17 June 2013

# The Internal Syntax of Shona Class Prefixes

Rose-Marie Déchaine
(corresponding author)
dechaine@mail.ubc.ca
University of British Columbia
2613 West Mall, Totem Field Studios, Vancouver, BC, Canada, V6T 1Z4
tel: 1-604-822-6466

Raphaël Girard
girard.raphael@courrier.uqam.ca
University of British Columbia

Calisto Mudzingwa
tawacali@gmail.com
University of British Columbia

Martina Wiltschko
Martina.Wiltschko@ubc.ca
University of British Columbia

**Abstract**

Shona (Southern Bantu, Guthrie Zone S10) gender/noun-class prefixes display massive multi-functionality, with concomitant semantic heterogeneity. We argue that this pervasive multi-functionality is a consequence of the pre-syntactic association of Saussurean sound-meaning correspondences and that it reflects the possibility of a prefix associating to distinct syntactic positions, with predictable semantic differences. Using the model of *Interface Syntax*, we claim that Shona noun-class prefixes associate to one of four syntactic positions: to NOMINAL INNER ASPECT as sortal heads for mass nouns; to NOMINAL OUTER ASPECT as number-marking heads for count nouns; to a dedicated EVALUATIVE position as expressives; to D as honorifics. The analysis provides a structural basis of the count/mass contrast, correctly predicts the distribution of substitutive and additive number-marking, accounts for the difference between descriptive and evaluative noun-class prefixes, and derives the existence of alliterative (concordial) agreement.

*Keywords*: agreement; Bantu; evaluative; noun-class; gender; number

Highlights

- N-class prefixes function as sortals, number markers, expressives and honorifics.
- N-class prefixes in NOMINAL INNER ASPECT mark sortal contrasts with mass Ns.
- N-class prefixes in NOMINAL OUTER ASPECT mark number on count Ns.
- As expressives, N-class prefixes occupy a dedicated EVALUATIVE position.
- As honorifics, N-class prefixes occupy a DETERMINER position.

## 1. Introduction: what is gender? [1]

Gender establishes sub-classes of nouns by inducing class partition (Déchaine and Tremblay, 2010, 2012). Many languages have a bi-partite class partition; examples are given in (1)-(3). French class partition is based on biological gender, distinguishing FEMININE and MASCULINE (1). Plains Cree assigns animacy values, distinguishing ANIMATE and INANIMATE, (2). And, according to Stebbins (2005), Mali contrasts HUMAN with NON-HUMAN, (3). (For related discussion, see Corbett (1991).)

(1) a. *l-a* *petit-e* *avocat-e* French (Romance)
DET-F.SG small-F lawyer.F.SG
'the small lawyer(FEMININE)'

b. *l-e* *petit-Ø* *avocat-Ø*
DET-M.SG small-M.SG lawyer-M.SG
'the small lawyer(MASCULINE)'

(2) a. *ê-wâpisk-isi-t* Plains Cree (Algonquian)
COMP-white-be.AN-3P.AN
's/he(ANIMATE) is white'

b. *ê-wâpisk-â-k*
COMP-white-be.IN-3P.IN
'it(INANIMATE) is white'

(3) a. *Ta* *ve* Mali (Baining)
3P.H.PL there
'They(HUMAN) are there'

b. *Ngē* *ve*
3P.NH.PL there
'They(NON-HUMAN) are there' (Stebbins, 2005, p. 81, (9-10))

But it is possible for a language to have several noun classes, henceforth *N-class*. Thus, some languages have a tri-partite division. For example, German distinguishes three N-classes: FEMININE, MASCULINE, and NEUTER (4).

[1] Abbreviations and conventions: 1=class1; 2=class2; 3=class3; 3P=3rd person; 4= class4; 5=class5; 6=class6; 7=class7; 8=class8; 9=class9; 10=class10; 11=class11; 12=class12; 13=class13; 14=class14; 21=class21; AN=animate; ASP=aspect; AUG=augmentative; C=class; COMP=complementizer; DET=determiner; DEM=demonstrative; DIST=distal; ENUM=enumerative; F=feminine; FV=final vowel; H=human; HAB=habitual; HON=honorific; IN=inanimate; INFL=inflection; M=masculine; N= nasal autosegment; NEUT=neuter; NH=non-human; OBJ=object; PL=plural; POSS=possessive; PRO=pronoun; PROX=proximate; PST=past, SG=singular; SM=subject marker; SORT=sortal; SUBJ=subject; V=verb; VCE=autosegment voicing feature; % = subject to dialect variation; # = semantically blocked; & = ambiguous; * = ill-formed; > = more frequent.

(4) a. *d-ie* *Maschine* German (Germanic)
DET-F.SG machine.F
'the machine(FEMININE)'

b. *d-er* *Baum*
DET-M.SG tree.M
'the tree(MASCULINE)'

c. *d-as* *Wasser*
DET-NEUT.SG water.NEUT
'the water(NEUTER)'

How many N-classes can a language have? By definition, the lower bound of an N-class partition is two. But there is no upper bound. This is because class partition is subset formation, with each class/subset defined by a particular semantic feature (Corbett, 1991, pp. 30-32). And since the set of semantic features is not fixed, languages vary with respect to which features, and how many, they recruit for N-classes (de la Grasserie, 1898; Déchaine and Tremblay, 2010, 2012). In this context, the numerous N-classes found in Bantu languages are instructive, as they provide evidence concerning the logic of class partition in natural language. Here, we focus on Shona, a Southern Bantu language (Guthrie Zone S10) that is described as having up to twenty N-classes. These are numbered 1 through 21, based on proto-Bantu reconstruction (Maho, 1999). Bantu N-classes are distinguished from each other via a set of prefixes that occur on the N-stem; note that not all languages have the complete set of prefixes. Relevant to the present discussion are the fourteen prefixes attested in Shona, listed in Table 1.[2] To control for other confounds, we

[2] We do not discuss the infinitive class 15 prefix *kù*$_{15}$, nor the locative prefixes: class 16 *pà*$_{16}$ 'on', class 17 *kù*$_{17}$ 'at', and class 18 *mù*$_{18}$ 'in'. See Fortune (1984) for details.

For reasons orthogonal to this paper, the morpho-phonology of class 9/10 is unusual. First, the Proto-Bantu forms are additive, in that the plural class prefix is added to the singular class prefix: **ni*$_{SG}$ (class 9) and **li*$_{PL}$*-ni* (class 10). Second, in many Bantu languages (including Shona), the prefix of class 9 is a nasal autosegment; this is why Fortune (1984) represents Shona class 9 as N. Third, in many languages (including Shona), the prefixes for class 9/10 are neutralized with underived N-stems (Maho, 1999), even though class 9/10 are still distinct in the concordial system (see §6) and with derived N-stems. Shona N-stems from class 9/10 are number-neutral as a result of phonological restructuring: the class prefix is autosegmental and triggers consonant mutation of oral and nasal stops. Following Fortune (1984) we symbolize this consonant mutation as *N*.

The class 5 voicing autosegment also triggers consonant mutation, which is phonologically constrained in ways that are not well understood (Lafon, 1994). Monosyllabic stems surface with /i/, (i). Vowel-initial stems surface with /z/, (ii). Voiceless stops and affricates surface voiced, (iii). (The form *mè*$_6$*-so* reflects the application of coalescence of the a+i sequences (Mudzingwa, 2010). All other stems are unaffected by class 5 consonant mutation. In addition, N-stems with initial segments that are lexically voiced, as with *-gùtà* 'city', appear with a voiced initial segment in both the singular and plural, as in (iv). Thus, phonologically, the stem that occurs with the plural N-class prefix *mà*$_6$ is the base form, and the singular (class 5) form is derived.

focus on how N-class prefixes combine with underived N-stems. We do not treat the morpho-phonology of Shona N-class prefixes; see Mudzingwa (2010) and (Déchaine et al., (in preparation b)).

Table 1: Shona noun-class prefixes (adapted from Fortune, 1984, p. 31*f*.)
(shaded cells are multi-functional)

| DESCRIPTIVE SEMANTIC FEATURES | | CLASS | PROTO-BANTU | SHONA | N-CLASS PREFIX | |
|---|---|---|---|---|---|---|
| HUMAN | SG | 1 | *mu- | *mù-* | *mù-kómáná* | ‘boy(s)’ |
| | PL | 2 | *βa- | *và-* | *và-kómáná* | |
| SOLID, EXTENDED | SG | 3 | *mu- | *mù-* | *mù-tí* | ‘tree(s)’ |
| | PL | 4 | *mi- | *mì-* | *mì-tí* | |
| SOLID, NON-EXTENDED | SG | 5 | *li- | VOICE- | VCE-*gòré* | ‘cloud(s)’ |
| | PL | 6 | *ma- | *mà-* | *mà-kòré* | |
| ARTIFACT | SG | 7 | *ki- | *chì-* | *chì-nhù* | ‘thing(s)’ |
| | PL | 8 | *βi- | *zvì-* | *zvì-nhù* | |
| ANIMAL | SG | 9 | *ni- | N- | N-*shùmbá* | ‘lion(s)’ |
| | PL | 10 | *li-ni | N- | N-*shùmbá* | |
| OUTLINE, EXTENDED | SG | 11 | *lu- | *rù-* | *rù-kòvá* | ‘stream(s)’ |
| | PL | 10 | *ma- | N- | N-*hòvá* | |
| SMALL ENTITY | SG | 12 | *ka- | *kà-* | *kà-mbùyú* | ‘insect(s)’ |
| | PL | 13 | *tu- | *tù-* | *tù-mbùyú* | |
| SOLID, DIFFERENTIATED | SG | 14 | *βu- | *Xù-* | *ù-swá* | ‘grass(es)’ |
| | PL | 6 | *ma- | *mà-* | *mà-ù-swá* | |
| AUGMENTATIVE | SG | 21 | *ɣi- | *zì-* | *zì-mù-nhù* | ‘big person(s)’ |
| | PL | 6 | *ma- | *mà-* | *mà-zì-và-nhù* | |

N-class prefixes bear low tone and attach directly to an N-stem. They enter into pairwise contrasts that are often described as a SINGULAR/PLURAL distinction, but this is an over-simplification. To see this, consider the shaded cells in Table 1, which reveal that Shona N-class prefixes are, at least sometimes, multi-functional. The class 6 prefix *mà*$_6$ regularly marks the plural of class 5, but also marks the plural for class 14 and class 21. Another instance of multi-functionality is the class 9/10 prefixal autosegment (N), which codes plural for class 9 and 11. Attending to the details of the multi-functionality of N-class prefixes is a rewarding exercise for several reasons. First, it yields a more accurate description of the Shona N-class system. Second, it makes possible a more nuanced formal analysis of N-classes. Third, it provides insight into the logic of class partition in natural language.

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(i) *i*$_5$*-bwe* ‘stone’ *mà*$_6$*-bwe* ‘stones’

(ii) VCE$_5$*-zísó* ‘eye’ *mè*$_6$*-só* ‘eyes’ < mà$_6$ + ísó (cf. Zezuru: *mà*$_6$*-zísó*)

(iii) VCE$_5$*-bàdzá* ‘hoe’ *mà*$_6$*-pàdzá* ‘hoes’
VCE$_5$*-dámá* ‘cheek’ *mà*$_6$*-támá* ‘cheeks’
VCE$_5$*-gòré* ‘cloud, year’ *mà*$_6$*-kòré* ‘clouds, years’
VCE$_5$*-jírá* ‘blanket’ *mà*$_6$*-chírá* ‘blankets’
VCE$_5$*-bvúpá* ‘bone’ *mà*$_6$*-pfúpá* ‘bones’
VCE$_5$*-dzánzá* ‘worn out basket’ *mà*$_6$*-tsánzá* ‘worn out baskets’

(iv) VCE$_5$*-gùtà* ‘city’ *mà*$_6$*-gùtà* ‘cities’

The discussion proceeds as follows. We survey the multi-functionality of Shona N-class prefixes and argue that it is problematic for analyses that treat the prefixes as having a fixed feature value (§2). Using the *Interface Syntax* model (Wiltschko and Déchaine, 2010), we propose that the multi-functionality of N-class prefixes reflects the possibility of the same N-class prefix associating to distinct syntactic positions, with predictable semantic differences (§3). Our analysis accounts for how N-class prefixes are recruited for the count/mass contrast (§4), and derives the difference between descriptive and evaluative N-class prefixes (§5). We then consider the implications of our proposal for alliterative agreement (§6) and for models of morphology (§7). §8 concludes.

