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ARTICLE

Post-syntactic feature insertion is not yet motivated

Hannah Jane Middleton

Queen Mary University of London, UK
Email: jane.middleton@proton.me

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Abstract

This article argues that post-syntactic feature insertion is insufficiently motivated at present and should therefore not yet be accepted as a morphological process within the theory of Distributed Morphology. Post-syntactic feature insertion has been proposed for Nimboran verbal morphology (Noyer 1998), Kiowa agreement prefixes (Harbour 2003a), Leísta Spanish doubled clitics (Nevins 2007), and Romanian gender agreement (Farkas 1990). I show that these datasets can be analysed without invoking post-syntactic feature insertion, and discuss what a dataset would have to look like to motivate it. Such a dataset would have a number of parallel circumstances, each with a true elsewhere exponent and a specific environment in which another exponent behaved like an elsewhere one, exponing two feature bundles that are the polar inverse of each other. A theory of morphology that does not allow for post-syntactic feature insertion predicts such data to be impossible.

Keywords: post-syntactic feature insertion; impoverishment; Distributed Morphology

Résumé

Cet article soutient que l'insertion de traits post-syntaxiques n'est pas suffisamment motivée, et qu'elle ne devrait donc pas encore être acceptée comme un processus morphologique dans le cadre de la théorie de la morphologie distribuée. L'insertion de traits post-syntaxiques a été proposée pour la morphologie verbale en nimboran (Noyer 1998), pour les préfixes d'accord en kiowa (Harbour 2003a), pour les clitiques doublés en espagnol leísta (Nevins 2007) et pour l'accord de genre en roumain (Farkas 1990). Je montre que ces ensembles de données peuvent être analysés sans invoquer l'insertion de traits post-syntaxiques, et je discute des caractéristiques nécessaires à un ensemble de données pour pouvoir le motiver. Un tel ensemble de données contiendrait un certain nombre de circonstances parallèles, chacune incluant un véritable exposant d'ailleurs et un environnement spécifique dans lequel un autre exposant se comporterait comme un exposant d'ailleurs, exposant deux ensembles de caractéristiques qui sont l'inverse polaire l'un de l'autre. Une théorie de la morphologie qui ne permet pas l'insertion de traits post-syntaxiques prédit que de telles données sont impossibles.

Mots-clés: insertion de traits post-syntaxiques; appauvrissement; morphologie distribuée

1. Introduction

This article argues that post-syntactic feature insertion is insufficiently motivated at present, and therefore cannot be a morphological process that the theory of Distributed Morphology (Halle and Marantz 1993, a.o.) can call upon.[1] This is in contrast to its counterpart, post-syntactic feature deletion (impoverishment), which is well motivated (Bonet 1991, a.o.). Post-syntactic feature insertion was first proposed by Farkas (1990) and, in the Distributed Morphology framework, by Noyer (1998). The only other paper that has put forward a serious argument in its favour is Harbour (2003a), though it has been invoked to deal with some troublesome data in Leísta Spanish in a footnote in Nevins (2007).

In this article, I review these arguments and show that the data these authors aimed to account for can be accounted for without recourse to even a constrained implementation of post-syntactic feature insertion, such as Noyer's. The analysis in this article is presented within the theoretical framework of Distributed Morphology, as were the analyses of Noyer (1998), Harbour (2003a), and Nevins (2007) (cf. Trommer 2006, another counter-argument presented in the so-called framework of Minimalist Distributed Morphology). In this framework, the terminal nodes of trees are spelt out and sent to PF, where they receive their phonological form. The phonological forms of the terminal nodes are determined by rules of exponence, which are found on the language's Exponent List (or Vocabulary List). The rules of exponence are governed by the Maximal Subset Principle (Kiparsky 1973; Halle and Marantz 1993; Halle 1997). The Maximal Subset Principle states that for a given bundle of features, the exponent that realises the maximal subset of that bundle of features must be used. Thus, if the feature bundle is [F G], and there are two rules of exponence (F ⇔ eks, and [F G] ⇔ wai), the chosen exponent is *wai*, because *wai* realises the largest subset of features in that bundle. Between Spell Out and PF, the terminal nodes may be subject to morphological processes, such as impoverishment and obliteration, but not (I will argue) feature insertion.[2]

A reviewer asks what "price" we should be willing to pay in selecting one theory over another. It could be argued that we should favour the theory with the smallest sum of morphological processes and rules that correctly derives known data, so that a theory with only impoverishment but a large number of rules is dispreferred in favour of a theory with both impoverishment and insertion and far fewer rules. But against this, a

[1]Abbreviations: ♀♂ = gender; # = number; π = person; 1 = 1st person; 2 = 2nd person; 3 = 3rd person; A = animate; ABL = ablative; ACC = accusative; ASP = aspect; CL = clitic; DAT = dative; DL = dual; EXC = exclusive; FEM = feminine; I = inanimate; INC = inclusive; INV = inverse; MASC = masculine; NEG = negation; NEUT = neuter; NOM = nominative; PAST = past tense; PL = plural; PRON = demonstrative pronoun; Q = question; SG = singular.

[2]Obliteration is a more extreme version of impoverishment (Arregi and Nevins 2007, 2012; Calabrese 2008, 2011), where a syntactic node is deleted post-syntactically.

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Table 1. The copula *be* and its subject in English

	AFFIRMATION		NEGATION	
STATEMENT	**I am**	We are	**I am not**	We are not
	You are	You are	You are not	You are not
	She is	They are	She is not	They are not
QUESTION	**Am I**	Are we	**Aren't I**	Aren't we
	Are you	Are you	Aren't you	Aren't you
	Is she	Are they	Isn't she	Aren't they

theory with two morphological processes is twice as powerful as a theory with only one, so it should be eschewed if possible. We could also consider the debate from a more concrete theoretical perspective, and observe that feature insertion violates Inclusivity (Chomsky 1995) while impoverishment does not, so insertion should be avoided independently of powerfulness considerations. I will show that in sticking to a theory with one morphological process (impoverishment) rather than two, the price we pay is a little reanalysis of four languages, which is considerably cheaper than the cost of a theory that includes post-syntactic feature insertion.

One thing should be clarified before we begin, namely that in the present article, I am concerned only with the post-syntactic insertion of φ-features, and not the post-syntactic valuation of unvalued features, which has sometimes been called post-syntactic feature insertion (e.g., Schütze 2001, who posited Feature Filling as a possible mechanism to account for default Case; see McFadden 2020 for a more recent discussion of this issue).

1.1 Impoverishment

Before I introduce the morphological process to be challenged (post-syntactic feature insertion), I will first discuss a relatively uncontroversial morphological process: post-syntactic feature deletion, better known as *impoverishment* (Bonet 1991), which has been posited in two scenarios. In the first case, a node bears two features, [F G], and there are two exponents compatible with this node, one that expones [F] and the other [F G]. Deletion of [G] is assumed when the exponent for [F] expones the node; by the Maximal Subset Principle, the exponent for [F G] should "beat" the exponent for [F], but since it doesn't, it follows that the feature [G] was deleted post-syntactically. I also assume, as many have before me, an antihomophony bias: "Learners avoid positing a contextual allomorph of a morpheme μ that is homophonous with the default exponent of μ" (Bobaljik 2012: 35).

We can illustrate impoverishment in Standard English. Consider the data in Table 1 (Francis 1985; Hudson 2000; Bresnan 2001; Nevins 2008, 2011).[3]

[3]Nevins (2011) notes that while a phonological motivation for the *amn't* gap may be plausible, its repair is clearly morphological (wholesale replacement of *am* by an unexpected auxiliary with different morphosyntactic features) rather than phonological (e.g., repair of a nasal cluster by vowel epenthesis).

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The φ-features of the subject are copied onto the auxiliary node, and are spelt out together with the auxiliary.[4] The affirmative statements demonstrate that the copula has three present tense allomorphs in English, see (1):[5]

(1) *Allomorphs ofthe English copula in the present tense*

$$[\text{BE PRESENT} +\text{participant} +\text{author} +\text{atomic}] \Leftrightarrow \text{am}$$
$$[\text{BE PRESENT} -\text{participant} -\text{author} +\text{atomic}] \Leftrightarrow \text{is}$$
$$[\text{BE PRESENT}] \Leftrightarrow \text{are}$$

The morphology of the copula in the negative statements and affirmative questions demonstrates that the exponence of the copula is not affected by the addition of negation, nor by question formation. But when negation and question formation occur together and the negation morpheme cliticizes onto the auxiliary node, the exponence of the copula with a 1SG subject is affected: the elsewhere exponent *are* appears, replacing the more highly specified *am*.[6] According to the Maximal Subset Principle, this should be impossible, because the most highly-specified exponent will always "win". It follows from this that the φ-features the auxiliary node inherited from the subject are post-syntactically deleted when negation (NEG) cliticizes onto the auxiliary node in question formation (Q), as in (2):[7]

(2) *Rule of Impoverishment for the English copula*[8]

$$[+\text{ participant} + \text{author} + \text{atomic}] \rightarrow \not{\varphi} \;/\; [\text{BE} \_\_ \text{ Q NEG}]$$

The second argument for post-syntactic impoverishment has been proposed to explain cases where a feature is systematically silent when certain conditions arise (Calabrese 2008, Harbour 2008). Consider, for example, the Latin case suffixes in Table 2.

I assume that the Nominative case is the *elsewhere* case (Jakobson 1962, Neeleman and Weerman 1999, Caha 2009, Smith et al. 2019, Zompi 2019), Accusative case realises one feature more ([F]), Dative realizes a feature more than that ([F G]), and Ablative a third feature on top of that ([F G H]).[9] Note that across all noun classes, the Dative and Ablative cases are syncretic in the plural. These data are compatible with

[4]That the features are copied to the auxiliary is supported by the fact that the morphology of the 1SG auxiliary changes in negative questions, but the pronoun itself does not.

[5]I discuss the person and number features used here in more detail in section 1.3.

[6]The elsewhere exponent is the one least specified for a given domain.

[7]It would of course be possible to delete only the feature [+atomic] (or [+author]) and obtain the same results, though the conditioning environment for this impoverishment would then have to include [+participant +author] (or [+participant +atomic]) to ensure that impoverishment only happens when the subject is 1SG; the exponent *is* still appears with a 3SG subject, negation and question formation.

