Deconstructing subcategorization:
Conditions on insertion versus position

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1 Introduction

The empirical contrast between infixation and suppletive allomorphy is deceptively straightforward to describe. Consider infixation of the Actor Focus exponent *um* in Chamorro: this exponent has a phonological condition on its realization, namely, that it must precede a vowel. When combining with a vowel-initial stem, *um* simply precedes the stem, (1a), but when combining with a consonant-initial stem, *um* must be realized inside the stem in order to satisfy this phonological condition, (1b).

(1)   Infixation in Chamorro (Yu 2007, 89, citing Topping 1973, 185)

    a.   V-initial stem: *um-epanglo* 'look for crabs' (root: *epanglo*)

    b.   C-initial stem: *tr<um>isti* 'become sad' (root: *tristi*)

Now consider the third person possessor exponent *y* in Tzeltal: this exponent also has a phonological condition on its realization, also that it must precede a vowel. With a vowel-initial stem, *y* precedes this stem, (2a), just like *um* above. But, whereas *um* in Chamorro is allowed to show up inside of its stem, *y* cannot, (2b); instead, a different exponent is chosen for non-vowel-initial stems, *s*.

(2)   Suppletive allomorphy in Tzeltal (Paster 2006, 59, citing Slocum 1948, 80)

    a.   V-initial stem: *y-ahwal* 'his ruler' (root: *ahwal*)

    b.   C-initial stem: **m<y>ul* 'his sin' (root: *mul*)   (cf. *s-mul*)

The y/s alternation is a case of phonologically-conditioned suppletive allomorphy.

The question we raise in this squib is as follows. If Tzeltal y and Chamorro um both have the same (or at least a similar) phonological condition on their realization—they both must precede a vowel—why do the exponents behave differently? More specifically stated: why can um show up inside of its stem to satisfy the phonological condition on its realization, while y cannot? And more generally stated: what differentiates the behavior of infixes from that of suppletive allomorphs?

We entertain several possible answers, homing in on two hypotheses in particular: (i) an approach we refer to as *enriched subcategorization*, which takes there to be one mechanism governing both infixation and suppletion, with their differences coming from enrichments to an exponent's well-formedness condition, and (ii) an opposing approach we refer to as *split subcategorization*, which teases apart a mechanism governing infixation (a condition on an exponent's *position*) from one governing suppletion (a condition on an exponent's *insertion*). On the basis of a number of theoretical and empirical considerations, we argue for the latter approach: subcategorization must be deconstructed, even at the fine-grained level of interest here, as used to regulate individual exponents.

In §2, after a brief introduction to the concept of subcategorization, we present our split subcategorization proposal. In §3, we introduce a set of alternative approaches to the infixation/suppletion distinction, turning to a more in-depth comparison in §4 of the split vs. enriched subcategorization approaches and arguing for the former. §5 explores some implications of our findings.

2 Background and proposal

The mechanism of *subcategorization* has been used for decades to account for many sorts of idiosyncratic behaviors of lexical items, ranging from argument structure and syntactic complement selection to second positionhood and prosodic structure building (see, e.g., Chomsky 1965, 1981; Grimshaw 1979; Lieber 1980; Kiparsky 1982; Selkirk 1982; Inkelas 1990; Anderson 1992; Orgun 1996; Siddiqi 2009; Bennett et al. 2018; Sande et al. 2020). In this broad sense, subcategorization is used to specify what is required for the grammatical/licit realization of a lexical item, i.e., what is "missing" in order for the lexical item to be (in some sense) licensed. We focus on the use of subcategorization for regulating the idiosyncratic behaviors of *individual exponents* (morphs, vocabulary items), in particular, for infixal positioning and suppletive allomorphy (see, e.g., Inkelas 1990; Halle and Marantz 1993; Paster 2005, 2006, 2009; Yu 2007). For now, we put aside the myriad other uses

of subcategorization, though we'll return to them briefly at the end of §5.

At the level of individual exponents, subcategorization has been used to subsume two particular types of restrictions that we'll be interested in here. The first type—which we henceforth refer to as Conditions on Insertion (COINs)—determine *whether* an exponent is allowed to be inserted in a given environment. Subcategorization frames that impose a COIN are employed for suppletive allomorphy, as well as some cases of morphological compatibility and gaps (see, e.g., Lieber 1980; Jensen 1990; Booij and Lieber 1993; Halle and Marantz 1993, 1994; Booij 1998; Bobaljik 2000; Paster 2005, 2006, 2009; Bye 2008; Hannahs 2013; Harley 2014; McPherson 2014, 2019; *i.a.*). The second type—Conditions on Position (COPs)—regulate *where* an exponent must be positioned relative to a (phonological or prosodic) pivot.[1] Subcategorization frames that impose a COP are used primarily for infixation (see, e.g., Kiparsky 1986; Inkelas 1990; Cohn 1992; Blevins 1999; Yu 2003, 2007). Given that the same machinery (subcategorization) with the same scope (over individual exponents) has been used for both suppletion and infixation, a natural question that arises is whether COINs and COPs are fundamentally the same mechanism or two different mechanisms.

