

Discontinuous agreement: Nine birds, two stones*

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Nine characteristics of discontinuous agreement are shown to flow from a syntax that deals in whole phi structures and a linearisation algorithm that renders these discontinuous when conditions converge. This approach is demonstrably superior to reliance solely on syntax, morphology, or the lexicon, outperforming these across a range morphological and syntactic data from Afroasiatic languages and those of Australia and Papua New Guinea.

1. Introduction: Deceptive appearances

On first encounter, Afroasiatic agreement gives the appearance of great freedom. Representative examples (from Biblical Aramaic, Rosenthal 1961, 43–44) show that agreement can be monomorphemic, either prefixally (1) or suffixally (2). (In Aramaic, the position corresponds to whether the verb is imperfective or perfective.)¹

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¹The following largely conventional abbreviations are used: 1 first person, 2 second person, 3 third person, ABS absolute, ASP aspect, AUX auxiliary, CAUS causative, COM comitative, CONSTR construct, DECL declarative, DEF definitive, DU dual, EX exclusive, FEM feminine, FPL feminine plural, FSG feminine singular, IMP imperative, IMPF imperfective, INF infinitive, IRR irrealis, MASC masculine, MPL masculine plural, MSG masculine singular, NEG negative, NIGHT nighttime, PASS passive, PAUS pausal form, PC paucal, PF perfective, PL plural, PRES present, REFL reflexive, RECIP reciprocal, RFUT remote future, SEQ sequential, SG singular, TALK talk (a one-member noun class), VB verb. Abbreviations like FSG and MPL

- (1) ʔe- ktub
 1SG-write.IMPF
 'I will write'
- (2) kṭab- ū
 learn.PF-3PL
 'they wrote'

Other person-number combinations result in bimorphemic agreement, as (3)–(4) show for second person masculine plural (in the imperfective and perfective, respectively).

- (3) ti-kṭb- ūn
 2-write.IMPF-MPL
 'you will write'
- (4) kṭab- t- ūn
 write.PF-2-MPL
 'you wrote'

Some members of the family extend to trimorphemic agreement, as in the Muher examples below (complete skeletal paradigm in table 1, Meyer 2020, 239; trimorphemic examples from Kabyle Berber are discussed in section 3.2):

- (5) ʔa- tti-nnakäs- m- a
 NEG-2- quarrel.RECIP.IMP-PL-FEM
 'Don't quarrel with each other!' (Ronny Meyer, p.c.)
- (6) nākkäs-hi-m- a- m
 bite.PF- 2- PL-FEM-DECL
 'you bit' (Ronny Meyer, p.c.)

Person and number agreement in the polymorphemic cases (3)–(6) obeys two generalisations that form the central explicanda of an account of discontinuous agreement. First, for any agreeing argument, at most one morpheme is prefixal. Other agreement morphemes controlled by the same argument are suffixal. Bimorphemic

are for brevity only (in lieu of SG.FEM or PL.MASC) and do not imply a special featural representation. Subscripted roman numerals indicate noun classes (Yimas) and subscripted A, D, O indicate that agent-, dative-, and object-indexing agreement morphology. Subject agreement and possessives in Afroasiatic do not bear subscripts. Epenthetic vowels are included in the gloss line but omitted when the underlying form is under discussion. In Classical Hebrew glossing, en-dashes represent Masoretic hyphens, as in (71).

	singular	plural	singular	plural
1	- <i>h^w</i>	- <i>nä</i>	<i>ä/n-</i>	<i>n-...-nä</i>
2M	- <i>h-ä</i>	- <i>h-m-^w</i>	<i>t-</i>	<i>t-...-m-^w</i>
F	- <i>h-^y</i> > - <i>ç</i>	- <i>h-m-a</i>	<i>t-...-^y</i>	<i>t-...-m-a</i>
3M	- <i>ä</i>	- <i>m-^w</i>	<i>y-</i>	<i>y-...-m-^w</i>
F	- <i>ätt</i>	- <i>m-a</i>	<i>t-</i>	<i>y-...-m-a</i>

Table 1: Muher subject agreement

cases (3)–(4) thus present one or two agreement suffixes; trimorphic cases (5)–(6), two or three.

(7) Prefix uniqueness generalisation

In polymorphemic agreement for a single argument, at most one exponent is prefixal.

Second, irrespective of affix position relative to the verb, person precedes number. This is evident (with boldfacing on person exponents; epenthetic vowels removed) both in Aramaic *t-...-ün* and *-t-ün* and in Muher *t-...-m-a* and *-h-m-a*. The same ordering applies to person and gender, as the Aramaic examples below (Rosenthal, 1961, 43–44), and previous examples of Muher, illustrate:

(8) *ti-ktb-* *in*
 2-write.IMPV-FSG
 ‘you will write’

(9) *ktab-* *t-i*
 write.PF-2-FSG
 ‘you wrote’

Of person, number, and gender, then, person is always precedent:²

(10) Person first generalisation

²Because number and gender frequently fuse in Afroasiatic, I leave their relative linear order aside. In Muher, we have number before gender, but if Aramaic MPL and FPL are decomposed into *-ün* and *-ä-n*, then we have gender *ü/ä* before number *n*. The difference could simply be down to Aramaic allowing syllable structure to trump a syntax-based order.

In polymorphemic agreement for a single argument, person precedes other exponents.

I present an account of these generalisations based on two principles (section 2). One is syntactic: that agreement in the languages under discussion here deals in whole phi-structures with internal structure, number dominating person. The other concerns morphology in the sense of the mapping from syntax to exponence: that syntactic dominance maps to linear postcedence in a cyclic fashion. In specific circumstances, the process maps contiguous syntactic structure to discontinuous morphological structure. These are the two stones of this paper's subtitle. They make discontinuous agreement an emergent property of position (syntax) and exponence and linearisation (morphology).

I contrast this hybrid morphosyntactic account with purely morphological and purely syntactic alternatives (sections 3–4). These are substantially less constrained and face a variety of problems. In some cases, they overgenerate contrary both to the data and my account. In other cases, they are falsified by further data that my account accommodates directly or with minimal additional assumptions. Section 5 shows further that my account responds to the challenges of allomorphy correctly. The further data adduced in these sections are the subtitle's nine birds. The account therefore goes far beyond the two generalisations with which we have begun.

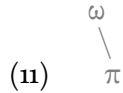
In keeping with the remit of this journal, I will use Afroasiatic data wherever possible. The argument will, though, at times rely on data from elsewhere in the world. This strengthens the account, showing we are dealing with robust crosslinguistic phenomena that converge, for their explanation, on a very particular division of labour between syntax and morphology.

2. A morphosyntactic account

The first principle of my account is that syntax deals in whole phi structures.³ The structure assumed here is simplified from Harbour 2016. It comprises person and, syntactically above it, number. These are represented as π and ω , respectively, where the

³Syntax can traffic in subparts of phi structures. The most obviously recognisable cases are syntactic categories that agree in number and gender but are invariant for person. Examples include the Hebrew present participle, the Romance past participle, or for many Slavic languages, the past tense. Languages where person and number agreement on the verb can be controlled by separate arguments, as in Georgian *m-xvdi-t* 'you.PL met me' (1SG_O-met-PL), may also belong in this category, even if, for the right argument combinations, they seeming show discontinuous agreement of the Afroasiatic variety, as in *g-xvdi-t* 'I met you.PL' (2_O-met-PL).

grey text indicates syntactic material awaiting exponence, as opposed to the exponents themselves, which are in black. The basis for this hierarchy is semantic and corresponds the common-sense position that you first establish who you are talking about and then how many they are.⁴



This simplified structure makes the core of the account easier to present but more detail about three points, which I headline now, will be needed below. First, not all exponents exhaust all of π or ω , or both, in one swoop; exponents that combine sub-parts of person and number are addressed at the end of this section. Second, gender becomes relevant in section 3.2; it is positioned above number. Finally, in Harbour 2016, the structure in (11) dominates a root phi node, φ , which is omitted for now as it does not affect core cases (it can be assumed to lack an exponent); it is represented in section 4.3, where its presence or absence is argued to drive prefixal versus suffixal placement. Until then, I treat the position of the whole phi set as a syntactic given.

The second principle concerns the process of exponence, the mapping from syntactic hierarchy to linear strings. The morphological component of the grammar builds linear strings by translating syntactic dominance into linear postcedence: if A dominates B, then, for their exponents, B precedes A (Travis 1984, Kayne 1994, Brody 2000). In this process, I posit that only the edges of the string are available sites for concatenation of new exponents. This responds to the basic intuition that string building should not disrupt what it has already built. This does not rule out the existence of infixes or floating segments, which are a recurrent feature of Afroasiatic. They affix to the end of the string like other exponents and then have their linear position determined by other grammatical mechanisms (see section 3.3). But such string-internal access depends on special operations, not on the default concatenation process.

The joint effect of these principles is best explained by illustration. Consider exponence of (11) in relation to an already linearised, potentially morphologically complex string *verb*. There are two binary options, hence four cases, to consider, according to whether syntax has positioned phi such that it will precede or follow *verb* and whether phi is expounded mono- or polymorphemically.

⁴In my earliest work on this topic (2007–2008), I posited a syntax with person above number. By 2009, I had adopted Mirror Theory (Brody 2000, Brody and Szabolcsi 2003) to deal with word order facts in Kiowa (Adger et al., 2009). This forced me to invert the hierarchy of person and number. The finding that person and number require the same hierarchy on semantic grounds was independent.

For the monomorphemic cases, assume the exponent φ :

$$(12) \quad \begin{array}{c} \omega \\ \diagdown \\ \pi \mapsto \varphi \end{array}$$

When (11) is targeted for exponence, it is concatenated (\rightarrow) with the previously linearised *verb*. Since exponence proceeds from the root up (Bobaljik, 2000), it is the base of the structure that is concatenated with the preexisting string, though this is immaterial for monomorphemic cases. Prefixation is shown on the left, suffixation on the right in (13):

$$(13) \quad \begin{array}{c} \omega \\ \diagdown \\ \pi \rightarrow verb \end{array} \qquad \begin{array}{c} \omega \\ \diagdown \\ verb \rightarrow \pi \end{array}$$

Exponence of (13) by (12) yields:

$$(14) \quad \varphi \rightarrow verb \qquad verb \rightarrow \varphi$$

Concrete instantiations of (14) are *ʔe-ktub* ‘I will write’ (1) and *ktab-ū* ‘they wrote’ (2).

To illustrate the polymorphemic cases, I take a bimorphemic example with separate exponents for person and number (15).

$$(15) \quad \begin{array}{c} \pi \mapsto \pi \\ \omega \mapsto \omega \end{array}$$

Because exponence begins at the root, π applies to (13) first:

$$(16) \quad \begin{array}{c} \omega \\ \diagdown \\ \pi \rightarrow verb \end{array} \qquad \begin{array}{c} \omega \\ \diagdown \\ verb \rightarrow \pi \end{array}$$

Number ω is expounded next. Structural dominance translates to linear precedence. So, in both cases, ω is to be concatenated after the right edge of π . In the suffixal case, the right edge of π coincides with the right edge of the linear string built so far. So, ω is concatenated not merely after but in fact at the right edge of π : $verb \rightarrow \pi \rightarrow \omega$.