[8]I use the lightning symbol {$\not{\varphi}$} for impoverishment, and the empty set symbol {∅} for post-syntactic feature insertion.

[9]The syntax and semantics of the Case features are not relevant here, and therefore not discussed. See, among others, Caha (2009), Radkevich (2010), Smith et al. (2019), Zompi (2019), and Middleton (2021) for details.

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Table 2. Case suffixes in Latin

	CLASS I		CLASS II		CLASS III		CLASS IV		CLASS V	
	SG	PL	SG	PL	SG	PL	SG	PL	SG	PL
NOM	-a	-ae	-us	-i	*variable*	-es	-us	-us	-es	-es
ACC	-am	-as	-um	-os	-em	-es / -is	-um	-us	-em	-es
DAT	-ae	**-is**	-o	**-is**	-i	**-ibus**	-ui	**-ibus**	-ei	**-ebus**
ABL	-a	**-is**	-o	**-is**	-e	**-ibus**	-u	**-ibus**	-e	**-ebus**

Table 3. The conditions required to motivate post-syntactic feature insertion

Exponents	Tree at Spell Out	Feature Insertion	Exponed Tree
[F G] ⇔ /Y/	|	|	|
[F] ⇔ /X/	F	[F G]	/Y/

an underspecification analysis, in which only the features [F G] are exponed in the plural, but this would miss the systematicity of the phenomenon, which occurs in every noun class. Since impoverishment has already been motivated for the first scenario described, we know that it is independently required by our theory of morphology, and therefore we can call upon it to explain the systematicity of the phenomenon here (Calabrese 2008). The rule of impoverishment requires deleting the feature [H] in the context of the plural ([−atomic]), rendering the Dative and Ablative feature bundles identical:

(3) *Rule of Impoverishment for Latin case suffixes*

$[\text{H}] \rightarrow \not{} \; / \; [-\text{atomic} \_\_ \;]$

1.2 Post-syntactic feature insertion

Let us now consider what circumstances must hold for post-syntactic feature insertion to be motivated. Post-syntactic feature insertion is the opposite of impoverishment, so the same conditions hold, but in reverse. First, we need a node that bears a feature [F], as shown in Table 3.

We also need two exponents, one that is compatible with this node ([F] ⇔ X) and one which is overspecified by another feature ([F G] ⇔ Y). Post-syntactic feature insertion is motivated if the node bearing only [F] is exponed by the overspecified exponent Y; by the Maximal Subset Principle, the exponent X should "beat" the exponent Y, but since it doesn't, it follows that the feature G was inserted post-syntactically.

To be convincing, any analysis that makes use of post-syntactic feature insertion must robustly show that alternative analyses making use of the morphological tools independently required by the theory are unable to account for the data in question. In this article, I show that the data that are argued to motivate post-syntactic feature insertion can in fact be accounted for without resorting to it, thereby rendering present analyses involving post-syntactic feature insertion insufficiently motivated.

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$$\begin{bmatrix} 1\text{EXC} \\ -\text{participant} \\ +\text{author} \end{bmatrix} \begin{bmatrix} 1\text{INC} \\ +\text{participant} \\ +\text{author} \end{bmatrix} \begin{bmatrix} 1 \\ +\text{participant} \\ +\text{author} \end{bmatrix} \begin{bmatrix} 2 \\ +\text{participant} \\ -\text{author} \end{bmatrix} \begin{bmatrix} 3 \\ -\text{participant} \\ -\text{author} \end{bmatrix}$$

Figure 1. The person feature bundles.

1.3. Person and number features

Before I continue, I will briefly comment on the person and number features used throughout this article, which have been updated from those used in Farkas (1990), Noyer (1998), Harbour (2003a), and Nevins (2007) to those argued for in Harbour (2016) (for person) and Harbour (2014) (for number). As far as I can tell, updating these features has no impact on the basic arguments presented in these papers.

Harbour (2016) derives person distinctions by applying person features to the person lattice.[10] The person lattice is π, which denotes all persons, iuo_o ($i = 1^{st}$; $u = 2^{nd}$; $o = 3^{rd}$; x_o = others).[11] The first person feature that is applied to π is [±participant], which either adds or removes iu_o. The feature [±author] is then applied to the lattice. This either adds or removes i_o. Harbour's derivations of the four persons are given in (4). Where 1st person is not divided further, it is featurally identical to 1INC.

(4) The person feature denotations (Harbour 2016)

a. 1EXC $(((\pi)-\text{participant})+\text{author}) = iuo_o - iu_o + i_o = i_o$

b. 1INC $(((\pi)+\text{participant})+\text{author}) = iuo_o + iu_o + i_o = iu_o$

c. 2 $(((\pi)+\text{participant})-\text{author}) = iuo_o + iu_o - i_o = u_o$

d. 3 $(((\pi)-\text{participant})-\text{author}) = iuo_o - iu_o - i_o = o_o$

The person feature bundles, as I will represent them throughout the rest of this article, are given in Figure 1.

The number distinctions can also be derived by applying features to a lattice. The two number features are [±atomic] and [±minimal]. [+atomic] selects a single item, and [−atomic] selects a non-singular item. The feature [±atomic] applies to the lattice first. Then [±minimal] applies; [+minimal] selects the smallest set of items compatible with the set already selected, and [−minimal] selects a set of items that is at least one more than the set already selected.

(5) The number feature denotations (Harbour 2014)

a. Singular $(((\#)+\text{atomic})+\text{minimal}) = \{\bullet\}$

b. Dual $(((\#)-\text{atomic})+\text{minimal}) = \{\bullet\,,\ \bullet\}$

c. Plural $(((\#)-\text{atomic})-\text{minimal}) = \{\bullet\,,\ \bullet,\ \bullet,\ \ldots\}$

Note that when the person features denote 1INC, [+atomic] will select two people (the speaker and addressee), since this is the smallest number of people compatible with this

[10] See Harbour (2016) for a more technical exposition; my aim here is to present Harbour's analysis in no more detail than is necessary to follow the rest of the arguments in this article.

[11] The 3rd person, o, always collapses to x_o.

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$$\begin{bmatrix} \text{SG} \\ +\text{atomic} \\ +\text{minimal} \end{bmatrix} \begin{bmatrix} \text{DL} \\ -\text{atomic} \\ +\text{minimal} \end{bmatrix} \begin{bmatrix} \text{PL} \\ -\text{atomic} \\ -\text{minimal} \end{bmatrix}$$

Figure 2. The number feature bundles.

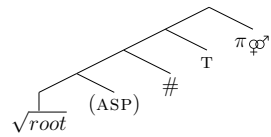

Figure 3. The Nimboran verbal structure.

denotation of person features; [−atomic] will select three or more people (the speaker, the addressee, and at least one more person). The number feature bundles, as I will represent them throughout the rest of this article, are given in Figure 2.

1.4 The structure of the article

The remainder of this article is structured as follows. I discuss Nimboran in section 2, Kiowa in section 3, Leísta Spanish in section 4, and Romanian in section 5. In each section I present the original analysis, and then show that we can account for the data without post-syntactic feature insertion. In section 6, I discuss what a dataset would have to look like to allow for an analysis including post-syntactic feature insertion. I conclude in section 7.

2. Exhibit A: Nimboran

2.1 The case for post-syntactic feature insertion in Nimboran: Noyer (1998)

Post-syntactic feature insertion was first proposed in Distributed Morphology by Noyer (1998) to account for the verbal morphology of Nimboran, a Papuan language of New Guinea (Anceaux 1965, Inkelas 1993). The structure of the Nimboran verb, inasmuch as it concerns us here, is given in Figure 3.

The verbal root is immediately followed by an optional node, which I have called ASP, that can host certain particles, masculine object agreement, or the durative aspect marker. Then comes number agreement information. Above this is a node that hosts Tense information, and finally a node that hosts person and gender (masculine or non-masculine) agreement information (Inkelas 1993).

(6) *Two Nimboran sentences*

a. ŋgedóu- ke- d- ú
draw- DL- FUT- 1EXC
'We will draw (here).'

b. ŋgedóu- tam- en- t- ím
draw- DUR- SG- PRES- 1INC
'We (two) are drawing.' (Annceaux 1965: 186, 234)

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Table 4. Nimboran verbal root alternations (Noyer 1998)

√	A	B	C
draw	ŋgedúo	ŋgedóu	ŋgedói
pull out	betuá	betáo	betaói
water	suáŋ	sáoŋ	saóiŋ

Nimboran verbs obligatorily agree with their subject, and obligatorily bear tense (Inkelas 1993). The structure in Figure 3 is pre-phonological; the morphemes can change order at PF to satisfy phonological constraints in the language that do not concern us here (Noyer 1998). Throughout the rest of this article, I give the pre-phonological morphemes of Nimboran, based on the reconstructions in Anceaux (1965) and Inkelas (1993). Nimboran roots show alternations, examples of which are shown in Table 4.

We can see the morphology of Nimboran verbs when the optional node ASP is absent (6a) illustrated in Table 5 in the future tense, *-d*.[12]

Noyer (1998) argues on both phonological and morphological grounds that the B allomorphs are the elsewhere exponents of the verbal root. Phonologically, the A allomorphs show metathesis of B's final syllable, and the C allomorphs are B's ablauted counterparts. Noyer adds that Inkelas notes that the B allomorphs appear in the passive, suggesting that they have the most heterogeneous distribution (Noyer 1998: 274).

Since the allomorphy of the verbal root is conditioned by the number of its subject, I will represent this with the rules in (7).

(7) *Noyer's Rules of Exponence for Nimboran verbal roots*

$\sqrt{\ } \Leftrightarrow$ A / [__ +atomic +minimal]

$\sqrt{\ } \Leftrightarrow$ C / [__ −minimal]

$\sqrt{\ } \Leftrightarrow$ B

There are three number affixes in Nimboran. The affix *-maN* only appears in the 1INC.SG; the affix $-^{i}$ (an autosegmental entity whose effect is to induce a palatalisation of nearby segments (Noyer 1998: 272)) is restricted to plural subjects specified for [−participant]; and the affix *-k* appears everywhere else in the dual and plural for all persons. Noyer's rules of exponence for the number features are in (8).