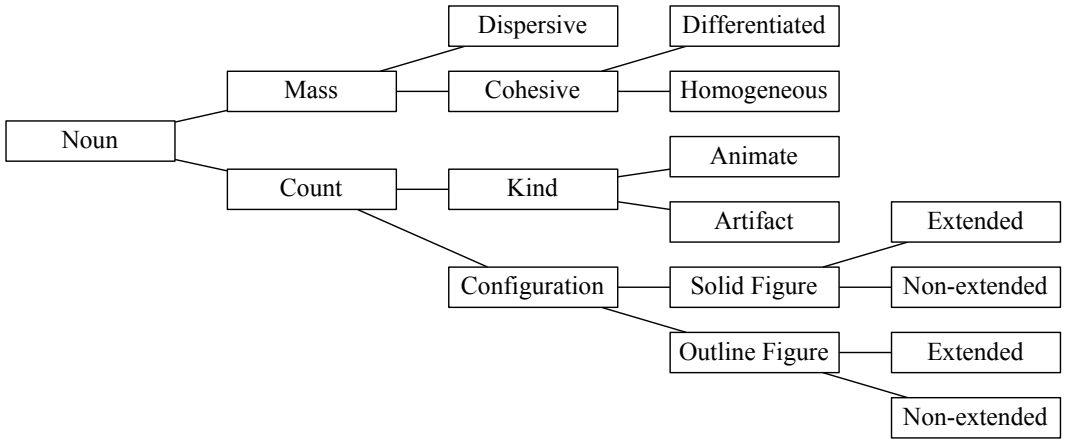
## 2. The problem: Shona N-class prefixes are multi-functional

Shona N-class prefixes are often described as forming a single paradigm, with each prefix having a dedicated function. This is an idealized description: most N-class prefixes are multi-functional, with the same prefix coding several contrasts. Related to this is the fact that Shona N-class prefixes fulfill two functions (Fortune, 1984), according to whether they have descriptive or expressive content. N-class prefixes with descriptive content sort nouns into COUNT versus MASS; (almost) all N-class prefixes code such contrasts (Denny and Creider, 1986). N-class prefixes with expressive content provide evaluative information relating to size (DIMINUTIVE, AUGMENTATIVE) and affect (PEJORATIVE, HONORIFIC); only some N-class prefixes have evaluative force. After discussing the descriptive meaning of N-class prefixes (§2.1), we turn to their expressive dimension (§2.2).

### *2.1 The descriptive meaning of N-class prefixes*

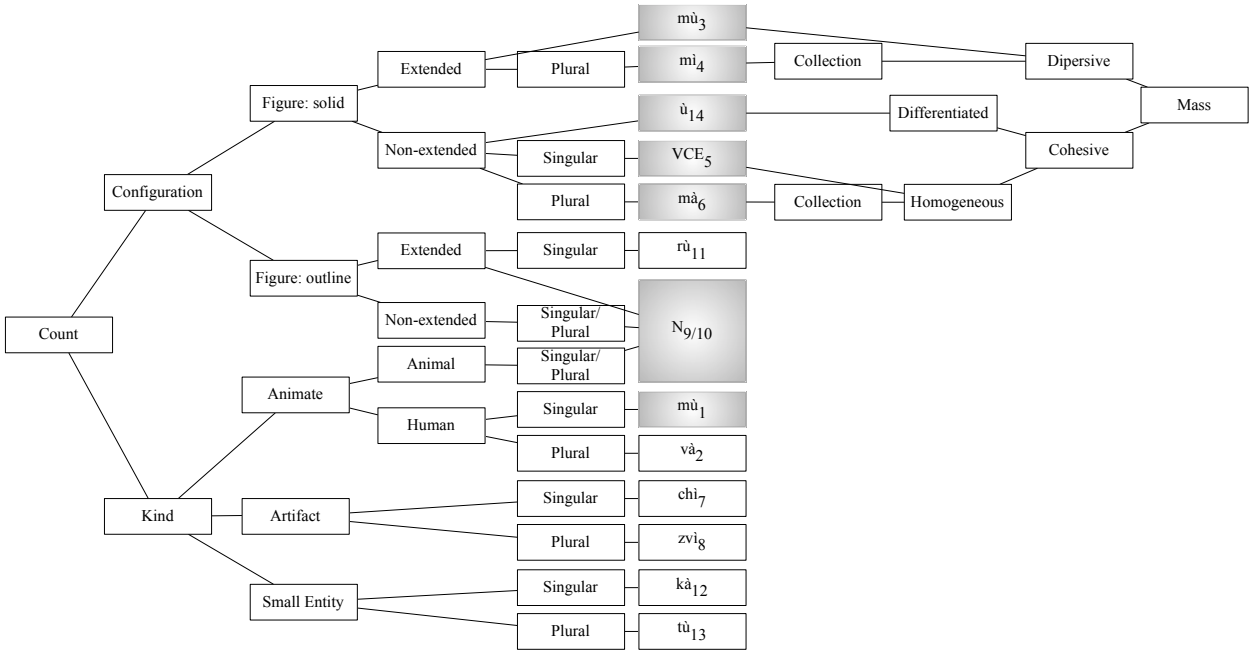
Denny and Creider (1986, p. 219) propose the feature analysis of proto-Bantu N-classes in Figure 1. For expository purposes, we adopt their schema, and amend it as necessary for Shona. The Denny and Creider analysis recognizes a MASS/COUNT contrast, with further sub-divisions. In the MASS domain, there is a contrast between DISPERSIVE and COHESIVE substances, with the latter sub-dividing into DIFFERENTIATED and HOMOGENEOUS matter. In the COUNT domain, there is a contrast between things, which they call KINDS, and shapes, which they call CONFIGURATIONS. KIND nouns sub-classify into ANIMATES versus ARTIFACTS. (For Denny and Creider, "KIND" is purely a classificatory feature. In particular, it does not correspond to the kind-denoting entities that figure in the formal semantic analysis of Carlson (1977) and subsequent work.) CONFIGURATION nouns sub-classify into SOLID and OUTLINE figures, with each of these sub-dividing into EXTENDED and NON-EXTENDED figures.

Figure 1: Semantic feature analysis of proto-bantu noun-classes (Denny and Creider, 1986)




We present the semantic features relevant for Bantu N-classes as a backdrop against which the Shona data can be evaluated. It is beyond the scope of this paper to motivate a particular semantic classification, but for a useful review, see Katamba (2003). Applying the Denny and Creider schema to Shona yields the classification in Figure 2. For MASS nouns, the basic contrast in Shona is between DISPERSIVE and COHESIVE substances, with the latter distinguished according to whether they are DIFFERENTIATED or HOMOGENEOUS. One innovation that seems to be Shona-specific is the development of an N-class for objects that are inherently small, which corresponds to class 12/13. (In other Bantu languages, class 12/13 is a general-purpose diminutive.) Thus, the Shona KIND domain, in addition to having ANIMATES and ARTIFACTS, also contains SMALL ENTITIES.

Figure 2: Descriptive denotations of Shona noun-class prefixes

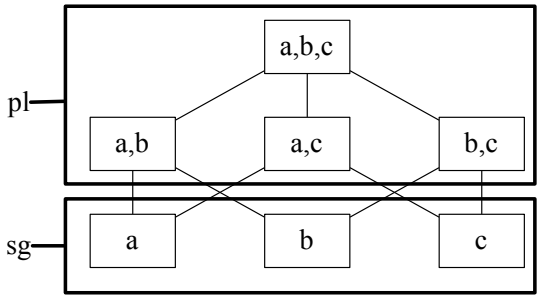


Relevant to our concerns is the fact that, independent of which semantic classification is adopted, there is not a one-to-one correspondence between semantic features and N-class prefixes. While some N-class prefixes are *uni-functional* (they always classify nouns for the same feature), others are *multi-functional* (they classify nouns for more than one feature). In Figure 2, uni-functional prefixes are in unshaded cells, and multi-functional ones are in shaded cells. If prefixes had an intrinsic feature specification, this would preclude the possibility of a prefix classifying nouns for more than one feature. But the facts are quite the opposite, as a given N-class prefix often does double duty, for example by marking semantic contrasts on both MASS and COUNT nouns. And within the COUNT domain, some N-class prefixes mark contrasts on both CONFIGURATION and KIND nouns. Although the precise nature of this multi-functionality differs from one Bantu language to the next, it is found in all Bantu languages (Maho, 1999).

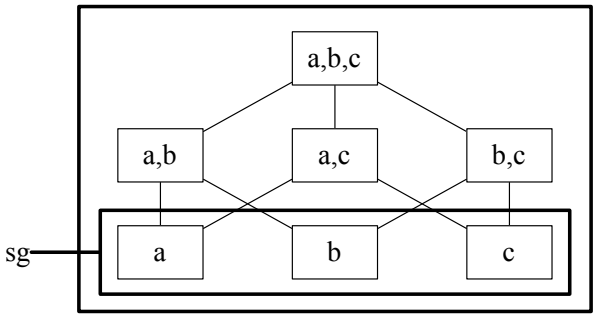
N-classes also code number contrasts. While count nouns have a SINGULAR/PLURAL contrast, mass nouns have a UNIT/COLLECTION contrast. In Shona, UNIT is unmarked relative to COLLECTION; hence in Figure 2, only COLLECTION is indicated. Our use of the term COLLECTION is intended to capture the fact that pluralization of MASS nouns is subject to a distinct logic than that of COUNT nouns. (It is not to be confused with the term COLLECTIVE; on the latter see Corbett (2000).) The deployment of number reveals that, in Shona, different markedness contrasts are at play. To see what we mean by markedness contrasts, consider the lattice structures in Figure 3, where the bottommost layer corresponds to individual atoms (i.e. to singletons), and the upper layers to successively larger groupings of atoms (i.e. to pluralities). As far as we can tell, Shona exploits four possibilities. If both SINGULAR and PLURAL are semantically marked, singular-marked Ns denote atomic individuals, and plural-marked Ns denote non-atomic individuals, Figure 3a. This holds of the SINGULAR/PLURAL contrast found with class 1/2 (*mù-kómáná* 'boy'; *và-kómáná* 'boys'), class 7/8 (*chì-nhù* 'thing'; *zvì-nhù* 'things'), and class 12/13 (*kà-mbùyú* 'insect'; *tù-mbùyú* 'insects'). Another possibility is for PLURAL to be semantically marked, in which case plural-marked Ns denote non-atomic individuals, and "non-plurals" are compatible with any part of the lattice structure, Figure 3b. This holds of the unmarked/PLURAL contrast found with class 3/4 (*mù-tí* 'tree'; *mì-tí* 'trees') and class 5/6 (*gòré* 'cloud'; *mà-kòré* 'clouds'), as well as with the unmarked/COLLECTION contrast found with class 3/4 (*mù$_3$nyú* 'salt'; *mì$_4$nyú* 'much salt') and class 5/6 (*ròpà* 'blood', *mà$_6$-ròpà* 'much blood'). And if only SINGULAR is semantically marked, then singular-marked Ns denote atomic individuals and "non-singulars" are compatible with any part of the lattice structure, Figure 3c. This holds of the SINGULAR/unmarked contrast with class 11/10 (*rù-kòvá* 'river'; *hòvá* 'rivers'). Finally, there is number-neutrality, as in Figure 3d, where a number-marked N-stem is compatible with both singular and plural denotations. This holds of class 9/10 ($^{\&}$*shùmbá* 'lion(s)'), and class 14 ($^{\&}$*ù-swá* 'grass(es)').

Figure 3: Number-marking and markedness contrasts

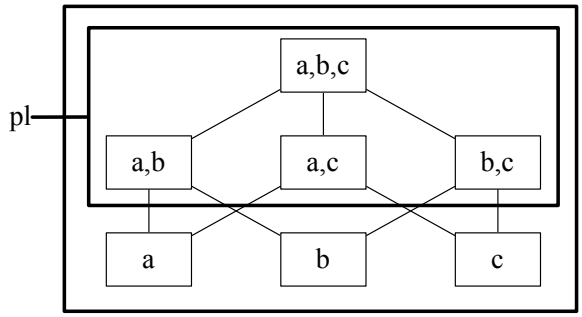
a. SINGULAR/PLURAL contrast



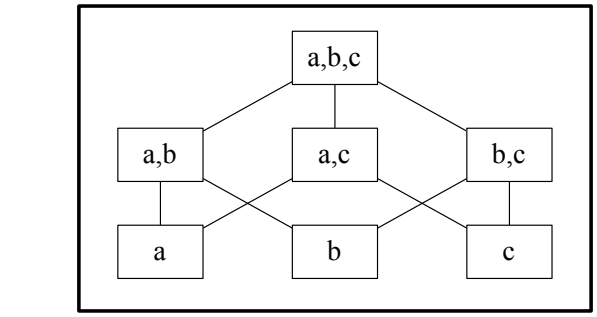

c. unmarked/SINGULAR contrast




b. unmarked/PLURAL contrast




d. number-neutral




Evidence for these markedness differences comes from the distinct morpho-syntactic strategies that Shona uses for number-marking, including substitutive marking (where a SINGULAR/PLURAL contrast is at play), additive marking (where a MARKED/unmarked contrast is at play), and number-neutrality.

