

Missing links in derivational paradigms

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O u t l i n e

- A. Derivational paradigms vs inflectional paradigms
- B. Missing links in derivational paradigms
- C. Independent motivation for the principle of rule conflation
 - *Rule A's domain of application in the context of rule B*
 - *Rule A's productivity in the context of rule B*
 - *The content expressed by rule A in the context of rule B*
 - *Rule A's usefulness in the context of rule B*
 - *The processing of rule A in the context of rule B*
 - *Rule A's dual function in the context of rule B*
- D. Conclusion

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Derivational paradigms vs inflectional paradigms

Derivational paradigms vs inflectional paradigms

A fundamental architectural difference between inflectional paradigms and derivational paradigms is one of hierarchy.

Derivational paradigms vs inflectional paradigms

The inflectional paradigm of a lexeme L may be seen as a set of cells, where each cell is the pairing $\langle w, \sigma \rangle$ of a word form w with a morphosyntactic property set σ .

The synthetic inflectional paradigm of French INVENTER ‘invent’

Indicative					Subjunctive		Imperative
Present	Imperfect	Simple past	Future	Conditional	Present	Imperfect	
1sg <i>invente</i>	<i>inventais</i>	<i>inventai</i>	<i>inventerai</i>	<i>inventerais</i>	<i>invente</i>	<i>inventasse</i>	
2sg <i>inventes</i>	<i>inventais</i>	<i>inventas</i>	<i>inventeras</i>	<i>inventerais</i>	<i>inventes</i>	<i>inventasses</i>	<i>invente</i>
3sg <i>invente</i>	<i>inventait</i>	<i>inventa</i>	<i>inventera</i>	<i>inventerait</i>	<i>invente</i>	<i>inventât</i>	
1pl <i>inventons</i>	<i>inventions</i>	<i>inventâmes</i>	<i>inventerons</i>	<i>inventerions</i>	<i>inventions</i>	<i>inventassions</i>	<i>inventons</i>
2pl <i>inventez</i>	<i>inventiez</i>	<i>inventâtes</i>	<i>inventerez</i>	<i>inventeriez</i>	<i>inventiez</i>	<i>inventassiez</i>	<i>inventez</i>
3pl <i>inventent</i>	<i>inventaient</i>	<i>inventèrent</i>	<i>inventeront</i>	<i>inventeraient</i>	<i>inventent</i>	<i>inventassent</i>	

Infinitive: *inventer*

Participles Present: *inventant*
Past: *inventé*

Derivational paradigms vs inflectional paradigms

⟨ *inventons*, {1st plural present indicative} ⟩

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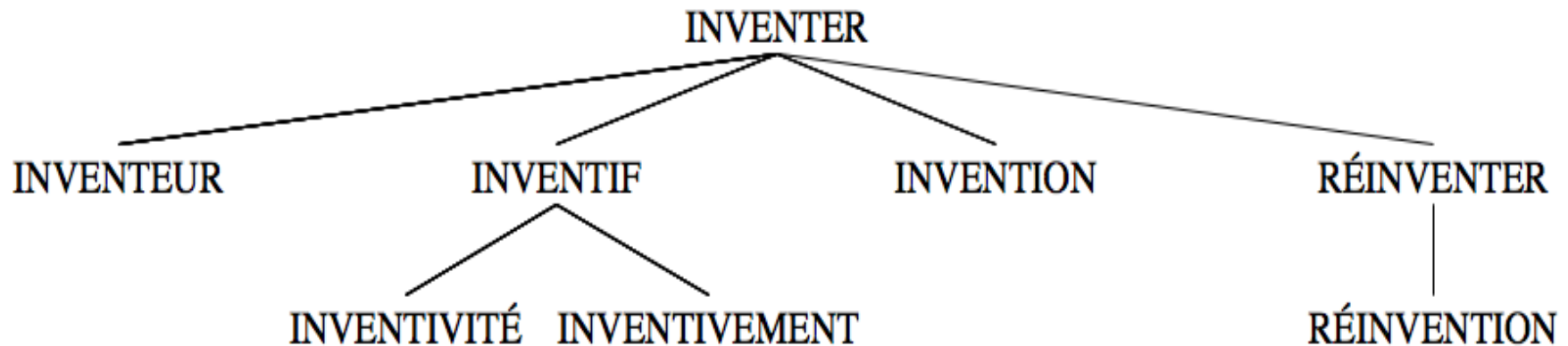
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Derivational paradigms vs inflectional paradigms

By contrast, the derivational paradigm of a lexeme L has a hierarchical structure dominated by L: each node in this structure is a lexeme that derives from the nodes that dominate it.

The derivational paradigm of French **INVENTER** ‘invent’



Derivational paradigms vs inflectional paradigms

Here, I discuss a canonical property of derivational paradigms and one kind of apparent deviation from this property.

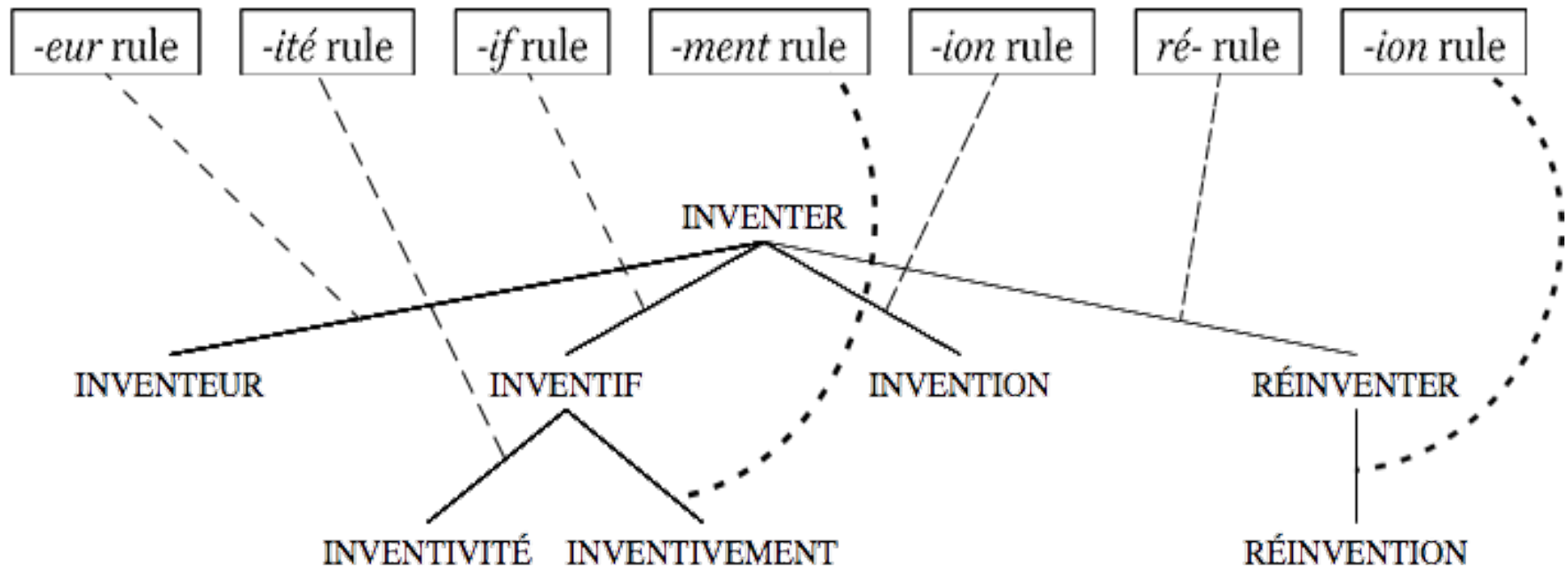
Derivational paradigms vs inflectional paradigms

I will say that a derivational paradigm P is canonical with respect to the property of RULE-BASED HIERARCHY if and only if it satisfies the following criterion:

For any two lexemes L_1 and L_2 that stand in a mother-daughter relation in P , there is a rule of derivation R such that $R(L_1) = L_2$. That is, R determines both the morphological form and the syntactico-semantic properties of L_2 from those of L_1 .

Derivational paradigms vs inflectional paradigms

The canonical structure of the paradigm of French INVENTER ‘invent’



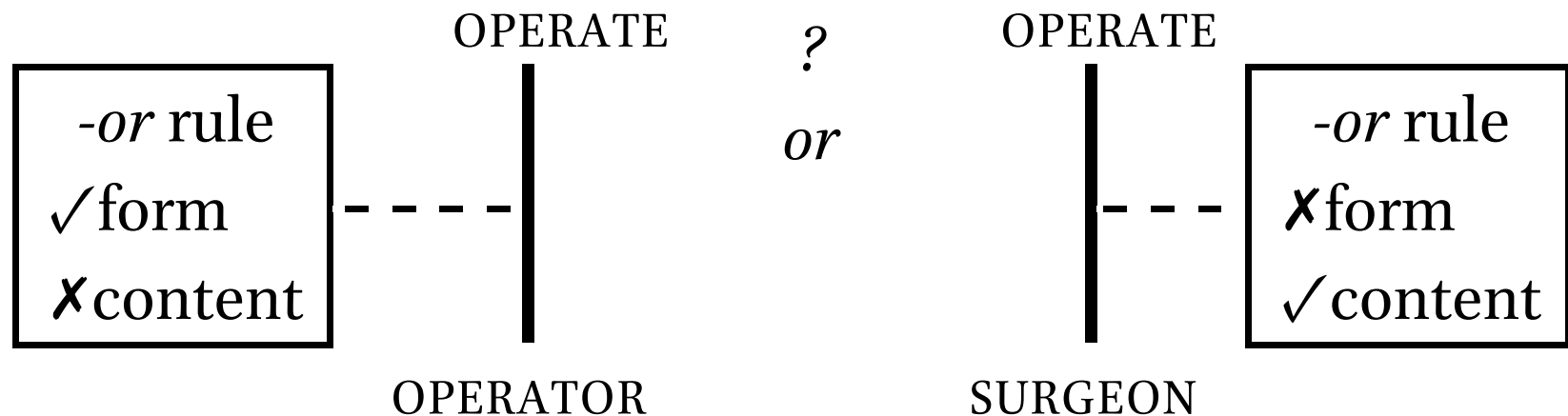
Derivational paradigms vs inflectional paradigms

There are various ways in which a derivational paradigm might deviate from the canonical property of rule-based hierarchy.