(8) *Noyer's Rules of Exponence for Nimboran's number agreement affixes (version 1)*

[+atomic +minimal] ⇔ -maN / [__ +participant +author]

[−atomic −minimal] ⇔ $-^{i}$ / [__ −participant]

[−atomic] ⇔ -k

The future tense is exponed by the affix *-d*. This is followed by the person-gender affix, which corresponds regularly to the person features, except for the affix *-um*.

[12] 1EXC.SG denotes the speaker alone; 1EXC.DL denotes the speaker and one other person who is not the hearer; 1INC.SG denotes the speaker and hearer (the smallest set of people that satisfies [+participant +author]); and 1INC.DL denotes the speaker, hearer and one other person. For examples, see Anceaux (1965).

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Table 5. Subject agreement affixes of Nimboran when ASP is absent

FUTURE	SINGULAR [+atomic] [+minimal]	DUAL [−atomic] [+minimal]	PLURAL [−atomic] [−minimal]
1EXC [−participant +author]	√A -maN -d -um	√B -k -d -um	√C -^{i} -d -um
1INC [+participant +author]	√A -maN -d -ám	√B -k -d -ám	√C -k -d -ám
2 [+participant −author]	√A -maN -d -em	√B -k -d -em	√C -k -d -em
3M [−participant −author]	√A -maN -d -am	√B -k -d -am	√C -^{i} -d -am
3N [−participant −author −masculine]	√A -maN -d -um	√B -k -d -um	√C -^{i} -d -am

Morpheme denotations: Root -number -tense -person+gender.

This includes exponence of [−masculine], which is not realised in the plural. Noyer's remaining rules of exponence are given in (9).

(9) *Noyer's remaining Rules of Exponence (version 1)*

$$[-\text{participant} \ -\text{author} \ -\text{masculine}] \Leftrightarrow \text{-um} \ / \ [+\text{minimal} \ \_\_ \ ]$$
$$[-\text{participant} \ -\text{author}] \Leftrightarrow \text{-am}$$
$$[+\text{participant} \ -\text{author}] \Leftrightarrow \text{-e}$$
$$[+\text{participant} \ +\text{author}] \Leftrightarrow \text{-ám}$$
$$[-\text{participant} \ +\text{author}] \Leftrightarrow \text{-u}$$
$$[\text{FUTURE}] \Leftrightarrow \text{-d}$$

Noyer's argument for post-syntactic impoverishment and feature insertion is motivated by the morphology of the verbal roots, number affixes, and person-gender affixes, which surface when certain particles, the plural object morpheme *dar*, or the durative affix *-tam* appear in the verbal structure (6b) (Noyer 1998). Following Noyer, I illustrate this in Table 6 with the durative affix *-tam*, in cases where the tense is present, *-t*.[13]

The verbal morphology that appears in the durative is very informative. First, we can see that the affix *-um*, which realises the 3rd person non-masculine, is not restricted to the singular and dual, but can appear in the plural too. Noyer observes that this indicates that it expones the feature bundle [−participant −author −masculine] (10a) with no conditioning environment (cf. (9)), and that the feature [−masculine] is impoverished when the feature [−minimal] is present (10b), but that this rule of impoverishment is blocked in non-neutral environments.[14]

(10) *Noyer's Rules of Exponence and Impoverishment for* [−masculine] *(final version)*

a. $[-\text{participant} \ -\text{author} \ -\text{masculine}] \Leftrightarrow$ -um

b. $[-\text{masculine}] \rightarrow \not{f} \ / \ [-\text{minimal} \ \_\_ \ ]$

[13]For examples, see Anceaux (1965: 107, 234).

[14]A comment is due on the way by which Noyer ensures that the rules of impoverishment in (10b) and (13b) are blocked in the presence of the durative. The rules of impoverishment that Noyer (1998) proposes for

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Table 6. Subject agreement affixes of Nimboran when ASP is present

DURATIVE, PRESENT	SINGULAR [+atomic] [+minimal]	DUAL [−atomic] [+minimal]	PLURAL [−atomic] [−minimal]
1EXC [−participant +author]	√B -tam -maN -t -um	√C -tam -^{i} -t -um	√C -tam -^{i} -t -um
1INC [+participant +author]	√B -tam -maN -t -ám	√C -tam -^{i} -t -ám	√C -tam -^{i} -t -ám
2 [+participant −author]	√B -tam -maN -t -em	√C -tam -^{i} -t -em	√C -tam -^{i} -t -em
3M [−participant −author]	√B -tam -maN -t -am	√C -tam -^{i} -t -am	√C -tam -^{i} -t -am
3N [−participant −author −masculine]	√B -tam -maN -t -um	√C -tam -^{i} -t -um	√C -tam -^{i} -t -um

Morpheme denotations: Root -aspect -number -tense -person+gender.

Second, the appearance of the B root when the subject is singular indicates that the feature [+minimal] has been deleted in the presence of the durative aspect (11a) (given as ASP, so that the rule applies whenever the Aspect node is present in the structure). This prevents the A root from being inserted because the conditioning environment for the A root is not met, and the B root — now the most highly-specified root — replaces it. The feature [+atomic] cannot have been deleted, because it is exponed in the 1INC.SG as *-maN* (11b) (cf. (8a)).

(11) *Noyer's Rules of Impoverishment and Exponence for the singular number features (final version)*

a. [+minimal] → ϟ / [ASP __]

b. [+atomic] ⇔ -maN / [__ +participant +author]

Third, the appearance of the C root when the subject is dual, indicates that the feature [+minimal] has been deleted (11a) and replaced by its polar counterpart [−minimal]

[−masculine] and [−minimal] actually include the feature [−atomic] in their conditioning environments (i).

(i) *Noyer's Rules of Impoverishment for* [−masculine] *and* [−minimal]

a. [−masculine] → ϟ / [−atomic −minimal __]

b. [−minimal] → ϟ / [−atomic __ +participant]

Noyer also proposes the impoverishment of [±atomic] when the durative is present, consequently bleeding impoverishment of [−masculine] and [−minimal] features in that environment. However, impoverishment of [±atomic] in the presence of the durative is problematic for his theory for two reasons. Firstly, he cannot explain the presence of the affix *-maN* in the 1INC.SG. Secondly, impoverishment of [±atomic] in the durative leaves Noyer unable to account for the appearance of -^{i} in the same paradigm, which expones [−atomic]. The affix -^{i} cannot expone only [−minimal], because then the number exponent in the neutral cases would be -k^{i}, contrary to fact. While the focus of this article is on arguing that post-syntactic feature insertion is currently insufficiently motivated, these problems add to the need to find a better analysis of the Nimboran data.

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in the presence of the durative (12).[15] This is necessary because the conditioning environment for the C root is [−minimal] (7), not [+minimal].

(12) *Noyer's Rule of Feature Insertion for* [−minimal]

$\varnothing \rightarrow$ [−minimal] / [−atomic __]

This is the crucial data supporting Noyer's claim for post-syntactic feature insertion: an allomorph known to be conditioned by a feature G appears in an environment where the feature G is not provided by the syntax. It follows that G is inserted post-syntactically. Noyer's analysis is dependent on the assumption that the C roots are conditioned by the presence of [−minimal]. Since the B roots are the default verbal roots, the C roots will only appear in a conditioned environment. If that environment was specified for [−atomic], the C roots would appear when the subject was dual in the neutral environments, contrary to fact. Thus, the conditioning environment for the C roots must be [−minimal]. Since the C roots then appear with dual subjects when the durative affix is present, Noyer concludes that the [+minimal] feature of the dual subject is impoverished and replaced by its polar counterpart [−minimal], feeding the presence of the C roots.

Noyer restricts the power of post-syntactic feature insertion by stating that only unmarked values of features can be inserted. Cross-linguistically, dual is known to be marked with respect to plural, which is in turn marked with respect to singular. Given this, [+minimal] is the marked value of [±minimal] in the context of [−atomic] (just as [−atomic] is the marked value of [±atomic] in the absence of [±minimal]). Thus, post-syntactic feature insertion in Nimboran is restricted to the unmarked value [−minimal] being post-syntactically inserted in the presence of [−atomic].

Support for the post-syntactic insertion of [−minimal] comes from the fourth morphologically significant difference found in (6). This is the presence of the -^{i} affix in the dual and plural for all persons. That this affix appears in the 1INC.PL and 2PL when the durative affix is present indicates that -^{i} expones the feature bundle [−atomic −minimal] (13a) with no conditioning environment (cf. (8b)), and that the feature [−minimal] is deleted when the feature [+participant] is present (13b), but that this rule of impoverishment is blocked in non-neutral environments.

(13) *Noyer's Rules of Exponence and Impoverishment for* [−minimal] *(final version)*

a. [−atomic −minimal] ⇔ -^{i}

b. [−minimal] → ↯ / [__ +participant]

That this affix appears in the dual when the durative is present is further evidence that the feature [+minimal] is deleted (11a) and replaced by its polar counterpart in the presence of the durative (12).

[15]It is unclear how the morphology knows which feature to insert. Once the original feature has been deleted, nothing remains in the structure to inform post-syntactic feature insertion. I can only envisage a successful argument for this if nodes host single features rather than feature bundles (à la Smith et al. 2019); an empty node would therefore be filled by the unmarked value of the feature it hosts.

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2.2. Accounting for the Nimboran data without post-syntactic feature insertion

Suppose we look at the Nimboran verbal morphemes in both environments simultaneously (see Table 7) to deduce the Nimboran rules of exponence.

Let us retain the B roots as the elsewhere verbal exponents (14c), and retain the conditioning environment for the exponence of the A roots (14a). As Noyer argues, the C roots must be restricted to appearing in a given environment, so that they "beat" the B roots. But here, the decision to consider the Nimboran morphemes in both environments simultaneously results in a crucial difference between the present analysis and the analysis in Noyer (1998), because the common feature of the environments in which the C root appears in (Table 7) is [−atomic] (14b).

(14) *Revised rules of exponence for the Nimboran verbal roots*

a. $\sqrt{\ } \Leftrightarrow$ A / [__ (ASP) +atomic +minimal]

b. $\sqrt{\ } \Leftrightarrow$ C / [__ (ASP) −atomic]

c. $\sqrt{\ } \Leftrightarrow$ B

Since the B root appears in the neutral environments with a dual subject, we can conclude that there is a rule of impoverishment for [−atomic] that applies when the subject is dual, but is blocked from applying when the durative aspect appears in the verbal structure. The rule required is given in (15).

