

# Discontinuous first person agreement in Semitic and postsyntactic modularity

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## Abstract

Semitic agreement is normally discontinuous (i.e. expressed by more than one affix on the verb) only in the second and third persons. However, in restricted cases in particular languages, first person agreement is also discontinuous. I discuss two types of first person discontinuities. The first manifests the hallmarks of a meta split, persisting across paradigms and exponents. I argue that this type of first person discontinuity arises due to postsyntactic *Fission* which separates antagonistic sets of features prior to insertion and which is driven by markedness constraints on feature coexponence. The second type of first person discontinuity is restricted to a single paradigm and does not evince true discontinuous bleeding effects. Such discontinuities are best captured via morphological *Doubling*, modeled via Generalized Reduplication. First person discontinuities thus provide strong empirical support for the autonomy of morpheme splitting rules and morpheme copying rules. I demonstrate that each type of rule has a distinct empirical signature and acts as a repair to a different kind of morphotactic constraint. Consequently, there must be more than one route to discontinuous agreement.

## 1 Introduction

Semitic (and Afroasiatic) discontinuous agreement is commonly restricted to the second and third persons. Thus, in the imperfective forms of the Levantine Arabic verb shown in (1) (commonly referred to in the Semitic literature as the *prefix conjugation*), subject agreement is realized by both a prefix and a suffix in the second person feminine singular, and in all second and third person plural forms. First person agreement, on the other hand, is invariably a monomorphemic prefix: in (1), these are  $\varnothing$ - for 1.SG and  $n\varnothing$ - for 1.PL. The exponents of  $\varphi$ -agreement on verbs are underlined throughout.

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- (1) Levantine Arabic prefix conjugation  $\sqrt{\text{drs}}$  ‘study’

(Brustad and Zuniga 2019: 417, Table 16.13)

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

The asymmetry between first and non-first persons evident in (1) manifests itself elsewhere in the language. For instance, in the *suffix conjugation* paradigm in (2)—so named because agreement is exclusively suffixal—and in the possessive pronouns in (3) (often referred to as ‘suffixes’ in the descriptive literature), we also find that the relevant discontinuities are restricted to the second and third persons, though here the exponents are linearly adjacent.

- (2) Levantine Arabic suffix conjugation  $\sqrt{\text{drs}}$  ‘study’

(Brustad and Zuniga 2019: 417, Table 16.12)

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

- (3) Levantine Arabic possessive pronoun suffixes<sup>1</sup>

(Brustad and Zuniga 2019: 411, Table 16.7)

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

In all three paradigms, we find splitting in (at least) the second person feminine singular and in the second and third person plural, but never do we find splitting in the first person. Hewett (To appear) argues that the recurrence of the same kind of discontinuity in more than one paradigm with the use of distinct exponents constitutes a *meta* generalization, on a par with *metasyncretism* (on which see Williams 1994, Bobaljik 2001, Frampton 2002, Harley 2008). Hewett refers to the general pattern of splitting in the non-first persons evident in (1)–(3) as *metafission*, and contends that this pattern motivates a morphotactic analysis of discontinuous agreement within the framework of Distributed Morphology (DM) (Halle and Marantz 1993, 1994), following the general programme laid out in Arregi and Nevins (2012). Specifically, Hewett’s analysis relies on the interaction of several postsyntactic operations organized in a serial architecture: Fission rules split up features from

<sup>1</sup>See Brustad and Zuniga (2019: 411) for a number of variant forms.

a single terminal into more than one position of exponence prior to insertion, Metathesis rules (modeled with the Generalized Reduplication formalism of Harris and Halle (2005) and Arregi and Nevins (2018)) derive the order of affixes, and Vocabulary Insertion determines the choice of exponents.

Second and third person discontinuities have understandably preoccupied most previous discussions of discontinuous agreement in Semitic, being also attested in other Afroasiatic languages (see Gragg (2019) for an overview). What has largely been overlooked—with the prominent exception of Noyer (1992)—is the fact that first person discontinuities, though rarer, are also attested. Broadly speaking, there are two kinds of first person discontinuities across Semitic. The first type has the profile of a meta split: in Mehri, first person discontinuities are restricted to dual number forms, but this split obtains throughout the language’s pronominal and agreement paradigms with distinct exponents. Thus, Mehri first person dual splitting constitutes an additional case of meta-fission. The second type of first person discontinuity is restricted to the prefix conjugation, and can be found in several languages of Ethiopia, certain (especially rural) dialects of Southern Iraqi and Khuzestani Arabic, and in Maghrebi Arabic. These first person discontinuities can be contrasted with second and third person discontinuities in the same languages which persist across paradigms and across exponents. Thus, we find one type of first person discontinuity (i.e. in Mehri) which looks like a restricted, innovative case of meta-fission, and another type (i.e. in Ethiopian Semitic, Southern Iraqi and Khuzestani Arabic, and Maghrebi Arabic) which does not.

These two patterns are best captured in a system with multiple postsyntactic operations providing more than one route to discontinuous agreement. The first person dual split in Mehri is accounted for with an additional, innovative Fission rule which separates first person and dual features. This rule will apply whenever first person dual features are bundled together lexically, predicting the non-vocabulary specific nature of this split and, hence, the *meta* generalization. First person splits in Ethiopian Semitic, Southern Iraqi and Khuzestani Arabic, and Maghrebi Arabic, on the other hand, can be accounted for—at least historically—with morphological *Doubling* via Generalized Reduplication. The existence of two distinct types of first person discontinuities provides support for the autonomy of Fission and of Doubling rules: each generates a distinct type of discontinuity. By contrast, analyses which only make use of a single mechanism to derive discontinuous agreement undergenerate. If all discontinuities were due to Fission, we would not expect to find near complete  $\varphi$ -featural overlap between prefixes and suffixes in the Ethiopian Semitic and Southern Iraqi and Khuzestani Arabic discontinuities, contrary to fact; we also might incorrectly predict all first person discontinuities to instantiate a *meta* pattern, again contrary to fact. On the other hand, if all discontinuities were due to morphological Doubling, we would never expect to find evidence for meta-fission. This is because Doubling rules (like all Generalized Reduplication rules) are triggered by *positional* constraints, not feature cooccurrence constraints. Meta patterns hold across paradigms regardless of the absolute position of the  $\varphi$ -feature exponents: prefix conjugation splits involve a prefix and a suffix (see (1)), whereas suffix conjugation splits involve multiple suffixes (see (2)). The linear flexibility of meta splits conflicts with the postsyntactic motivation for Generalized Reduplication. Thus, I contend that variation in the patterns of first person discontinuities across Semitic provides strong evidence in favor of postsyntactic modularity and for a distinction between splitting (i.e. Fission) and metathesis/doubling (i.e. Generalized Reduplication) rules.

The remainder of this paper is organized as follows. In section §2, I review the key components of the system proposed in Hewett (To appear) and demonstrate how that system accounts for the

basic pattern of discontinuity in the second and third persons in Semitic. In section §3, I discuss first person dual discontinuities in Omani Mehri. I argue that this splitting is motivated by an innovated, markedness-driven morphotactic constraint against the joint exponence of first person and dual features. The effects of this constraint and the triggered Fission rule are felt throughout the language’s morphological paradigms: first person and dual features are never coexponed. I then contrast the behavior of Mehri with several other Semitic languages. In section §4, I discuss first person splits in Ethiopian Semitic and demonstrate that they can be accounted for with Doubling via Generalized Reduplication. No Fission is needed for these discontinuities, and we correctly predict that there should be no meta-fission. In section §5, I analyze discontinuous first person *singular* agreement in Southern Iraqi and Khuzestani Arabic, arguing again for a pure Doubling analysis and showing how cross-linguistic variation is manifested in Generalized Reduplication rules. In section §6, I discuss first person splitting in Maghrebi Arabic, which ostensibly embodies discontinuous bleeding—that is, there is no overlapping  $\varnothing$ -featural exponence across affixes—but which fails to instantiate meta-fission. After carefully examining dialect variation in the Nile Delta, I propose that an earlier rule of Doubling in the first person was diachronically reanalyzed as first person Fission, accounting for the apparently conflicting properties of this split. section §7 compares the present modular approach with some alternatives and argues that none can account for both types of discontinuous first person agreement without stipulation. Finally, section §8 concludes.

## 2 Background: Hewett (To appear)

In this section, I give a brief overview of the analysis of discontinuous agreement in Semitic verbal paradigms put forth by Hewett (To appear). I direct the interested reader to that work for a more detailed discussion.

Verbal agreement is discontinuous—that is, it is expressed by more than one affix on the verb—in the second and third persons in both of the primary verbal conjugations of Semitic. This was illustrated with the Levantine Arabic prefix and suffix conjugation paradigms in (1) and (2) above. First person exponents, however, are consistently monomorphemic. To account for this person-based asymmetry, Hewett (To appear) proposes to use the Distributed Morphology operation of *Fission*.<sup>2</sup> Building on proposals in Arregi and Nevins (2012: 132–136) and Arregi and Nevins (2018: 637, (35)), Fission is taken to split up certain targeted features (which are said to be ‘antagonistic’ with respect to one another) prior to Vocabulary Insertion in response to language-specific morphotactic constraints banning the joint exponence of marked feature combinations (see Calabrese 2003 for a related idea). Adopting the features in (4) for Semitic, we can state the constraint on banned feature coexponence as in (5):

- (4) A partial inventory of Semitic agreement features
  - a. *Person features* (Noyer 1992; Halle 2000)
    - [±author]
    - [±participant]

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<sup>2</sup>See Hewett (To appear) and section §7 for a discussion of alternative approaches to discontinuous agreement in Semitic.

b. *Number features* (Harbour 2008b)

[±singular]

[±augmented]

c. *Gender features*

[±feminine]

(5) **Semitic morphotactic constraint on joint  $\varphi$ -feature exponence: non-author**

\*[-author] [ $\alpha$  singular] (no coexponence of [-author] and [ $\alpha$  singular])

The use of the variable  $\alpha$  to fill the value for the feature [±singular] in (5) collapses the pair of constraints in (6):

(6) **Semitic morphotactic constraints on joint  $\varphi$ -feature exponence: non-author**

a. \*[-author] [+singular]

b. \*[-author] [-singular]

Due to a suggestion by Karlos Arregi (*pers. comm.*), I will deviate slightly from Hewett (To appear) and assume that Fission-triggering constraints like (5) and (6) fit the general schema in (7):

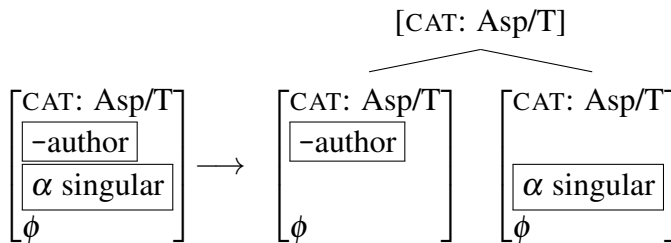
(7) **General schema for Fission-triggering morphotactic constraints**

\* $\alpha$ ,  $\beta$ , where  $\alpha$  and  $\beta$  are variables over nonempty (sub-)sets of features (indicated by square brackets ‘[...]’) in the feature set  $\mathcal{M}$  of a given morpheme.

(7) defines the targets of Fission as (sub-)sets of features rather than as the features themselves. This distinction will be important for the discussion of Omani Mehri in section §3.

Fission rules act in response to morphotactic constraints like (7). Given an input node with feature set  $\mathcal{M}$  bearing two antagonistic sets of features  $\alpha$  and  $\beta$  targeted by the Fission rule, Fission will split up  $\alpha$  and  $\beta$  into two distinct output nodes  $m_1$  and  $m_2$  and copy all other non-targeted sets of features  $\phi$  into both  $m_1$  and  $m_2$  in accordance with the condition in (9).<sup>3</sup> The non-author Fission rule which is triggered by the constraint in (5) is given in (8) (features targeted by Fission are boxed throughout for salience).

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



<sup>3</sup>See Hewett (To appear) for a justification of this component of the analysis. In brief, Fission must copy non-targeted features into both output nodes to account for cases of overlapping  $\varphi$ -featural exponence under Fission (referred to in Harbour (2008a) and Hewett (To appear) as ‘impure’ discontinuities). One prominent example comes from the realization of 2.F.SG prefix conjugation agreement, which, in Levantine Arabic, involves multiple exponence of second person features—both at the prefix *and* at the suffix positions: *tə-drus-i* ‘you (f.sg.) study’ (2-study-2.F.SG). My analysis of Levantine Arabic suffix conjugation agreement in (19) also illustrates this, as the exponents *-t* and *-i* both realize the feature [+participant].

(9) **Feature preservation under Fission**

Non-targeted features  $\phi$  are copied into both output nodes in Fission.

Because this rule is stated to apply only to nodes bearing the (sets of) features [-author] and [ $\alpha$  singular], it will never apply in the first person. This captures the core person-based asymmetry in Semitic exemplified by the Levantine Arabic data above. Finally, due to the observation that person-marking morphemes tend to precede number-marking ones cross-linguistically (see Trommer 2001, 2003; Harbour 2008a; Campbell 2012, Mooney 2022), I will assume that  $\phi$ -features form an ordered n-tuple, represented as a ‘stack.’ I hypothesize that the full arrangement of  $\phi$ -features is as in (10):

(10) Semitic stack of  $\phi$ -features

$$\begin{bmatrix} \pm\text{author} \\ \pm\text{participant} \\ \pm\text{singular} \\ \pm\text{augmented} \\ \pm\text{feminine} \end{bmatrix}$$

We can now formalize the person-before-number ordering generalization as in (11): Fission imposes a relative linear ordering on the two output terminals, translating dominance relations into linear precedence relations (an idea inspired by similar proposals in Harbour 2007, 2008a and Campbell 2012). Again, (11) differs from a similar principle given in Hewett (To appear) in referencing feature *sets* rather than features.

(11) **Dominance-to-precedence mapping under Fission**

Given two ordered (sub-)sets of features  $\alpha$  and  $\beta$  in the feature set  $\mathcal{M}$  of a given morpheme, such that

- a.  $\alpha$  and  $\beta$  are targeted by a Fission rule, and
  - b.  $\alpha$  is higher than  $\beta$  in  $\mathcal{M}$ ,
- ... the output node bearing  $\alpha$  precedes the output node bearing  $\beta$ .

To derive the suffix conjugation, all we need are the relevant vocabulary entires. Those in (12) work well for the Levantine Arabic data in (2):<sup>4</sup>

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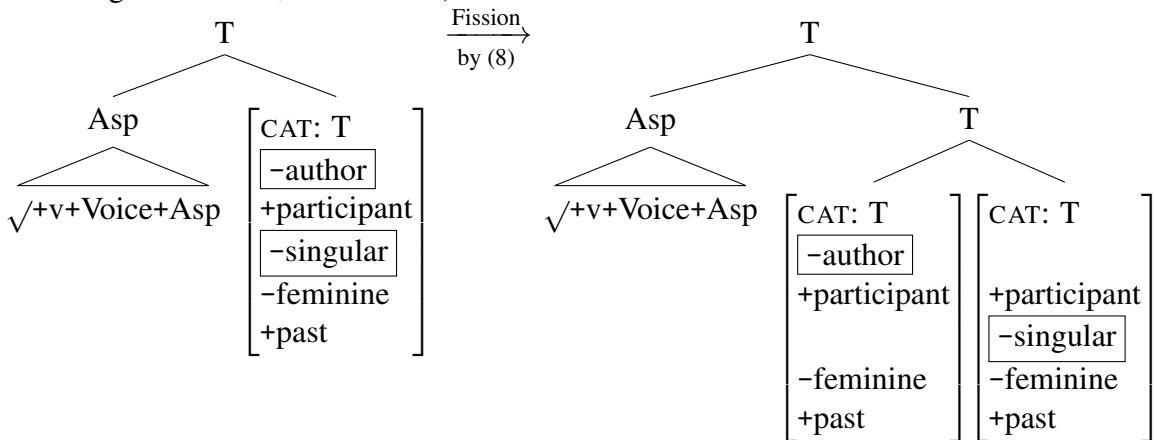
<sup>4</sup>There remains the slightly thorny matter of the syncretism between first person singular and second person masculine singular forms in the exponent *-t*. See the Appendix for discussion.