Derivational paradigms vs inflectional paradigms

There are various ways in which a derivational paradigm might deviate from the canonical property of rule-based hierarchy. For example:

A puzzle in the derivational paradigm of English OPERATE 'perform surgery'



Derivational paradigms vs inflectional paradigms

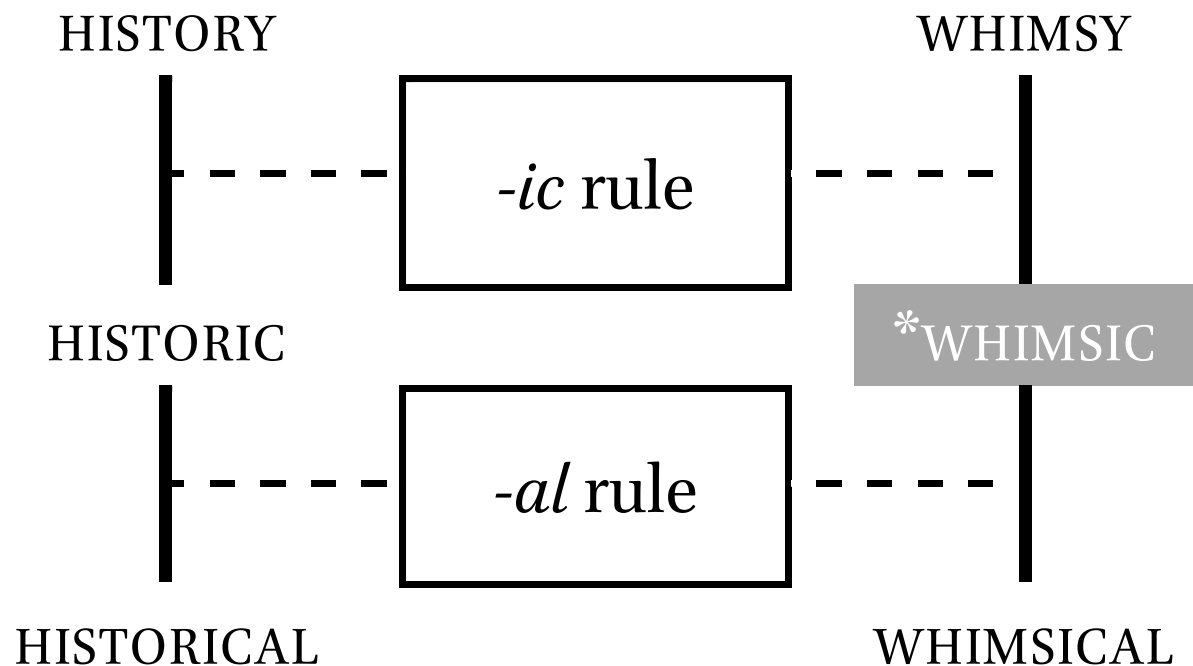
My focus here will be on a different sort of apparent deviation from canonical rule-based hierarchy: the fact that in some derivational paradigms, the mother-daughter relation between two lexemes is seemingly mediated by two rules rather than one.

Missing links in derivational paradigms

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Some derivational paradigms seem to have a “missing link” between base and derivative:

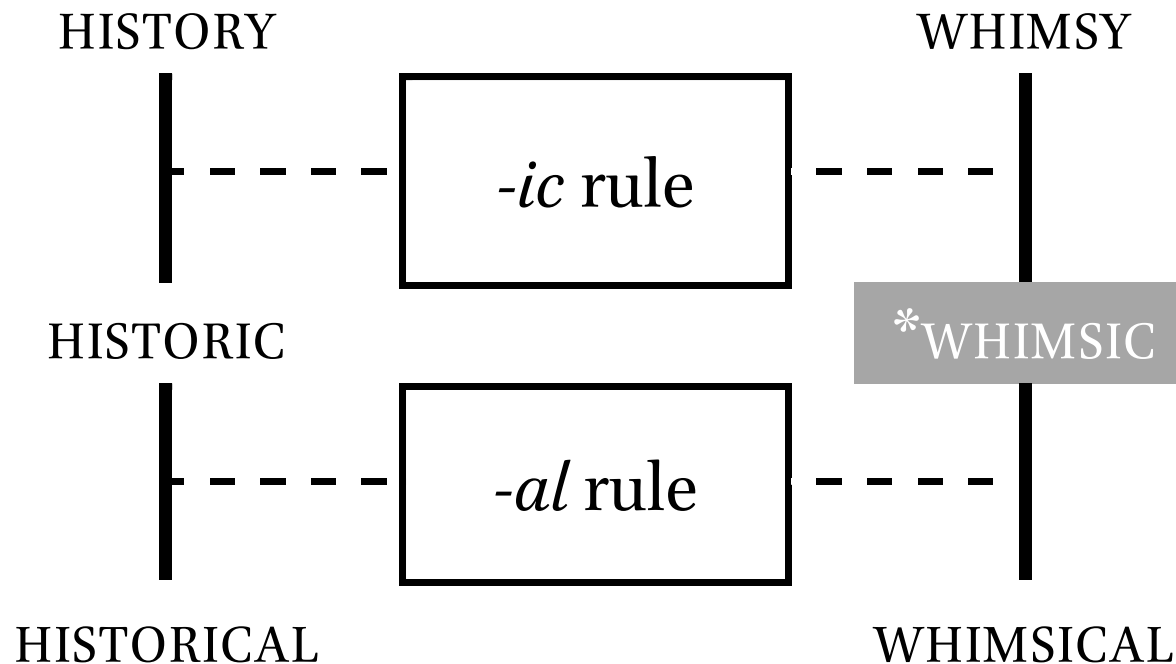
A missing link in the derivational paradigm of WHIMSY



Missing links in derivational paradigms

A MISSING LINK is a nonactual lexeme whose stem seemingly participates in defining the morphology of an actual lexeme's stem.

A missing link in the derivational paradigm of WHIMSY



Missing links in derivational paradigms

Should missing links be seen as evidence that the lexicon of a language includes virtual as well as actual lexemes?

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- The one approach would seem to entail that the lexicon contains more virtual words than actual words;
- the other requires that we invent criteria for deciding which nonactual but well-formed words are virtual and which are not.

Missing links in derivational paradigms

Here, I present a solution to the problem of derivational missing links that is more concrete (and less ontologically suspect).

My essential claim is that two rules of derivation may combine to form a single, complex rule.

Missing links in derivational paradigms

Some simple and complex rules of affixation in English

	Simple rules of affixation				Complex rules of affixation	
a.	<i>-ic</i>	+	<i>-al</i>	→	<i>-ical</i>	
	<i>-ist</i>	+	<i>-ic</i>	→	<i>-istic</i>	
	<i>-at</i>	+	<i>-ion</i>	→	<i>-ation</i>	
b.			<i>-ize</i>	+	<i>-ation</i>	→ <i>-ization</i>

Cf. Bauer 1988, Bochner 1992, Raffelsiefen 1992, Luís & Spencer 2005.

Missing links in derivational paradigms

How do rules combine?

One possibility: **Rule composition**

Rule B composes with rule A to produce the composed rule ($B \circ A$), whose application to a lexeme L is the result of applying B to the result of applying A to L.