(15) *Rule of Impoverishment for* [−atomic]

[−atomic] → ϟ / [[[$\sqrt{\ }$] __] +minimal]

Crucially, the node that hosts the durative aspect is not given as part of the conditioning environment. This ensures that when the aspect node is included in the verbal structure, the rule of impoverishment cannot apply.

We also need a rule of impoverishment that applies to either [+atomic] or [+minimal] when the subject is singular and the durative is present, to explain the presence of the B roots in the structures with the ASP node and singular subjects. If this rule applies to [+atomic], we cannot explain the presence of the *-maN* affix marking 1INC.SG subjects, so the rule must target [+minimal] (16).

(16) *Rule of Impoverishment for* [+minimal]

[+minimal] → ϟ / ASP] +atomic __]

Since [+minimal] is deleted in singular environments with the ASP node, the affix *-maN* must expone [+atomic], rather than the bundle [+atomic +minimal], and its conditioning environment is 1INC (17a). [+atomic] is exponed by a phonologically null exponent elsewhere (17b).

(17) *Rules of Exponence for* [+atomic]

a. [+atomic] ⇔ -maN / __] ...] +participant +author]

b. [+atomic] ⇔ ∅

This leaves the puzzle of the remaining number exponents. The affix $-^{i}$ appears when ASP is absent and the subject is plural, and when ASP is present and the subject is dual or

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Table 7. The subject agreement affixes of Nimboran

FUTURE	SINGULAR [+atomic] [+minimal]	DUAL [−atomic] [+minimal]	PLURAL [−atomic] [−minimal]
1EXC [−participant +author]	√A -tam -maN -d -um	√B -tam -k -d -um	√C -tam -^{i} -d -um
1INC [+participant +author]	√A -tam -maN -d -ám	√B -tam -k -d -ám	√C -tam -k -d -ám
2 [+participant −author]	√A -tam -maN -d -em	√B -tam -k -d -em	√C -tam -k -d -em
3M [−participant −author]	√A -tam -maN -d -am	√B -tam -k -d -am	√C -tam -^{i} -d -am
3N [−participant −author −masculine]	√A -tam -maN -d -um	√B -tam -k -d -um	√C -tam -^{i} -d -um
DURATIVE, PRESENT	[+atomic] [+minimal]	[−atomic] [+minimal]	[−atomic] [−minimal]
1EXC [−participant +author]	√B -tam -maN -t -um	√C -tam -^{i} -t -um	√C -tam -^{i} -t -um
1INC [+participant +author]	√B -tam -maN -t -ám	√C -tam -^{i} -t -ám	√C -tam -^{i} -t -ám
2 [+participant −author]	√B -tam -maN -t -em	√C -tam -^{i} -t -em	√C -tam -^{i} -t -em
3M [−participant −author]	√B -tam -maN -t -am	√C -tam -^{i} -t -am	√C -tam -^{i} -t -am
3N [−participant −author −masculine]	√B -tam -maN -t -um	√C -tam -^{i} -t -um	√C -tam -^{i} -t -um

Morpheme denotations: Root -aspect -number -tense -person+gender.

plural. Recall that [−atomic] is deleted, ASP is absent and the subject is dual (15); since this is the feature that characterises the environments where -^{i} appears, we already have an explanation for its absence here. But a puzzle remains: -^{i} does not appear when ASP is absent and the subject is 1INC.PL or 2PL. It follows that there is a rule of impoverishment deleting a feature, because -^{i} does appear with these subjects when ASP is present. This rule of impoverishment cannot target [−atomic] because the C root appears when ASP is absent and the subject is 1INC.PL or 2PL; thus, -^{i} must realise another feature too. The only feature available is [minimal] (18b) (I collapse the optionality of [+minimal] or [−minimal] to [±minimal] (Harbour 2003a, Despić and Murray 2018)).[16]

(18) *Rules of Exponence for the remaining number features*

a. [−minimal] → ↯ / [[[[√]−atomic __] T] +participant]

b. [−atomic ± minimal] ⇔ -^{i}

c. *elsewhere* $_{\#}$ ⇔ -k

The rule of impoverishment that captures the fact that the affix -^{i} does not appear when ASP is absent and the subject is 1INC.PL or 2PL thus targets [−minimal] (18a). It follows that -*k* is the elsewhere number exponent (18c).

[16] A reviewer has argued that (18b) amounts to two homophonous exponents, which Noyer's (1998) analysis was designed to avoid. In section 6, I will argue firstly that while speakers are biased against homophony, there is no absolute ban against it, and secondly that a single pair of homophonous exponents is not enough to motivate post-syntactic feature insertion; this requires a more systematic set of homophonous pairs.

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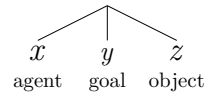

Figure 4. The structure of the Kiowa agreement prefix.

Finally we come to the rules of exponence for the person features. These do not need to change from those proposed by Noyer (1998) (19), though the rule of impoverishment for the [−masculine] feature has to be specified so that it cannot apply when the durative aspect is present (20).

(19) *The remaining Rules of Exponence*

a. [−participant −author − masculine] ⇔ -um
b. [−participant −author] ⇔ -am
c. [+participant −author] ⇔ -e
d. [+participant +author] ⇔ -ám
e. [−participant +author] ⇔ -u
f. [FUTURE] ⇔ -d
g. [PRESENT] ⇔ -t

(20) *Rule of Impoverishment for* [−masculine]

[−masculine] → ↯ / [[[[√] −atomic −minimal] T] __]

By considering the morphemes in all environments simultaneously, it was possible to identify the features they exponed and the rules of impoverishment that must precede exponence, without invoking post-syntactic feature insertion. I now turn to Kiowa.

3. Exhibit B: Kiowa

3.1 The case for post-syntactic feature insertion in Kiowa: Harbour (2003a) Kiowa is a Kiowa-Tanoan language indigenous to Oklahoma, USA.

3.1.1 The structure of the Kiowa agreement prefix

Kiowa agreement prefixes subsume argument information into a single pre-verbal prefix. Kiowa verbs agree for up to three arguments: an agent, a goal, and an object (21).

(21) *A Kiowa pre-verbal prefix*

á- ʔʔ

they: to them: it- gave

'They gave it to them.' (Harbour 2003: 546)

While these prefixes are famously difficult to decompose morphologically (since many are portmanteaux), there is sufficient morphological evidence to support the structure in Figure 4, which forms a phonological island distinct from the verb (Harbour 2003a, 2008).

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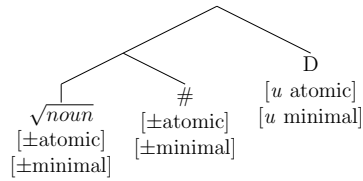

Figure 5. The nominal structure of Kiowa DPs.

Each node in this tree hosts copies of the person and number features of the argument it agrees with. This is straightforward for the person features, already detailed in section 1.3. The number features of the Kiowa agreement prefixes require a little more explanation. The features that underlie number are again those detailed in section 1.3. Kiowa nouns each belong to one of four Classes, each of which has an inherent number. The inherent number of Class I is "one or two"; the inherent number of Class II is "two or more"; the inherent number of Class III is "two"; and the inherent number of Class IV is "any number" (Harbour 2003a: 551). Harbour notes that these inherent numbers correspond to particular features that underlie number systems more generally. Specifically, Class I bears the inherent feature [+minimal], Class II bears the inherent feature [−atomic], Class III bears the inherent features [−atomic +minimal], and Class IV bears no inherent number features at all. The nominal structure in Kiowa is given in Figure 5.

Harbour proposes that "inverse is the realisation of uninterpretable number features on D [...] Uninterpretable number on D is valued by a computation over number and Noun. If [the inherent number] and the [natural] number are consistent, then the values are copied onto D. If they clash, however, copying of all values is impossible and D is valued instead as [INVERSE]" (Harbour 2003a: 553). The verbal agreement prefixes Agree with the features on D, so inverse marking is carried over into the verbal domain. The number agreement values for the prefixes are given in the final column of Table 8.

The features hosted by the nodes *x*, *y* and *z* in Figure 4 are thus those in Figure 1 and those in the final column of Table 8. We are now ready to turn to Harbour's (2003a) argument for post-syntactic feature insertion in Kiowa.

3.1.2 The argument for grouping dual, plural and inverse as a natural class

Harbour's (2003a) argument for post-syntactic feature insertion hinges on the need to group dual, plural and inverse marked arguments together as a natural class. This presents a problem, as dual, plural and inverse marked arguments do not have any features in common that would underlie this natural class; the only thing they have in common is the absence of [+atomic] (the distinguishing feature of singular arguments) from their feature bundles. Harbour presents three pieces of evidence showing that inverse-marked arguments form a natural class with plural and dual-marked arguments.

[+nasal]. The feature [+nasal] is an exponent of dual. Consider first the agreement prefixes in Table 9, where either the agent or the goal is dual.

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Table 8. Prefix number agreement in Harbour (2003a)

Class	Inherent Number	Natural Number	Prefix number agreement
I	[+minimal]	[+atomic +minimal]	[+atomic +minimal]
		[−atomic +minimal]	[−atomic +minimal]
		[−atomic −minimal]	[INVERSE]
II	[−atomic]	[+atomic +minimal]	[INVERSE]
		[−atomic +minimal]	[−atomic +minimal]
		[−atomic −minimal]	[−atomic −minimal]
III	[−atomic +minimal]	[+atomic +minimal]	[INVERSE]
		[−atomic +minimal]	[−atomic +minimal]
		[−atomic −minimal]	[INVERSE]
IV		[+atomic +minimal]	[+atomic +minimal]
		[−atomic +minimal]	[−atomic +minimal]
		[−atomic −minimal]	[−atomic −minimal]

Table 9. Examples of agreement prefixes where the agent, *x*, or goal, *y*, is dual

***x*:**	***y*:**	***z***				
		{∅}	3SG	3DL	3PL	3INV
2DL	(3A)	ma	má*	mén	mán*	mén*
3DL	(3A)	ę	ę́*	én	én*	én
2DL	1SG	mâa*	mâa*	ménêi*	mánîi*	mɔ́n*
2DL	3SG		mâa*	ménêi*	mánîi*	ɔ́nɔ̂ɔ*
3DL	1SG	ę̨́i*	ę̨́i*	ę̨nêi*	ę̨nîi*	ę̨nɔ̂ɔ*
3DL	3SG		ę̨́i*	ę̨nêi*	ę̨nîi*	ę̨nɔ̂ɔ*
any	2DL	mɔ́	mɔ́	mén	mán	mɔ́n
any	3DL		mé	mén	mén	mén

3A denotes a 3rd person plural animate argument, and the asterisks indicate that the prefix lowers the tone of the subsequent verb.

