Discontinuous first person agreement in Semitic – evidence for a modular postsyntax[*]

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1. Introduction

Semitic (/Afroasiatic) agreement is commonly *discontinuous* (i.e. split, >1 affix) in the 2nd/3rd persons only, where it persists across paradgims/exponents (i.e. a *meta* split):

(1) **Prefix conjugation** ($\sqrt{}$drs 'study')

	SG	PL
1	ə-drus	nə-drus
2M	tə-drus	tə-drus-u
2F	tə-drus-i	tə-drus-in
3M	jə-drus	jə-drus-u
3F	tə-drus	jə-drus-in

(2) **Suffix conjugation** ($\sqrt{}$drs 'study')

	SG	PL
1	daras-t	daras-na
2M	daras-t	daras-t-u
2F	daras-t-i	daras-t-in
3M	daras	daras-u
3F	daras-ət	daras-in

(Levantine Arabic; Brustad and Zuniga 2019: 417)

However, discontinuities are also attested in the first person in various Semitic languages:

(3) Omani Mehri prefix conjugation

	SG	DU	PL
1	ə-	ə-…-ōh/-śh	n-
2M	t-	t-…-ōh/-śh	t-…(-əm)
2F	t-…(-i)	t-…-ōh/-śh	t-…-ən
3M	y-	y-…-ōh/-śh	y-…(-əm)
3F	t-	t-…-ōh/-śh	t-…-ən

(Rubin 2018: 165)

(4) Wolane affirmative indicative non-past main verb prefix conjugation (omitting the auxiliary)

	SG	PL
1	y-	y-…-n
2M	t-	t-…-u
2F	t-…-i	t-…-u
3M	y-…	y-…-u
3F	t-…	y-…-u

(adapted from Meyer 2006: 97, Table 11)

NOVEL OBSERVATION: Some first person discontinuities exhibit a meta split like 2nd/3rd person agreement (e.g. Omani Mehri), others do not (e.g. Wolane) (N.B. see appendix A on Maghrebi Arabic):

(5) Omani Mehri first person suffix conjugation

	SG	DU	PL
1	-k	-k-i	-ən

(Rubin 2018: 162)

(6) Wolane first person suffix conjugation

	SG	PL
1	-hʷ	-nɛ

(adapted from Meyer 2006: 108, Table 16)

QUESTIONS RAISED BY DISCONTINUOUS AGREEMENT

1. Quantity of affixes question: Assuming that subject φ-agreement starts on a single node in the syntax (e.g. Agr/Asp/T), how do we account for the varying number of affixal exponents of agreement?

2. Position of affixes question: How do we account for the order of affixes w.r.t. other affixes/the verb stem?

1

> **A modular approach to Semitic discontinuous agreement (Hewett 2022, To appear)**

▷ Semitic verbal agreement begins life bundled on a single node and is broken up postsyntactically (see appendix C for arguments against a purely syntactic approach to discontinuous agreement):

  ∗ **Quantity** of verbal agreement affixes is determined by two distinct postsyntactic operations:

    • Morpheme splitting rules (i.e. *Fission*) account for ***meta* splits** across paradigms/exponents (e.g. 2nd/3rd person across Semitic, and 1st person dual in Omani Mehri) and some mutually exclusive realization of features across affixes, driven by *constraints against featural coexponence*.

    • Morpheme doubling/copying rules (i.e. *Generalized Reduplication*) account for 1st person discontinuities restricted to the prefix conjugation (e.g. in Wolane).

    ⤳ There is more than one postsyntactic route to discontinuous agreement (see also appendix B).

  ∗ **Position** of verbal agreement affixes is determined by *positional constraints* driving morpheme doubling and metathesis rules (i.e. *Generalized Reduplication*).

▷ Analyses which rely on a single operation (e.g. Vocabulary Insertion, VI) to explain the quantity and position of affixes fail to account for the two types of discontinuous first person agreement.

N.B. In Distributed Morphology (Halle and Marantz 1993): syntax feeds morphological operations, including morpheme splitting (Fission), morpheme copying (e.g. Generalized Reduplication), and exponence (VI).

2. What is a meta split and how does Fission account for it?

In Semitic, splitting generally occurs in the 2nd/3rd persons and it persists across paradigms (=*meta* split):

(7) Levantine Arabic prefix conjugation

	SG	PL
1	ə-drus	nə-drus
2M	tə-drus	tə-drus-u
2F	tə-drus-i	tə-drus-in
3M	jə-drus	jə-drus-u
3F	tə-drus	jə-drus-in

(8) Levantine Arabic suffix conjugation

	SG	PL
1	daras-t	daras-na
2M	daras-t	daras-t-u
2F	daras-t-i	daras-t-in
3M	daras	daras-u
3F	daras-ət	daras-in

(9) Levantine Arabic possessive pronoun suffixes[1]

	SG	PL
1	-i	-na
2M	-ak	-k-on
2F	-ik, -tʃ-i	-k-in
3M	-o	(-h)-on
3F	(-h)-a	-h-in

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[1] See Brustad and Zuniga (2019: 411) for a number of variant forms.

Two puzzles of discontinuous agreement

- Assuming that subject φ-agreement is bundled on a single node in the syntax (e.g. (10)), why can agreement be discontinuous in Semitic at all?
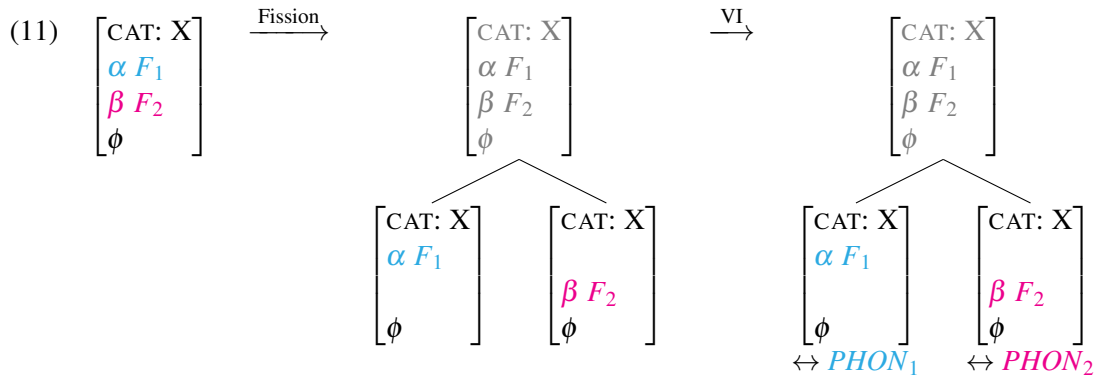
  (10) Structure of a Semitic verbal complex head after head movement, with φ-agreement in Asp/T