In the prefixal case, the right edge of π is no longer accessible. It forms part of the interstices of the string $\pi \rightarrow verb$. Without the intervention of special morphological operations (such as for infixation or metathesis; section 3.3), only the right edge of the whole string is accessible. Nonetheless, this right edge satisfies to the dominance-to-

postcedence mapping principle without disturbing the linear string that it is the job of exponence to create. The result is ω realised at distance from π , creating discontinuous morphology from a continuous syntactic object. ω is capable of this mobility because, when phi is targeted for exponence, it is the bottom of the structure, where exponence begins, that is concatenated. If mapped onto separate exponents, as in (13), the initial concatenation constrains only the lowest exponent of the phi structure.

The strings resulting from prefixal and suffixal phi are shown in (17).

$$(17) \quad \pi \rightarrow verb \rightarrow \omega \qquad \qquad \qquad verb \rightarrow \pi \rightarrow \omega$$

Instantiations are *ti-ktb-ūn* ‘you will write’ (3) and *ktab-t-ūn* ‘you wrote’ (4). The different arrangements result from the interaction of syntax, lexicon, and linearisation. There is no parametric setting for “discontinuous agreement languages”.

The basic derivation above can be (lightly) complicated in two ways. First, there can be three exponents. Such cases use the same principles but with an extra iteration of the process, as in (28). Second, exponents need not divide person and number neatly. This does not affect the derivation above. Given number features ω_1 and ω_2 and exponents π' , realising person plus one number feature, and ω' , realising the other—

$$(18) \quad \begin{array}{c} \omega_1 \\ \diagdown \\ \pi \mapsto \pi' \end{array} \qquad \qquad \qquad \omega_2 \mapsto \omega'$$

—the exponent subsuming person is placed at the bottom of the structure and the number-only exponent follows it, either discontinuously, $\pi' \rightarrow verb \rightarrow \omega'$, or continuously, $verb \rightarrow \pi' \rightarrow \omega'$ (see section 4). The ready availability of this derivation is theory dependent. In classic Distributed Morphology (Halle and Marantz, 1993), where exponents insert only into terminal nodes, person and number would first be fused together. In Mirror Theory, the linearisation of syntax creates a separate object, so no such terminal node restriction applies. A reviewer draws an analogy to spanning (Svenonius, 2016).

The foregoing derives both the generalisations with which we began. That person precedes other exponents (10) follows from π being the lowest head in the structure. If dominance translates to postcedence, then the exponent that precedes all others will correspond to the head dominated by other all heads expounded in a given functional sequence. Importantly, this order is preserved in cases where person and number (or gender) are discontinuous. One could imagine that, if the right edge of an exponent is unavailable as a docking site, then linearisation fails or requires some stipulation, which could equally favour the left edge of the string. The linearisation procedure here encounters no such issue. It amounts to finding the precedent object and docking at

the first subsequent site, the right edge. Syntactic contiguity thus guides the morphological component in establishing linear relations but does not override it, inserting exponents string internally. In the morphological component of the grammar, morphological relations take precedence over syntactic ones.

Prefix uniqueness (7) also follows. Prefixal agreement arises when a phi structure as a whole is positioned so as to linearise to the left edge of the previously established string. Once its first exponent, like π in (17), has been concatenated to form $\pi \rightarrow verb$, the only nondisruptive position available to further exponents that have to follow π is the right end of the string. The result is a unique prefix but potentially multiple suffixes.

The purview of the unique prefix condition must be properly understood. It is not that verbs in general can have only one prefix. Rather, only one prefixal exponent can result from each prefixally positioned syntactic object. Further exponents of each such object are forced to the end of the string. Section 4.1 shows that important properties of such iterative prefixation follow from this approach.⁵

3. On purely morphological accounts

To show the account above is correct, I consider two classes of alternative accounts of generalisations (7) and (10). The first class, in this section, deny syntax a role and attribute all aspects of discontinuous agreement to the morphological component of the grammar. I consider two different implementations of this idea. In the first (section 3.1), discontinuous agreement resides in the nature of the exponent list. By focussing on Berber data (section 3.2), I argue that this approach needs to be part of our analytic arsenal but its role lies in accounting for exceptions, not generalities. In the second implementation (section 3.3), the patterns are attributed to specific morphological operations rather than to general properties of the exponential mapping from syntax.

3.1. Affixation by stipulation

Afroasiatic agreement morphology has played a prominent role in the development of formal morphological theory, especially as concerns features and operations. The nature of affixality itself was not a key concern of such work. Instead, accounts like

⁵The constraint against multiple prefixes from single arguments is nuanced. In Kiowa, for instance, multiple exponents of a third plural object (*á*, *t*) can, and indeed must, both precede the verb, as in *b-á-t-tsán* ‘yours arrived’ (2PLD-3PLO-3NSGO-arrive.PF). There is, however, a prosodic boundary between agreement prefixes like *bát* and the following verb (Harbour, 2003). The mechanisms in the main text function within, not across, such domains. It is a matter for language-by-language investigation to determine what the relevant domains of any given verb are (see Hale 2001 on Navajo for one such study; a potentially challenging case of which I have only just become aware is Nez Perce, Deal in press).

Noyer 1992, Halle 1997, and Banksira 2000 stipulate prefixality versus suffixality item by item. For instance, Halle’s approach to the discontinuous second person masculine plural imperfective of an example like Classical Hebrew (19) posits the exponents in (20):

(19) t- dabb- ū
 2-speak.IMPF-PL
 ‘you will speak’ (Job 13:7)

(20) 2 ↦ t (prefix)
 PL ↦ ū (suffix)

The prefixality of person and the suffixality of number are a matter of stipulation in (20). Equally valid exponents could reverse their direction of affixation:

(21) 2 ↦ t (suffix)
 PL ↦ ū (prefix)

The result (with appropriate morphophonological adjustments, *ū-dibbar-t*) is in fact a licit word of Classical Hebrew but one with a different meaning: ‘and you.FSG will speak’ (discussed further in section 4.2). There is therefore no derivation of the Person First generalisation (10).

Also equally possible on this approach is the cooccurrence of two prefixal exponents:

(22) 2 ↦ t (prefix)
 PL ↦ ū (prefix)

Such combinations are not ruled out on phonological grounds (23)–(24), but, when they occur, the two prefixes do not expose a single phi structure. Prefixal ū is interpreted either as relating to argument structure (23) or as a conjunction (24):

(23) t- ū- maṭ
 3FSG-PASS.CAUS-die.IMPF
 ‘it shall be put to death’ (2 Kings 11:15)

(24) ū- t- mīṭ- ēm
 and.ASP-2-die.CAUS.IMPF-3MPL₀
 ‘and you.MSG put them to death’ (cf, Judges 20:13 *ūnmīṭēm* ‘and we put them to death’)

This approach therefore also does not deliver the prefix uniqueness (7). Moreover, (23)–(24) highlight further problems for person being first, in that an additional stipulation would be required regarding which affix in (22) precedes the other.

3.2. Exception by stipulation

The systematicity of Afroasiatic agreement argues against a stipulative, reversible approach to direction of affixation. This conclusion is underlined by a desultory affix genuinely exceptional to positional norms: the first person singular in Berber languages. To understand the nature of the exception, I first lay out a corollary of the account so far, concerning the base position to which discontinuous agreement resiles (that is, pulls back) when tweaked into monomorphemicity.

Discontinuous agreement arises, on my account, from a prefixed phi structure. This means that the prefixal position is the base position and the suffixal one is secondary. Straightforward as this may seem, it is a consequence of the account that deserves further attention. It has two effects, one strict, one looser. Exploration of the looser one brings the role of stipulation into its proper place.

The strict consequence concerns the base position of agreement. In Afroasiatic, tense-aspect is the key determinant of prefixality or suffixality. This is most clearly visible for monomorphemic agreement, as in (1)–(2), a prefixal imperfective and a suffixal perfective. There is no single value of tense-aspect for which pure prefixality and pure suffixality cooccur (*pace* the exceptions to which we presently turn) and, for any given tense or aspect, such variation as there is in affix position depends on phi features. For instance, plural *t-dabbr-ū* ‘you will speak’ (19) uses both a prefix and a suffix. If we change person to third, this configuration is maintained, *y-dabbr-ū* ‘they will speak’ (Job 32:7). However, if person is changed to first, or number to singular, the suffix is lost and only the prefixal position is maintained, as in *n-dabbēr* ‘we will speak’ (Job 18:2) and *t-dabbēr* ‘you will speak’ (Genesis 31:24). In all such examples, discontinuous agreement resiles to the prefixal position.

Where it is licit to suppress the prefix in a discontinuous form, the result is quite different from suppression of the suffix. Consider *t...-ū* (19) with each affix suppressed in turn:

(25) t- dabbēr
2-speak.IMPF
‘you.MSG will speak’ (Genesis 31:24)

(26) dabbr- ū
speak.IMP-PL

‘speak!’ (Genesis 50:4)

The two results are not uniform. Both (19) and (25) are imperfective whereas (26) is imperative. Imperatives in Classical Hebrew are, like perfectives, purely suffixal. Thus, (26) does not represent agreement resiling to the suffixal position but a wholesale change of aspect and force.

Thus, when we isolate phi-based effects on affix order, we have:

- (27) Base position generalisation
For a fixed value of tense, aspect, and so on, discontinuous agreement resiles to the position of the prefix, not the suffix.⁶

The Hebrew examples above are mono- or bimorphemic. The generalisation also holds for trimorphemic agreement, as Muher third person plurals, $y\text{-...-}m\text{-}^w/a$, illustrate. In the masculine singular, these too resile to the prefixal position, $y\text{-}$ (table 1).

The looser consequence concerns how the base position generalisation scales up to whole paradigms. If the whole phi structure is placed in just one position, prefixal or suffixal, for any given value of aspect, tense, and so on, then paradigms will be either uniformly suffixal or prefixal (where a ‘prefixal paradigm’ consists of monomorphemic prefixes and/or prefix and suffix combinations). The family as a whole lacks conjugations in which pure suffixes intermingle with pure prefixes and prefix/suffix combinations. The generalisation is robust enough that one finds the terms ‘prefixal conjugation’ and ‘suffixal conjugation’ routinely used in the literature.

The Berber languages, however, presents a challenge, as exemplified by Kabyle Berber. The more widespread of its two paradigms (table 2, right; Dallet 1982, 1025) mixes the purely prefixal (3MSG, 3FSG, 1PL) and discontinuous cases (2SG, 2MPL, 2FPL) with three cases that involve suffixes only (1SG, 3MPL, 3FPL). The first thing to note here is that none of this contradicts the base position generalisation. There is no discontinuous form that resiles to the suffixal position. However, this linear diversity, which is common across Berber (Prasse, 1973), runs against the general structure of Afroasiatic. Considering why puts stipulative affix position in its proper place.