In all of these agreement prefixes, [+nasal] has spread to all phonemes (following Harbour 2003a, I have not marked nasality on the vowels). However, when the object is dual, but neither the agent nor goal are likewise, the prefix is only exponed as [+nasal] if the agent (in transitives) or agent *and* goal (in ditransitives) are singular, as in Table 10 (cf. Table 11).

Harbour concludes that plural and inverse agents and goals "block" prefixes with 3DL objects from being exponed as [+nasal]. This is the first piece of evidence that the plural and inverse form a natural class.

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Table 10. Prefixes with a 3DL object and singular agents and goals

x:	*y*:	*z* 3DL
1SG		nen
2SG		men
2SG	1SG	né
3SG	1SG	né
1SG	2SG	nén

x:	*y*:	*z* 3DL
1SG	3SG	nén
2SG	3SG	én
	3SG	én
	1SG	né
	2SG	nén

Table 11. Prefixes with a 3DL object and at least one other non-singular argument

x:	*y*:	*z* 3DL
1EXC		et
1INC		bet
2INV		bet
3INV		et
2INV	1SG	bédêi*

x:	*y*:	*z* 3DL
3INV	1SG	édêi*
any	2INV	bét
1EXC	3SG	édêi*
1INC	3SG	bédêi*
any	3INV	bét

Table 12. Transitive agreement prefixes

x:	*z*			
	3SG	3DL	3PL	3INV
1SG	gya	nen	gyat	dé
1EXC	é*	et	ét*	ét
1INC	bá*	bet	bát*	bét

x:	*z*			
	3SG	3DL	3PL	3INV
2SG	a	men	bat	be
2DL	má*	mén	mán*	mén
2PL	bá*	bet	bát*	bét

Dental codas. The second piece of evidence for grouping dual, plural, and inverse together as a natural class comes from codas. Consider the transitive agreement prefixes in Table 12.

Harbour observes that the agreement prefixes with singular objects uniformly have no codas. The agreement prefixes with non-singular objects, on the other hand, uniformly have codas, except for those with a 3INV object; these have a coda only when the agent is non-singular (inspection of the agreement prefixes shows that the 1EXC and 1INC have no morphological number). We therefore have a second piece of evidence where dual, plural and inverse group together as a natural class.

The vowel ɔ. The vowel ɔ only appears in ditransitive agreement prefixes. It almost uniformly denotes 3INV objects, which do not concern us here, and is also seen when the prefix has a 3SG or 'advanced' object (the $z = \{\varnothing\}$ column in Table 13).[17] Consider

[17] Advanced objects are non-third person themes, realised in Kiowa like goals (Harbour 2003a: 558). See Adger and Harbour (2007) for an analysis.

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Table 13. Agreement prefixes with obliterated agents

y:	*z*				
	Ø	3SG	3DL	3PL	3INV
1SG	ę́	ę́	né	yą́	nɔ́
1DL	dɔ́	dɔ́	dét	gyát	dɔ́t
1PL	dɔ́	dɔ́	dét	gyát	dɔ́t

y:	*z*				
	Ø	3SG	3DL	3PL	3INV
2SG	em	gyá	nén	yán	gɔ́
2DL	mɔ́	mɔ́	mén	mán	mɔ́n
2INV	bɔ́	bɔ́	bét	bát	bɔ́t

Table 14. Summary of the evidence that dual, plural and inverse form a natural class

	Object				
Agent *or* Goal	{Ø}	3SG	3DL	3PL	3INV
Neither non-singular	*ɔ	*ɔ	NASAL		*CODA
Either non-singular	ɔ	ɔ	*NASAL		CODA

Table 15. Agreement prefixes where the goal is 2SG

x:	*y*:	*z*				
		{Ø}	3SG	3DL	3PL	3INV
{Ø}/1SG	2SG	em	gyá	nén	yán	gɔ́
other	2SG	gɔ́	gɔ́	dét	gyát	gɔ́t

the agreement prefixes in Table 13, which denote ditransitive prefixes whose agent has been obliterated (Harbour 2008: 165).

Harbour notes that when the goal is non-singular and the object is either advanced or 3SG, the vowel *ɔ* appears. He concludes from this that the conditioning environment for *ɔ* is a non-singular agent or goal, again supporting the need to group dual, plural and inverse together as a natural class.

Summary. The evidence for grouping dual, plural and inverse together as a natural class is summarised in Table 14 (Harbour 2003a: 559).

3.1.3 The argument for post-syntactic feature insertion in Kiowa

The data that clinches the case for post-syntactic feature insertion for Harbour is given in Table 15, where the goals of the agreement prefixes are 2SG.

The agreement prefixes in the first row of (15) are used when the agent is absent or 1SG. The prefixes in the second row are used the rest of the time. Harbour argues that it is this second row of prefixes that presents the evidence for post-syntactic feature insertion. The morphological evidence here shows that these prefixes meet the requirement in (14) that either the agent or goal is non-singular: the prefix with the 3DL object is not nasalised, the prefix with the 3INV object has a coda, and the prefixes with the advanced and 3SG objects have the vowel *ɔ*. The goal in the *other*:2SG:*z* prefixes is indisputably [+atomic], and thus cannot be the non-singular argument conditioning the morphology.[18] It follows from this that it is the agent that is non-singular. The question

[18]Following Harbour (2003a, 2008), I refer to prefixes by their structure *x*:*y*:*z*. Thus, the 1SG:2SG:3SG prefix has a 1SG agent, a 2SG goal, and a 3SG object. It is exponed by *gyá* (see Table 15).

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that now arises is how we group the dual, plural and inverse together as a natural class.

Harbour argues that since non-singularity is the shared property of dual, plural and inverse, they must each bear the feature [−atomic]. This is straightforward for dual and plural, which already bear this feature, but not for inverse, which does not. A more complex explanation is required. Harbour proposes the following. First, to capture the fact that the {∅}:2SG:*z* prefixes are syncretic with the 1SG:2SG:*z* ones, Harbour argues that when the agent is 1SG, the entire *x* node is obliterated (22).

(22) *Rule of Obliteration when the agent is* 1SG

$[_x$ 1SG] → ϟ/ __ $[_y$ 2SG]

Harbour observes that the syncretism between the non-singular agents in the *other*:2SG:*z* prefixes cannot be captured by obliteration of the *x* node here, as this would cause them to syncretise with the {∅}/1SG:2SG*z* ones. Consequently, he argues that when the agent is non-singular, all the features of the *x* node, but not the node itself, are impoverished (23).

(23) *Six Rules of Impoverishment when the goal is* 2SG

a. [ANIMATE] → ϟ / $[_x$ __] $[_y$ 2SG]

b. [INVERSE] → ϟ / $[_x$ __] $[_y$ 2SG]

c. [±minimal] → ϟ / $[_x$ __] $[_y$ 2SG]

d. [±atomic] → ϟ / $[_x$ __] $[_y$ 2SG]

e. [±author] → ϟ / $[_x$ __] $[_y$ 2SG]

f. [±participant] → ϟ / $[_x$ __] $[_y$ 2SG]

Once these features have been deleted, the *x* node is empty, and crucially free to host any feature that one might happen to want to insert. This was precisely what Harbour wished, and he proposed the rule of post-syntactic feature insertion directly (24).

(24) *Rule of post-syntactic feature insertion*

∅ → [−atomic] / $[_x$ __]

Harbour demonstrates that the default number in Kiowa is plural. He shows firstly that sentences with expletive subjects in English have plural (inanimate) agreement in Kiowa, secondly that Kiowa predicates with dummy (i.e., null and adverbial) objects take plural agreement, and thirdly that Kiowa reflexives are systematically realised as 3rd animate plural objects. That plural is the default number in Kiowa is important for Harbour because (as we have already seen) Noyer (1998) argued that when features are inserted post-syntactically, only the default value of the feature is inserted. This restricts post-syntactic feature insertion so that it cannot happen rampantly. Harbour thus argues that [−atomic] and [−minimal] are the default values of [±atomic] and [±minimal], and are therefore the values that participate in post-syntactic feature insertion in Kiowa.

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The happy consequence of the post-syntactic insertion of [−atomic] is that Harbour can now explain why dual, plural and inverse marked arguments behave as a natural class, which he previously claimed was impossible.

3.2 Accounting for the Kiowa data without post-syntactic feature insertion

Unbeknownst to him, Harbour eliminated the need for post-syntactic feature insertion in Kiowa within five years of publishing his paper. In his thesis, he wrote that "After further thought, I am disinclined to take the position just outlined [...] The introduction of a feature violates inclusivity. Within Minimalism, the issue of whether syntax obeys inclusivity — that is, whether it does anything more than stick things together, move them around, and duplicate them — is major as it speaks to the issue of design optimality. If syntax is not subject to inclusivity, if, instead, it can produce things from nowhere, then the theory of syntax becomes potentially far less constrained" (Harbour 2003b: 76, typographical errors corrected).

In his (2008) book, Harbour provides a new analysis of the valuation of uninterpretable number features on D (25), such that D is able to host both values of a single feature.

(25) *Valuation of D*

Uninterpretable number on D is valued by a computation over number and Class.

