

Morphological description and the algebra of morphotactics

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The micromorphology hypothesis

In the most adequate description of a language's morphology, an affix may be morphologically complex, i.e. a combination of other affixes.

- A. The micromorphology hypothesis
- B. Affix composition
- C. Some explanations and interpretations
 - i. Anomalies in the sequence of affixes
 - ii. Anomalies of nonmonotonicity
 - iii. Parallelisms between single affixes and sequences of affixes
- D. Conclusion

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Examples

Arnott, D. W. 1970. *The nominal and verbal systems of Fula*. Oxford: Oxford University Press.

Ashton, E. O. 1944. *Swahili grammar*. Essex: Longman.

Soukka, Maria. 2000. *A descriptive grammar of Noon: A Cangin language of Senegal*. Munich: LINCOM Europa.

etc.

The micromorphology hypothesis

In the most adequate description of a language's morphology, an affix may be morphologically complex, i.e. a combination of other affixes.

By contrast, theories of morphology generally fail to accommodate the micromorphology hypothesis.

The micromorphology hypothesis

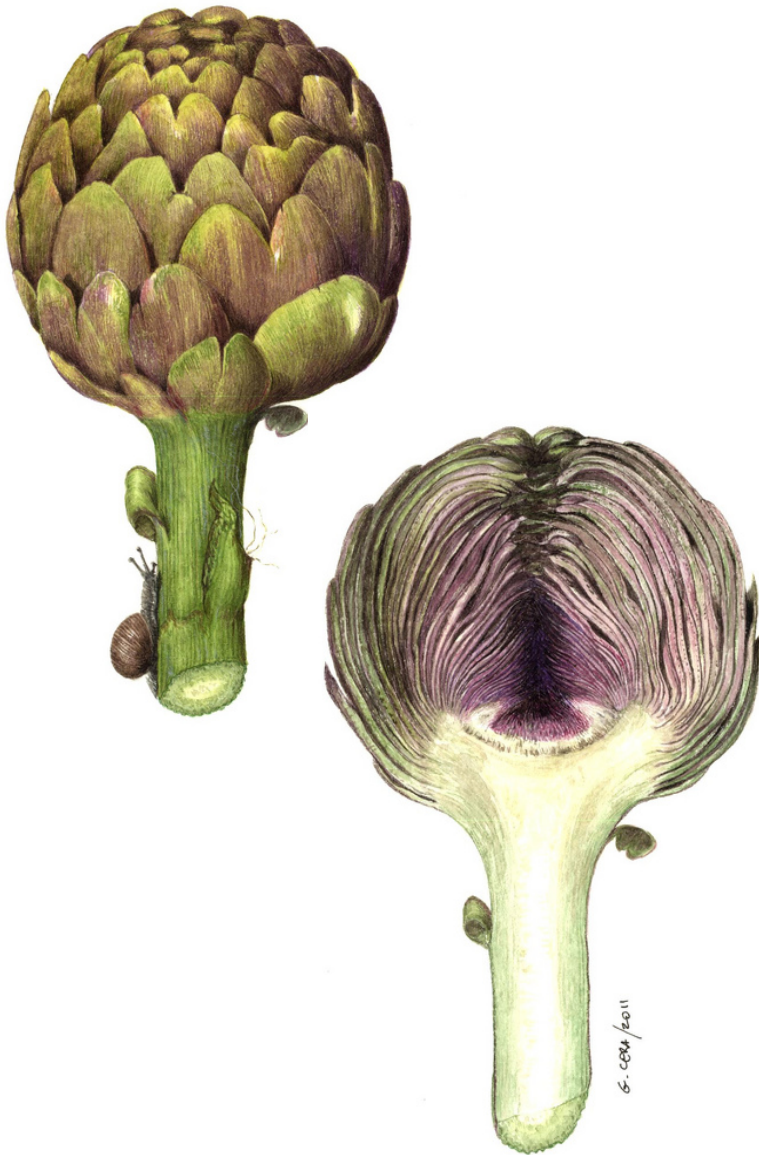
In the most adequate description of a language's morphology, an affix may be morphologically complex, i.e. a combination of other affixes.

By contrast, theories of morphology generally fail to accommodate the micromorphology hypothesis.

Rare exceptions

Bochner, Harry. 1992. *Simplicity in generative morphology*. Berlin: Mouton de Gruyter.

Luís, Ana, & Andrew Spencer. 2005. A paradigm function account of 'mesocclisis' in European Portuguese. In G. Booij & J. van Marle (eds.), *Yearbook of Morphology 2004*, 177-228. Dordrecht: Springer.



Morphological theories tend to regard affixed word forms as having an artichoke-like structure consisting of a stem that hosts successive, progressively peripheral layers of affixes:

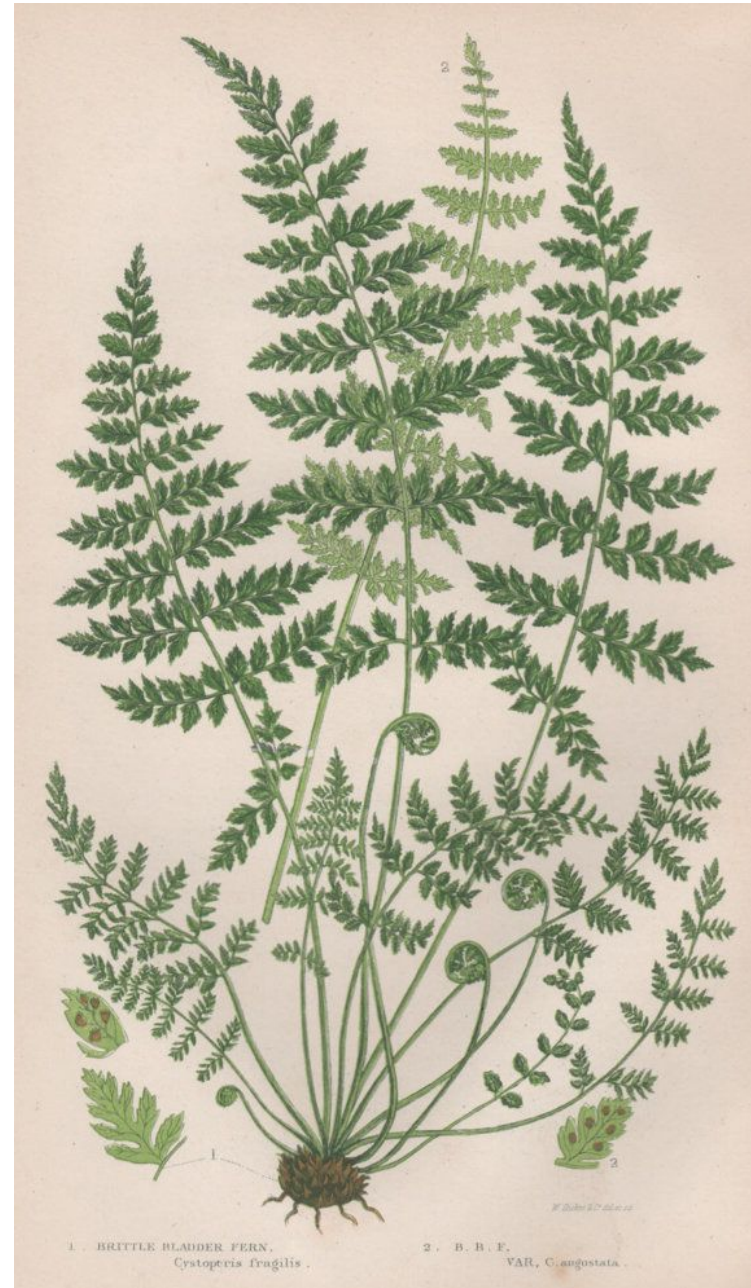
[aff [aff [stem] aff] aff]

Yet, many language descriptions instead treat affixed word forms as having the multiply pinnate structure of a bladderfern, whose leaves consist of leaflets consisting of leaflets.



On this analogy, an affixed word form may consist of a stem that carries affixes that may themselves be affixed structures:

[[aff aff][stem][aff aff]]



An example

Soukka, Maria. 2000. *A descriptive grammar of Noon: A Cangin language of Senegal*. Munich: LINCOM Europa.

Noon micromorphology

The inflection of the Noon adjective YAK 'big'

			Noun class	Indefinite	Definite		
					Location 1	Location 2	Location 3
Nondiminutive	Inanimate	sg	1	<i>wiyak</i>	<i>wiyakwii</i>	<i>wiyakwum</i>	<i>wiyakwaa</i>
			2	<i>fiyak</i>	<i>fiyakfii</i>	<i>fiyakfum</i>	<i>fiyakfaa</i>
			3	<i>miyak</i>	<i>miyakmii</i>	<i>miyakmum</i>	<i>miyakmaa</i>
			4	<i>kiyak</i>	<i>kiyakkii</i>	<i>kiyakkum</i>	<i>kiyakkaa</i>
			5	<i>piyak</i>	<i>piyakpii</i>	<i>piyakpum</i>	<i>piyakpaa</i>
			6	<i>jiyak</i>	<i>jiyakjii</i>	<i>jiyakjum</i>	<i>jiyakjaa</i>
	pl	1–3	<i>ciyak</i>	<i>ciyakcii</i>	<i>ciyakcum</i>	<i>ciyakcaa</i>	
		4–6	<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	
	Animate	sg	<i>iyiak</i>	<i>iyiakyii</i>	<i>iyiakyum</i>	<i>iyiakyaa</i>	
		pl	<i>biyak</i>	<i>biyakbii</i>	<i>biyakbum</i>	<i>biyakbaa</i>	
	Diminutive	sg	<i>jiyak</i>	<i>jiyakjii</i>	<i>jiyakjum</i>	<i>jiyakjaa</i>	
		pl	<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	