The pervasive multi-functionality of Shona N-class prefixes is best appreciated by considering the sub-paradigms defined by the class features. In presenting these sub-paradigms, we adopt the convention of shading cells occupied by multi-functional morphemes; these morphemes also mark contrasts in other sub-paradigms. Consider the sub-paradigm for KIND count nouns in Table 2, which contrast inanimate ARTIFACTS, ANIMATES, and SMALL ENTITIES. While the SINGULAR/PLURAL contrast holds of [ARTIFACT], [ANIMATE: HUMAN], and [SMALL ENTITY], it is neutralized with class 9/10 [ANIMATE: ANIMAL]. This yields a class partition of seven cells (rather than the logically possible eight.)

Table 2: Kind sub-paradigm, count nouns (shaded cells are multifunctional)

| | [ARTIFACT] | [ANIMATE] | | [SMALL ENTITY] |
|---|---|---|---|---|
| | | [HUMAN] | [ANIMAL] | |
| SINGULAR | *chì*$_7$ | *mù*$_1$ | N$_{9/10}$ | *kà*$_{12}$ |
| PLURAL | *zvì*$_8$ | *và*$_2$ | | *tù*$_{13}$ |

With respect to their descriptive meanings, prefixes for class 1/2 [ANIMATE: HUMAN], class 7/8 [ARTIFACT], and class 12/13 [SMALL ENTITY]are uni-functional: they always classify nouns for the same feature. But prefixes for class 9/10 [ANIMATE: ANIMAL] are multi-functional: in addition to occurring with KIND nouns, they also occur with CONFIGURATION nouns.

Consider the sub-paradigm for CONFIGURATION count nouns, Table 3. There are potentially four SINGULAR prefixes, marking the following contrasts: [SOLID, EXTENDED], [SOLID, NON-EXTENDED], [OUTLINE, EXTENDED], and [OUTLINE, NON-EXTENDED]. Each singular prefix should have a corresponding plural. However, only [SOLID, EXTENDED] — class 3/4 (*mù*$_3$/*mì*$_4$) — has a SINGULAR/PLURAL contrast. The other cells show either over- or under-differentiation. For example, the [SOLID, NON-EXTENDED, SINGULAR] cell is marked by two class prefixes (VOICE$_5$ or *ù*$_{14}$); this is over-differentiation. And class 9/10 collapses three cells of the paradigm; this is under-differentiation of number (SINGULAR/PLURAL) and shape (EXTENDED/NON-EXTENDED).

Table 3: Configuration sub-paradigm, count nouns (shaded cells are multifunctional)

| | SOLID FIGURE | | | OUTLINE FIGURE | |
|---|---|---|---|---|---|
| | EXTENDED | NON-EXTENDED | | EXTENDED | NON-EXTENDED |
| SINGULAR | *mù*$_3$ | VOICE$_5$ | *ù*$_{14}$ | *rù*$_{11}$ | |
| PLURAL | *mì*$_4$ | *mà*$_6$ | | N$_{9/10}$ | |

In the present analysis, *over-differentiation* includes allomorphy and suppletion. (Allomorphy requires phonological relatedness, suppletion does not). As for *under-differentiation*, it corresponds to syncretism, but the two are not equivalent. Under-differentiation covers any one-to-many mapping, while syncretism is defined (by some authors) as the collapse of two adjacent cells of a paradigm (Hansson, 2007).

The class prefixes that occur with configuration count nouns are, for the most part, multi-functional. Indeed, only one class prefix from this sub-paradigm is restricted to configuration nouns, namely *rù*$_{11}$. The remaining N-class prefixes of this group (*mù*$_3$, *mì*$_4$, VOICE$_5$, *ù*$_{14}$, *mà*$_6$, N$_{9/10}$) also mark contrasts in other sub-paradigms.

Now consider the sub-paradigm of MASS nouns, Table 4. Five prefixes are used for mass nouns: *mù*$_3$, *mì*$_4$, VOICE$_5$, *mà*$_6$, *ù*$_{14}$. The N-class prefixes for MASS nouns are recruited from the same set of prefixes used for COUNT nouns. We take this to indicate that the MASS/COUNT distinction is not a primitive in Shona. (We return to this below.)

Table 4: Mass sub-paradigm (shaded cells are multifunctional)

| | DISPERSIVE | COHESIVE | |
|---|---|---|---|
| | | HOMOGENEOUS | DIFFERENTIATED |
| UNIT | *mù*$_3$ | VOICE$_5$ | *ù*$_{14}$ |
| COLLECTION | *mì*$_4$ | *mà*$_6$ | |

Table 5 summarizes the distribution of Shona N-Class prefixes relative to the MASS/COUNT contrast. Some N-class prefixes are restricted to one sub-class of count Ns. Thus, while class 1/2, 7/8, 12/13 occur only with kind count Ns, class 11 only occurs with configuration count Ns. The other N-class prefixes are multi-functional: class 9/10 occurs with KIND or CONFIGURATION count Ns; class 3/4, 5/6, and 14 occur with MASS or COUNT Ns.

Table 5: Shona noun class prefixes: descriptive denotations

| | | *mù*$_1$ | *và*$_2$ | *chì*$_7$ | *zvì*$_8$ | *kà*$_{12}$ | *tù*$_{13}$ | *rù*$_{11}$ | N$_{9/10}$ | *mù*$_3$ | *mì*$_4$ | VOICE$_5$ | *mà*$_6$ | *ù*$_{14}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MASS | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| COUNT | CONFIGURATION | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | KIND | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | | | | |

We argue that the semantic multi-functionality of N-class prefixes arises because the same prefix can associate to different syntactic positions. Before showing how this works, we consider another way in which Shona N-class prefixes are multi-functional.

*2.2 The expressive dimension of N-class prefixes*

As in all Bantu languages, each Shona N-stem associates with a canonical class prefix. But it is also possible for a noun to combine with a non-canonical N-class prefix. Table 6 provides examples, showing how the N-stem *-kómáná*$_1$ 'boy' — which as a [HUMAN] noun usually combines with class 1/2 — can combine with other N-class prefixes. These non-canonical combinations are expressive, and have evaluative denotations relating to size (DIMINUTIVE, AUGMENTATIVE) or affect (PEJORATIVE, HONORIFIC). Fortune (1984) calls N-class prefixes that combine with noun stems in this way "secondary prefixes". We adopt the convention of subscripting N-stems with the canonical N-class of the singular form. For example, the canonical N-class prefix of the stem *-kómáná* 'boy' is class 1, as it usually combines with the class 1 prefix *mù*$_1$; this is annotated *mù*$_1$*kómáná*$_1$ 'boy'. The plural form with the class 2 *và*$_2$ prefix is annotated *và*$_2$*kómáná*$_1$ 'boys'. The evaluative form with the class 7 prefix *chì*$_7$ is annotated *chì*$_7$*kómána*$_1$ 'small sturdy boy'. (For more detailed exemplification of Shona evaluatives, see Déchaine et al. ((in preparation a)).[3]

[3]As shown in (i), in Zezuru Shona, when class 3 *mù*$_3$ has expressive meaning it has pejorative force (Fortune, 1984, p. 48*f*.). As shown in (ii), Class 3 *mù*$_3$ also occurs in a fixed sequence of N-class prefixes, namely *mù*$_3$*zì*$_{21}$*kù*$_{17}$, and is can be accompanied by stylistic vowel lengthening on the N-stem, as in (ii-c). For Karanga, the variety of Shona discussed in the main text, *mù*$_3$ does not occur used by itself with pejorative force. Instead, as shown in (iii), Karanga augmentative *zì*$_{21}$ is ambiguous between a purely augmentative reading and an augmentative pejorative reading. But as shown in the right-hand column of (iii), pejorative *mù*$_3$ is still detectable in Karanga, which also permits *zì*$_{21}$*mù*$_3$. See Déchaine et al. (in preparation, a) for details. For related discussion of dialect variation with N-class prefixes in other Bantu languages, see Bokamba (1993).

(i) Zezuru Shona: *mù*$_3$ with pejorative force (Fortune, 1984, p. 48)

| | | |
|---|---|---|
| a. | VCE$_5$*bàngò*$_5$ | *mù*$_3$*pàngò*$_5$ |
| | 'pole' | 'useless, unwieldly pole' |
| b. | *chì*$_7$*ròngó*$_7$ | *mù*$_3$*ròngó*$_7$ |
| | 'waterpot' | 'unsuitably shaped large pot; pot unsuitable for cooking' |
| c. | *rù*$_{11}$*kòvà*$_{11}$ | *mù*$_3$*kòvà*$_{11}$ |
| | 'stream' | 'big dangerous stream' |

(ii) Zezuru Shona: *mù*$_3$*zì*$_{21}$*kù*$_{17}$ with pejorative force (Fortune, 1984, p. 49)

| | | |
|---|---|---|
| a. | *mù*$_1$*róórà*$_1$ | *mù*$_3$*zì*$_{21}$*kù*$_{17}$*róórà*$_1$ |
| | 'bride' | 'a huge lump of a bride without manners' |
| b. | VCE$_5$*gùmbò*$_5$ | *mù*$_3$*zì*$_{21}$*kù*$_{17}$*kùmbò*$_5$ |
| | 'pole' | 'large leg with weak bone insufficient to bear weight' |
| c. | VCE$_5$*jírá*$_5$ | *mù*$_3$*zì*$_{21}$*kù*$_{17}$*chíirá*$_5$ |
| | 'cloth' | 'a miserable threadbare cloth' |

Table 6: Descriptive and evaluative denotations of Shona noun-class prefixes
(shaded cells are multi-functional)

| CLASS | | | DESCRIPTIVE DENOTATION | | | EVALUATIVE DENOTATION | | |
|---|---|---|---|---|---|---|---|---|
| 1 | SG | *mù-* | HUMAN | *mù*$_1$*kómáná*$_1$ | ‘boy(s)’ | | | |
| 2 | PL | *và-* | | *và*$_2$*kómáná*$_1$ | | HONORIFIC | *vá*$_{HON}$*mù*$_1$*kómáná*$_1$ | ‘Mr/Ms Boy’ |
| | | *vá-* | | | | | *vàná vá*$_{HON}$*mù*$_1$*kómáná*$_1$ | ‘Mr/Ms Boys’ |
| 3 | SG | *mù-* | SOLID, EXTENDED | *mù*$_3$*tí*$_3$ | ‘tree(s)’ | | | |
| 4 | PL | *mì-* | | *mì*$_4$*tí*$_3$ | | | | |
| 5 | SG | VCE- | SOLID, NON-EXTENDED | VCE$_5$*gòré*$_5$ | ‘cloud(s)’ | AUGMEN-TATIVE | VCE$_5$*gómáná*$_1$ | ‘big boy(s)’ |
| 6 | PL | *mà-* | | *mà*$_6$*kòré*$_5$ | | | *mà*$_6$VCE$_5$*gómáná*$_1$ | |
| 7 | SG | *chì-* | ARTIFACT | *chì*$_7$*nhù*$_7$ | ‘thing(s)’ | SMALL & STURDY | *chì*$_7$*kómáná*$_1$ | ‘small sturdy boy(s)’ |
| 8 | PL | *zvì-* | | *zvì*$_8$*nhù*$_7$ | | | *zvì*$_8$*kómáná*$_1$ | |
| 9 | SG | N- | ANIMAL | N$_{9/10}$*shùmbá*$_9$ | ‘lion(s)’ | | | |
| 10 | PL | | | | | | | |
| 11 | SG | *rù-* | OUTLINE, EXTENDED | *rù*$_{11}$*kòvá*$_{11}$ | ‘stream(s)’ | THIN/SICKLY | *rù*$_{11}$*kómáná*$_1$ | ‘thin scraggly boy(s)’ |
| | PL | | | N$_{10}$*hòvá*$_{11}$ | | | | |
| 12 | SG | *kà-* | SMALL ENTITY | *kà*$_{12}$*mbùyú*$_{12}$ | ‘insect(s) | DIMINUTIVE | *kà*$_{12}$*kómáná*$_1$ | ‘tiny boy(s) |
| 13 | PL | *tù-* | | *tù*$_{13}$*mbùyú*$_{12}$ | | | *tù*$_{13}$*kómáná*$_1$ | |
| 14 | SG | *ù-* | ABSTRACT/ MASS | *ù*$_{14}$*swá*$_{14}$ | ‘grass(es)’ | | | |
| | PL | | | *mà*$_6$*ù*$_{14}$*swá*$_{14}$ | | | | |
| 21 | SG | | | | | AUGMEN-TATIVE | *zì*$_{21}$VCE$_5$*gómáná*$_1$ | ‘big boy(s)’ |
| | PL | | | | | | *mà*$_6$*zì*$_{21}$VCE$_5$*gómáná*$_1$ | |

The investigation of evaluative denotations leads to the following observations. First, non-canonical combinations of N-class prefixes and N-stems are expressive (Fortin, 2011), in the sense of Potts (2007): they are independent of descriptive content; they predicate something of the utterance situation; they are evaluated from a particular perspective (usually the speaker’s); they are difficult to paraphrase; they achieve their content by being uttered and so are performative. The expressive dimension of N-class prefixes is attested in all Bantu languages.