The features of both are replicated on D. (Harbour 2008: 74)

Harbour writes that:

> D bears uninterpretable number [...] which must be valued. Valuation [...] involves matching the feature content of D with that of Class and number. In a departure from other work [...] uninterpretability is argued to involve overspecification, rather than underspecification, of the feature. That is, [*u*F] is argued to abbreviate specification of both [−F] and [+F], which must be matched with interpretable counterparts or else deleted, rather than specification of a valueless [F]. This view permits valuation of D to produce the feature conflicts, [−F +F], on which the analysis of the inverse hinges. (Harbour 2008: 62)

The consequence of this is that inverse marking now appears whenever D hosts both values of one number feature, and one value of the other. Harbour captures the uniformity of inverse marking with an abstract rule of exponence for inverse (26) (where INVERSE is a placeholder for a number of phonologically-conditioned exponents).[19]

(26) *Rule of Exponence for inverse in Kiowa*

$[+\mathrm{F} -\mathrm{F} \pm \mathrm{G}] \Leftrightarrow$ INVERSE

As before, inverse marking is carried over into the verbal domain, but we must update the features to reflect the overspecification that triggers inverse. The number agreement

[19]The morphological properties of this system are discussed at length in Harbour (2008), chapters 3–5.

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Table 16. Prefix number agreement in Harbour (2008)

Class	Inherent Number	Natural Number	Prefix number agreement
I	[+minimal]	[+atomic +minimal]	[+atomic +minimal]
		[−atomic +minimal]	[−atomic +minimal]
		[−atomic −minimal]	**[−atomic +minimal −minimal]**
II	[−atomic]	[+atomic +minimal]	**[−atomic +minimal +atomic]**
		[−atomic +minimal]	[−atomic +minimal]
		[−atomic −minimal]	[−atomic −minimal]
III	[−atomic +minimal]	[+atomic +minimal]	**[−atomic +minimal +atomic]**
		[−atomic +minimal]	[−atomic +minimal]
		[−atomic −minimal]	**[−atomic +minimal −minimal]**
IV		[+atomic +minimal]	[+atomic +minimal]
		[−atomic +minimal]	[−atomic +minimal]
		[−atomic −minimal]	[−atomic −minimal]

values for the prefixes are given in the final column of Table 16, with the instances of inverse in bold.

Crucially, the four clashes between inherent and natural number that generate inverse marking all involve the valuation of D with [−atomic], rendering inverse a member of the natural class that also includes dual and plural, and allowing Harbour to account for the data discussed above without post-syntactic feature insertion.[20]

4. Exhibit C: Leísta Spanish

I now turn to Leísta Spanish. I will show that the data can be accounted for without post-syntactic feature insertion, simply by reanalysing the Rules of Exponence.[21]

4.1 The case for post-syntactic feature insertion in Leísta Spanish: Nevins (2007)

Nevins (2007) presents an analysis of the spurious *se* effect (Perlmutter 1971, Bonet 1991) found in many Spanish dialects, including Leísta Spanish. The spurious *se* effect arises as a consequence of the ban on **le lo* in clitic doubling sequences (27a). Violation

[20]The only way inverse marking could appear without D hosting the feature [−atomic] is if there were a single instance of a noun whose inherent number was [−minimal]. Since no Class of Kiowa nouns is inherently plural, this scenario is impossible.

[21]Two reviewers mentioned Müller's (2004) account of Russian syncretism in noun inflection. The problem discussed evaporates as soon as the features for case are updated to those used in Caha (2009), who demonstrates that the genitive case contains the accusative. The syncretism Müller is trying to capture is straightforwardly modelled, and no feature insertion is required. This reanalysis parallels the one presented for Leísta Spanish, given in section 4.2.

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Table 17. Standard spanish 3SG clitics

3π clitics	Direct Object [ACC]	Indirect Object [ACC DAT]
[+animate]	lo ♂ / la ♀	le
[−animate]	lo ♂ / la ♀	le

Table 18. Leísta 3SG clitics

3π clitics	Direct Object [ACC]	Indirect Object [ACC DAT]
[+animate]	le	le
[−animate]	lo ♂ / la ♀	le

of this ban is avoided by the mysterious appearance of the highly underspecified clitic *se* replacing *le* (27b).

(27) *The spurious* se *effect in Leísta Spanish*

a. *A Pedro, el premio, le lo dieron ayer.
to Pedro, the prize, 3CL.DAT 3CL.ACC gave.PL yesterday
'To Pedro, the prize, they gave him it yesterday.'

b. A Pedro, el premio, se lo dieron ayer.
to Pedro, the prize, CL 3CL.ACC gave.PL yesterday
'To Pedro, the prize, they gave him it yesterday.' (Nevins 2007: 282)

Nevins argues that the spurious *se* effect arises as a consequence of dissimilation, and accounts for it with a rule of impoverishment that deletes the 3rd person features from the dative clitic feature bundle when it immediately precedes another 3rd person clitic (28) (Nevins 2007: 310).

(28) *Rule of Impoverishment for Leísta Spanish*

[−participant −author] → ϟ / [CL __ ACC DAT ...] [CL 3π ...]

There are three 3SG clitics in Standard Spanish, shown in Table 17: the masculine accusative *lo*, the feminine accusative *la*, and the genderless dative *le*.

In the Leísta Spanish dialect, the genderless dative clitic *le* is additionally used as a direct object clitic when the referent is animate (Table 18, Bleam 1999: 1). To account for the different distributions of the clitics, Nevins (2007) proposes the rules of exponence for Leísta Spanish shown in (29). Note that none of the clitics expone the Dative case, which structurally includes the Accusative: [[[NOM] ACC] DAT] (Smith et al. 2019, Zompi 2019).

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(29) *Nevins' partial list of the Rules of Exponence for Leísta Spanish clitics*

a. [CL 3π ACC +masc −animate] ⇔ lo
b. [CL 3π ACC −masc −animate] ⇔ la
c. [CL 3π ACC] ⇔ le
d. [CL 2π ACC] ⇔ te
e. [CL 1π ACC] ⇔ me
f. [CL] ⇔ se

While these rules of exponence capture the direct object 3rd person clitics and the animate 3rd person clitics, they incorrectly predict that masculine inanimate indirect objects will be doubled with the clitic *lo* (as demonstrated in (30)), while feminine inanimate indirect objects will be doubled with the clitic *la*.

(30) *Clitic doubling of an inanimate Indirect Object in Leísta Spanish*
Le pusé azucar a-l pastel.
3CL put.PAST.1SG sugar A-the cake.MASC
'(On it,) I put sugar on the cake.' (Nevins 2007: 282)

It follows that Leísta Spanish has a rule of impoverishment that deletes gender features in the Dative (31). Nevins does not discuss this rule, but it is necessary for his account to work.

(31) *Rule of Impoverishment for gender features in the Dative (Version 1)*
♂♀ → ϟ / [CL 3π ACC DAT __ −animate]

Once gender has been deleted from the feature bundle, the exponents *lo* and *la* are overspecified, so inanimate Indirect Objects will be doubled with the less-specified clitic *le*. Now consider the data that prompts Nevins to invoke post-syntactic feature insertion. Like the spurious *se* cases, this is another instance of dissimilation, triggered by neighbouring animate clitics (32).

(32) *Another case of dissimilation in Leísta Spanish*

a. *Te le di.
2CL 3CL.A gave.1SG
'I gave him to you.'

b. Te lo di.
2CL 3CL.MASC.I gave.1SG
'I gave him to you.' or 'I gave it to you.' (Nevins 2007: 282)

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$$\begin{bmatrix} \textit{you} \\ \text{CL } 2\pi \\ \text{ACC DAT} \\ -\text{masculine} \\ +\text{animate} \end{bmatrix} \begin{bmatrix} \textit{him} \\ \text{CL } 3\pi \\ \text{ACC} \\ +\text{masculine} \\ +\text{animate} \end{bmatrix}$$

Figure 6. The feature bundles in the syntax.

$$\begin{bmatrix} \textit{you} \\ \text{CL } 2\pi \\ \text{ACC DAT} \\ -\text{masculine} \\ +\text{animate} \end{bmatrix} \begin{bmatrix} \textit{him} \\ \text{CL } 3\pi \\ \text{ACC} \\ +\text{masculine} \\ -\text{animate} \end{bmatrix}$$

Figure 7. The feature bundles at PF.

The unexpected interpretation of (32b) is *I gave him to you*, which should, according to the rules of exponence in (29), be rendered with the clitics *te le*. The clitic feature bundles of (32a) as they appear in the syntax are given in Figure 6, and the clitic feature bundles as they are when they reach PF are given in Figure 7.

The key difference is that the [+animate] feature in the direct object feature bundle for *him* has been deleted and replaced by [−animate]. Nevins argues that there must be an additional animacy dissimilation rule that applies to the second clitic of such sequences (33), followed by a post-syntactic rule of feature insertion for [−animate] (34) (Nevins 2007: 282).[22]

(33) *Nevins' Rule of Impoverishment for* [+animate]

$[+\text{animate}] \rightarrow \not{+} \; / \; [\text{CL} \ldots +\text{animate}] \; [\text{CL} \ldots \_\_]$

(34) *Nevins' Rule of Feature Insertion for* [− animate]

$\varnothing \rightarrow [-\text{animate}] \; / \; [\text{CL} \ldots +\text{animate}] \; [\text{CL} \ldots \_\_]$

4.2 Accounting for the Leísta Spanish data without post-syntactic feature insertion

Post-syntactic feature insertion can be avoided completely with a simple reassessment of the rules of exponence for Leísta Spanish. Consider the alternative rules of exponence in (35), which no longer mention the feature [±animate] at all.

[22]Nevins (2007) takes the default value of [±animate] to be negative, which means that it is available for post-syntactic insertion, à la Noyer (1998) and Harbour (2003a). However, this seems a little odd, since it is the only value of [±animate] to appear in his rules of exponence (29), indicating that it is the marked value.

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(35) *Partial list of the Rules of Exponence for Leísta Spanish clitics (Final)*

a. [CL 3π ACC +masculine] ⇔ lo
b. [CL 3π ACC −masculine] ⇔ la
c. [CL 3π ACC] ⇔ le
d. [CL 2π ACC] ⇔ te
e. [CL 1π ACC] ⇔ me
f. [CL] ⇔ se

These rules alone predict that *lo* and *la* will always expone 3rd person clitic feature bundles, so the rule of impoverishment in (31) must be modified so that gender features are deleted when the clitic denotes an animate (36a) or Dative argument (36b).