(Soukka 2000: 86ff)

Noon micromorphology

The inflection of the Noon adjective YAK 'big'

				Indefinite	Definite		
Noun class					Location 1	Location 2	Location 3
Nondiminutive	Inanimate	sg	1	<i>wiyak</i>	<i>wiyakwii</i>	<i>wiyakwum</i>	<i>wiyakwaa</i>
			2	<i>fiyak</i>	<i>fiyakfii</i>	<i>fiyakfum</i>	<i>fiyakfaa</i>
			3	<i>miyak</i>	<i>miyakmii</i>	<i>miyakmum</i>	<i>miyakmaa</i>
			4	<i>kiyak</i>	<i>kiyakkii</i>	<i>kiyakkum</i>	<i>kiyakkaa</i>
			5	<i>piyak</i>	<i>piyakpii</i>	<i>piyakpum</i>	<i>piyakpaa</i>
			6	<i>jiyak</i>	<i>jiyakjii</i>	<i>jiyakjum</i>	<i>jiyakjaa</i>
	pl	1–3	<i>ciyak</i>	<i>ciyakcii</i>	<i>ciyakcum</i>	<i>ciyakcaa</i>	
		4–6	<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	
	Animate	sg		<i>yiyak</i>	<i>yiyakyii</i>	<i>yiyakyum</i>	<i>yiyakyyaa</i>
		pl		<i>biyak</i>	<i>biyakbii</i>	<i>biyakbum</i>	<i>biyakbaa</i>
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	pl		<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	

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			3	<i>miyak</i>	<i>miyakmii</i>	<i>miyakmum</i>	<i>miyakmaa</i>
			4	<i>kiyak</i>	<i>kiyakkii</i>	<i>kiyakkum</i>	<i>kiyakkaa</i>
			5	<i>piyak</i>	<i>piyakpii</i>	<i>piyakpum</i>	<i>piyakpaa</i>
			6	<i>jiyak</i>	<i>jiyakjii</i>	<i>jiyakjum</i>	<i>jiyakjaa</i>
	pl	1–3	<i>ciyak</i>	<i>ciyakcii</i>	<i>ciyakcum</i>	<i>ciyakcaa</i>	
		4–6	<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	
	Animate	sg	<i>yiyak</i>	<i>yiyakyii</i>	<i>yiyakyum</i>	<i>yiyakyyaa</i>	
		pl	<i>biyak</i>	<i>biyakbii</i>	<i>biyakbum</i>	<i>biyakbaa</i>	
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			2	<i>fiyak</i>	<i>fiyakfii</i>	<i>fiyakfum</i>	<i>fiyakfaa</i>
			3	<i>miyak</i>	<i>miyakmii</i>	<i>miyakmum</i>	<i>miyakmaa</i>
			4	<i>kiyak</i>	<i>kiyakkii</i>	<i>kiyakkum</i>	<i>kiyakkaa</i>
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	pl	1–3	<i>ciyak</i>	<i>ciyakcii</i>	<i>ciyakcum</i>	<i>ciyakcaa</i>	
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	Animate	sg		<i>yiyak</i>	<i>yiyakyii</i>	<i>yiyakyum</i>	<i>yiyakya</i>
		pl		<i>biyak</i>	<i>biyakbii</i>	<i>biyakbum</i>	<i>biyakbaa</i>
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			3	<i>miyak</i>	<i>miyakmii</i>	<i>miyakmum</i>	<i>miyakmaa</i>
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		pl		<i>biyak</i>	<i>biyakbii</i>	<i>biyakbum</i>	<i>biyakbaa</i>
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			3	<i>miyak</i>	<i>miyakmii</i>	<i>miyakmum</i>	<i>miyakmaa</i>
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			5	<i>piyak</i>	<i>piyakpii</i>	<i>piyakpum</i>	<i>piyakpaa</i>
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	pl	1–3	<i>ciyak</i>	<i>ciyakcii</i>	<i>ciyakcum</i>	<i>ciyakcaa</i>	
		4–6	<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	
	Animate	sg		<i>yiyaak</i>	<i>yiyaakyii</i>	<i>yiyaakyum</i>	<i>yiyaakyaak</i>
		pl		<i>biyak</i>	<i>biyakbii</i>	<i>biyakbum</i>	<i>biyakbaak</i>
Diminutive	sg		<i>jiyak</i>	<i>jiyakjii</i>	<i>jiyakjum</i>	<i>jiyakjaa</i>	
	pl		<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	

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Noon micromorphology

Noon adjectival inflections

			Noun class	Class marker
Nondiminutive	Inanimate	sg	1	<i>w-</i>
			2	<i>f-</i>
			3	<i>m-</i>
			4	<i>k-</i>
			5	<i>p-</i>
			6	<i>j-</i>
	Animate	sg	1–3	<i>c-</i>
			4–6	<i>t-</i>
		pl		<i>y-</i>
				<i>b-</i>
Diminutive	sg		<i>j-</i>	
		pl	<i>t-</i>	

Prefixal formative:

i-

Suffixal formatives:

Location 1

-ii

Location 2

-um

Location 3

-aa

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			Noun class	Class marker
Nondiminutive	Inanimate	sg	1	<i>w-</i>
			2	<i>f-</i>
			3	<i>m-</i>
			4	<i>k-</i>
			5	<i>p-</i>
			6	<i>j-</i>
	Animate	sg	1–3	<i>c-</i>
			4–6	<i>t-</i>
			sg	<i>y-</i>
			pl	<i>b-</i>
Diminutive	sg		<i>j-</i>	
		pl	<i>t-</i>	

Prefixal formative:

i-

Suffixal formatives:

Location 1

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			Noun class	Class marker
Nondiminutive	Inanimate	sg	1	<i>w-</i>
			2	<i>f-</i>
			3	<i>m-</i>
			4	<i>k-</i>
			5	<i>p-</i>
			6	<i>j-</i>
	Animate	pl	1–3	<i>c-</i>
			4–6	<i>t-</i>
			sg	<i>y-</i>
			pl	<i>b-</i>
Diminutive		sg	<i>j-</i>	
		pl	<i>t-</i>	

Prefixal formative: *i-*

Suffixal formatives:

Location 1 *-ii*

Location 2 *-um*

Location 3 *-aa*

Noon micromorphology

Noon adjectival inflections

			Noun class	Class marker
Nondiminutive	Inanimate	sg	1	<i>w-</i>
			2	<i>f-</i>
			3	<i>m-</i>
			4	<i>k-</i>
			5	<i>p-</i>
			6	<i>j-</i>
	Animate	pl	1–3	<i>c-</i>
			4–6	<i>t-</i>
			sg	<i>y-</i>
			pl	<i>b-</i>
Diminutive		sg	<i>j-</i>	
		pl	<i>t-</i>	

Prefixal formative:

i-

Suffixal formatives:

Location 1 *-ii*

Location 2 *-um*

Location 3 *-aa*

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		Noun class	Indefinite	Definite				
				Location 1	Location 2	Location 3		
Non-diminutive	Inanimate	sg	1	<i>wiyak</i>	<i>wiyakwii</i>	<i>wiyakwum</i>	<i>wiyakwaa</i>	
			2	<i>fiyak</i>	<i>fiyakfii</i>	<i>fiyakfum</i>	<i>fiyakfaa</i>	
			3	<i>miyak</i>	<i>miyakmii</i>	<i>miyakmum</i>	<i>miyakmaa</i>	
			4	<i>kiyak</i>	<i>kiyakkii</i>	<i>kiyakkum</i>	<i>kiyakkaa</i>	
			5	<i>piyak</i>	<i>piyakpii</i>	<i>piyakpum</i>	<i>piyakpaa</i>	
			6	<i>jiyak</i>	<i>jiyakjii</i>	<i>jiyakjum</i>	<i>jiyakjaa</i>	
		pl	1–3	<i>ciyak</i>	<i>ciyakcii</i>	<i>ciyakcum</i>	<i>ciyakcaa</i>	
			4–6	<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	
		Animate	sg		<i>yyiak</i>	<i>yyiakyii</i>	<i>yyiakyum</i>	<i>yyiakyaa</i>
			pl		<i>biyak</i>	<i>biyakbii</i>	<i>biyakbum</i>	<i>biyakbaa</i>
Diminutive		sg		<i>jiyak</i>	<i>jiyakjii</i>	<i>jiyakjum</i>	<i>jiyakjaa</i>	
		pl		<i>tiyak</i>	<i>tiyaktii</i>	<i>tiyaktum</i>	<i>tiyaktaa</i>	

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The inflection of the Noon adjective YAK 'big'

			Noun class	Definite Location 2
Non-diminutive	Inanimate	sg	1	<i>wiyakwum</i>
			2	<i>fiyakfum</i>
			3	<i>miyakmum</i>
			4	<i>kiyakkum</i>
			5	<i>piyakpum</i>
			6	<i>jiyakjum</i>
	pl	1-3	<i>ciyakcum</i>	
		4-6	<i>tiyaktum</i>	
	Animate	sg	<i>yiakyum</i>	
		pl	<i>biyakbum</i>	
Diminutive	sg	<i>jiyakjum</i>		
	pl	<i>tiyaktum</i>		

Noon micromorphology

The inflection of the Noon adjective YAK 'big'

