



Rescaffolding the Bundle in Afroasiatic Inflection

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Amazigh

- (1) Subject agreement Inflection of Tamazight (a variety of Amazigh spoken in Morocco) *dawa* ('cure') (the forms in parentheses are those of the related variety Tachlhit). The forms are the same across the different tense/aspect stems.

	Singular	Plural
3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-γ	n-dawa

Amazigh

- -Exemplary case in Harley & Noyer 1997
- -It has both prefixes and suffixes
- -There are overt Singular affixes
- -There is extensive gender allomorphy on verbs (though cf. Universal 44)

	Singular	Plural
3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Amazigh

- Allomorphy: plural is *m-* or *n-*
- Neutralization: no gender in 1st plural
- Morpheme order: 3rd sing is prefix, 3rd plural is suffix

	Singular	Plural
3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Amazigh and other Afroasiatic Lgs

- The Bundle: if all phi-features are just on T in the verb, why are they spread out sometimes as prefixes, sometimes as suffixes?
- How are they split up, such that sometimes there is one affix, sometimes two, and sometimes three?

	Singular	Plural
3m	i-dawa	dawa-n
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1	dawa-y	n-dawa

Splitting the Postsyntactic Bundle: Halle 1997

- T-Agr has a bundle such as [-author, +participant, +fem, +pl]
- Exponents such as /t-/ <-> [-author, +participant] are prefixes, while others are suffixes. Exponents are chosen according to specificity
- Leftover features get spelled out by subsequent exponents.

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3m	i-dawa	dawa-n
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2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Linearizing the Bundle: Harbour 2008

- There is a feature-geometric tree, with Pers at the top
- Exponents such as /t-/ <-> [-author, +participant] are chosen
- Exponence of leftover features must respect Person-Left, Number-Right as a principle governing their linearization

	Singular	Plural
3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Fissing the Bundle: Hewett 2019

- Morphotactic condition for certain lgs: some combinations, such as [-author], cannot co-occur with [+/-plural] on the same morphological terminal
- This drives fission, such that the affixes exponing [-author] person are not realized together with gender&number

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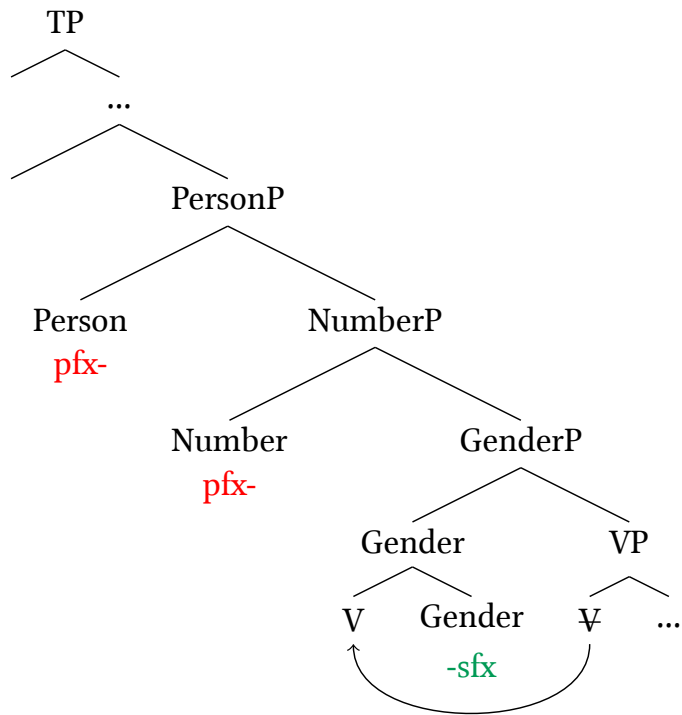
Rescaffolding the Bundle

- Rather than assuming that all these features are bundled together and must subsequently be rendered asunder by fission, what if they all actually start out separate?
- One feature per syntactic head. The relative order of each of these is shuffled and distributed by syntactic means: their merge order, their selection, and upward movement

	Singular	Plural
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1	dawa-y	n-dawa

- Morphemes are early inserted and shuffled around by syntactic means. These syntactic means should also account for their allomorphy and neutralization.
- They should ideally respect the principle of Kiparsky's Tiger for other Semitic lgs: we expect parochial conditions to be shed across time and space.

Itamar's Tree



More cartography is needed!

(1) 2p = +participant 1p = +participant 3p = -participant
-author +author -author

(2) **Structural (“cartographic”) implementation**

AuthorP > ParticipantP > TenseP > NumberP > GenderP > **3P** > VP
(building on Shlonsky 1989, 2000, Nevins 2002)

(4) VP = The category that includes the verbal stem (root and vowels) = VoiceP (Arad 2005, Kastner 2020).

(5) The fundamental hypothesis is that *the order of affixes is syntactically-derived by moving VP over them*.

(6) Earlier work assumed that V moves as a head, landing in-between or across the PNG. That raises thorny issues concerning incorporation and excorporation.

(7) The alternative we pursue is category movement: VP is the minimal category that moves. The other components of VP, specifically the arguments, move to various argument positions in the clause. This implies that the derivations we suggest are going to have to include a lot more structure.

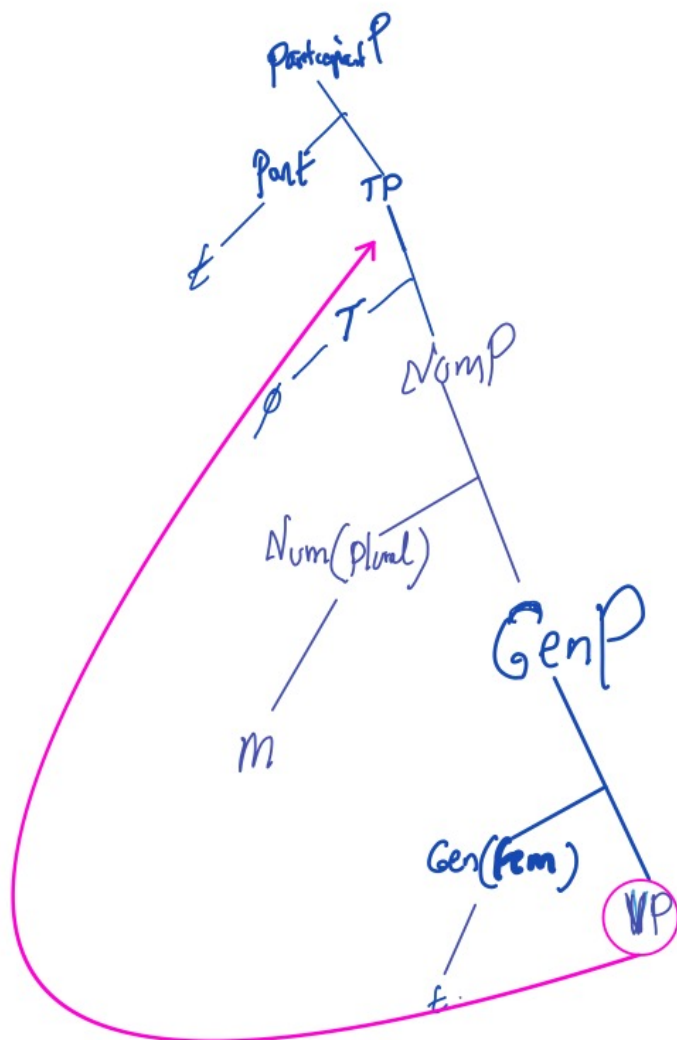
(8) We take the suffixes to be heads which are ‘lower than’ (c-commanded by) VP.