Our proposal is that COINs and COPs are two formally distinct mechanisms, universally ordered with respect to each other, with COINs taking precedence over COPs. As noted in the introduction, we refer to this approach as *split subcategorization*. COINs are evaluated at the point of choosing an exponent to realize a morpheme, and they place an environmental pre-condition on the insertion of a particular exponent. COPs are evaluated at a derivationally later point and (unlike COINs) can compel displacement of an exponent to satisfy the condition. Speaking in these terms, the difference between Chamorro *um*, (1), and Tzeltal *y*, (2), is as represented in (3).[2]

(3)   Split subcategorization restrictions

     a.   [AF] : *um* / COIN: none; COP: __V   (Chamorro)

     b.   [3POSS] : *y* / COIN: __V; COP: none   (Tzeltal)

What (3a) states is that *um* can be inserted with any stem (it has no COIN), but it must end up

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[1]We have adapted this *whether*/*where* framing from Paster (2009, 19-20).

[2]Throughout this squib, we adopt a simple notation for introducing exponent-specific subcategorization frames, schematized in (i). (If relevant to the account being discussed, we will differentiate frames as being COINs or COPs.)

(i)   [MORPHOSYNTACTIC FEATURE] : *exponent* / CONTEXT__CONTEXT

We do not intend for these to be taken as the ultimate representations of subcategorization frames, an issue outside of the scope of this squib.

linearly preceding a vowel. On the other hand, (3b) states that y can only be inserted when it combines with a vowel-initial stem, and has no displacement (infixal) properties (it has no COP).

We are not the first to propose a split among sub-types of subcategorization. Some kind of split has been argued for in a variety of works, e.g., "passive subcategorization" vs. "active subcategorization" (Inkelas 1990), "anchoring" vs. "selection" (Bye 2008), "linear distribution" vs. "allomorphic selection" (Yu 2017). The split we argue for is not identical to that made in any of these proposals. Still, it should be noted that the COIN/COP split we argue for is *assumed* in much work in Distributed Morphology and related approaches (e.g., Halle and Marantz 1993; Embick 2010; Bye and Svenonius 2012), encoded in the distinction between Vocabulary Insertion (where COINs are evaluated) and later (morpho)phonological operations (where we propose COPs would be evaluated).

Before wrapping up this section, we want to clarify an additional assumption we make under the split subcategorization approach: neither COINs nor COPs govern the prefixal/suffixal status of an exponent. Rather, basic concatenated order (including whether an affixal morpheme precedes its stem, as a prefix, or follows its stem, as a suffix) is established independently from *and prior to* both COINs and COPs. Recall that our focus is on idiosyncratic properties of individual exponents, not on regular, class-based behavior—prefixation/suffixation is typically a property of (classes of) *morphemes*, not exponents. The role of the separation of COINs/COPs from basic order will become clear throughout the following sections, and we turn specifically to justifying this assumption in §5.

3 Alternative accounts

There are several ways to approach infixation and suppletive allomorphy that (unlike split subcategorization, §2) do not take them to result from two distinct mechanisms.[3]

One potential way to regulate suppletive allomorphy vs. infixation is to appeal to optimization: when infixation will produce a phonotactically well-formed/better output, then an exponent is allowed to be infixal, but when it will produce an ill-formed/worse output, then there is suppletive allomorphy (or perhaps a morphological gap) instead. Such an account would point to the

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[3]One alternative we do not discuss, suggested to us by Michal Starke (p.c), is that it may merely be the fact of having a competitor exponent (as in Tzeltal, with s as a competitor for y) vs. not having a competitor exponent (as for infixal Chamorro *um*) that determines whether infixation is allowed, with infixation possible just in case there is no relevant competitor. However, it is well-documented that an exponent may be prosodically/phonologically circumscribed and also not have a systematic competitor, yet still not be allowed to be an infix. See, for example, McCarthy and Prince 1993a's descriptions of Maori and Kinande, and Carstairs-McCarthy 1998's discussions of English and Classical Attic Greek. In §4, we will see several more types of reasons that we should tease apart infixation (being allowed to appear inside a stem) from suppletive allomorphy (having a competitor exponent) as orthogonal conditions.

ill-formedness of *m<y>ul, (2b), as due to a phonotactic problem—this phonotactic problem both prevents y from infixing, and stops y from appearing prefixally on consonant-initial stems (*y-mul). However, an account of the infixation/suppletion distinction on purely phonotactic grounds is ultimately untenable—it is well-attested that infixation can be non-optimizing and even anti-optimizing (see, e.g., Blevins 1999; Yu 2007; Kalin 2021). Infixation is *not* generally blocked by creating a phonotactically ill-formed output. As an illustration of this, consider the fact that it is quite common for infixes to create phonotactic problems that then need to be repaired, e.g., see the glide insertion involved in Hunzib infixation in §4.3 (and for many more cases, see Yu 2007 and Kalin 2020a).