(36) *Rules of Impoverishment for gender features (Final Version)*

a. ♀♂ → ϟ / [CL 3π ACC +animate __]
b. ♀♂ → ϟ / [CL 3π ACC DAT __]

However, if these rules of impoverishment apply when two animate clitics form a doubling sequence, the ungrammatical (32a) will surface, instead of the attested (32b). It follows, then, that the rules of impoverishment in (36) apply *after* the rule of impoverishment in (33), which deletes the feature [+animate] in the second feature bundle. This bleeds the rule in (36), deriving the data in (32). Hence, with the simple removal of [−animate] from the rules of exponence, and a slight readjustment to the rules of impoverishment for gender features, it is possible to account for the Leísta Spanish data without recourse to post-syntactic feature insertion.

5. Exhibit D: Romanian

5.1 The case for post-syntactic feature insertion in Romanian: Farkas (1990)

The morphological puzzle in Romanian presented in Farkas (1990) can also be accounted for without post-syntactic feature insertion if the feature inventory and rules of exponence are suitably adjusted. The data that concerns us here is gender agreement. Masculine and feminine nouns in Romanian trigger masculine and feminine agreement with determiners, adjectives and predicative adjectives (37).[23]

[23] I am grateful to Ileana Grama for providing me with additional Romanian data and judgements.

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(37) *Masculine and feminine agreement in Romanian*

a. Un trandafir alb e scump.
a.MASC.SG rose.MASC white.MASC.SG is expensive.MASC.SG
'A white rose is expensive.'

b. Niște trandafiri albi sunt scumpi.
some rose.MASC.PL white.MASC.PL are expensive.MASC.PL
'Some white roses are expensive.'

c. O garoafă albă e scumpă.
a.FEM.SG carnation.FEM.SG white.FEM.SG is expensive.FEM.SG
'A white carnation is expensive.'

d. Niște garoafe albe sunt scumpe.
some carnation.FEM.PL white.FEM.PL are expensive.FEM.PL
'Some white carnations are expensive.' (Farkas 1990: 539)

Neuter nouns, however, trigger masculine agreement in the singular, and feminine agreement in the plural (38).

(38) *Neuter agreement in Romanian*

a. Un scaun confortabil e folositor.
a.MASC.SG chair.NEUT comfortable.MASC.SG is useful.MASC.SG
'A comfortable chair is useful.'

b. Niște scaune confortabile sînt folositoare.
some chairs.NEUT.PL comfortable.FEM.PL are useful.FEM.PL
'Some comfortable chairs are useful.' (Farkas 1990: 540)

Romanian demonstrative pronouns display similar agreement behaviour. Romanian has four demonstrative pronouns, given in (39).

(39) *The four Romanian demonstrative pronouns*

a. acesta (ăsta) 'this.MASC.SG'

b. aceştia (ăştia) 'this.MASC.PL'

c. aceasta (asta) 'this.FEM.SG'

d. acestea (astea) 'this.fem.pl' (Farkas 1990: 540)

When Romanian demonstrative pronouns refer deictically, they agree in gender and number with their referent (40) (Dowty and Jacobson 1988, Farkas 1990: 540).

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Table 19. Farkas' Romanian agreement and demonstrative pronoun exponents

AGREEMENT			DEMONSTRATIVE PRONOUNS		
[−feminine +atomic]	⇔	-Ø	[PRON −feminine +atomic]	⇔	ăsta
[−feminine −atomic]	⇔	-i	[PRON −feminine −atomic]	⇔	ăştia
[+feminine +atomic]	⇔	-ă	[PRON +feminine +atomic]	⇔	asta
[+feminine −atomic]	⇔	-e	[PRON +feminine −atomic]	⇔	astea

(40) Demonstrative pronouns in Romanian

a. ăsta e confortabil.
this.MASC.SG is comfortable.MASC.SG
'This is comfortable.'

b. ăştia sînt confortabili.
these.MASC.PL are comfortable.MASC.PL
'These are comfortable.'

c. asta e confortabilă.
this.FEM.SG is comfortable.FEM.SG
'This is comfortable.'

d. astea sînt confortabile.
these.FEM.PL are comfortable.FEM.PL
'These are comfortable.'

As was the case with determiner, adjective and predicative adjective agreement, demonstrative pronouns denoting neuter nouns trigger masculine agreement in the singular (40a), and feminine agreement in the plural (40d) (Farkas 1990: 540). Farkas captures the Romanian data with the exponents in Table 19.

Farkas assumes that there is one gender feature in Romanian, [±feminine]. Feminine nouns are [+feminine], masculine nouns are [−feminine], and neuter nouns bear no gender feature at all. Farkas states that the default value of [±feminine] in Romanian is negative. This is consistent with the fact that when there is no noun for an adjective to agree with, the adjective is realised with masculine agreement (41b).

(41) *Masculine agreement when there is no noun*

a. Vrema e noroasă.
weather.FEM.SG is cloudy.FEM.SG
'The weather is cloudy.'

b. E noros afară.
is cloudy.MASC.SG outside
'It is cloudy outside.' (Farkas 1990: 543)

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To account for this and the neuter agreement patterns, Farkas proposes two post-syntactic feature insertion rules (42).

(42) *Farkas' Rules of Feature Insertion for* [±feminine]

a. $\varnothing \rightarrow$ [+feminine] / [$_{N}$ −atomic __]

b. $\varnothing \rightarrow$ [−feminine]

(Farkas 1990: 542, presented here in the DM style)

These rules of feature insertion ensure that when agreement takes place, neuter nouns will trigger masculine agreement in the singular, and feminine agreement in the plural. They also ensure that when there is no noun for the adjective to agree with, its gender will be masculine.

However, when there is no noun for the demonstrative pronoun to take its gender from, such as when the speaker doesn't know what the referent is (43), or when the pronoun denotes an event (44), the pronominal form used is feminine.

(43) *Feminine demonstrative pronouns when the referent is unknown*

a. Ce e asta?
what is this.FEM.SG
'What is this?'

b. Ce sînt astea?
what are these.FEM.PL
'What are these?'

(Farkas 1990: 540)

(44) *A feminine demonstrative pronoun when the referent is an event*
Petru e acasă, dar asta nu o ştie decît Maria.
Peter is home but this.FEM.SG not CL knows only Mary
'Peter is home, but this is known only to Mary.' (idem)

To account for this fact, Farkas proposes another post-syntactic rule of feature insertion, for demonstrative pronouns (45):

(45) *Farkas' Final Rule of Feature Insertion for* [+fem]

$\varnothing \rightarrow$ [+feminine] / [$_{Dem}$ __]

(Farkas 1990: 543)

Finally, Farkas demonstrates that her rules of feature insertion apply *before* agreement takes place. The key data involves a demonstrative pronoun referring to an event that triggers agreement on a predicative adjective (46).

(46) *Mismatched agreement in Romanian*

a. Petru a acasă. Asta e uluitor / *uluitoare.
Peter is home this.FEM.SG is amazing.MASC.SG / *amazing.FEM.SG
'Peter is home. This is amazing.'

(Farkas 1990: 541)

In this example, the demonstrative pronoun is marked as feminine, but masculine agreement is triggered on the predicative adjective. This is only possible in Farkas' system if the rules of feature insertion apply before agreement takes place; otherwise, we

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would see the predicative adjective in (46) agreeing in gender with the demonstrative pronoun.

5.2 Accounting for the Romanian data without post-syntactic feature insertion[24]

It is not necessary to post-syntactically insert gender features in Romanian if two gender features are recognised instead of one: [±feminine] and [±masculine] (see Matushansky 2020 for a similar proposal with slightly different exponents, or Kramer 2015 for one which involves only one binary feature).[25] In this system, feminine is denoted by the features [+feminine −masculine], masculine by [−feminine +masculine], and neuter by [−feminine −masculine]. We can see the exponents for the agreement affixes and demonstrative pronouns with the relevant features in the charts in Figures 8 and 9 respectively.

	♂		♀
	−FEM		+FEM
	+MASC	−MASC	
+A	Ø	Ø	-ă
−A	-i	-e	-e

Figure 8. Agreement affixes.

	♂		♀
	−FEM		+FEM
	+MASC	−MASC	
+A	ăsta	ăsta	asta
−A	ăştia	astea	astea

Figure 9. Demonstrative pronouns.

The syncretism between the masculine and neuter singular is captured by their shared feature [−feminine], and the syncretism between the feminine and neuter plural is captured by their shared feature [−masculine].

Since these feature bundles do not account for the fact that the default agreement gender is masculine and the default demonstrative pronoun gender is feminine, the exponents cannot be specified for the full feature bundles. In the case of the agreement affixes, the features that are mentioned in the rules of exponence are [−masculine]

[24]This section makes the point that the Romanian data can be accounted for without post-syntactic feature insertion, but does not claim this to be the optimal analysis; a complete analysis would also have to account for wider complexities of the Romanian system which are not addressed here. See, for example, Farkas and Zec (1995), Acquaviva (2008), Croitor and Giurgea (2009), Bateman and Polinsky (2010), and others for further analysis of Romanian gender.

[25]A reviewer observes that an analysis of Romanian gender with two binary features will struggle to account for co-ordination agreement patterns in the language. However, we may not want to account for these patterns in the syntax, as there is evidence that co-ordination agreement patterns with other φ-features are extra-syntactic, for example in the case of co-ordinated paucals (see Harbour 2020).

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and [+feminine] (47), while the features mentioned in the rules of exponence for the demonstrative pronouns are [+masculine] and [−feminine] (48).

(47) *RoEs for the agreement affixes*

[−masculine −atomic] ⇔ -e
[+feminine +atomic] ⇔ -ă
[−atomic] ⇔ -i
[+atomic] ⇔ ∅

(48) *RoEs for the demonstrative pronouns*

[+masculine −atomic] ⇔ ăştia
[−feminine +atomic] ⇔ ăsta
[−atomic] ⇔ astea
[+atomic] ⇔ asta

When there is no noun for the predicative adjective to agree with, the agreement affix will be -{∅}, the masculine singular. When there is no noun for the demonstrative pronoun to agree with, the form will be *asta*, the feminine singular. This apparent mismatch in agreement will surface when both appear together in the absence of a noun, as we saw in (46).