Second, within Shona, there is dialect variation regarding which prefixes have evaluative denotations. In Karanga Shona, the distribution is as follows:

(i) N-class prefixes with descriptive and evaluative denotations:
class 2 (*va*$_2$) 5/6 (VOICE$_5$/*mà*$_6$), 7/8 (*chì*$_7$/*zvì*$_8$), 11 (*rù*$_{11}$), and 12/13 (*kà*$_{12}$/*tù*$_{13}$).

(ii) N-class prefixes with only a descriptive denotation:
class 1 (*mù*$_1$), 3/4 (*mù*$_3$/*mì*$_4$), 9/10 (N$_{9/10}$) and 14 (*ù*$_{14}$).

---

(iii) KARANGA SHONA: *zì*$_{21}$(*mù*$_3$) with pejorative force

| | | | | |
|---|---|---|---|---|
| a. | *mù*$_1$*kómáná*$_1$ | $^{\&}$*zì*$_{21}$VCE$_5$*gómáná*$_1$ OR | $^{\&}$*zì*$_{21}$*mù*$_3$*kómáná*$_1$ | **mù*$_3$*kómáná*$_1$ |
| | ‘boy’ | ‘big (troublesome, unlikeable) boy’ | | |
| b. | *rù*$_{11}$*kòvá*$_{11}$ | $^{\&}$*zì*$_{21}$*kòvá*$_{11}$ | $^{\&}$*zì*$_{21}$*mù*$_3$*kòvá*$_{11}$ | **mù*$_3$*kòvá*$_{11}$ |
| | ‘stream’ | ‘big (dangerous) stream’ | | |
| c. | *ù*$_{14}$*tánhó*$_{14}$ | $^{\&}$*zì*$_{21}$*tánhó*$_{14}$ | $^{\&}$*zì*$_{21}$*mù*$_3$*tánhó*$_{14}$ | **mù*$_3$*tánhó*$_{14}$ |
| | ‘ladder’ | ‘big (dangerous) ladder’ | | |

(iii) N-class prefix with only an evaluative denotation:
class 21 (*zì*$_{21}$), which is augmentative (and secondarily augmentative pejorative).

Third, N-class prefixes normally bear low tone, but in certain syntactic contexts, they surface with high tone. This syntactically conditioned high tone, which is found with relativization and nominal predication, is also found with the evaluative honorific, *vá*$_{2.HON}$.

With this as background, consider Figure 4, which shows the dimensions of meanings that Shona N-class prefixes encode. Evaluative meanings include PEJORATIVE$_3$, AUGMENTATIVE$_{5/6/21}$, THIN/SICKLY$_{11}$, HONORIFIC$_2$, SMALL/STURDY$_{7/8}$, and DIMINUTIVE$_{12/13}$. Multi-functional prefixes are in shaded cells; prefixes with evaluative meanings are in cells with a dotted outline. We call attention to the fact that most N-class prefixes, in addition to having a descriptive meaning, also have an evaluative meaning. This departs from the description and analysis offered in Fortin (2011), who restricts his attention to the evaluative uses of the DIMINUTIVE$_{12/13}$ and AUGMENTATIVE$_{21}$.

Figure 4: Dimensions of meanings for Shona noun-class prefixes

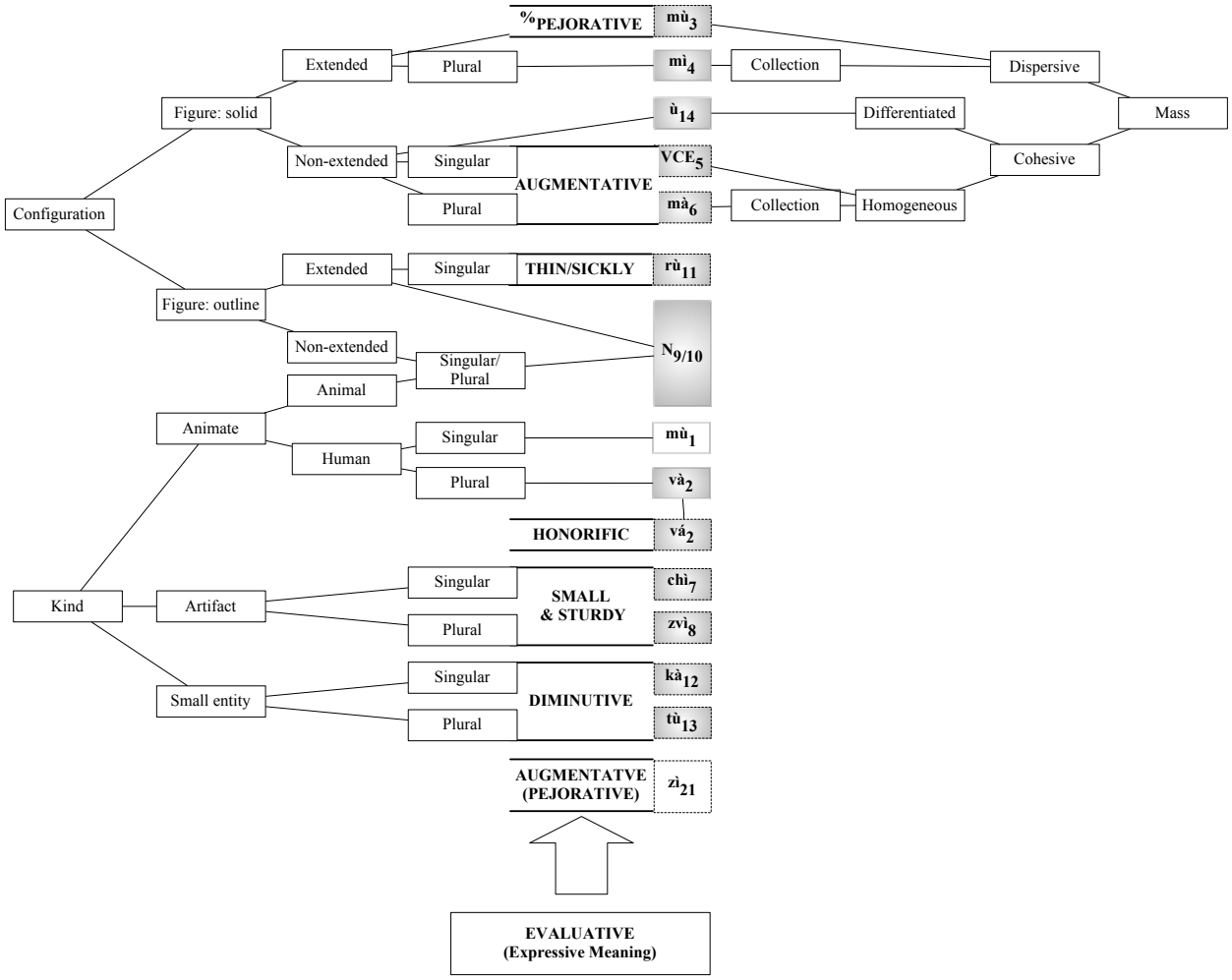



Figure 4 shows that Shona N-class prefixes are multi-functional in two ways. First, the same prefix can be multi-functional within the same dimension. For example, the class 3 prefix *mù*$_3$ is

associated with a descriptive meaning on count nouns and mass nouns. Second, the same prefix can be multi-functional across dimensions of meaning. For example, the class 11 prefix *rù*$_{11}$ can be associated with a descriptive or an expressive meaning. The patterns of multi-functionality are summarized in Table 7.

Table 7: Multi-functionality of Shona noun-class prefixes

| | | *mù*$_1$ | *và*$_2$ | *chì*$_7$ | *zvì*$_8$ | *kà*$_{12}$ | *tù*$_{13}$ | *rù*$_{11}$ | N$_{9/10}$ | *mù*$_3$ | *mì*$_4$ | VOICE$_5$ | *mà*$_6$ | *ù*$_{14}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESCRIPTIVE | MASS | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | COUNT | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| EXPRESSIVE | EVALUATIVE | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | % | | ✓ | ✓ | |

We now show that this inter-leaving of two dimensions of meanings (descriptive and expressive) is the by-product of a simple syntactic algorithm.

## 3. The theoretical significance of multi-functionality

The analysis of a morpheme with more than one function can proceed in two ways. One possibility is to treat multi-functionality as homophony. On this view, the same form is assigned distinct lexical entries. Another possibility is to treat multi-functionality as structurally determined, with the same morpheme occupying distinct syntactic positions. To take a familiar example, the homophony approach assigns to the English verb *have* several distinct entries, distinguishing possessor *have* from causative *have* and aspectual *have*, as in (5).

(5) HOMOPHONY ANALYSIS OF ENGLISH *have*

| | | | |
|---|---|---|---|
| a. | HAVE$_1$ | Possessor *have* | *Lucy has a book.* |
| b. | HAVE$_2$ | Causative *have* | *Lucy had Sally close the door.* |
| c. | HAVE$_3$ | Aspectual *have* | *Lucy has written the letter.* |

A syntactic approach assigns a single abstract lexical entry to *have*, analyzing it as general-purpose transitive relation R(x,y), and deriving its different functions from the nature of the complement introduced by *have* (Déchaine et al., 1995). This is illustrated in (6). The different "meanings" of *have* reflect the syntactic environment in which it is inserted: if *have* has a DP complement, the possessor construal arises, (6a); if *have* has a *v*P complement, the causative construal arises (6b); if *have* has an as AspP complement (i.e. an aspectually inflected verb phrase), then the aspectual construal arises, (6c).

(6) SYNTACTIC ANALYSIS OF ENGLISH *have*:
HAVE: R(x,y)

| | | | |
|---|---|---|---|
| a. | y = DP | Possessor *have*: | *Lucy* [$_V$ *has* [$_{DP}$ *a book*]] |
| b. | y = *v*P | Causative *have*: | *Lucy* [$_V$ *had* [$_{vP}$ *Sally close the door*]] |
| c. | y = AspP | Aspectual *have*: | *Lucy* [$_V$ *has* [$_{AspP}$ *written the letter*]] |

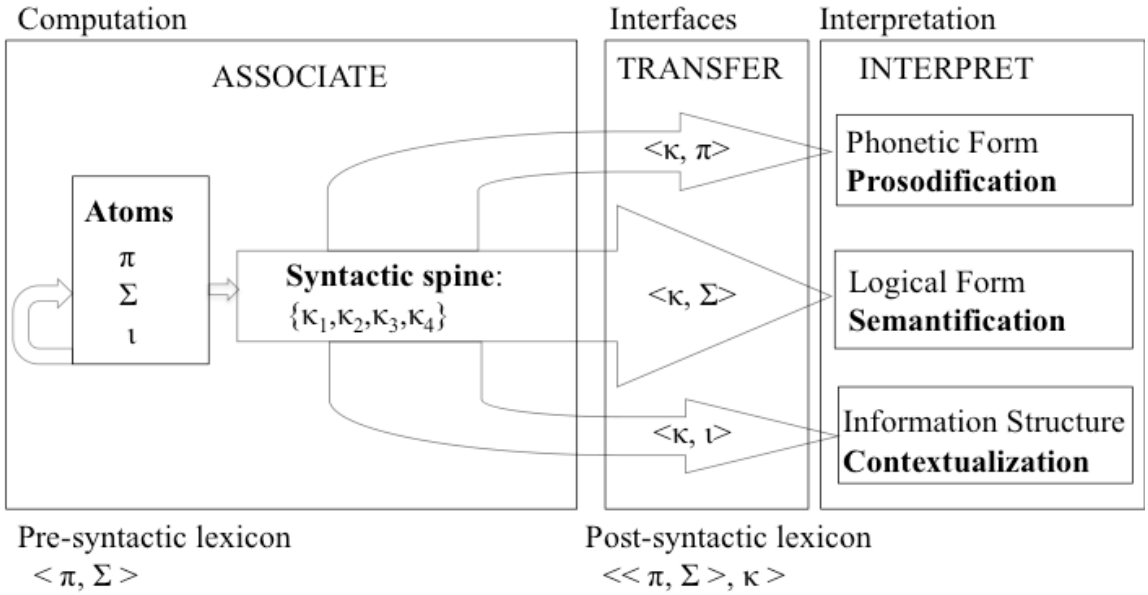
Shona N-class prefixes present a similar analytic challenge. On a homophony view, N-class prefixes with multiple functions have distinct lexical entries, one for each function. A homophony analysis, though workable, fails to capture regularities as it makes no generalizations about the relation between form and meaning. Rather than positing homophony, we treat the

form-meaning mapping of Shona N-class prefixes as reflecting constraints imposed by the syntactic interface. Our analysis is couched in terms of the *Interface Syntax* model of Wiltschko and Déchaine (2010). We introduce the model (§3.1), and then show how it applies to Shona N-class prefixes (§3.2).

*3.1. How the syntactic spine constrains the form-meaning mapping*

Figure 5 shows Wiltschko and Déchaine's (2010) *Interface Syntax* model. We draw attention to the fact that this model distinguishes the *pre-syntactic lexicon* (formatives that are not categorized) from the *post-syntactic lexicon* (formatives that are categorized). As we shall see below, this distinction provides insight into the workings of Shona N-class prefixes.