(9) By the same logic, prefixes are heads in positions higher than VP (they c-command it).

- (10) We shall see that VP sometimes moves, sometimes it pied pipes.
- (11) its mother node and sometime it get pied piped by a higher node.
- (12) In this, we take inspiration from Cinque's (2005 et seq) analysis of word-order variation among the components of DP – movement of NP alone or pied-piping.
- (13) When a feature (a head) is non-overt, its specifier must be filled. We call this **Edge Visibility (EV)**. (This may be thought of as a derivational interface condition).
- (14) When the head is overt, its specifier cannot be filled. We follow Collins (2007), Collins & Kayne (2021) and call this the **No Crowding Constraint (NCC)**.

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Derivation of 2fpl *t-dawa-n-t*

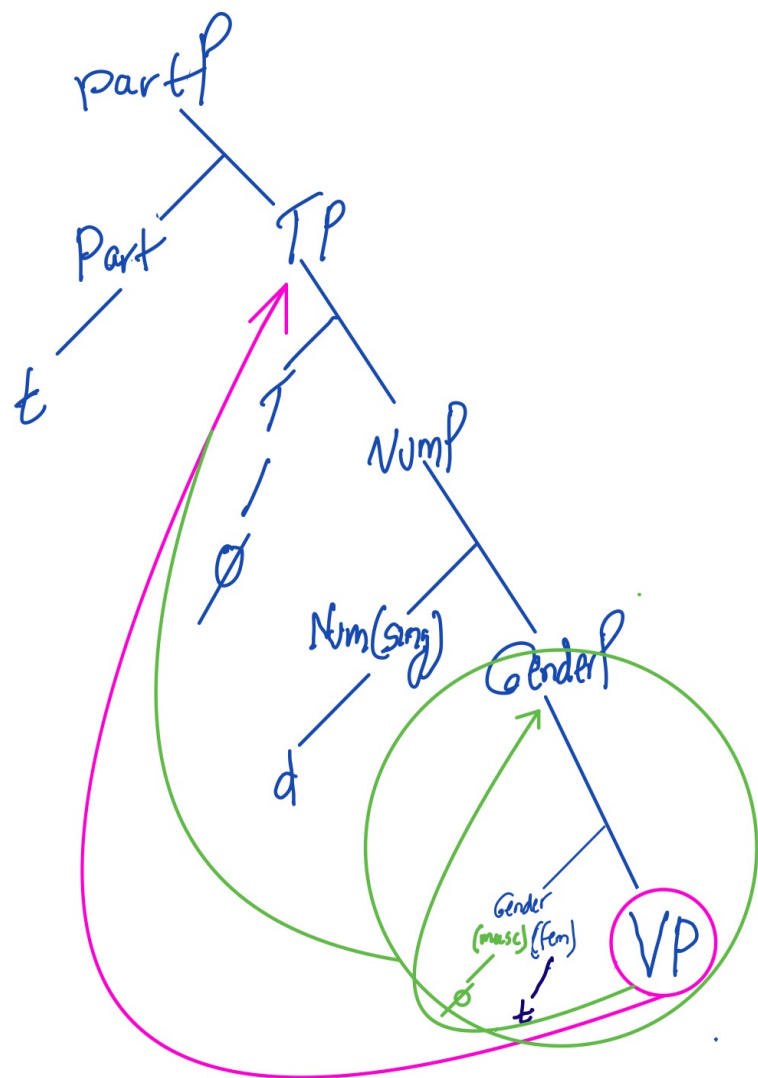


The plural morpheme here is underlyingly *m*, just like in the masculine form *t-dawa-m*. In Tamazight it assimilates in coronality to the following *t*. In Tachlhit, a closely-related dialect, it remains *m*.

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3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
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1	dawa-y	n-dawa

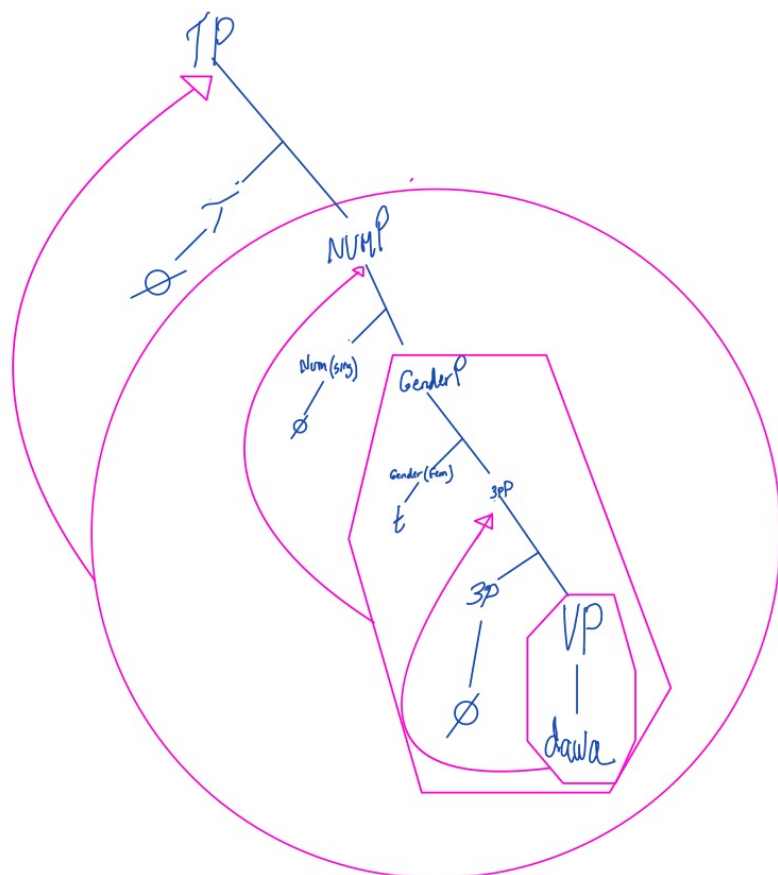
Derivation of 2ms and 2fs *t-dawa-d* (-t)