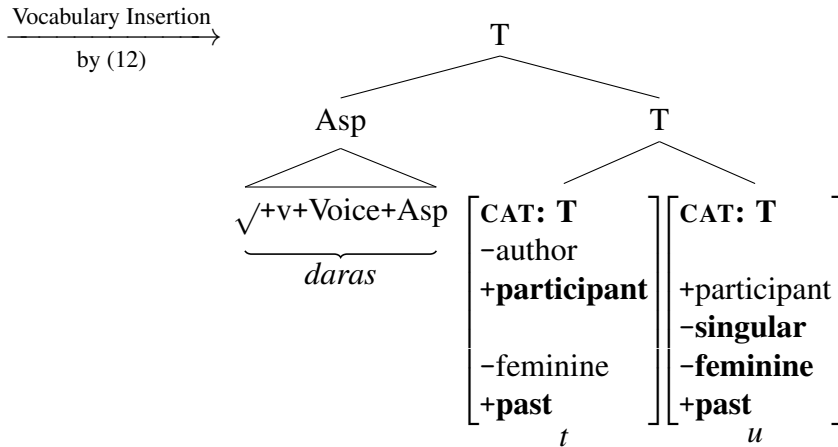
(12) Levantine Arabic suffix conjugation vocabulary entries

- |   |  |
|---|--|
| <p>a. <math>\left[ \begin{array}{l} \text{CAT: T} \\ +\text{participant} \\ +\text{past} \end{array} \right] \leftrightarrow -t \text{ (1.SG/2)}</math></p>   | <p>e. <math>\left[ \begin{array}{l} \text{CAT: T} \\ +\text{singular} \\ -\text{feminine} \\ +\text{past} \end{array} \right] \leftrightarrow -\emptyset \text{ (M.SG)}</math></p> |
| <p>b. <math>\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ -\text{singular} \\ +\text{past} \end{array} \right] \leftrightarrow -na \text{ (1.PL)}</math></p>    | <p>f. <math>\left[ \begin{array}{l} \text{CAT: T} \\ -\text{singular} \\ +\text{feminine} \\ +\text{past} \end{array} \right] \leftrightarrow -in \text{ (F.PL)}</math></p>        |
| <p>c. <math>\left[ \begin{array}{l} \text{CAT: T} \\ +\text{participant} \\ +\text{singular} \\ +\text{feminine} \\ +\text{past} \end{array} \right] \leftrightarrow -i \text{ (2.F.SG)}</math></p> | <p>g. <math>\left[ \begin{array}{l} \text{CAT: T} \\ -\text{singular} \\ -\text{feminine} \\ +\text{past} \end{array} \right] \leftrightarrow -u \text{ (M.PL)}</math></p>         |
| <p>d. <math>\left[ \begin{array}{l} \text{CAT: T} \\ +\text{singular} \\ +\text{feminine} \\ +\text{past} \end{array} \right] \leftrightarrow -\text{at} \text{ (F.SG)}</math></p>                  |  |

Example (13) provides a derivation of the second masculine plural suffix conjugation verb *daras-t-u* ‘you (m. pl.) studied’: non-author Fission splits up the targeted sets [-author] and [-singular] from the input node into two discrete output nodes and copies all other features into both. I assume that complex heads are linearized head-last; the order of fissioned nodes is determined by (11).

(13) Levantine Arabic: derivation of *daras-t-u* ‘you (m.pl.) studied’ (studied-2-M.PL) (Brustad and Zuniga 2019: 417, Table 16.12)





Deriving the prefix conjugation, on the other hand, requires morphological displacement to generate a prefix from the underlyingly suffixal complex verbal head. Hewett (To appear) models this displacement with the *Generalized Reduplication* formalism originally due to Harris and Halle (2005), and adapted in Arregi and Nevins (2012, 2018). Generalized Reduplication was designed to provide a unified account of morphological metathesis and doubling through the use of a copy(-and-delete) mechanism. At the heart of the formalism are double brackets used to define the domain of reduplication: “[...].” Full reduplication follows immediately ((14)). Partial reduplication (i.e. doubling) is achieved by deleting a subsequence of the copied material; the subsequence to be deleted is indicated by means of angle brackets and is enclosed in a grey box at intermediate levels of representation ((15)). Finally, morphological metathesis is achieved by combining the two angle brackets in one rule ((16)).

(14) Full Reduplication: repeat all material inside [...].

[[ A B ]] → ABAB

(15) Partial Reduplication

a. Delete the material after > in the second copy, doubling of A:

[[ A > B ]] → ABA B → ABA

b. Delete the material before < in the first copy, doubling of B:

[[ A < B ]] → A BAB → BAB

(16) Metathesis of A and B

[[ A > < B ]] → A BA B → BA

Hewett (To appear) proposes the Metathesis rule in (17) to handle displacement of the  $\varphi$ -bearing node closest to the verb stem (either Asp<sup>0</sup> or T<sup>0</sup>, depending on the language) in the Semitic prefix conjugation.

(17) **Semitic prefix conjugation Metathesis**

a. Structural description: [Asp<sup>0max</sup>/T<sup>0max</sup> √ v Voice Asp<sub>[-perf]</sub>/T<sub>[-past]</sub>]

b. Structural change:

i. Insert [[ to the immediate left of √, and ]] to the immediate right of Asp/T.

ii. Insert >< to the immediate left of Asp/T.



Like other pre-Vocabulary Insertion rules, the Metathesis rule in (17) is assumed to act as a post-syntactic repair to a morphotactic constraint. Asp/T-initiality in (18) is the trigger for prefix conjugation Metathesis; this constraint states that imperfective/non-past verbs in Semitic must have prefixes.

(18) **Asp/T-initiality**

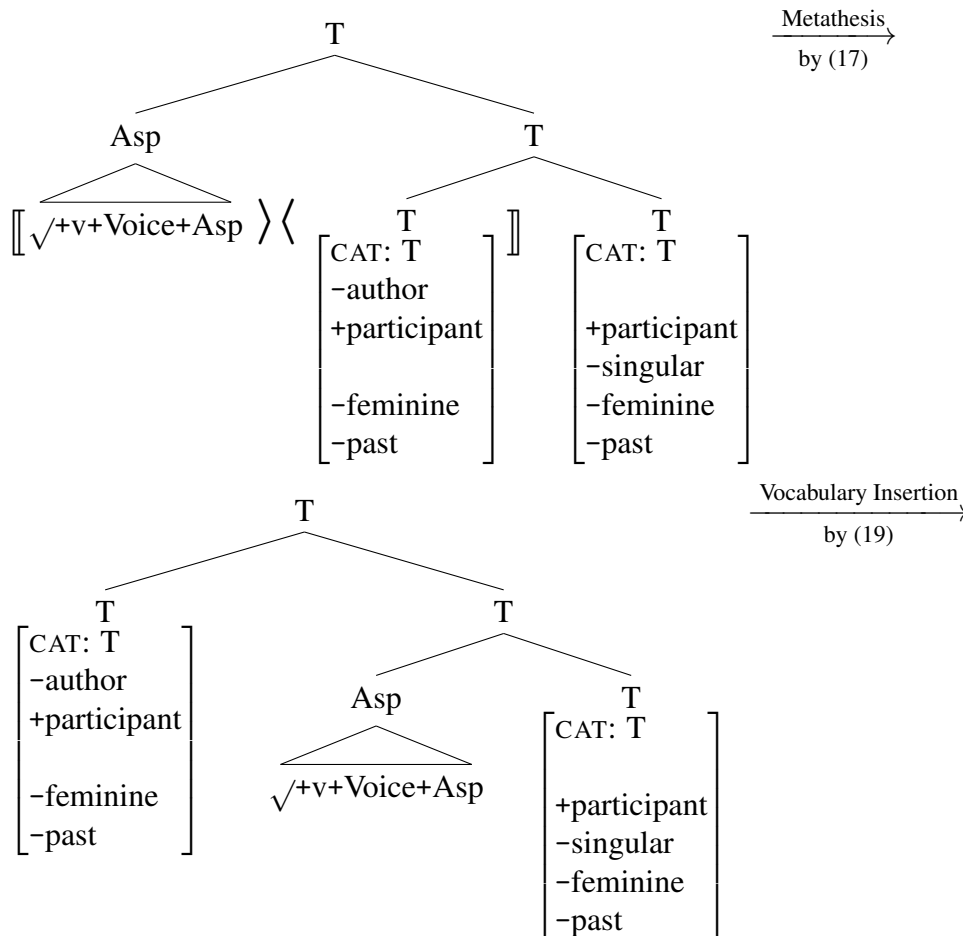
Terminal Asp<sub>[-perf]</sub>/T<sub>[-past]</sub> is initial within Asp<sup>0max</sup>/T<sup>0max</sup>.

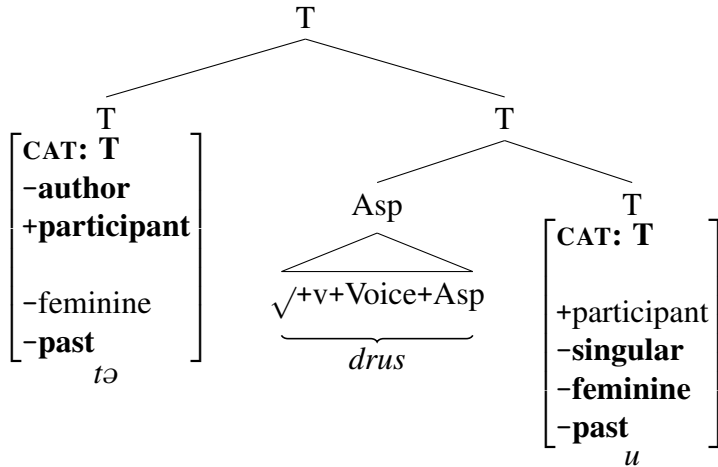
Example (20) illustrates how prefix conjugation Metathesis generates a prefix in the Levantine Arabic verb *tə-drus-u* ‘you (m.pl.) study’ with the vocabulary entries in (19). For the sake of space, I omit the prior step of non-author Fission splitting up T prior to Metathesis.

(19) Levantine Arabic: vocabulary entries for 2.M.PL prefix conjugation agreement

- a.  $\left[ \begin{array}{l} \text{CAT: T} \\ -\text{author} \\ +\text{participant} \\ -\text{past} \end{array} \right] \leftrightarrow t\theta- (2)$       b.  $\left[ \begin{array}{l} \text{CAT: T} \\ -\text{singular} \\ -\text{feminine} \\ -\text{past} \end{array} \right] \leftrightarrow -u (M.PL)$

(20) Levantine Arabic: derivation of *tə-drus-u* ‘you (m.pl.) study’ (2-study-M.PL) (Brustad and Zuniga 2019: 417, Table 16.13)





Semitic prefix conjugation Metathesis thus linearly inverts the verb stem and the leftmost  $\varphi$ -bearing Asp/T terminal, giving rise to discontinuous agreement.

These are the basic contours of Hewett’s (To appear) account of Semitic discontinuous agreement: morphotactic constraints force the application of postsyntactic rules to manipulate the structure and position of agreement nodes in complex verbal heads prior to Vocabulary Insertion. In particular, a constraint against coexponence of the sets of features  $[-\text{author}]$  and  $[\alpha \text{ singular}]$  triggers Semitic non-author Fission, and a separate positional constraint requiring imperfective/non-past verbs to have prefixes triggers Semitic prefix conjugation Metathesis.

An anonymous reviewer wonders whether using Generalized Reduplication to derive the prefix conjugation from an underlyingly suffixal structure might make predictions either about the diachrony of the prefix conjugation in Semitic/Afroasiatic or about the relationship between doubling and metathesis. For instance, one might expect to find an earlier stage at which only the suffix conjugation was used, prior to the innovation of the Generalized Reduplication rule in (17). Unfortunately, due to the antiquity of both paradigms, we may be unable to answer these questions. The suffix conjugation is best attested in Semitic, though similar paradigms are also found in Egyptian and, vestigially, in Berber (see Gragg 2019: 33–34 and Wilson 2020: 59–69), and a cognate suffixal paradigm may also be attested in Cushitic (Banti 1987; but see Banti 2004 for an alternative perspective). The prefix conjugation is likewise attested in all of these language families to some degree except Egyptian, which lost the prefix conjugation altogether. In the other Afroasiatic phyla—namely, Chadic and Omotic—neither conjugation is attested. If all attested prefix conjugation paradigms can be derived via prefix conjugation Metathesis ((17)), then it may be that we simply do not have an old enough record to determine if doubling ever preceded metathesis.<sup>5</sup>

The rest of this paper will consider several case studies of discontinuous *first person* agreement across Semitic. I will argue that any account of the full range of attested data must countenance (at least) two distinct mechanisms for generating discontinuous agreement. Hewett’s modular system—with both Fission and Generalized Reduplication—is well equipped to do so. As I discuss in section §7, alternative analyses fail to derive both patterns without resorting to stipulation.

<sup>5</sup>Note that the cases of first person doubling discussed in the remainder of the paper are arguably innovative, hence may eventually give way to metathesis.

### 3 First person splits in Modern South Arabian: Markedness-driven Fission

Our first case study of discontinuous agreement in the first person comes from Omani Mehri.<sup>6</sup> Mehri is a Modern South Arabian language spoken in eastern Yemen and western Oman, along with a small number of speakers in southern Saudi Arabia (Rubin 2019). The first point of note is that Mehri morphologically distinguishes three numbers: singular, dual, and plural. Second and third person agreement on the verb is discontinuous in all numbers, as shown in (21) and (22).

(21) Omani Mehri imperfect prefix conjugation affixes<sup>7</sup> (Rubin 2018: 165)

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

(22) Omani Mehri suffix conjugation affixes (Rubin 2018: 162)

	SG	DU	PL
1	-k	-k-i	-ən
2M	-k	-k-i	-k-əm
2F	-š (<*-k-i) <sup>8</sup>	-k-i	-k-ən
3M	-∅ (ABLAUT)	-ōh/-ǫh	-əm/-∅ (ABLAUT)
3F	-ūt/-ōt/-ēt <sup>9</sup>	-t-ōh/-t-ǫh	-∅ (ABLAUT)

As discussed in Noyer (1992: 111–115) (see also Halle 2000: 139–140), what is striking about these paradigms is the fact that first person agreement is also discontinuous, though only in the dual. This discontinuity is most obvious in the prefix conjugation, where first person dual agreement patently consists of two parts: a first person non-plural prefix ə-,<sup>10</sup> and the dual number

<sup>6</sup>The same basic set of facts can be seen in other dialects of Mehri, including Eastern Yemeni Mehri (Watson 2012), and in other Modern South Arabian languages, including Jibbali (Rubin 2014) and Soqotri (Kogan and Bulakh 2019). See Simeone-Senelle (1997, 2011) for overview.

<sup>7</sup>This set of imperfect prefix conjugation affixes is only used with a subset of verbal templates and verb roots in the language. See Rubin (2018: 165) for the other set of imperfect agreement morphemes, and Rubin (2018: 169) for subjunctive prefix conjugation affixes.

<sup>8</sup>Rubin (2018: 22).

<sup>9</sup>On the various allomorphs of 3.F.SG suffix conjugation agreement in Omani Mehri, see Bendjaballah and Rubin (2020).