An optimization-based account that is supplemented with certain types of morphological and morphophonological constraints provides a more suitable toolset. For example, McCarthy and Prince (1993a, 120) propose a typology that emerges from three types of constraints, given in (4) (adapted):

(4)   a.   EDGEMOSTNESS: An affix should be realized at X edge of the stem (X = left or right)

       b.   ALIGN-AFFIX: An affix should be realized at X edge of Y pivot (X = left or right, and Y = a particular phonological/prosodic category)

       c.   M-PARSE: Outputs must be morphologically parsed (i.e., must not be unjoined sets)

EDGEMOSTNESS compels the prefixal or suffixal positioning of a particular exponent, while an exponent subject to an ALIGN-AFFIX constraint may exhibit infixal or suppletive behaviors. M-PARSE militates against the "Null Parse" (failed output). If both ALIGN-AFFIX and M-PARSE dominate EDGEMOSTNESS, then infixation will be allowed, because the requirements to (i) align an affix with respect to a phonological/prosodic pivot and (ii) have a successful morphological parse are more important than realizing the affix at the edge. This would be the case for Chamorro *um*, (1b). If EDGEMOSTNESS and ALIGN-AFFIX dominate M-PARSE, then the failure to satisfy both positional requirements simultaneously (being at a particular edge *and* orientation with respect to a pivot) can result in a Null Parse, i.e., a gap, which may or may not be filled by a different (suppletive) exponent. For Tzeltal, y would be subject to EDGEMOSTNESS(LEFT) as well as an ALIGN-AFFIX constraint requiring it to precede a vowel; when y combines with a vowel-initial stem, both constraints are simultaneously satisfied, but when the stem is consonant-initial, y is not allowed to appear at all, (2b). A similar sort of typology is suggested by Yu (2007), but with infixation blocked in Tzeltal-like cases by a high-ranked constraint enforcing non-interruption of morphological constituents (in place

of the SMALL CAPS EDGEMOSTNESS constraint of McCarthy and Prince 1993a). Under both types of accounts, a single ALIGN-AFFIX constraint has a COIN or COP effect depending on relative constraint rankings.

A third possibility is what we referred to in the introduction as the enriched subcategorization model. Under such a model, infixation and suppletive allomorphy are differentiated using frames enriched with elements like stem boundaries and optional segments (see, e.g., Inkelas 1990; Blevins 1999; Paster 2006; Papillon 2021). Such accounts could model Chamorro *um* vs. Tzeltal *y* as in (5):

(5)   a.   [AF] : *um* / [$_{STEM}$ (C)(C)__V ...]   (Chamorro)

       b.   [3POSS] : *y* / __[$_{STEM}$ V ...]   (Tzeltal)

Since *um*'s frame permits it to appear inside of its stem (after one or two Cs), this exponent may be an infix, while *y*'s frame requires it to appear at the leftmost edge. Similar to the optimality-based accounts, there is no COIN frame distinct from a COP frame; rather, a frame will have a COIN or COP *effect* depending on aspects of the frame's enrichments. Note that it is inescapable in the enriched subcategorization model that frames *also* specify the prefixal/suffixal nature of an exponent, unlike what we assume for the split subcategorization model (see end of §2).

Since the optimality-based accounts and enriched subcategorization are similar in their predictions, but the latter is more notationally similar to our approach, we focus on the latter for comparing to split subcategorization, §4. We briefly note the implications for optimality-based accounts in §4.5.

4   Comparing split and enriched subcategorization

In this section, we pit split subcategorization against enriched subcategorization, restated in (6) and (7) to clarify how they treat Conditions on Insertion (COINs) and Conditions on Position (COPs).

(6)   **Split subcategorization:** An exponent may be subject to a COIN and/or a COP, which are two distinct types of subcategorization condition.

(7)   **Enriched subcategorization:** An exponent may be subject to one subcategorization condition, which may be enriched in different ways to produce a COIN and/or COP effect.

We leverage four arguments for split subcategorization over enriched subcategorization, (8):

(8) a. **Condition content**: COINs and COPs display distinct typological profiles; only COINs can refer to specific phonological segments/features and to idiosyncratic classes of roots.

b. **Elsewhere exponents**: Collapsing COINs and COPs sacrifices the true elsewhere distribution of an 'elsewhere' exponent in cases of infixation.

c. **Condition complexity**: By separating COINs and COPs, both types of conditions can be stated simply, locally, and non-disjunctively.

d. **Ordering effects**: A typological gap in infixal allomorphy reveals that COINs are satisfied at a derivationally earlier point than COPs (i.e., they do not apply simultaneously).