- The surface forms of the masculine and feminine forms are identical.
 - We hypothesize that the feminine form implicates Gender(fem) *t*, which is subsequently silenced when preceded by an affixal *d*.
 - This is a case of haplology, similar to
The cats's behavior --> *kats*, **katses*
Katz's behavior --> **kats*, *katses*
 - A masculine object clitic *t* appearing to the right of *t-dawa-d* will not be silenced and yield a geminate *t* -> *tdawatt*. The clitic, unlike the feminine morpheme, is external to the domain in which silencing applies.
- Clitics in Berber are 'mobile': When V is preceded by negation, various modal and temporal particles, etc., the clitic shifts to the left of the verbal stem:
- i-sal=t ur=t-i-sal
3-ask=Obj:3ms Neg=Obj:3ms=3-as
he asked him.' 'he didn't ask him'.
- VP moves out of GenP when Num non-null.



	Singular	Plural
3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Derivation of 3rd fem singular *t-dawa*

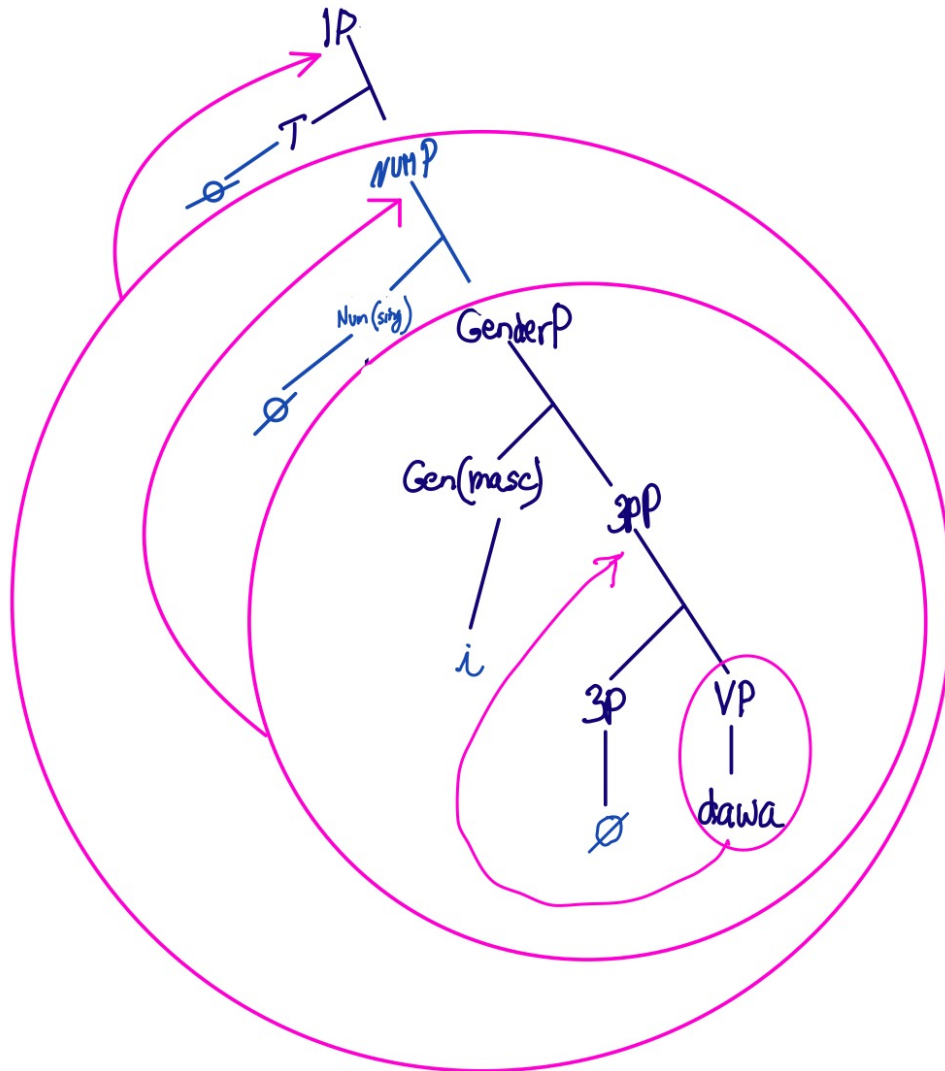


- 3pers is non-overt. To satisfy EV, VP moves to its spec.
- Gender(fem) *t* is merged. EV is satisfied. By NCC, nothing moves to its Spec.
- Number(sing) is merged. Non-overt, it attracts its complement to its spec
- Note that to satisfy EV, 3P could also move to its spec. Why did this not happen?
- **Phonologically null Num attracts GenderP.**

The VP has stayed low due to there being 3P and due to a null Num.