<sup>10</sup>Watson (2012: 86–89) observes that for some speakers of Eastern Yemeni Mehri and of Omani Mehri, the first person dual utilizes the *n*- prefix of the first person plural, rather than the prefix of the first person singular. This also holds for certain speakers of Omani Mehri with subjunctive allomorphs of first person agreement: *l*- (1.SG), *l*-...-ōh/-ǫh ~ *n*-...-ōh/-ǫh (1.DU), and *n*- (1.PL) (slightly adapted from Watson 2012: 89). The only part of our analysis that would need to change to accommodate those speakers would be the vocabulary entries for first person prefixes: the first person singular vocabulary entry for ə-/l- would need to be fully specified for person and number, and the first person non-singular entry for *n*- would need to be underspecified for number (i.e. an elsewhere entry realizing first person features and perhaps also [-singular]).

suffix *-ōh/-ǎh*, clearly related to the cardinal number *trōh* ‘two’.<sup>11</sup> In the suffix conjugation, the first person dual is also discontinuous, though this fact is somewhat masked by a participant-based syncretism (see the Appendix): all first and second person forms except the first person plural contain the general participant-marking suffix *-k*; in the dual, *-k* is followed by a distinct number suffix *-i* (possibly diachronically descended from the oblique dual number suffix *\*-ay*, see Noyer 1992: 113 and Lipiński 1997: 364). This latter dual suffix is the normal dual ending on nouns (e.g. *warx* ‘month’ ~ *warx-i* ‘two months’ (Rubin 2018: 88)). I will not attempt to determine the distribution of the two dual suffixes *-ōh/-ǎh* and *-i*, but will instead focus on deriving the first person forms.

The first person dual discontinuity is also found in pronominal paradigms of the language: example (23) illustrates with strong pronouns and (24) with possessive pronominal suffixes which attach to singular nouns.

- (23) Omani Mehri strong independent pronouns<sup>12</sup> (Rubin 2018: 51)

	SG	DU	PL
1	hōh	(ə)k-áy	nəḥāh
2M	hē-t	(ə)t-áy	(ə)t-ēm
2F	hē-t	(ə)t-áy	(ə)t-ēn
3M	hē	h-ay	h-ēm
3F	sē	h-ay	s-ēn

- (24) Omani Mehri possessive pronominal suffixes on singular nouns (Rubin 2018: 55)

	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

Since the first person dual discontinuity is not specific to certain vocabulary items and holds throughout multiple paradigms, just like the standard second and third person discontinuities, I conclude that this split represents an additional instance of metafission. Rather than stipulate this split on an entry-by-entry basis, I hypothesize that Omani Mehri has developed a novel morphotactic constraint barring the joint exponence of first person and dual features. The formal constraint in (26), which presupposes the featural decomposition of number in (25), expresses precisely this fact:

- (25) Featural decomposition of number categories (Noyer 1992; Harbour 2008b; Nevins 2011b)
- Singular = [+singular, -augmented]
  - Dual = [-singular, -augmented]

<sup>11</sup>Rubin (2018: 166) suggests that the suffix *-ōh/-ǎh* developed from an earlier *\*-ay*, though Noyer (1992: 113) and Lipiński (1997: 363) reconstruct *\*-ā*, drawing a parallel with the Classical Arabic verbal dual ending and nominative dual case ending *-ā(ni)*.

<sup>12</sup>Initial *ə-* is lost in certain vowel hiatus environments according to Rubin (2018: 51).

- c. Plural = [-singular, +augmented]
- d. [+singular, +augmented] is impossible.

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

The motivation for the constraint in (26) comes from considerations of markedness.

I assume that the morphotactic constraints triggering Impoverishment and Fission are fundamentally language-specific and/or universal statements about marked feature cooccurrence restrictions (Noyer 1992, 1998; Nevins 2011b; Arregi and Nevins 2012). I adopt the hypothesis from Arregi and Nevins (2012: 204–205) that it is *values* of features (i.e. ‘+’ or ‘-’) that are marked, not the features themselves. Although there are many ways to diagnose featural markedness, I will assume that a feature is marked if it undergoes and triggers more neutralizations and more morphological splits than its unmarked counterpart. Of the  $\varphi$ -features discussed so far—except for [ $\pm$ augmented]—the following are context-free marked (see Arregi and Nevins 2012: 204, (5)):

- (27) Context-free feature markedness statements for Semitic
- [ $\pm$ author]: marked value = +
  - [ $\pm$ participant]: marked value = +
  - [ $\pm$ singular]: marked value = -
  - [ $\pm$ feminine]: marked value = +

Supporting evidence for the alleged markedness of the feature values in (27) comes from patterns of neutralizations in Semitic. For instance, although we find gender distinctions in the second and third persons for at least some numbers, we never find gender marking in the first person (see Noyer 1992: 40).<sup>13</sup> This is true across Semitic, and appears to hold for many pronominal systems cross-linguistically (see Siewierska 2004: 104–107): gender features are consistently neutralized

<sup>13</sup>There are at least two exceptions to this rule, both of which come from Aramaic. In Modern Western Aramaic, a cluster of dialects spoken in a handful of mountain villages northeast of Damascus, the older Aramaic active and passive participles have been adapted into fully inflected present tense and perfect verbal forms bearing person, number, and gender features (Fassberg 2019: 642). With such verbs, a shared set of prefixes mark person and, in the second person, gender and number (*n-* for 1, *tʃ-* for 2.M.SG and 2.PL, *f-* for 2.F.SG, and  $\emptyset-$  for 3), while suffixes (which are the inherited participial endings which never marked person at any stage of Aramaic) mark only gender and number (Arnold 1990: 75–78). Crucially, first person forms also mark gender (and number) suffixally: *n-zōb-na* ‘I (f.) buy’ (1-buy-F.SG), *n-zōb-nan* ‘we (f.) buy’ (1-buy-F.PL) (Arnold 2011: 691). Nevertheless, first person features are never jointly exponed with gender features, in line with the constraint in (28). All other instances of first person marking in the language lack gender (e.g. subjunctive and preterite verbal forms and all pronouns), making it less likely that the separate exponence of first person and gender is due to Fission. I tentatively propose instead that present tense and perfect verbal forms in Modern Western Aramaic involve more than one  $\varphi$ -bearing terminal in the syntax, and that splitting is not postsyntactic; the form of the prefixes is then determined via vocabulary entries sensitive to their preverbal position.

The other case of gender marking in the first person in Semitic comes from several other Aramaic languages. I will focus my discussion on Syriac, Ṭuroyo, and Northeastern Neo-Aramaic (NENA). Here too, gender is only marked in a subset of first person forms—namely, in analytic present tense constructions consisting of an active participle agreeing in number and gender followed by a pronominal enclitic in Syriac (Pat-El 2019: 664), in the B(ase)-suffixes (adopting the terminology of Kalin (2020)) encoding number and gender agreement with an argument in imperfective (or ‘Present Base’, in Coghill’s (2003; 2016) terms) and past passive verbs in Ṭuroyo (Jastrow 2011: 701–704), and, apparently, in the S(imple)-suffixes on imperfective and past passive verbs in NENA (Khan 2011: 719–720); for instance, Ṭuroyo *dəmx-o-no* ‘I (f.) sleep’ (sleep.PRES-B.F.SG-S.1.SG) (Jastrow 2011: 702, Table 39.6) and Christian Urmi (NENA) *pátx-an* ‘I (f.) open’ (open.PRES-S.1.F.SG) (Khan 2016: 266). I follow Coghill (2016: 36, fn. 15) in taking this

in the context of [+author]. The constraint in (28) expresses this fact as a cooccurrence restriction on feature sets.

- (28) **Semitic morphotactic constraint on joint  $\varphi$ -feature exponence: 1 and gender**  
\*[+author] [ $\alpha$  feminine]

This constraint triggers an *impoverishment* rule in the postsyntax which removes one (or more) of the offending features from the bundle prior to insertion (see, e.g., Bonet 1991; Noyer 1992; Halle 2000). Specifically, I propose the impoverishment rule in (29) for Semitic (see also Noyer 1998: 270):

- (29) **Semitic first person gender impoverishment rule**  
Delete gender features in a morpheme additionally specified as [+author].

Nevins (2011b) calls impoverishment rules like (29) *markedness-triggered* because the presence of a marked feature (in this case, [+author]) causes a distinction in another feature (in this case, [ $\alpha$  feminine]) to go unrealized.

In addition to context-free markedness, the notion of *contextual markedness* is also useful in characterizing the triggers for postsyntactic operations. I submit that Semitic non-author Fission ((8)) is best analyzed as triggered by contextual markedness: although the feature [-author] is unmarked on its own (cf. (27)), it is marked in the context of number features. Again, cross-linguistic patterns of neutralization support this conclusion: Corbett (2000: 56) observes for pronominal systems that, if number marking is restricted to a single person, it appears in the first person (see also Siewierska 2004: 92–93). The contextually marked value of [-author] is stated in (30):

- (30) Context-sensitive feature markedness statement for [-author]  
[ $\pm$ author]: marked value = - on a node additionally specified as [ $\alpha$  singular]

Thus, the contextually marked [-author] feature triggers non-author Fission per (8) to circumvent coexponence of [-author] and [ $\alpha$  singular]. For additional examples of splitting in the non-first persons beyond Semitic, see Nevins (2011a: 45), Nevins and Sandalo (2011), and Harbour (2016: 123).

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innovative first person gender marking to be exceptional, arising diachronically due to the suffixation of first person enclitic pronouns onto a participial base inflected for gender (and originally, number) (though see Hoberman (1988: 571) for some complications in reconstructing the NENA first person plural suffix *-ax*, which appears to be a reduced form of the independent pronoun reconstructed as *\*axnan* for Proto-NENA, rather than being related to the Syriac first person plural enclitic *=nan*). While gender is marked on the participial stem in Syriac (representing older Aramaic) in both the singular and the plural (e.g. *qɔʔl-ɔ=nɔ* (kill.ACT.PTCP-F.SG=1.SG) versus *qɔʔl-ɔn=nan* (kill.ACT.PTCP-F.PL=1.PL) (Pat-El 2019: 664, Table 25.16)), gender marking on the stem was neutralized or lost altogether in the plural in later Neo-Aramaic varieties (e.g. Ṭuroyo *dəmx-i-na* ‘we sleep’ (sleep.PRES-B.PL-S.1.PL) (Jastrow 2011: 702, Table 39.6) and Christian Urmi (NENA) *pátx-ax* ‘we open’ (open.PRES-S.1.PL) (Khan 2016: 266)). What I would like to suggest is that NENA S-suffixes be synchronically decomposed into two separate morphemes parallel to Syriac and Ṭuroyo (e.g. Christian Urmi *pátx-a-n* ‘I (f.) open’ (open.PRES-B.F.SG-S.1.SG)). First person plural NENA forms would then require vowel hiatus resolution to delete the first vowel, corresponding to the plural B-suffix; the hypothesized Christian Urmi form *\*pátx-i-ax* ‘we open’ (open.PRES-B.PL-S.1.PL) would be realized as *pátxax* (see Khan (2016: 223) for similar /i-/a/ resolutions in Christian Urmi). If such a decomposition is possible, then, as with Modern Western Aramaic, we can maintain that gender marking in the first person in Ṭuroyo and NENA arises due to two separate  $\varphi$ -probing operations: one associated with B-set agreement which is looking for number/gender features, and another which is looking for the full set of  $\varphi$ -features and which is realized as S-set agreement (see Kalin 2020 for such an analysis of Ṭuroyo). Because gender and [+author] are realized by separate morphemes, (28) is satisfied.

Now consider the feature [ $\pm$ augmented], which was invoked in the account of Mehri first person dual splits above ((26)). Following Nevins (2011b: 421), I propose that [-augmented] is marked in the context of [-singular]:

- (31) Context-sensitive feature markedness statement for [-augmented]  
 [ $\pm$ augmented]: marked value = - on a node additionally specified as [-singular]

Like context-free markedness, we can see the effects of contextual markedness when we consider patterns of neutralization. In Mehri, although we find gender distinctions in second person singular and plural verbal agreement, we find no such gender marking in the second person dual. This can be seen in the paradigm in (22): masculine and feminine gender are distinguished in second person plural suffix conjugation agreement in the most peripheral suffix: *-k-əm* (2-M.PL) versus *-k-en* (2-F.PL). In the dual, however, gender is neutralized, yielding a single form for both the masculine and feminine: *-k-i* (2-DU). Gender neutralization in the dual is plausibly the result of too many marked features occurring on the same terminal node—in this case, the cooccurrence of the marked gender feature [+feminine] and the marked combination of number features [-singular, -augmented] with the person feature [+participant].<sup>14</sup>

- (32) **Omani Mehri morphotactic constraint on joint  $\varphi$ -feature exponence: 2.DU and gender**  
 \* $[\alpha$  feminine] [-singular, -augmented] / \_\_\_ [+participant] (no coexponence of dual and gender in the second person)

The constraint in (32) triggers the impoverishment rule in (33):

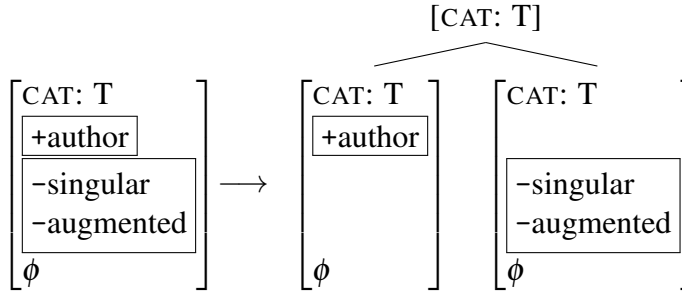
- (33) **Omani Mehri second dual gender impoverishment rule**  
 Delete gender features in a morpheme additionally specified as [+participant, -singular, -augmented].

This rule will delete gender features on any morpheme additionally bearing second person dual features, preventing their coexponence and thereby accounting for the aforementioned metasyncretism. Crucially, it is the contextually marked value of [-augmented] in the presence of [-singular] that triggers impoverishment: second person singular forms are also specified as [-augmented], but nevertheless express gender (e.g. *-k* (2.M.SG) vs. *-š* (2.F.SG) in (22)).

Let us now return to the matter of deriving discontinuous first person dual agreement. I have proposed that Omani Mehri innovated the markedness constraint in (26), the motivation for which is by now evident: [+author] is context-free marked in Mehri ((27)), and [-augmented] is marked in the context of [-singular] ((31)). In order to comply with this constraint and to reduce the markedness of such feature bundles, Omani Mehri must also have innovated the highly specific Fission rule in (34), which applies only in the first person.

<sup>14</sup>We could also restrict the rule to [-author] contexts, though this may not be necessary: gender features are already neutralized in the first person across Semitic ((28)–(29)). Consequently, neither (32) nor (33) will need to apply in first person forms. We must at least include the feature [+participant] in the constraint in (32) and the impoverishment rule in (33) to prevent them from applying also to third person morphemes, where we *do* find gender marking in the dual, at least in verbal agreement (e.g. suffix conjugation *-ōh/-ōh* (3.M.DU) versus *-t-ōh/-t-ōh* (3.F.DU)).

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



This rule states that, given some input terminal of category [CAT: T] whose feature matrix bears the subsets of features [+author] and [-singular, -augmented], first person dual Fission will split [+author] into the left output terminal and [-singular, -augmented] into the right output terminal; all non-targeted features  $\phi$  will be copied into both output nodes. Crucially, the Mehri data illustrate that Fission-triggering constraints regulate the cooccurrence of (sub)sets of features, not of features themselves. This is because only a single Fission operation is triggered by the constraint in (26), not two, despite the fact that three distinct features are implicated; crucially, however, only two sets of features are referenced by the constraint.<sup>15</sup> Thanks to Karlos Arregi (*pers. comm.*) for extremely valuable discussion of this point.