The following subsections take up each of these arguments in turn.

4.1 Argument 1: The content of subcategorization frames

We know from Chamorro and Tzeltal, (1)–(2), that COINs and COPs can refer to at least some of the same types of elements in their frames, namely, the vowel/consonant distinction. However, the overlap is not complete—COINs and COPs have different typological profiles as to the substance of their frames, both with respect to phonology and morphosyntax. We do not attempt to exhaustively differentiate the frames of COINs and COPs, but rather, we highlight two major, well-documented differences: (i) COINs can refer to specific segments and fine-grained phonological features, whereas COPs cannot, and (ii) COINs can refer to an idiosyncratic class of roots, whereas COPs cannot.

We'll start by examining the phonological frames of COPs more closely. Recall that the core outcome of a COP is infixation. Yu (2003, 2007) establishes two common crosslinguistic classes of infixal "pivots" (building on Ultan 1975; Moravcsik 1977, 1978; *inter alia.*), shown in Table 1. Five phonological elements are relevant: C, V, syllable, foot, stress. Noticeably absent are numerous additional logical possibilities, notably pivots that involve specific segments or fine-grained phonological features, like [p], [+NASAL], or [−SONORANT] (Yu, 2007, 218ff.). In such a hypothetical case, an exponent would position itself relative to, e.g., the first [+NASAL] segment in its stem.

Table 1: Infixal subcategorization (Yu 2007, 67; parentheses = uncommon)

Edge pivots		Prominence pivots
First consonant	(Last consonant)	Stressed foot
First vowel	Last vowel	Stressed syllable
(First syllable)	Last syllable	Stressed vowel

COINs seem to be able to subcategorize for all the same phonological elements as the COPs above, but in addition, COINs *can* refer to specific segments and phonological features. It is easy to find such examples of segment-conditioned allomorphy. Consider the causative suffix in Turkish (Paster 2006, 55, who cites Lewis 1967; Haig 2004): this suffix has two suppletive allomorphs, *-t* and *-DIr*. The exponent *-DIr* is the elsewhere allomorph, while *-t* appears following polysyllabic stems that end in a vowel, /r/, or /l/, as seen in, e.g., *bekle-t* 'wait-CAUS' ('cause to wait') and *ye-dir* 'eat-CAUS' ('feed'). For many more examples of phonological features and prosodic elements determining allomorphy, see Paster 2005, 2006, 2009.[4]

The asymmetries between COINs and COPs extend beyond phonology, and we briefly mention one such case. COINs commonly subcategorize for a particular root or list of roots, e.g., participle marking in English which is idiosyncratically *-(e)n* for an arbitrary list of roots (*beat*, *give*, *take*, etc.), but is exponed as *-(e)d* elsewhere. We know of no COPs that subcategorize for a particular root (or list of roots), i.e., where the root (or class of roots) serves as a sort of pivot for infixation. In such a hypothetical case, an exponent would require adjacency with a particular root (or class of roots), thereby displacing inside a given morphosyntactic domain until such a position is achieved.[5]

Under a split subcategorization approach—especially one where COINs derivationally precede COPs (as we'll argue in §4.4) and so potentially interface with different types of representations—it is natural that the substance of COIN and COP frames could differ. An enriched subcategorization approach, in contrast, predicts the content of the restrictions to fully overlap, counter to fact.

4.2 Argument 2: The elsewhere distribution

A second difference emerges between enriched and split subcategorization in terms of how a productive elsewhere distribution is modeled for an infix. We illustrate this with two case studies.

In Bahnar (Banker, 1964; Banker et al., 1979), an Austroasiatic language of Vietnam, the nominalizer has two suppletive allomorphs, described theory-neutrally in (9), and exemplified in (10).

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[4]This assumes that cases of so-called 'melody'-conditioned allomorphy should truly be analyzed as suppletive. For an alternative involving single underlying representations with floating 'rescue segments', see Scheer 2016.

[5]Note that this hypothetical does *not* describe any of the following cases. In Dakota, subject markers infix or prefix depending on the lexical identity of the root they combine with (Boas and Deloria 1941); the root in such cases is not the pivot, nor is infixal positioning exponent-specific. In cases of so-called 'mobile affixation' (e.g., Noyer 1993), the position of an exponent depends on the *phonological* form of the root. Finally, there may be affixes that always strictly appear root-adjacent, but this is for all roots, not a particular class of roots. We do not speculate here about whether these phenomena could be formalized via subcategorization, or with COINs or COPs more specifically.