			Noun class	Definite Location 2				
				-2	-1	Stem	1	2
Non- diminutive	Inanimate	sg	1	<i>w-</i>	<i>i-</i>	yak	<i>-w</i>	<i>-um</i>
			2	<i>f-</i>	<i>i-</i>	yak	<i>-f</i>	<i>-um</i>
			3	<i>m-</i>	<i>i-</i>	yak	<i>-m</i>	<i>-um</i>
			4	<i>k-</i>	<i>i-</i>	yak	<i>-k</i>	<i>-um</i>
			5	<i>p-</i>	<i>i-</i>	yak	<i>-p</i>	<i>-um</i>
			6	<i>j-</i>	<i>i-</i>	yak	<i>-j</i>	<i>-um</i>
	pl	1-3	<i>c-</i>	<i>i-</i>	yak	<i>-c</i>	<i>-um</i>	
		4-6	<i>t-</i>	<i>i-</i>	yak	<i>-t</i>	<i>-um</i>	
	Animate	sg	<i>y-</i>	<i>i-</i>	yak	<i>-y</i>	<i>-um</i>	
		pl	<i>b-</i>	<i>i-</i>	yak	<i>-b</i>	<i>-um</i>	
Diminutive	sg	<i>j-</i>	<i>i-</i>	yak	<i>-j</i>	<i>-um</i>		
	pl	<i>t-</i>	<i>i-</i>	yak	<i>-t</i>	<i>-um</i>		

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The inflection of the Noon adjective YAK 'big'

			Noun class	Definite Location 2					
				-2	-1	Stem	1	2	
Non- diminutive	Inanimate	sg	1	w-	i-	yak	-w	-um	
			2	f-	i-	yak	-f	-um	
			3	m-	i-	yak	-m	-um	
			4	k-	i-	yak	-k	-um	
			5	p-	i-	yak	-p	-um	
			6	j-	i-	yak	-j	-um	
			pl	1-3	c-	i-	yak	-c	-um
				4-6	t-	i-	yak	-t	-um
			Animate	sg	y-	i-	yak	-y	-um
				pl	b-	i-	yak	-b	-um
Diminutive			sg	j-	i-	yak	-j	-um	
			pl	t-	i-	yak	-t	-um	

Prefixal
formative

Noon micromorphology

The inflection of the Noon adjective YAK 'big'

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Non- diminutive	Inanimate	sg	1	w-	i-	yak	-w	-um	
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			3	m-	i-	yak	-m	-um	
			4	k-	i-	yak	-k	-um	
			5	p-	i-	yak	-p	-um	
			6	j-	i-	yak	-j	-um	
			pl	1-3	c-	i-	yak	-c	-um
				4-6	t-	i-	yak	-t	-um
			Animate	sg	y-	i-	yak	-y	-um
				pl	b-	i-	yak	-b	-um
Diminutive			sg	j-	i-	yak	-j	-um	
			pl	t-	i-	yak	-t	-um	

Suffixal
formative



Noon micromorphology

The inflection of the Noon adjective YAK 'big'

			Noun class	Definite Location 2				
				-2	-1	Stem	1	2
Non- diminutive	Inanimate	sg	1	w-	i-	yak	-w	-um
			2	f-	i-	yak	-f	-um
			3	m-	i-	yak	-m	-um
			4	k-	i-	yak	-k	-um
			5	p-	i-	yak	-p	-um
			6	j-	i-	yak	-j	-um
	pl	1-3	c-	i-	yak	-c	-um	
		4-6	t-	i-	yak	-t	-um	
	Animate	sg	y-	i-	yak	-y	-um	
		pl	b-	i-	yak	-b	-um	
Diminutive	sg	j-	i-	yak	-j	-um		
	pl	t-	i-	yak	-t	-um		

Class
markers

Noon micromorphology

The inflection of the Noon adjective YAK 'big'

			Noun class	Prefixal concord	Stem	Definite suffix
Non-diminutive	Inanimate	sg	1	<i>w-i-</i>	<i>yak</i>	<i>-w-um</i>
			2	<i>f-i-</i>	<i>yak</i>	<i>-f-um</i>
			3	<i>m-i-</i>	<i>yak</i>	<i>-m-um</i>
			4	<i>k-i-</i>	<i>yak</i>	<i>-k-um</i>
			5	<i>p-i-</i>	<i>yak</i>	<i>-p-um</i>
			6	<i>j-i-</i>	<i>yak</i>	<i>-j-um</i>
	pl	1–3	<i>c-i-</i>	<i>yak</i>	<i>-c-um</i>	
		4–6	<i>t-i-</i>	<i>yak</i>	<i>-t-um</i>	
Animate	sg		<i>y-i-</i>	<i>yak</i>	<i>-y-um</i>	
	pl		<i>b-i-</i>	<i>yak</i>	<i>-b-um</i>	
Diminutive	sg		<i>j-i-</i>	<i>yak</i>	<i>-j-um</i>	
	pl		<i>t-i-</i>	<i>yak</i>	<i>-t-um</i>	

Noon micromorphology

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			Noun class	Prefixal concord	Stem	Definite suffix
Non-diminutive	Inanimate	sg	1	<i>w-i-</i>	yak	<i>-w-um</i>
			2	<i>f-i-</i>	yak	<i>-f-um</i>
			3	<i>m-i-</i>	yak	<i>-m-um</i>
			4	<i>k-i-</i>	yak	<i>-k-um</i>
			5	<i>p-i-</i>	yak	<i>-p-um</i>
			6	<i>j-i-</i>	yak	<i>-j-um</i>
	pl	1–3	<i>c-i-</i>	yak	<i>-c-um</i>	
		4–6	<i>t-i-</i>	yak	<i>-t-um</i>	
Animate	sg		<i>y-i-</i>	yak	<i>-y-um</i>	
	pl		<i>b-i-</i>	yak	<i>-b-um</i>	
Diminutive	sg		<i>j-i-</i>	yak	<i>-j-um</i>	
	pl		<i>t-i-</i>	yak	<i>-t-um</i>	

The micromorphology hypothesis

Is the micromorphology hypothesis simply a descriptive shortcut, or does it have theoretical significance?

The micromorphology hypothesis

The micromorphology hypothesis is theoretically significant because it affords simple explanations for several otherwise puzzling phenomena and additionally allows new, more adequate interpretations of various phenomena.

Two versions of the micromorphology hypothesis

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Affix-oriented version

In the most adequate description of a language's morphology, an affix may be morphologically complex, i.e. a combination of other affixes.

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In the most adequate description of a language's morphology, an affix may be morphologically complex, i.e. a combination of other affixes.

Rule-oriented version

In the most adequate description of a language's morphology, a morphological rule may be morphologically complex, i.e. the composition of other morphological rules.

Two versions of the micromorphology hypothesis

Composition is not restricted to affixes/rules of affixation.

Stump, Gregory. Ms. An apparently noncanonical pattern of morphotactic competition.

Stump, Gregory. Ms. Rules and blocks.

Rule-oriented version

In the most adequate description of a language's morphology, a morphological rule may be morphologically complex, i.e. the composition of other morphological rules.

Two versions of the micromorphology hypothesis

Affix-oriented version

In the most adequate description of a language's morphology, an affix may be morphologically complex, i.e. a combination of other affixes.

Still, it's somewhat less clumsy to speak in terms of affixes rather than rules of affixation.

Rule
In the
morph
com
rules

I will therefore follow the practice of saying
the affix x expressing the content y
and meaning
the rule realizing y through the affixation of x.

cally

Two versions of the micromorphology hypothesis

Affix-oriented version

In the most adequate description of a language's morphology, an affix may be morphologically complex, i.e. a combination of other affixes.

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Affix composition

Affix composition

At the core of the micromorphological approach to morphotactics is the notion of **affix composition** (= rule composition).

I represent affix composition by means of an operator ‘©’: thus, **[A © B]** is **the composition of affix A with affix B.**

Affix composition

At the core of the micromorphological approach to morphotactics is the notion of **affix composition** (= rule composition).

Given any affix [A © B] resulting from the composition of affix A with affix B, I adopt the terminology proposed by Alice Harris (to appear) in referring to

- A as the **dependent** affix, and
- B as the **carrier** affix.

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Given any affix [A © B] resulting from the composition of affix A with affix B, I adopt the terminology proposed by Alice Harris (to appear) in referring to

- A as the **dependent** affix, and
- B as the **carrier** affix.

By default, the morphotactic distribution of [A © B] is like that of its carrier affix B (same position class/rule block).

Affix composition

At the core of the micromorphological approach to morphotactics is the notion of **affix composition** (= rule composition).

The precise effect of affix composition depends on whether the affixes involved are inflectional or derivational.