$$
\begin{array}{c}
\text{Asp/T} \\
\diagup \quad \diagdown \\
\text{Voice} \qquad \begin{bmatrix} \text{CAT: Asp/T} \\ \phi \end{bmatrix} \longleftarrow \boxed{\textit{locus of } \varphi\textit{-agreement} \atop \textit{varies across languages}} \\
\diagup \quad \diagdown \\
\sqrt{\text{+v+Voice+Asp}}
\end{array}
$$
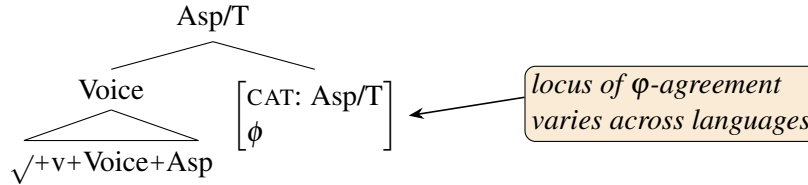
- How do we explain the *meta* pattern of 2nd/3rd person discontinuous agreement?
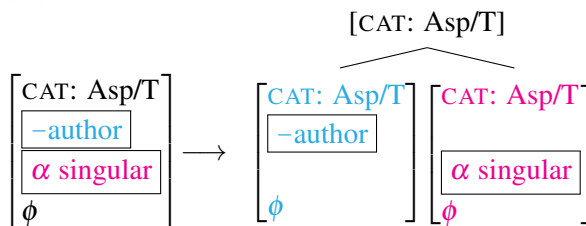

Fission accounts for both puzzles

Fission **splits up** certain features and **copies** all others (here, ϕ) into two output nodes **prior to VI** (Arregi and Nevins 2012; Hewett 2022, To appear; see also Halle and Marantz 1993 and Calabrese 2003).

(11)
$$
\begin{bmatrix} \text{CAT: X} \\ \alpha\, F_1 \\ \beta\, F_2 \\ \phi \end{bmatrix}
\xrightarrow{\text{Fission}}
\begin{bmatrix} \text{CAT: X} \\ \alpha\, F_1 \\ \beta\, F_2 \\ \phi \end{bmatrix}
\xrightarrow{\text{VI}}
\begin{bmatrix} \text{CAT: X} \\ \alpha\, F_1 \\ \beta\, F_2 \\ \phi \end{bmatrix}
$$

$$
\begin{bmatrix} \text{CAT: X} \\ \alpha\, F_1 \\ \\ \phi \end{bmatrix}
\begin{bmatrix} \text{CAT: X} \\ \\ \beta\, F_2 \\ \phi \end{bmatrix}
\qquad
\begin{bmatrix} \text{CAT: X} \\ \alpha\, F_1 \\ \\ \phi \end{bmatrix}
\begin{bmatrix} \text{CAT: X} \\ \\ \beta\, F_2 \\ \phi \end{bmatrix}
$$
$$
\qquad\qquad\qquad\qquad\quad \leftrightarrow PHON_1 \quad \leftrightarrow PHON_2
$$

Semitic 2nd/3rd person splitting is derived by the Fission rule in (12), which acts in response to the **language-specific morphotactic constraint** in (13).

(12) **Semitic non-author Fission rule**

$$
\begin{array}{c}
\qquad\qquad [\text{CAT: Asp/T}] \\
\qquad\qquad \diagup \quad \diagdown \\
\begin{bmatrix} \text{CAT: Asp/T} \\ \boxed{-\text{author}} \\ \boxed{\alpha\ \text{singular}} \\ \phi \end{bmatrix}
\rightarrow
\begin{bmatrix} \text{CAT: Asp/T} \\ \boxed{-\text{author}} \\ \\ \phi \end{bmatrix}
\begin{bmatrix} \text{CAT: Asp/T} \\ \\ \boxed{\alpha\ \text{singular}} \\ \phi \end{bmatrix}
\end{array}
$$

(13) **Constraint triggering non-author Fission**

$$*[-\text{author}]\, [\alpha\ \text{singular}]$$

$$\boxed{\textit{bans coexponence of} \atop [-\text{author}],\ [\alpha\ \text{singular}]}$$

(14) A partial inventory of Semitic φ-features

a. *Person features*	b. *Number features*	c. *Gender features*
(Halle 2000)	(Harbour 2008b)	[±feminine]
[±author]	[±singular]	
[±participant]	[±augmented]	

Fission rules only make reference to *features*, not *exponents* because **Fission logically precedes VI**. *Meta splits* are accounted for: splitting occurs whenever [−author] and [±singular] are bundled together.

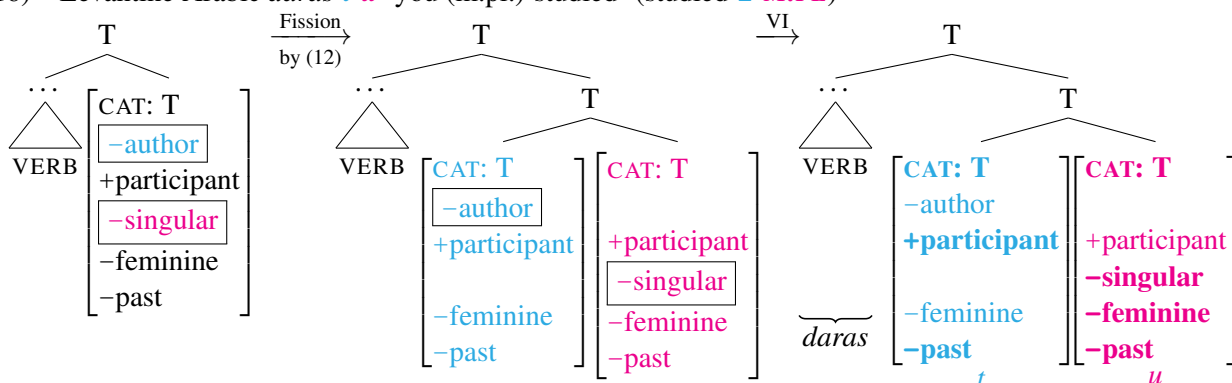

1st person agreement is monomorphemic because Fission ((12)) fails to apply with [+author]
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(15) Levantine Arabic *daras-na* 'we studied' (studied-**1.PL**)

$$\text{T} \quad \xrightarrow{\text{VI}} \quad \text{T}$$

VERB, $\begin{bmatrix} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ -\text{singular} \\ +\text{past} \end{bmatrix}$ $\xrightarrow{\text{VI}}$ VERB *daras*, $\begin{bmatrix} \textbf{CAT: T} \\ +\textbf{author} \\ +\textbf{participant} \\ -\textbf{singular} \\ +\textbf{past} \end{bmatrix}$ *na*