Missing links in derivational paradigms

Another possibility: Rule conflation

Four formal patterns of rule conflation

	Rule B	Rule A	Conflation of B with A (= [B © A])	the application of [B © A] to stem X
i.	suffixes <i>-b</i>	suffixes <i>-a</i>	suffixes <i>-ab</i>	<i>Xab</i> [= (B ◦ A)(X)]
ii.	suffixes <i>-b</i>	prefixes <i>a-</i>	prefixes <i>ab-</i>	<i>abX</i> [\neq (B ◦ A)(X), i.e. <i>aXb</i>]
iii.	prefixes <i>b-</i>	suffixes <i>-a</i>	suffixes <i>-ba</i>	<i>Xba</i> [\neq (B ◦ A)(X), i.e. <i>bXa</i>]
iv.	prefixes <i>b-</i>	prefixes <i>a-</i>	prefixes <i>ba-</i>	<i>baX</i> [= (B ◦ A)(X)]

Missing links in derivational paradigms

Another possibility: Rule conflation

Four formal patterns of rule conflation

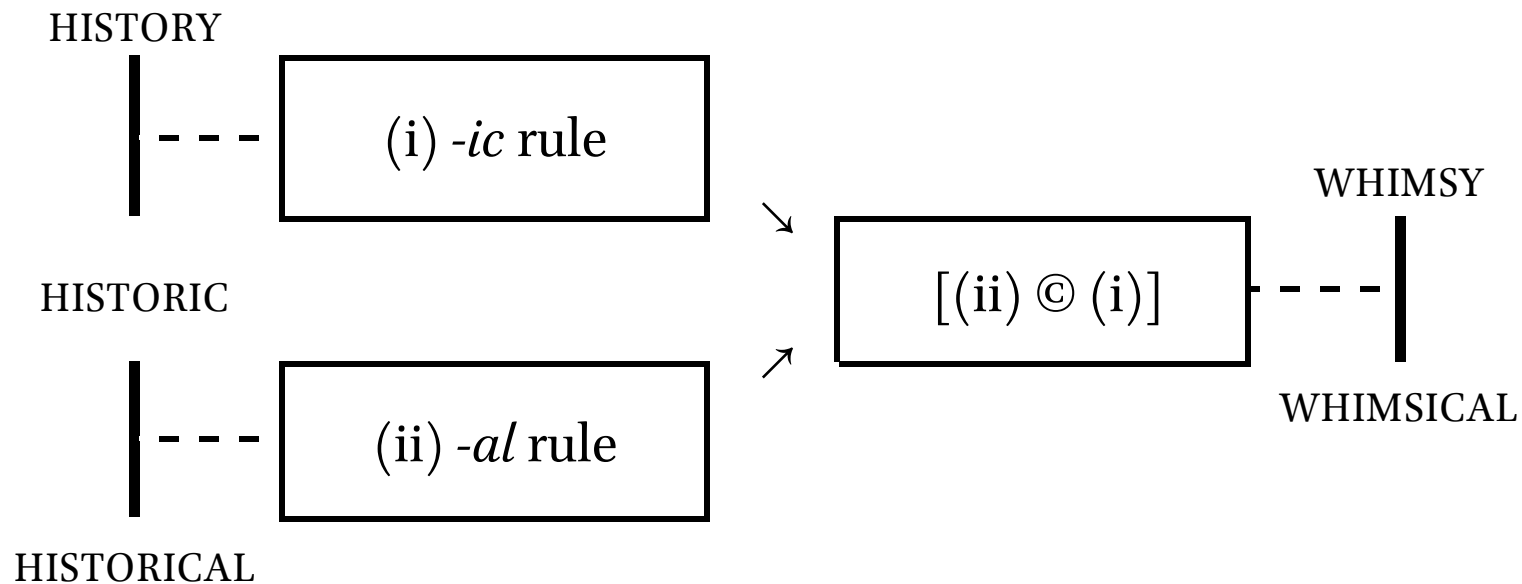
	Rule B	Rule A	Conflation of B with A (= [B © A])	the application of [B © A] to stem X
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iv.	prefixes <i>b-</i>	prefixes <i>a-</i>	prefixes <i>ba-</i>	<i>baX</i> [= (B ◦ A)(X)]

Nevertheless, the default content expressed by [B © A] is the composition of B's content with that of A.

Missing links in derivational paradigms

Rule conflation reconciles the mother-daughter pair WHIMSY – WHIMSICAL with the canonical property of rule-based hierarchy.

**No missing link in the derivational paradigm
of WHIMSY**



Missing links in derivational paradigms

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- **The existence of a complex rule conflating rule B with rule A does not, in itself, exclude the possibility that these rules might apply independently, in their unconflated forms.** Thus, while the derivational relation between the lexemes WHIMSY and WHIMSICAL is mediated by a conflation of the *-al* rule with the *-ic* rule, these two rules nevertheless apply independently in licensing the derivatives HISTORIC and HISTORICAL.

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- **The existence of a complex rule conflating rule B with rule A does not, in itself, exclude the possibility that these rules might apply independently, in their unconflated forms.** Thus, while the derivational relation between the lexemes WHIMSY and WHIMSICAL is mediated by a conflation of the *-al* rule with the *-ic* rule, these two rules nevertheless apply independently in licensing the derivatives HISTORIC and HISTORICAL.
- The properties of a conflated rule are, in the **default** case, deducible from the properties of the individual rules that it comprises; nevertheless, a conflated rule does take on the status of an independent rule, and its properties may therefore **deviate** from the default properties inferrable from its component rules.

The principle of rule conflation is independently motivated by a variety of phenomena

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- a. The domain of rule A may depend on whether it applies in combination with rule B.
- b. The productivity of rules A and B may depend on whether they apply in combination.
- c. The content expressed by the combination of rules A and B may differ from the content of A combined with the content of B .
- d. Rule A may be more useful in combination with rule B than it is alone
- e. Words involving the combination of rule A with rule B may be processed faster than words with other rule combinations.
- f. Rule A may have two different functions in the context of rule B.

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It is reasonable to assume that a derivational rule A maintains the same domain of application no matter what rule applies after it.

Yet, this assumption is widely disconfirmed.

The domain of rule A may depend on whether it applies in combination with rule B.

Some adjectives are defined by the successive application of the two rules, first the *-ic* rule, then the *-al* rule.

Derivatives in *-ic* and *-ical*

	Stem	Adjective in- <i>ic</i>	Adjective in- <i>ic-al</i>
a.	<i>history</i>	<i>historic</i>	<i>historical</i>
	<i>cycle</i>	<i>cyclic</i>	<i>cyclical</i>

The domain of rule A may depend on whether it applies in combination with rule B.

There are also adjectives derived by means of the *-ic* rule that do not serve as stems for the *-al* rule.

Derivatives in *-ic* and *-ical*

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	<i>cycle</i>	<i>cyclic</i>	<i>cyclical</i>
b.	<i>ion</i>	<i>ionic</i>	* <i>ionical</i>
	<i>base</i>	<i>basic</i>	* <i>basical</i>

The domain of rule A may depend on whether it applies in combination with rule B.

But in the definition of still other words, the application of the *-ic* rule requires the subsequent application of the *-al* rule. This third group seems to involve missing links, i.e. a sort of inward conditioning.

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	<i>cycle</i>	<i>cyclic</i>	<i>cyclical</i>
b.	<i>ion</i>	<i>ionic</i>	* <i>ionical</i>
	<i>base</i>	<i>basic</i>	* <i>basical</i>
c.	<i>whimsy</i>	* <i>whimsic</i> (missing link)	<i>whimsical</i>
	<i>nonsense</i>	* <i>nonsensic</i> (missing link)	<i>nonsensical</i>

The domain of rule A may depend on whether it applies in combination with rule B.

This third group is not small:

Some adjective types in *-ical* with more than 50 tokens in COCA which lack any corresponding adjective in *-ic*

<i>physical</i>	70068	<i>eschatological</i>	489	<i>narratological</i>	236	<i>philological</i>	111
<i>radical</i>	14186	<i>nonsensical</i>	468	<i>farcical</i>	207	<i>pneumatological</i>	99
<i>identical</i>	9128	<i>genealogical</i>	443	<i>teleological</i>	195	<i>soteriological</i>	95
<i>vertical</i>	7699	<i>cylindrical</i>	865	<i>etymological</i>	190	<i>commonsensical</i>	94
<i>surgical</i>	6151	<i>nautical</i>	856	<i>ecclesiological</i>	184	<i>ornithological</i>	93
<i>biblical</i>	6000	<i>cortical</i>	392	<i>lackadaisical</i>	167	<i>archetypical</i>	87
<i>pharmaceutical</i>	4213	<i>zoological</i>	379	<i>typological</i>	150	<i>terminological</i>	86
<i>cervical</i>	1511	<i>quizzical</i>	372	<i>indexical</i>	135	<i>tautological</i>	70
<i>whimsical</i>	1169	<i>inimical</i>	290	<i>helical</i>	133	<i>museological</i>	58
<i>impractical</i>	1141	<i>christological</i>	260	<i>oratorical</i>	118	<i>tropological</i>	58
<i>lexical</i>	938	<i>pontifical</i>	259	<i>catechetical</i>	111	<i>ototopical</i>	54

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The principle of rule conflation provides an alternative to postulating missing links or inward conditioning in the derivational paradigms of all these words.

This alternative is to say that the domain of the conflated *-ical* rule includes forms that aren't in the domain of the simple *-ic* rule.

The productivity of rules A and B may depend on whether they apply in combination.

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It is reasonable to assume that the productivity of words involving the joint application of rule A and rule B is in general calculable from the productivity of rule A and that of rule B.

Yet, one can easily find cases in which the joint application of rules A and B has significantly greater productivity than the application of either A or B individually.

The productivity of rules A and B may depend on whether they apply in combination.

Productivity* of the *-ize* rule in COCA: 0.0028

*The category-conditioned productivity of a morphological rule M (Baayen 1993):

$$\frac{\text{number of hapax legomena exhibiting M}}{\text{total number of tokens exhibiting M}}$$

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Productivity* of the *-ize* rule in COCA: 0.0028

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A rule may enhance the applicability of a subsequent rule; in the terminology of Williams (1981), the first rule “potentiates” the second one.