Of the two cases of pure suffixality that this paradigm presents (first singular and third plural), that of third plurals is likely illusory, rooted in a zero person exponent. Compare them to the second person plurals, which involve the person exponent t (shared with second singular), the plural allomorph m , and, for the feminine, the gen-

⁶The generalisation can be taken to apply to purely suffixal conjugations (like the Biblical Aramaic perfective) but it is not linearly detectable.

	singular	plural		singular	plural
1	$-\gamma$	$-it$		$-\gamma$	$n-$
2M					$t\dots-m$
F	$-d$	$-it$		$t\dots-d$	$t\dots-m-t$
3M	$-\emptyset$			$y-$	$-n$
F	$-t$	$-it$		$t-$	$-n-t$
	‘Property’ verbs			Other tense/aspect	

Table 2: Kabyle Berber subject agreement

der exponent t .⁷ If we assume a syntax with gender above number above person, then linearisation proceeds as discussed above and shown below, though with one further iteration of exponence and linearisation for the feminine:

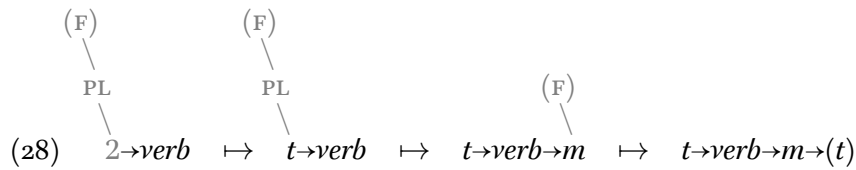
⁷Although it preempts the discussion, I list the full set of exponents for the paradigm here. As often occurs in exponential analysis, the solution is (nonthreateningly) nonunique. For conceptual reasons irrelevant here, I handle the syncretism of second singular masculine/feminine via impoverishment (rather than by an exponent with internal variable, of the form $\{M/F\}_{SG} \mapsto d$ in context $2_ _$):

- (i) $M/F \mapsto \emptyset$ in context $2SG _ _$

Given (i), the exponents in (ii) suffice:

- | | | |
|------|--|--|
| (ii) | a. $1PL \mapsto n$ | e. $2 \mapsto t$ |
| | b. $1SG \mapsto \rightarrow\gamma$ | g. $PL \mapsto \begin{cases} m \text{ in context } 2_ _ \\ n \text{ in context } 3_ _ \end{cases}$ |
| | c. $3MSG \mapsto y$ | h. $F \mapsto t$ |
| | d. $3 \mapsto \emptyset$ in context $PL _ _$ | |

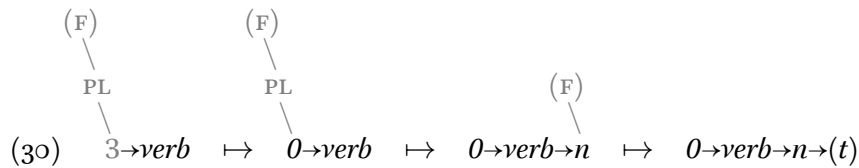
The only point of note not discussed in the main text is that, for third singular feminine, only feminine is exponed. There is no exponent for third, singular, or the two combined (given its gender specification, $3MSG \mapsto y$ is overspecified, hence excluded). Thus, despite being high enough in the structure to be shunted at times into a suffixal position (as in third plural feminine $0\dots-n-t$), in this case, as the only exponent, it is prefixal. Just like Aramaic t (32)–(33), the affix is peripatetic. Needless to say, this analysis assumes a difference between zero exponence and lack of exponence (cf, Halle and Marantz 1993 on *do*-support); readers who dislike this are free to posit $3FSG \mapsto t$ instead.



A concrete example is (29):

- (29) t- uli- m- t
 2-climb.PF-PL-FEM
 ‘you climbed’ (Mettouchi, 2018, 275)

The surface forms of the third person plurals parallel these except that there is no overt marker of person and the exponent of number displays a different allomorph, *n* not *m*. The relative positions of the overt markers and the gender exponents are the same. A simple account emerges if (28) is rerun with zero person and the appropriate number allomorph (discontinuities rooted in zero prefixes are further discussed in section 4.1):



A concrete example is:

- (31) uli- n- t
 climb.PF-PL-FEM
 ‘they climbed’ (Mettouchi, 2018, 275)

For first singular *y*, no analysis with a covert prefix suggests itself. Like third feminine singular *t*, it is an invariant exponent but, unlike 3FSG *t*, which is a suffix in the suffixal conjugation and a prefix in the prefixal one, 1SG *y* remains fixedly suffixed. The mobile feminine *t* is shared with other Afroasiatic languages, as illustrated for Aramaic below (with the superficial complication of epenthetic vowels and spirantisation; Rosenthal 1961, 60):

- (32) kitb- at
 write.PF-3FSG
 ‘she wrote’

- (33) ti- ktub
 3FSG-write.IMPF
 ‘she will write’

The fixity of first singular γ across both paradigms is, by contrast, an innovation of Proto-Berber (Prasse, 1973). In the prefixal conjugations of more conservative Semitic languages, first singular is ʔ , as in Aramaic (1). Berber has replaced this with γ from the suffixal conjugation but, crucially, has treated suffixality as an inherent part of the exponent’s specification.

- (34) 1SG $\mapsto \rightarrow\gamma$

The exponent $\rightarrow\gamma$ comprises both a phonemic string, γ , and an instruction to position it subsequent to other material. As per section 2, such instructions are taken target the edges of previously constructed strings, leading to suffixality.

This is the proper purview of order stipulation. It serves to specify an exceptionally positioned affix against the backdrop of a theory that captures more thoroughgoing rules of placement by general means. Item-by-item stipulation is the right mechanism for exceptions that prove rules, not for rules themselves.

- (35) Theoretical lemma 1
 The toolkit for discontinuous agreement should not include item-by-item stipulation of affixal direction, as this mechanism is required for exceptional affixal placement.

3.3. Why not morphological operations

As a component of the grammar, morphology has its own means of moving things about. These are the basis of infixation and metathesis (for which Frampton 2008 gives a common formal basis). At the segmental level, such processes are well established in Afroasiatic. Aramaic *hištkaḥ* ‘was found’ (Rosenthal, 1961, 45) illustrates this. This verb form derives from the root *škh* concatenated with the argument-structural and aspectual exponents, *hit* and *a*. Of these, the *t* of *hit* infixes after the first root consonant and *a*, after the last.

If metathesis is independently motivated, it might seem sensible to call on it to move agreement exponents about. Discontinuous agreement could be derived either from a double-prefixed or a double-suffixed verb:⁸

⁸The unpublished work Hewett 2022 explores this approach using the suffixal position as basic (36b). After the current paper had been resubmitted, *Natural Language & Linguistic Theory* pre-published a ver-

- (36) Potential metathetic derivations of discontinuous agreement
- a. $\pi \rightarrow \omega \rightarrow verb \mapsto \pi \rightarrow verb \rightarrow \omega$ (metathesis of *verb* and ω)
- b. $verb \rightarrow \pi \rightarrow \omega \mapsto \pi \rightarrow verb \rightarrow \omega$ (metathesis of *verb* and π)

Operations like metathesis are, however, both too powerful and too specific to account for the properties of discontinuous agreement. Metathetic derivation across the board is too *ad hoc* to count as an explanation.

First, there is the problem of distance. The Aramaic examples of segment metathesis above are local: $hi\langle tš \rangle k\langle ha \rangle \mapsto hištkaḥ$. For discontinuous agreement, the metathesis would need to be highly nonlocal, which raises the question of why, in a form like 3FPL *yīštakḥān* (my invention) third feminine plural *y-ān* prefixed to *hit-škaḥ* does not metathesise locally *hit* to produce *y-it-ān-škaḥ*.

This problem arises more acutely in yet more complex morphological systems. In Yimas, a Sepik language of Papua New Guinea that we will see more of shortly, a metathetic approach (from the prefixal position) to the discontinuous object agreement *pu...-mpwi* would have *mpwi* jumping six intervening landing sites to land seven morphemes away (37).

- (37) ta- pu-n- ant- mpi-ca- kia- k- nak- mpwi
 NEG-3_O-3SG_A-hear-SEQ-put-NIGHT-IRR-3SG_D-TALK_O
 ‘she did not ignore her’ (Foley, 1991, 480)

Floating segments can travel substantial distances in both Yimas and in Afroasiatic (e.g., Chaha, Banksira 2000). Yet they only travel so far as is necessary to secure safe landing. Putative metathesis for discontinuous agreement is unnatural in comparison. Local metathesis, as in Aramaic *hištkaḥ*, swaps adjacent segments. The morphological equivalent would swap adjacent morphemes, not fling them across whole strings.

Not only are the landing sites for metathesis problematic, so are the targets. The hypothetical metatheses in (36) happened to preserve the person first generalisation. Nothing forces choices of movement target that guarantee this. Equally legitimate would be:

- (38) Problematic metathetic derivations of discontinuous agreement
- a. $\pi \rightarrow \omega \rightarrow verb \mapsto \omega \rightarrow verb \rightarrow \pi$ (metathesis of $\omega \rightarrow verb$ and π)
- b. $verb \rightarrow \pi \rightarrow \omega \mapsto \omega \rightarrow verb \rightarrow \pi$ (metathesis of $\pi \rightarrow verb$ and ω)

sion Hewett's paper (<https://link.springer.com/article/10.1007/s11049-022-09559-w>). I have yet to work through it in detail but do not yet see grounds for retracting any of the points made in this article.

With trimorphemic agreement, as in Muher (table 1) and Kabyle Berber (table 2), the scope for aberrance is all the larger.

Just as there are languages like Berber that pinpoint the proper place of exponent-specific stipulation, so there are languages that do likewise for metathesis. The Australian language Walmatjari (Hudson 1978; glossing below as per Harbour 2008a, 216–217) displays discontinuous agreement for the agents in first-on-second and second-on-first scenarios. Examples include first exclusive plural *rna...-lu* (39) and second person dual *n...-pila* (40):

(39) ma- rna- n- ta- lu
 AUX-1EX_S-2_O-SG_O-PL_S
 ‘we *verb* you’

(40) ma- n- tarra-ngu-pila
 AUX-2_S-1EX_O-DU_O-DU_S
 ‘you two *verb* us two’

Exponence of some argument combinations results in *n* followed by retroflex *rn*, which the language does not allow. In *ma-n-rli-ngu-0* (AUX-2_S-1INCL_O-DU_O-SG_S), the phonotactic violation is fixed by epenthesis of the meaningless syllable *ta* (*ma-n-ta-rli-ngu*). In other cases, metathesis is invoked, as in *ma-n-rna-panya-pila* (AUX-2_S-1EXCL_O-PL_O-DU_S), which becomes *ma-rna-n-panya-pila* (hence, AUX-1EXCL_O-2_S-PL_O-DU_S).

Metathesis is a reasonable posit here for the same reason that exponent-specific stipulation of suffixality was for Berber. In both cases, we are faced with exceptional orders (a suffix where we expect a prefix, interleaving OSOS where we expect SOOS). In both cases, there is extra evidence of the exceptionality (the same suffix in another conjugation, a different repair in the same context). Moreover, unlike metathesis for discontinuous agreement, the operation applies here between adjacent morphemes, on a par with the infixation example with which we began. We are led to a further condition on possible accounts of discontinuous agreement similar to (35):

(41) Theoretical lemma 2
 The toolkit for discontinuous agreement should not include morphological ordering operations, as these mechanisms are required for exceptions.

3.4. Summary

This section has considered two purely morphological approaches to discontinuous agreement. Both aim to do away with the role attributed to syntax in my account. In

one, prefixality and suffixality, the shape of the string, are stored in the lexicon, on a par with all other idiosyncratic information about the shape of the affix. The other alternative shares my more pared down lexicon but relies on morphological operations to move one exponent into a discontinuous position. Both these approaches allow for a greater range of patterns than is attested. They furthermore fail to derive the likes of the person first (10) and base position (27) generalisations. There are, however, detectably exceptional affix orders for which idiosyncratic stipulation and morphological operations are arguably the correct approach. This exceptionality proves that the proper use for these mechanisms lies in accounting for exceptions. For rules themselves, my account is a more principled explanation.