Affix composition

involving affixes of **inflectional** realization

	Affix	Content
Carrier affix:	x - prefix	{ α }

Affix composition

involving affixes of **inflectional** realization

	Affix	Content
Carrier affix:	<i>x</i> - prefix	{ α }
Dependent affix:	- <i>y</i> suffix	{ β }

Affix composition

involving affixes of **inflectional** realization

	Affix	Content
Carrier affix:	x - prefix	$\{\alpha\}$
Dependent affix:	$-y$ suffix	$\{\beta\}$
Composite $[-y \textcircled{c} x-]$:	$x-y$ - prefix	$\{\alpha\} \cup \{\beta\}$

Affix composition

involving **derivational** affixes

	Affix	Content change	Category change
Carrier affix:	<i>a</i> - prefix	$\alpha \rightarrow f(\alpha)$	$C_1 \rightarrow C_2$

Affix composition

involving **derivational** affixes

	Affix	Content change	Category change
Carrier affix:	a - prefix	$\alpha \rightarrow f(\alpha)$	$C_1 \rightarrow C_2$
Dependent affix:	$-b$ suffix	$\beta \rightarrow g(\beta)$	$C_2 \rightarrow C_3$

Affix composition

involving **derivational** affixes

	Affix	Content change	Category change
Carrier affix:	a - prefix	$\alpha \rightarrow f(\alpha)$	$C_1 \rightarrow C_2$
Dependent affix:	$-b$ suffix	$\beta \rightarrow g(\beta)$	$C_2 \rightarrow C_3$
Composite [$-b$ © a -] :	ab - prefix	$\alpha \rightarrow g(f(\alpha))$	$C_1 \rightarrow C_3$

Affix composition in Noon adjectival inflection

			Noun class	Class marker
Nondiminutive	Inanimate	sg	1	<i>w-</i>
			2	<i>f-</i>
			3	<i>m-</i>
			4	<i>k-</i>
			5	<i>p-</i>
			6	<i>j-</i>
		pl	1–3	<i>c-</i>
			4–6	<i>t-</i>
	Animate	sg		<i>y-</i>
			pl	<i>b-</i>
Diminutive		sg		<i>j-</i>
		pl		<i>t-</i>

Prefixal formative: *i-*

Suffixal formatives:

Location 1 *-ii*

Location 2 *-um*

Location 3 *-aa*

Affix composition in Noon adjectival inflection

			Noun class	Class marker	Prefixal concord
Nondiminutive	Inanimate	sg	1	<i>w-</i>	Prefixal formative: <i>i-</i>
			2	<i>f-</i>	
			3	<i>m-</i>	
			4	<i>k-</i>	
			5	<i>p-</i>	
			6	<i>j-</i>	
		pl	1-3	<i>c-</i>	Suffixal formatives: Location 1 <i>-ii</i> Location 2 <i>-um</i> Location 3 <i>-aa</i>
	4-6		<i>t-</i>		
	Animate	sg		<i>y-</i>	
			pl	<i>b-</i>	
Diminutive	sg		<i>j-</i>		
		pl	<i>t-</i>		

Affix composition

	Affix	Content
Dependent affix:	<i>w-</i>	{inanimate sg cl.1}
Carrier affix:	<i>i-</i>	{Adj}
Composite [<i>w-</i> © <i>i-</i>] :	<i>w-i-</i>	{Adj inanimate sg cl.1}
<i>w-i-</i> overrides <i>i-</i> by Pāṇini's principle.		

Affix composition

Affix composition in Noon adjectival inflection

			Noun class	Class marker						
Nondiminutive	Inanimate	sg	1	<i>w-</i>	Prefixal formative:	<i>i-</i>				
			2	<i>f-</i>						
			3	<i>m-</i>						
			4	<i>k-</i>						
			5	<i>p-</i>						
			6	<i>j-</i>						
	Animate	sg	1–3	<i>c-</i>	Suffixal formatives:	Location 1	<i>-ii</i>			
			4–6	<i>t-</i>						
		pl							Location 2	<i>-um</i>
										Location 3
Diminutive	sg		<i>j-</i>	Definite suffixes						
		pl	<i>t-</i>							

Affix composition

	Affix	Content
Dependent affix:	<i>w-</i>	{inanimate sg 1}
Carrier affix:	<i>-ii</i>	{def loc1}
Composite [<i>w-</i> © <i>-ii</i>] :	<i>-w-ii</i>	{def loc1 inanimate sg 1}
<i>-w-ii</i> overrides <i>-ii</i> by Pāṇini's principle.		

Some explanations and interpretations

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The micromorphology hypothesis affords simple explanations for several otherwise puzzling phenomena and additionally allows new, more adequate interpretations of various phenomena. The phenomena at issue include

- apparently anomalous affix sequences
- apparent instances of nonmonotonicity in morphology
- parallelisms between single affixes and sequences of affixes

Some explanations and interpretations

Anomalies in the sequence of affixes

Some explanations and interpretations

Anomalous with respect to what?

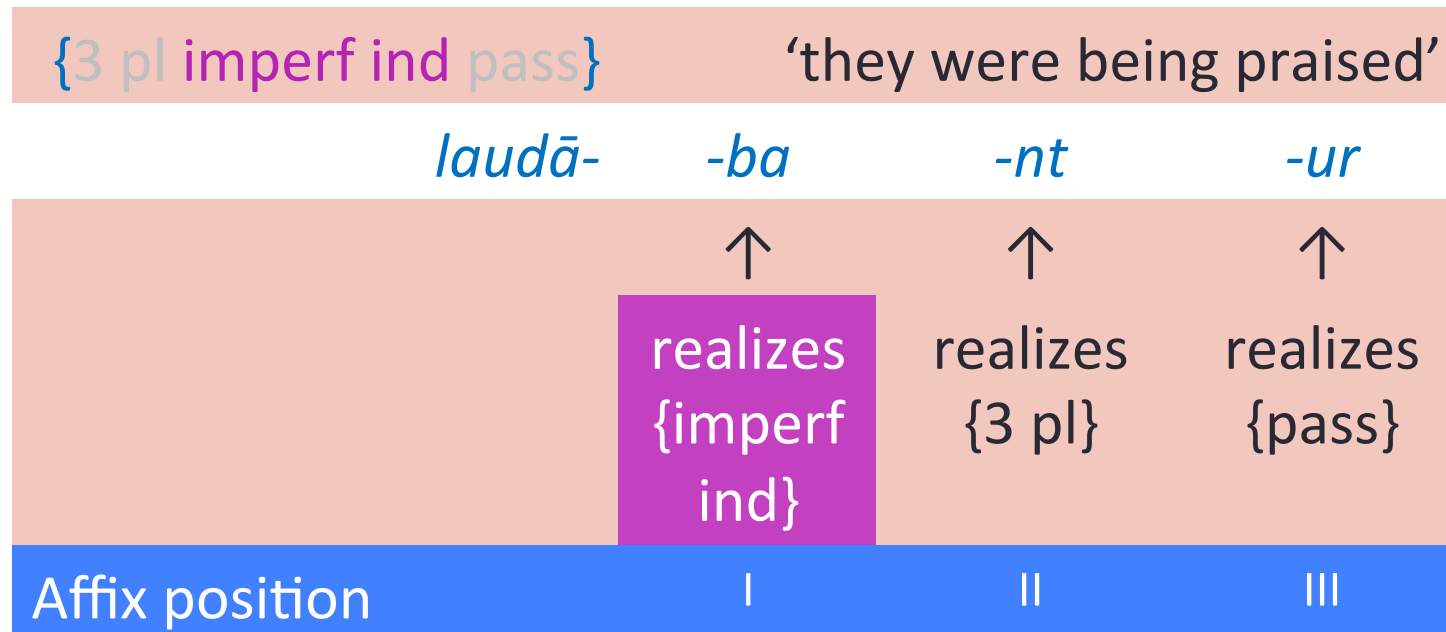
In the canonical case, the expectation is that each affix occupies a particular position in the sequence of affix positions defining a word form's morphology.

	{3 pl imperf ind pass}			‘they were being praised’
	<i>laudā-</i>	<i>-ba</i>	<i>-nt</i>	<i>-ur</i>
		↑	↑	↑
		realizes {imperf ind}	realizes {3 pl}	realizes {pass}
Affix position		I	II	III

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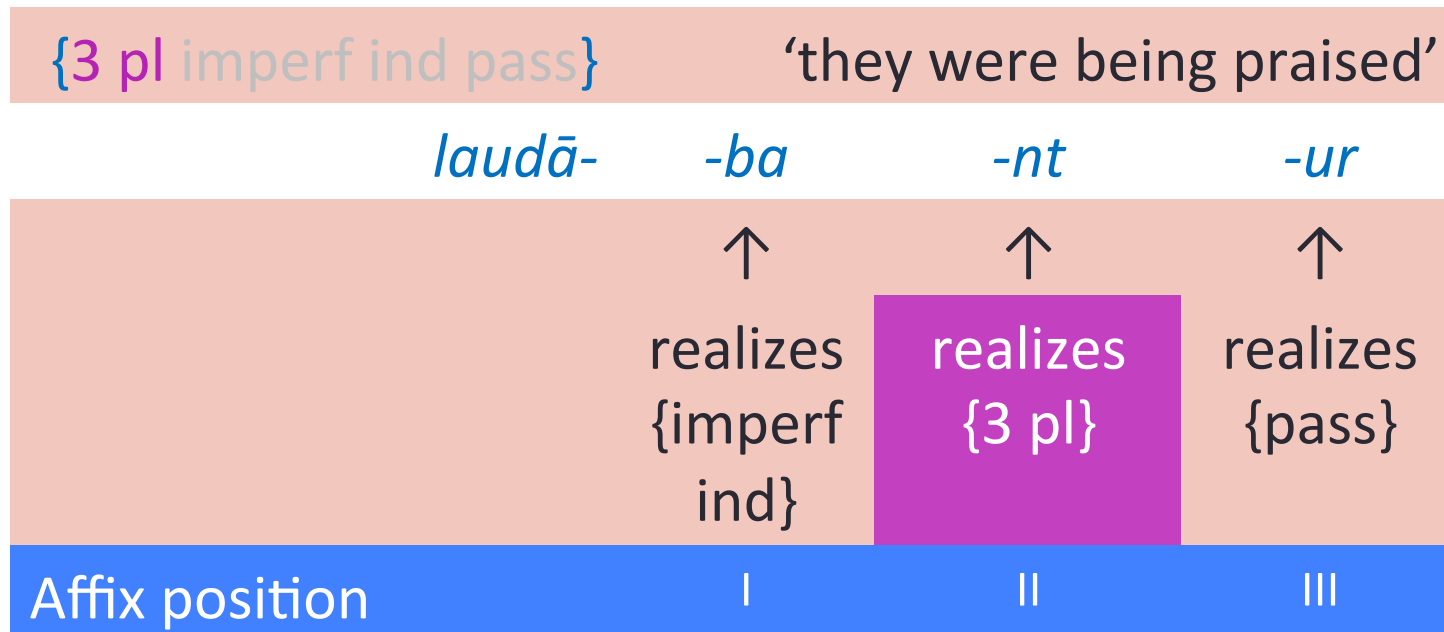
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	<i>laudā-</i>	<i>-ba</i>	<i>-nt</i>	<i>-ur</i>
		↑	↑	↑
		realizes {imperf ind}	realizes {3 pl}	realizes {pass}
Affix position		I	II	III

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Anomalies in the sequence of affixes

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Anomalies in the sequence of affixes

- a. Certain affixes may exhibit unexpected ordering when in combination but otherwise exhibit the expected ordering.