Here, the *-ize* rule might be seen as potentiating the *-ation* rule, since verbs in *-ize* generally belong to the *-ation* rule’s domain of application.

The productivity of rules A and B may depend on whether they apply in combination.

Productivity* of the *-ize* rule in COCA: 0.0028

Productivity* of the *-ation* rule in COCA: 0.0021

Productivity* of *-ize* and *-ation* rules applying together in COCA: 0.0047

Aronoff (1976) proposes to account for potentiation in the formulation of the potentiated rule, by means of a “positive constraint” stipulating that its domain of application generally includes stems derived by means of the potentiating rule.

The productivity of rules A and B may depend on whether they apply in combination.

Productivity* of the *-ize* rule in COCA: 0.0028

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Aronoff (1976) proposes to account for potentiation in the formulation of the potentiated rule, by means of a “positive constraint” stipulating that its domain of application generally includes stems derived by means of the potentiating rule.

On this approach, the formulation of the *-ation* rule stipulates that verbs in *-ize* are in general in its domain of application.

The productivity of rules A and B may depend on whether they apply in combination.

Productivity* of the *-ize* rule in COCA: 0.0028

Productivity* of the *-ation* rule in COCA: 0.0021

Productivity* of *-ize* and *-ation* rules applying together in COCA: 0.0047

But this same approach can't account for the fact that the productivity of the *-ize* rule is also apparently enhanced by the subsequent application of the *-ation* rule.

The productivity of rules A and B may depend on whether they apply in combination.

Productivity* of the *-ize* rule in COCA: 0.0028

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Productivity* of *-ize* and *-ation* rules applying together in COCA: 0.0047

But this same approach can't account for the fact that the productivity of the *-ize* rule is also apparently enhanced by the subsequent application of the *-ation* rule.

In COCA, this fact is reflected in the existence of nouns in *-ization* whose corresponding verb in *-ize* is absent—

The productivity of rules A and B may depend on whether they apply in combination.

Tokens of nouns in *-ization* in COCA for which forms of the corresponding verb in *-ize* are absent from the corpus

<i>adjectivalization</i>	1	<i>Bavarianization</i>	7	<i>cantonization</i>	8	<i>condo-ization</i>	1	<i>cyclization</i>	1
<i>amateurization</i>	4	<i>Beirutization</i>	1	<i>capillarization</i>	1	<i>condomization</i>	1	<i>Dagwoodization</i>	1
<i>amorphization</i>	4	<i>bipolarization</i>	5	<i>Carolinization</i>	1	<i>confessionalization</i>	4	<i>Daimlerization</i>	2
<i>androgenization</i>	3	<i>Bolivianization</i>	1	<i>carryization</i>	1	<i>continentalization</i>	1	<i>villagization</i>	15
<i>Angelesization</i>	3	<i>bosonization</i>	2	<i>centaurization</i>	1	<i>contractorization</i>	1	<i>vulgatization</i>	1
<i>angelicization</i>	1	<i>briberizations</i>	1	<i>chaptalization</i>	1	<i>corporalization</i>	1	<i>Wal-martization</i>	2
<i>angelization</i>	5	<i>Brusselization</i>	1	<i>Chileanization</i>	1	<i>corporativization</i>	1	<i>Walmartization</i>	3
<i>Asianization</i>	5	<i>buffetization</i>	1	<i>Christmasization</i>	1	<i>cosmopolitization</i>	1	<i>Washingtonization</i>	1
<i>Aspenization</i>	4	<i>Bulgarization</i>	2	<i>CNN-ization</i>	1	<i>cretinization</i>	2	<i>worldization</i>	1
<i>Australianization</i>	1	<i>bunkerization</i>	1	<i>coca-colaization</i>	1	<i>criticalization</i>	1	<i>wristonization</i>	1
<i>automization</i>	1	<i>Cajunization</i>	10	<i>coca-colonization</i>	4	<i>Cubanization</i>	1	<i>Zairianization</i>	9
<i>Bahrainization</i>	1	<i>California-ization</i>	1	<i>Colombianization</i>	2	<i>culturization</i>	1	<i>Zairization</i>	1
<i>Balinization</i>	2	<i>Californization</i>	1	<i>commodization</i>	1	<i>curarization</i>	1	<i>Zionization</i>	1
<i>Bantustanization</i>	2	<i>Cancunization</i>	1	<i>compromization</i>	1	<i>customerization</i>	2	<i>Zuckerization</i>	1

The productivity of rules A and B may depend on whether they apply in combination.

Tokens of nouns in *-ization* in COCA for which forms of the *-ize* rule apply in the corpus

<i>adjectivalization</i>						<i>cyclization</i>	1		
<i>amateurization</i>						<i>Dagwoodization</i>	1		
<i>amorphization</i>						<i>Daimlerization</i>	2		
<i>androgenization</i>						<i>villagization</i>	15		
<i>Angelesization</i>						<i>vulgatization</i>	1		
<i>angelicization</i>						<i>Wal-martization</i>	2		
<i>angelization</i>						<i>Walmartization</i>	3		
<i>Asianization</i>						<i>Washingtonization</i>	1		
<i>Aspenization</i>						<i>worldization</i>	1		
<i>Australianization</i>						<i>Wristonization</i>	1		
<i>automization</i>						<i>Zairianization</i>	9		
<i>Bahrainization</i>	1	<i>California-ization</i>	1	<i>Colombianization</i>	2	<i>culturization</i>	1	<i>Zairization</i>	1
<i>Balinization</i>	2	<i>Californization</i>	1	<i>commodization</i>	1	<i>curarization</i>	1	<i>Zionization</i>	1
<i>Bantustanization</i>	2	<i>Cancunization</i>	1	<i>compromization</i>	1	<i>customerization</i>	2	<i>Zuckerization</i>	1

The *-ize* rule seems to be subject to a kind of inward conditioning such that in some cases, it is only applicable if the *-ation* rule applies subsequently.

The enhancement of the *-ize* rule's productivity by the *-ation* rule cannot be portrayed as a positive constraint on the stems to which the *-ize* rule applies.

The productivity of rules A and B may depend on whether they apply in combination.

Tokens of nouns in *-ization* in COCA for which forms of the corpus

The principle of rule conflation allows the conflation of the *-ation* rule with the *-ize* rule to have the status of an independent rule whose productivity is in principle independent of that of its component rules taken individually.

<i>adjectivalization</i>					<i>cyclization</i>	1	
<i>amateurization</i>					<i>Dagwoodization</i>	1	
<i>amorphization</i>					<i>Daimlerization</i>	2	
<i>androgenization</i>					<i>villagization</i>	15	
<i>Angelesization</i>					<i>vulgatization</i>	1	
<i>angelicization</i>					<i>Wal-martization</i>	2	
<i>angelization</i>					<i>Walmartization</i>	3	
<i>Asianization</i>	5	<i>buffetization</i>	1	<i>Christmasization</i>	1	<i>cosmopolitization</i>	1
<i>Aspenization</i>	4	<i>Bulgarization</i>	2	<i>CNN-ization</i>	1	<i>cretinization</i>	2
<i>Australianization</i>	1	<i>bunkerization</i>	1	<i>coca-colaization</i>	1	<i>criticalization</i>	1
<i>automization</i>	1	<i>Cajunization</i>	10	<i>coca-colonization</i>	4	<i>Cubanization</i>	1
<i>Bahrainization</i>	1	<i>California-ization</i>	1	<i>Colombianization</i>	2	<i>culturization</i>	1
<i>Balinization</i>	2	<i>Californization</i>	1	<i>commodization</i>	1	<i>curarization</i>	1
<i>Bantustanization</i>	2	<i>Cancunization</i>	1	<i>compromization</i>	1	<i>customerization</i>	2
						<i>Washingtonization</i>	1
						<i>worldization</i>	1
						<i>wristonization</i>	1
						<i>Zairianization</i>	9
						<i>Zairization</i>	1
						<i>Zionization</i>	1
						<i>Zuckerization</i>	1

The content expressed by the combination of rules A and B may differ from the content of A combined with the content of B.

The content expressed by the combination of rules A and B may differ from the content of A combined with the content of B.

Ordinarily, the content expressed by the application of rules A and B is, in some sense, a function of the content realized by A together with that realized by B.

Yet there are clear cases in which this is not so.

The content expressed by the combination of rules A and B may differ from the content of A combined with the content of B.

Derived adjectives in *-istic* ← nouns in *-ist*

Nouns in *-ist* generally have human reference, denoting specialists in or devotees of X or Xism. Yet, the interpretation of an adjective in *-istic* generally isn't a function of the class of people denoted by the corresponding noun in *-ist*.

a linguistic phenomenon

a futuristic landscape

etc.

The content expressed by the combination of rules A and B may differ from the content of A combined with the content of B.

Moreover, there are adjectives in *-istic* for which there is no corresponding noun in *-ist*.