	Singular	Plural
3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
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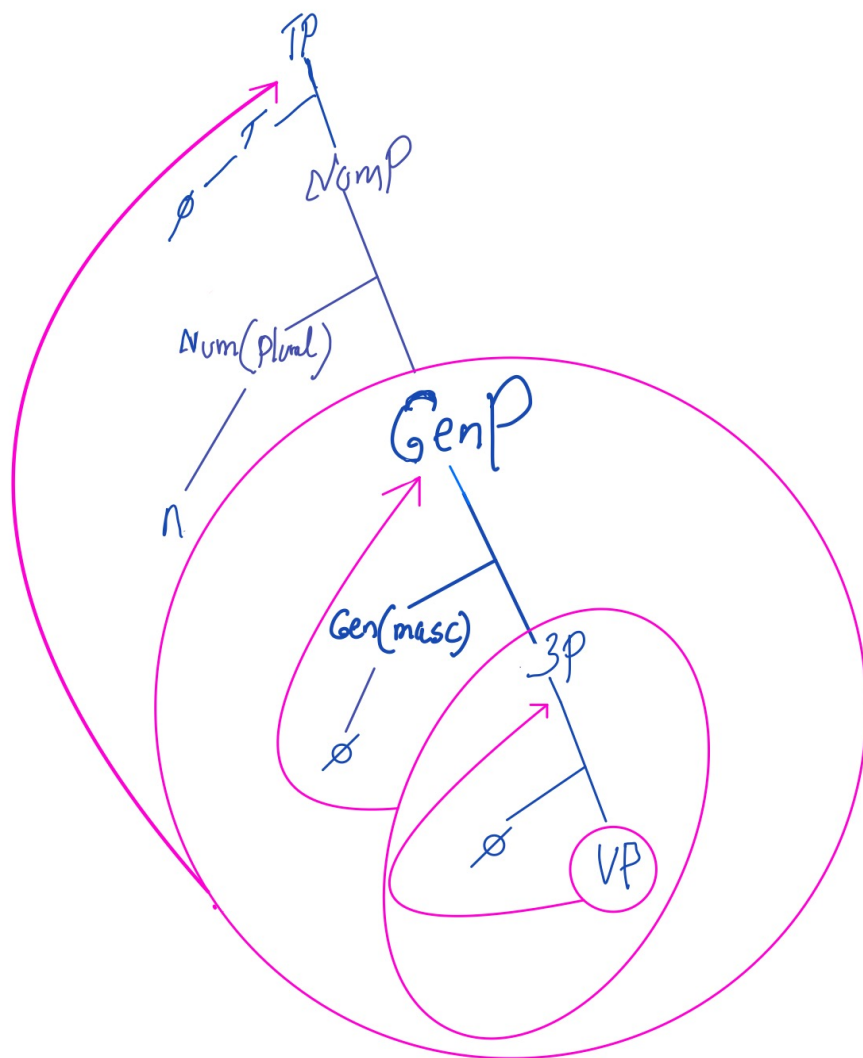
Derivation of 3ms *i-dawa*



- Gender(masc) is *i*. It is selected by null Num(sing) and selects 3p. (We will see these conditions decay in Semitic, recalling Kiparsky's Tiger)
- To satisfy EV, 3P is filled by VP. (Note that EV freezes a spec where it is).
- When null-Num is merged, it attracts GenderP.

	Singular	Plural
3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
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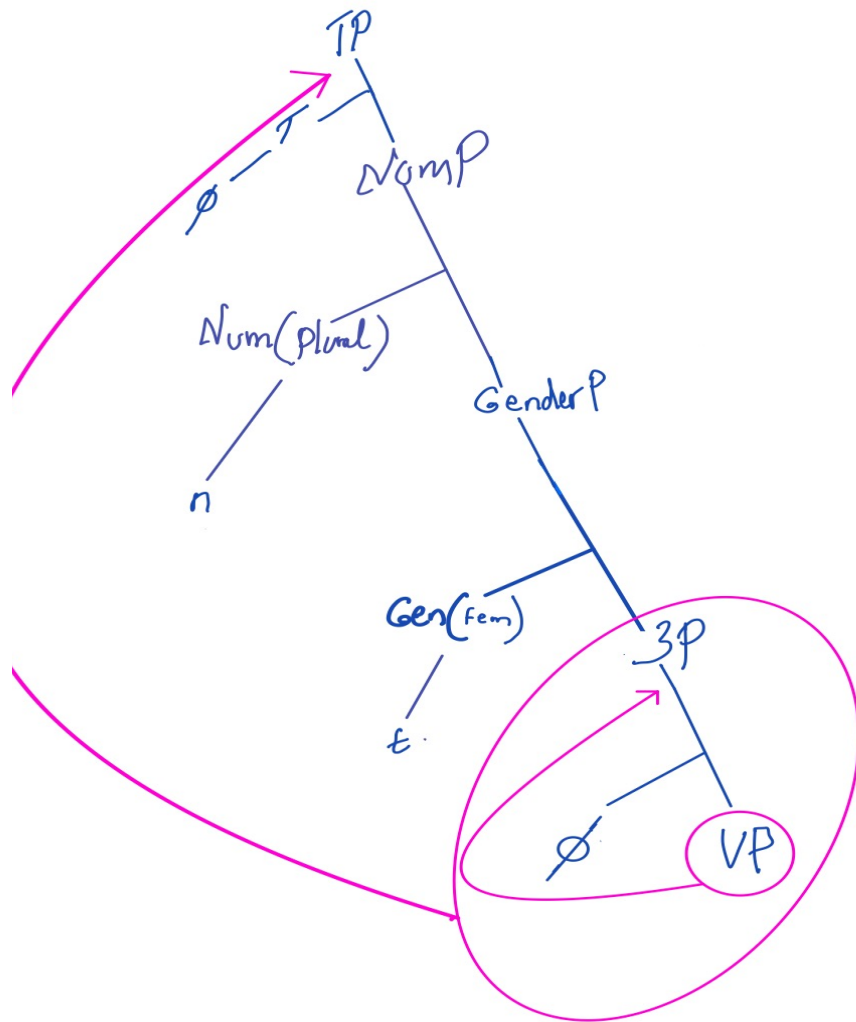
Derivation of 3mpl *dawa-n*



- The plural morpheme here is *n*. Since there is another plural morpheme, *m*, we have to express the different conditioning environments.
- **Number(pl) *m* is c-commanded by Participant.**

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3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
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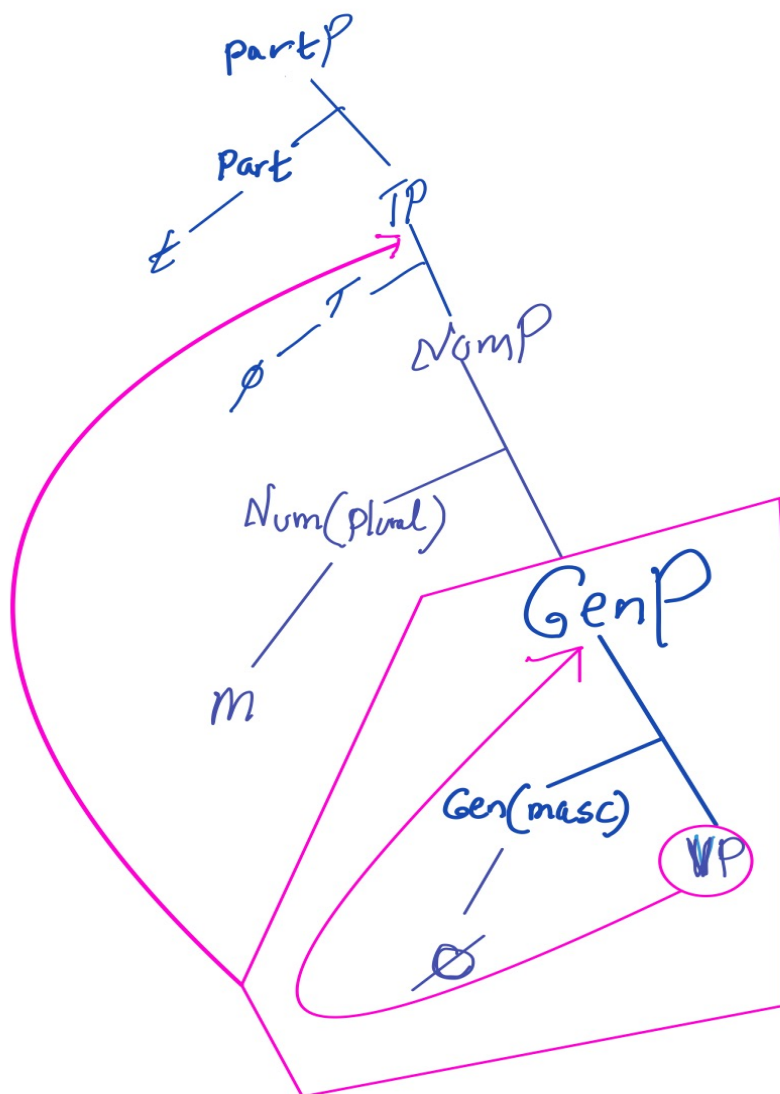
Derivation of 3fpl *dawa-n-t*