bolded features are matched at VI
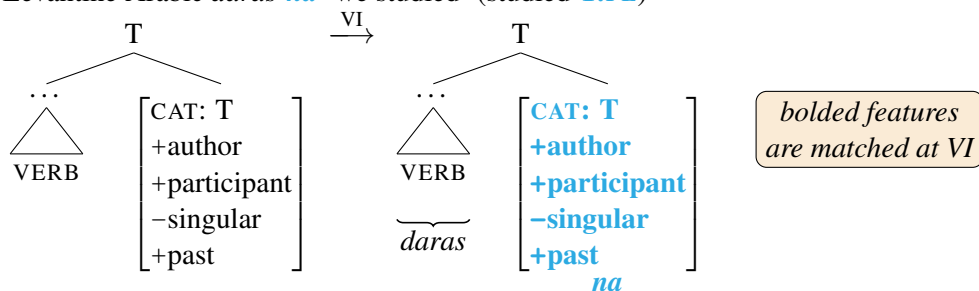
2nd/3rd person agreement is discontinuous due to Fission ((12))
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(16) Levantine Arabic *daras-t-u* 'you (m.pl.) studied' (studied-**2-M.PL**)

$$\text{T} \quad \xrightarrow[\text{by (12)}]{\text{Fission}} \quad \text{T} \quad \xrightarrow{\text{VI}} \quad \text{T}$$

VERB, $\begin{bmatrix} \text{CAT: T} \\ \boxed{-\text{author}} \\ +\text{participant} \\ \boxed{-\text{singular}} \\ -\text{feminine} \\ -\text{past} \end{bmatrix}$ $\xrightarrow[\text{by (12)}]{\text{Fission}}$ VERB, $\begin{bmatrix} \text{CAT: T} \\ \boxed{-\text{author}} \\ +\text{participant} \\ -\text{feminine} \\ -\text{past} \end{bmatrix} \begin{bmatrix} \text{CAT: T} \\ +\text{participant} \\ \boxed{-\text{singular}} \\ -\text{feminine} \\ -\text{past} \end{bmatrix}$ $\xrightarrow{\text{VI}}$ VERB *daras*, $\begin{bmatrix} \textbf{CAT: T} \\ -\text{author} \\ +\textbf{participant} \\ -\text{feminine} \\ -\textbf{past} \end{bmatrix}_{t} \begin{bmatrix} \textbf{CAT: T} \\ +\text{participant} \\ -\textbf{singular} \\ -\textbf{feminine} \\ -\textbf{past} \end{bmatrix}_{u}$

Similarly for the possessive pronominal suffix paradigm in (9) (e.g. *-k-on* 'your' (-**2-M.PL**)): Fission occurs whenever [−author] and [± singular] are bundled together.

A similar argument from *metasyncretism* for Impoverishment

Metasyncretism: a syncretism that recurs across paradigms/exponents. It's a generalization over exponents, not an idiosyncratic property of particular vocabulary entries (see Bobaljik 2001, Harley 2008).

- *Semitic gender metasyncretism:* gender is not marked in the first person in Semitic.
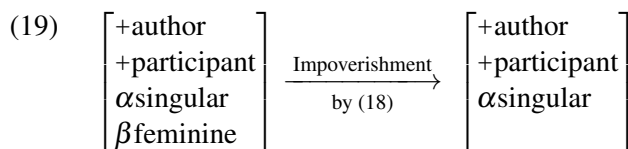
Impoverishment analysis: delete gender features from 1st person morphemes prior to exponence.

(17) **Semitic morphotactic constraint on joint φ-feature exponence: 1 and gender**
*[+author] [α feminine]

(18) **Semitic first person gender impoverishment** (see also Noyer 1998: 270)
Delete [α feminine] in a morpheme specified as [+author], [α feminine].

(19) $\begin{bmatrix} +\text{author} \\ +\text{participant} \\ \alpha\text{singular} \\ \beta\text{feminine} \end{bmatrix} \xrightarrow[\text{by (18)}]{\text{Impoverishment}} \begin{bmatrix} +\text{author} \\ +\text{participant} \\ \alpha\text{singular} \end{bmatrix}$

Because (18) operates prior to VI, gender and [+author] can never be coexponed, accounting for the metasyncretism!

UPSHOT: Fission accounts for the number of affixes in discontinuous agreement (including patterns of *metafission*) and predicts the suffix conjugation. VI-centric approaches fail to predict metafission (see section §6).

3. Generalized Reduplication predicts the prefix conjugation

Prefixation = displacement via **Generalized Reduplication** (Harris and Halle 2005, Arregi and Nevins 2018).

(20) Full Reduplication: repeat all material inside $\llbracket \ldots \rrbracket$.
$\llbracket$ A B $\rrbracket \to$ ABAB

(21) Partial Reduplication
a. Delete the material after $\rangle$ in the second copy, doubling of A:
$\llbracket$ A $\rangle$ B $\rrbracket \to$ ABA⟨B⟩ $\to$ ABA
b. Delete the material before $\langle$ in the first copy, doubling of B:
$\llbracket$ A $\langle$ B $\rrbracket \to$ ⟨A⟩BAB $\to$ BAB

(22) Metathesis of A and B
$\llbracket$ A $\rangle\langle$ B $\rrbracket \to$ ⟨A⟩BA⟨B⟩ $\to$ BA

(23) **Semitic prefix conjugation Metathesis** – inverts the verb and subject agreement
a. Structural description: $[_{\text{Asp}^{0\text{max}}/\text{T}^{0\text{max}}}\; \sqrt{} \; v \; \text{Voice} \; \text{Asp}_{[-\text{perf}]}/\text{T}_{[-\text{past}]}$
b. Structural change:
  i. Insert $\llbracket$ to the immediate left of $\sqrt{}$, and $\rrbracket$ to the immediate right of $\text{Asp}_{[-\text{perf}]}/\text{T}_{[-\text{past}]}$.
  ii. Insert $\rangle\langle$ to the immediate left of $\text{Asp}_{[-\text{perf}]}/\text{T}_{[-\text{past}]}$.

(24) **Constraint triggering prefix conjugation displacement: Asp/T-initiality**
Terminal $\text{Asp}_{[-\text{perf}]}/\text{T}_{[-\text{past}]}$ is initial within $\text{Asp}^{0\text{max}}/\text{T}^{0\text{max}}$.

(25) Levantine Arabic *nə-drus* 'we study' (**1.PL**-study)

2nd/3rd person is discontinuous *and* discontiguous when both (12) and (23) apply

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(26) Levantine Arabic *tə-drus-u* 'you (m.pl.) study' (**2**-study-**M.PL**)

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(27) **Postsyntactic rule ordering:**
Fission ≺ Generalized Reduplication ≺ VI

See Hewett (2022); Kramer (To appear) for arguments that the number and position of discontinuous agreement affixes must be determined prior to VI to account for linear adjacency constraints on affixal allomorphy.

Interim summary

- Meta splits in 2nd/3rd persons require *autonomous Fission rules* which operate before VI.