Figure 5: Interface Syntax Model




A single computation, *Associate*, derives the entire grammar; this includes phonology, morphology, syntax, semantics, and information structure. *Associate* is a function that takes two terms as input, and derives as output a complex term. This operation ranges over the basic *atoms* of the grammar, and over a universally defined *syntactic spine* ($\kappa_1$, $\kappa_2$, $\kappa_3$, $\kappa_4$). There are three classes of atoms: prosodic ($\pi$), semantic ($\Sigma$), and information-structural ($\iota$). As for the syntactic spine, it consists of a universal set of categories based on general-purpose cognitive functions of typing, classifying, and anchoring, as in (7). Roughly, *inner typing* is akin to categorization, *classifying* corresponds to sub-categorization, *anchoring* corresponds to discourse activation (e.g. definiteness and tense), and *outer typing* corresponds to syntactic argument typing (e.g. typing of CP or KP).

(7)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SPINE | [ $\kappa_1$ | [ $\kappa_2$ | | [ $\kappa_3$ | | [ $\kappa_4$ | ] ] ] ] |
| FUNCTION | [ OUTER TYPING | [ ANCHORING | | [ CLASSIFYING | | [ INNER TYPING | ] ] ] ] |

In most natural languages, this abstract syntactic spine is realized as two distinct — but often overlapping — spines, namely the verbal spine and the nominal spine. Consider (8), which shows the *verbal spine*. Small *v* is the locus of inner typing. *Aspect* is the locus of event classification. *Infl* is the locus of event anchoring; this is where tense, or its equivalents, reside (Ritter and Wiltschko, 2009). *Comp* is the locus of outer typing; this corresponds to clause-typing. In the Interface Syntax model, these four sub-domains are hypothesized to be universal. A given language can, but need not, further sub-divide these domains, giving rise to prolific domains (Bobaljik and Thráinsson, 1998; Grohmann, 2003). *Interface Syntax* claims that only the core set of Functional categories are universally present, and that individual languages differ in how prolific their F-category inventories are. (This departs from orthodox minimalism, which assumes that an invariant set of features define the F-categories of all natural languages.) For example, on independent grounds, Rizzi (1997) has argued that the C-domain splits into $C_{FORCE}$ and $C_{FINITENESS}$. And in English, the I-domain has been argued to sub-divide into Tense and Modality (Bach, 1967). As for Aspect, in many languages there is evidence that it subdivides into OUTER ASPECT (Smith, 1991) versus INNER ASPECT (Travis, 2010).

(8) V-SPINE

a. Core

$[_{CP}$ Comp $[_{IP}$ Infl $[_{AspP}$ Aspect $[_{vP}$ *v* ] ] ] ]

b. Prolific Domain

$[C_{FORCE}$ $[C_{FINITE}$ $[I_{TENSE}$ $[I_{MODALITY}$ $[_{OuterVAsp}$ $[_{InnerVAsp}$ $[_{vP}$ *v* ] ] ] ] ] ] ]

Now consider (9), which shows the *nominal spine*. Small *n* is the locus of inner typing. CLASS is the locus of entity classification. D is the locus of entity anchoring. K is the locus of argument-typing. All four domains are, by hypothesis, universally present, but individual languages may differ according to how prolific each sub-domain is. In languages that allow case-stacking, the K-domain arguably sub-divides into $K_{FORCE}$ and $K_{ARGUMENT}$ (Richards, 2012; Schütze, 2001). And in some languages, the D-domain sub-divides into $D_{DEFINITE}$ and $D_{SPECIFIC}$ (Ionin, 2006). For Shona – and likely for all Bantu languages with N-classes – we argue that the CLASS domain subdivides into the nominal equivalent of inner and outer aspect (Rijkhoff, 1991). In our analysis, INNER NOMINAL ASPECT corresponds to the classifying function relevant for mass nouns, namely sorting. And OUTER NOMINAL ASPECT corresponds to the classifying function relevant for count nouns, namely the singular/plural contrast.

(9) N-SPINE

a. Core

$[_{KP}$ Kase $[_{DP}$ Det $[_{ClassP}$ Class $[_{nP}$ *n* ] ] ] ]

b. Prolific Domain

$[K_{FORCE}$ $[K_{FINITE}$ $[D_{DEF}$ $[D_{SPEC}$ $[_{OuterNAsp}$ Sg/Pl $[_{InnerNAsp}$ Sort $[_{nP}$ *n* ] ] ] ] ] ] ]

The idea that Bantu N-classes lexicalize a form of nominal aspect is pre-figured in the work of Demuth (2000), who speculates that:

> [*T*]*he classification of nouns can be thought of as a semantic and (grammatical) necessity,* […]. *If this is so, then we need the equivalent of a Reichenbachian treatment for nominal classification*. (Demuth, 2000, p. 288 *f*.).

One question that arises is why sortal contrasts (analyzed as INNER N-ASPECT) are introduced before number-marking contrasts (analyzed as OUTER N-ASPECT). One indication that this is correct is the fact that in languages where sortal contrasts are introduced by classifier nouns, the latter are the locus of number-marking, e.g. English *two spoons of salt*. (We return to this below.)

*3.2 How the syntactic N-spine constrains the form-meaning mapping in Shona*

Our focus is the nominal spine in Shona, (10). We propose that the multi-functionality of Shona N-class prefixes is a by-product of how they are categorized, in a technical sense. In the *Interface Syntax* model, categorization arises when uncategorized formatives associate to a category of the nominal spine. Some N-class prefixes associate to INNER N-ASPECT; these occur with mass nouns. Other N-class prefixes associate to OUTER N-ASPECT; these occur with count nouns, and mark singular/plural contrasts. Yet other prefixes associate to the nominal spine as evaluatives. We argue below that, in Shona, EVALUATIVE is a dedicated syntactic position that arises via extension of the classifying function. Finally, one N-class prefix, honorific *vá*$_{2.HON}$ , associates to the D position.

(10)

| [$_{DET}$ … | [$_{EVALUATIVE}$ | [$_{OuterNAsp}$ Sg/Pl | [$_{InnerNAsp}$ Sort | [$_{nP}$ *n* ] ] ] ] |
|---|---|---|---|---|
| HONORIFIC | SIZE | COUNT | MASS | STEM |
| ↑ | ↑ | ↑ | ↑ | |
| N-class | N-class | N-class | N-class | |

In *Interface Syntax*, the association of phonological form to meaning is compiled in two ways. Consider (11). The pre-syntactic lexicon can associate phonological form (π) to meaning (Σ), without categorizing it: these are <π,Σ> formatives. We call these *uncategorized Saussurean formatives*, (11a). They are sound-meaning associations with no category label. In the post-syntactic lexicon, sound-meaning bundles are associated with their categorical identity by virtue of associating to the spine: they are <<π,Σ>,κ> formatives.[5] These are *categorized Saussurean formatives* (Wiltschko, in prep.). These sound-meaning associations carry a dedicated category label, as in (11b). What characterizes a Shona-type lexicon (and more generally Bantu) is the extensive use made of uncategorized Saussurean formatives. Once this is recognized, many otherwise puzzling properties of the Shona lexicon fall into place.[6]

[5] The does not exhaust the logical possibilities. The pre-syntactic lexicon includes un-categorized atoms (i-a) and uncategorized complex formatives (i-b). The latter are formed when Associate combines two atoms. The post-syntactic lexicon includes categorized atoms (ii-a), and categorized complex formatives (ii-b).

(i) a. < π >, < Σ >, < ι > b. < π, Σ >, < π, ι >, < Σ, ι >

(ii) a. < π, κ >, < Σ, κ >, < ι, κ > b. << π, Σ > κ >, << π, ι > κ >, << Σ, ι > κ >

[6] A reviewer asks how uncategorized sound-meaning bundles arise in the first place. It is clear that the "meaning" of N-class prefixes is very abstract, and cross-cuts several dimensions, in the sense of Potts (2007). To answer this requires also taking into account deverbal nouns; see Déchaine (2012).

(11) Saussurean Formatives

| | | | |
|---|---|---|---|
| a. | pre-syntactic | $< \pi, \Sigma >$ | uncategorized Saussurean formative |
| b. | post-syntactic | $<< \pi, \Sigma > \kappa >$ | categorized Saussurean formative |

If sound-meaning bundles are dissociated from category labels, the question arises as to how categorization takes place. Given the architecture of *Interface Syntax*, the only mechanism available for categorization is via association to the syntactic spine. For cases that involve the type of multi-functionality that Shona N-class prefixes display, there are three logical possibilities. First, *prefix stacking* is predicted to arise when two Saussurian formatives associate to distinct category labels, as in (12a). In addition, the lower prefix in a prefix stacking configuration may drop resulting in a pattern we refer to as *prefix drop*, as in (12b). Finally, it is also possible to associate a given formative to a lower position with subsequent raising to a higher position. This is *prefix raising*, as in (12c). This last possibility, which involves a many-to-one mapping between form and category is the equivalent of Williams' (2003) notion of a *span* and to the notion of *fusion* within Distributed Morphology (Halle and Marantz, 1993).

(12)

| | | | | |
|---|---|---|---|---|
| a. | $[_{\kappa 1}$ PREFIX$_{\alpha}$ | $[_{\kappa 2}$ PREFIX$_{\beta}$ | [ N-stem ] ] ] | PREFIX STACKING |
| b. | $[_{\kappa 1}$ PREFIX$_{\alpha}$ | $[_{\kappa 2}$ ~~PREFIX~~$_{\beta}$ | [ N-stem ] ] ] | PREFIX DROP |
| c. | $[_{\kappa 1}$ PREFIX$_{\alpha}$ | $[_{\kappa 2}$ ~~PREFIX~~$_{\alpha}$ | [ N-stem ] ] ] | PREFIX RAISING |

These analytic possibilities provide an elegant and unified account for the emergence of multi-functionality. On the one hand, they account for the deployment of number marking in the mass/count domain (§4). On the other hand, the same algorithm accounts for the descriptive/evaluative function of N-class prefixes (§5).

## 4. How Interface Syntax derives the count/mass partition

In our analysis, the multi-functionality of Shona N-class prefixes reflects the possibility of an N-class prefix associating to distinct syntactic positions. The two syntactic positions that play a role in the count/mass partition are INNER N-ASPECT, responsible for sortal contrasts, and OUTER N-ASPECT, responsible for number contrasts. (13) illustrates how N-class prefixes associate to these two positions.

(13)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a. | $[_{\text{OuterNAsp}}$ | $\alpha$ | $[_{\text{InnerNAsp}}$ | $\beta$ | [ N-stem ] ] ] | PREFIX STACKING |
| b. | $[_{\text{OuterNAsp}}$ | $\alpha$ | $[_{\text{InnerNAsp}}$ | ~~$\beta$~~ | [ N-stem ] ] ] | PREFIX DROP |
| c. | $[_{\text{OuterNAsp}}$ | $\alpha$ | $[_{\text{InnerNAsp}}$ | ~~$\alpha$~~ | [ N-stem ] ] ] | PREFIX RAISING |
| | | Sg/Pl | | Sort | | |

Prefix stacking (13a) corresponds to additive number marking (§4.1); this is when a sequence of two N-class prefixes appear on an N-stem (Bokamba, 1993). Prefix drop (13b) corresponds to substitutive number marking (§4.2); this is when a single N-class prefix appears on an N-stem. And prefix raising (13c) corresponds to multifunctional number marking (§4.3); this is when the same N-class prefix is recruited to mark both sortal contrasts (with mass N denotations) and singular/plural contrasts (with count N denotations).

*4.1 Prefix stacking corresponds to additive number marking*

In Shona, an N-class prefix attaches to an already prefixed N-stem to mark number in one context, namely with the number-neutral class 14 prefix *ù*$_{14}$.[7] This gives rise to prefix stacking. Illustrative examples are given in Tables 8 and 9 for count and mass nouns respectively.