- One difference between this form and the 3fs *t-dawa* is the placement of Gender(fem) *t*: It is a suffix here and a prefix in the singular form.
- We derive this from the fact that Num is overt here while it is non-overt in the prefixal form.
- Non-overt Num attracts GenP to its spec; overt Num does not. Instead, 3pP moves all the way up to spec/Tense.
- Crucially, *-t* is not a prefix or a suffix as an intrinsic property. Its eventual position depends on other elements in the derivation

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2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Derivation of 2mpl *t-dawa-m*



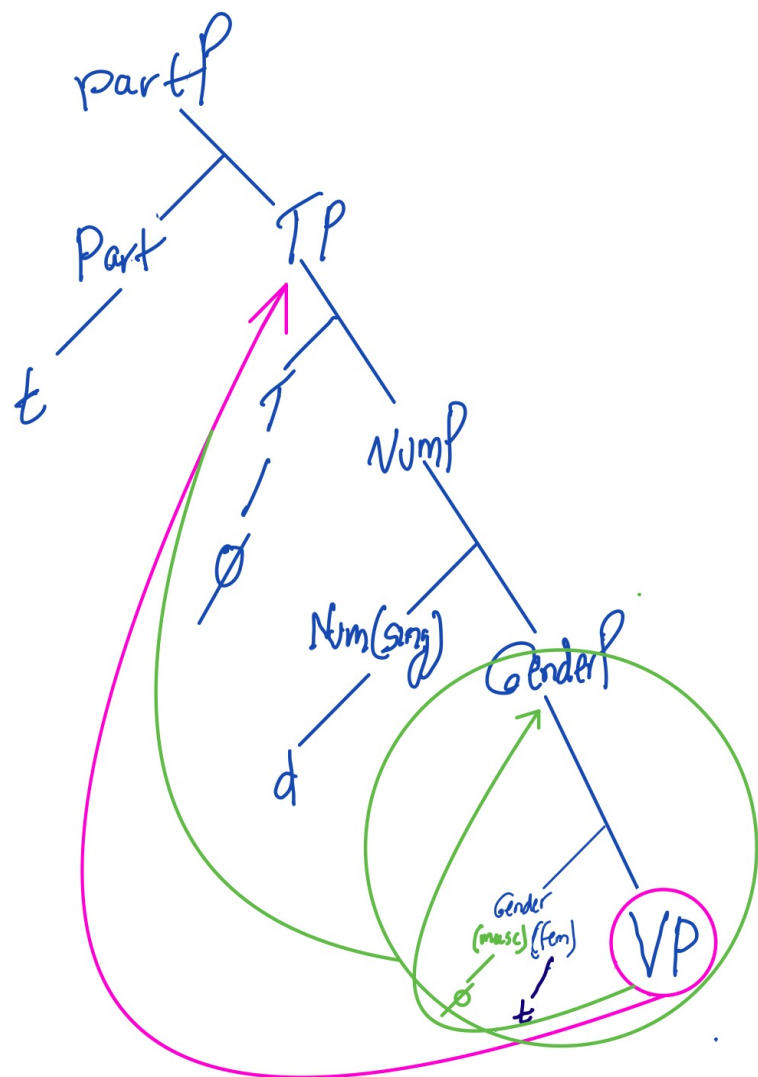
	Singular	Plural
3m	i-dawa	dawa-n
3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Derivation of 2ms and 2fs *t-dawa-d (-t)*

Summary of 2nd person, and of 3rd Plural: (Suffixal number and gender)

VP usually moves to spec,TP, leaving Num (-d,-m, or -n) and Gen (feminine -t) after it

t- is a high Participant head, above TP



Summary of 3rd singular:

The lack of overt Num (and GenP's movement to Num) keeps VP low in spec, 3rd Pers

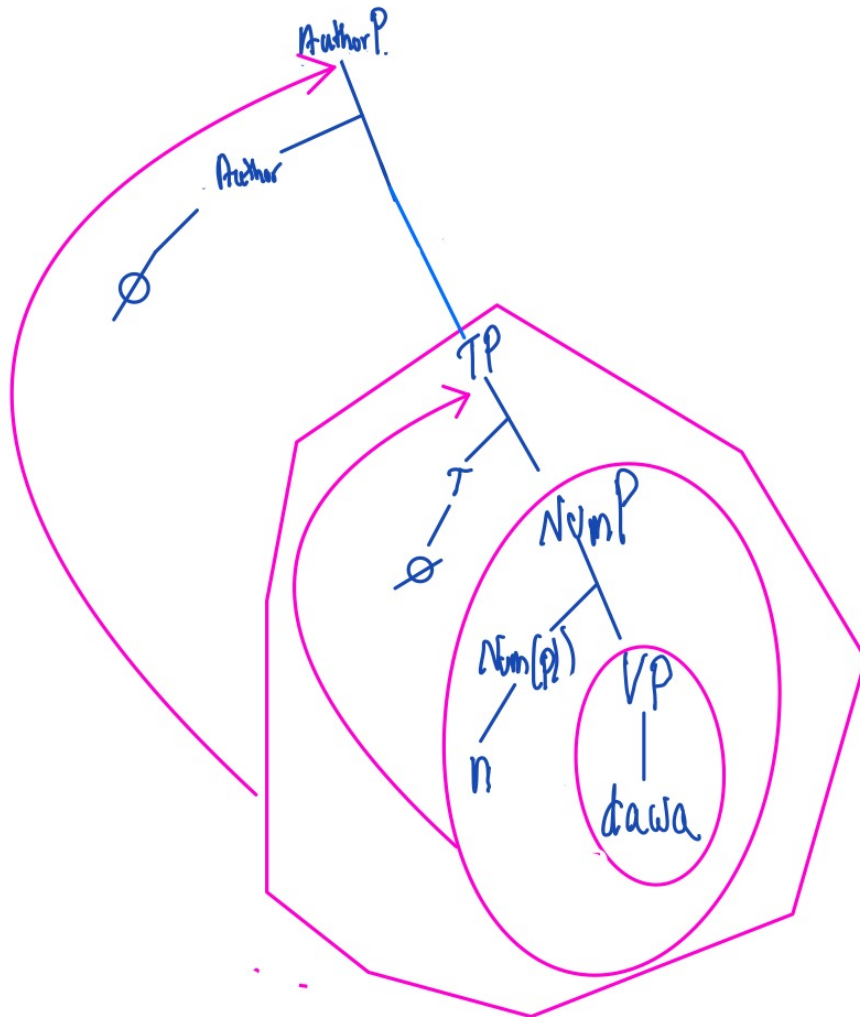
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3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Derivation of 1pl *n-dawa*