- Generalized Reduplication derives prefixes from an underlyingly suffixal complex verb head.

Independent evidence for the necessity of Fission and Generalized Reduplication comes from variation in discontinuous first person agreement across Semitic.

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4. First person meta splitting in Omani Mehri requires Fission

Omani Mehri (Modern South Arabian; Oman) 1st person dual **meta splits** require Fission.

(28) Omani Mehri prefix conjugation

	SG	DU	PL
1	ə-	ə-…-**ōh**/-**óh**	n-
2M	t-	t-…-**ōh**/-**óh**	t-…(-**əm**)
2F	t-…(-**i**)	t-…-**ōh**/-**óh**	t-…-**ən**
3M	y-	y-…-**ōh**/-**óh**	y-…(-**əm**)
3F	t-	t-…-**ōh**/-**óh**	t-…-**ən**

(Rubin 2018: 165)

(29) Omani Mehri suffix conjugation

	SG	DU	PL
1	-**k**	-**k**-**i**	-**ən**
2M	-**k**	-**k**-**i**	-**k**-**əm**
2F	-š (<*-**k**-**i**)	-**k**-**i**	-**k**-**ən**
3M	-∅ (ABLAUT)	-**ōh**/-**óh**	-**əm**/-∅ (ABLAUT)
3F	-**ūt**/-**ōt**/-**ēt**	-t-**ōh**/-t-**óh**	-∅ (ABLAUT)

(Rubin 2018: 162)

(30) Omani Mehri possessive pronominal suffixes on singular nouns

	SG	DU	PL
1	-**i**	-**ək**-**i**	-**ən**
2M	-**ək**	-**ək**-**i**	-**ək**-**əm**
2F	-əš (<*-**ək**-**i**)	-**ək**-**i**	-**ək**-**ən**
3M	-**əh**	-**əh**-**i**	-**əh**-**əm**
3F	-**əs**	-**əh**-**i**	-**əs**-**ən**

(Rubin 2018: 55)

(31) Featural decomposition of number categories (Noyer 1992; Harbour 2008b; Nevins 2011)

a. Singular = [+singular, −augmented]

b. Dual = [−singular, −augmented]

c. Plural = [−singular, +augmented]

d. [+singular, +augmented] is impossible.

Omani Mehri innovated the following morphotactic constraint & Fission rule:

(32) **Omani Mehri morphotactic constraint on joint φ-feature exponence: 1.DU**
*[+author] [−singular, −augmented] (no coexponence of first person and dual)

(33) **Omani Mehri first person dual Fission rule**

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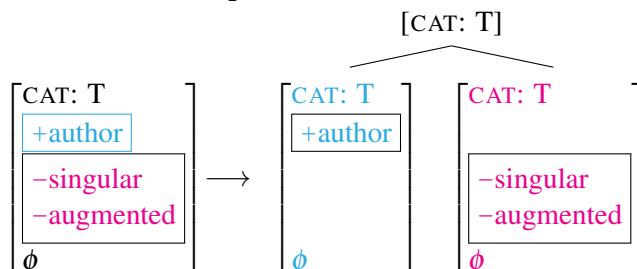
(34) Omani Mehri ə-*bəgd-ōh* 'we two chase' (**1**-chase-**DU**) (Rubin 2019: 270)

$$\text{T} \xrightarrow[\text{by (33)}]{\text{Fission}} \text{T} \xrightarrow[\text{by (23)}]{\text{Metathesis}}$$

[Tree diagrams showing derivation from T through Fission, VI, and Metathesis, with feature structures:

First tree: T dominating VERB and [CAT: T, +author, +participant, −singular, −augmented, −past]

Second tree: T dominating VERB ⟩⟨ and two feature structures: [CAT: T, +author, +participant, −past] and [CAT: T, +participant, −singular, −augmented, −past]

Lower left tree: T dominating [CAT: T, +author, +participant, −past] and T (VERB + [CAT: T, +participant, −singular, −augmented, −past])

Lower right tree (via VI): T dominating [CAT: **T**, **+author**, **+participant**, **−past**] (ə) and T (VERB + *bəgd* + [CAT: **T**, +participant, **−singular**, **−augmented**, −past] (ōh))]

1DU Fission in Omani Mehri will apply whenever [+author] and [−singular, −augmented] are bundled together, accounting for splitting in the suffix conjugation and in possessive pronominal suffixes.

Fission is **driven by morphotactic constraints on featural coexponence**. This morphotactic constraint *reduces markedness in feature bundles prior to exponence* (see section §7).

Excursus: The same constraint can drive Fission OR Impoverishment

Ban on coexponence of 1st and dual triggers *Fission* in Omani Mehri, *Impoverishment* in Classical Arabic.

(35) Metasyncretism of first person dual & plural in Classial Arabic

    a. Prefix conjugation (Birnstiel 2019: 384)   b. Possessive pronouns (Birnstiel 2019: 376)

	SG	DU	PL
1	**ʔa**-…	**na**-…	**na**-…

	SG	DU	PL
1	**-iː/-ja:**	**-na:**	**-na:**

(36) **Classical Arabic morphotactic constraint on joint φ-feature exponence: 1.DU** (= (32))
*[+author] [−singular, −augmented]

(37) **Classical Arabic first person dual impoverishment**
Delete [−augmented] in a morpheme specified as [+author], [−singular, −augmented].

UPSHOT: there is independent evidence for the constraint in (32) banning coexponence of first person and dual number.

However, not all first person discontinuities exhibit a meta split like Omani Mehri…

5. First person discontinuities without a meta split only require Generalized Reduplication

Many Ethiopian Semitic languages (mostly spoken in the Gurage Zone) exhibit **first person plural splits in the prefix conjugation**. This first person plural splitting differs from Omani Mehri 1DU in two ways:

1. *Both* affixes realize [α author] (**N.B.** non-past tense auxiliary *-ān* in brackets; subj. agreement is on Asp).

(38) Wolane (East Gurage) prefix conjugation[2]

	SG	PL
1	**y**-…[-ā-hʷ]	**y**-…-**n**[-ān]
2M	**t**-…[-ā-hɛ]	**t**-…-**u**[-ā-hʷm]
2F	**t**-…-**i**[-ā-š]	**t**-…-**u**[-ā-hʷm]
3M	**y**-…[-ān]	**y**-…-**u**[-ān]
3F	**t**-…[-ā-t]	**y**-…-**u**[-ān]

(adapted from Meyer 2006: 97, 127)

(39) Wolane first person prefix conjugation affixes

a. $\begin{bmatrix} \text{CAT: Asp} \\ \boxed{+\text{author}} \\ +\text{participant} \\ -\text{perfective} \end{bmatrix}$ ↔ **y**-

b. $\begin{bmatrix} \text{CAT: Asp} \\ \boxed{+\text{author}} \\ +\text{participant} \\ -\text{singular} \end{bmatrix}$ ↔ **-n(ɛ)** / VERB ___

2. First person plural splitting is **restricted to the prefix conjugation**; compare (38) with (40)–(41).

(40) Wolane first person suffix conjugation (Meyer 2006: 108, Table 16)

	SG	PL
1	…**-hʷ**	…**-nɛ**

(41) Wolane first person possessive pronominal suffixes (Meyer 2006: 171, Table 35)

	SG	PL
1	**-yɛ**	**-ɲɲɛ**

✗ An analysis with 1PL Fission would predict (i) only one affix to realize [α author] and (ii) meta splits.