4. On purely syntactic accounts

In light of syntactic theories endowed with fine-grained feature structures and/or intricate movement sequences (Kayne 1994, Cinque 2002, Caha 2009), this section explores whether one can do away with the role I have afforded to morphology, thus creating a purely syntactic account of discontinuous agreement.

Section 4.1 argues against a syntactic approach by considering derivations in which two arguments trigger discontinuous agreement at once. This argument demands a lengthier digression into Yimas than readers of an Afroasiatic journal might expect. However, the results carry over into Arabic dialects in a way that has not been previously noted.

Section 4.2 focuses on constructions in Classical Hebrew that are diagnostic of verb height. These show that prefixal agreement is impervious to height of verb movement and so cannot be attributed to curtailed syntactic movement. A more recent account that attempts to circumvent this conclusion via intermediate partial exponence is incompatible with agreement patterns of one construction central to the argument.

Given the complexities of the Classical Hebrew data, section 4.3 revisits the mechanism behind prefixal and suffixal placement of the whole phi set (which was taken as given when the core of the account was laid out in section 2). It argues that prefixation in Afroasiatic does not arise from syntactic operations *per se* but from a combination of how agreement is represented in the syntax and how such structures are interpreted postsyntactically. Suffixation, by contrast, is tied to deletion of structure.

4.1. Multiple splits flank

Yimas, unlike Afroasiatic and Walmatjari, displays discontinuous agreement across a range of arguments. Examples are given below for agents (42), goals (43), and objects

(44):⁹

(42) ka- *mpan*- tu- kr- *ηkt*
LIKE-1_A-2SG_O-kill-RFUT-PC_A
'We few will kill you.' (Foley, 1991, 266)

(43) pampak *mpan* ta- *kul*- *ηa*- kr- *ηkan*-ak
fastening stick.SG_V one.SG_V NEG-2PL_D-give-RFUT-PC_D- SG_O
'I won't give you a fastening stick.' (Foley 1991, 464; see note 11 re 2PL-...-PC)

(44) pamuj irmut ta- *pu*-nan- a- ti- *kia*- nt- *η*
leg.SG_{VI} shame NEG-3_O-2SG_D-DEF-feel-NIGHT-PRES-SG_{VI.O}
'Your leg has no shame.' (Foley, 1991, 301)

Overt discontinuities have a somewhat restricted distribution. In transitives, for

⁹I use 'agreement' to mean argument indexing morphology, abstracting away from cliticness, which is immaterial to my analysis. For a recent analysis which makes several notable advances, see Yuan 2020.

Example (42) involves a portmanteau of first person agent and second singular direct (or indirect) object agreement. Portmanteaux are a phenomenon not covered by mechanisms discussed so far. Distributed Morphology uses fusion to construct them (and, here, possibly impoverishment of number from second person singular). Trommer 1999 recasts such operations as contextual allomorphy (of, in this case, second singular in the presence of first person) and zero exponence (of first person). Trommer's approach could be enacted, leaving some additional facts about allomorphy aside, as:

(i) 2SG_O ↦ *mpan* in context 1_A___
1_A ↦ 0 in context 2SG_O___
PC ↦ *ηkt*

For unfused first person agents, number is generally exponed monomorphemically with person. Such exponents are blocked by (i), in which zero consumes person. The only number exponent available to the agent is one that never fuses with a first person agent, namely paucal. (To prevent third person number exponents realising, say, the plural of a first person plural here, third person number might be explicitly third person, not number only, or else agent plural could be impoverished in this context. This would still permit the paucal, assuming the features of Harbour 2014.)

I am not aware of any work on portmanteaux in Mirror Theory. Trommer's approach could be adopted here, or indeed a classic DM one. However, a simpler approach might be available. Since Mirror-Theoretic linearisation constructs a new object, exponence need not cleave as closely to syntax as it does in Distributed Morphology. Subjacent persons could be mapped onto a single exponent ($[1_A \ 1_{O \ 2}] \mapsto \textit{mpan}$), simulating the effect of Trommer's allomorphy-cum-zero-exponence without further ado. This leaves the number dominating 1 available for further exponence subsequent to *mpan*. I do not control the literature on portmanteaux (e.g., Svenonius 2016, Ostrove 2018, Banerjee 2021) well enough to guarantee that this potentially less constrained approach is defensible. What matters for the present paper is that the solution space is nonnull.

instance, they occur for first and second person, only in the paucal, as in (42)–(43), and for third persons, only in arguments sandwiched between negation and an *n*-initial morpheme (44).

When conditions for both discontinuities are met, these always flank, in the sense that one discontinuity occurs within the string encased by the other (Harbour, 2008a):

- (45) Flanking generalisation
In multiple discontinuities, one discontinuity flanks (i.e., contains the string containing) the other.

Walmartjari (39)–(40) illustrated this modestly, with bimorphemic but continuous object agreement flanked by discontinuous agent agreement. Yimas is more exuberant. It allows double discontinuities. Examples include (46), where the third singular object agreement for noun class IX *pu*-...-*a* flanks first paucal dative *kra*-...-*ŋkan*, and (47), where the third person object agreement for one-member noun class ‘talk’ *pu*-...-*mpwi* flanks second paucal agent *nan*-...-*ŋkan*:

- (46) wanwa ta- pu-n- kra- tkam-r- ŋkan-a
knife.SG_{IX} NEG-3_O-3SG_A-1PL_D-show-PF-PC_D- SG_{IX.O}
‘He didn’t show us few the knife.’ (William Foley, p.c.)
- (47) ta- pu-nan- ant- mpi-ca- kia- k- ŋkan-ak- mpwi
NEG-3_O-2PL_A-hear-SEQ-put-NIGHT-IRR-PC_A- 3SG_D-TALK_O
‘You few did not ignore her.’ (William Foley, p.c.)

Discontinuities of a more abstract form occur when third person *pu* is not licensed in a negated verb (because the subsequent morpheme is not *n*-initial). There is no overt prefix but the suffix occurs and, crucially, its position obeys the flanking generalisation, as comparison between (47) and (48) illustrates. This motivates a zero exponent for person and, hence, discontinuity $0 \rightarrow \dots \rightarrow \omega$, with the same flanking as in (46)–(47):

- (48) ta- 0- kay- ant- mpi-ca- kia- k- ŋkan-ak- mpwi
NEG-3_O-1PL_A-hear-SEQ-put-NIGHT-IRR-PC_A- 3SG_D-TALK_O
‘We few did not ignore her.’ (William Foley, p.c.)

The reality of this zero position is further reinforced by its being overtly occupied by *pia*, the prefixal counterpart to *pu/0*-...-*mpwi*, in the corresponding affirmative:

- (49) pia- kay- ant- mpi-ca- kia- k- ŋkan-akn
TALK_O-1PL_A-hear-SEQ-put-NIGHT-IRR-PC_A- 3SG_D

‘We few ignored her.’ (William Foley, p.c.)

Once discontinuities with null prefixes are recognised, Yimas in fact presents triple discontinuities. In contrast to other arguments in the language, third person datives are only ever suffixal. By the logic of the principles governing argument order,¹⁰ we would expect them to occur further from the verb than a first/second person agent. This is precisely what the suffixal order of paucal (for agent), third singular dative, and third person object (TALK) show in (47)–(49). We can therefore represent (47) as:

- (50) ta- pu-*0*- nan- ant- mpi-ca- kia- k- ŋkan-*ak*- mpwi
 NEG-3_O-3_D-2PL_A-hear-SEQ- put-NIGHT-IRR-PC_A- 3SG_D-TALK_O
 ‘You few did not ignore her.’

There is no challenge in accounting for these cases in terms of the theory given so far. Syntax is assumed, as before, to order whole phi structures according to Sepik-specific criteria. Exponence begins at the root and proceeds up the syntactic hierarchy (Bobaljik, 2000), hence leftward along the prefix chain. For (46), repeated as (51), syntax and linearisation of the complex verb up to the first argument yield (52):¹¹

- (51) wanwa ta- pu-n- kra- tkam-r- ŋkan-*a*
 knife.SG_{IX} NEG-3_O-3SG_A-1PL_D-show-PF-PC_D- SG_{IX.O}
 ‘He didn’t show us few the knife.’ (William Foley, p.c.)

- (52) $\begin{array}{c} \text{SG}_{\text{IX}} \quad \text{SG} \quad \text{PC} \\ \diagdown \quad \diagdown \quad \diagdown \\ [\text{NEG} \text{ [3O} \text{ [3A} \text{ [1D} \rightarrow \text{tkam} \rightarrow \text{r} \end{array}$

First person paucal is exponed by first plural *kra* and first/second paucal *ŋkan* resulting

¹⁰If all arguments are third person, the order is O₃-D₃-A₃-V (or O₃-A₃-D₃-V, no data decides between these orders), or any substring of these should one or more arguments be optionally absent. If only one argument is first or second person, its agreement occurs immediately preverbally (hence orders O₃-D₃-A_{1/2}-V and A₃-O_{1/2}-V; D only occurs with O₃). If both first and second person occur and one is dative, then there is no agent agreement (unless by portmanteau, as in (42), footnote 9). If neither is dative, then the verb is transitive and the order is A_{1/2}-O_{2/1} (with, for some person number combinations, obligatory portmanteaux or absence of agent agreement).

¹¹Some featural detail is absent from (52), raising the question of how what I’ve labelled for convenience as 1D–PC maps onto exponents for 1PLD and first/second PC. Where, in short, does the plural come from? Following Harbour 2014, I take plural and paucal in Yimas to share the features –atomic –minimal and to be differentiated by +additive and –additive respectively. The first plural exponent realises first person and –atomic –minimal. Applied to paucal, this leaves –additive unexponed and hence liable for realisation as a suffix.

(58) [Psn_O [Psn_A [Psn_D [[verb-Num_D-Num_A-Num_O [[[[[...]]]]]]]]]]

This delivers the flanking generalisation (45). There are, however, significant problems.

First, the base position generalisation (27) is lost. As in Afroasiatic, monomorphemic exponence resiles to the prefixal position of its discontinuous counterpart. If the agent of (47) is plural in lieu of paucal and the clause affirmative, not negative, then agent agreement reduces from **nan-...-ɲkan** to **nan-** and object agreement, from *pu-...-mpwi* to *pia-*. Both monomorphemic alternatives are shown in (59):

(59) *pia-* **nan-** ant- mpi-ca- kia- k- nakn
 TALK_O-2PL_A-hear-SEQ-put-NIGHT-IRR-3SG_D
 ‘You ignored her.’ (William Foley, p.c.)

The effect is mysterious on the syntactic approach. So long as PersonP and NumberP are nonlocal to each other, there is no good reason for the contents of one to be exponed in the other, let alone for that position obligatorily to be prefixal. The locality question can be fixed with adequate movements and landing sites, thus bringing any two heads (those hosting 3 and TALK, say) into a local enough relation for coexponence (by *pia* instead of *pu* and *mpwi*). However, the cause of each such movement would need to be justified. And, in an account with such easy access to movement, the question of why this should only ever yield prefixes looks unlikely to be answered.

A second problem arises from the person-dependent order of agent, dative, and object agreement. The O-A-D hierarchy posited in (57) is based on affix order in (46). In (47), where the agent rather than the dative is the sole nonthird person argument, the order is A-D-O (see footnote 10 on the full range of possible orders). While it is unobjectionable for a syntactic account to allow person values to affect the order of the Person_AP, Person_DP, and Person_OP, it is mysterious why a parallel reordering should take place for NumberP of the same arguments. These are supposed to be autonomous heads. Yet precisely such reorderings must be assumed or else hallmark flanking of multiple discontinuities is lost. And if merely assumed, not derived, person-shadowing reorderings of number merely stipulate the flanking generalisation (45) *post hoc*.