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Fula

- *mball-u-mi-be-*'
help-TNS-1SG.SBJ-3PL.CL2.OBJ-FG
'I helped them'
- *mball-u-daa-mO-*'
help-TNS-2SG.SBJ-3SG.CL1.OBJ-FG
'you (sg.) helped him'

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- *mball-u-mi-be-*'
help-TNS-1SG.SBJ-3PL.CL2.OBJ-FG
'I helped them'
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'I helped you (sg.)'
- *mball-u-daa-mO-*'
help-TNS-2SG.SBJ-3SG.CL1.OBJ-FG
'you (sg.) helped him'
- *mball-u-mO-mi-*'
help-TNS-3SG.CL1.OBJ-1SG.SBJ-FG
'I helped him'

- a. Certain affixes may exhibit unexpected ordering when in combination but otherwise exhibit the expected ordering.

Fula

- | | |
|---------------------------------|---------------------------------|
| ● <i>mball-u-mi-be-</i> ' | ● <i>mball-u-mA-mi-</i> ' |
| help-TNS-1SG.SBJ-3PL.CL2.OBJ-FG | help-TNS-2SG.OBJ-1SG.SBJ-FG |
| 'I helped them' | 'I helped you (sg.)' |
| ● <i>mball-u-daa-mO-</i> ' | ● <i>mball-u-mO-mi-</i> ' |
| help-TNS-2SG.SBJ-3SG.CL1.OBJ-FG | help-TNS-3SG.CL1.OBJ-1SG.SBJ-FG |
| 'you (sg.) helped him' | 'I helped him' |

By default, an **object suffix -Y** composes with a **subject suffix -X**:

[-Y © -X] (= the composed suffix -X-Y).

- a. Certain affixes may exhibit unexpected ordering when in combination but otherwise exhibit the expected ordering.

Fula

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help-TNS-1SG.SBJ-3PL.CL2.OBJ-FG
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'I helped you (sg.)'
- *mball-u-daa-mO-*'
help-TNS-2SG.SBJ-3SG.CL1.OBJ-FG
'you (sg.) helped him'
- *mball-u-mO-mi-*'
help-TNS-3SG.CL1.OBJ-1SG.SBJ-FG
'I helped him'

But the 1sg subject suffix *-mi* composes with the personal object suffixes *-mA* (2sg) and *-mO* (3sg):

$[-mi \textcircled{c} -mA]$ (= the composed suffix *-mA-mi*)

$[-mi \textcircled{c} -mO]$ (= the composed suffix *-mO-mi*).

By Pāṇini's principle, this narrower pattern of composition overrides the more general pattern.

- a. Certain affixes may exhibit unexpected ordering when in combination but otherwise exhibit the expected ordering.

Latin passives • *audi* -o -r 'I am heard'
hear 1SG PASS

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Latin passives

- *audi* -o -r 'I am heard'
hear 1SG PASS
- *audī* -r -is 'you are heard'
hear PASS 2SG

- a. Certain affixes may exhibit unexpected ordering when in combination but otherwise exhibit the expected ordering.

Latin passives

- *audi*

-o	-r
1SG	PASS

 'I am heard'
- *audī*

-r	-is
PASS	2SG

 'you are heard'

By default, the passive suffix *-r* composes with a subject concord *-X*:

$[-r \text{ } \textcircled{\text{C}} \text{ } -X]$ (= the composed suffix *-X-r*).

- a. Certain affixes may exhibit unexpected ordering when in combination but otherwise exhibit the expected ordering.

Latin passives

- *audi -o -r* 'I am heard'
hear 1SG PASS

- *audī -r -is* 'you are heard'
hear PASS 2SG

But the second-person singular subject concord composes with the passive suffix:

$[-is \textcircled{c} -r]$ (= the composed suffix *-r-is*).

By Pāṇini's principle, this narrower pattern of composition overrides the more general pattern.

Some explanations and interpretations

Anomalies in the sequence of affixes

- a. Certain affixes may exhibit unexpected ordering when in combination but otherwise exhibit the expected ordering.
- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

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Swahili relative affixes

Gender	1/2	3/4	5/6	7/8	9/10	11/10
sg	<i>ye</i>	<i>o</i>	<i>lo</i>	<i>cho</i>	<i>yo</i>	<i>o</i>
pl	<i>o</i>	<i>yo</i>	<i>yo</i>	<i>vyo</i>	<i>zo</i>	<i>zo</i>

b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

- *vitabu* *a-vi-soma-vyo* *Hamisi*
books.CL.8 SBJ:CL.1-OBJ:CL.8-read-REL:CL.8 Hamisi.CL.1
'the books which Hamisi reads'

b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

- *vitabu* *a-vi-soma-vyo* *Hamisi*
 books.CL.8 SBJ:CL.1-OBJ:CL.8-read-REL:CL.8 Hamisi.CL.1
 ‘the books which Hamisi reads’
- *vitabu* *a-na-vyo-vi-soma* *Hamisi*
 books.CL.8 SBJ:CL.1-TNS-REL:CL.8-OBJ:CL.8-read Hamisi.CL.1
 ‘the books which Hamisi is reading’

b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

- *vitabu* *a-vi-soma-vyo* *Hamisi*
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 ‘the books which Hamisi reads’

- *vitabu* *a-na-vyo-vi-soma* *Hamisi*
 books.CL.8 SBJ:CL.1-TNS-REL:CL.8-OBJ:CL.8-read Hamisi.CL.1
 ‘the books which Hamisi is reading’

- *vitabu* *a-si-vyo-vi-soma* *Hamisi*
 books.CL.8 SBJ:CL.1-NEG-REL:CL.8- OBJ:CL.8-read Hamisi.CL.1
 ‘the books which Hamisi doesn’t read’

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

Swahili relative concord

III	II	A	I	STEM	A	
<i>a-</i>			<i>vi-</i>	<i>soma</i>	<i>-vyo</i>	'(books [<i>vi-tabu</i>]) that he reads'
SBJ			OBJ	read	REL	
<i>a-</i>	<i>na-</i>	<i>vyo-</i>	<i>vi-</i>	<i>soma</i>		'(books [<i>vi-tabu</i>]) that he is reading'
SBJ	TNS	REL	OBJ	read		
<i>a-</i>	<i>si-</i>	<i>vyo-</i>	<i>vi-</i>	<i>soma</i>		'(books [<i>vi-tabu</i>]) that he doesn't read'
SBJ	NEG	REL	OBJ	read		

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

	Affix	Content
Dependent affix = relative concord, e.g.	-vyo	{REL:{CLASS:8}}
	<i>na-</i>	{pres}
	<i>si-</i>	{neg}
	<i>na-vyo-</i>	{REL:{CLASS:8} pres}
	<i>si-vyo-</i>	{REL:{CLASS:8} neg}

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

	Affix	Content
Dependent affix = relative concord, e.g.	-vyo	{REL:{CLASS:8}}
Carrier affix = position ii prefix, e.g.	na-	{pres}
	si-	{neg}
	<i>na-vyo-</i>	{REL:{CLASS:8} pres}
	<i>si-vyo-</i>	{REL:{CLASS:8} neg}

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

	Affix	Content
Dependent affix = relative concord, e.g.	-vyo	{REL:{CLASS:8}}
Carrier affix = position ii prefix, e.g.	na- si-	{pres} {neg}
Composites [-vyo © na-] :	na-vyo-	{REL:{CLASS:8} pres}
[-vyo © si-] :	si-vyo-	{REL:{CLASS:8} neg}

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	Affix	Content
Dependent affix = relative concord, e.g.	-vyo	{REL:{CLASS:8}}
Carrier affix = position ii prefix, e.g.	na-	{pres}
	si-	{neg}
Composites [-vyo © na-] :	na-vyo-	{REL:{CLASS:8} pres}
[-vyo © si-] :	si-vyo-	{REL:{CLASS:8} neg}
By Pāṇini's principle, na-vyo- overrides both na- and -vyo , si-vyo- overrides both si- and -vyo .		

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

Partial paradigm of a Fula verb
'washed'

Relative past active

	SBJ stem	PRET	SBJ
1sg	<i>lootu</i>	<i>-nO</i>	<i>-mi</i>
2sg	<i>lootu</i>	<i>-nO</i>	<i>-daa</i>
3sg	<i>'o- looti</i>	<i>-nO</i>	
1pl	<i>min- looti</i>	<i>-nO</i>	
2pl incl	<i>lootu</i>	<i>-nO</i>	<i>-den</i>
2pl excl	<i>lootu</i>	<i>-nO</i>	<i>-don</i>
3pl	<i>be- looti</i>	<i>-nO</i>	

(Arnott 1970: 217f)

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

Partial paradigms of two Fula verbs

	'washed'			'was/were seated'		
	Relative past active			Stative (i) middle		
	SBJ	stem	PRET SBJ	SBJ	PRET	stem
1sg		<i>lootu</i>	<i>-nO -mi</i>	<i>mi-</i>	<i>-don-</i>	<i>nO- joodii</i>
2sg		<i>lootu</i>	<i>-nO -daa</i>	<i>'a-</i>	<i>-don-</i>	<i>nO- joodii</i>
3sg	<i>'o-</i>	<i>looti</i>	<i>-nO</i>	<i>'o-</i>	<i>-don-</i>	<i>nO- joodii</i>
1pl	<i>min-</i>	<i>looti</i>	<i>-nO</i>	<i>min-</i>	<i>-don-</i>	<i>nO- joodii</i>
2pl incl		<i>lootu</i>	<i>-nO -den</i>	<i>'en-</i>	<i>-don-</i>	<i>nO- joodii</i>
2pl excl		<i>lootu</i>	<i>-nO -don</i>	<i>'on-</i>	<i>-don-</i>	<i>nO- joodii</i>
3pl	<i>be-</i>	<i>looti</i>	<i>-nO</i>	<i>be-</i>	<i>-don-</i>	<i>nO- joodii</i>

(Arnott 1970: 217f)

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

Partial paradigms of two Fula verbs

The prefix *don-* appears in the stative-(i) and continuous-(i) tenses.