> **1PL discontinuous agreement in Ethiopian Semitic is DOUBLING via Generalized Reduplication**
>
> *Prefixes* in Semitic are derived through Metathesis (i.e. Generalized Reduplication with '⟩⟨'). A small change in the rule gives us Doubling in 1PL (i.e. use '⟨' instead of '⟩⟨' in 1PL).
>
> (42) **First person plural Doubling in Wolane**
>   a. Structural description: [$_{\text{Asp}^{0max}}$ √ v Voice Asp$_{[+author, -singular, -perfective]}$
>   b. Structural change:
>   i. Insert ⟦ to the immediate left of √, and ⟧ to the immediate right of Asp$_{[+author, -singular, -perfective]}$.
>   ii. Insert ⟨ to the immediate left of Asp$_{[+author, -singular, -perfective]}$.
>
> * After 1PL Doubling, [+author] can be realized twice.
>
> * 1PL Doubling applies to satisfy *the pan-Semitic positional constraint requiring prefixes in the prefix conjugation* (43), hence only applies in the prefix conjugation.
>
> (43) **Constraint triggering prefix conjugation displacement: Asp/T-initiality** (= (24))
>   Terminal Asp$_{[-perf]}$/T$_{[-past]}$ is initial within Asp^{0max}/T^{0max}.

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[2]The first person prefix *y*- is accidentally homophonous with the third person prefix *y*-: in non-word initial positions, only the first person prefix has the allomorph *l*-.

(44) Wolane *y-sɛbr-n[-ān]* 'we break' (**1**-break-**1.PL**[-AUX]) (Meyer 2006: 97, Table 11)

T

Asp   T [−past] $\xrightarrow{\text{Doubling by (42)}}$ T $\xrightarrow{\text{VI}}$

⟦ ⟨ VERB ⟩

| CAT: Asp |
| +author |
| +participant |
| −singular |
| −perfective |

Asp   T [−past]

Asp

CAT: Asp / +author / +participant / −singular / −perfective

VERB

CAT: Asp / +author / +participant / −singular / −perfective

T

Asp   T [−past]   *ān*

| **CAT: Asp** |
| **+author** |
| **+participant** |
| −singular |
| **−perfective** |
y

Asp

VERB | **CAT: Asp** / **+author** / **+participant** / **−singular** / −perfective |

sɛbr   *n(ɛ)*
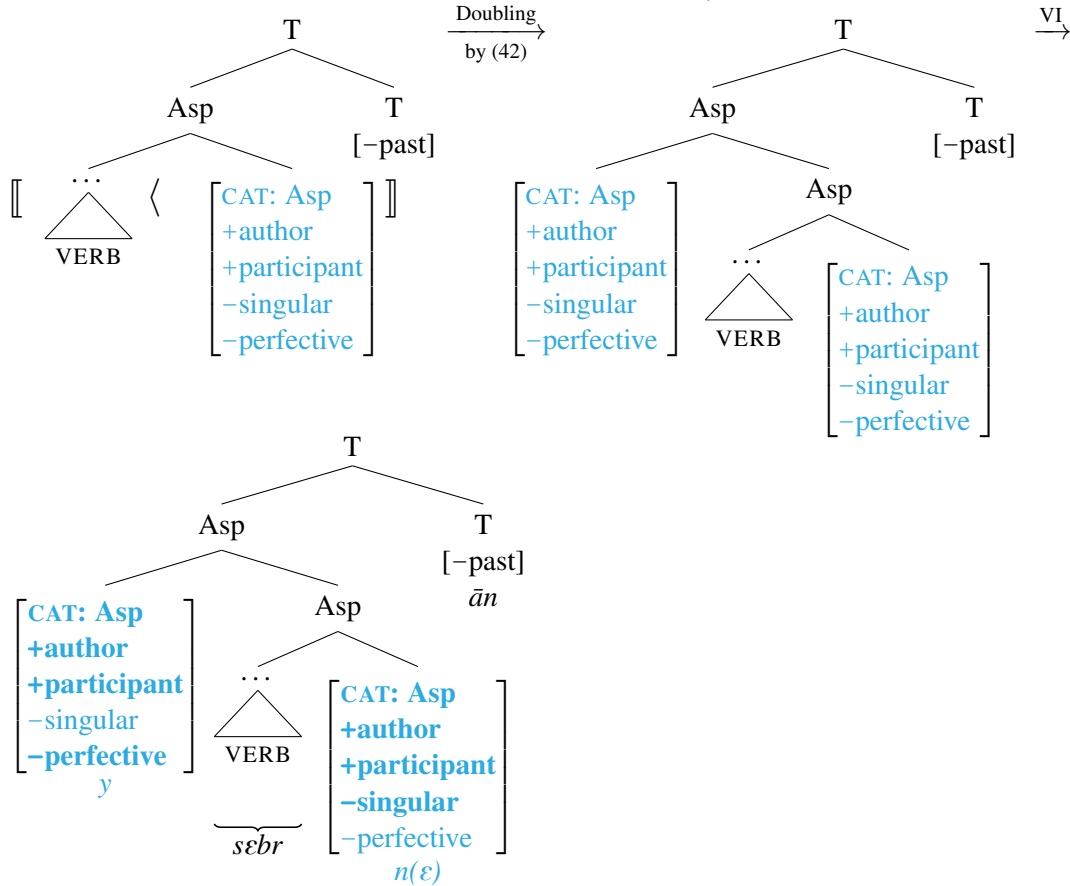
Upshot

∗ **Fission** determines the quantity of terminals in meta splits (e.g. 2nd/3rd person across Semitic, 1st dual in Omani Mehri) and predicts the suffix conjugation.

∗ **Generalized Reduplication** predicts the position of terminals in the prefix conjugation and predicts first person discontinuities restricted to the prefix conjugation.

Excursus: first person doubling can also occur in the *singular*

In some dialects of Iraqi and Khuzestani Arabic, 1SG agreement can be discontinuous. Like Wolane, discontinuous 1SG agreement (i) realizes [+author] twice and (ii) is **restricted to the prefix conjugation**. (**N.B.** 1PL agreement is not discontinuous: *nə-*.)