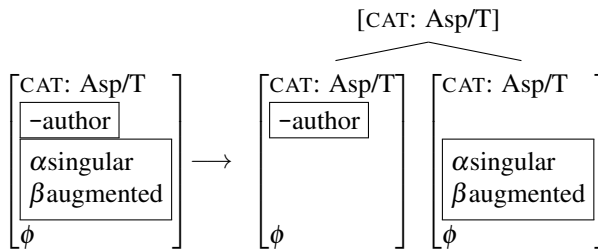
An additional important consequence of the analysis so far is that neither the constraint in (26) nor the Fission rule in (34) is tied to particular vocabulary entries. We thus predict to find splitting in the first person dual across exponents, and this is indeed what we find (see (21)–(24)).<sup>16</sup> Fission as defined here is a natural way of capturing this generalization.

Consider now how first person dual suffix conjugation agreement is derived in Omani Mehri. First person dual fission ((34)) will split up [+author] from [-singular, -augmented] and the vocabulary entries in (35) will insert the relevant exponents into the fissioned terminals. The derivation of *bəgəd-k-i* ‘we two chased’ is given in (36).

(35) **Omani Mehri suffix conjugation first person vocabulary entries**

<sup>15</sup>The same is true when we reformulate Semitic non-author Fission and its triggering constraint in Mehri, both of which must also make reference to the feature [ $\pm$ augmented]:

- (i) **Semitic morphotactic constraint on joint  $\phi$ -feature exponence: non-author (with [ $\pm$ augmented])**  
\*[-author] [ $\alpha$ singular,  $\beta$ augmented]
- (ii) **Semitic non-author Fission (with [ $\pm$ augmented])**



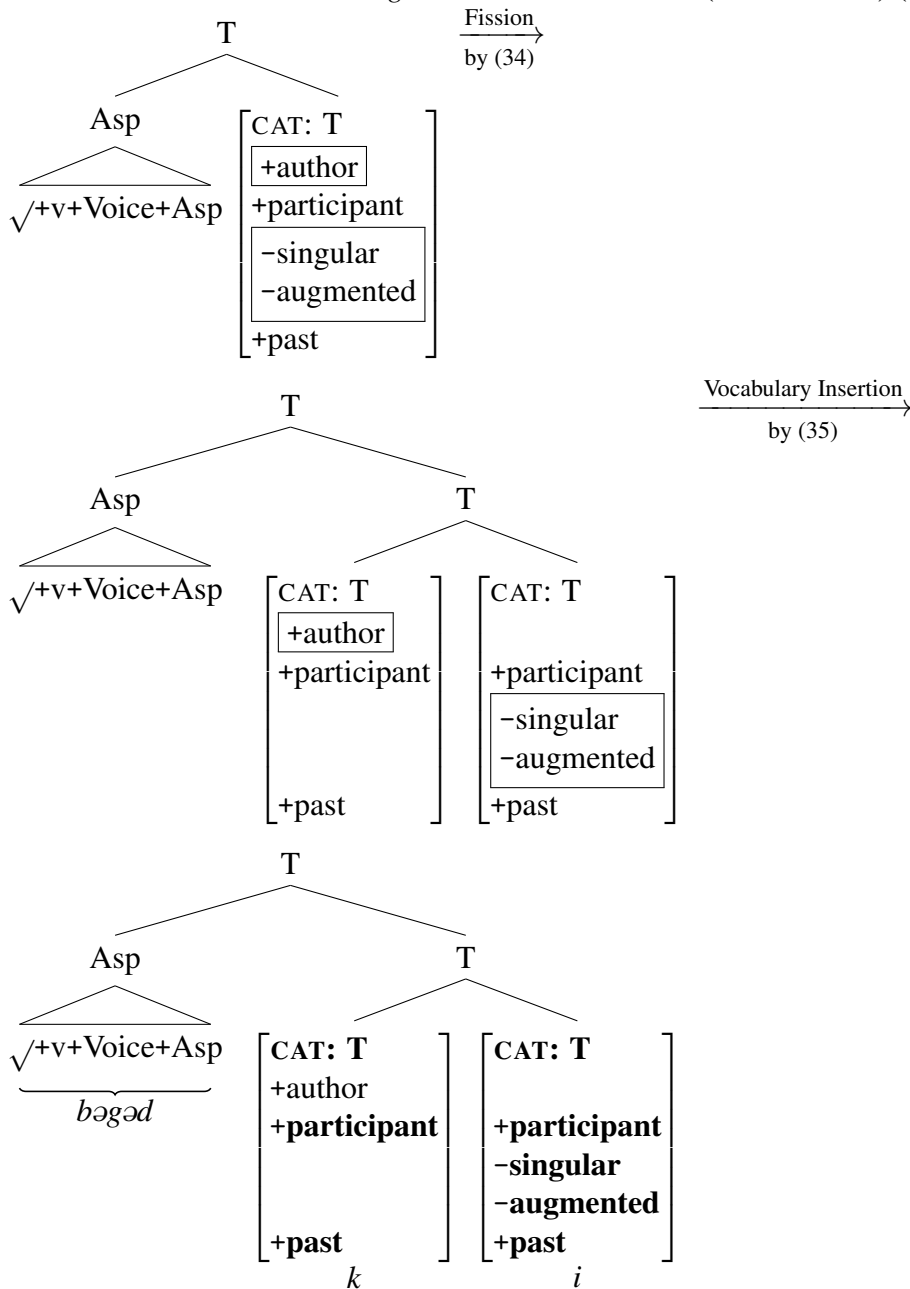
First person dual Fission in Omani Mehri is essentially an extension of the constraint in (i) to [+author] in combination with the most marked set of number features: the dual (i.e. [-singular, -augmented]).

<sup>16</sup>See Noyer (1992: 111–113) for a similar prediction but an analysis with Vocabulary-Insertion-driven Fission.



- a.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ -\text{singular} \\ +\text{augmented} \\ +\text{past} \end{array} \right] \leftrightarrow -\text{ən} \text{ (1.PL)}$
- b.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{participant} \\ +\text{past} \end{array} \right] \leftrightarrow -k \text{ (PART)}$
- c.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{participant} \\ -\text{singular} \\ -\text{augmented} \\ +\text{past} \end{array} \right] \leftrightarrow -i \text{ (PART.DU)}$

(36) Omani Mehri: derivation of *bəgəd-k-i* ‘we two chased’ (chased-1-DU) (Rubin 2019: 270)



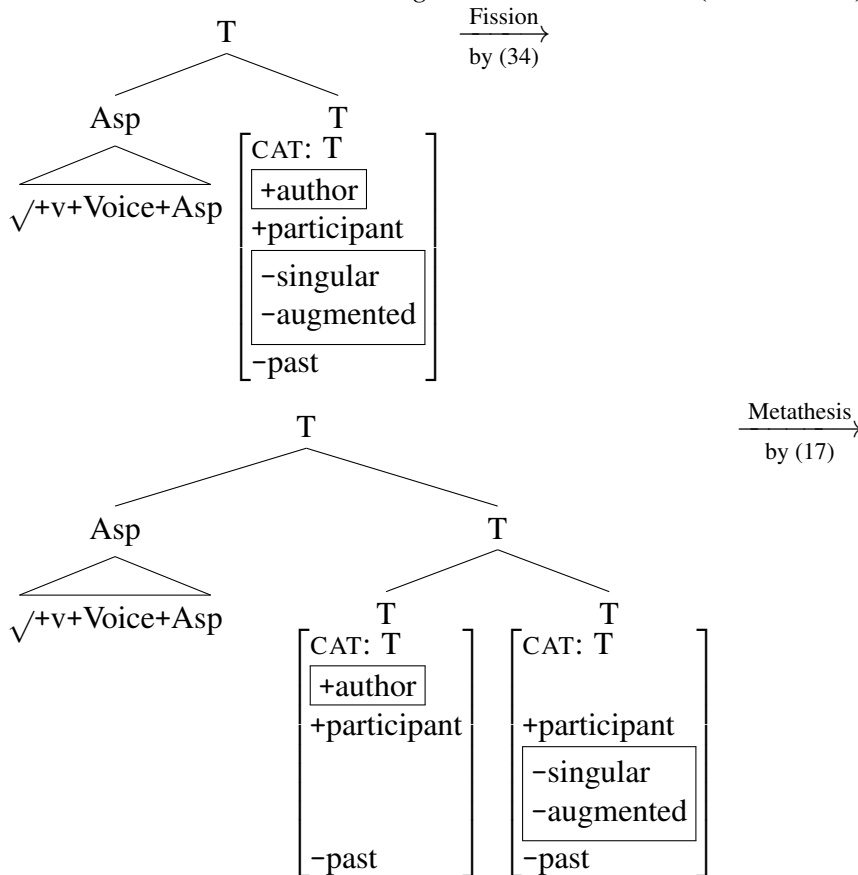
The derivation of the first person dual prefix conjugation is similar, except prefix conjugation

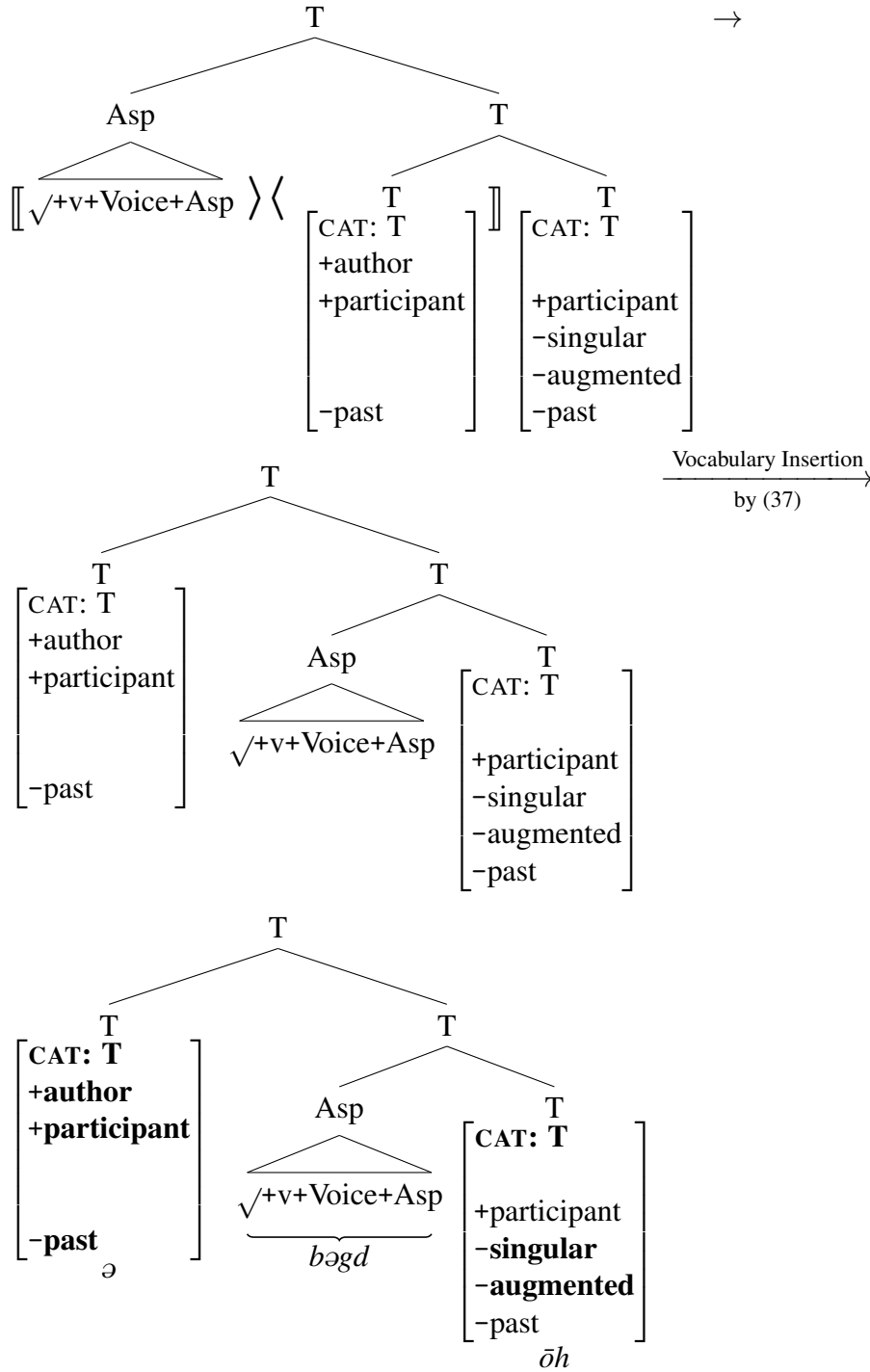
Metathesis ((17)) applies in response to the templatic requirement that prefix conjugation verbs have prefixes: the T-initiality constraint in (18). After first dual Fission has applied, prefix conjugation Metathesis displaces the leftmost fissioned terminal to the left edge of the maximal projection of  $T^0$ , generating a prefix. Example (38), along with the vocabulary entries in (37), shows how all these pieces fit together to derive discontinuous first person dual agreement in Omani Mehri:

(37) Omani Mehri prefix conjugation first person vocabulary entries

- a.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ -\text{singular} \\ +\text{augmented} \\ -\text{past} \end{array} \right] \leftrightarrow n\text{- (1.PL)}$
- b.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ -\text{past} \end{array} \right] \leftrightarrow \varnothing\text{- (1)}$
- c.  $\left[ \begin{array}{l} \text{CAT: T} \\ -\text{singular} \\ -\text{augmented} \end{array} \right] \leftrightarrow \text{-}\bar{o}h\text{-}\acute{o}h\text{ (DU)}$

(38) Omani Mehri: derivation of  $\varnothing\text{-}b\acute{e}gd\text{-}\bar{o}h$  ‘we two chase’ (1-chase-DU) (Rubin 2019: 270)





A few other Semitic languages—all ancient and exclusively mediated through fragmentary textual records—have been argued to attest first person dual forms in some limited capacity. These are Ugaritic pronominal paradigms and suffix conjugation agreement (Tropper 2000: 227, 469, Tropper and Vita 2019: 487, 496), Eblaite genitive pronominal suffixes (Streck 2011: 344, Catagnoti 2012: 72), and Old Assyrian (and occasionally Babylonian, see Kouwenberg 2005: 100–101) verbal inflection (Kouwenberg 2017: 485). In each case, it is unclear whether the innovation of dual marking in the first person is restricted to one or two paradigms, or if paradigm gaps are

due to lacunae in the textual record. I will henceforth leave these other cases aside, as we cannot determine whether or not they participate in a meta pattern.

Before moving on to the next section, it is worth considering a language which also bans the joint exponence of first person and dual features, but which deploys impoverishment instead of fission as a means of reducing this markedness. Classical Arabic, like Omani Mehri, also draws a three-way number distinction between singular, dual, and plural. However, unlike Omani Mehri, there is no splitting in any first person cells: (39) illustrates with possessive pronouns, and (40) with jussive prefix conjugation agreement.