**Adjectives in *-istic* with 8 or more tokens in COCA
lacking any corresponding noun in *-ist***

<i>anachronistic</i>	567	<i>euphemistic</i>	92	<i>solipsistic</i>	99
<i>animalistic</i>	104	<i>heuristic</i>	506	<i>Spinozistic</i>	10
<i>autistic</i>	1045	<i>hubristic</i>	51	<i>sultanistic</i>	8
<i>carnivalistic</i>	11	<i>logistic</i>	1689	<i>sylogistic</i>	57
<i>characteristic</i>	7675	<i>oligopolistic</i>	31	<i>synchronistic</i>	30
<i>cladistic</i>	12	<i>paralinguistic</i>	15	<i>triumphalistic</i>	9
<i>co-artistic</i>	18	<i>patristic</i>	279	<i>veristic</i>	9
<i>communalistic</i>	8	<i>Rousseauistic</i>	9	<i>warrioristic</i>	9
<i>ethno-linguistic</i>	13	<i>shamanistic</i>	70	<i>wholistic</i>	28

The content expressed by the combination of rules A and B may differ from the content of A combined with the content of B.

The principle of rule conflation makes it possible to avoid assuming that these adjectives belong to derivational paradigms that include some missing nominal links.

As an independent rule, the conflation of the *-ic* rule with the *-ist* rule deviates from a conflated rule's default semantics, deriving adjectives whose interpretation is not a function of the interpretation of the corresponding *-ist* noun (if one even exists).

The content expressed by the combination of rules A and B may differ from the content of A combined with the content of B.

In many cases, the interpretation of adjectives in *-istic* is very much like that of adjectives in *-ic*, as though *-ist* has been bleached of any content.

Cf. the near-synonyms

cabalistic

esoteric

cannibalistic

anthropophagic

narcissistic

egocentric

realistic

pragmatic

synergistic

synergic

Rule A may be more useful in combination with rule B than it is alone.

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It's reasonable to assume that a particular class of derivational bases is just as useful as any class of derivatives to which it gives rise.

Yet, evidence abounds of derivatives that fail to conform to this assumption. Recall—

Rule A may be more useful in combination with rule B than it is alone.

Tokens of nouns in *-ization* in COCA for which forms of the corresponding verb in *-ize* are absent from the corpus

<i>adjectivalization</i>	1	<i>Bavarianization</i>	7	<i>cantonization</i>	8	<i>condo-ization</i>	1	<i>cyclization</i>	1
<i>amateurization</i>	4	<i>Beirutization</i>	1	<i>capillarization</i>	1	<i>condomization</i>	1	<i>Dagwoodization</i>	1
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<i>Australianization</i>	1	<i>bunkerization</i>	1	<i>coca-colaization</i>	1	<i>criticalization</i>	1	<i>wristonization</i>	1
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<i>Bahrainization</i>	1	<i>California-ization</i>	1	<i>Colombianization</i>	2	<i>culturization</i>	1	<i>Zairization</i>	1
<i>Balinization</i>	2	<i>Californization</i>	1	<i>commodization</i>	1	<i>curarization</i>	1	<i>Zionization</i>	1
<i>Bantustanization</i>	2	<i>Cancunization</i>	1	<i>compromization</i>	1	<i>customerization</i>	2	<i>Zuckerization</i>	1

Rule A may be more useful in combination with rule B than it is alone.

Nouns in *-ization* with 10 or more tokens in COCA which outnumber the corresponding verb in *-ize* by at least 10 to 1

(N = *-ization* noun tokens; V = *-ize* verb tokens)

	N	V	N+V	N/(N+V)		N	V	N+V	N/(N+V)
<i>self-actualization</i>	213	1	214	0.995	<i>globalization</i>	4683	294	4977	0.941
<i>self-realization</i>	140	1	141	0.993	<i>tabloidization</i>	15	1	16	0.938
<i>civilization</i>	10526	175	10701	0.984	<i>barbarization</i>	13	1	14	0.929
<i>Finlandization</i>	56	1	57	0.982	<i>Kafkatization</i>	13	1	14	0.929
<i>factorization</i>	133	3	136	0.978	<i>renormalization</i>	64	5	69	0.928
<i>self-categorization</i>	40	1	41	0.976	<i>Arabization</i>	25	2	27	0.926
<i>Islamization</i>	173	5	178	0.972	<i>decimalization</i>	12	1	13	0.923
<i>desalinization</i>	62	2	64	0.969	<i>geovisualization</i>	12	1	13	0.923
<i>neovascularization</i>	27	1	28	0.964	<i>microneutralization</i>	12	1	13	0.923
<i>Vietnamization</i>	27	1	28	0.964	<i>embolization</i>	117	10	127	0.921
<i>marketization</i>	103	5	108	0.954	<i>principalization</i>	11	1	12	0.917
<i>isomerization</i>	20	1	21	0.952	<i>Talibanization</i>	22	2	24	0.917
<i>hyalinization</i>	18	1	19	0.947	<i>cross-fertilization</i>	87	8	95	0.916
<i>salinization</i>	89	5	94	0.947	<i>McDonaldization</i>	10	1	11	0.909
<i>re-epithelialization</i>	16	1	17	0.941	<i>overcapitalization</i>	10	1	11	0.909
<i>self-dramatization</i>	16	1	17	0.941					

Rule A may be more useful in combination with rule B than it is alone.

The disparity of these token frequencies suggests that the nouns in these tables are, in some sense, more useful than the corresponding verbs.

Usefulness is a multifaceted concept. First, word X may be more useful than word Y with respect to its semantic content—that is, the denotation of X may be more important than that of Y.

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Usefulness is a multifaceted concept. First, word X may be more useful than word Y with respect to its semantic content—that is, the denotation of X may be more important than that of Y.

The noun *Cajunization* appears ten times in COCA, the verb *Cajunize* not at all; by contrast, the noun *pasteurization* appears 123 times, and forms of the verb *pasteurize* appear 122 times. This difference likely has a semantic explanation: the meaning of *pasteurization* is based a well-defined process, but the meaning *Cajunization* is based on the well-defined outcome of a vague and heterogeneous set of factors.

Rule A may be more useful in combination with rule B than it is alone.

Second, word X may be more useful than word Y with respect to the lexicon, since word Y might be blocked by an existing lexical item while word X is not.

For instance, nominalizations in *-ic-ity* generally correspond to adjectives in *-ic* (*authenticity, elasticity, specificity, toxicity, etc.*) but *multiplicity* and *simplicity* are exceptions; this is presumably because **multiplic* and **simplic* are lexically blocked by the existence of *multiple* and *simple*.

Rule A may be more useful in combination with rule B than it is alone.

Third, word X may be more useful than word Y because it better satisfies an output condition.

For instance, *Hermanator* (a blend of *Herman*—media personality Herman Cain—and *Terminator*) has six tokens in COCA, but no token of any form of the putative verb **Hermanate*. *Hermanator* works well as a blend of *Terminator*, but **Hermanate* does not.

Rule A may be more useful in combination with rule B than it is alone.

The principle of rule conflation makes it possible to avoid assuming that nouns like *Cajunization*, *simplicity*, and *Hermanator* occupy derivational paradigms in which **Cajunize*, **simplic* and **Hermanate* appear as missing links.

In each case, this principle makes it possible to assume that a conflated rule [B © A] defines derivatives that are more useful than those defined by rule A.

Words involving the combination of rule A with rule B may be processed faster than words with other rule combinations.

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Experimental evidence shows that formulaic combinations of words are stored and accessed as wholes and are therefore processed more quickly than nonformulaic word combinations that are otherwise comparable (Wray 2002; Underwood et al. 2004; Conklin & Schmitt 2012).

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Various factors contribute to formulaicity: formulaic word combinations

- are very frequent (*down the street, just what I wanted*),
- are idiomatic (*over the hill, sure as shooting*) or
- are simply the conventionally accepted way of expressing something (*please accept our condolences, take a walk*).

Words involving the combination of rule A with rule B may be processed faster than words with other rule combinations.

Research on formulaic language has mostly focused on formulaic combinations of words. But logically, combinations of affixes could also become formulaic (Frauenfelder & Schreuder 1992: 180).

Words involving the combination of rule A with rule B may be processed faster than words with other rule combinations.

Durrant (2013) shows that in Turkish, certain affixes appear adjacently with very high frequency, and are therefore good candidates for formulaicity. For example, 99.74% of the tokens of the 3rd-person singular possessive suffix *-sIn* in his sample appeared in one of three combinations:

<i>-dIk-</i>	<i>-sIn</i>	[subordinator – 3sg possessive]
<i>-mA</i>	<i>-sIn</i>	[subordinator – 3sg possessive]
<i>-yAcAK</i>	<i>-sIn</i>	[subordinator – 3sg possessive]

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<i>-yAcAK</i>	<i>-sIn</i>	[subordinator – 3sg possessive]

Moreover, one or another of these three combinations appeared in 20.51% of all of the verb-form tokens in the sample.

If frequency contributes to formulaicity, combinations of these sorts should become formulaic.

Words involving the combination of rule A with rule B may be processed faster than words with other rule combinations.

Bilgin (2016) confirmed this experimentally.

In a word recognition task, Bilgin presented subjects with inflected nouns, some with high-frequency suffix sequences, e.g.

gergedan-laş-tır-dı

rhino-BECOME-CAUS-PAST

caused to become a rhino

—and others with low-frequency suffix sequences, e.g.

antilop-laş-tır-ıp

antelope-BECOME-CAUS-GERUND

having caused to become an antelope,

controlling for the relative frequency of noun stems, of stem+suffix sequence combinations, and of the individual suffixes.

Words involving the combination of rule A with rule B may be processed faster than words with other rule combinations.