A reviewer observes that these exponents alone do not capture the fact that neuter is always syncretic with either masculine or feminine; on the contrary, these exponents allow for neuter to be exponed without necessitating syncretism. We need two rules of impoverishment to ensure that neuter is always syncretic with another gender. The first will delete all masculine features in the presence of [+atomic] (49a); this accounts for the fact that neuter and masculine are always syncretic in the singular. The second deletes all feminine features in the presence of [−atomic] (49b); this accounts for the fact that neuter and feminine are always syncretic in the plural.

(49) *Rules of Impoverishment for Romanian gender features*

a. [±masculine] → ϟ / [+atomic __]
b. [±feminine] → ϟ / [−atomic __]

By adding another gender feature to the inventory, it has been possible to capture the Romanian data and its interesting mismatches in agreement, without recourse to post-syntactic feature insertion.

6. So what would motivate a theory of post-syntactic feature insertion?

This section is as much about what a theory without post-syntactic feature insertion would predict to be impossible as it is about what kind of data would motivate a theory of post-syntactic feature insertion. Let us start by considering what a dataset would have to look like to motivate post-syntactic feature insertion. I can only think of one such scenario: There must be an exponent X that realises at least one feature, and an elsewhere exponent Y. In a specific environment, the exponent X must realise two feature bundles that have no features in common, while Y realises all remaining feature bundles.

To illustrate this scenario, imagine a hypothetical relative of English, whose copula has a similar, but not identical, set of allomorphs. In our hypothetical relative of

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English, the copula surfaces as *is* in negative questions when the subject is 3SG or 1PL and the negative morpheme cliticizes onto the copula, Table 21.

The morphology of the copula in the affirmative statements, affirmative questions, and negative statements gives us good reason to posit the same rules of exponence that we proposed before (50).

(50) *Allomorphs of the copula of the hypothetical relative of English*

[BE PRESENT +participant +author +atomic] ⇔ am
[BE PRESENT −participant −author +atomic] ⇔ is
[BE PRESENT] ⇔ are

But we cannot explain the appearance of *is* in negative questions when the subject is 1PL and the negative morpheme cliticizes onto the copula with the morphological processes we already have, because the feature bundles for 1PL and 3SG are exact opposites. This allows us to posit a rule of impoverishment that deletes the φ-features of the copula with a 1PL subject (51a), and another rule that post-syntactically inserts the φ-features of the copula with a 3SG subject (51b).

(51) *Rules of Impoverishment and feature insertion for the hypothetical relative of English*

a. [+participant +author −atomic] → ↯ / [Q BE PRESENT __ NEG]
b. ∅ → [−participant −author +atomic] / [Q BE PRESENT __ NEG]

If we assume an absolute ban on accidental homophony (rather than a bias against it), post-syntactic feature insertion is the only way that the morphology of this hypothetical relative of English can be accounted for, because it involves two elsewhere exponents in a specific environment; the true elsewhere exponent *are* which is the elsewhere exponent in all environments, and the false elsewhere exponent *is*, which behaves like an elsewhere exponent (because it realises two feature bundles who have no feature in common) only in negative questions.

If *is* surfaced as the copula in negative questions with any other subject, the morphology could be accounted for by reanalysing which features *is* expones, and positing an impoverishment rule that applies in affirmative statements, affirmative questions and negative statements. This is because the feature bundle of 3SG shares at least one feature with the other five feature bundles. For example, if the copula was exponed as *is* in negative questions with a 2PL subject, first we would reanalyse the rules of exponence so that *is* exponed [−author] (52), the shared feature of 2PL and 3SG.

(52) *The Rule of Exponence if* is *exponed the copula in negative questions with* 2PL *and* 3SG *subjects*

[BE PRESENT −author] ⇔ is

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Second, we would posit a rule of impoverishment that deletes the feature [−author] in affirmative statements, affirmative questions, and negative statements with 2SG, 2PL or 3PL subjects, or negative questions with 2SG or 3PL subjects (53).[26]

(53) *The Rule of Impoverishment if* is *exponed the copula in negative questions with* 2PL *and* 3SG *subjects*

[−author] → ∅ / [BE PRESENT __ x], where $x \subset$ {+participant, −atomic, Q, NEG}

This was exactly what we saw in Nimboran, and this is why the Nimboran data did not motivate a theory of morphology that includes post-syntactic feature insertion.

If we assume, however, that there is not an absolute ban on accidental homophony, but instead only a bias against it, only a more complex scenario will motivate post-syntactic feature insertion. Consider the English suffix *-s*. This suffix denotes possessives (*John's book*; *the dog's collar*), plurality (*elephants*; *footballs*), and 3rd singular agreement (*she swims*; *he laughs*) (54)–(56).

(54) *Possessive* -s
[POSS] ⇔ -s

(55) *Plural* -s[27]
[−atomic] ⇔ -s

(56) 3rd *singular* -s
[3 +atomic] ⇔ -s

None of these feature bundles have a common feature for *-s* to expone, and to the best of my knowledge, no one has suggested that *-s* is an elsewhere form for these three cases. Likewise, no one has suggested accounting for the distribution of *-s* with impoverishment and post-syntactic feature insertion; this has only been invoked when two feature bundles, identical bar the polarity of at least one feature, are both exponed by an exponent x. Instead, it is accepted that the three suffixes *-s* are homophonous exponents for three different feature bundles. We also invoke homophonous exponents in cases such as *to-too-two*, *there-their-they're*, *night-knight* and *gorilla-guerrilla*, which shows that speakers are not subject to an absolute ban on accidental homophony, but are biased against it.

Earlier, we saw that once a morphological process is independently required by the theory, we can call upon it to account for other relevant data (e.g., impoverishment in Latin Case suffixes (2), where impoverishment isn't required but does account for the systematic syncretism of the Dative and Ablative Cases). We can make a similar argument here: homophonous exponents, while to be avoided if possible, are well-attested, and consequently homophony is available as an explanation for data that would otherwise present evidence that features have been post-syntactically deleted and inserted. If a dataset like our hypothetical relative of English (Table 20) were to come to light, I would therefore argue that homophony is an adequate, if not beautiful, explanation for the data.

This returns us to the question raised by the reviewer in the Introduction: What price should we be willing to pay in selecting one theory over another? I submit that once a morphological process has been motivated, further iterations of the process

[26]There is a locality issue here: impoverishment of [−author] is blocked if all four features [+participant −atomic Q NEG] are present in the bundle. I set aside discussion of blocking conditions on impoverishment for now, but see Ackema and Neeleman (2018) for discussion of this issue (*The Russian Doll Principle*).

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Table 20. The copula BE and its subject in a hypothetical relative of English

	AFFIRMATION		NEGATION	
STATEMENT	I am	**We are**	I am not	**We are not**
	You are	You are	You are not	You are not
	She is	They are	She is not	They are not
QUESTION	Am I	**Are we**	Aren't I	**Isn't we**
	Are you	Are you	Aren't you	Aren't you
	Is she	Are they	Isn't she	Aren't they

Table 21. A sample of auxiliaries in negative questions in a hypothetical relative of English

BE		DO		HAVE	
Aren't I	**Isn't we**	Don't I	**Doesn't we**	Haven't I	**Hasn't we**
Aren't you	Aren't you	Don't you	Don't you	Haven't you	Haven't you
Isn't she	Aren't they	Doesn't she	Don't they	Hasn't she	Haven't they
MAY		WILL		CAN	
Mayn't I	**Masn't we**	Won't I	**Woesn't we**	Can't I	**Casn't we**
Mayn't you	Mayn't you	Won't you	Won't you	Can't you	Can't you
Masn't she	Mayn't they	Woesn't she	Won't they	Casn't she	Can't they

come for free. I thus favour theories with fewer morphological processes, since they are proportionally less powerful than theories with more.

Should we then abandon any thoughts of post-syntactic feature insertion? Not necessarily, but the data that would motivate it has to be more systematic and more complex than in the hypothetical example we have just considered. To motivate post-syntactic feature insertion in our hypothetical relative of English, we would want to see the contextual syncretism seen in Table 20 surface with most auxiliaries in Table 21, rather than just one.

If we assume English has 13 auxiliaries (*be*, *do*, *have*, *can*, *could*, *may*, *might*, *must*, *ought*, *shall*, *should*, *will*, and *would*), at least eight of them would have to show this syncretism in negative questions with cliticization for the phenomenon to be attributed to an underlying morphological process rather than accidental homophony, according to the Tolerance Principle (Yang 2005, 2016). If this threshold was met, the syncretism would be too systematic for an analysis of accidental homophony to be plausible, and an analysis that includes post-syntactic feature insertion would be motivated.

In summary, a number of desiderata have to be met before post-syntactic feature insertion can be convincingly motivated. Firstly, there must be an exponent X that realises at least one feature, and an elsewhere exponent Y. Secondly, in a specific environment, the exponent X must realise two feature bundles that have no features in common, while Y realises all remaining feature bundles. Finally, the first two desiderata must be met in a number of parallel circumstances, so that the contextual syncretism of X is sufficiently systematic that it cannot be attributed to chance. To the best of my

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knowledge, no such dataset has been found, so post-syntactic feature insertion remains insufficiently motivated at present. A dataset that meets these three desiderata is predicted to be impossible by a theory of morphology that does not include post-syntactic feature insertion as a morphological process.

7. Conclusion

I have shown that we can analyse Nimboran verbal morphology without invoking post-syntactic feature insertion if we examine the Nimboran morphemes in neutral and non-neutral environments simultaneously, rather than examining first the morphemes in the neutral environments, and then those in the non-neutral environments. I then showed that Harbour's (2008) analysis of inverse captures the fact that it forms a natural class with dual and plural, allowing us to explain the Kiowa data without invoking post-syntactic feature insertion. The interesting dissimilation of clitic doubling sequences in Leísta Spanish and the agreement of adjectives and demonstrative pronouns in Romanian can also be accounted for without invoking post-syntactic feature insertion by reanalysing the rules of exponence for both datasets and updating the feature inventory in the latter.

Finally, I discussed what a dataset would have to look like for an analysis that includes post-syntactic feature insertion to be invoked. Such a dataset would have to include a number of parallel circumstances in which there is a true elsewhere exponent, and a specific environment in which another exponent behaved like an elsewhere exponent, exponing two feature bundles that are the polar inverse of each other. To the best of my knowledge, such a dataset has yet to be found; one is in fact predicted to be impossible in a theory that does not allow for post-syntactic feature insertion.

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