- (39) Classical Arabic possessive pronouns (adapted from Birnstiel 2019: 376)

	SG	DU	PL
1	-i:/-ja:	-na:	-na:
2M	-k-a	-k-um-a:	-k-um
2F	-k-i	-k-um-a:	-k-un-na
3M	-h-u	-h-um-a:	-h-um
3F	-h-a:	-h-um-a:	-h-un-na

- (40) Classical Arabic jussive prefix conjugation verb,  $\sqrt{\text{f}\text{f}\text{l}}$  ‘do’ (adapted from Birnstiel 2019: 384)

	SG	DU	PL
1	$\text{ʔa-f}\text{f}\text{al}$	$\text{na-f}\text{f}\text{al}$	$\text{na-f}\text{f}\text{al}$
2M	$\text{ta-f}\text{f}\text{al}$	$\text{ta-f}\text{f}\text{al-a:}$	$\text{ta-f}\text{f}\text{al-u:}$
2F	$\text{ta-f}\text{f}\text{al-i:}$	$\text{ta-f}\text{f}\text{al-a:}$	$\text{ta-f}\text{f}\text{al-na}$
3M	$\text{ya-f}\text{f}\text{al}$	$\text{ya-f}\text{f}\text{al-a:}$	$\text{ya-f}\text{f}\text{al-u:}$
3F	$\text{ta-f}\text{f}\text{al}$	$\text{ta-f}\text{f}\text{al-a:}$	$\text{ya-f}\text{f}\text{al-na}$

Instead of Fission in the first person dual, we find a meta neutralization of number features: dual and plural are never distinguished from one another in the first person in Classical Arabic. Such a metasyncretism is readily motivated by a morphotactic constraint banning the coexponence of first person and dual features:

- (41) **Classical Arabic morphotactic constraint on joint  $\varphi$ -feature exponence: 1.DU**  
 \*[+author] [-singular, -augmented]

Whereas an identical constraint in Omani Mehri ((26)) triggers first person dual Fission, in Classical Arabic, (41) triggers the impoverishment rule in (42). The feature distinguishing dual from plural (i.e. [-augmented]) is deleted in the dual, rendering dual and plural feature bundles identical at the point of Vocabulary Insertion. This is what Nevins (2011b) refers to as *markedness-targeted impoverishment*.

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

Thus, though Omani Mehri and Classical Arabic obey the same morphotactic constraint, by hypothesis, they resolve this constraint in different ways—in Omani, with Fission, and in Classical

Arabic, with impoverishment. The effects of Fission and impoverishment are observable throughout the morphology of each language: the former manifests as metafission, while the latter manifests as metasyncretism.

So in summary, because we observe patterns of metafission in Omani Mehri with first person dual features, I have proposed a Fission-based analysis of this discontinuity. The constraint is highly specific, and does not follow from the more general non-author Fission rule or constraint operative throughout Semitic, but this is arguably desirable: Classical Arabic also bans the joint realization of first person and dual features but employs impoverishment, rather than Fission, to reduce markedness in the relevant feature bundles. Starting with the next section, I pivot to consider first person discontinuities which do not manifest metafission.

## 4 First person splits in Ethiopian Semitic: Doubling

The next case study concerns discontinuities in the first person agreement of several Ethiopian Semitic languages, mostly spoken in the Gurage Zone in southern Ethiopia (on which see Meyer 2019: 227).<sup>17</sup> Consider Wolane affirmative indicative imperfective agreement on main verbs with the non-past tense auxiliary *-ān* in (43). Such composite forms with an imperfective main verb and enclitic auxiliary are standardly referred to as ‘compound imperfects’ in the Ethiopian Semitic literature (see Leslau 1958, 1995, 1997, 1999; Bulakh 2014). Agreement morphemes on the main verb are underlined, and those realizing first person agreement are additionally bolded. The auxiliary also takes its own (exclusively suffixal) agreement markers; I will largely ignore this agreement in what follows (though see Bulakh 2014 and Kramer 2019 for insightful discussion of the distribution of agreement morphemes on auxiliaries in various Ethiopian Semitic languages).

- (43) Wolane affirmative indicative non-past main verb  $\sqrt{\text{sbr}}$  ‘break’  
 (AGR-V-(AGR-)AUX(-AGR)) (Meyer 2006: 97, Table 11)<sup>18</sup>

<sup>17</sup>A similar pattern is attested in Agaw, a cluster of closely related Cushitic languages spoken in parts of Ethiopia and Eritrea. Despite the prefix conjugation no longer being fully productive in Agaw (though it remains so in the closely related Cushitic languages Beja (Appleyard 2007) and Qafar-Saho (Hayward and Orwin 1991); see Noyer (1992: 107–109) and Halle (2000: 138–139) for additional discussion), first person plural agreement is clearly discontinuous when it is preserved, and we find [+author] features marked on both discontinuous affixes. Hetzron (1976a) provides the paradigm in (i) for Awngi (see also Wilson 2020: 55–56):

- (i) Awngi (Agaw, Cushitic) prefix conjugation, *-nt-* ‘come’ (Hetzron 1976a: 22, Table 4)

	SG	PL
1	<u>á</u> -nté	<u>á</u> -nt- <b>né</b>
2	<u>tí</u> -nté	<u>tí</u> -nt- <u>ánà</u>
3M	<u>yí</u> -nté	<u>yí</u> -nt- <u>ánà</u>
3F	<u>tí</u> -nté	<u>yí</u> -nt- <u>ánà</u>

Hetzron (1968: 159, fn. 7) claims that Ethiopian Semitic first person discontinuities arose under influence from Cushitic, though it seems just as likely that first person discontinuities could have emerged as an areal feature.

<sup>18</sup>The forms in (43) are abstract underlying representations. See Meyer (2006: 97) for precise phonetic realizations.

	SG	PL
1	y-sɛbr-ā-h <sup>w</sup>	y-sɛbr- <b>n</b> -ān
2M	t-sɛbr-ā-hɛ	t-sɛbr- <b>u</b> -ā-h <sup>w</sup> m
2F	t-sɛbr- <b>i</b> -ā-š	t-sɛbr- <b>u</b> -ā-h <sup>w</sup> m
3M	y-sɛbr-ān	y-sɛbr- <b>u</b> -ān
3F	t-sɛbr-ā-t	y-sɛbr- <b>u</b> -ān

What is immediately striking about this paradigm is that first person agreement is discontinuous in the plural, realized by the combination of the prefix *y-* and the suffix *-n*. Crucially, however, the distribution of features in the first person is unlike what we find in the second and third persons: the first person plural suffix *-n(ɛ)*—appearing also in the suffix conjugation, see (46)—expones (among others) the [+author] feature.<sup>19</sup> The form of the first person prefix requires some elaboration.

First person singular and plural prefix conjugation verbs share a *y-* prefix (a palatal approximant), homophonous with the third person prefix *y-*. The forms of the first and third person prefixes diverge from one another, however, when the agreement prefix is non-initial within the morphological word. For instance, in compound imperfect forms of the verb containing a prefixed relative complementizer *yɛ-* and a prefixed negative morpheme *?a(l)-*, first person prefixes are realized as *l-*, while third person prefixes remain *y-*.

- (44) Wolane negative relative compound imperfect  $\sqrt{\text{sbr}}$  ‘break’ + 3.M.SG object *-(ɛ)y* ‘him’  
(REL-NEG-AGR-V-(AGR-)OBJ-AUX(-AGR)) (Meyer 2006: 127, Table 25)

	SG	PL
1	yɛ-?a- <b>l</b> -sɛbr-ɛy-ā-h <sup>w</sup>	yɛ-?a- <b>l</b> -sɛbr- <b>nɛ</b> -y-ān
2M	yɛ-?a-t-sɛbr-ɛy-ā-hɛ	yɛ-?a-t-sɛbr- <b>u</b> -y-ā-h <sup>w</sup> m
2F	yɛ-?a-t-sɛbr- <b>i</b> -y-ā-š	yɛ-?a-t-sɛbr- <b>u</b> -y-ā-h <sup>w</sup> m
3M	yɛ-?a-y-sɛbr-ɛy-ān	yɛ-?a-y-sɛbr- <b>u</b> -y-ān
3F	yɛ-?a-t-sɛbr-ɛy-ā-t	yɛ-?a-y-sɛbr- <b>u</b> -y-ān

I assume that the first and third person *y-*’s in (43) are accidentally homophonous, explaining their divergent allomorphic behavior.<sup>20</sup> Thus, in Wolane, discontinuous first person agreement contains a prefix realizing [+author] features without marking number (either *y-* or *l-*, depending on position)—explaining why it is shared across singular and plural forms—and the more general

<sup>19</sup>According to Meyer (2006: 40–41), the front, low-mid vowel /ɛ/, given here as part of the underlying representation of the suffix *-nɛ*, is deleted at a morpheme juncture when followed by the long vowel *ā* due to vowel hiatus resolution, but is overt otherwise. I assume that this is why /ɛ/ does not appear before the auxiliary *-ān*.

<sup>20</sup>The alternative would be to take *y-* in both cases to be the radical elsewhere prefix, and *l-* to be a more specific first person allomorph. This strikes me as unlikely, as we would need to restrict the *l-* allomorph to the heterogeneous class of non-initial environments. Furthermore, closely related Ethiopian Semitic languages which do not exhibit the same 1st-3rd syncretism nevertheless do have a specific first person allomorph in word-initial contexts—that is, in the context where we find first person *y-* in Wolane. For instance, in Gumer (Western Gurage), first person singular and plural agreement prefixes are distinguished in word-initial position: **ə**- (1.SG) versus **n(i)**-...-**inə** (1.PL) (Völlmin 2017: 122). In non-initial position, the distinction is neutralized and converges on the first person plural exponent *n(i)-* (see, e.g., Völlmin 2017: 157, Table 68). Both of the first person prefixes, however, are distinct from the regular third person prefix *y-*. Other languages displaying the same type of allomorphy are Chaha (Banksira 2000: 242, (1b)), Muher (Meyer 2019: 239, Table 10.11), Inor (Chamora and Hetzron 2000: 45–47), and Argobba of Aliyu Amba (Leslau 1997: 50). See Hetzron (1977: 77–80) for overview and additional data.

first person plural suffix *-nɛ* realizing (at least) [+author, -singular]. Furthermore, to prevent *-nɛ* from appearing in the prefixal position, we can add a contextual restriction to the vocabulary entry in (45c) stipulating that *-nɛ* only appears at the right edge of the verb stem. Competition between the vocabulary entries in (45), all of which realize [+author] features, models this allomorphy:

- (45) Wolane first person prefix conjugation vocabulary entries
- a.  $\left[ \begin{array}{l} \text{CAT: Asp} \\ +\text{author} \\ +\text{participant} \\ -\text{perfective} \end{array} \right] \leftrightarrow y- / \# \_ (1, \text{imperfective, word-initial})$
- b.  $\left[ \begin{array}{l} \text{CAT: Asp} \\ +\text{author} \\ +\text{participant} \\ -\text{perfective} \end{array} \right] \leftrightarrow l(\varepsilon)- (1, \text{imperfective})$
- c.  $\left[ \begin{array}{l} \text{CAT: Asp} \\ +\text{author} \\ +\text{participant} \\ -\text{singular} \end{array} \right] \leftrightarrow -n\varepsilon // \text{VERB } \_ (1.\text{PL})$

Note additionally that the contextual specifications in the rules in (45a) and (45c) make reference to linearly adjacent material, providing additional evidence for Hewett’s (To appear) claim that allomorphy in discontinuous agreement is crucially sensitive to linear order. Other Eastern Gurage languages (e.g. Zay (Leslau 1999; Meyer 2005) and Silt’e (Gutt 1986, 1997)) attest similar patterns.

At least two traits distinguish Ethiopian Semitic first person plural discontinuities as in (43) from both Semitic non-author Fission ((8)) and from Mehri first person dual Fission ((34)). First, only in Ethiopian Semitic first person plural splits do we find multiple exponence of the [+author] feature—both in the prefix *and* in the suffix (and in the latter case, [+author] is also realized together with [-singular]). In Semitic non-author Fission and Mehri first person dual Fission, [ $\pm$ author] is only ever realized at the prefixal position, and crucially never together with number features. Second, there is no evidence for meta-fission in the first person in Ethiopian Semitic: first person plural agreement in the suffix conjugation and first person plural pronouns are consistently monomorphemic:

- (46) Wolane perfective first person agreement,  $\sqrt{\text{sbr}}$  ‘break’ (Meyer 2006: 108, Table 16)

SG	PL
1 sɛbɛr-h <sup>w</sup>	sɛbɛr-nɛ

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

SG	PL
1 -yɛ	-ɲɲɛ

Ethiopian Semitic first person plural discontinuities do not exhibit the hallmarks of Fission. Rather, they appear to involve pure morphological doubling of a terminal bearing first person features.

We can model the hypothesized doubling straightforwardly using Generalized Reduplication. Specifically, I propose the doubling rule in (48) for the relevant Ethiopian Semitic languages (I assume with Demeke (2003: 45) and Kramer (2019: 4) that subject agreement in Ethiopian Semitic is located on (high) Aspect):

(48) **First person plural Doubling in Wolane and similar Ethiopian Semitic languages**

- a. Structural description:  $[_{Asp}^{0max} \sqrt{v} \text{Voice Asp}_{[+author, -singular, -perfective]}]$
- b. Structural change:
  - i. Insert [ to the immediate left of  $\sqrt{v}$ , and ] to the immediate right of  $Asp_{[+author, -singular, -perfective]}$ .
  - ii. Insert < to the immediate left of  $Asp_{[+author, -singular, -perfective]}$ .

As discussed in Section §2, Doubling rules have essentially the same character as Metathesis rules in this formalism, the difference being that Metathesis rules combine two angle brackets inside the domain of reduplication, while Doubling rules use only a single angle bracket. The effect of (48) will be to create a copy of Asp to the left of the verb stem *only* when Asp bears the features [+author, -singular, -perfective].

We can now give a principled explanation for why these first person plural discontinuities are restricted to the prefix conjugation: if splitting in the first person plural results from Doubling, and not from Fission, then we predict to find discontinuities only when Generalized Reduplication is motivated—namely, when triggered by the positional constraint in (49):

(49) **Asp/T-initiality (= (18))**

Terminal  $Asp_{[-perf]}/T_{[-past]}$  is initial within  $Asp^{0max}/T^{0max}$ .