Both these problems are avoided on my account. The prefixal position is basic, so resiling comes for free. Syntax orders whole phi structures, so whatever affects person

(i) patn n- mpu-ɲa- taɲ- mama-k- n- tal- ci- t
 betelnut.SG_V 3SG_{V,O}-3PL_A-1SG_D-COM-bad- IRR-SG_{V,O}-CAUS-become-PF
 ‘They ruined my betelnut.’ (Foley, 1991, 321)

For syntactic derivations of discontinuous agreement in Afroasiatic, one could, by contrast, entertain head movement.

order affects number order.

Discontinuities for multiple arguments do not exist in Afroasiatic. However, double discontinuities arise in Arabic dialects with bipartite negation. Benmamoun 2000 and Benmamoun et al. 2013 argue that negative *ma-...-š* and its dialectal variants correspond to a single syntactic head. Nonetheless, it linearises as two separate affixes across a range of syntactic complements, including predicate nominals (60), prepositional phrases (61), and verbs (62):

(60) ma- ʔbib- š
 NEG-doctor-NEG
 ‘not a doctor’ (Benmamoun et al., 2013, 99)

(61) ma- ʔda- ha- š
 NEG-near-3FSG-NEG
 ‘not near her’ (Benmamoun et al., 2013, 99)

(62) ma- šrəb- na- š
 NEG-drink-1PL-NEG
 ‘We did not drink.’ (Jamal Ouhalla, p.c.)

My account of flanked splits extends to these cases provided there are syntactic elements in the right dominance relations for *ma* and *š* to expone. Lacking expertise in negation, I offer a placeholder solution with the right logical shape. Suppose that negation consists of a host head, say Laka’s (1990) Σ for polarity, and a feature that gives the head specific content, call it **NEG**:

(63) [Σ **NEG**]

I follow Adger and Svenonius 2011 in distinguishing between features and the heads that host them. In this asymmetric relationship, the head is the more basic entity, the prerequisite for the feature. I suggest that this primacy is reflected in exponence: if head and feature are expounded separately, it is the host head (Σ) that is targeted before the hosted feature (**NEG**):

(64) $\begin{array}{c} \text{NEG} \\ \diagdown \\ \Sigma \rightarrow \text{ʔbib} \end{array} \mapsto \begin{array}{c} \text{NEG} \\ \diagdown \\ \text{ma} \rightarrow \text{ʔbib} \end{array} \mapsto \text{ma} \rightarrow \text{ʔbib} \rightarrow \text{š}$

(For the monomorphemic negative *lā*, we posit simultaneous exponence of [Σ **NEG**] in appropriate contexts.)

When a verb with discontinuous agreement is negated, double discontinuities arise and, as in Yimas (and Walmatjari), they flank:

- (65) *ma- t- šərb- u- š*
 NEG-2-drink-PL-NEG
 ‘Do not drink!’ (Jamal Ouhalla, p.c.)
- (66) *ma- ta- n/t/y-šərb- u- š*
 NEG-IMPF-1/2/3-drink-PL-NEG
 ‘We/you/they do not drink.’ (Jamal Ouhalla, p.c.)

The last example has precisely the structure of Yimas (46), derived in (52)–(56): one discontinuity (*ma-...-š*) flanking another (*n/t/y-...-u*) with a third head, aspect, realised monomorphemically (*-ta-*) between the two prefixal parts.

A reviewer points to similar examples from Amharic—

- (67) *a- y-säbr- u- mm*
 NEG-3-break.IMPF-PL-NEG
 ‘They do/will not break.’ (Leslau 1995, 303; likewise, see Wetter 2010, 407)

—whilst caveating that it remains to be seen whether Amharic split negation is to be analysed as discontinuous realisation of a single head.

4.2. Classical Hebrew and the syntactic account

A purely Afroasiatic argument against purely syntactic approaches to discontinuous agreement can be mounted on the basis of Classical Hebrew. Shlonsky 1989, Nevins 2002, and Martinović 2019 derive differential affixality through different height of verb movement. Positing separate PersonP and NumberP (with the latter lower) in the extended verbal projection, they use movement to PersonP to produce suffixality and movement to a lower position at or above NumberP to produce discontinuous agreement with prefixal person and suffixal number.

An immediate problem with the approach arises with the person first generalisation (10). If the verb moves through Number to Person, the resultant affix order in the perfective should be *verb*→ ω → π . All relevant examples above—Aramaic (4), (9), Muher (6), table 1, and Berber (29), (31), table 2—display the opposite order, as per my account (cf, Rose 1996, Lowenstamm 2011, Hewett 2020).

Diagnostics of verb height in Classical Hebrew reveal a further problem. The ‘infinitive absolute’ (bold below) is a bare form of the verb that serves to focus, intensify,

or emphasise a fully conjugated, argument-taking verb of the same root (*italics*):

- (68) w- ʕattāh **hāloḵ** *hālak*-tā
 and-now go.INF.ABS go.PF-2MSG
 ‘And now that thou art surely gone.’ (Genesis 31:30 וְעַתָּה הָלַכְתָּ הַלְכָהּ וְהָלַכְתָּ)
- (69) **hāloḵ** ʔ- *ēlēk* ʕimmāk
 go.INF.ABS 1SG-go.IMP with.2MSG.PAUS
 ‘I will surely go with thee.’ (Judges 4:9 הֲלֹךְ אִלַּי עִמָּךְ)

These examples, perfective and imperfective respectively, are typical in that the infinitive absolute precedes the finite verb. This order is reversed in a well-defined set of constructions in which verb movement to the complementiser domain is frequently found crosslinguistically. These include constructions with imperative-like force, such as injunctives (70), and clause-chaining narrative force (71), a construction that focuses sequentiality and precludes all further fronting:

- (70) n- *ēl*ḵ- āh **hāloḵ** l- ḥallot
 1PL-go.IMP INJ go.INF.ABS to-entreat.INF.CONSTR
 ‘Let us go speedily to entreat.’ (Zecharia 8:21 הֲלֹכְהוּ לְחַלּוֹת)
- (71) lāmmāh-zzeh šillāḥ- t- o way- y- *ēlēk* **hāloḵ**
 why- this send.PF-2MSG-3MSG_O and.ASP-3MSG-go.IMP go.INF.ABS
 ‘Why is it that thou hast sent him away, and he is quite gone?’ (2 Samuel 3:24
 לָמָּה זָכַרְתָּ שִׁלַּחְתָּ וְיָלַךְ הַלּוֹךְ)

The reversal of order between infinitive absolute and finite verb precisely where a high verb is expected shows that the infinitive absolute diagnoses verb height in a manner similar to adverbs in Romance (Pollock, 1989). Verbs that follow it are lower, likely in Aspect, given the aspect-prominence of Classical Hebrew. Verbs that precede it are in the C domain. This conclusion is reinforced by the contrastive or topical nature of other constituents that precede infinitive absolute, such as *ʕattāh* ‘now’ in (68), contrasting with prior causal actions, or *mikkol ʕēṣ-haggān* ‘of every tree of the garden’ in (72), contrasting with the one forbidden tree:

- (72) mikkol ʕēṣ- haggān ʔākol t- oʔkēl
 of every tree.CONSTR-the garden eat.INF.ABS 2-eat.IMP
 ‘Of every tree of the garden thou mayest freely eat.’ (Genesis 2:16 מִכָּל עֵץ-הַגָּן, אָכַל תֹּאכַל)

There contrastiveness is predicted because their position before the infinitive absolute means that they too are in the C domain.

Given this diagnostic, (69) and (71) show that prefixal agreement is impervious to height of verb movement. In (69), a finite verb below the infinitive absolute has prefixal agreement. In (71), a finite verb above the infinitive absolute still has prefixal agreement. Prefixality is therefore independent of height of verb movement and cannot be attributed to syntax alone (Harbour, 2007).

Martinović 2019 argues against this conclusion by appeal to the idea that phase heads like C trigger exponence of their complement. At such points, syntax pauses, the complement of the phase head is exponed, and then syntax resumes using the output of exponence. In the case of (72), prefixality of person in [π 3 [Asp GO.IMPV]] is locked in and preserved by all subsequent verb movement. Whatever the merits of this approach for Wolof, Martinović’s prime focus, it only raises further problems in Classical Hebrew owing to a curious fact about one species of V-to-C triggers.

The forms of the verb under narrative conjunction (traditionally, ‘*wāw* consecutive’) are not identical to those lower in the clause. Stress shifts, for example, from *šāmártī* (1SG) and *šmárten* (2FPL) to *šāmartí* and *šmartén*. With this, there can be change of vowel quality, as in *yāqúm* to *yáqām*, and apocope, as in *yibkéh* to *yébk*. This means that Martinović’s approach must at least allow substantial overwriting.

A more substantive problem is the proposal that affixality is locked in prior to movement into the C domain. Classical Hebrew verbs show the very variation that this approach is designed to preclude. Imperfective exponents are used for the perfective, and perfective exponents, for the imperfective. For instance, *hālak* is perfective in (73) but the same form is imperfective after a narrative conjunction, *w-hālak* (74):

(73) w- lābān hālak li- ḡzoz ʔet- šoʔno
 and-Lavan go.PF.3MSG to-shear.INF.CONSTR ACC-sheep.3MSG
 ‘Now Lavan was gone to shear his sheep.’ (Genesis 31:19 וְלָבָן הָלַךְ לְגֹזֵם אֶת-צֹאֲנוֹ)

(74) w- hālak ʔal-kāl-ḡdotāyw
 and.ASP-go.PF.3MSG on-all-bank.PL.3MSG
 ‘And he shall go over all his banks.’ (Isaiah 8:7 וְהָלַךְ עַל-כָּל-גְּדֵדוֹתָיו)

Parallel examples for the prefixal conjugation are imperfective *y-ēlēk* in (75) and perfective *way-y-ēlēk* (76). In contrast to (73)–(74), where the normal and narrative conjunctions at the start of each sentence are identical in form, *w*, the narrative conjunction for prefixal verbs has its own form, *waC*, where the value of *C* is copied from the following consonant, hence *way* in (76). This provides further morphological evidence that

narrative conjunction is indeed different from ordinary conjunction.

- (75) hinnēh malʔākī y- ēlēk lḫāneykā
 behold angel.1SG 3MSG-go.IMPF before.2MSG
 ‘Behold, Mine angel shall go before thee.’ (Exodus 32:34 הִנֵּה מַלְאָכִי יֵלֵךְ לְפָנַיִךְ)
- (76) way- y- ēlēk ʔabrāhām way- yi- qqah ʔet- hā- ʔayil
 and.ASP-3MSG-go.IMPF Abraham and.ASP-3MSG-go.IMPF ACC-the-ram
 ‘And Abraham went and took the ram.’ (Genesis 22:13 וַיֵּלֶךְ אַבְרָהָם וַיִּקַּח אֶת-הָאֵילִם)

A syntactic account is inappropriate for facts such as these. Wherever syntax moves the verb relative to whole phi (or separate person and number) structures for the perfective and imperfective, it would then have to move the complex verb higher for the narrative forms while at the same time reversing the arrangements of phi and the verb. Such acrobatics are not the stuff of syntax.

- (77) Theoretical lemma
 Prefixedness does not solely depend on height of movement.