'was/were seated'
Stative (i) middle

SBJ PRET stem

mi-don- nO- joodii

'a-don- nO- joodii

'o-don- nO- joodii

min-don- nO- joodii

'en-don- nO- joodii

'on-don- nO- joodii

be-don- nO- joodii

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

	Affix	Content
Dependent affix = preterite suffix	-nO	{pret}
	<i>don-</i>	{stat/cont-(i)}
	<i>don-nO-</i>	{pret stat/cont-(i)}

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

	Affix	Content
Dependent affix = preterite suffix	<i>-nO</i>	{pret}
Carrier affix	<i>don-</i>	{stat/cont-(i)}
	<i>don-nO-</i>	{pret stat/cont-(i)}

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

	Affix	Content
Dependent affix = preterite suffix	<i>-nO</i>	{pret}
Carrier affix	<i>don-</i>	{stat/cont-(i)}
Composite [- <i>nO</i> © <i>don-</i>] :	<i>don-nO-</i>	{pret stat/cont-(i)}

- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.

	Affix	Content
Dependent affix = preterite suffix	<i>-nO</i>	{pret}
Carrier affix	<i>don-</i>	{stat/cont-(i)}
Composite [- <i>nO</i> © <i>don-</i>] :	<i>don-nO-</i>	{pret stat/cont-(i)}
By Pāṇini's principle, <i>don-nO-</i> overrides both <i>don-</i> and <i>-nO</i> .		

Some explanations and interpretations

Anomalies in the sequence of affixes

- a. Certain affixes may exhibit unexpected ordering when in combination but otherwise exhibit the expected ordering.
- b. Whether an affix appears as a prefix or as a suffix apparently depends on whether another affix is present.
- c. The same affix appears in various affix positions.

c. The same affix appears in various affix positions.

Example from Limbu [Kiranti; Nepal]
(data from van Driem 1987)

Limbu verb morphology involves a complex system of agreement that encodes both subject and object. At issue here are two suffixes:

- **-ŋ** 1st sg agent concord
- **-m** non3rd plural agent concord

c. The same affix appears in various affix positions.

Example from Limbu [Kiranti; Nepal]
(data from van Driem 1987)

These affixes are special in two ways.

- They may appear in two different positions (suffix positions 5 and 9, in van Driem's numbering); and
- they appear in these positions only in the presence of carrier affixes in positions 4 and 8.

c. The same affix appears in various affix positions.

The agent suffixes

-ŋ and *-m* in the

positive nonpreterite

paradigm of the

Limbu verb

HUʔMAʔ ‘teach’

	agent → patient	pf1		stem	sf						
		a	b		1	4	5	7	8	9	10
1s → 2s				huʔ	nε						
1s → 2d				huʔ	nε				ci	ŋ	
1s → 2p				huʔ	n(ε)				i	ŋ	
1s → 3s				huʔr		u	ŋ				
1s → 3ns				huʔr		u	ŋ		si	ŋ	
1pi → 3s	a			huʔr		u	m				
1pi → 3ns	a			huʔr		u	m		si	m	
1pe → 2				huʔ	nε				ci		ge
1pe → 3s				huʔr		u	m				be
1pe → 3ns				huʔr		u	m		si	m	be
2 → 1	a	gε		huʔ							
2p → 3s		kε		huʔr		u	m				
2p → 3ns		kε		huʔr		u	m		si	m	

c. The same affix appears in various affix positions.

The agent suffixes

-ŋ and *-m* in the

positive nonpreterite

paradigm of the

Limbu verb

HUʔMAʔ ‘teach’

	agent → patient	pf1		stem	dependent							
		a	b		1	4	5	7	8	9	10	
1s → 2s				huʔ	nε							
1s → 2d				huʔ	nε				ci	ŋ		
1s → 2p				huʔ	n(ε)				i	ŋ		
1s → 3s				huʔr		u	ŋ					
1s → 3ns				huʔr		u	ŋ		si	ŋ		
1pi → 3s	a			huʔr		u	m					
1pi → 3ns	a			huʔr		u	m		si	m		
1pe → 2				huʔ	nε				ci			ge
1pe → 3s				huʔr		u	m					be
1pe → 3ns				huʔr		u	m		si	m		be
2 → 1	a	gε		huʔ								
2p → 3s		kε		huʔr		u	m					
2p → 3ns		kε		huʔr		u	m		si	m		

c. The same affix appears in various affix positions.

The agent suffixes

-ŋ and *-m* in the

positive nonpreterite

paradigm of the

Limbu verb

HUʔMAʔ 'teach'

	agent	pf1		stem	carrier							
		a	b		1	4	5	7	8	9	10	
1s → 2s				huʔ	nε							
1s → 2d				huʔ	nε					ci	ŋ	
1s → 2p				huʔ	n(ε)					i	ŋ	
1s → 3s				huʔr		u	ŋ					
1s → 3ns				huʔr		u	ŋ			si	ŋ	
1pi → 3s	a			huʔr		u	m					
1pi → 3ns	a			huʔr		u	m			si	m	
1pe → 2				huʔ	nε				ci			ge
1pe → 3s				huʔr		u	m					be
1pe → 3ns				huʔr		u	m			si	m	be
2 → 1	a	gε		huʔ								
2p → 3s		kε		huʔr		u	m					
2p → 3ns		kε		huʔr		u	m			si	m	

c. The same affix appears in various affix positions.

The agent suffixes

-*ŋ* and **-*m*** in the

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	a	b		1	4	5	7	8	9	10
1s → 2s			huʔ	nε						
1s → 2d			huʔ	nε				ci	ŋ	
1s → 2p			huʔ	n(ε)				i	ŋ	
1s → 3s			huʔr		u	ŋ				
1s → 3ns			huʔr		u	ŋ		si	ŋ	
1pi → 3s	a		huʔr		u	m				
1pi → 3ns	a		huʔr		u	m		si	m	
1pe → 2			huʔ	nε			ci			ge
1pe → 3s			huʔr		u	m				be
1pe → 3ns			huʔr		u	m		si	m	be
2 → 1	a	gε	huʔ							
2p → 3s		kε	huʔr		u	m				
2p → 3ns		kε	huʔr		u	m		si	m	

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1s → 3s			huʔr		u	ŋ					
1s → 3ns			huʔr		u	ŋ		si	ŋ		
1pi → 3s	a		huʔr		u	m					
1pi → 3ns	a		huʔr		u	m		si	m		
1pe → 2			huʔ	nε			ci				ge
1pe → 3s			huʔr		u	m					be
1pe → 3ns			huʔr		u	m		si	m		be
2 → 1	a	gε	huʔ								
2p → 3s		kε	huʔr		u	m					
2p → 3ns		kε	huʔr		u	m		si	m		

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1s → 2p			huʔ	n(ε)				i	ŋ	
1s → 3s			huʔr		u	ŋ				
1s → 3ns			huʔr		u	ŋ		si	ŋ	
1pi → 3s	a		huʔr		u	m				
1pi → 3ns	a		huʔr		u	m		si	m	
1pe → 2			huʔ	nε			ci			ge
1pe → 3s			huʔr		u	m				be
1pe → 3ns			huʔr		u	m		si	m	be
2 → 1	a	gε	huʔ							
2p → 3s		kε	huʔr		u	m				
2p → 3ns		kε	huʔr		u	m		si	m	

c. The same affix appears in various affix positions.

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Limbu verb

HUʔMAʔ 'teach'

agent → patient	pf1		stem	sf						
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1s → 2s			huʔ	nε						
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1s → 2p			huʔ	n(ε)				i	ŋ	
1s → 3s			huʔr		u	ŋ				
1s → 3ns			huʔr		u	ŋ		si	ŋ	
1pi → 3s	a		huʔr		u	m				
1pi → 3ns	a		huʔr		u	m		si	m	
1pe → 2			huʔ	nε			ci			ge
1pe → 3s			huʔr		u	m				be
1pe → 3ns			huʔr		u	m		si	m	be
2 → 1	a	gε	huʔ							
2p → 3s		kε	huʔr		u	m				
2p → 3ns		kε	huʔr		u	m		si	m	

c. The same affix appears in various affix positions.

	Affix	Content
Dependent affixes = agent suffixes	<i>-ŋ</i>	{{1 sg agt}}
	<i>-m</i>	{{non3 pl agt}}
	<i>-u</i>	{{3 pat}}
	<i>-si</i>	{{nonsg pat}}
	<i>-u-ŋ</i>	{{1 sg agt} {3 pat}}
	<i>-si-m</i>	{{non3 pl agt} {nonsg pat}}

c. The same affix appears in various affix positions.