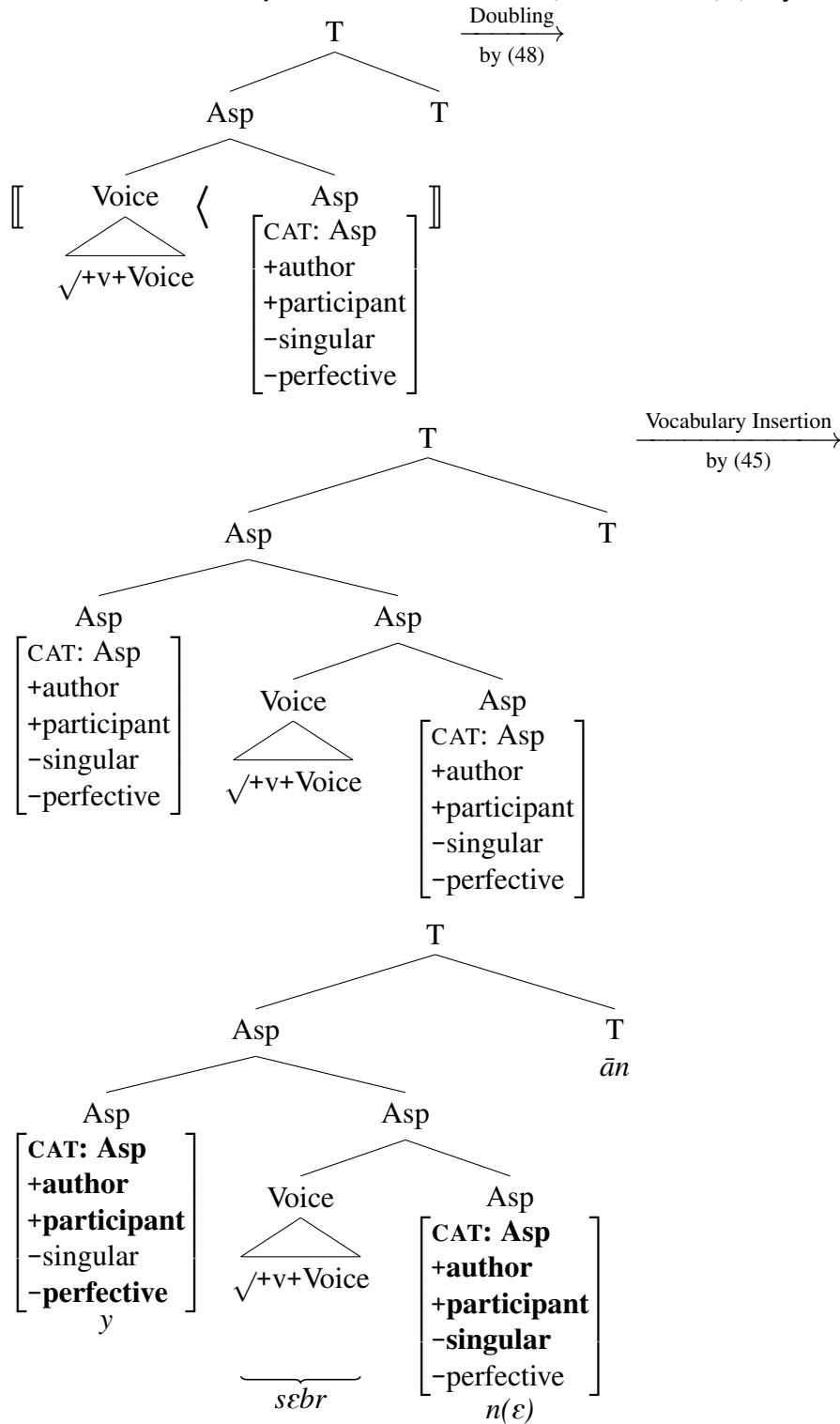
This constraint will not apply in the suffix conjugation—which contains  $Asp_{[+perf]}/T_{[+past]}$ —or in pronominal forms, which lack Asp/T; hence, first person plural Doubling will not be triggered. We thus (correctly) fail to derive a meta pattern of first person discontinuities in Wolane.

It also remains to explain how Wolane satisfies the constraint in (49) in first person plural contexts. Both first person plural Doubling ((48)) and Semitic prefix conjugation Metathesis ((17)) will satisfy this constraint. When an input structure meets the structural description of both rules, as is the case with first person plural agreement in Wolane, Doubling will always apply according to Subset Principle reasoning: the structural description of the Doubling rule in (48) is a subset of the structural description of prefix conjugation Metathesis in (17), hence Doubling is more specific and must apply. Application of either rule will destroy the context for the other to apply and hence bleed further displacement, since both rules are specified to occur only when the verb stem is left-most within the maximal 0-level projection of Asp/T.

I illustrate a Doubling derivation for the Wolane first person plural prefix conjugation verb *y-sεbr-n-ān* ‘we break’ in (50). I follow much previous work in assuming that Ethiopian Semitic auxiliaries realize T (see, e.g., Demeke 2003; Yimam 2006; Kramer 2019), though I omit a detailed exposition of its realization (and in particular, the realization of agreement on this auxiliary) for space considerations.



(50) Wolane: derivation of *y-sebr-n-ān* ‘we break’ (1-break-1.PL) (Meyer 2006: 97, Table 11)



The upshot of the preceding discussion is as follows: first person plural splits in Ethiopian Semitic instantiate a different kind of discontinuous agreement in Semitic. They are empirically distinguished from Fission in licensing multiple exponence of [+author] features and in being restricted to the prefix conjugation. Generalization Reduplication, an operation independently

needed to account for the presence of prefixes in the prefix conjugation, straightforwardly extends to Ethiopian Semitic to account for first person plural Doubling. The distinction between the Ethiopian Semitic pattern and the previously discussed Fission patterns strongly favors a modular postsyntax in which distinct rules give rise to true splitting (i.e. Fission) and to metathesis/doubling (i.e. Generalized Reduplication). The two types of operation should not be equated lest we obscure this empirical contrast. The next section details another kind of doubling discontinuity with data from Southern Iraqi and Khuzestani Arabic.

## 5 First person splits in Iraqi and Khuzestani Arabic: Further evidence for first person Doubling

In certain dialects of Southern Iraqi Arabic and Khuzestani Arabic, first person singular agreement is often discontinuous in the prefix conjugation, consisting of both a prefix *a-* and a suffix *-an* (see especially Meissner 1903; Ingham 1982, 1997, 2000, 2011; Hassan 2021; Leitner 2022: 271–272). Example (51) illustrates with data from a dialect of the Euphrates village of al-Huwaydir in Iraq.

- (51) a. a- ru:h -an  
 1.SG- go -1.SG  
 ‘I go.’
- b. a- ju:f -an  
 1.SG- see -1.SG  
 ‘I see.’
- (Abu-Haidar 1988: 76)

According to Ingham (1982: 83), the first person singular suffix *-an* is optional with roots whose second consonant is one of the two glides /j/ or /w/ (i.e. glide-medial or ‘hollow’ roots, (51)) and with final geminate roots ((52a)), as well as with all verbs when followed by a pronominal object suffix ((52b)).<sup>21</sup>

- (52) a. a- dizz -an  
 1.SG- send -1.SG  
 ‘I send’
- b. a- yasm -an -hin  
 1.SG- divide -1.SG -3.F.PL.ACC  
 ‘I will divide them (fem.)’
- (Khuzestani Arabic; Ingham 1973: 548)

Ingham (2000: 127) conjectures that this suffix arose diachronically as a contraction of a post-verbal first person singular pronoun *ana* with the verb: \**aru:h-ana* ‘I go’ (1.SG.go-1.SG.PRON) > *aru:h-an* (1.SG.go-1.SG) (see also Wilmsen and Al Muhairi 2020: 290). Unfortunately, this putative diachronic path does not provide a straightforward explanation for the appearance of *-an* before pronominal object morphemes as in (52b).<sup>22</sup>

<sup>21</sup>Thanks to Bettina Leitner (*pers comm.*) for helping to clarify the distribution of this affix.

<sup>22</sup>Meissner (1903: XXXVIII), on the other hand, relates the first person ending *-an* to the so-called ‘energ(et)ic’ endings *-anna* and *-an* of Classical Arabic which were restricted to the prefix conjugation and whose primary function appears to have been signaling strong speaker commitment to the utterance (e.g. a high degree of certainty or a salient wish regarding future time reference) (Birnstiel 2019: 385). Such a connection seems highly speculative, as there is

Regardless of the precise origin of the first person singular *-an* ending, one thing is clear: there is no parallel discontinuity for first person plural agreement, which remains monomorphemic *nə* in the prefix conjugation (see Ingham 2011: Table 4). Furthermore, no splitting is evident in first person suffix conjugation agreement or pronouns:

- (53) Khuzestani Arabic first person suffix conjugation agreement,  $\sqrt{ktb}$  ‘write’ (Ingham 2011: Table 3)

	SG	PL
1	kətab-ət	kətab-na

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

	SG	PL
1	āna~āni	əħna

The Southern Iraqi and Khuzestani Arabic data thus closely resemble the Ethiopian Semitic pattern discussed in Section §4: [+author] is realized by both the prefix and suffix (though in this case, the split is instantiated in the singular rather than in the plural), and the split is only attested in the prefix conjugation. First person singular discontinuous agreement therefore does not instantiate a *meta* pattern. I submit that these dialects of Arabic, like Ethiopian Semitic, have innovated a Doubling rule—namely, (55)—which is more specific than (hence, bleeds) Semitic prefix conjugation Metathesis. The contexts for doubling are heterogeneous and do not form a natural class: doubling occurs (i) with glide-medial and geminate roots, and (ii) in the context of pronominal object suffixes. Consequently, the structural description of the doubling rule in (55) contains a disjunction. I will further assume that the roots which trigger doubling bear a diacritic designating their root class: adopting a general schema XYZ for Semitic tri-consonantal roots (following Kastner 2016, 2019, 2020), these diacritics are XjZ, XwZ, and XYY, henceforth represented as root subscripts.<sup>23</sup>

(55) **First person singular Doubling in Southern Iraqi and Khuzestani Arabic**

a. Structural description:

- i.  $[_{T^{0max}} \sqrt{\{XjZ, XwZ, XYY\}} v \text{ Voice Asp } T_{[+author, +singular, -past]}, \text{ or}$
- ii.  $[_{T^{0max}} \sqrt{v \text{ Voice Asp } T_{[+author, +singular, -past]}} D$

b. Structural change:

- i. Insert [ to the immediate left of  $\sqrt{\quad}$ , and ] to the immediate right of  $T_{[+author, +singular, -past]}$ .
- ii. Insert < to the immediate left of  $T_{[+author, +singular, -past]}$ .

no other positive evidence for the preservation of ‘energetic’ endings in Southern Iraqi or Khuzestani Arabic dialects, which are not restricted to the first person in Classical Arabic. See Leitner (2022: 271–272) for additional discussion.

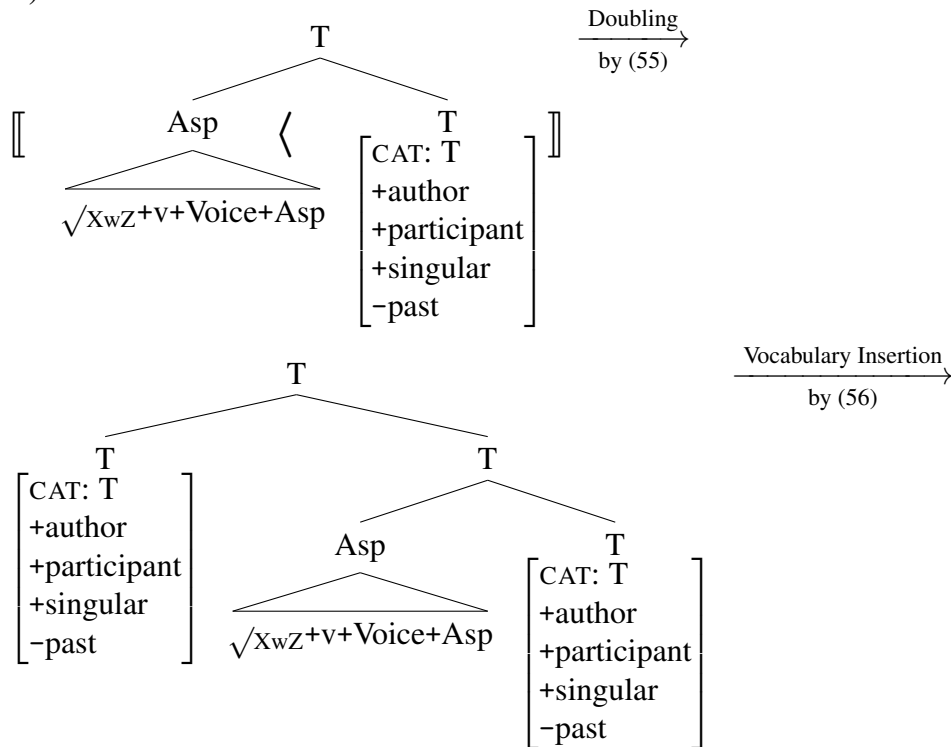
<sup>23</sup>See Faust (2012, 2016) for arguments that what I am calling ‘root class’ might actually correspond to the *phonological index* of a root, building on work by Borer (2005a,b, 2013). A root’s phonological index matches an abstract, numerical pointer (Harley 2014) with some phonological form, though crucially without making reference to a phonological context (which is only constructed later in the determination of underlying representations and phonetic forms). See also Kastner (2016: 153–158) for similar speculations that ‘root classes’ can be likened to the familiar conjugation classes of Romance languages. These root classes diachronically arose from regular phonological processes which are opaque and irregular in the daughter Semitic languages (see, e.g., Tucker 2015 on Modern Standard Arabic), motivating a synchronic analysis in which root classes are features.

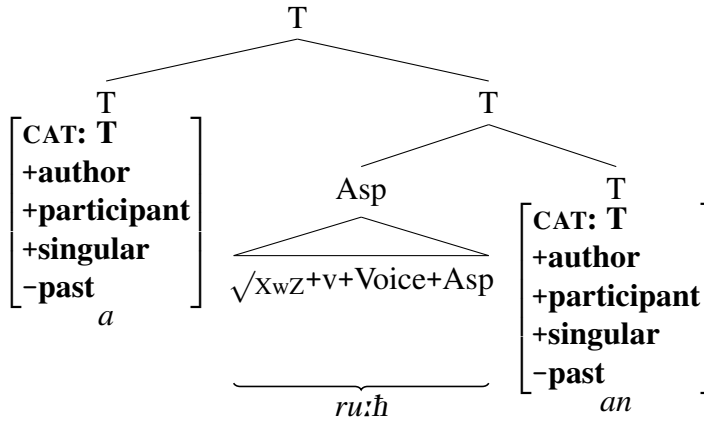
I sketch a Doubling derivation of the first person singular prefix conjugation verb *a-ru:ḥ-an* ‘I go’ which belongs to the root class  $\sqrt{xwz}$  in (57), utilizing the vocabulary entries in (56).

(56) Iraqi/Khuzestani Arabic first person prefix conjugation vocabulary entries

- a.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ +\text{singular} \\ -\text{past} \end{array} \right] \leftrightarrow a- / \_ \text{ VERB (1.SG, prefix)}$
- b.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ +\text{singular} \\ -\text{past} \end{array} \right] \leftrightarrow -\text{an (1.SG)}$
- c.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ -\text{singular} \\ -\text{past} \end{array} \right] \leftrightarrow n- \text{ (1.PL)}$

(57) Iraqi/Khuzestani Arabic: derivation of *a-ru:ḥ-an* ‘I go’ (1.SG-go-1.SG) (Abu-Haidar 1988: 76)





The Southern Iraqi/Khuzestani Arabic data illustrate an important facet of the analysis: each module of the postsyntax is a potential locus for cross-linguistic variation. Thus, we find first person *singular* doubling in these Arabic dialects paralleling first person *plural* doubling in Ethiopian Semitic, and neither instantiates a meta pattern. By contrast, (non-author) Fission operates identically in the two sets of languages. I count the flexibility of the modular postsyntactic account advocated here in capturing all of this variation as an important strength of the analysis.

## 6 First person splits in Maghrebi Arabic: A diachronic path from Doubling to Fission

Our final case study of first person discontinuities in Semitic comes from Maghrebi Arabic. The Maghrebi dialect area stretches roughly from the Nile delta in the east to the Atlantic coast of Africa in the west, and from the Mediterranean Sea in the north (including the island of Malta) to the Sahel and the Senegal River in the south (Aguadé 2018; Benkato 2020). As has been noted by many scholars, one of the hallmark isoglosses of this dialect group is the inflection of first person agreement in the prefix conjugation. In all of these dialects, the inherited first person singular prefix *ʔ-* (with its associated post-consonantal vowel) was lost and replaced by the (historically first person plural) prefix *ni-*. In addition, the plural suffix *-u*, otherwise restricted to the second and third persons in non-Maghrebi dialects, is extended to the first person plural. Example (58) illustrates the difference in first person prefix conjugation agreement between the Maghrebi dialect of Tunis (Gibson 2011: Table 4) and the non-Maghrebi Muslim Baghdadi dialect (Erwin 2004: 84).

(58)

	Tunis (Maghrebi)	Muslim Baghdadi (Non-Maghrebi)
1.SG	<u>ni</u> -ktib	<u>ʔa</u> -ktib
1.PL	<u>ni</u> -ktb- <u>u</u>	<u>ni</u> -ktib

As with Ethiopian Semitic and Southern Iraqi/Khuzestani Arabic, we can show that the first person plural discontinuity is restricted to the prefix conjugation: first person plural suffix conjugation agreement ((59)) and pronominal forms ((60)) are not discontinuous.