Subjects' response times were faster for high-frequency suffix sequences than for low-frequency sequences.

This suggests that the high-frequency sequences are processed as stored units rather than by the successive retrieval of individual suffixes.

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Rule conflation is precisely the principle that allows high-frequency affix combinations to be stored and accessed as units.

Rule A may have two different functions in the context of rule B.

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English derivational morphology exhibits a striking pattern of polyfunctionality involving the rules that introduce the suffixes *-ion*, *-ation* and *-ate*.

Rule A may have two different functions in the context of rule B.

The history of *-ion* and *-ation*

Latin nominalization:

perfect passive participial stem + *-iō(n)* = third-declension noun

Declension of Latin *incīsiō*

‘incision’

	Singular	Plural
Nom	<i>incīsiō</i>	<i>incīsiōnēs</i>
Gen	<i>incīsiōnis</i>	<i>incīsiōnum</i>
Dat	<i>incīsiōnī</i>	<i>incīsiōnibus</i>
Acc	<i>incīsiōnem</i>	<i>incīsiōnēs</i>
Abl	<i>incīsiōne</i>	<i>incīsiōnibus</i>
Voc	<i>incīsiō</i>	<i>incīsiōnēs</i>

Declension of Latin *aliēnātiō*

‘separation’

	Singular	Plural
Nom	<i>aliēnātiō</i>	<i>aliēnātiōnēs</i>
Gen	<i>aliēnātiōnis</i>	<i>aliēnātiōnum</i>
Dat	<i>aliēnātiōnī</i>	<i>aliēnātiōnibus</i>
Acc	<i>aliēnātiōnem</i>	<i>aliēnātiōnēs</i>
Abl	<i>aliēnātiōne</i>	<i>aliēnātiōnibus</i>
Voc	<i>aliēnātiō</i>	<i>aliēnātiōnēs</i>

Rule A may have two different functions in the context of rule B.

The history of *-ate*

Many Latin verbs were first borrowed into English in the perfect passive participial form.

This subsequently served as the basis for their integration into the system of English verb morphology (Marchand 1966: 199ff). Every form in the paradigms of English *incise* and *alienate* reflect this participial origin:

incīs- : perfect passive participial stem of *incīdere* ‘to cut open’

aliēnāt- : perfect passive participial stem of *aliēnāre* ‘to transfer’

Rule A may have two different functions in the context of rule B.

The history of *-ate*

Verbs from the Latin first conjugation therefore turn up in English with a final *-ate*. This was subsequently reanalyzed as a verb-deriving suffix.

Rule A may have two different functions in the context of rule B.

Some *-ation* nouns have
parallel *-ate* verbs

Because verbs in *-ate* often existed alongside nouns in *-ation*—originally the nominalizations of first-conjugation verbs—the suffix *-ation* in these nouns was in turn reanalyzed as involving the verb-forming suffix *-ate* followed by the nominalizing suffix *-ion*.

Noun or Adjective	<i>-ate</i> verb	<i>-ion</i> noun
<i>active</i>	<i>activ-ate</i>	<i>activ-at-ion</i>
<i>alien</i>	<i>alien-ate</i>	<i>alien-at-ion</i>
<i>assassin</i>	<i>assassin-ate</i>	<i>assassin-at-ion</i>
<i>captive</i>	<i>captiv-ate</i>	<i>captiv-at-ion</i>
<i>liquid</i>	<i>liquid-ate</i>	<i>liquid-at-ion</i>
<i>motive</i>	<i>motiv-ate</i>	<i>motiv-at-ion</i>
<i>note</i>	<i>not-ate</i>	<i>not-at-ion</i>
<i>oxygen</i>	<i>oxygen-ate</i>	<i>oxygen-at-ion</i>
<i>pulse</i>	<i>puls-ate</i>	<i>puls-at-ion</i>
<i>saliva</i>	<i>saliv-ate</i>	<i>saliv-at-ion</i>
<i>sublime</i>	<i>sublim-ate</i>	<i>sublim-at-ion</i>
<i>ulcer</i>	<i>ulcer-ate</i>	<i>ulcer-at-ion</i>
<i>vaccine</i>	<i>vaccin-ate</i>	<i>vaccin-at-ion</i>
<i>valid</i>	<i>valid-ate</i>	<i>valid-at-ion</i>

Rule A may have two different functions in the context of rule B.

But there were nouns in *-ation* that did not have parallel verbs in *-ate*. Many were nominalizations whose verbal counterparts were borrowed from Latin (or Old French) in their root form rather than in their perfect passive participial form.

E.g. the noun *accusation* (Latin *accusātiō*, acc. *accusātiōnem*) corresponds to the verb *accuse* (Latin *accusāre*) rather than to **accusate*.

Some *-ation* nouns do not have parallel *-ate* verbs

Verb	* <i>-ate</i> verb	<i>-ation</i> noun
<i>accuse</i>	* <i>accus-ate</i>	<i>accus-ation</i>
<i>cease</i>	* <i>cess-ate</i>	<i>cess-ation</i>
<i>consult</i>	* <i>consult-ate</i>	<i>consult-ation</i>
<i>declare</i>	* <i>declar-ate</i>	<i>declar-ation</i>
<i>deport</i>	* <i>deport-ate</i>	<i>deport-ation</i>
<i>evoke</i>	* <i>evoc-ate</i>	<i>evoc-ation</i>
<i>examine</i>	* <i>examin-ate</i>	<i>examin-ation</i>
<i>expect</i>	* <i>expect-ate</i>	<i>expect-ation</i>
<i>form</i>	* <i>form-ate</i>	<i>form-ation</i>
<i>manifest</i>	* <i>manifest-ate</i>	<i>manifest-ation</i>
<i>represent</i>	* <i>represent-ate</i>	<i>represent-ation</i>
<i>reveal</i>	* <i>revel-ate</i>	<i>revel-ation</i>
<i>usurp</i>	* <i>usurp-ate</i>	<i>usurp-ation</i>
<i>visit</i>	* <i>visit-ate</i>	<i>visit-ation</i>

Rule A may have two different functions in the context of rule B.

This difference has led some to assume that the morphology of nouns like *validation* is different from that of nouns like *accusation*—that *validation* is derived by means of two rules while *accusation* is derived by means of a single rule.

- a. **-ate rule** **-ion rule**
valid → *validate* → *validation*
- b. **-ation rule**
accuse → *accusation*

Rule A may have two different functions in the context of rule B.

Moreover, some have argued that the suffixes *-ion* and *-ation* are allomorphs.

Aronoff (1976: 104), for example, proposes the following rule to derive one from the other.

$$+A_{ion} \rightarrow \begin{cases} +ion \\ +tion \end{cases} / X \begin{cases} +cor \\ -cor \end{cases} \text{ — ,}$$

where $X \alpha cor$ is one of a set of specified latinate roots

Rule A may have two different functions in the context of rule B.

But could *validation* and *accusation* actually be alike in their morphology?

From a purely etymological point of view, they are.

And although modern English *-at-* serves a function in *validation* that it doesn't serve in *accusation*, the same can be said of *-ist* in *futurist* and *futuristic*.

Moreover, there are at least three considerations that suggest that *-at-* is the same formative in *accusation* as in *validation*.

Rule A may have two different functions in the context of rule B.

First, some English nominalizations in *-ation* for which verbal counterparts in *-ate* were never borrowed acquired them subsequently by back-formation.

Rule A may have two different functions in the context of rule B.

**Verbs in *-ate* likely derived from nouns
in *-ation* by back-formation**

Noun in <i>-ation</i>	1 st attestation	Verb in <i>-ate</i>	1 st attestation
<i>constipation</i>	c1400	<i>constipate</i>	1541
<i>cremation</i>	1623	<i>cremate</i>	1874
<i>dedication</i>	1382	<i>dedicate</i>	1530
<i>equation</i>	1393	<i>equate</i>	1530
<i>granulation</i>	1617	<i>granulate</i>	1666
<i>incarnation</i>	1297	<i>incarnate</i>	1533
<i>mitigation</i>	1382	<i>mitigate</i>	1425
<i>mutation</i>	1398	<i>mutate</i>	1796
<i>oration</i>	c1440	<i>orate</i>	c1600
<i>pagination</i>	1794	<i>paginate</i>	1858
<i>termination</i>	1395	<i>terminate</i>	1425

Rule A may have two different functions in the context of rule B.

Second, the *-at-* in *-ate* and the *-at-* in *-ation* are mutually exclusive. That is, we don't find nominalizations such as the following, which result from applying the *-ation* rule to a verb in *-ate*.

**alienatation*

**salivatation*

**validatation*

Rule A may have two different functions in the context of rule B.

Third, *-at-* appears with suffixes other than *-ion*. The pattern in Row (a) below is paralleled by those in Rows (b)–(d).

The parallel morphology of *-ion*, *-ive*, *-or* and *-ory*

	without <i>-at-</i>	with <i>-at-</i>	corresponding verb in <i>-ate</i> ?	
			yes	no
(a) Nouns in <i>-ion</i>	<i>rebellion</i>	<i>hyphenation</i> <i>explanation</i>	<i>hyphenate</i>	<i>*explanate</i>
(b) Adjectives in <i>-ive</i>	<i>explosive</i>	<i>operative</i> <i>conservative</i>	<i>operate</i>	<i>*conservate</i>
(c) Nouns in <i>-or</i>	<i>governor</i>	<i>activator</i> <i>commentator</i>	<i>activate</i>	<i>*commentate</i>
(d) Adjectives in <i>-ory</i>	<i>sensory</i>	<i>obligatory</i> <i>explanatory</i>	<i>obligate</i>	<i>*explanate</i>

Rule A may have two different functions in the context of rule B.