Table 8: number-marking via prefix-stacking (count nouns)

| NUMBER-NEUTRAL | | PLURAL | | |
|---|---|---|---|---|
| $^{\&}$*ù*$_{14}$*tá*$_{14}$ | 'bow'<br>'bows' | **mà*$_6$*tá*$_{14}$ | *mà*$_6$*ù*$_{14}$*tá*$_{14}$ | '(not well crafted) bows' |
| $^{\&}$*ù*$_{14}$*tánhó*$_{14}$ | 'ladder'<br>'ladders' | **mà*$_6$*tánhó*$_{14}$ | *mà*$_6$*ù*$_{14}$*tánhó*$_{14}$ | '(not well-made) ladders' |
| $^{\&}$*ù*$_{14}$*só*$_{14}$ | 'face'<br>'faces' | **mà*$_6$*só*$_{14}$ | *mà*$_6$*ù*$_{14}$*só*$_{14}$ | '(unpleasant) faces' |

Table 9: number-marking via prefix-stacking (mass nouns)

| NUMBER-NEUTRAL | | COLLECTION | | |
|---|---|---|---|---|
| $^{\&}$*ù*$_{14}$*chí*$_{14}$ | 'honey'<br>'honeys' | **mà*$_6$*chí*$_{14}$ | $^{\&}$*mà*$_6$*ù*$_{14}$*chí* | '(distasteful) honeys'<br>'much (distasteful) honey' |
| $^{\&}$*ù*$_{14}$*ròzví*$_{14}$ | 'brain'<br>'brains' | **mà*$_6$*ròzví*$_{14}$ | $^{\&}$*mà*$_6$*ù*$_{14}$*ròzví*$_{14}$ | '(distasteful) brains'<br>'much (distasteful) brain' |
| $^{\&}$*ù*$_{14}$-*tsí*$_{14}$ | 'smoke'<br>'smokes' | **mà*$_6$*tsí*$_{14}$ | $^{\&}$*mà*$_6$*ù*$_{14}$*tsí*$_{14}$ | '(bothersome) smokes'<br>'much (bothersome) smoke' |

Pluralization by prefix-stacking arises if the canonical N-class prefix is number-neutral, as with *ù*$_{14}$. The number-neutrality of *ù*$_{14}$ is detectable with count and mass nouns, which when inflected with the class 14 prefix are ambiguous between a singular or plural construal. Thus, *ù*$_{14}$ is a sortal prefix with no differentiation for number, as in (14a). Observe that the plural-marked forms are ambiguous between a descriptive and an evaluative meaning: *mà*$_6$*ù*$_{14}$*tá*$_{14}$ may be construed as 'bows' (14b) or 'not well-crafted bows' (14c). The latter reflects the usage of an N-class prefix with expressive force. In the present analysis, this arises via head-movement of the N-class prefix from Outer Aspect to the EVALUATIVE position, as in (14c). (See §5.3 for details.)[8]

[7] To our knowledge, only one class 14 N-stem, namely -*swà*$_{14}$ 'grass', (i-a), can be pluralized by either prefix stacking (i-b), or prefix drop (i-c). Prefix drop is discussed in §4.2.

| | | | | |
|---|---|---|---|---|
| (i) | a. | *ù*$_{14}$*swà*$_{14}$ | 'grass' | |
| | b. | *mà*$_6$*ù*$_{14}$*swà* | 'grasses, much grass' | PREFIX STACKING |
| | c. | *mà*$_6$*swà*$_{14}$ | 'grasses, much grass' | PREFIX DROP |

[8] A reviewer asks what rules out **mà*$_{6.\text{EVAL}}$-*mà*$_{6.\text{PL}}$-*ù*$_{14}$-*tá*$_{14}$ ['not well-crafted bows']. This would arise if *mà*$_6$ associates to the EVALUATIVE position (where it has expressive pejorative force), and also associates to OUTER N-ASPECT (where it has descriptive plural semantics). Iteration of the same N-class prefix is not possible in Karanga Shona (the variety discussed in the main text) but it is found in other varieties. See §5.3 for discussion.

(14) [EVALUATIVE [OuterNAsp Sg/Pl [InnerNAsp Sort [nP *tá*$_{14}$ ] ] ] ]

| | | | | | |
|---|---|---|---|---|---|
| a. | — | | *ù*$_{14}$ | *tá*$_{14}$ | ‘bow/bows’ |
| b. | | *mà*$_{6.PL}$ | *ù*$_{14}$ | *tá*$_{14}$ | ‘bows’ |
| c. | *mà*$_{6.PL}$ | ~~*mà*~~$_{6.PL}$ | *ù*$_{14}$ | *tá*$_{14}$ | ‘not well-crafted bows’ |

A structurally based analysis of N-class prefixes correctly predicts the possibility of additive number-marking, where a plural prefix stacks. As discussed below (§5.1), the same mechanism accounts for the possibility of additive expressive morphology, where an evaluative prefix stacks. Prefix-stacking as a way of marking number contrasts is found only with number-neutral N-class prefixes, of which Shona has only one, namely *ù*$_{14}$. By far the most common strategy is for N-class prefixes to substitute for one another; this is what we discuss next.

*4.2 Prefix drop corresponds to substitutive number marking*

In Shona, the most common way to mark number contrasts is via substitutive number marking, where singular and plural N-class prefixes substitute for each other. This accords with the traditional description, which recognizes the following substitution pairs: class 1/2 (*mù*$_{SG}$/*và*$_{PL}$), 3/4 (*mù*$_{SG}$/*mì*$_{PL}$), 5/6 (VCE$_{SG}$/*mà*$_{PL}$), 7/8 (*chì*$_{SG}$/*zvì*$_{PL}$), 11/10(*rù*$_{SG}$/N$_{PL}$), and 12/13 (*kà*$_{SG}$/*tù*$_{PL}$). Examples are given in Table 10.

Table 10: Substitutive number-marking (count nouns)

| SEMANTIC CLASS | SINGULAR | | | PLURAL | | |
|---|---|---|---|---|---|---|
| HUMAN | *mù*$_1$ | *mù-nhù* | ‘person’ | *và*$_2$ | *và-nhù* | ‘people’ |
| | | *mù-kómáná* | ‘boy’ | | *và-kómáná* | ‘boys’ |
| SOLID, EXTENDED | *mù*$_3$ | *mù-tí* | ‘tree’ | *mì*$_4$ | *mì-tí* | ‘trees’ |
| | | *mù-sùmá* | ‘suma tree’ | | *mì-sùmá* | ‘suma trees’ |
| SOLID, NON-EXTENDED | VOICE$_5$ | VCE-*gúdó* | ‘baboon’ | *mà*$_6$ | *mà-kúdó* | ‘baboons’ |
| | | VCE-*bèrè* | ‘hyena’ | | *mà-péré* | ‘hyenas’ |
| | | VCE-*démó* | ‘axe’ | | *mà-témó* | ‘axes’ |
| | | VCE-*gòrè* | ‘cloud’ | | *mà-kòrè* | ‘clouds’ |
| ARTIFACT | *chì*$_7$ | *chì-nhù* | ‘thing’ | *zvì*$_8$ | *zvì-nhù* | ‘things’ |
| | | *chì-kwèpá* | ‘pipe’ | | *zvì-kwèpá* | ‘pipes’ |
| OUTLINE, EXTENDED | *rù*$_{11}$ | *rù-kòvà* | ‘stream’ | N$_{10}$ | N-*hòvà* | ‘brooks, streams’ |
| | | *rù-rìmì* | ‘tongue, language’ | | N-*ndìmì* | ‘tongues, languages’ |
| SMALL ENTITY | *kà*$_{12}$ | *kà-sípítí* | ‘spring of water’ | *tù*$_{13}$ | *tù-sípítí* | ‘springs of water’ |
| | | *kà-ndóróró* | ‘cricket’ | | *tù-ndóróró* | ‘crickets’ |

That both singular and plural forms are marked indicates that number marking, with these prefixes, is an equipollent contrast. Specifically, on count nouns, these substitutive prefixes instantiate OUTER N-ASPECT, and code a SINGULAR/PLURAL contrast, (15).

(15) [OuterNAsp Sg/Pl [InnerNAsp [ ∅] [nP *n* ] ] ] PREFIX DROP

SINGULAR$_{1/3/5/7/12}$
PLURAL$_{2/4/6/8/13}$

With count Ns, only OUTER N-ASPECT is filled; INNER N-ASPECT is structurally present, but lacks phonological content. This corresponds to prefix drop, with the lower prefix position

unfilled. There remains the question of whether N-class prefixes associate with INNER N-ASPECT. That both OUTER and INNER N-ASPECT are active in Shona is confirmed by another type of number-marking, to which we now turn, where the N-class prefix is multi-functional, marking both sortal contrasts (for mass N denotations) and number contrasts (with count N denotations).

*4.3 Prefix raising corresponds to multi-functional number marking*

Consider (16). By hypothesis, if an N-class prefix associates to OUTER N-ASPECT, this yields a count denotation, with a concomitant singular/plural contrast. If an N-class prefix associates to INNER N-ASPECT, this yields a mass denotation.

(16) $[_{\text{Outer.NAsp}}$ Sg/Pl $[_{\text{Inner.NAsp}}$ Sort $[_{\text{nP}}$ *n* $]\,]\,]$

COUNT (Sg/Pl) ↑ N-class; MASS (Sort) ↑ N-class; STEM (*n*)

(16) predicts that the same prefix can mark a sortal or a number contrast; exactly this type of multi-functionality is attested in Shona. As shown in Tables 11 and 12, class 3/4 (*mù*$_3$/*mì*$_4$) and class 5/6 (VOICE$_5$/*mà*$_6$) attach to either mass or count nouns.

Table 11: Multi-functional number-marking with *mù*$_3$/*mì*$_4$

| | | | | |
|---|---|---|---|---|
| COUNT EXTENDED | SINGULAR | | PLURAL | |
| | *mù*$_3$*tí* | 'tree' | *mì*$_4$*tí* | 'trees' |
| | *mù*$_3$*kúyù* | 'fig tree' | *mì*$_4$*kúyù* | 'fig trees' |
| | *mù*$_3$*gáká* | 'garden cucumber' | *mì*$_4$*gáká* | 'garden cucumbers' |
| MASS DISPERSIVE | SINGULAR/UNIT | | PLURAL/COLLECTION | |
| | $^{\&}$*mù*$_3$*nyú* | 'portion of salt'<br>'some salt' | $^{\&}$*mì*$_4$*nyú* | 'salts'<br>'much salt' |
| | $^{\&}$*mù*$_3$*káká* | 'portion of milk'<br>'some milk' | $^{\&}$*mì*$_4$*káká* | 'milks'<br>'much milk' |
| | $^{\&}$*mù-tò* | 'portion of gravy'<br>'some gravy' | $^{\&}$*mì-tò* | 'gravies'<br>'much gravy' |

Table 12: Multi-functional number-marking with vce$_5$/*mà*$_6$

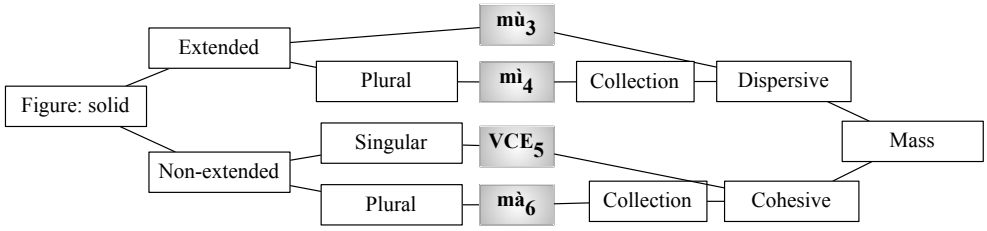
| | | | | |
|---|---|---|---|---|
| COUNT: NON-EXTENDED | SINGULAR | | PLURAL | |
| | VOICE$_5$*bèrè* | 'hyena' | *mà*$_6$*péré* | 'hyenas' |
| | VOICE$_5$*démó* | 'axe' | *mà*$_6$*témó* | 'axes' |
| | VOICE$_5$*gòré* | 'cloud' | *mà*$_6$*kòré* | 'clouds' |
| MASS: COHESIVE | SINGULAR/UNIT | | PLURAL/COLLECTION | |
| | $^{\&}$VOICE$_5$*ròpà* | 'portion of blood'<br>'some blood' | $^{\&}$*mà*$_6$*ròpà* | 'bloods'<br>'much blood' |
| | $^{\&}$VOICE$_5$*dòvì* | 'portion of peanut butter'<br>'some peanut butter' | $^{\&}$*mà*$_6$*dòvì* | 'peanut butters'<br>'much peanut butter' |
| | $^{\&}$VOICE$_5$*dóró* | 'portion of beer'<br>'some beer' | $^{\&}$*mà*$_6$*dóró* | 'beers'<br>'much beer' |

Observe that *mù*$_3$*káká* 'milk' (Table 11) is classified as [DISPERSIVE], but that VCE$_5$*dòvì* 'peanut butter' and VCE$_5$*dóró* 'beer' are [COHESIVE]. The grouping of beer with peanut butter reflects the fact that the local variety of beer is denser and thicker than its North American or European

counterparts, being almost like porridge in consistency. This raises the question of how specific lexical items come to be associated with a given N-class, which we do not treat here. For discussion relating to Bantu, see (Katamba, 2003) for general discussion of how mass nouns are classified, see (Wierzbicka, 1988).

Figure 6 shows that class prefixes that are multi-functional relative to the count/mass contrast mark similar features. Note that the number contrast with *mù*$_3$/*mì*$_4$ is an unmarked/PLURAL contrast (for count nouns) and an unmarked/COLLECTION contrast for mass nouns. In the count domain, these N-class prefixes mark an EXTENDED/NON-EXTENDED CONTRAST. In the mass domain, they mark a DISPERSIVE/COHESIVE contrast. We conjecture that "extended" solid figures and "dispersive" substances have a feature in common; we call it [SPREAD].[9]

Figure 6: Multi-functional number marking with count/mass nouns




The multi-functionality that arises in the count/mass domain indicates that the same formative associates to INNER N-ASPECT (to mark sortal contrasts), or OUTER N-ASPECT (to mark singular/plural contrasts). The relevant sub-structures are shown in (17). If they map onto OUTER N-ASPECT — this corresponds to COUNT denotations — the prefixes classify SOLID figures. And if they associate to INNER N-ASPECT — this corresponds to MASS denotations — the same prefixes classify physical properties of substances.