- Radical idea: this is the same *n-* we've seen all along
- AuthorP is present now. It will need a spec
- But there is no clusivity distinction in Afroasiatic and hence no PartP at all
- (cf. Harbour 2018, Ackema & Neeleman 2018)
- (Nice evidence from Tigrinya -k that 1pl lacks Part)
- GenderP is not simply silent but absent.

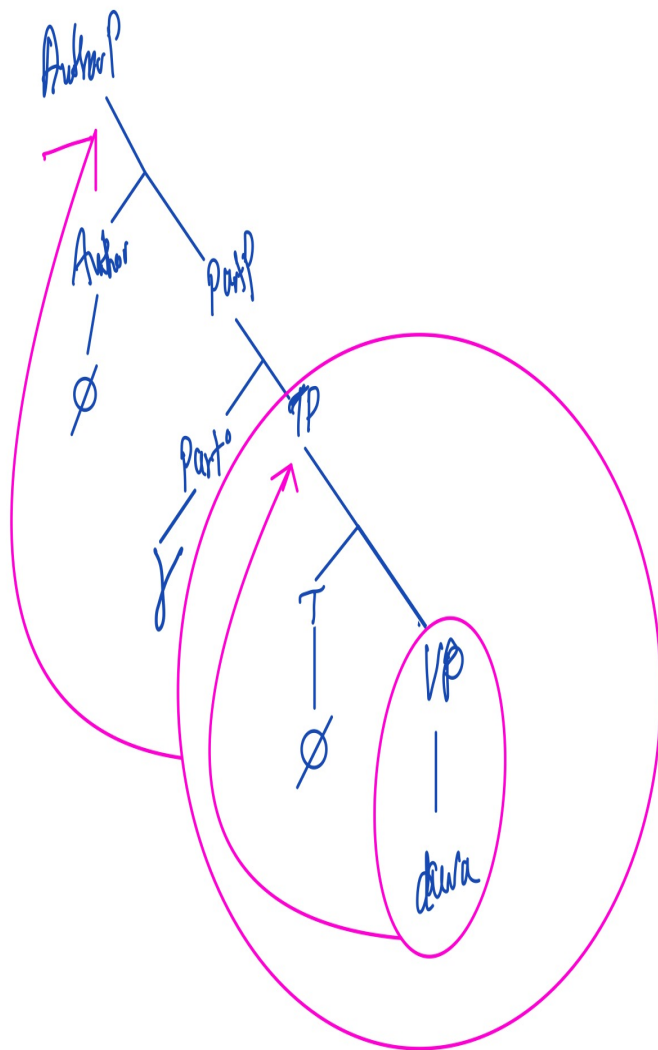
Categories that move to Spec/Auth must not have a complement: Lightness.

- By having NumP move to Spec/TP rather than VP, TP becomes 'light' and can then move to Spec/Auth, to satisfy EV.
- Number(pl) is *n* and is not c-commanded by Part.
- **Would GenderP have been there, Lightness for Spec,Auth and Spec,Part could not have been satisfied**



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3f	t-dawa	dawa-n-t
2m	t-dawa-d	t-dawa-m
2f	t-dawa-d (-t)	t-dawa-n-t (-m-t)
1	dawa-y	n-dawa

Derivation of 1sg *dawa-y*



1. *y* is merged in Participant. It is selected by non-overt Author.
2. Non-overt Author has to meet EV.
3. If GenderP is not projected in the first-person forms, then a non-overt NumP must also be absent. This is because, to recall, non-overt NumT attracts GenP to its Spec. Thus, in the first-person singular form, TP immediately dominates VP.
4. TP moves to Spec/Author.

Thank you for your attention to the Amazigh derivations thus far!

They seem to work the same for Taqbaylit too, once spirantization is taken into account

Outlook for Semitic: MH Future Tense

Allomorphic differences (e.g. -d vs 0, -m vs -u, -t vs -i) are largely straightforward to account for.

Other, morpheme order differences (in blue) point to microcomparative differences in the syntax. Examining how and why these differences are expressed ideally leads to further questions about VP movement in each language

	Singular	Plural
3m	i-dawa > yi-sdr	dawa-n > yi-sdr-u
3f	t-dawa > t-sdr	dawa-n-t > t-sdr-na
2m	t-dawa-d > t-sdr	t-dawa-m > t-sdr-u
2f	t-dawa-d-t > t-sdr-i	t-dawa-n-t > t-sdr-na
1	dawa-y > ?-sdr	n-dawa > n-sdr

For example, in Moroccan & Tunisian Arabic, n- is found in 1sg also; so it has been reinterpreted as a higher node in the tree (“Morpheme Migration”)