(9)   Bahnar nominalization

    a.   *bɔ* : appears with *m*-initial stems; prefixal

    b.   *ɔn* : appears with all other stems (elsewhere); infixal (after first C)

(10)   a.   NOM + muih → bɔ-muih 'field in the woods'

    b.   NOM + tăr → t<ɔn>ăr 'woven bamboo'

The nominalizer is realized as a prefix, *bɔ*, with stems that begin with *m*, and as an infix, *ɔn*, after the first consonant with all other stems (i.e., elsewhere).

    The Bahnar nominalizer allomorphs are characterized differently under the two competing models we're considering, (11)–(12). Split subcategorization separates exponent choice (encoded with a COIN) from infixation (encoded with a COP), while enriched subcategorization collapses them.

(11)   Split subcategorization approach to Bahnar nominalization

    a.   [NOM] : *bɔ* / COIN: __m; COP: none

    b.   [NOM] : *ɔn* / COIN: none; COP: C__

(12)   Enriched subcategorization approach to Bahnar nominalization

    a.   [NOM] : *bɔ* / __ [$_{STEM}$ m ...]

    b.   [NOM] : *ɔn* / [$_{STEM}$ C__ ...]

Under split subcategorization, (11), the COINs specify that *bɔ* is inserted only when it precedes an *m* and that *ɔn* is inserted elsewhere; the COPs specify that *bɔ* is not an infix (no COP), and that *ɔn* is an infix that goes after a consonant. Recall from §2 that the split subcategorization approach assumes that there is a prior established linear order of the morphemes (separate from COINs and COPs), which here would be that the nominalizer precedes its stem. Thus, the environment relevant for COIN evaluation is the left edge of the stem, and the infixal exponent will also look from this edge to find the closest matching pivot (a consonant). In contrast, under enriched subcategorization, (12), all of this information is encoded in a bundle, requiring *bɔ* to be at the left edge of an *m*-initial stem, and *ɔn* to follow the consonant at the left edge of a consonant-initial stem.

    A close examination of the frames in (11) and (12) reveals a fundamental difference between between the approaches with respect to 'elsewhereness'. Under split subcategorization, (11), *ɔn*

combines with all non-*m*-initial stems by virtue of having no COIN at all; in other words, *on*'s elsewhere distribution falls out from the *lack* of any COIN specification, and as such is a 'true' elsewhere allomorph. Under enriched subcategorization, there is no true elsewhere allomorph in this sense. Instead, as seen in (12), both allomorphs specify some set of stems in the lexicon which they are compatible with, and it is the relative specificity of *m* (in *bɔ*'s subcategorization frame) over C (in *on*'s subcategorization frame) that determines the broader distribution of *on*, assuming some version of the Elsewhere Principle. Since all stems in Bahnar are C-initial, *on* will effectively have an elsewhere distribution, as its subcategorization frame is compatible with all stems. But, the cost of enriched subcategorization should be apparent: the frame for an infixal exponent needs to redundantly encode lexicon-wide phonological properties if the infix has an elsewhere distribution.

More generally speaking, under an enriched subcategorization model, the frame of an infix needs to specify the pivot/placement of the infix while *also* specifying any segments that may be present between the stem edge and the infix.[6] Consider, for example, the proposed enriched frame for the nominalizing infix -*ni*- in Leti (which combines with "Class II" verbs), shown in (13):

(13)   [NOM] : *ni* / [$_{STEM,CL.II}$ (C)__V...]   (adapted from Blevins 1999, (10))

What this frame states is that *ni* must be placed before a V (this is the infixal pivot) that is either at the left edge of its stem, or separated from the edge by a single C (and, the stem must be of Class II). This frame is consistent with all relevant stems, because all Class II verbs begin with V or CV. Just like for Bahnar *on*, an enriched subcategorization frame for *ni* in Leti needs to (redundantly) encode phonological facts, in this case about a class of verb stems (nb. beginning with V/CV crucially does not *determine* membership in this class). Under a split subcategorization model, *ni* would simply have two separate frames, a COIN restricting *ni* to appearing with Class II verbs, and a COP telling *ni* to go before a vowel; there is no specification of intervening edgemost segments.

The discussion above compared split and enriched subcategorization in terms of the nature of elsewhere distributions for infixes. Under split subcategorization, there can be infixes that are true elsewhere exponents—they have no constraints on their insertion. Under enriched subcategorization, the collapsing of conditions on insertion and position means that there is never a true elsewhere infix in the sense of *lacking* a subcategorization restriction; rather, the elsewhere distribution falls out from relative specificity of frames (as seen in Bahnar) and the inclusion of all possible segments that

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[6]Note that this may be avoided with certain multi-tiered representations, like those proposed by Papillon 2021.

may intervene between an infix and the stem edge (as seen in Bahnar and Leti).