The identification of *-at-* as the same suffix in all four of these classes is independently motivated in at least two ways.

Rule A may have two different functions in the context of rule B.

- (i) Many verbs ending in *-(i)fy* have an alternate stem ending in *-(i)fic* whose use is conditioned by certain suffixes.

Vowel-initial suffixes don't always condition this alternation (*signifier, pacifist, classifiable*), but it is invariably conditioned by the suffixes *-ation, -ative, -ator* and *-atory*:

simplify → *simplific-at-ion*

signify → *signific-at-ive*

purify → *purific-at-or*

classify → *classific-at-ory*

This fact seems coincidental unless one assumes that the alternation is conditioned by the suffix *-at-* and that this is a shared component of each of *-ation, -ative, -ator* and *-atory*.

Rule A may have two different functions in the context of rule B.

- (ii) Some derivatives in *-ation*, *-ative*, *-ator* and *-atory* derive from a verb in *-ate*, while others do not. Whether or not they do, they exhibit the same accentual patterns:

Accentuation of *-ation*, *-ative*, *-ator* and *-atory*

	suffix-initial	stem-final	stem-penultimate
<i>-ation</i>	<i>valid-átion</i> (<i>váldate</i>) <i>explan-átion</i> (<i>*explanate</i>)		
<i>-ative</i>		<i>interróg-ative</i> (<i>intérrogate</i>) <i>consérv-ative</i> (<i>*conservate</i>)	<i>óper-ative</i> (<i>óperate</i>) <i>signífic-ative</i> (<i>*significate</i>)
<i>-ator</i>	<i>cre-átor</i> (<i>créate</i>) <i>lev-átor</i> ¹ (<i>*levate</i>)	<i>cúr-ator</i> (<i>cúrate</i>) <i>idól-ator</i> (<i>*idolate</i>)	<i>áctiv-ator</i> (<i>áctivate</i>) <i>cómm-ent-ator</i> (<i>*commentate</i>)
<i>-atory</i>		<i>compéns-atory</i> (<i>cómpensate</i>) <i>explán-atory</i> (<i>*explanate</i>)	<i>discrímin-atory</i> (<i>discríminate</i>) <i>impróvis-atory</i> (<i>*improvisate</i>)

1. a muscle that raises a body part (med.)

Rule A may have two different functions in the context of rule B.

This suggests that they are alike in their morphology:

(a) *hyphen-at-ion*

accus-at-ion

(c) *activ-at-or*

comment-at-or

(b) *ulcer-at-ive*

conserv-at-ive

(d) *respir-at-ory*

accus-at-ory

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This suggests that they are alike in their morphology:

(a) *hyphen-at-ion*
accus-at-ion

(b) *ulcer-at-ive*
conserv-at-ive

(c) *activ-at-or*
comment-at-or

(d) *respir-at-ory*
accus-at-ory

Despite this likeness of morphological form, the *-at-* rule is clearly performing two functions here.

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- | | |
|--------------------------|--------------------------|
| (a) <i>hyphen-at-ion</i> | (b) <i>ulcer-at-ive</i> |
| <i>accus-at-ion</i> | <i>conserv-at-ive</i> |
| (c) <i>activ-at-or</i> | (d) <i>respir-at-ory</i> |
| <i>comment-at-or</i> | <i>accus-at-ory</i> |

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- In the derivation of *hyphenation*, *ulcerative*, *activator* and *respiratory*, it serves as a verb-deriving rule.

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| <i>accus-at-ion</i> | <i>conserv-at-ive</i> |
| (c) <i>activ-at-or</i> | (d) <i>respir-at-ory</i> |
| <i>comment-at-or</i> | <i>accus-at-ory</i> |

Despite this likeness of morphological form, the *-at-* rule is clearly performing two functions here.

- In the derivation of *hyphenation*, *ulcerative*, *activator* and *respiratory*, it serves as a verb-deriving rule.
- In the derivation of *explanation*, *conservative*, *commentator* and *explanatory*, it joins with the *-ion* rule to form a rule of deverbal nominalization.

Rule A may have two different functions in the context of rule B.

Rule conflation affords a simple account of the dual function of *-at-* in English nominalizations in *-ation*. This account has three main characteristics.

First, it distinguishes two subclasses of verbs:

Class I: Verbs that nominalize by means of *-ion*, including verbs in *-ate*

(Examples: *govern, rebel, repulse, sense, hyphenate, validate*)

Class II: Verbs that nominalize by means of *-ation* and lack any corresponding verb in *-ate*

(Examples: *accuse, examine, expect, explain, conserve, comment*)

Rule A may have two different functions in the context of rule B.

Second, it has simple rules that introduce the basic derivational affixes.

Each rule includes the specification of a stem operation, a domain of application, and the category of the resulting derivative.

The verbs defined by rule (ate) belong to Class I, and rules (ion)–(ory) have verbs of Class I as their domain of application.

Basic rules of derivation for a fragment of English

Rule name	Stem operation	Domain	Range	Examples
(<u>ate</u>)	$X \rightarrow Xate$	N or A	V, Class I	<i>hyphen</i> → <i>hyphenate</i> , <i>valid</i> → <i>validate</i>
(<u>ion</u>)	$X \rightarrow Xion$	V, Class I	N	<i>rebel</i> → <i>rebellion</i>
(<u>ive</u>)	$X \rightarrow Xive$	V, Class I	A	<i>repulse</i> → <i>repulsive</i>
(<u>or</u>)	$X \rightarrow Xor$	V, Class I	N	<i>govern</i> → <i>governor</i>
(<u>ory</u>)	$X \rightarrow Xory$	V, Class I	A	<i>sense</i> → <i>sensory</i>

Rule A may have two different functions in the context of rule B.

Third, the model specifies how the basic rules conflate. The rule below licenses the conflation of each of rules (ion)–(ory) with rule (ate).

In the default case, a conflated rule [B © A] has the same domain of application as A; but the conflated rules defined here deviate from this default pattern, since their domain of application consists of verbs belonging to Class II (rather than nouns and adjectives).

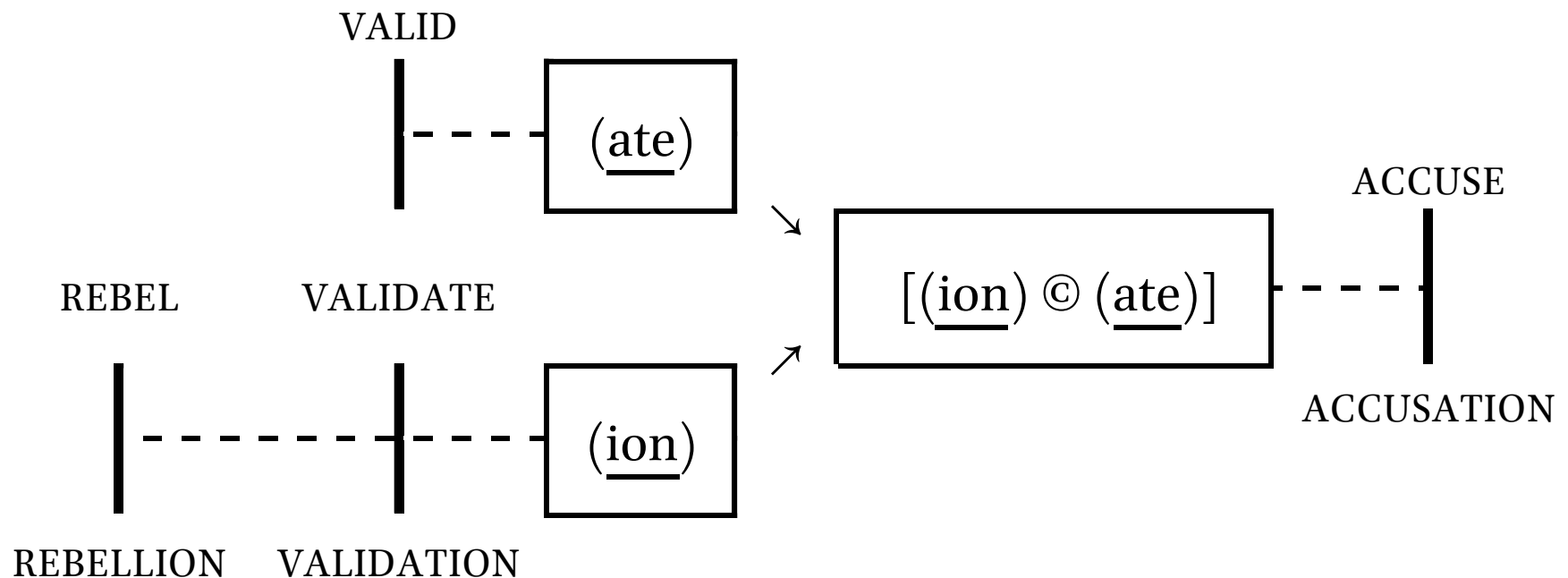
For each rule $R \in \{(\underline{\text{ion}}), (\underline{\text{ive}}), (\underline{\text{or}}), (\underline{\text{ory}})\}$, $[R \text{ © } (\underline{\text{ate}})]$ is a rule whose domain is [V, Class II].