A few points about Modern Hebrew inflection

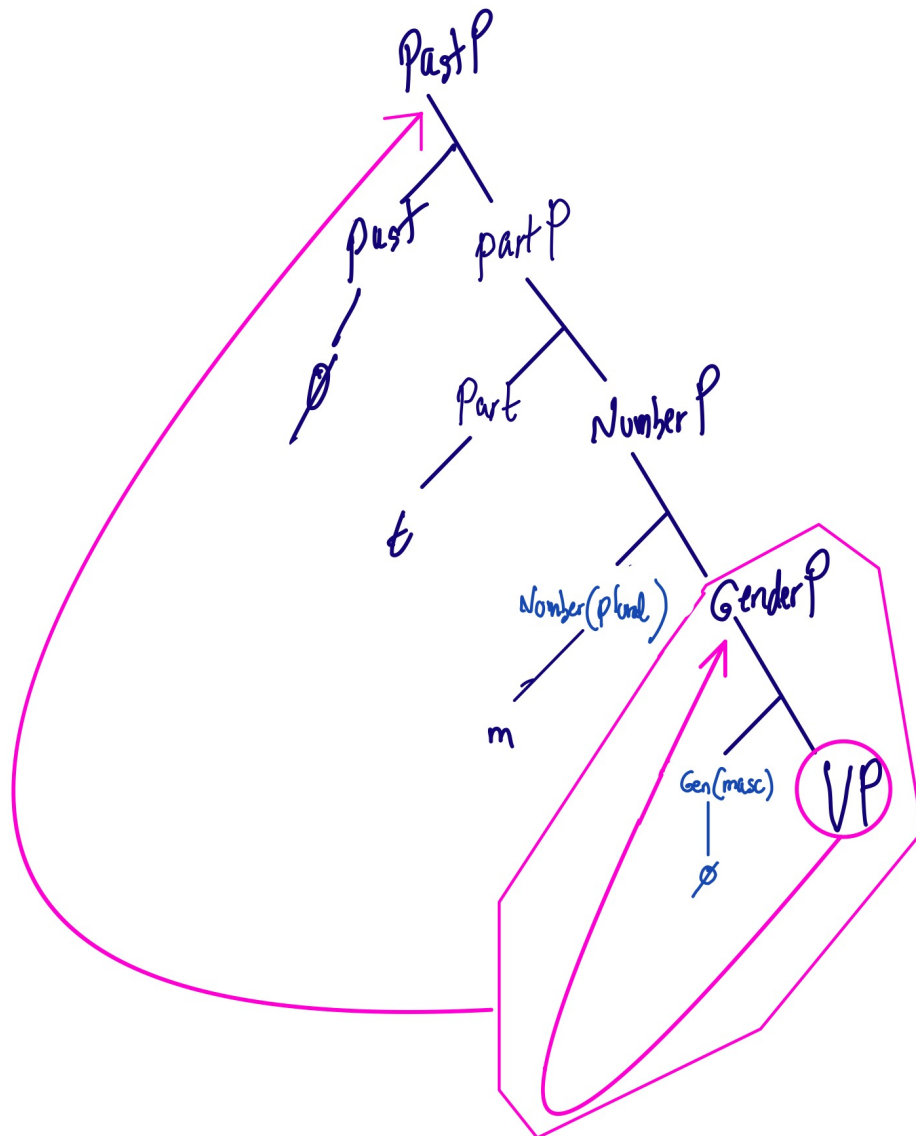
Unlike Tamazight, the Hebrew/Semitic prefixal vs. suffixal paradigms are keyed to tense/aspect (we also leave open whether in fact the Amazigh Stem represents something much larger than VP)

- In Modern Hebrew, the suffixal paradigm is that of Tense(Past) and the prefixal paradigm characterizes Tense(future).
- So, we have to hierarchically distinguish past and future tense and modify the proposed cartography to

PastP > AuthorP > ParticipantP > **FutP** > NumberP > GenderP > 3P > VP

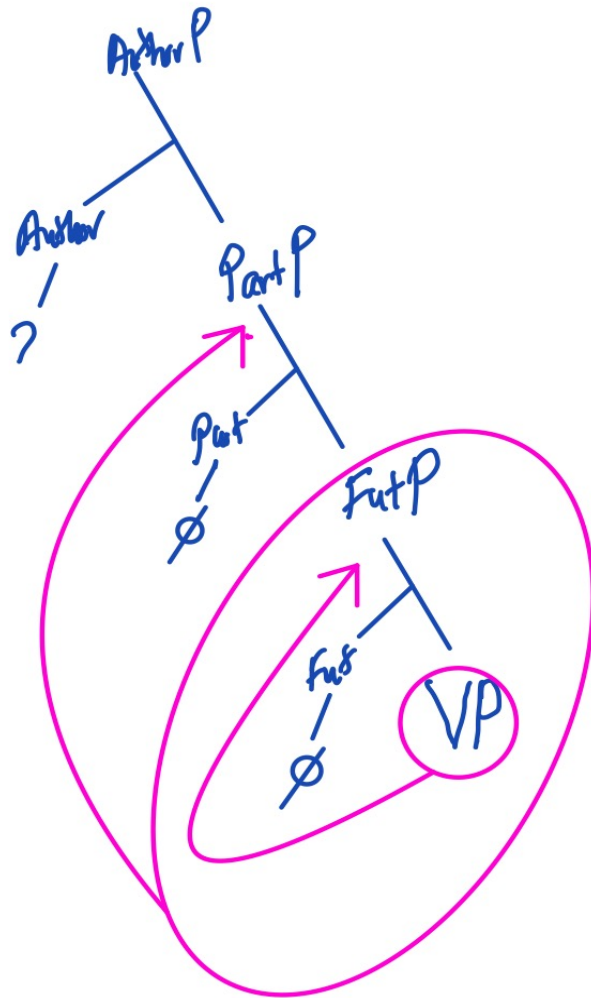
- In the past tense, Hebrew **VP** moves up to Spec/Past.
- Consequently, all PNG morphemes show up as **suffixes**.