	Affix	Content
Dependent affixes = agent suffixes	-<i>ŋ</i>	{{1 sg agt}}
	-<i>m</i>	{{non3 pl agt}}
Carrier affixes in positions 4 and 8, e.g.	-<i>u</i>	{{3 pat}}
	-<i>si</i>	{{nonsg pat}}
	-<i>u-ŋ</i>	{{1 sg agt} {3 pat}}
	-<i>si-m</i>	{{non3 pl agt} {nonsg pat}}

c. The same affix appears in various affix positions.

	Affix	Content
Dependent affixes = agent suffixes	-<i>ŋ</i>	{{1 sg agt}}
	-<i>m</i>	{{non3 pl agt}}
Carrier affixes in positions 4 and 8, e.g.	-<i>u</i>	{{3 pat}}
	-<i>si</i>	{{nonsg pat}}
Composite [- <i>ŋ</i> © <i>u</i> -] :	-<i>u-ŋ</i>	{{1 sg agt} {3 pat}}
[- <i>m</i> © <i>si</i> -] :	-<i>si-m</i>	{{non3 pl agt} {nonsg pat}}

c. The same affix appears in various affix positions.

	Affix	Content
Dependent affixes = agent suffixes	-<i>η</i>	{{1 sg agt}}
	-<i>m</i>	{{non3 pl agt}}
Carrier affixes in positions 4 and 8, e.g.	-<i>u</i>	{{3 pat}}
	-<i>si</i>	{{nonsg pat}}
Composite [- <i>η</i> © <i>u</i> -] :	-<i>u-η</i>	{{1 sg agt} {3 pat}}
[- <i>m</i> © <i>si</i> -] :	-<i>si-m</i>	{{non3 pl agt} {nonsg pat}}
By Pāṇini's principle, -<i>u-η</i> overrides -<i>u</i> , -<i>si-m</i> overrides -<i>si</i> .		

c. The same affix appears in various affix positions.

Past-tense forms of Pengo HUR 'see'

Agr	Singular	Plural
1 st	<i>huṛ-t-aŋ</i>	EXCL. <i>huṛ-t-ap</i> , INCL. <i>huṛ-t-as</i>
2 nd	<i>huṛ-t-ay</i>	<i>huṛ-t-ader</i>
3 rd	m. <i>huṛ-t-an</i>	<i>huṛ-t-ar</i>
	f. <i>huṛ-t-at</i>	<i>huṛ-t-ik</i>
	n. <i>huṛ-t-iŋ</i>	<i>huṛ-t-iŋ</i>

(Burrow & Bhattacharya 1970: 62–70)

c. The same affix appears in various affix positions.

Past-tense forms of Pengo HUR 'see'

Agr	Singular	Plural
1 st	<i>huṛ-t-aŋ</i>	EXCL. <i>huṛ-t-ap</i> , INCL. <i>huṛ-t-as</i>
2 nd	<i>huṛ-t-ay</i>	<i>huṛ-t-ader</i>
3 rd	m. <i>huṛ-t-an</i>	<i>huṛ-t-ar</i>
	f. <i>huṛ-t-at</i>	<i>huṛ-t-ik</i>
	n. <i>huṛ-t-iŋ</i>	<i>huṛ-t-iŋ</i>

(Burrow & Bhattacharya 1970: 62–70)

c. The same affix appears in various affix positions.

Past-tense forms of Pengo HUR 'see'

Agr		Singular	Plural
1 st		<i>hur-t-an</i>	EXCL. <i>hur-t-ap</i> , INCL. <i>hur-t-as</i>
2 nd		<i>hur-t-ay</i>	<i>hur-t-ader</i>
3 rd	m.	<i>hur-t-an</i>	<i>hur-t-ar</i>
	f.		<i>hur-t-ik</i>
	n.	<i>hur-t-at</i>	<i>hur-t-iŋ</i>

(Burrow & Bhattacharya 1970: 62–70)

c. The same affix appears in various affix positions.

Perfect forms of Pengo HUR 'see'

Agr		Singular	Plural
1 st		<i>hur-t-aŋ-n-an</i>	EXCL. <i>hur-t-ap-na</i> , INCL. <i>hur-t-ah-na</i>
2 nd		<i>hur-t-ay-na</i>	<i>hur-t-ader-na</i>
3 rd	m.	<i>hur-t-an-na</i>	<i>hur-t-ar-na</i>
	f.	<i>hur-t-at-na</i>	<i>hur-t-ik-n-ik</i>
	n.		<i>hur-t-iŋ-n-iŋ</i>

c. The same affix appears in various affix positions.

Perfect forms of Pengo HUR 'see'

Agr		Singular	Plural
1 st		<i>hur-t-an-n-an</i>	EXCL. <i>hur-t-ap-na</i> , INCL. <i>hur-t-ah-na</i>
2 nd		<i>hur-t-ay-na</i>	<i>hur-t-ader-na</i>
3 rd	m.	<i>hur-t-an-na</i>	<i>hur-t-ar-na</i>
	f.	<i>hur-t-at-na</i>	<i>hur-t-ik-n-ik</i>
	n.		<i>hur-t-iŋ-n-iŋ</i>

c. The same affix appears in various affix positions.

	Affix	Content
Dependent affixes include three concords	-aŋ	{1 sg}
	-ik	{3 pl fem}
	-iŋ	{3 pl neut}
	<i>-na</i>	{perf}
	<i>-n-aŋ</i>	{perf 1 sg}
	<i>-n-ik</i>	{perf 3 pl fem}
	<i>-n-iŋ</i>	{perf 3 pl neut}

c. The same affix appears in various affix positions.

	Affix	Content
Dependent affixes include three concords	-aŋ	{1 sg}
	-ik	{3 pl fem}
	-iŋ	{3 pl neut}
Carrier affix = perfect suffix	-na	{perf}
	-n-aŋ	{perf 1 sg}
	-n-ik	{perf 3 pl fem}
	-n-iŋ	{perf 3 pl neut}

c. The same affix appears in various affix positions.

	Affix	Content
Dependent affixes include three concords	-aŋ	{1 sg}
	-ik	{3 pl fem}
	-iŋ	{3 pl neut}
Carrier affix = perfect suffix	-na	{perf}
Composite [-aŋ © -na] :	-n-aŋ	{perf 1 sg}
[-ik © -na] :	-n-ik	{perf 3 pl fem}
[-iŋ © -na] :	-n-iŋ	{perf 3 pl neut}

c. The same affix appears in various affix positions.

	Affix	Content
Dependent affixes include three concords	<i>-aṅ</i>	{1 sg}
	<i>-ik</i>	{3 pl fem}
	<i>-iṅ</i>	{3 pl neut}
Carrier affix = perfect suffix	<i>-na</i>	{perf}
Composite [- <i>aṅ</i> © <i>-na</i>] :	<i>-n-aṅ</i>	{perf 1 sg}
[- <i>ik</i> © <i>-na</i>] :	<i>-n-ik</i>	{perf 3 pl fem}
[- <i>iṅ</i> © <i>-na</i>] :	<i>-n-iṅ</i>	{perf 3 pl neut}
By Pāṇini's principle, <i>-n-aṅ</i> , <i>-n-ik</i> and <i>-n-iṅ</i> all override <i>-na</i> .		

Some explanations and interpretations

Anomalies of nonmonotonicity

Some explanations and interpretations

Anomalies of nonmonotonicity

The expectation is that an affix possesses the same intrinsic properties whether it appears alone or in combination with other affixes. But there are anomalous cases in which this does not hold true.

Some explanations and interpretations

Anomalies of nonmonotonicity

- d. An affix's domain apparently depends on whether a particular affix appears more peripherally.

- d. An affix's domain apparently depends on whether a particular affix appears more peripherally.

By default, the composed affix [B © A] joins with exactly the same stems as the carrier affix A.

<u>Stem</u>	carrier <i>-ic</i>	composite <i>-ic-al</i>
<i>history</i>	<i>historic</i>	<i>historical</i>
<i>cycle</i>	<i>cyclic</i>	<i>cyclical</i>

But once it is reanalyzed as an autonomous affix, [B © A] may come to have a domain distinct from that of affix A.

- d. An affix's domain apparently depends on whether a particular affix appears more peripherally.

On one hand, [B © A] may appear where affix A does not.

<u>Stem</u>	carrier <i>-ic</i>	composite <i>-ic-al</i>
<i>whimsy</i>	* <i>whimsic</i>	<i>whimsical</i>
<i>nonsense</i>	* <i>nonsensic</i>	<i>nonsensical</i>

On the other hand, affix A may appear where [B © A] does not.

<u>Stem</u>	carrier <i>-ic</i>	composite <i>-ic-al</i>
<i>ion</i>	<i>ionic</i>	* <i>ionical</i>
<i>base</i>	<i>basic</i>	* <i>basical</i>

Some explanations and interpretations

Anomalies of nonmonotonicity

- d. An affix's domain apparently depends on whether a particular affix appears more peripherally.
- e. An affix's productivity apparently depends on whether a particular affix precedes.

- e. An affix's productivity apparently depends on whether a particular affix precedes

$$\begin{bmatrix} /X/ \\ V \\ Z \end{bmatrix} \leftrightarrow \begin{bmatrix} /Xable/ \\ A \\ \text{ABLE to be Zed} \end{bmatrix}$$

(Bochner 1993: 91)

$$\begin{bmatrix} /X/ \\ A \\ Z \end{bmatrix} \leftrightarrow \begin{bmatrix} /Xity/ \\ N \\ \text{STATE of being Z} \end{bmatrix}$$

(p. 88)

$$\begin{bmatrix} /X/ \\ V \\ Z \end{bmatrix} \leftrightarrow \begin{bmatrix} /Xability/ \\ N \\ \text{STATE of being ABLE to be Zed} \end{bmatrix}$$

(p. 94)

- e. An affix's productivity apparently depends on whether a particular affix precedes

In the newspaper texts in the Corpus of Contemporary American English (COCA; Davies 2008–):

	Suffix	Productivity*
	<i>-ity</i>	.002
	<i>-able</i>	.008
	<i>-abil-ity</i>	.012
Cf.	<i>-ic</i>	.007
	<i>-ic-ity</i>	.004

- *i. e. potential productivity (Baayen 2003, 2009):
hapaxes with morphology m / tokens with m

- e. An affix's productivity apparently depends on whether a particular affix precedes

Citing examples of this sort noted by Aronoff 1976, Williams 1981 refers to this phenomenon as (e.g.) the *potentiation* of *-ity* by *-able*.