(17) $[_{\text{Outer.NAsp}}$ Sg/Pl $[_{\text{Inner.NAsp}}$ Sort $[_{\text{nP}}$ *n* $]\,]\,]$

| | $< \Sigma,\ \pi >$ | $< \pi,\ \Sigma >$ |
|---|---|---|
| (singular, extended) [SPREAD] | *mù*$_3$ | *mù*$_3$ [SPREAD] (dispersive, unit) |
| (plural, extended) [SPREAD] | *mì*$_4$ | *mì*$_4$ [SPREAD] (dispersive, collection) |
| (singular, non-extended) [*u*SPREAD] | VCE$_5$ | VCE$_5$ [*u*SPREAD] (cohesive, homogeneous, unit) |
| (plural, non-extended) [*u*SPREAD] | *mà*$_6$ | *mà*$_6$ [*u*SPREAD] (cohesive, homogeneous, collection) |

In our analysis, the COUNT/MASS contrast is structural in nature, even in languages where, at first glance, one might think it is a lexical difference. For example, in many languages, including English, count Ns can be pluralized (18a), but mass Ns can't be (18b). Instead, mass nouns require the presence of a sortal noun, and it is the sortal noun that is the locus of plurality (18c).

(18) a. *three dog**s***
b. **three furniture**s***
c. *three piece**s** of furniture*

[9] More remains to be said. In particular, there is the question of how [SPREAD/*u*SPREAD] maps onto count and mass denotations. Based on the Shona data, we conjecture that [SPREAD] is the marked value, with [*u*SPREAD] the elsewhere case. This is consistent with the fact that [SPREAD] picks out a definable property, namely extended figures in the count domain, and dispersive substances in the mass domain.

The sortal N *piece* associates to INNER N-ASPECT, while number-marking associates to OUTER N-ASPECT, as in (19a). While English sortal Ns lexicalize INNER N-ASPECT, the Shona counterparts are N-class prefixes. This correctly predicts that, in Shona, it will be possible to stack N-class prefixes, as in (19b), where the inner prefix is sortal, and the outer prefix instantiates number-marking. (For related discussion, see Wiltschko (2006)).

(19) a. [$_{\text{Outer.NAsp}}$ *-s* [$_{\text{Inner.NAsp}}$ *piece* [$_{\text{nP}}$ *furniture* ] ] ]

b. [$_{\text{Outer.NAsp}}$ *mà-* [$_{\text{Inner.NAsp}}$ *ù-* [$_{\text{nP}}$ *chí* ] ] ]
C6.PL C14 honey
'honeys' (i.e. 'kinds of honey')

We also predict that the same N-stem will be ambiguous between a count and a mass denotation. This is most easily discerned with "plural" forms: for example, the "plural" form of the stem *-nyú*$_3$ 'salt' is ambiguous between a count (PLURAL) denotation ('salts') or a mass (COLLECTION) denotation ('much salt'). The count/mass ambiguity of plural-marked MASS nouns reflects the structural ambiguity of the N-class prefixes. When prefixes associate to OUTER N-ASPECT they mark singular/plural contrasts; when they associate to INNER N-ASPECT they sort substances into units versus collections; this is schematized in (20). Just as the same "plural" N-class prefix may code PLURAL (for count denotations) or COLLECTION (for mass denotations), it is similarly possible for the same "singular" N-class prefix to code SINGULAR (for count denotations) or UNIT (for mass denotations).[10]

(20) [$_{\text{Outer.NAsp}}$ Sg/Pl [$_{\text{Inner.NAsp}}$ Sort [$_{\text{nP}}$ *n* ] ] ]
↑ ↑
SINGULAR$_{3/5}$ UNIT$_{3/5}$
PLURAL$_{4/6}$ COLLECTION$_{4/6}$

(21) shows how this applies to the class 4 prefix *mì*$_4$. In combination with the N-stem *-nyú*$_3$ 'salt', if *mì*$_4$ associates to INNER N-ASPECT, it yields a mass construal 'much salt'. And when *mì*$_4$ associates to OUTER N-ASPECT, it yields a count construal, literally 'salts'. (In English, this is rendered by the introduction of a sortal noun, e.g. *kinds of salt*.) This predicts that the mass/count construal of *mì*$_4$*-nyú*$_3$ is structurally determined. "Singular" forms are similarly predicted to be structurally ambiguous, according to whether the N-class prefix associates to INNER N-ASPECT or OUTER N-ASPECT, (22). Both of theses predictions are confirmed: "plural"-marked nouns can be

[10] The data in the main text report the general pattern for COHESIVE mass nouns. There are lexical exceptions; e.g., *-fútá*$_5$ 'fat', has only a count denotation in its singular form (i-a), but a count or mass denotation in its plural/collective form, (i-b). And with *-té*$_5$ 'saliva', the unit form is unattested (ii-a); it only occurs in the collective form (ii-b). (ii-c) shows that it is possible for *-té*$_5$ 'saliva' to occur with a singular N-class prefix, here *rù*$_{11}$.

(i) a. VOICE$_5$*fútá*$_5$ 'piece of animal fat' [on absence of voicing, see fn. 2]
b. &*mà*$_6$*fútá*$_5$ 'oil, kinds of oil, a lot of oil; many pieces of animal fat'

(ii) a. *VOICE$_5$*dé; *ì*$_5$*-dé* [on appearance of *ì-* with class 5 monosyllabic nouns, see fn. 2]
b. &*mà*$_6$*té*$_6$ 'saliva, kinds of saliva, a lot of saliva'
c. *rù*$_{11}$*té*$_6$ 'thin sickly saliva, drooling'

construed as plural or collective, (23) ; "singular"-marked nouns can be construed as atoms or units (24).[11]

(21) a. [Outer.NAsp [Inner.NAsp *mì*4.COLL [nP *nyú* ] ] ] 'much salt'
b. [Outer.NAsp *mì*4.PL [Inner.NAsp [nP *nyú* ] ] ] 'salts'

(22) a. [Outer.NAsp [Inner.NAsp *mù*3.UNIT [nP *nyú* ] ] ] ] 'salt'
b. [Outer.NAsp *mù*3.SG [Inner.NAsp [nP *nyú* ] ] ] ] '(portion of) salt'

(23) a. &*mù-kómáná à-kà-tèng-à mì-nyú yà-kà-wánd-á*
C1-boy SM-PST-buy-FV C4-salt C4.SM-PST-much/many-FV
= (i) 'The boy bought much salt' (MASS construal)
= (ii) 'The boy bought many salts' (COUNT construal)

b. *mù-kómáná à-kà-tèng-à mì-nyú mì-shànú*
C1-boy SM-PST-buy-FV C4-salt C4-five
'The boy bought five salts, i.e. five kinds/portions of salt' (COUNT construal)

(24) a. *mù-kómáná à-kà-tèng-à mù-nyú wà-kà-wánd-á*
C1-boy SM-PST-buy-FV C3-salt C3.SM-PST-much/many-FV
'The boy bought much salt' (MASS construal)

b. *mù-kómáná à-kà-tèng-à mù-nyú mù-mwé*
C1-boy SM-PST-buy-FV C3-salt C3-one
'The boy bought one salt, i.e. one kind/portion of salt' (COUNT construal)

*4.4 Interim conclusion: the mass/count partition and number marking*

We have argued that, in Shona, the mass/count partition is structurally determined. Crucial to our analysis is the idea that the same N-class prefix associates to distinct categorical heads. This

[11] We predict that OUTER N-ASPECT (*mì*4) can co-occur with INNER N-ASPECT (*mù*3), as in (i). Such combinations are infelicitous, and a periphrastic combination is volunteered instead (ii-a), where a unit-marked head noun combines with a plural-marked demonstrative. The opposite combination, namely a collective-marked head N combining with a singular-marked demonstrative, is illicit, (iib). The regular concordial agreement is as in (iii), where both the head N and demonstrative are inflected with the same N-class agreement. The significance of this data is unclear at present, so we put it aside for now.

(i) # *mì*4-*mù*3-*nyú*
PLURAL-UNIT-salt
[TARGET: 'kinds/portions of salt']

(ii) a. *mù*3-*nyú*3 *ì*4-*yì*
UNIT-salt PL-DEM.PROX
'these kinds/portions of salt'

b. **mì*4-*nyú*3 *ù*3-*yù*
COLL-salt SG-DEM.PROX

(iii) a. &*mù*3-*nyú*3 *ù*3-*yù*
SG/UNIT-salt SG/UNIT-DEM.PROX
= (i) 'this salt' (MASS/UNIT)
= (ii) 'this portion of salt' (COUNT/SG)

b. &*mì*4-*nyú*3 *ì*4-*yì*
PL/COLL-salt PL/COLL-DEM.PROX
= (i) 'these collections of salt' (MASS/COLL)
= (ii) 'these portions of salt' (COUNT/PL)

derives the three surface number-marking patterns that are attested in Shona, namely prefix stacking (additive plural marking), prefix drop (substitutive plural marking), and prefix raising (multifunctional N-class prefixes that mark number on count or mass nouns). Remarkably, these same mechanisms account for the use of N-class prefixes as evaluatives, to which we now turn.

## 5. How Interface Syntax derives the descriptive/evaluative partition

Shona N-class prefixes display another type of multi-functionality. Besides their descriptive meaning, they also have an expressive meaning that is discernible when they occur with non-canonical N-stems. We illustrate this with the class 7 prefix *chì*$_7$. In its canonical usage, *chì*$_7$ appears with ARTIFACT count nouns, such as *-nhù*$_7$ 'thing' or *-kwèpà*$_7$ 'pipe', as in (25). In its evaluative use, *chì*$_7$ combines with N-stems of other classes; in such contexts it has denotations such as 'small N', 'small sturdy N', 'small dense N'. For example, if *chì*$_7$ combines with the class 1 (HUMAN) N-stem *-kómáná*$_1$ 'boy' as in (26), this gives the construal 'small sturdy boy'.

(25) a. *chì*$_7$*nhù*$_{7.\text{ARTIFACT}}$ 'thing'
b. *chì*$_7$*kwèpà*$_{7.\text{ ARTIFACT}}$ 'pipe'

(26) a. *mù*$_1$*kómáná*$_{1.\text{HUMAN}}$ 'boy'
b. *chì*$_7$*kómána*$_{1.\text{HUMAN}}$ 'small sturdy boy'

Consider (27). As already discussed, canonical N-class prefixes associate to N-ASPECT, which in Shona subdivides into two positions: OUTER N-ASPECT and INNER N-ASPECT. We propose that, when they have evaluative force, N-class prefixes associate to a distinct position, which we label EVALUATIVE. Our analysis predicts three surface patterns for evaluative marking. (27a) shows prefix stacking: the descriptive N-class prefix associates to N-ASPECT, and the expressive N-class prefix associates to EVAL. (27b) shows prefix drop, where the descriptive class prefix drops out. (27c) shows prefix raising, where the expressive N-class prefix associates to N-ASPECT, and then raises to EVAL.[12] The surface distribution of evaluative prefixes accords with these three possibilities. All evaluative prefixes do prefix stacking (§5.1), but only some do prefix drop (§5.2) or prefix raising (§5.3). In addition, we argue that the honorific prefix, the only evaluative prefix with high tone, associates to an even higher position, namely D (§5.4).