(45) **a-**   ruːħ -**an**
    1.SG- go   -**1.SG**
    'I go.'   (Abu-Haidar 1988: 76)

(46) **a-**   ɣasm -**an**   -hin
    1.SG- divide -**1.SG** -3.F.PL.ACC
    'I will divide them (fem.)' (Ingham 1973: 548)

(47) Khuzestani Arabic first person suffix conjugation (Ingham 2011: Table 3)

	SG	PL
1	...-ət	...-**na**

(48) Khuzestani Arabic first person independent pronouns (Ingham 2011: Table 1)

	SG	PL
1	**āna∼āni**	**əħna**

Analysis: Iraqi/Khuzestani Arabic innovated a 1SG Doubling rule, parallel to Wolane 1PL Doubling.

6. Comparison with an alternative approach

A no-good analysis of meta splits: splitting by stipulation during VI

A prominent alternative approach to splitting in DM: Fission is **iterated VI cyclically matching features** on a node with separate vocabulary entries (esp. Noyer 1992, Halle 2000, Harbour 2008a, 2016, To appear).

(49)
$$\begin{bmatrix} \text{CAT: X} \\ \alpha\ F_1 \\ \beta\ F_2 \end{bmatrix} \xrightarrow{\text{VI}} \begin{bmatrix} \text{CAT: X} \\ \cancel{\alpha\ F_1} \\ \beta\ F_2 \end{bmatrix} \xrightarrow{\text{VI}} \begin{bmatrix} \text{CAT: X} \\ \cancel{\alpha\ F_1} \\ \cancel{\beta\ F_2} \end{bmatrix}$$

$$\begin{bmatrix} \text{CAT: X} \\ \alpha\ F_1 \end{bmatrix} \leftrightarrow PHON_1$$

this step is "Fission"

$$\begin{bmatrix} \text{CAT: X} \\ \alpha\ F_1 \end{bmatrix} \leftrightarrow PHON_1 \qquad \begin{bmatrix} \text{CAT: X} \\ \beta\ F_2 \end{bmatrix} \leftrightarrow PHON_2$$
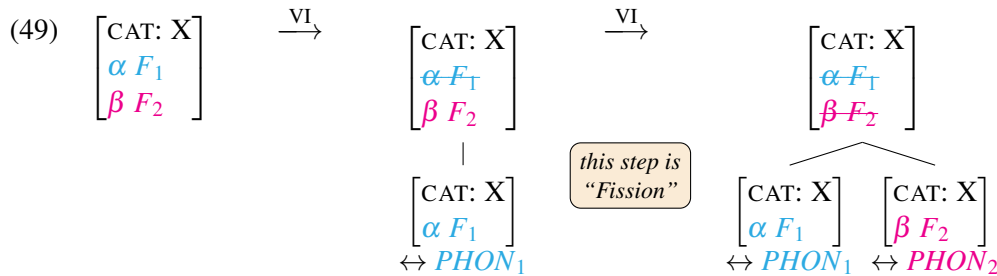
Under such approaches, Fission is parasitic on a language's **inventory of vocabulary entries** and must operate **with VI**. Vocabulary-centric approaches fail to predict exponent-independent splitting.

(50) a. tə- drus -u   b. -k -on
          2- study -**M.PL**   -**2** -**M.PL**
          'you study'   'your' (Levantine Arabic; Brustad and Zuniga 2019: 411, 417)

(51) *A vocabulary-centric account of* 2.M.PL *metafission in Levantine Arabic is stipulative*

CAT: T   CAT: D

$$t \leftrightarrow \left\{ \begin{bmatrix} 2 \end{bmatrix} \right\} \leftrightarrow k$$

$$u \leftrightarrow \left\{ \begin{bmatrix} \text{M, PL} \end{bmatrix} \right\} \leftrightarrow on$$
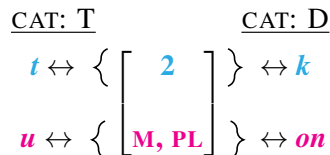
CONCLUSION: VI-centric approaches to splitting should be abandoned in favor of a modular approach.

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7. Markedness in the postsyntax

Constraints triggering Fission (and Impoverishment) are **language-specific and/or universal statements about marked feature cooccurrence restrictions** (Noyer 1992, 1998; Nevins 2011; Arregi and Nevins 2012).

(52) A feature is marked if it undergoes/triggers more neutralizations than its unmarked counterpart.

Semitic non-author Fission & markedness

(53) **Constraint triggering Semitic non-author Fission**
       *[−author] [α singular]

(54) **Context-sensitive feature markedness statement for [−author]**
       [±author]: marked value = − on a node additionally specified as [α singular]
       Supporting evidence: cross-linguistically, if number marking is restricted to a single person, it appears in the first person (Corbett 2000: 56).

Omani Mehri first person dual Fission & markedness

(55) **Constraint triggering Omani Mehri 1.DU Fission**
       *[+author] [−singular, −augmented] (no coexponence of first person and dual)

(56) a. [+author] is context-free marked
           Supporting evidence: gender is neutralized in [+author] morphemes across Semitic.

      b. **Context-sensitive feature markedness statement for [−augmented]** (see Nevins 2011: 421)
          [±augmented]: marked value = − on a node additionally specified as [−singular]
          Supporting evidence: gender is neutralized in the dual in Mehri, not in plural or singular.

$\boxed{\text{UPSHOT:}}$ The Fission-based analysis of Semitic discontinuous agreement provides novel evidence for the role that *markedness* plays in the postsyntax.

8. Conclusion

> **Summary and consequences**
>
> ✓ Semitic discontinuous agreement provides strong evidence for a **modular postsyntax** in which certain operations (e.g. Fission, Generalized Reduplication) logically precede others (e.g. VI).
>
> ✓ *Metafission* requires a way to make generalizations about splitting *across paradigms and exponents*, paralleling metasyncretism: this is **Fission**. VI alone is insufficient to account for metafission.
>
> ✓ **Generalized Reduplication** unites morphological metathesis and doubling, accounting for (i) the presence of prefixes in the prefix conjugation and (ii) the existence of first person doubling across Semitic, yielding a distinct type of discontinuous agreement.
>
> ✓ Two kinds of morphotactic constraints drive postsyntactic operations: **feature cooccurrence constraints** sensitive to markedness trigger Fission & Impoverishment (Noyer 1998; Nevins 2011); **positional constraints** trigger Generalized Reduplication (Arregi and Nevins 2012, 2018).

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A. First person discontinuities in Maghrebi Arabic: A diachronic path from Doubling to Fission

Maghrebi (i.e. North African) Arabic famously exhibits discontinuous first person plural agreement:

- Like Ethiopian Semitic (and Iraqi/Khuzestani Arabic), Maghrebi 1PL discontinuous agreement does not participate in a meta pattern ⤳ **Doubling (via Generalized Reduplication)**.

- Like Mehri, only prefixes in Maghrebi 1PL discontinuous agreement realize [α author] ⤳ **Fission**.