The way that enriched subcategorization frames characterize elsewhere infixes is problematic for two reasons. First, it is redundant. Infixes are generally "edge-oriented" (Yu, 2007):[7] an infix will appear as close to the edge as possible while still satisfying its pivot/placement; the phonotactics of the language determines what can appear between an infix and the stem edge, i.e., this does not need to be specified in subcategorization frames. Second, the fact that these sorts of optional intervening segments *are* included in enriched frames predicts infix distributions that are not attested. For example, we might expect to find an infix that will go after an initial C *or* CV sequence, (14):

(14)   Hypothetical enriched subcategorization frame: $[_{STEM}$ C(V) __ ... $]$

To our knowledge, no infix has this type of variable distribution, without a consistent pivot. (For reference, see the list of infixal pivots in Table 1, and for comparison, see the superfically very similar enriched frame for Hunzib's infix in §4.3 below.) To rule out enriched frames like those in (14), there would need to be stipulated constraints on the location and nature of optional segments. Under a split subcategorization model, no such frames are predicted to exist: infixation is accounted for without specifying optionally-present intervening segments, and the elsewhere distribution is captured by the absence of a COIN. Predictions related to condition complexity are taken up further below.

4.3   Argument 3: Condition complexity

Our third argument for split subcategorization comes from comparing the relative complexity of subcategorization frames across approaches, in particular in terms of locality and disjunctiveness.

The discussion here will anchor around the Northeast Caucasian language Hunzib (van den Berg, 1995). In Hunzib, the verbal plural morpheme has two suppletive forms, shown in (15)–(16).[8]

(15)   Hunzib verbal plural (van den Berg, 1995, 81-83)

   a.   *baa* : appears with stems that end in a long vowel; suffixal

   b.   *á* : appears with all other stems (elsewhere); infixal (before final C)

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[7]Note that a small class of infixes are 'prominence-oriented', but this does not impact the conclusions here.

[8]In the example words, two phonological processes are at play: the final vowel is shortened after suffixation of *-baa* due to stress shift, and a glide may be inserted before the infix to break up vowel hiatus. Also, while the examples given for the exponent *á* do not conclusively show that this infix goes before the final consonant of the stem, the larger data set available in van den Berg 1995 confirms this.

(16)   a.   ʔãqaa + VPL → ʔãqa-baa 'be thirsty (pl)'   (van den Berg, 1995, 283)

b.   ek + VPL → e<yá>k 'fall (pl)'   (van den Berg, 1995, 81)

c.   ɑhu + VPL → ɑ<á>hu 'take (pl)'   (van den Berg, 1995, 284)

As shown above, *baa* is a suffix on long-vowel-final stems, and *á* (underlyingly stressed) is the elsewhere exponent, an infix that goes before the final consonant of the stem.

Split and enriched subcategorization offer different characterizations of this pattern, (17)–(18).

(17)   Split subcategorization approach to Hunzib verbal plural marking

a.   [VPL] : *baa* / COIN: Vː__; COP: none

b.   [VPL] : *á* / COIN: none; COP: __C

(18)   Enriched subcategorization approach to Hunzib verbal plural marking

a.   [VPL] : *baa* / [$_{STEM}$ ... Vː]__

b.   [VPL] : *á* / [$_{STEM}$ ... __ C(V)]

The split subcategorization approach models the elsewhere distribution of *á* through the absence of a COIN, and its infixal positioning by a simple, locally-stated COP, requiring left-adjacency with a consonant. Recall again that the split approach assumes that morphemes have a concatenated order prior to exponence (see discussion at end of §2), and thus *á* will minimally displace from this edge (the right edge here) to a position where its COP is satisfied. The enriched subcategorization approach has no formal elsewhere (see §4.2), but rather *baa* is compatible with one set of stems (those that end in a long vowel) and goes after such stems, while *á* is compatible with another set of stems (those that end in a consonant or short vowel) and is an infix in those stems.

Several considerations come into play in evaluating the two approaches to Hunzib. With a COIN/COP split, (17), all subcategorized elements can be stated both simply (no optional segments, no stem edges, cf. §4.2) and purely locally—insertion (via the COIN) is conditioned by an immediately adjacent segment, the long vowel, and infixation (via the COP) is determined under adjacency as well, necessitating an immediately-following consonant. If the COIN and COP are conflated, (18), the conditions are more complex and they encode both non-locality and disjunctiveness. For choosing *á* over *baa*, the nature of the final segment matters, and this final segment is not always immediately local to the exponent; this can be seen in particular in cases with a final short

vowel, like *a<á>hu*, (16c), where the conditioning segment (the stem-final short vowel) is not immediately local to the infix (before the final consonant). Alongside non-locality comes the disjunctive environment, as the frame in (18b) states that *á* is inserted just in case one of two stem-forms holds: the stem ends in a C or CV. Disjunctivity is required because enriched subcategorization needs to express a negative condition—*á* must appear with all stems that *do not* end in a long vowel, but that end with any other phonotactically-allowed sequence. By separating COINs and COPs, the split approach needs neither non-locality nor disjunctiveness, nor the sort of redundancy of §4.2.