In our terms, the potentiation of *-ity* by *-able* refers to the fact that the composition of *-ity* with *-able* is more productive than *-ity* is on its own.

Some explanations and interpretations

Anomalies of nonmonotonicity

- d. An affix's domain apparently depends on whether a particular affix appears more peripherally.
- e. An affix's productivity apparently depends on whether a particular affix precedes.
- f. Two affixes apparently realize less content separately than they do together.

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Finite conjugation of Old English SCIERAN 'cut, shear'

		Present	Past
Indicative	1 st -person singular	<i>scier-e</i>	<i>scear</i>
	2 nd -person singular	<i>scier-e-st</i>	<i>scēar-e</i>
	3 rd -person singular	<i>scier-e-þ</i>	<i>scear</i>
	Plural	<i>scier-aþ</i>	<i>scēar-o-n</i>
Subjunctive	Singular	<i>scier-e</i>	<i>scēar-e</i>
	Plural	<i>scier-e-n</i>	<i>scēar-e-n</i>
Imperative	Singular:	<i>scier</i>	
	Plural:	<i>scier-aþ</i>	

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- f. Two affixes apparently realize less content separately than they do together.

	Affix	Content
Dependent affix = plural suffix	<i>-n</i>	{plural}
	<i>-e</i>	{ }
	<i>-e-n</i>	{plural}

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	Affix	Content
Dependent affix = plural suffix	<i>-n</i>	{plural}
Carrier affix = default suffix	<i>-e</i>	{}
	<i>-e-n</i>	{plural}

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	Affix	Content
Dependent affix = plural suffix	<i>-n</i>	{plural}
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Composite [<i>-n</i> © <i>-e</i>] :	<i>-e-n</i>	{plural}

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Composite [- <i>n</i> © - <i>e</i>] :	<i>-e-n</i>	{plural}
By Pāṇini's principle, <i>-e-n</i> overrides <i>-e</i> .		

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Composite [<i>-n</i> © <i>-e</i>] :	<i>-e-n</i>	{plural}
<p>By Pāṇini's principle, <i>-e-n</i> overrides <i>-e</i>. The composite <i>-e-n</i> is reanalyzed as an exponent of {sbjv plural}.</p>		

Some explanations and interpretations

**Parallelisms between single rules
and sequences of rules**

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Parallelisms between single rules and sequences of rules

- g. A simple affix seems to stand in paradigmatic opposition to a sequence of affixes.

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Swahili negation

V	IV	III	II	I	STEM	
<i>ha-</i>	<i>tu-</i>	<i>ta-</i>		<i>vi-</i>	<i>soma</i>	'we will not read them (= books [<i>vi-tabu</i>])'
NEG	SBJ	TNS		OBJ	read	
	<i>si-</i>	<i>ta-</i>		<i>vi-</i>	<i>soma</i>	'I will not read them (= books [<i>vi-tabu</i>])'
	NEG+SBJ	TNS		OBJ		

- g. A simple affix seems to stand in paradigmatic opposition to a sequence of affixes.

Latin
passives

- *audi -ō* 'I hear'
hear 1SG
- *audi -o -r* 'I am heard'
hear 1SG PASS
- *audī -tis* 'you hear'
hear 2PL
- *audī -minī* 'you are heard'
hear 2PL.PASS

Some explanations and interpretations

Parallelisms between single rules and sequences of rules

- g. A simple affix seems to stand in paradigmatic opposition to a sequence of affixes.
- h. A morphotactic restriction seems sensitive to a nonadjacent affix.

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Second-person singular imperative active forms in Sanskrit
(5th and 9th conjugations)

	PRS-STEM			
	ROOT	SUFFIX	2SG	
5 th conjugation	<i>āp</i>	<i>-nu</i>	<i>-hi</i>	‘obtain!’
	<i>su</i>	<i>-nu</i>		‘press out!’
9 th conjugation	<i>krī</i>	<i>-ṇī</i>	<i>-hi</i>	‘buy!’
	<i>aś</i>	<i>-āna</i>		‘eat!’

h. A morphotactic restriction seems sensitive to a nonadjacent affix.

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Second-person singular imperative active forms in Sanskrit
(5th and 9th conjugations)

PRS-STEM

The phonological conditions involve a root's final segment and an adjacent composed affix.

5 th conjugation	<i>ap</i>	<i>-na</i>	<i>-hi</i>	'obtain!'
	<i>su</i>	<i>-nu</i>		'press out!'
9 th conjugation	<i>krī</i>	<i>-ṇī</i>	<i>-hi</i>	'buy!'
	<i>aś</i>	<i>-āna</i>		'eat!'

h. A morphotactic restriction seems sensitive to a nonadjacent affix.

Chichewa

a-ku-máng-il-an-i:ts-a

~ *a-ku-máng-its-il-a:n-a*

3PL-PROG-tie-APPL-REC-CAUS-FV

‘they make each other tie with (a rope)’

(Ryan 2010: 762; Hyman 2003: 273)

Mapuche

llepipu-ñma-fal-ye-nge-me-y

~ *llepipu-ye-ñma-fal-nge-me-y*

request-IND.OBJ-FORCE-PL-PASS-TH-AGR

‘they have to be requested many things’

(Ryan 2010: 762; Smeets 1989: 361)

Chumbivilcas Quechua

kiki-la-n-kuna ~ *kiki-n-kuna-la*

self-just-3-PL

‘just themselves’

(Ryan 2010: 762; Muysken 1981: 295)

- j. A morphotactic restriction seems sensitive to a nonadjacent affix.

Chichewa

a-ku-máng-il-an-i:ts-a

~ *a-ku-máng-íts-il-a:n-a*

3PL-PROG-tie-APPL-REC-CAUS-FV

'they make each other tie with (a rope)'

(Ryan 2010: 762; Hyman 2003: 273)

Mapud

llellipu

request-IND.OBJ-FORCE-PL-PASS-TH-AGR

'they have to be requested many things'

(Ryan 2010: 762; Smeets 1989: 361)

Chumbivilcas Quechua

kiki-la-n-kuna ~ *kiki-n-kuna-la*

self-just-3-PL

'just themselves'

(Ryan 2010: 762; Muysken 1981: 295)

In each of these cases, a composed affix and an adjacent simple affix reverse their order.

Some explanations and interpretations

Parallelisms between single rules and sequences of rules

- g. A simple affix seems to stand in paradigmatic opposition to a sequence of affixes.
- h. A morphotactic restriction seems sensitive to a nonadjacent affix.
- i. Two affixes are partially alike.

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Primary and secondary agreement suffixes in Sanskrit
(active voice suffixes)

		Singular	Dual	Plural
Primary endings	1 st	<i>-mi</i>	<i>-vas</i>	<i>-mas</i>
	2 nd	<i>-si</i>	<i>-thas</i>	<i>-tha</i>
	3 rd	<i>-ti</i>	<i>-tas</i>	<i>-anti</i>
Secondary endings	1 st	<i>-m</i>	<i>-va</i>	<i>-ma</i>
	2 nd	<i>-s</i>	<i>-tam</i>	<i>-ta</i>
	3 rd	<i>-t</i>	<i>-tām</i>	<i>-an</i>

i. Two affixes are partially alike.

		Affix	Content
Pre-Sanskrit I:	Affix 1	<i>-i</i>	{ind nonpast}
	Affix 2	<i>-m</i>	{1 sg}

i. Two affixes are partially alike.

		Affix	Content
Pre-Sanskrit I:	Affix 1	<i>-i</i>	{ind nonpast}
	Affix 2	<i>-m</i>	{1 sg}
Pre-Sanskrit II:	Dependent affix	<i>-i</i>	{ind nonpast}
	Carrier affix	<i>-m</i>	{1 sg}
	Composite [<i>-i</i> © <i>-m</i>]	<i>-m-i</i>	{1 sg ind nonpast}

i. Two affixes are partially alike.

		Affix	Content
Pre-Sanskrit I:	Affix 1	<i>-i</i>	{ind nonpast}
	Affix 2	<i>-m</i>	{1 sg}
Pre-Sanskrit II:	Dependent affix	<i>-i</i>	{ind nonpast}
	Carrier affix	<i>-m</i>	{1 sg}
	Composite [<i>-i</i> © <i>-m</i>]	<i>-m-i</i>	{1 sg ind nonpast}
Sanskrit:	Dependent affix	<i>-i</i>	{ind nonpast}
	Carrier affix	<i>-m</i>	{1 sg}
	Composite reanalyzed	<i>-mi</i>	{1 sg ind nonpast}

Conclusion

A widespread assumption is that affixes are by definition morphologically unanalyzable and therefore combine only with stems.

The evidence discussed here suggests that an affix may combine with another affix to form a more complex affix.

More broadly, it suggests that an adequate theory of morphotactics requires a richer algebra than is generally assumed in current morphological theory, but one which is at least tacitly assumed in many language-specific morphological descriptions.

Conclusion

This is, again, not just an observation about affixes, but about rules: morphological rules do not invariably apply directly to stems, but may compose with one another to produce more specific rules. Thus, the algebra of morphotactics should perhaps more accurately be called an algebra of “regulatactics”.

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Thank you!