(57) Tunis Arabic prefix conjugation (√ktb 'write')

	SG	PL
1	**ni**-ktib	**ni**-ktb-**u**
2	**ti**-ktib	**ti**-ktb-**u**
3M	**yi**-ktib	**yi**-ktb-**u**
3F	**ti**-ktib	**yi**-ktb-**u**

(Gibson 2011: Table 4)

(58) Tunis Arabic suffix conjugation (√ktb 'write')

	SG	PL
1	ktib-**t**	ktib-**na**
2	ktib-**t**	ktib-**t**-**u**
3M	ktib	kitb-**u**
3F	kitb-**it**	kitb-**u**

(Gibson 2011: Table 5)

(59) Tunis Arabic possessive pronouns

	SG	PL
1	**-i**/**-ya**	**-na**
2	**-(i)k**	**-k**-**um**
3M	**-u**/**-h**	**-h**-**um**
3F	**-h**-**a**	**-h**-**um**

(Gibson 2011: Table 2)

> **Proposal: Maghrebi 1PL discontinuities result from Fission, diachronically derived from Doubling**

(60) **Hypothesized diachronic path**: $a$ktib~niktib $\xrightarrow{\text{Doubling}}$ $a$ktib~niktib$u$ $\xrightarrow{\text{Fission}}$ niktib~niktib$u$

Cf. parallels in dialect variation in Nile Delta Egyptian Arabic:

(61) Nile Delta variation in first person prefix conjugation agreement (Behnstedt 2016: 23)

	West (= Maghrebi)	**Center-West**	**East** (= non-Maghrebi)
1.SG	ni-ktib	a-ktib	a-ktib
1.PL	ni-ktib-u	ni-ktib-u	ni-ktib

1. <u>Stage 1</u>: *-u* extends to the 1st person from 2nd/3rd via Doubling ((62)), triggered by Asp/T-initiality ((24)).

(62) **First person plural Doubling in Center-West Delta Egyptian Arabic dialects**
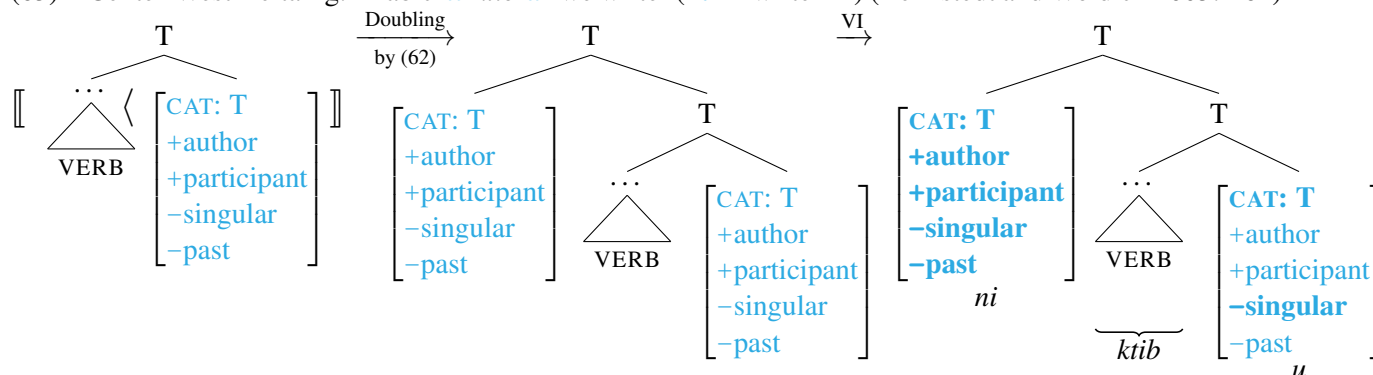   a. Structural description: $[_{\text{T}^{0\text{max}}} \sqrt{} \; \text{v Voice Asp T}_{[+\text{author}, -\text{singular}, -\text{past}]}$
    b. Structural change:
        i. Insert ⟦ to the immediate left of $\sqrt{}$, and ⟧ to the immediate right of $\text{T}_{[+\text{author}, -\text{singular}, -\text{past}]}$.
        ii. Insert ⟨ to the immediate left of $\text{T}_{[+\text{author}, -\text{singular}, -\text{past}]}$.

(63) Center-West Delta Eg. Arabic *ni-ktib-u* 'we write' (**1.**PL-write-**PL**) (Behnstedt and Woidich 2005: 161)


2. <u>Stage 2</u>: *ni-* realizes 1st person without number; 1PL Doubling ((62)) is reanalyzed as 1PL Fission ((65)), and Asp/T-initiality is reinterpreted as a ban on coexponence of 1 and PL in the prefix conjugation ((64)).
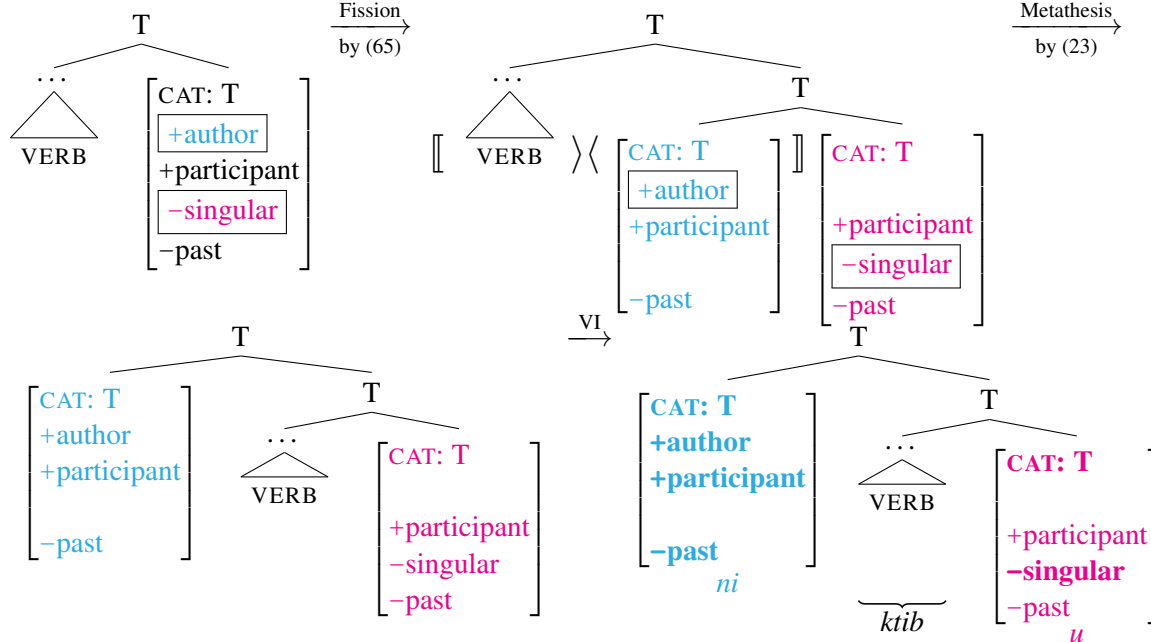
(64) **Maghrebi morphotactic constraint on joint φ-feature exponence: 1 and number**
    *[+author], [α singular] / ___ [−past] (no coexponence of first person and number in the non-past)