4.4 Argument 4: Ordering effects

A final argument for splitting COINs from COPs comes from a recent typological result. Examining 31 cases of suppletive allomorphy involving an infix, Kalin (2020a) finds that suppletion is *never* conditioned by material that is local to an infix only in the surface, post-infixation environment. In other words, the choice among suppletive allomorphs is never made based on an infix's surroundings in its infixed position, but rather always at the stem edge; this is consistent with both Hunzib and Bahnar above, where exponent choice is governed by an edgemost segment. This suggests that COINs are evaluated based on a distinct, pre-infixation (i.e., pre-COP), edgemost environment.

To illustrate, consider the hypothetical enriched subcategorization frames in (19), modeled on variations on ingredients from the enriched frames for exponents in Bahnar, Hunzib, and Leti:

(19) Hypothetical enriched subcategorization frames

a. [$_{STEM}$ (C)V__m ...]

b. [$_{STEM}$ ... V:__C(V)]

These frames both impose some additional constraint on an infixal exponent based on its surroundings in its infixed position, beyond the usual 'pivot' (see Table 1). An exponent with the frame in (19a) will only be compatible with stems where it can infix after the first vowel and (in that position) immediately precede *m*. The frame in (19b) requires that an exponent be infixed before the final consonant, but only if in that infixed position the exponent will follow a long vowel. Kalin's (2020a) findings are that such exponent distributions are unattested.

In contrast to the enriched model, the split subcategorization model does not predict any such unattested exponent distributions. In particular, if insertion (via COINs) is separate from and

determined before infixed position is determined (via COPs), then it is completely natural that exponent choice should not be able to be impacted by the infixed surroundings of an exponent—simply put, the exponent is not yet in an infixal position at the point of COIN evaluation.

4.5 Interim summary and comments

In this section, we have compared split and enriched subcategorization on a number of fronts. We showed that enriched subcategorization has a number of shortcomings: it doesn't predict differences between the substance of COIN and COP frames (§4.1), it may require encoding redundant segments, non-local conditioning environments, and disjunctive environments (§4.2-3), and it predicts a range of exponent distributions that are unattested (§4.2, §4.4). Note that optimality-based accounts (see §3) have some of the same shortcomings, in particular with respect to predicting identical COIN/COP substance (contra the findings in §4.1) and with respect to predicting simultaneous evaluation of insertion and position conditions, such that the infixed environment should be able to factor into suppletive exponent choice (contra the findings in §4.4); see also discussion in Kalin 2020a, §7.2.

Split subcategorization fares better than enriched subcategorization as well as optimality-based approaches, and we therefore conclude that this is the model to be preferred—subcategorization at the exponent level must be decomposed into separate conditions regulating exponent choice (COINs) versus those regulating exponent infixation (COPs).

5 Implications

In this squib, we have proposed that subcategorization at the exponent level be deconstructed into (at least) two distinct conditions/mechanisms. We summarize our proposal in (20).

(20)   **Split subcategorization:** An exponent may have a condition on its insertion (a COIN) and/or a condition on its position (a COP), which (i) are formally independent of one another, (ii) operate over an overlapping but distinct set of primitives, and (iii) are ordered with respect to each other—COINs are satisfied before COPs.

The first condition—the COIN—applies early, presumably at or soon after the spell-out of syntax, and governs suppletive exponent choice. The second condition—the COP—applies at a later point, and governs manipulations of exponent position, i.e., infixation.

This proposal predicts a two-by-two typology of COIN and COP configurations for a given exponent, given in Table 2. Two of the cells (having just a COIN, or having just a COP) are instantiated in several of the case studies above. It's also possible for an exponent to have neither a COIN nor a COP, as is the case for any elsewhere exponent that is non-infixal, like English plural suffix -z. It should also be possible according to our proposal for a single exponent to have both a COIN and a COP, and indeed this is borne out, as discussed below.

