	*Verb Tense Aspect
A > T	*Aspect Tense Verb	*Aspect Verb Tense	Verb Aspect Tense

Syntactic Explanation

Base Configuration

Tense

Aspect

Verb

Head Movement 1

Tense

[Verb Aspect]

~~Verb~~

Head Movement 2

[[Verb Aspect] Tense]

~~[Verb Aspect]~~~~Verb~~

Problems with Julien (2000)

“The order appears crosslinguistically invariant. The limited cases of apparent variation all seem to involve agreement and negation . . .” (Cinque, 1999:127)

“. . . there is one inflectional category which does not so easily fit into the . . . rigid framework that syntactic analyses provide. This category is agreement. (Julien, 2000:359)

Trommer (2003,2008) on Subject Agreement

Subject Agreement follows 3 preferences:

- ▶ Person → left
- ▶ Number → right
- ▶ Agreement → Tense

Split Agreement

Georgian (Carmack, 1997:315)

<i>v-xedav</i>	<i>v-xedav-t</i>	<i>xedav-s</i>	<i>xedav-en</i>
S1-see	S1-see-PL	see-S3s	see-S3p
‘I see’	‘we see’	‘he sees’	‘they see’

Amharic (Leslau, 1995:301)

<i>yə-säbr</i>	<i>yə-säbr-u</i>	<i>ə-säbər</i>	<i>ənnə-säbər</i>
S3-break	S3-break-SPI	S1-break	S1p-break
‘he breaks’	‘they break’	‘I break’	‘we break’

Observations

- ▶ Person Agreement is left-peripheral
- ▶ Number Agreement ist right-peripheral
- ▶ [Person+Number]-Agreement varies according to language

OT-Analysis

- ▶ Person Agreement should be as leftwards as possible
 $L \leftrightarrow \text{PER}$
- ▶ Number Agreement should be as rightwards as possible
 $\text{NUM} \leftrightarrow R$

Split Person/Number Agreement

		L ⇄ PER	NUM ⇄ R
✌	P > V > N		
☞	P > N > V		*
☞	V > P > N	*	
☛	N > P > V	**	*
☛	V > N > P	*	**
†	N > V > P	**	**

[Person+Number] Agreement

Ranking1 (Amharic)

	L ↔ PER	NUM ↔ R
☞ PN > V		*
V > PN	*!	

Ranking2 (Georgian)

	NUM ↔ R	L ↔ PER
PN > V		*
☞ V > PN	*!	

Typological Evidence (different patterns from 58 languages)

	both prefix		both suffix		mixed		all	
P > N	9	90.0%	22	73.3%	39	97.5%	70	87.5%
N > P	1	10.0%	8	26.7%	1	2.5%	10	12.5%
sum	10		30		40		80	

	both prefixes	mixed	both suffixes
P > N	Person Number V	Person V Number	V Person Number
N > P	*Number Person V	*Number V Person	*V Number Person

(cf. also Cysouw, 2006)

REFLECT(AGR)

An affix realizing an agreement category A should reflect the position of its host H by

- a. being right-adjacent to an affix realizing H , or by
- b. occupying the position of H , if H is not realized

Typological Evidence: Order of AgrS and Tense

	T Suffix		T prefix		all	
Agr conform	52	66.7%	23	74.2%	78	69.6%
Agr not conform	26	33.3%	8	25.8%	34	30.4%
sum	78		31		112	

→ Clear preference for conformity

Order of AgrS and Tense: Prefixes

	My results	Julien's evaluation	Julien's data
T > A	15 62.5%	9 39.1%	17 47.2%
A > T	9 37.5%	14 60.9%	19 52.8%
sum	24	23	36

- ▶ both orders well documented
- ▶ If T is a prefix,
REFLECT favors T A V,
and L ⇔ PER favors A T V

Order of AgrS and Tense: Suffixes

	My results	Julien's data
T > A	44 84.6%	64 80%
A > T	8 15.4%	16 20%
sum	52	80

- ▶ Clear preference for V > T > A
- ▶ REFLECT **and** NUM ⇔ R favor the same order

The Systematicity of Affix Order: Albanian

	Present	Imperfect	Aorist
1sg	puno- \emptyset -j	puno-j-a	puno-v-a
2sg	puno- \emptyset -n	puno-j-e	puno-v-e
3sg	puno- \emptyset -n	puno-n-te	puno- \emptyset -i
1pl	puno- \emptyset -jmë	puno-n-im	punua- \emptyset -m
1pl	puno- \emptyset -ni	puno-n-it	punua- \emptyset -t
3pl	puno- \emptyset -jnë	puno-n-in	punua- \emptyset -n

Verb	Tense	Person/Number
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Construction Sites

- ▶ Combination of affixation and distance preferences
- ▶ Integration of syntactic and morphological factors
- ▶ Phonological factors
(Noyer, 1994; Paster, 2005)
- ▶ Affix Order with nouns

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