(65) **First person Fission in Maghrebi Arabic**

13
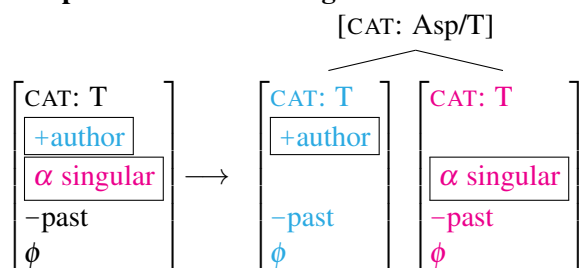
(66) Maghrebi Arabic <u>*ni-ktib-u*</u> 'we write' (1-write-PL) (Behnstedt and Woidich 2005: 161)

$$\text{T} \xrightarrow[\text{by (65)}]{\text{Fission}} \text{T} \xrightarrow[\text{by (23)}]{\text{Metathesis}}$$

T
— VERB

CAT: T
[+author]
+participant
[−singular]
−past

⟶ (Fission by (65)) ⟶

T

⟦ VERB ⟧ ⟨ CAT: T / +author / +participant / −past ⟩ ⟦ CAT: T / +participant / [−singular] / −past ⟧

$\xrightarrow{\text{VI}}$

T

CAT: T / +author / +participant / −past

T
— VERB — CAT: T / +participant / −singular / −past

T

CAT: T / **+author** / **+participant** / **−past** — *ni*

T
— VERB — *ktib* — CAT: T / +participant / **−singular** / **−past** — *u*

B. Predictions about the typology of multiple exponence

Fission and Generalized Reduplication predict two types of multiple exponence with distinct empirical profiles:

Fission-derived patterns of multiple exponence

∗ Fission-derived multiple exponence participates in a meta pattern because constraints like (67) only make reference to antagonistic features (and not to category, tense, etc.).

(67) **Constraint triggering non-author Fission**
      *[−author] [α singular]

(**N.B.** Maghrebi Arabic 1PL splitting is an exception to this rule, as discussed in appendix A.)

∗ Fission-derived multiple exponence displays *some* mutually exclusive realization of features (i.e. Noyer's 1992 "discontinuous bleeding") because antagonistic features are split up.

Generalized Reduplication-derived patterns of multiple exponence

∗ Generalized Reduplication-derived multiple exponence does not necessarily participate in a meta pattern because Generalized Reduplication acts in response to positional constraints like (68).
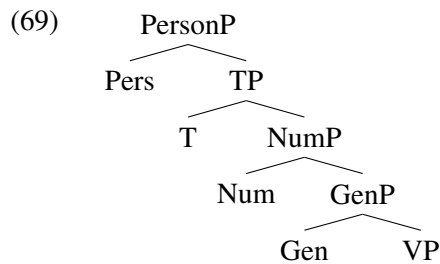
(68) **Constraint triggering prefix conjugation displacement: Asp/T-initiality**
      Terminal $\text{Asp}_{[-\text{perf}]}/\text{T}_{[-\text{past}]}$ is initial within $\text{Asp}^{0\text{max}}/\text{T}^{0\text{max}}$.

∗ Generalized Reduplication-derived multiple exponence does not necessarily display discontinuous bleeding because it involves node *copying*; features on terminal nodes are never split up.

PersonP hypothesis: φ-features project independently (Shlonsky 1989, Martinović 2019; see also Banksira 2000, Tourabi 2002, Lumsden and Halefom 2003, Lowenstamm 2011, and Bruening 2017: 51–55).

(69)

```
        PersonP
       /      \
    Pers       TP
             /    \
           T       NumP
                  /    \
                Num     GenP
                       /    \
                     Gen     VP
```
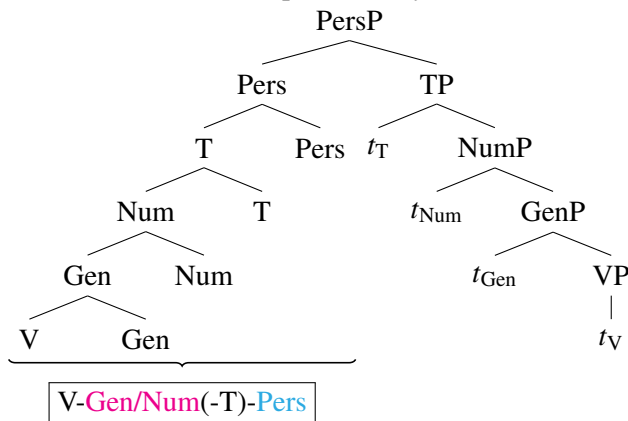
- **Suffix conjugation:** V moves successive-cyclically to Pers.

- **Prefix conjugation:** V moves successive-cyclically to T, Pers is a prefix (e.g. via Lowering; Embick and Noyer 2001). (But see Shlonsky To appear for an alternative positing *phrasal* movement.)

PersonP makes incorrect predictions (see Hewett 2022: §2.6).

- PersonP incorrectly predicts a Number-Person order in the suffix conjugation via the Mirror Principle.

(70)   Incorrect suffixal order predicted by PersonP

```
                    PersP
                  /       \
               Pers        TP
              /    \      /    \
            T      Pers  t_T    NumP
          /   \   /  \        /      \
        Num    T       t_Num      GenP
       /   \                    /      \
     Gen   Num               t_Gen      VP
    /  \                                 |
   V    Gen                             t_V
```

V-Gen/Num(-T)-Pers

(71)   Ṣanʕānī Arabic perfect $\sqrt{\text{gmbr}}$ 'sit' (Watson 1993: 56)

	Plural
1	gambar-**nā**
2M	gambar-**t**-**ū**
2F	gambar-**t**-**ayn**
3M	gambar-∅-**ū**
3F	gambar-∅-**ayn**
	V-Pers-Gen/Num

- No clear one-to-one mapping between φ-features and agreement affixes:

(72)   **ti**- gambir -**ī**
       2- sit   -**2**.F.SG
       'you (f.sg) sit' (Ṣanʕānī Arabic)

- No clear reason why splitting is sensitive to specific φ-features (e.g. pan-Semitic 1st vs. 2nd/3rd and 1DU splitting in Omani Mehri reduce markedness).

- No explanation for patterns of splitting across paradigms → doesn't predict metafission.

TAKEAWAY: A purely syntactic approach to discontinuous agreement should be rejected.