Examples: $[(\underline{\text{ion}}) \text{ © } (\underline{\text{ate}})] : \textit{accuse} \rightarrow \textit{accus-at-ion}$
 $[(\underline{\text{ive}}) \text{ © } (\underline{\text{ate}})] : \textit{conserve} \rightarrow \textit{conserv-at-ive}$
 $[(\underline{\text{or}}) \text{ © } (\underline{\text{ate}})] : \textit{comment} \rightarrow \textit{comment-at-or}$
 $[(\underline{\text{ory}}) \text{ © } (\underline{\text{ate}})] : \textit{accuse} \rightarrow \textit{accus-at-ory}$

Rule A may have two different functions in the context of rule B.

Derivational paradigms defined by means of these rules do not have missing links such as *ACCUSATE and are, to that extent, canonical with respect to the property of rule-based hierarchy.

Branches in the derivational paradigms of REBEL, VALID, and ACCUSE



Rule A may have two different functions in the context of rule B.

Here, I have focused on the dual function of the *-ate* rule in the context of the *-ion* rule. But other rules also seem to exhibit this sort of dual function.

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Action nominalizations of eight English verbs

Verb	<i>-ion</i>	<i>-ation</i>	<i>-tion</i>	<i>-ition</i>
<i>commune</i>	<i>commun-ion</i>			
<i>educate</i>	<i>educat-ion</i>			
<i>present</i>		<i>present-ation</i>		
<i>realize</i>		<i>realiz-ation</i>		
<i>intervene</i>			<i>interven-tion</i>	
<i>resume</i>			<i>resump-tion</i>	
<i>repeat</i>				<i>repet-ition</i>
<i>expose</i>				<i>expos-ition</i>

Rule A may have two different functions in the context of rule B.

Here, I have focused on the dual function of the *-ate* rule in the context of the *-ion* rule. But other rules also seem to exhibit this sort of dual function.

Three parallel patterns of rule conflation in English nominalizations

	Rules	Derivations	Example	Missing link?
a.	<i>-ate</i> rule, <i>-ion</i> rule conflated <i>-at-ion</i> rule	$A \rightarrow V \rightarrow \text{action N}$ $V \rightarrow \text{action N}$	<i>valid</i> \rightarrow <i>validate</i> \rightarrow <i>validation</i> <i>accuse</i> \rightarrow <i>accusation</i>	* <i>accusate</i>
b.	<i>-t</i> rule, <i>-ion</i> rule conflated <i>-t-ion</i> rule	$V \rightarrow \text{patient N} \rightarrow \text{action N}$ $V \rightarrow \text{action N}$	<i>produce</i> \rightarrow <i>product</i> \rightarrow <i>production</i> <i>seduce</i> \rightarrow <i>seduction</i>	* <i>seduct</i>
c.	<i>-ite</i> rule, <i>-ion</i> rule conflated <i>-it-ion</i> rule	$V \rightarrow A \rightarrow \text{action N}$ $V \rightarrow \text{action N}$	<i>define</i> \rightarrow <i>definite</i> \rightarrow <i>definition</i> <i>add</i> \rightarrow <i>addition</i>	* <i>addite</i>

Conclusion

A great deal of work in morphology has been dedicated to explaining form/content mismatches, including such mismatches as

- syncretism
- deponency
- morphomic categories
- overabundance
- underdetermination

etc.

Conclusion

The evidence discussed here reveals another domain of form/content mismatch, that of morphological rules that take on unpredicted properties when they apply together.

The principle of rule conflation affords a formal model of this sort of mismatch, one in which the conflation $[B \textcircled{A}]$

- has a domain different from that of A
- is more productive than A or B
- expresses content that is not directly deducible from that of rules A and B
- is more useful than rule A on its own
- is processed more quickly than other rule combinations
- allows rule A to function in more than one way in the context of rule B.

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Rule conflation in inflection

(15) The position of an affix depends on the presence or absence of another affix.

- (16) a. *vitabu* *a-vi-soma-vyo* *Hamisi*
 books.CL.8 subj:cl.1-obj:cl.8-read-rel:cl.8 Hamisi.CL.1
 ‘the books which Hamisi reads’
- b. *vitabu* *a-na-vyo-vi-soma* *Hamisi*
 books.CL.8 subj:cl.1-tns- rel:cl.8- obj:cl.8-read Hamisi.CL.1
 ‘the books which Hamisi is reading’
- c. *vitabu* *a-si-vyo-vi-soma* *Hamisi*
 books.CL.8 subj:cl.1-neg- rel:cl.8- obj:cl.8-read Hamisi.CL.1
 ‘the books which Hamisi doesn’t read’

Rule conflation in inflection

Figure 7. 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		

Rule conflation in inflection

(17) An affix may be dependent, in the sense that it only appears in the presence of an adjacent “carrier” affix.

Table 16. The agent suffixes *-ŋ* and *-m* in the positive nonpreterite paradigm of the Limbu verb *HUʔMAʔ* ‘teach’

	agent → patient	prefix		stem	suffix						
		1a	1b		1	4	5	7	8	9	10
a.	1s → 2s			<i>huʔ</i>	<i>ne</i>						
b.	1s → 2d			<i>huʔ</i>	<i>ne</i>				<i>ci¹</i>	<i>ŋ</i>	
c.	1s → 2p			<i>huʔ</i>	<i>n(ε)</i>				<i>i</i>	<i>ŋ</i>	
d.	1s → 3s			<i>huʔr</i>		<i>u</i>	<i>ŋ</i>				
e.	1s → 3ns			<i>huʔr</i>		<i>u</i>	<i>ŋ</i>		<i>si</i>	<i>ŋ</i>	
f.	1pi → 3s	<i>a</i>		<i>huʔr</i>		<i>u</i>	<i>m</i>				
g.	1pi → 3ns	<i>a</i>		<i>huʔr</i>		<i>u</i>	<i>m</i>		<i>si</i>	<i>m</i>	
h.	1pe → 2			<i>huʔ</i>	<i>ne</i>				<i>ci</i>		<i>ge</i>
i.	1pe → 3s			<i>huʔr</i>		<i>u</i>	<i>m</i>				<i>be</i>
j.	1pe → 3ns			<i>huʔr</i>		<i>u</i>	<i>m</i>		<i>si</i>	<i>m</i>	<i>be</i>
k.	2 → 1	<i>a</i>	<i>gε</i>	<i>huʔ</i>							
l.	2p → 3s		<i>kε</i>	<i>huʔr</i>		<i>u</i>	<i>m</i>				
m.	2p → 3ns		<i>kε</i>	<i>huʔr</i>		<i>u</i>	<i>m</i>		<i>si</i>	<i>m</i>	

1. alternant of *si* (van Driem 1987: 77)

Rule conflation in inflection

(18) A simple affix apparently stands in paradigmatic opposition to a sequence of affixes.

Table 17. Singular personal forms of Swahili KUSOMA ‘read’ in three tenses
(‘I am reading it’, etc.)

		Present					Past					Future				
		-iv	-iii	-ii	-i	stem	-iv	-iii	-ii	-i	stem	-iv	-iii	-ii	-i	stem
Pos	1sg		<i>ni-</i>	<i>na-</i>	<i>ki-</i>	<i>soma</i>		<i>ni-</i>	<i>li-</i>	<i>ki-</i>	<i>soma</i>		<i>ni-</i>	<i>ta-</i>	<i>ki-</i>	<i>soma</i>
	2sg		<i>u-</i>	<i>na-</i>	<i>ki-</i>	<i>soma</i>		<i>u-</i>	<i>li-</i>	<i>ki-</i>	<i>soma</i>		<i>u-</i>	<i>ta-</i>	<i>ki-</i>	<i>soma</i>
	3sg		<i>a-</i>	<i>na-</i>	<i>ki-</i>	<i>soma</i>		<i>a-</i>	<i>li-</i>	<i>ki-</i>	<i>soma</i>		<i>a-</i>	<i>ta-</i>	<i>ki-</i>	<i>soma</i>
Neg	1sg	<i>si-</i>		<i>na-</i>	<i>ki-</i>	<i>soma</i>	<i>si-</i>		<i>ku-</i>	<i>ki-</i>	<i>soma</i>	<i>si-</i>		<i>ta-</i>	<i>ki-</i>	<i>soma</i>
	2sg	<i>ha-</i>	<i>u-</i>	<i>na-</i>	<i>ki-</i>	<i>soma</i>	<i>ku-</i>	<i>u-</i>	<i>ku-</i>	<i>ki-</i>	<i>soma</i>	<i>ha-</i>	<i>u-</i>	<i>ta-</i>	<i>ki-</i>	<i>soma</i>
	3sg	<i>ha-</i>	<i>a-</i>	<i>na-</i>	<i>ki-</i>	<i>soma</i>	<i>ku-</i>	<i>a-</i>	<i>ku-</i>	<i>ki-</i>	<i>soma</i>	<i>ha-</i>	<i>a-</i>	<i>ta-</i>	<i>ki-</i>	<i>soma</i>