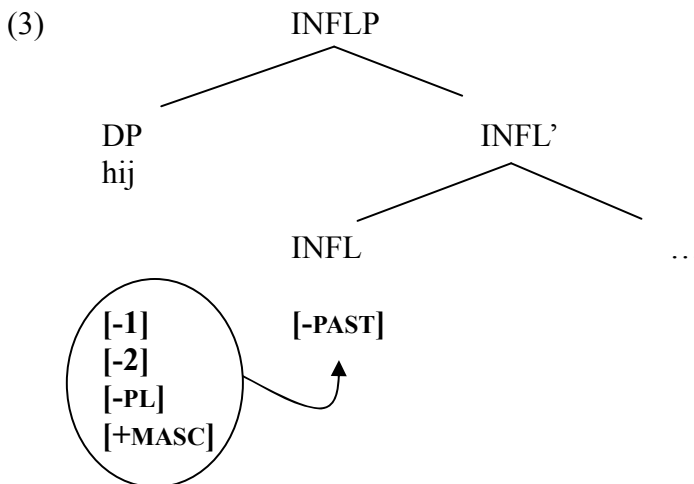


2. Defining the perimeters

To keep the number of theories manageable, we make the following assumptions:

ASSUMPTION I: THE APPLICABLE FEATURES ARE [1], [2], [PL] AND [PAST].
Following Frampton (2002) a.o.

ASSUMPTION II: AGREEMENT ENTAILS THE COPYING OF FEATURES FROM THE SUBJECT ONTO AN INFL-NODE.



ASSUMPTION III: IMPOVERISHMENT RULES EXIST.
Implicitly assumed in (2a-c), repeated below in (4):

- | | | | | | |
|-------|-----------------|----|-----------------|----|-----------------|
| (4)a. | -t → [-1] | b. | -∅ → [+1] | c. | -∅ → [+1] |
| | -en → [+plural] | | -en → [+plural] | | -t → [-1] |
| | -∅ → elsewhere | | -t → elsewhere | | -en → elsewhere |
| | -de → [+past] | | -de → [+past] | | -de → [+past] |

Two observations:

1. *-t* does not occur in the present plural nor in the past plural.
2. Both the present plural and past plural have the form *-en*.

To account for 1, two impoverishment rules can be formulated:

- [_{AGR} -1] → □/_[_{AGR} +pl]
 [_{AGR} -1] → □/_[_{TENSE} +past]

To account for 2, we assume that *-en* also applies in the past tense by way of *stacking*, rather than assuming an extra suffix *-den* for [past, plural]. The result of stacking looks like this:

V + *-de* + *-en*.

Consequence: The number of features per affix can be restricted.

In a theory without impoverishment rules:

1. No generalization over present and past \rightarrow accident of the lexical items: $-t$ happens to be very specified as [+present, +singular].
2. No stacking ($-de + -en$) can be assumed to capture the generalization, as it leads to overgeneration elsewhere: $-de + -t = *-\text{det}$.

ASSUMPTION IV: THE DEFAULT FORM IS AN 'AFFIXAL' DEFAULT.

We assume that the default applies in those cases in which no other affix applies. This entails that the default is not a candidate for stacking.

ASSUMPTION V: THE 'ONE-FEATURE-PER-AFFIX PRINCIPLE' IS IN EFFECT.

We assume that each affix within the Dutch verbal inflectional system is characterized by one phi-feature only (Bennis & MacLean 2006). However, this principle is violable.

3. Testing possible analyses against a larger data set

We looked at:

- the MAND atlas: paradigms from 592 data points.
- the verb *leven* 'to live', present and past tense.
- the number and type of abstract paradigms that are attested.

Results:

- There are 11 types of present tense paradigms.
- There are 7 types of past tense paradigms (amount of syncretism increases).
- There are 25 combinations of present and past tense paradigms.

These are the eight analyses:

1: Default is $-t$
 1A: monovalent features
 1B: bivalent features

2: Default is -0
 2A: monovalent features
 2B: bivalent features

3: Default $-en$
 3A: monovalent features
 3B: bivalent features

4: No Default
 4A: monovalent features
 4B: bivalent features

4. A quantitative analysis

We adopt 4 criteria:

1. Number of features used within a paradigm. We count all features that are spelled out, taking [-1] and [+1] to be two different features.
2. Number of accidental syncretisms. For example: $-t \rightarrow [-1]$ and $-t \rightarrow [+2, +pl]$

3. Number of impoverishment rules.
 - a. Number of general impoverishment rules, of the type: $[\alpha] \rightarrow \square$
 - b. Number of contextual impoverishment rules, of the type: $[\alpha] \rightarrow \square / _ [\beta]$
 - i. Number of contextual impoverishment rules with a negative context, of the type: $[\alpha] \rightarrow \square / _ [-\beta]$
 - ii. Number of contextual impoverishment rules with a two-feature context, of the type: $[\alpha] \rightarrow \square / _ [\beta, \delta]$
4. Number of suffixes with two or more features (violation of the One Feature Principle)

Basically, for each criterion goes: the lower the number the better.