Table 2: COIN and COP typology of conditions on exponents

		Has a COP?	
		YES	NO
Has a COIN?	YES	Nancowry INOM *in*	Hunzib VPL *baa*
	NO	Chamorro AF *um*	English PL *z*

In Nancowry, an Austroasiatic language of the Nicobar islands, India (Radhakrishnan 1981; Kalin 2021; also briefly discussed in Paster 2006), there are several cases of allomorphy that are sensitive to stem size. Of interest here is the instrumental nominalizer (INOM), which is exponed as *in* with disyllabic stems and *an* with monosyllabic stems. Additionally, both exponents are infixes:

(21)   Nancowry instrumental nominalizer (Radhakrishnan, 1981; Kalin, 2021)

    a.   *in* : appears with disyllabic stems; infixal (after first C; first V deletes)

    b.   *an* : appears with monosyllabic stems; infixal (after first C)

(22)   a.   INOM + kurus (scratch) → k<in>rus 'a rake'

    b.   INOM + top (file) → t<an>op 'a file'

Under our approach to subcategorization, this exponent alternation could be modeled as in (23):[9]

(23)   Split subcategorization approach to Nancowry instrumental nominalization

    a.   [INOM] : *in* / COIN: __Ft; COP: V__

    b.   [INOM] : *an* / COIN: none; COP: C__

The exponent *in* is (by its COIN) constrained to appearing before a foot (a disyllabic stem), and has as its infixal pivot the first vowel (its COP); following Kalin (2021), we assume that this pivot

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[9]There are other logically-possible ways to work out the details here, e.g., with respect to which of these exponents is the elsewhere, and whether it is syllable count they are sensitive to rather than the presence of a complete foot. However, none of this would change the fact that one of the exponents must have both a COIN and a COP.

vowel disappears because of hiatus resolution, i.e., $k<in>rus$ from (22a) has an intermediate form $ku<in>rus$. The exponent *an* appears elsewhere (has no COIN), and has a simple post-consonantal distribution (per its COP). The Nancowry nominalizer exponent *in* fills the last cell in Table 2. (For an enriched subcategorization approach to Nancowry, see Papillon 2021, 7.)

The split subcategorization proposal has implications for the architecture of the morphosyntax-phonology interface. Regardless of their absolute timing, it must be that COINs hold at a derivationally earlier point than COPs. Our proposal thus requires an intermediate representation after syntax but before phonology. Therefore, a parallel P-with-M model (e.g., McCarthy and Prince 1993b,c; Mester 1994; Kager 1996; Mascaró 1996, 2007; Hyman and Inkelas 1997; Tranel 1998; Horwood 2002; Bonet 2004), whereby morphological and phonological constraints are evaluated at once, is insufficient. Our proposal also supports models which deny a role of surface optimization in dictating allomorph choice (in line with, e.g. Halle and Marantz 1993; Paster 2006; Bye 2008; Embick 2010; Bye and Svenonius 2012; Kalin 2020b; Rolle 2021; *inter alia*), and equally, it counters those which allow it (e.g., Lapointe 2001; Bermúdez-Otero 2016; Brinkerhoff 2019; de Belder 2020).

Finally, to wrap up this squib, we want to zoom out to a wider perspective on subcategorization. As noted at the outset of §2, subcategorization is used for a wide variety of phenomena apart from suppletive allomorphy and infixation, including argument structure, syntactic complement selection, morphological compatibility and gaps, prefixhood/suffixhood, affix ordering, clitic second positionhood, idiosyncratic prosodic domains, and phonological rule blocking. Can any of these be collapsed with each other and/or be subsumed under COINs or COPs?

We have taken a stance on one of these other uses of subcategorization: prefixhood vs. suffixhood should *not* be collapsed with COINs nor COPs. In addition to the benefits accrued in frame simplicity (§4.2-3), we follow the line of argumentation from Kalin (2020a). She finds that all suppletive exponents of a morpheme (including infixal exponents) cluster at the same edge of the stem (left or right), and that suppletive conditioning environments are uniformly found at (or looking inward from) this stem edge. These findings suggest that basic linearization with respect to a stem is determined prior to the evaluation of *both* COINs and COPs.[10] Otherwise, edge orientation should be able to co-vary with suppletive exponents, and opposite-edge conditioning should be possible.

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[10]This proposal is in accordance with other 'indirect' accounts of infixation (see, e.g., Anderson 1972; Moravcsik 1977; Halle 2001; Horwood 2002; Plank 2007; Bye and Svenonius 2012). We leave open the question of whether basic concatenated order falls out in some algorithmic way based off of the morpho(syntactic) structure (*à la* Kayne 1994; Bye and Svenonius 2012), or whether it is the result of parameterization of head ordering (*à la* Harley 2011).

As for the other uses of subcategorization, we do not attempt to address them here, but hope that what we have done is to show *how* to argue for or against the use of a single mechanism for multiple of these purposes. In doing so, one should consider at least (i) whether the restrictions operate at the same level (e.g., over exponents vs. morphemes), (ii) whether the restrictions operate over the same type of elements, (iii) whether the restrictions are derivationally ordered with respect to others, (iv) whether the input can be altered to satisfy the restriction, (v) what types of notational complexities need to be introduced, and (vi) whether the full set of predicted patterns are attested. We also implore proposals that employ subcategorization to be careful using enriched multi-purpose frames, and to be explicit about the properties a subcategorization frame has.

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