If the locus of explanation for discontinuous agreement is not the syntax, then, by process of elimination, it lies in the morphological component, as on my account.

4.3. Prefixation and suffixation at the morphosyntax interface

The intricacies of Classical Hebrew raise the question of what the precise division of labour between syntax and morphology is. Brief consideration shows that the answer will not be uniform crosslinguistically. In Yimas, for instance, person and argument role jointly determine proximity of each argumental phi structure to the verb, thus affording syntax an unambiguous role. For Afroasiatic, the role of syntax is, I believe, more limited, with different aspects (or tenses) having the same phi syntax. The difference arises in how the resultant structures are handled and then interpreted at the interface, leading to a honing of the account begun in section 2, with crucial reference to the root phi node, set aside until now.

For an aspect-prominent language like Classical Hebrew, I assume that Aspect is the locus of subject phi agreement.

- (78)
$$\begin{array}{c} \omega \\ \diagdown \\ [\text{Asp } \pm\text{perfective } [\varphi \pi]] \end{array}$$

This structure is a head, *Asp*, in the extended projection of the verb, hosting both an ‘endogenous’ feature, \pm perfective which specifies aspect, and an additional, ‘exogenous’ material, namely, a phi structure valued by the subject.

Older Generative models posit movement of V-to-*Asp* movement, which linearises with the verb before aspect, as shown in (79) (if that is your preference, stick with it). I follow the general approach to verb movement phenomena within Mirror Theory where there is no movement *per se*. Instead, some head in the extended projection is earmarked as the locus of exponence (the * diacritic of Brody 2000). A language may have default locus of exponence, like Aspect, and yet may override this default when higher functional material, in C, say, is present. This is the theoretical rendition of V-to-C phenomena. Irrespective of the locus of exponence, Aspect will be linearised after the verb, because the Aspect dominates V.

$$(79) \quad \text{verb} \rightarrow [{}_{\text{Asp}} \pm\text{perfective} \begin{array}{c} \omega \\ \diagdown \\ [\varphi \pi] \end{array}]$$

As per the discussion (16)–(18) and (63)–(64), linearisation concatenates the head of the structure, *Asp*, with the existing string, *verb*.

The question now is what linearisation makes of the complex entity that it now encounters. I suggest that the crux is that it is confronted with distinct syntactic entities, $[{}_{\text{Asp}} \dots]$ and $[\varphi \dots]$, from separate functional sequences, with $[{}_{\text{Asp}} \dots]$ dominating $[\varphi \dots]$. From an interface perspective, the phi structure looks like a specifier. It is a type of nominal projection selected by verbal projection. It is not part of the extended verbal projection. Making the simplistic assumption that, if it looks like a specifier, it is linearised like a specifier, we derive placement to the left of $[{}_{\text{Asp}} \dots]$. I assume that, unlike D, φ heads too small a structure to be linearised as a self-sufficient string (cf, Cardinaletti and Starke 1999) and so is linearised as a dependent of the verb. This translates to linearisation at the left edge of the string, given that linearisation only has access to edges, not innards (80):

$$(80) \quad \begin{array}{c} \omega \\ \diagdown \\ [\varphi \pi] \end{array} \rightarrow \text{verb} \rightarrow [{}_{\text{Asp}} \pm\text{perfective}]$$

Prefixal placement of agreement is therefore not due to a special syntactic or morphological process but is the default setting for full phi agreement at the morphosyntax interface.

For suffixal agreement to arise, the integrity of the phi structure must be compro-

mised so that it no longer looks to the interface like a full nominal structure. To this end, I suggest deletion of the root phi node (81). This deletion is not to be thought of in feature-geometric terms, according to which deletion deletes both its target and its target's dependents (e.g., Bonet 1991, Harley and Ritter 2002; contra which, see, e.g., Harbour 2014, 2016). Instead, deleting the root node is comparable to ellipsis in syntax or completing a row in Tetris: the bottom goes but higher material is unaffected. Since suffixal agreement is perfective in Classical Hebrew, this deletion is contextualised to +perfective.¹⁴

(81) $\varphi \mapsto \emptyset$ in the context of +perfective

Without its category-defining root node, this is no longer recognised as a nominal-like element to be linearised like a specifier. Instead, it is targeted for exponence at the same time and at the same linear position as other contents of $[_{ASP} \dots]$, making it suffixal.

A virtue of (81) is that it makes the relationship between perfective and suffixal exponence arbitrary. This allows for other triggers of suffixality, a flexibility that Afroasiatic demands. Modern Hebrew has replaced the aspect dominance of the classical language with tense dominance. For the modern language, the trigger for suffixal agreement is +past. In Akkadian, perfective was expounded as a root template and cooccurred with prefixal agreement. Suffixal agreement was confined to statives (Caplice, 2002). Somewhat similarly, Kabyle Berber reserves suffixal agreement for 'verbs of quality' (Dallet, 1982, 1025). In Afar, phonological properties of the root are the trigger (Kamil,

¹⁴To handle narrative conjunction—with perfective using exponents that are otherwise imperfective and *vice versa*—I can see two options. The context of (81) could be expanded disjunctively:

(i) $\varphi \mapsto \emptyset$ in the context of +perfective or and.ASP –perfective

On this approach, exponents of π and ω would have to be positionally conditioned rather than dependent on the value of \pm perfective, as value-specific exponents would not occur for both normal perfective and narrative imperfective. An alternative to a wider context of deletion is a morphological operation to make (81) as it stands sufficient. This would involve switching values of \pm perfective in narrative forms prior to (81) taking effect:

(ii) α perfective \mapsto $-\alpha$ perfective in context and.ASP

Though value switching is an unattractively powerful posit, it may be independently needed for gender on Classical Hebrew numerals, where masculine uses feminine desinences and *vice versa*. (On morphological polarity and applications α notation more broadly, see Noyer 1992, De Lacy 2012 and Harbour 2013, amongst others.)

2015). The Akkadian and Berber patterns are noteworthy in that suffixal agreement is confined to a specific context whereas prefixal agreement is heterogeneous. This heterogeneity accords with prefixality being the default reflex of linearisation.

The notion that suffixal agreement is tied to a loss of structure also receives support. In its suffixal conjugation, Berber (table 2) shows fewer distinctions and fewer exponents per person-number-gender combination, suggesting the deletion of the root node has spread into further impoverishment of the feature structure, particularly as concerns person, the lower part of the phi structure. Separately, in Semitic, there is the interesting levelling of what Akkadian still preserved as first singular *-ku* and second person *-t...* Ethiopic languages typically have *k* as the only consonant for all these persons; other Semitic languages, *t*. Again, then, in the suffixal conjugation, there is a loss of distinction in the lower part of the phi structure.

(82) Semantic variability of the prefixal conjugation

The prefixal conjugation is the more varied in terms of semantic range and is not tied to any specific function.

4.4. Summary

Attempts to afford syntax a monopoly on discontinuous agreement are empirically problematic. The flanking behaviour of double splits in Arabic, Walmatjari, and especially Yimas is syntactically unnatural, particularly as concerns variability of affix order and the base position effect. Attempts to tie affix position to verb height run into problems in Classical Hebrew, even allowing for interleaving of syntax with exponence. The role of syntax in Afroasiatic subject agreement is arguably quite limited (in contrast to a more substantive role in Yimas). Subject phi structures are uniform as to syntactic position and prefixality arises at the interface, whenever phi remains structurally integral. If reduced to a nonargumental size, however, it remains suffixal, along with its host head.

5. Allomorphy

Allomorphy is sensitive to both syntactic locality and morphological adjacency (Bonet and Harbour, 2012). Given the interplay between syntax and morphology argued for above, allomorphy provides a further testing ground. Examining distance in section 5.1 and timing in section 5.2 shows my account to make the right structural relationships available. (Allomorphy and discontinuous agreement in Afroasiatic is also the focus of Hewett 2020.)

	singular	dual
1	ma-kar-mana-ndək-naya	i-kar-mana-ndək-mbaya
2	n-kar-mana-ndək-naya	n-kar-mana-ndək-mbaya
3	0-kar-mana-ndək-oya	mbə-kar-mana-ndək-mbaya

Table 3: Wongan Kopar ‘was walking’ (PSN-walk-DUR-NRPST-NMB)

5.1. Distance

Substantial linear and syntactic distance can separate person from number in discontinuous configurations, as (47) and (i) in footnote 13 in Yimas attest. In the Wongan dialect of Kopar, a Sepik sibling of Yimas, number shows allomorphy for person despite substantial intervening material. The near past durative of ‘walk’ consists of person on the left, number on the right, and three discrete morphemes in between (PSN-walk-DUR-NRPST-NMB; Foley 2022, 73). Table 3 shows this for singular and dual. In the dual, number is invariant, *mbaya*. In the singular, by contrast, number shows participant-conditioned allomorphy, *naya* for first and second person, *oya* for third. This allomorphy seemingly spans three intervening morphemes.

Afroasiatic presents similar examples. Consider the second and third person plural in Berber prefixal paradigm (table 2). The exponent of number is sensitive to the value of person even though they occur at opposite ends of the verb. Illustrating for the (unmarked) masculine in Tarifit Berber, second person uses the plural allomorph *m* (83), third person, *n* (84):

(83) t- tɰw- aɤf- m
 2-PASS-catch.PF-2PL
 ‘you were caught’ (Jamal Ouhalla, p.c.)

(84) 0-tɰw- aɤf- n
 3-PASS-catch.PF-3PL
 ‘they were caught’ (Jamal Ouhalla, p.c.)

The linear distance may not be so impressive as in Sepik languages but this is due in part to the more fusional nature of the Afroasiatic verb.

Classical Hebrew displays sensitivities in the other direction. Where more archaic forms are preserved, the third person feminine plural, instead of syncretising with the masculine plural, has the distinct form in (85):

- (85) t - $i\bar{t}$ - $\text{\textasciixook}k\bar{e}m$ - $n\bar{a}h$
 3FEM-REFL-wise.IMPF-FPL
 ‘they will show themselves wise’ (Kautzsch, 1910, 154, 539)

This verb double expones feminine. Its prefix is shared with third feminine singular (86) and its suffix, with the (homophonous and likewise archaic) second feminine plural:¹⁵

- (86) t - $i\bar{t}$ - $\text{\textasciixook}k\bar{e}m$
 3FEM-REFL-wise.IMPF
 ‘she will show herself wise’ (Kautzsch, 1910, 154, 539)

- (87) t - $i\bar{t}$ - $\text{\textasciixook}k\bar{e}m$ - $n\bar{a}h$
 2-REFL-wise.VB.IMPF-FPL
 ‘you will show yourselves wise’ (Kautzsch, 1910, 154, 539)

Given that gender is typically bundled with number in Afroasiatic, the locus of exponence of feminine is the suffixal position, feminine plural $n\bar{a}h$. The prefixal position therefore shows allomorphy for a property of the suffix, in contrast to the previous examples, where the suffix shows allomorphy for properties of the prefix.

Linearly construed, all these cases involve long-distance allomorphy. Continuing with the last example, there are between t and $n\bar{a}h$, the verb root $\text{\textasciixook}km$, the vowel and gemination pattern $C_1aC_2C_2eC_3$ that makes the root verbal and imperfective, and the reflexive $(h)it$. All such cases are problematic in the light of theories that place tighter constraints than these on the distance over which allomorphy can act.