In our count, we assume a one to one mapping between syntax and morphology. Every syntactic feature that is copied onto the INFL-node and is not spelled out by morphology is impoverished.

Consequences:

- (i) [+masculine] $\rightarrow \square$ in all dialects
- (ii) [+2] $\rightarrow \square$ in some dialects

Table 1: Quantitative results

	<i>Analyses</i>	1A	1B	2A	2B	3A	3B	4A	4B
<i>Criteria</i>									
1: number of features		-	83	-	101	-	104	-	119
2: accidental syncretism		-	12	-	18	-	24	-	18
3a: general impoverishment rules		-	125	-	109	-	91	-	90
3b: contextual impoverishment rules		-	78	-	111	-	111	-	110
3b-i: contextual impoverishment rules, negative context		-	9	-	11	-	24	-	11
3b-ii: contextual impoverishment rules, 2 feature context		-	6	-	12	-	10	-	11
4: suffixes with two or more features		-	2	-	15	-	14	-	15
Total		-	315	-	377	-	378	-	374

5. Taking into account qualitative factors

Two main conclusions:

- (i) 2A, 3A and 4A (monovalent with default is -0 , $-en$ and no default, respectively) have no score, since 3rd person singular cannot be described with the current feature set and the unavailability of negative features. Illustrated for 2A:

(5)a.	-t	\rightarrow	?	b.	-t	\rightarrow	[singular]
	-en	\rightarrow	[+plural]		-en	\rightarrow	[+plural]
	$-\emptyset$	\rightarrow	elsewhere		$-\emptyset$	\rightarrow	elsewhere
	-de	\rightarrow	[+past]		-de	\rightarrow	[+past]

- (ii) All A-analyses run into a second qualitative problem. Example from Analysis 1A applied to a dialect type from Limburg (n=29).

(6)a.	presen		past		b.	-∅	→	[1]
	t							
	SG	PL	SG	PL		-st	→	[2]
1 st	leef-∅	lev-en	leef-de	leef -den		-t	→	[]
2 nd	leef-st	leef-t	leef-de-st	leef -den		-en	→	[pl]
3 rd	leef-t	lev-en	leef-de	leef -den		-de	→	[past]

- c.
- [_{AGR} gender¹] → □
 - [_{AGR} 1] → □/_ [_{AGR} pl]
 - [_{AGR} 1] → □/_ [_{TENSE} past]
 - [_{AGR} 2] → □/_ [_{AGR} pl]
- [_{AGR} pl] → □/_ [_{AGR} 2, -past]

To block *-en* from occurring in 2nd person plural in the present tense only, we need an impoverishment rule referring to an unmarked context (namely, [-past]).

Solution: there are two *-t*'s:

(7)a.	presen		past		b.	-∅	→	[1]
	t							
	SG	PL	SG	PL		-st	→	[2]
1 st	leef-∅	lev-en	leef-de	leef -den		-t	→	[]
2 nd	leef-st	leef-t	leef-de-st	leef -den		-t	→	[2, pl]
3 rd	leef-t	lev-en	leef-de	leef -den		-en	→	[pl]
						-de	→	[past]

- c.
- [_{AGR} gender] → □
 - [_{AGR} 1] → □/_ [_{AGR} pl]
 - [_{AGR} 1] → □/_ [_{TENSE} past]
 - [_{AGR} 2] → □/_ [_{AGR} pl]

Consequences:

- (i) Increase of the number of affixes
- (ii) Increase of the number of accidental syncretisms
- (iii) Reduction of the number of impoverishment rules

6. Recount: adding the A-analyses to the score.

Table 2: Quantitative results of all eight Analyses.

<i>Criteria</i>	<i>Analyses</i>	1A	1B	2A	2B	3A	3B	4A	4B
1: number of features		86	83	98	101	110	104	115	119
2: accidental syncretism		24	12	26	18	24	24	26	18
3a: general impoverishment rules		39	125	52	109	38	91	34	90
3b: contextual impoverishment rules		72	78	103	111	138	111	140	110
3b-i: contextual impoverishment rules, negative context		0	9	0	11	0	24	0	11
3b-ii: contextual impoverishment rules, 2 feature context		1	6	3	12	8	10	7	11

¹ This is of course simplifying a bit.

4: suffixes with two or more features	11	2	15	15	1	14	14	15
Total	233	315	297	377	319	378	336	374

Analysis 1A (default *-t*, monovalent) has the lowest score. With exception of 1B, all A-Analyses score lower than the B-analyses. The main cause of the difference between A and B is the one to one mapping between syntax and morphology.

Analysis 1B: INFL contains [± 1], [± 2], [\pm plural], [\pm gender], [\pm past]. Example from the same dialect type as in (7).