(59) Tunis Arabic suffix conjugation agreement (Gibson 2011: Table 5)

	SG	PL
1	ktib- <u>t</u>	ktib- <b>na</b>
2	ktib- <u>t</u>	ktib- <u>t-u</u>
3M	ktib	kitb- <u>u</u>
3F	kitb- <u>it</u>	kitb- <u>u</u>

(60) Tunis Arabic possessive pronominal suffixes (Gibson 2011: Table 2)

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

First person plural discontinuous agreement in Maghrebi Arabic thus does not instantiate a meta pattern. In view of just these facts, a Fission analysis of the Maghrebi data would appear unjustified, motivating instead a Doubling analysis. What is puzzling for a Doubling analysis, however, is the fact that there does not appear to be any multiple exponence of  $\phi$ -features in Maghrebi first person plural forms: the prefix *ni-* ostensibly realizes [+author] alone, while the suffix *-u* realizes [-singular] without person, as evidenced by the fact that *-u* appears in the second and third person plural (e.g. Tunis Arabic *ti-ktb-u* ‘you (pl.) write’ (2-write-PL)). The mutually exclusive realization of features—what Noyer (1992) termed ‘discontinuous bleeding’—tends to be a feature of Fission, not of Doubling, since only Fission separates antagonistic feature sets. It might appear, then, that the Maghrebi data present us with an analytical paradox.

The solution, I contend, emerges from close inspection of dialect variation in Egypt. Behnstedt and Woidich (2005: 161–162) report on a continuum of dialects in the Nile Delta region which exhibit microvariation in the realization of first person prefix conjugation agreement (see Behnstedt (1978, 2016) and Behnstedt and Woidich (2018) for additional discussion and references). At the eastern periphery of this dialect group, we find the non-Maghrebi pattern *aktib~niktib*, shared by many speakers from Cairo (see Woidich 2006: 76). At the western periphery, we find the standard Maghrebi pattern *niktib~niktibu*. However, geographically sandwiched between these two groups (especially in the Kafr El Sheikh province) we find a mixed pattern of first person agreement which utilizes the non-Maghrebi first person singular form but the Maghrebi first person plural form: *aktib~niktibu*. These three patterns are summarized in (61).

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

	West	Center-West	East
1.SG	<u>ni</u> -ktib	<u>a</u> -ktib	<u>a</u> -ktib
1.PL	<u>ni</u> -ktib- <u>u</u>	<u>ni</u> -ktib- <u>u</u>	<u>ni</u> -ktib

It is the mixed pattern spoken in the center-west Delta which attests the type of multiple exponence we expect from morphological doubling: both the prefix *ni-* and the suffix *-u* realize [-singular].

For speakers of the mixed pattern, the analysis is straightforward: I propose that the innovative first person plural Doubling rule in (62) bleeds the application of the more general Semitic rule of prefix conjugation Metathesis ((17)). The derivation in (64) illustrates, utilizing the vocabulary entries in (63). I take the entry for the first person plural prefix *ni-* in (63b) to be limited to a preverbal (i.e. prefixal) position via contextual restriction.

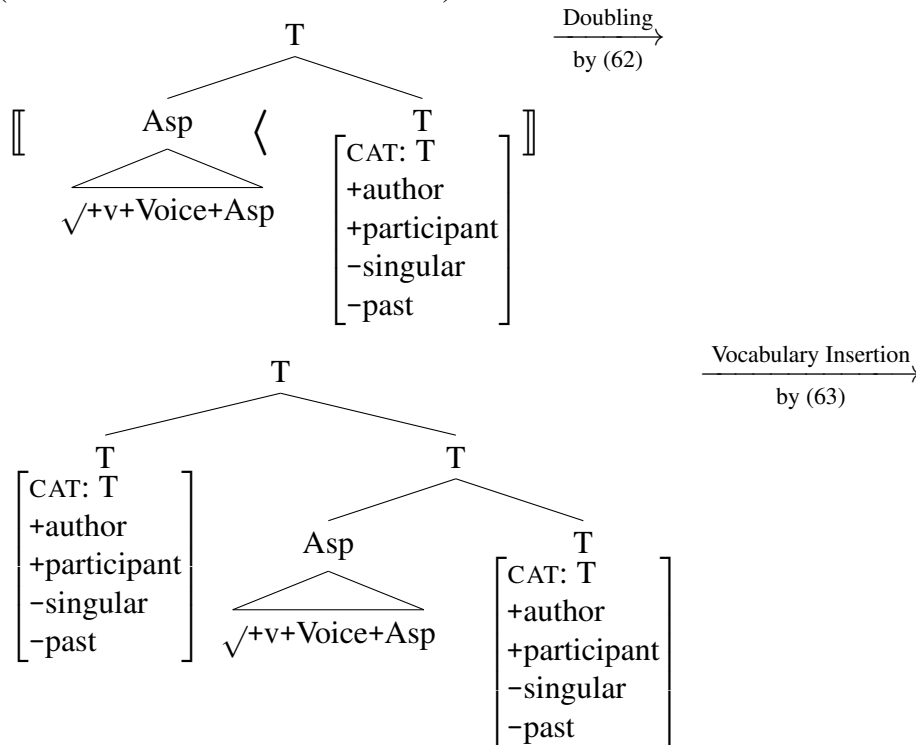
(62) **First person plural Doubling in Center-West Delta Egyptian Arabic dialects**

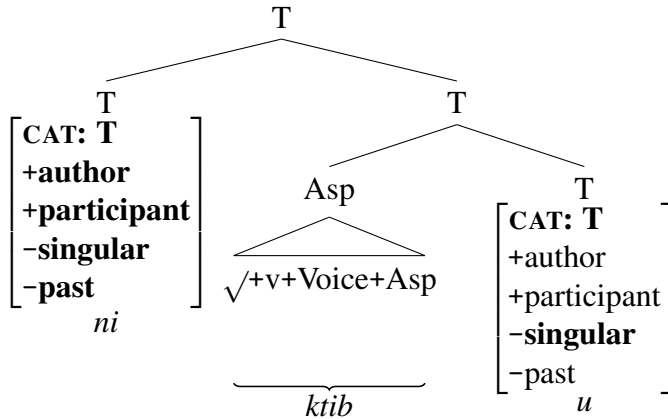
- a. Structural description:  $[_{T^{0max}} \sqrt{v} \text{ Voice Asp } T_{[+author, -singular, -past]}$
- b. Structural change:
  - i. Insert [ to the immediate left of  $\sqrt{v}$ , and ] to the immediate right of  $T_{[+author, -singular, -past]}$ .
  - ii. Insert < to the immediate left of  $T_{[+author, -singular, -past]}$ .

(63) Center-West Delta Egyptian Arabic first person prefix conjugation vocabulary entries

- a.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ +\text{singular} \\ -\text{past} \end{array} \right] \leftrightarrow a- \text{ (1.SG)}$
- b.  $\left[ \begin{array}{l} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ -\text{singular} \\ -\text{past} \end{array} \right] \leftrightarrow ni- / \_ \text{ VERB (1.PL, prefix)}$
- c.  $\left[ \begin{array}{l} \text{CAT: T} \\ -\text{singular} \end{array} \right] \leftrightarrow -u \text{ (PL)}$

(64) Center-West Delta Egyptian Arabic: derivation of *ni-ktib-u* ‘we write’ (1.PL-write-PL) (Behnstedt and Woidich 2005: 161)





The non-Maghrebi pattern *aktib~niktib* involves neither Fission nor Doubling, but rather Metathesis (see Hewett (To appear) for discussion).

This leaves the more general Maghrebi pattern *niktib~niktibu* to be explained. I propose (following Behnstedt 1978) that the present-day geographical continuum in the Delta parallels the historical development of these affixes.<sup>24</sup> Earlier *aktib~niktib* became *aktib~niktibu* via extension of the *-u* suffix to the first person plural—by hypothesis, via the Doubling rule in (62). Then, at a certain point, the prefix *ni-* was reinterpreted as realizing first person features alone without marking number (contrast (63b)).<sup>25</sup> At this stage, I propose that speakers reinterpreted the inherited Doubling rule as a first person Fission rule, though one that was highly restricted in its domain, applying only in the context of [-past]. Such a contextual restriction would have been necessary to maintain the prefix-conjugation-only triggering context for prior first person plural Doubling—namely, Asp/T-initiality:

(65) **Asp/T-initiality** (= (18))

Terminal Asp<sub>[-perf]</sub>/T<sub>[-past]</sub> is initial within Asp<sup>0max</sup>/T<sup>0max</sup>.

Thus, just as Asp/T-initiality only requires the presence of a prefix in the prefix conjugation, so too do the Maghrebi Arabic morphotactic constraint in (66) and associated first person Fission rule in (67) trigger splitting of T<sup>0</sup> bearing first person features only in the prefix conjugation (i.e. only in the non-past).

(66) **Maghrebi morphotactic constraint on joint  $\varphi$ -feature exponence: 1 and number**

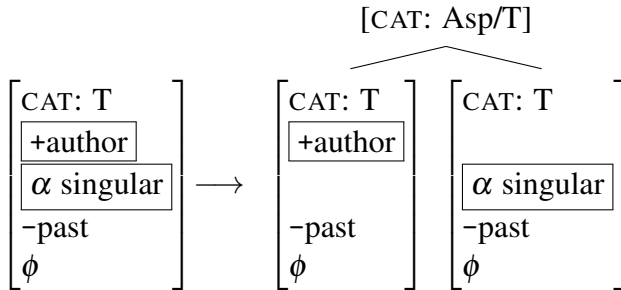
\*[+author], [ $\alpha$  singular] / \_\_\_ [-past] (no coexponence of first person and number in the non-past)

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

<sup>24</sup>Whether or not the current dialectal situation in the Delta actually reflects the preservation of earlier diachronic stages, or whether the variation arose via contact (as speculated in Woidich (1996: 338) and Behnstedt and Woidich (2005: 162)) is ultimately tangential to my proposal.

<sup>25</sup>That 1.PL *niktibu* precedes 1.SG *niktib* historically is also proposed by Bergsträsser (1983: 194–195) and Owens (2003: 735).





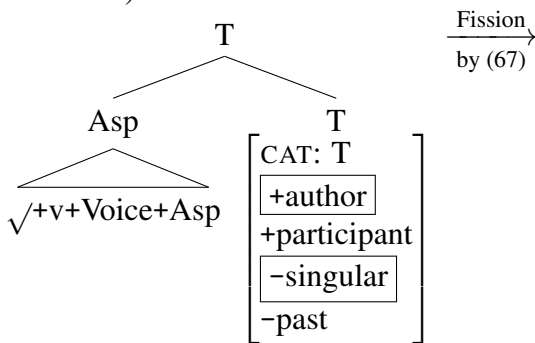
The first person singular prefix *a-* ((63a)) was then lost in Maghrebi dialects since *a-* realizes [+author] together with [+singular], and, per (66), no vocabulary entry may jointly realize [+author] and [ $\alpha$  singular] in these varieties.<sup>26</sup>

The vocabulary entries in (68) and the derivation in (69) illustrate how first person plural *ni-ktib-u* ‘we write’ is derived via first person Fission ((67)) in Maghrebi Arabic.

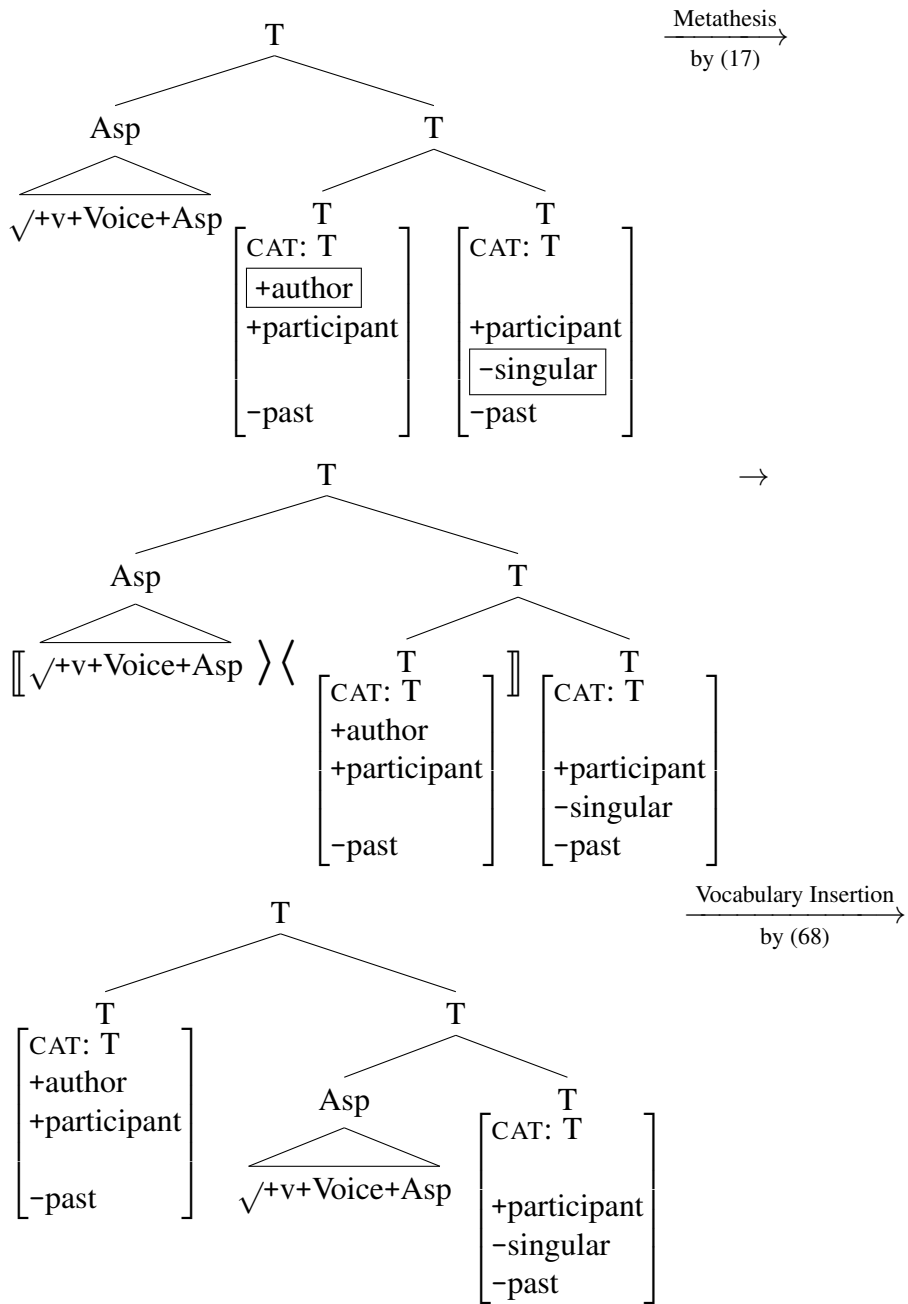
(68) Maghrebi Arabic first person prefix conjugation vocabulary entries

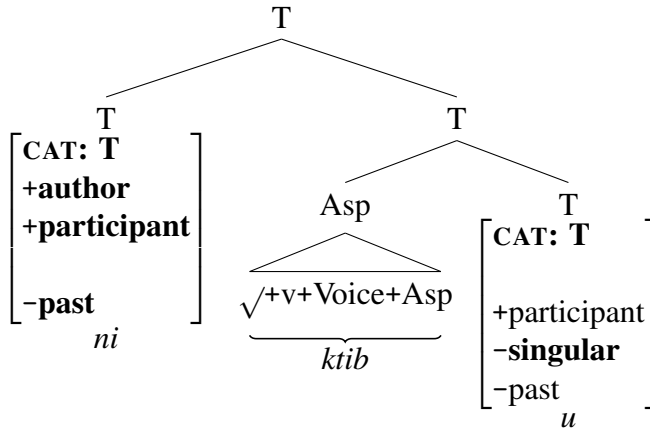
- a.  $\left[ \begin{array}{c} \text{CAT: T} \\ +\text{author} \\ +\text{participant} \\ -\text{past} \end{array} \right] \leftrightarrow ni- (1)$
- b.  $\left[ \begin{array}{c} \text{CAT: T} \\ -\text{singular} \end{array} \right] \leftrightarrow -u (PL)$

(69) Maghrebi Arabic: derivation of *ni-ktib-u* ‘we write’ (1-write-PL) (Behnstedt and Woidich 2005: 161)



<sup>26</sup>Noyer (1992: 110)—assuming that Fission is fundamentally driven by Vocabulary Insertion—proposes an inverse order of development for the Maghrebi pattern: *ni-* was first reanalyzed as marking first person only, at which point *-u* was immediately extended to the first person plural forms (see Blau 1965: 119–120 for a similar proposal). Noyer bases his proposal on an alleged causal relationship between the loss of the first person singular prefix *ʔ-* in Semitic and the extension of *-u* to the first person plural: “[o]nly when *n-* is reanalyzed as ‘1’ in the Maghreb dialects does *-u* extend to 1 pl” (1992: 110). The center-west Delta dialects illustrated in (61) falsify this generalization and bring back into question the chronology of the development of the Maghrebi pattern.