On my approach, the appearance of long-distance allomorphy is precisely that, an appearance. The allomorphy is actually achieved purely locally. Assume the exponents in (88):

- (88) $3 \mapsto t$ in context FEM ___
 FPL $\mapsto n\bar{a}h$ (archaic register)

When 3 is targeted for exponence, it is in the same phi structure as gender. This locality licenses the feminine-conditioned allomorph t before the feminine plural itself is exponed as $n\bar{a}h$ (89):

¹⁵Third feminine (85)–(86) and second person (87) begin with t . These are accidental homophones (Harbour, 2008b).

$$(89) \quad \begin{array}{c} \text{FPL} \\ \diagdown \\ 3 \rightarrow it \rightarrow \text{ḥakkēm} \end{array} \quad \mapsto \quad \begin{array}{c} \text{FPL} \\ \diagdown \\ t \rightarrow it \rightarrow \text{ḥakkēm} \end{array} \quad \mapsto \quad \begin{array}{c} nāh \\ \diagdown \\ t \rightarrow it \rightarrow \text{ḥakkēm} \end{array}$$

Person and number only become nonlocal at the next stage of the linearisation, when number is positioned string-finally:

$$(90) \quad t \rightarrow it \rightarrow \text{ḥakkēm} \rightarrow nāh$$

The details of Berber and Wongan Kōpar differ only in that the higher element shows allomorphy for the lower. For this direction allomorphy, exponence must be assumed to leave exponed syntactic features visible (or the conditioning is phonological), a natural position within Mirror Theory, where the linear object is separate from the output of syntax.

Not all cases of apparent long-distance allomorphy in Afroasiatic are internal to the phi structure. A reviewer draws my attention to examples from Argobba discussed in Hewett 2020. There, a plural suffix *u* is shared by second and third person (91)–(92):

$$(91) \quad \begin{array}{l} t\text{-awid-} \quad u\text{-ll-} \quad uxum \\ 2\text{-tell.IMPF-PL-AUX-2PL} \\ \text{'you tell' (Wetter 2010, 171 via Hewett 2020)} \end{array}$$

$$(92) \quad \begin{array}{l} y\text{-awid-} \quad u\text{-ll-} \quad ey \\ 3\text{-tell.IMPF-PL-AUX-3PL} \\ \text{'they tell' (Wetter 2010, 171 via Hewett 2020)} \end{array}$$

However, this plural obeys a complex allomorphic condition. When the verb bears a direct object suffix (situated before the auxiliary), the plural suffix is zero—but only if the subject is third person. Hence, *u* is present in second person (93) but absent from third person (94):

$$(93) \quad \begin{array}{l} t\text{-awid-} \quad u\text{-yyem-ll-} \quad uxum \\ 2\text{-tell.IMPF-PL-3PL}_0\text{-AUX-2PL} \\ \text{'you tell them' (Wetter 2010, 392 via Hewett 2020)} \end{array}$$

$$(94) \quad \begin{array}{l} y\text{-awid-} \quad 0\text{-yyem-ll-} \quad ey \\ 3\text{-tell.IMPF-PL-3PL}_0\text{-AUX-3PL} \\ \text{'they tell them' (Wetter 2010, 394 via Hewett 2020)} \end{array}$$

Hewett argues on the basis of further allomorphy in the object clitic itself that we are

dealing with a zero allomorph of the plural, not deletion of the plural feature. Thus, we have:¹⁶

$$(95) \quad \text{PL} \mapsto \begin{cases} 0 \text{ in context } 3\text{S} \text{ --- } \text{O} \\ u \end{cases}$$

The adjacency requirements of this allomorphy appear to place my analysis in a bind. The two conditioning factors, the person of the subject and the presence of an object, occurs on opposite sides of the verb. How can both be close enough at the point of allomorph determination to condition the outcome?

This bind relents to an elementary solution, however. Bobaljik 2000 proposes that, in terms of inspection up the tree, allomorph selection should be able to see the content of the next head up. His position was an enrichment of the claim, from Carstairs 1987, that only the category of the next head up is visible. The latter weaker position is all that the current data demand, however. The zero plural allomorph needs to inspect its own immediate environment, the phi structure, to see if it dominates third person and, additionally, needs to check the category of the next higher head to see if an object clitic is present. If both searches find their targets, the zero allomorph is used.

Accounts that place Person and Number at some distance along the clausal spine will potentially have trouble permitting this allomorphy. It therefore constitutes a further generalisation:

- (96) Allomorphic locality generalisation
Despite their linear distance, discontinuous person and number are able to condition allomorphy of one another.

5.2. Timing

A further allomorphic effect occurs in both Classical Hebrew and Yimas and is mentioned here both for the sake of completeness and because it yields a potentially informative divergence between the two languages. Yimas has a number of morphemes with allomorphy dependent on word finality. For instance, the paucal allomorph *ηkt* only occurs word-finally, as in (42). Word-medially, it occurs as *ηkan*, as in (43) and subsequent examples. Likewise, third singular dative is *nak* word-medially (97a) but *nakn* word-finally (97b):¹⁷

¹⁶In (95), I take “O” to mean an object visible to the morphology, hence a clitic object rather than a full DP which would be exponed under a separate cycle.

¹⁷The initial *n* is absent after *n*-final morphemes, giving medial *ak* in (43).

- (97) a. ta- pu-n- ant- mpi-ca- kia- k- *nak*- mpwi
 NEG-3_O-3SG_A-hear-SEQ-put-NIGHT-IRR-3SG_D-TALK_O
 ‘she did not ignore her’ (Foley, 1991, 480)
- b. pia- n- ant- kia- k- *nakn*
 TALK_O-3SG_A-hear-NIGHT-IRR-3SG_D
 ‘she listened to her’ (Foley, 1991, 480)

Word-final allomorphy presents a timing paradox. At the point when a third singular dative is under exponence, it is not yet known whether a further phi structure will also trigger discontinuous agreement. Until this is known, the correct allomorph cannot be determined. (This differs from the Argobba case above, where category information of the next head up suffices to determine allomorphy.)

A ready remedy has been independently proposed for other data. Mascaró 1996 and 2007 argue that not all allomorphic choices are determined at once. In particular, if an allomorph is sensitive to structure that has not yet been established, then the choice of allomorph may be deferred. If delayed allomorphy is to be entertained anywhere, then the word edge is the most reasonable place for it, as the end of the word is not defined until the end of word building. The options *nak* and *nakn* are thus metaphorically placed in a box the internal state of which is unknown (cf, De Belder 2020). When the box bumps against a further suffix or the word end, the lid pops up and a deterministic state is attained (Schrödinger, 1935).

Returning to Afroasiatic, Classical Hebrew has word-final allomorphy in suffixal second persons (Kautzsch, 1910, §51.1, 163, 540f). For the feminine singular, word-final 0 (98a) alternates with nonfinal *ī* (98b), and for the plural, final masculine and feminine *em* and *en* (99a) alternate with nonfinal *ū* (99b):

- (98) a. qṭal- t- 0
 kill.PF-2-FSG
 ‘you killed’
- b. qṭal- t- *ī*- hū
 kill.PF-2-FSG-3MSG_O
 ‘you killed him’¹⁸
- (99) a. qṭal- t- *em*
 kill.PF-2-MPL
 ‘you killed’
- b. qṭal- t- *ū*- hū
 kill.PF-2-PL-3MSG_O

¹⁸This form is indistinguishable from 1SGS.3MSG_O.

‘you killed him’

These data present a complexity beyond Yimas, one that also distinguishes them from Argobba in the previous subsection. The nonfinal forms from the suffixal conjugation are the same (modulo discontinuity) as in the prefixal conjugation. Suffixal second person feminine singular *-t-ī-* corresponds to *t-...-ī* in the prefixal conjugation, as does plural *-t-ū-* to *t-...-ū*. Given that *ī* and *ū* can be word final in the prefixal conjugation, treating them as nonfinal allomorphs is not a possibility (unless we regard surface *ī* and *ū* as arising from two homophones each). A solution in terms of allomorphy conditioned by a following object clitic, as in Argobba, can only be pursued if *ī* and *ū* of the prefixal conjugation (which occur irrespective of object clitics) are distinct exponents from those in (98b)–(99b).

Impoverishment presents an obvious solution in the case of plurals (if, indeed, homophony is not the correct solution here). Across three contexts, second and third person plurals display a cline of contrasts for gender. In the pronouns, both plurals distinguish gender (Kautzsch, 1910, 105):

(100) ʔatt-em/ēn
2- MPL/FPL
‘you’

(101) h-ēm/ēn
3-MPL/FPL
‘they’

In the suffixal paradigm, only second person maintains the distinction and does so via the same number-gender exponents as in (100)–(101):

(102) ʔāšī- t- em/en
do.PF-2-MPL/FPL
‘you did’ (Genesis 44:15 masculine, Exodus 1:18 feminine)

(103) hāy- ū
be.PF-PL
‘they were’ (Judges 8:30; both genders in the same verse)

And in the prefixal paradigm (archaicism aside), plurals lose gender entirely (references are to pairs of verses illustrating both masculine and feminine subjects):

- (104) ti-rʔ- ū
 2-see.IMPF-PL
 ‘you will see’ (Job 6:21 masculine, Song of Solomon 1:6 feminine with 1SG_O -nī)
- (105) y-ēlk- ū
 3-go.IMPF-PL
 ‘they will go’ (Joel 4:18 masculine, Hosea 14:10 feminine)

Given that the number suffix *ū* emerges whenever gender distinctions are absent, it is easily modelled as a default plural exponent that capitalises on the effects of impoverishment (a well precedented approach as in Bobaljik 2002, Kramer 2016). For third person plurals, the impoverishment applies irrespective of aspect. For second person, it occurs whenever the phi structure precedes something else, whether an object suffix or the verb itself.

Edge-sensitive allomorphy of the second feminine singular shows the same distribution as second plural. The zero exponent appears wherever the plurals maintain a gender distinction but is absent wherever the plurals lack gender. So, occurs in the pronoun (106) and suffixal conjugation (107):

- (106) ʔatt-0
 2- FSG
 ‘you’ (Genesis 24:23)
- (107) hālak-t- 0
 go.PF-2-FSG
 ‘you went’ (Ezekiel 16:47)

It is replaced by *ī* in the suffixal conjugation with object clitics (98b) and in the prefixal conjugation (108):

- (108) t-ēlk- ī
 2-go.IMPF-FSG
 ‘you will go’ (Judges 4:8)

Notwithstanding this parallel distribution, a solution impoverishing gender will not work here, as gender is the very thing that zero and *ī* express. A workable solution (bearing in mind that we are dealing with an exponent without further comparators, thus limiting evidence) is that zero occurs only if two conditions hold: word finality and linear adjacency to second person *t*. This solution is more closely analogous to Yimas, with the choice of allomorph deferred until the word edge has been built. (The

problem and solution are orthogonal to main concerns of this article and could probably be adopted by most proposals. So I do not phrase them as a further adequacy condition on accounts of discontinuous agreement.)

6. Conclusion

Investigation of discontinuous agreement in Afroasiatic and languages further afield reveals six generalisations:

- (7) prefix uniqueness
- (10) person first
- (27) base position
- (45) flanking
- (82) semantic variability of the prefixal conjugation
- (96) allomorphic locality

and three constraints on explanations, that is theoretical lemmas:

- (35) stipulation of affixal direction is for exceptions
- (41) operations of morphological reordering likewise
- (77) prefixality is independent of verb height.

My account of these relies on a syntax that simply deals in whole phi structures and a linearisation procedure that deals only in string edges. Neither claim is at all startling and yet the explanatory power of these two principles clearly outstrips that of accounts that make either syntax or morphology their sole locus of explanation.