(8)a.	presen		past		b.	$-\emptyset$	\rightarrow	[1]
	t							
	SG	PL	SG	PL		-st	\rightarrow	[2]
1 st	leef- \emptyset	lev-en	leef-de	leef -den		-t	\rightarrow	[]
2 nd	leef-st	leef-t	leef-de-st	leef -den		-en	\rightarrow	[pl]
3 rd	leef-t	lev-en	leef-de	leef -den		-de	\rightarrow	[past]

c. All features discharged

- [_{AGR} gender] \rightarrow \square
- [_{AGR} -pl] \rightarrow \square
- [_{TENSE} -past] \rightarrow \square
- [_{AGR} -1] \rightarrow \square
- [_{AGR} -2] \rightarrow \square
- [_{AGR} +1] \rightarrow \square /__{AGR} +pl]
- [_{AGR} +1] \rightarrow \square /__{TENSE} +past]
- [_{AGR} +2] \rightarrow \square /__{AGR} +pl]
- [_{AGR} +pl] \rightarrow \square /__{AGR} +2, _{TENSE} -past]

d. Not all features discharged

- [_{AGR} +1] \rightarrow \square /__{AGR} +pl]
- [_{AGR} +1] \rightarrow \square /__{TENSE} +past]
- [_{AGR} +2] \rightarrow \square /__{AGR} +pl]
- [_{AGR} +pl] \rightarrow \square /__{AGR} +2, _{TENSE} -past]

If Table 2 represents the score along the lines of (8c), Table 3 represents the score along the lines of (8d).

Table 3: Quantitative results when not all features are discharged in morphology.

<i>Criteria</i>	<i>Analyses</i>	1A	1B	2A	2B	3A	3B	4A	4B
1: number of features		86	83	98	101	110	109	115	119
2: accidental syncretism		86	83	98	101	110	109	115	119
3a: general impoverishment rules		0	0	0	0	0	0	0	0
3b: contextual impoverishment rules		72	78	103	72	138	78	140	110
3b-i: contextual impoverishment rules, negative context		0	9	0	11	0	23	0	11
3b-ii: contextual impoverishment rules, 2 feature context		1	6	3	12	8	8	7	11
4: suffixes with two or more features		11	2	15	15	1	17	14	15
Total		194	190	245	229	281	251	302	284

Below the total scores are ordered, starting with the lowest score.

1B	1A	2B	2A	3B	3A	4B	4A
190	194	229	245	251	281	284	302

Conclusion: Quantitatively, the best Analysis has a default form and bivalent features.

Note that the difference between 1A and 1B is very small. BUT: 24 vs. 12 accidental syncretisms.

7. Outlook

If we want to find out which affix is the most plausible default, there are two possible questions:

1. Which hypothesized default works best overall?
2. Which hypothesized default works best per dialect?

We have focused on question one, but it is necessary to look at the dialect-specific level, because:

- Some dialect types might score better by applying another default affix than the overall winner *-t*.
- Some dialect types lack the affix that functions as the default form. A dialect type from Flanders, Belgium (n=20) illustrates this:

(9)a.	present		b.	-en	→	[+1]
	SG	PL		-t	→	[-1]
	1 st	lev-en		-en	→	[p]
	2 nd	leef-t				
	3 rd	leef-t				

(9) shows that this dialect type does not have a zero morpheme. In this case Analysis 2(A/B) does not have any advantage.

We have compared the scores for the criteria per dialect type. Table 4 shows the sum of the lowest scores per dialect type of all Analyses.

Table 4: Sum of all lowest scores

<i>Criteria</i>	<i>Lowest scores</i>
1: number of features	79
2: accidental syncretism	7
3a: general impoverishment rules	0
3b: contextual impoverishment rules	65
3b-i: contextual impoverishment rules, negative context	2
3b-ii: contextual impoverishment rules, 2 feature context	3
4: suffixes with two or more features	0
Total	156

This number confirms that, even though 1B is the winner, there are dialect types with lower scores on other Analyses.

Analysis 1B has the best scores for 16 out of the 25 dialect types. (n=390)

In 3 cases there is a draw between 1B and 2B. (n=120)

In 1 case there is a draw between 1B and 3B. (n=11)

In 6 cases 3B (default *-en*, bivalent features) is the winner. (n=71)

Two examples of dialect types with Analysis 3B as a winner:

(1)a.	(n=23)	present		past		b.	(n=4)	present		past	
		SG	PL	SG	PL			SG	PL	SG	PL
	1 st	-∅	-en	-de	-de			-∅	-en	-m	-m
	2 nd	-t	-t	-de	-de			-en	-en	-m	-m
	3 rd	-t	-en	-de	-de			-t	-en	-m	-m

In each of these dialect types, the past tense has just one form.

The definition of a default is:

- It shows a horizontal or vertical syncretism.
- It does not show up in the past tense.

This conclusion confirms assumption IV: the default is affixal.

Consequence: This idea fits in a system in which agreement and tense features reside in the same syntactic node: agreement and tense affixes compete for one syntactic slot.

Prediction: The default cannot show up in the past tense if the past tense is spelled out by an affix.

The strong verb *breken* ('to break') shows cases of –t showing up in the past tense (*hij brakt*, 'he broke'). In these cases the INFL node is not overtly spelled out, because past tense is expressed by means of vowel alternation in the stem: present tense *breek* vs. past tense *brak*

References

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