Derivation of **past** tense 2mpl *sidar-t-m*



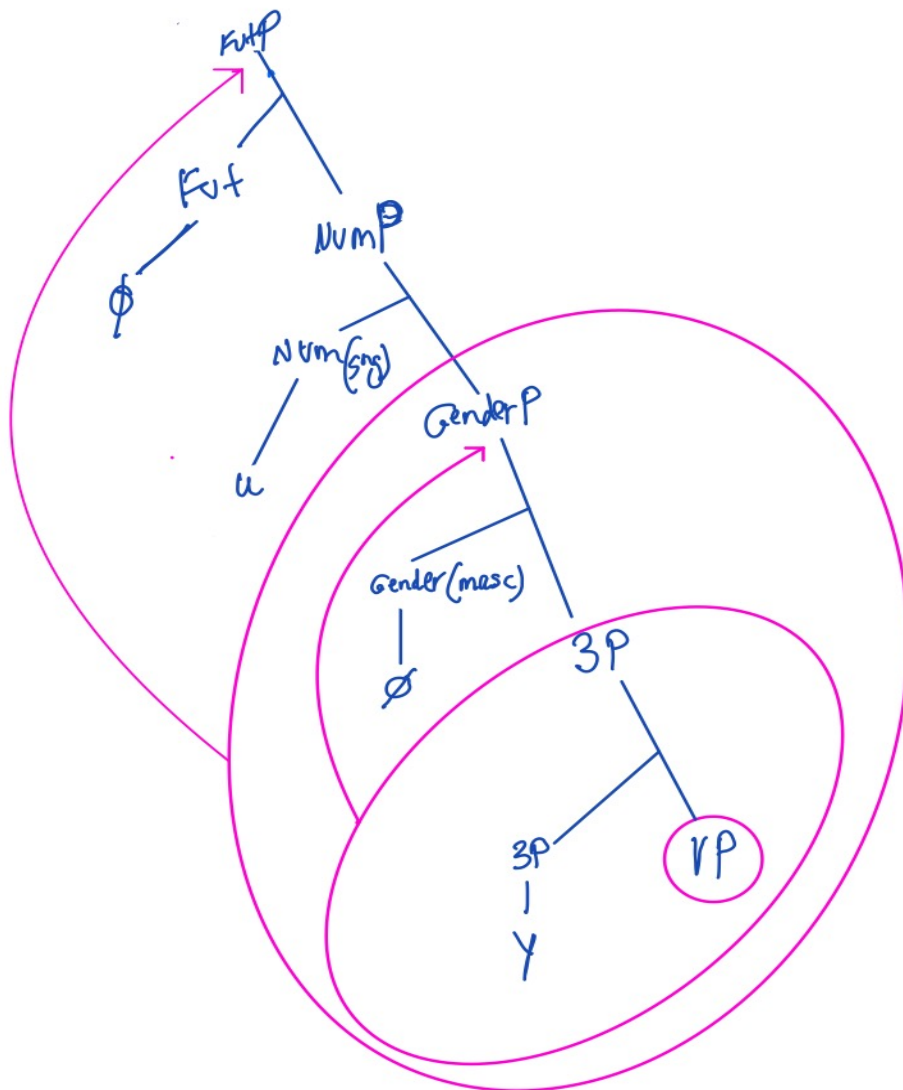
- Recall that in Hebrew, PastP is higher than ParticipantP and AuthorP. Movement of VP (alone or via pied-piping), targets Spec/Past.
- This explains why the PNG morphemes are exclusively suffixes.
- We illustrate the derivation of the past tense forms with 2mpl.

On to the **Blue** Forms: Derivation of 1sg ?-sader in MH



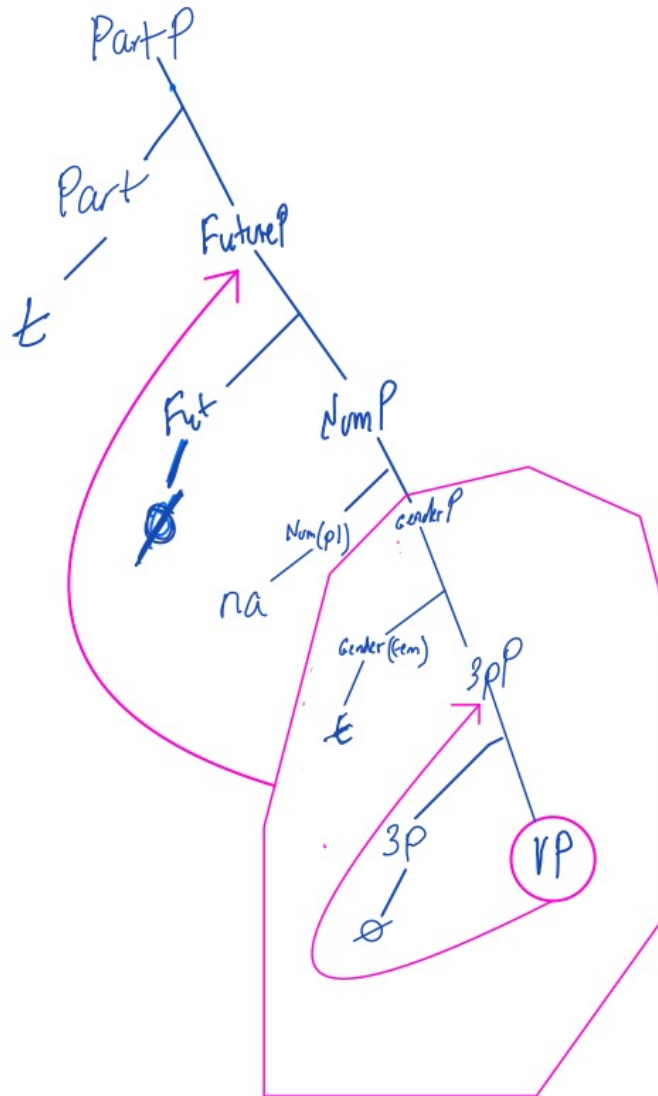
- ? is merged in Author. It selects a non-overt Part.
- If GenderP is not projected in the first-person forms, then a non-overt NumP must also be absent. This is because, to recall, non-overt NumT attracts GenP to its Spec. Thus, in the first-person singular form, FutP immediately dominates VP.
- FutP moves to Spec/Author.

Derivation of 3mpl *yi-sadr-u*



- The plural morpheme here is *u*.
- The 3p head is *y*.
(Amazigh *i* in 3ms *i-dawa* is Gender(Masc): Morpheme migration.)
- 3P and not VP moves to Spec/Gender. We have seen other cases of this: TB 1p *n-dawa*.
- Cinque (2005) calls this variety of pied-piping *picture of whom* pied piping, distinguished from the *whose picture* type. According to Cinque, both forms are found in the derivation of orders in the DP.
- For example, the order NP-AdjP-DemP in:
rabanim fanatim elu
Rabbi-pl fanatic these
is derived by moving NP over AdjP and then pied-piping the result over DemP (cf. Shlonsky 2004).

Derivation of 3fp *t-sader-na*



Merge of Gender(fem) *t* is not followed by movement of 3P to its specifier. Rather, Gen(fem) *t* itself pied pipes its complement 3P and moves to Spec/NumP by *picture of whom* pied piping.

Conclusions and Outlook

The reliance on a Lightness/Heaviness condition, and on variability in pied-piping along various categories, is highly reminiscent of the syntactic mechanisms employed by Koopman & Szabolcsi (2000) in their work on Verb Clusters

Bundling, of course, does greatly simplify the Agree mechanism, and here we leave open how agreement with each of these individual heads works. Gender agreement, for example, may be presuppositional.

Dual, infinitives, and imperatives are interesting future derivations to work through

Thank you for your at-tentio-n