I have, admittedly, adopted further principles (stones don't get birds without a sling to launch them):

- number dominates person
- dominance translates to postcedence
- exponence applies cyclically from the root outwards
- specifiers linearise to the left
- choice of allomorph can be delayed.

All are independently motivated in other work. Last, I take whole phi structures to be interpreted at the interface as specifiers of their host head. This is a question on which any account with host heads must take a position and, if my reading of Mirror Theory is correct, it is one that comes for free.

Given the bulk, intricacy, and diversity of the data that can be explained in this fashion, I conclude that discontinuous agreement results primarily from automatic aspects of the linearisation of syntactic structure and that this hallmark Afroasiatic phenomenon provides fundamental insight into the handover from hierarchical syntax to linearity of speech.

References

- Adger, David, Harbour, Daniel, and Watkins, Laurel J. 2009. *Mirrors and Microparameters: Phrase Structure Beyond Free Word Order*. Cambridge: Cambridge University Press.
- Adger, David and Svenonius, Peter. 2011. Features in Minimalist syntax. In Cedric Boeckx, ed., *The Oxford Handbook of Linguistic Minimalism*, 27–51, New York: Oxford University Press.
- Banerjee, Neil. 2021. Two ways to form a portmanteau: Evidence from ellipsis. *Proceedings of the Linguistic Society of America* 6:39–52.
- Banksira, Degif Petros. 2000. *Sound Mutations: The Morphophonology of Chaha*. Philadelphia/Amsterdam: John Benjamins.
- Benmamoun, Elabbas. 2000. *The Feature Structure of Functional Categories: A Comparative Study of Arabic Dialects*. Oxford: Oxford University Press.
- Benmamoun, Elabbas, Abunasser, Mahmoud, Al-Sabbagh, Rania, Bidaoui, Abdeladim, and Shalash, Dana. 2013. The location of sentential negation in arabic varieties. *Brill's Annual of Afroasiatic Languages and Linguistics* 83–116.
- Bobaljik, Jonathan. 2000. The ins and outs of contextual allomorphy, ms. McGill University, Montréal.
- Bobaljik, Jonathan. 2002. Syncretism without paradigms: Remarks on Williams 1981, 1984. In Geert Booij and Jaap van Marle, eds., *Yearbook of Morphology 2001*, 53–86, Dordrecht: Kluwer.
- Bonet, Eulàlia. 1991. Morphology after syntax: Pronominal clitics in Romance. Ph.D. thesis, MIT, Cambridge MA.

- Bonet, Eulàlia and Harbour, Daniel. 2012. Contextual allomorphy. In Jochen Trommer, ed., *The Morphology and Phonology of Exponence*, 195–235, Oxford: Oxford University Press.
- Brody, Michael. 2000. Mirror Theory: Syntactic representation in perfect syntax. *Linguistic Inquiry* 31:29–56.
- Brody, Michael and Szabolcsi, Anna. 2003. Overt scope in Hungarian. *Syntax* 6:19–51.
- Caha, Pavel. 2009. The nanosyntax of case. Ph.D. thesis, Universtitetet i Tromsø.
- Caplice, Richard. 2002. *Introduction to Akkadian*. Rome: Editrice Pontificio Instituto Biblico.
- Cardinaletti, Anna and Starke, Michal. 1999. The typology of structural deficiency: a case study of the three grammatical classes. In Henk van Riemsdijk, ed., *Clitics in the Languages of Europe*, 145–233, Berlin: Mouton de Gruyter.
- Carstairs, Andrew. 1987. *Allomorphy in Inflexion*. London: Croom Helm.
- Cinque, Guglielmo, ed. 2002. *Functional Structure in DP and IP*, volume 1 of *The Cartography of Syntactic Structures*. Oxford: Oxford University Press.
- Dallet, Jean-Marie. 1982. *Dictionnaire kabyle-français : parler des At Mangellat, Algérie*, volume 2. Paris: SELAF.
- De Belder, Marijke. 2020. A split approach to the selection of allomorphs: Vowel length alternating allomorphy in Dutch. *Glossa: A journal of general linguistics* 5:42.
- De Lacy, Paul. 2012. Morphophonological polarity. In Jochen Trommer, ed., *The Morphology and Phonology of Exponence*, 121–159, Oxford: Oxford University Press.
- Deal, Amy Rose. in press. Interaction, Satisfaction, and the PCC. *Linguistic Inquiry* 1–56.
- Foley, William. 1991. *The Yimas Language of New Guinea*. Stanford, CA: CSLI Publications.
- Foley, William. 2022. *A sketch grammar of Kopar: A language of New Guinea*. Berlin: De Gruyter.
- Frampton, John. 2008. *Distributed Reduplication*. Cambridge, MA: MIT Press.

- Hale, Kenneth. 2001. Navajo verb stem position and the bipartite structure of the Navajo conjunct sector. *Linguistic Inquiry* 32:678–693.
- Halle, Morris. 1997. Distributed Morphology: Impoverishment and Fission. In Benjamin Bruening, Yoonjung Kang, and Martha McGinnis, eds., *PF: Papers at the Interface (MIT Working Papers in Linguistics 30)*, 425–49, MIT, reprinted in Jacqueline Lecarme and Jean Lowenstamm and Ur Shlonsky, 2003, eds., *Research in Afroasiatic Grammar: Papers from the Third Conference on Afroasiatic Languages, Sophia Antipolis, France 1996*, 125–50, Amsterdam: Benjamins.
- Halle, Morris and Marantz, Alec. 1993. Distributed Morphology and the pieces of inflection. In Kenneth Hale and Samuel Jay Keyser, eds., *The View from Building 20*, 111–176, MIT Press.
- Harbour, Daniel. 2003. The Kiowa case for feature insertion. *Natural Language and Linguistic Theory* 21:543–78.
- Harbour, Daniel. 2007. Against PersonP. *Syntax* 10:223–243.
- Harbour, Daniel. 2008a. Discontinuous agreement and the Syntax–Morphology interface. In Daniel Harbour, David Adger, and Susana Béjar, eds., *Phi Theory: Phi Features across Modules and Interfaces*, 185–220, Oxford: Oxford University Press.
- Harbour, Daniel. 2008b. On homophony and methodology in morphology. *Morphology* 18:75–92.
- Harbour, Daniel. 2013. “Not plus” isn’t “not there”: Bivalence in person, number, and gender. In Ora Matushansky and Alec Marantz, eds., *Distributed Morphology Today*, 135–150; references, 223–249, Cambridge, MA: MIT Press.
- Harbour, Daniel. 2014. Paucity, abundance, and the theory of number. *Language* 90:185–229.
- Harbour, Daniel. 2016. *Impossible Persons*. Cambridge, MA: MIT Press.
- Harley, Heidi and Ritter, Elizabeth. 2002. Person and number in pronouns: A feature-geometric analysis. *Language* 78:482–526.
- Hewett, Matthew. 2020. On the autonomy of Fission: Evidence from discontinuous agreement in Semitic. Ms., University of Chicago.

- Hewett, Matthew. 2022. Allomorphy in semitic discontinuous agreement: Evidence for a modular approach to postsyntax. Ms., University of Chicago.
- Hudson, Joyce. 1978. *The Core of Walmatjari Grammar*. New Jersey: Humanities Press Inc.
- Kamil, Mohamed Hassan. 2015. L'afar : description grammaticale d'une langue couchitique (Djibouti, Erythrée et Ethiopie). Ph.D. thesis, Université Sorbonne, Paris Cité.
- Kautzsch, Emil. 1910. *Genesis' Hebrew Grammar*. Oxford: Clarendon Press, second edition, A. E. Cowley trans./ed.
- Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.
- Kramer, Ruth. 2016. Syncretism in Paradigm Function Morphology and Distributed Morphology. In Heidi Harley and Daniel Siddiqi, eds., *Morphological Metatheory*, 95–120, Amsterdam: Benjamins.
- Laka, Itziar. 1990. Negation in syntax: on the nature of functional categories and projections. Ph.D. thesis, Massachusetts Institute of Technology.
- Leslau, Wolf. 1995. *Reference grammar of Amharic*. Wiesbaden: Harrassowitz.
- Lowenstamm, Jean. 2011. The phonological pattern of phi-features in the perfective paradigm of Moroccan Arabic. *Brill's Journal of Afroasiatic Languages and Linguistics* 3:140–201.
- Martinović, Martina. 2019. Interleaving syntax and postsyntax: Spellout before syntactic movement. *Syntax* 22:4.
- Mascaró, Joan. 1996. External allomorphy and contractions in Romance. *Probus* 8:181–205.
- Mascaró, Joan. 2007. External allomorphy and lexical representation. *Linguistic Inquiry* 38:715–735.
- Mettouchi, Amina. 2018. The interaction of state, prosody and linear order in Kabyle (Berber): Grammatical relations and information structure. In Mauro Tosco, ed., *Afroasiatic: Data and perspectives*, 261–286, Amsterdam: John Benjamins.
- Meyer, Ronny. 2020. Gurage (Muher). In John Huehnergard and Na'ama Pat-el, eds., *The Semitic Languages*, 227–256, London: Routledge.

- Nevins, Andrew. 2002. Fission without a license. Concordia University, Colloquium Series.
- Noyer, Rolf. 1992. Features, positions and affixes in autonomous morphological structure. Ph.D. thesis, MIT.
- Ostrove, Jason. 2018. Stretching, spanning, and linear adjacency in Vocabulary Insertion. *Natural Language and Linguistic Theory* 36:1263–1289.
- Pollock, Jean-Yves. 1989. Verb movement, Universal Grammar and the structure of IP. *Linguistic Inquiry* 20:365–424.
- Prasse, Karl-Gottfried. 1973. *Manuel de grammaire touarègue (tǎhǎggart)*, volume 6–7: Verbe. Copenhagen: Akademisk Forlag.
- Rose, Sharon. 1996. Inflectional affix order in Ethio-Semitic. In Jacqueline Lecarme, Jean Lowenstamm, and Ur Shlonsky, eds., *Studies in AfroAsiatic Grammar*, 337–359. The Hague: Holland Academic Graphics.
- Rosenthal, Franz. 1961. *A Grammar of Biblical Aramaic*. Wiesbaden: Otto Harrassowitz, 5th (1983) edition.
- Schrödinger, Erwin. 1935. Die gegenwärtige Situation in der Quantenmechanik. *Naturwissenschaften* 23:807–812.
- Shlonsky, Ur. 1989. The hierarchical organization of subject verb agreement. Ms, University of Haifa.
- Svenonius, Peter. 2016. Spans and words. In Daniel Siddiqi and Heidi Harley, eds., *Morphological Metatheory*, 201–222. Amsterdam: Benjamins.
- Travis, Lisa. 1984. Parameters and effects of word order variation. Ph.D. thesis, MIT.
- Trommer, Jochen. 1999. Morphology consuming syntax' resources: Generation and parsing in a minimalist version of distributed morphology. In *Proceedings of the ESSLI Workshop on Resource Logic and Minimalist Grammars, Utrecht*.
- Wetter, Andreas. 2010. *Das Argobba: Eine deskriptive Grammatik der Varietät von Shonke und Tollaha (Zentraläthiopien)*. Cologne: Rüdiger Köppe.
- Yuan, Michelle. 2020. Dependent case and clitic dissimilation in Yimas. *Natural Language & Linguistic Theory* 38:937–985.