In summary, I have demonstrated that it is possible to account for the Maghrebi pattern using Fission despite the Maghrebi first person plural split not instantiating a meta pattern.<sup>27</sup> First person plural Doubling, which was independently necessary to account for the center-west Delta mixed pattern *aktib~niktibu*, was reinterpreted (along with its triggering constraint) as first person Fission in Maghrebi Arabic due to a reanalysis of the prefix *ni-* as marking first person features only in the prefix conjugation. We can thus continue to rely on meta-fission as a useful heuristic in identifying the empirical signature of Fission, while also recognizing differently motivated Fission rules without such a signature.<sup>28</sup>

<sup>27</sup>To the best of my knowledge, the only other appearance of a number-syncretizing *n-* prefix in the first person in Semitic comes from varieties of Aramaic; I will focus here on Modern Western Aramaic. In subjunctive verbal forms based on the older Aramaic prefix conjugation, we find whole-word syncretism between the first person singular and plural: *ni-kt<sup>l</sup>ul* ‘I/we beat’ (1-beat.SBJV) (Fassberg 2019: 643, Table 24.18). Siegal (2013: 117) claims that the 1.SG prefix *n-* in Modern Western Aramaic arose from a reduction of the independent first person singular pronoun *ana* to *n*, which was concomitantly prefixed to the subjunctive verbal stem. See Blau (1965: 119) and Cohen (1979: 224) for similar speculations. Whatever the historical source of such forms, they can be synchronically derived simply via Metathesis (without Fission) and a first person prefixal vocabulary entry underspecified for number. Note that suffixal agreement in the preterite *does* distinguish between first person singular and plural forms: *kar<sup>s</sup>l-iθ* ‘I beat’ (beat.PRET-1.SG) versus *kar<sup>s</sup>l-innah* ‘we beat’ (beat.PRET-1.PL) (adapted from Fassberg 2019: 643, Table 24.16), suggesting that the neutralization of number in the subjunctive is an idiosyncratic property of the vocabulary entry for *n-*. See footnote 13 for additional discussion of the *n-* prefix with present tense and perfect verbal forms.

As a final note, an anonymous reviewer wonders whether *n-* might ever be analyzable as only realizing [–singular] in Semitic. I do not believe so: *n-* consistently realizes first person features (i.e. [+author(, +participant)]), and typically also realizes number features (i.e. [–singular(, +augmented)]). However, in restricted cases like Modern Western Aramaic and Maghrebi, *n-* loses its number specification.

<sup>28</sup>An anonymous reviewer sketches a Doubling-based analysis of the Maghrebi facts which derives the apparent discontinuous bleeding effect (i.e. no overlapping exponence of person and number in *ni-ktib-u*) via exponent-specific properties. If Maghrebi Arabic retains the first person plural Doubling rule in (62), we can posit a vocabulary entry for *n-* realizing [+author, +participant, –past] which is restricted to the prefixal position via contextual restriction, leaving *-u* to realize the suffix. Nothing in the system proposed here rules out this alternative. However, my Fission-based analysis may be slightly more parsimonious if we assume that the general Maghrebi pattern developed from a *aktib~niktibu* pattern. The Doubling-based analysis of the Maghrebi pattern must make two seemingly unrelated assumptions: (i) *n-* was reinterpreted at a relatively early stage as realizing person without number, and (ii) the vocabulary entry for the first person singular prefix *a-* was independently lost. By contrast, in the Fission-based analysis, the loss of *a-* follows as an automatic consequence once speakers acquire the constraint in (66). As it stands, however, the empirical predictions of these two analyses overlap to a significant degree, and I admit that the choice between them is not obvious.

## 7 Comparison with alternative analyses of first person discontinuities

Before concluding, it is worth considering whether there are alternative approaches which can derive the two types of first person discontinuities in Semitic. For instance, an anonymous reviewer wonders whether the account developed by Clem et al. (2022) for inversion (i.e. metathesis) and doubling of T(ense) morphemes around a FOC(US) marker in Tiwa verbs would be applicable to the Semitic data. In Clem et al.'s analysis, T moves rightward over FOC in the string T-FOC-AGR in order to satisfy the subcategorization frame of a right-peripheral AGR morpheme which wants to be right-adjacent to T (what they call a *condition on position*, following Kalin and Rolle To Appear). Inversion of T and FOC yields the string FOC-T-AGR, whereas doubling of T yields the order T-FOC-T-AGR. Unfortunately, Clem et al.'s analysis does not seem extendable to the Semitic data for the following reason: Clem et al. rely on post-Vocabulary Insertion movement of exponents (modeled via optimality-theoretic constraint interaction) to derive inversion and doubling. However, as argued extensively in Hewett (To appear), the forms of Semitic agreement affixes are sensitive to their surface (i.e. displaced) linear position. Thus, the generation of Semitic discontinuous agreement cannot be the result of post-exponence movement. Hewett (To appear) makes essentially the same argument against prosodic accounts of Semitic affix placement.

Alternatively, one might adopt an approach which Hewett (To appear) calls *Vocabulary-centric*, exemplified by the analyses of Noyer (1992), Halle (2000), and Harbour (2008a, 2016), among others. Indeed, Noyer provides an account of both the Mehri and the Maghrebi Arabic data in his dissertation—both patterns which I account for with Fission. Without going into the details of Noyer's analysis, we can reject all Vocabulary-centric analyses on independent grounds: namely, they do not define an autonomous Fission operation and hence fail to account for patterns of meta-fission (see Hewett To appear for discussion of this point). In order to explain splitting in first person dual forms *across* paradigms in Mehri, Noyer must stipulate each split on an entry-by-entry basis. The present approach derives the meta pattern without stipulation. Finally, I am not aware of any extant Vocabulary-centric analysis which can differentiate first person Fission from first person Doubling, while still deriving the fact that Metathesis and Doubling both yield agreement flanking the verb stem, without additional assumptions. Thus, it seems that the current paper succeeds in providing an analysis of both types of first person discontinuities in Semitic—a success arguably not shared by the alternatives.<sup>29</sup>

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<sup>29</sup>A reviewer wonders about the implications of the analysis for the typology of multiple exponence. The Semitic data seem to demand that we distinguish at least two types of multiple exponence, corresponding to the two operations which produce them—namely, Fission (which is definitionally accompanied by feature copying, see (9)) and Doubling. These two types of multiple exponence have clearly different empirical profiles: Fission-derived multiple exponence participates in a meta pattern and involves some degree of discontinuous bleeding, whereas Doubling-derived multiple exponence does not participate in a meta pattern and typically does not exhibit discontinuous bleeding. As it stands, neither species of multiple exponence neatly matches up with one of the types defined in Harris (2017). However, it is encouraging that Doubling has already been successfully used to analyze multiple exponence in several other languages (see, e.g. Harris and Halle 2005; Arregi and Nevins 2012, 2018; Pavlou 2018). It remains to be seen whether the predicted empirical differences between the two types are observed in languages outside of Semitic (and Afroasiatic).

## 8 Conclusion

Discontinuous first person agreement is a heterogeneous phenomenon in Semitic. Certain discontinuities arise as a result of postsyntactic *Fission* rules which split up [+author] and (particular) number features, most notably in the first person dual in Mehri, but also in all first persons in Maghrebi Arabic. Certain other discontinuities arise as a result of postsyntactic *Doubling* rules which reduplicate a  $\varnothing$ -bearing terminal from the right edge to the left edge of the verb stem in order to comply with morphotactic requirements on the linear position of agreement affixes within the morphological word; doubling is found in several Ethiopian Semitic languages, in Southern Iraqi and Khuzestani Arabic, and in center-west Delta dialects of Egyptian Arabic. I have argued for the existence of two primary criteria for distinguishing Fission from Doubling: (i) discontinuities due to Fission instantiate *metafission* patterns, while those due to Doubling do not; and (ii) discontinuities due to Fission involve some mutually exclusive realization of features across affixes (reminiscent of Noyer’s (1992) ‘discontinuous bleeding’), whereas Doubling need not. First person discontinuities in Semitic thus provide a useful window into the inner workings of two distinct postsyntactic operations. They also demonstrate the necessity for distinguishing morpheme splitting rules from morpheme copying rules, thereby supporting the general program of Hewett (To appear). Finally, the case studies reviewed here emphasize the key role that markedness plays in driving postsyntactic operations *qua* repairs. It was argued here for the first time that the same morphotactic constraint can trigger either impoverishment or Fission (i.e. in the realization of first person dual forms in Omani Mehri and Classical Arabic), and that a positional constraint and its repair can be translated into a feature cooccurrence constraint and a corresponding rule of Fission as I argued occurred in the development of Maghrebi Arabic. The overall conclusions of this paper harmonize well with other work on the modularity of the postsyntactic component (see, e.g., Bonet 1991, Halle and Marantz 1993, 1994, Harley and Noyer 1999, Embick and Noyer 2001, 2007, Arregi and Nevins 2012, Guseva and Weisser 2018, Salzmann 2019, and Kalin To appear, among many others).

## A Decomposition in the first person suffix conjugation and diachrony in Semitic

As it stands, the rule in (12a) straightforwardly derives the 1.SG-2 syncretism for Levantine Arabic via underspecification: since first person singular feature bundles share the [+participant] feature with second person ones, and because there is no more specific vocabulary entry which could apply in the case of the first person, the rule in (12a) will be selected. Because there is no evidence for Fission in the first person elsewhere in the language—neither in the prefix conjugation nor in pronominal paradigms—I maintain the assumption that first person and second person agreement are structurally distinguished at the point of Vocabulary Insertion: the former is monomorphemic, whereas the latter is bimorphemic due to non-author Fission ((8)).

This simple underspecification analysis will not work for languages where only part of the exponents of first person singular and second person suffix conjugation agreement are identical. For instance, in the Tigrinya ‘old’ suffix conjugation, we find the segment /k/ shared between the first person agreement suffix *-ku* and all second person agreement suffixes (*-k-a* (2.M.SG), *-k-i* (2.F.SG), *-k-um* (2.M.PL), *-k-in* (2.F.PL)) (Bulakh 2019: 187, Table 8.9) (and likewise for Mehri

[+participant] *-k* in (22) and (24)). There are two possible ways to account for such data in keeping with our general program: (i) treat the /k/ in the first person singular as accidentally homophonous with the second person /k/ and maintain that there is no splitting in the first person in this language, or (ii) posit a highly restricted Fission rule splitting up [+author] and [+singular] in a morpheme specified as [CAT: T, +author, +participant, +singular, +past]. In the second analysis, the shared /k/ segment could be accounted for, as with the Levantine Arabic data, with a single underspecified entry: [+participant, +past] ↔ *-k*. The Fission-based analysis appears to be supported by the generalization that, in most of the daughter languages of Proto-Semitic, we find leveling of a previously heterogeneous person-marking system whereby /k/ marked the first person singular and /t/ marked the second person (see Hetzron 1976b). This system is preserved in the Akkadian stative. In languages like Arabic, Hebrew, and Aramaic, the second person /t/ spread to the first person singular, and in Ethiopian Semitic, Modern South Arabian, and some Ancient South Arabian dialects (e.g. Minaic and Sabaic, see Stein (2011: 1060) and Multhoff (2019: 332, Table 13.9)), the first person singular /k/ spread to the second person cells (see Harbour 2008c: 86–90 and Harbour 2016: 115–117 for additional discussion). Interestingly, it was not the entire exponent which was leveled, but rather just the consonant /t/ or /k/. The distribution of vowels after this consonant is diachronically quite stable. In Akkadian, which preserves the heterogeneous distribution of consonants, we find /u/ in the first person singular (i.e. *pars-ā-k-u*), /a/ in the second person masculine singular (i.e. *pars-ā-t-a*), and /i/ in the second person feminine singular (i.e. *pars-ā-t-i*). The same set of vowels is preserved in the Tigrinya data listed above (where we find /k/ leveled to all participants), and can also be found in the following Classical Arabic forms with leveling of /t/: *katab-t-u* ‘I wrote’, *katab-t-a* ‘you (m.sg.) wrote’, *katab-t-i* ‘you (f.sg.) wrote’ (Birnstiel 2019: 384, Table 15.15). The stability of this pattern, in spite of the change in consonants, suggests that first person singular suffix conjugation agreement ought to be decomposed in at least these cases: the realization of the consonant can change while leaving the vowel exponent undisturbed.

A Fission-based analysis of first person suffix conjugation agreement in Semitic might appear to be rather stipulative in light of my contention that, in the general case, Fission be substantiated by patterns of meta-fission; in this case, there is no synchronic meta-fission to motivate such an analysis. However, the robustness of the syncretism and its diachronic persistence across several distinct exponents might present an independent type of evidence for an analysis in terms of Fission. Harbour (2008c: 90–91) argues that the parallel historical development of exponents supports analyzing them as truly syncretic, rather than as accidentally homophonous. Hence, the parallel development of the first and second person singular exponents in related languages with distinct exponents might constitute just the right kind of evidence for Fission. For simplicity, I have kept to the simpler analysis of Levantine Arabic in the main text, whereby the first person never undergoes Fission in the singular or plural in the standard case. However, a more complete analysis would distinguish between languages like Tigrinya and Classical Arabic, which proffer evidence for Fission in the first person singular, and languages like Levantine Arabic, which do not and which can be accounted for with underspecification alone.

Harbour (2016: 115–17), faced with the same basic array of facts, suggests to decompose first person singular and second person suffix conjugation agreement in languages like Tigrinya into a [+participant] part (i.e. *-k*) and a [±author] part, with or without gender and/or number (i.e. *-u* vs. *-a* vs. *-i*). If [±participant] and [±author] are hosted by the same category node  $\pi$  (i.e. person), then Harbour’s analysis, like Noyer’s and Halle’s, requires multiple insertion at a single node. Such a stipulation is otherwise not warranted in Harbour’s account, and it is not clear whether multiple

insertion at a single node is possible given the Mirror Theoretic implementation of his analysis. Nor is it clear that his proposed mechanism for linearizing affixes will ensure the correct ordering between two exponents realizing distinct subsets of the  $\pi$  node.

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