[12] Prefix stacking and raising are not equally available throughout the entire evaluative paradigm. Number-neutral N-stems permit stacking but not raising; this holds of all class 14 nouns, and mass nouns of class 3. For example, *-chí*$_{14}$ 'honey' permits stacking, but prohibits raising, (i). Nouns that denote trees (class 3) allow stacking and raising, but with meaning differences, as in (ii). Stacking yields a tree denotation; raising a fruit denotation. In addition, evaluative N-class prefixes differ in their distribution: while class 7/8 and 12/13 prefixes occur as evaluatives with all N-classes, class 5/6 function as evaluatives only with class 1/2 (HUMAN) N-stems. For discussion of these, and other, blocking effects, see Déchaine et al. (in preparation, a).

| | | | | |
|---|---|---|---|---|
| (i) | a. | *ù*$_{14}$*chí*$_{14.\text{COHESIVE}}$ | 'honey' | |
| | b. | *chì*$_7$*ù*$_{14}$*chí*$_{14.\text{COHESIVE}}$ | 'small dense amt./piece of honey' | STACKING |
| | c. | **chì*$_7$*chí*$_{14.\text{COHESIVE}}$ | | *RAISING |
| (ii) | a. | *mù*$_3$*sùmá*$_{3.\text{EXTENDED}}$ | 'suma tree' | |
| | b. | *chì*$_7$*mù*$_3$*sùmá*$_{3.\text{EXTENDED}}$ | 'small sturdy suma tree' | STACKING |
| | c. | *chì*$_7$*sùmá*$_{3.\text{EXTENDED}}$ | 'small sturdy suma fruit' | RAISING |

(27)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a. | [EVALUATIVE | α | [N-ASPECT | β | [ N-stem ] ] ] | PREFIX STACKING |
| b. | [EVALUATIVE | α | [N-ASPECT | ~~β~~ | [ N-stem ] ] ] | PREFIX DROP |
| c. | [EVALUATIVE | α | [N-ASPECT | ~~α~~ | [ N-stem ] ] ] | PREFIX RAISING |
| | | ↑ | | ↑ | | |
| | | < Σ,π > | | < Σ,π > | | |
| | | EXPRESSIVE | | SINGULAR/PLURAL UNIT/COLLECTION | | |

*5.1 Prefix stacking corresponds to additive evaluative marking*

Shona N-class prefixes have two dimensions of meaning. In their descriptive use, they introduce classificatory features related to the N-stem they attach to. In their evaluative use, they introduce speaker-oriented expressive features related to size and affect. The tables below show that a canonical N-class prefix (here class 1 *mu*$_1$) can be preceded by an expressive N-class prefix. Tables 13 and 14 illustrate prefix stacking with singular and plural forms respectively. Some logical possibilities are blocked; these are shaded in grey. The blocking may be for phonological reasons, e.g. it is not possible to stack the VOICE$_5$ autosegment onto the class 1 prefix *mù*$_1$, so only the singly-prefixed form is attested, namely VCE$_5$*gómáná* 'big boy'. And there is also semantic blocking, **mà*$_6$*và*$_2$*kómáná*$_1$ ['big boys'] is blocked by the plural augmentative *mà*$_6$*zì*$_{21}$*và*$_2$*kómáná*$_1$ 'big boys'. (On the plural augmentative *mà*$_6$*zì*$_{21}$, see §5.2.)

Table 13: Additive evaluative marking (-*kómáná*$_1$ 'boy', singular)

| CLASS | | DESCRIPTIVE DENOTATION | | | EXPRESSIVE DENOTATION | | |
|---|---|---|---|---|---|---|---|
| 1 | *mù-* | HUMAN | *mù*$_1$*kómáná*$_1$ | 'boy' | — | — | — |
| 2 | *vá-* | — | — | — | HON | *vá*$_2$*mù*$_1$*kómáná*$_1$ | 'Mr Boy' |
| 5 | VCE- | SOLID, NON-EXT. | VCE$_5$*gòré*$_5$ | 'cloud' | AUG | VCE$_5$*gómáná*$_1$ | 'big boy' |
| 7 | *chì-* | ARTIFACT | *chì*$_7$*nhù*$_7$ | 'thing' | SMALL /STURDY | *chì*$_7$ *mù*$_1$*kómáná*$_1$ | 'small sturdy boy' |
| 11 | *rù-* | OUTLINE, EXT | *rù*$_{11}$*kòvá*$_{11}$ | 'stream' | THIN/SICKLY | *rù*$_{11}$ *mù*$_1$*kómáná*$_1$ | 'thin scraggly boy' |
| 12 | *kà-* | SMALL ENTITY | *kà*$_{12}$*mbùyú*$_{12}$ | 'insect' | DIM | *kà*$_{12}$ *mù*$_1$*kómáná*$_1$ | 'tiny boy' |
| 21 | *zì-* | — | — | — | AUG | *zì*$_{21}$*mù*$_1$*kómáná*$_1$ | 'big boy' |

Table 14: Additive evaluative marking (-*kómáná*$_1$ 'boy', plural)

| CLASS | | DESCRIPTIVE DENOTATION | | | EVALUATIVE DENOTATION | | |
|---|---|---|---|---|---|---|---|
| 2 | *và-* | HUMAN | *và*$_2$*kómáná*$_1$ | 'boys' | — | — | — |
| | *vá-* | — | — | — | HON | *vànà vá*$_2$*mù*$_1$*kómáná*$_1$ | 'Mr Boys' |
| 6 | *mà-* | SOLID, NON-EXT. | *mà*$_6$*kòré*$_5$ | 'clouds' | AUG | **mà*$_6$*và*$_2$*kómáná*$_1$ | ['big boys'] |
| 8 | *zvì-* | ARTIFACT | *zvì*$_8$*nhù*$_7$ | 'things' | SMALL /STURDY | *zvì*$_8$*và*$_2$*kómáná*$_1$ | 'small sturdy boys' |
| 13 | *tù-* | SMALL ENTITY | *tù*$_{13}$*mbùyú* $_2$ | 'insects' | DIM | *tù*$_{13}$*và*$_2$*kómáná*$_1$ | 'tiny boys' |
| 21 | *zì-* | — | — | — | AUG | *mà*$_6$*zì*$_{21}$VCE$_5$*gómáná*$_1$ | 'big boys' |

Consider (28), which shows how Shona N-class prefixes associate to the nominal spine. Some prefixes associate to N-ASPECT and some other head, either EVAL (VCE$_5$, *mà*$_6$, *chì*$_7$, *zvì*$_8$, *rù*$_{11}$, *kà*$_{12}$, and *tù*$_{13}$) or D (*va*$_2$). These are the prefixes that give rise to prefix stacking. Other prefixes are more restricted in their distribution. For example, some prefixes only associate to N-Aspect; in Shona, this includes *mù*$_1$, *mù*$_3$, *mì*$_4$. These prefixes don't have an evaluative function, and so don't give rise to evaluative prefix stacking (though as we have seen above, they participate in prefix stacking as it relates to number.) One prefix associates only to the

EVALUATIVE head, namely augmentative *zì*$_{21}$, which, as we shall see, is the only N-class prefix that participates in both prefix stacking and prefix drop.

(28)

| [D … | | [EVAL Expressive | | [N-ASP Number/Sort [nP *n* ] ] ] ] | |
|---|---|---|---|---|---|
| ↑ | | ↑ | | ↑ | |
| < Σ, | π > | < Σ, | π > | < π, | Σ > |
| — | — | — | — | *mù*$_1$ | [HUMAN] (singular) |
| [HONORIFIC] | *vá*$_2$ | — | — | *và*$_2$ | [HUMAN] (singular) |
| — | — | — | — | *mù*$_3$ | [SPREAD] (singular/unit) |
| — | — | — | — | *mì*$_4$ | [SPREAD] (plural/collection) |
| — | — | (sg) [AUG] | VCE$_5$ | VCE$_5$ | [*u*SPREAD] (singular/unit) |
| — | — | (pl) [AUG] | *mà*$_6$ | *mà*$_6$ | [*u*SPREAD] (plural/collection) |
| — | — | (sg) [SMALL/STURDY] | *chì*$_7$ | *chì*$_7$ | [ARTIFACT] (singular) |
| — | — | (pl) [SMALL/STURDY] | *zvì*$_8$ | *zvì*$_8$ | [ARTIFACT] (plural) |
| — | — | — | — | $N_{9/10}$ | [OUTLINE/ANIMAL] |
| — | — | (sg) [THIN/SICKLY] | *rù*$_{11}$ | *rù*$_{11}$ | [OUTLINE, EXTENDED] (singular) |
| — | — | (sg) [DIM] | *kà*$_{12}$ | *kà*$_{12}$ | [SMALL ENTITY] (singular) |
| — | — | (pl) [DIM] | *tù*$_{13}$ | *tù*$_{13}$ | [SMALL ENTITY] (plural) |
| — | — | [AUG] | *zì*$_{21}$ | — | — |

We draw attention to the fact that, in the present analysis, an N-class prefix does not have a "basic" meaning. Instead, the same abstract meaning is mapped onto distinct syntactic positions, with syntactic context further restricting the denotation. Consequently, the descriptive meaning of an N-class prefix is not its basic meaning. Rather, it is the meaning that arises when an N-class prefix associates to number position (i.e. N-ASPECT). And the expressive meaning of an N-class prefix is not a derived meaning. Rather, it is the meaning that arises when an N-class prefix associates to an evaluative position. In particular, we believe that the evaluative meanings of N-class prefixes exist in a parallel dimension of meaning, in the sense of Potts (2007). A question not addressed here is precisely how descriptive and expressive meanings of N-class prefixes relate to each other. Extending Fortin's (2011) account, which develops a formal semantic analysis of diminutive and augmentative Shona N-class prefixes, we conjecture that, in their descriptive use, N-class prefixes have a (default) neutral expressive value, and that in their evaluative use, they are associated with an expressive scale.

One might object that invoking "shared abstract meaning" to account for the multi-functionality of N-class prefixes relative to their descriptive and expressive uses is tantamount to treating them as homophonous. We nevertheless persist in resisting a homophony account. One reason for thinking that the multi-functionality of Shona N-class prefixes is structurally conditioned is the fact that grammatical features such as number-marking are preserved across the two dimensions of meaning. Thus, whichever number contrasts an N-class prefix marks in its descriptive function, it marks that same contrast in its evaluative function. We take this to indicate that something more than (accidental) homophony is at play. (We return to this in §6 in our discussion of alliterative agreement.)

*5.2 Prefix drop corresponds to dedicated evaluative marking*

The distribution of augmentative *zì*$_{21}$ is unusual in a number of respects; we argue that this is because it has only expressive semantics. In other words, AUGMENTATIVE *zì*$_{21}$ directly associates to the syntactic head EVALUATIVE, as in (29).[13]

(29)

$$[_{\text{EVALUATIVE}}\ [_{\text{N-ASPECT}}\ \text{Sg/Pl}\quad [_{\text{nP}}\ n\ ]\ ]\ ]\ ]$$

AUGMENTATIVE *zì*$_{21}$
(plural) AUGMENTATIVE *mà*$_{6}$*zì*$_{21}$

The status of AUGMENTATIVE *zì*$_{21}$ as an EVALUATIVE head is confirmed by its interaction with number marking. A first piece of evidence is that plural augmentatives are formed via the addition of plural *mà*$_{6}$. No other evaluative is pluralized in this way. The uniquness of this plural-marking strategy is better appreciated if one examines how AUGMENTATIVE *zì*$_{21}$ combines with already prefixed N-stems. Consider Table 15. In the singular, with AUGMENTATIVE *zì*$_{21}$, prefix stacking is the norm. The only exception to this is DIMINUTIVE *kà*$_{12}$, whose combination with AUGMENTATIVE *zì*$_{21}$ is blocked for semantic reasons. Notably, class 1 nouns such as *-kómáná*$_{1}$ 'boy' have two forms of the augmentative, according to whether *zì*$_{21}$ attaches to a normally inflected N-stem (*mù*$_{1}$*kómáná*$_{1}$ 'boy') or to an already evaluative marked N-stem (VCE$_{5}$*gómáná*$_{1}$ 'big boy'). This indicates that *zì*$_{21}$ directly associates with the EVAL head, and that other evaluative prefixes are introduced lower down. With this in mind, consider plural augmentatives. All things being equal, one would expect AUGMENTATIVE *zì*$_{21}$ to combine with a plural marked stem, but all such combinations are illicit, as shown in the second column of Table 15. Instead, plural is doubly-marked; this corresponds to the third column of Table 15. The only exceptions to this are *mà*$_{6}$, which in its evaluative function is an augmentative, and DIMINUTIVE *tù*$_{13}$.[14]

[13] As discussed by Lafon (1994, p. 72), data from Fortune (1984) indicates that it was previously possible for augmentative *zì*$_{21}$ to be substitutive in Zezuru Shona, (i). Such forms are also attested Karanga Shona, where the possibility of choosing between substitutive or additive marking can give rise to lexical contrasts, (ii).

| | | | | | |
|---|---|---|---|---|---|
| (i) | Zezuru Shona | | | | |
| | SUBSTITUTIVE AUGMENTATIVE | *z*$_{21}$*òtó*$_{3}$ | 'big fire' | *z*$_{21}$-*àná*$_{1}$ | 'naughty child' |
| (ii) | Karanga Shona | | | | |
| | SUBSTITUTIVE AUGMENTATIVE | *z*$_{21}$*òtó*$_{3}$ | 'big fireplace' | *z*$_{21}$-*àná*$_{1}$ | 'big (naughty) child' |
| | ADDITIVE AUGMENTATIVE | zì$_{21}$*m*$_{3}$*òtó*$_{3}$ | 'big fire' | zì$_{21}$-*mw*$_{1}$-*àná*$_{1}$ | 'big (naughty) child' |

[14] Vowel deletion is sensitive to morphological boundaries (Mudzingwa, 2010): it targets the boundary between a prefix and N-stem, (i), but not the boundary between two prefixes, (ii).

| | | | | |
|---|---|---|---|---|
| (i) | **zi*$_{21}$*òtó*$_{3}$ | *z*$_{21}$*òtó*$_{3}$ | > /zi+oto/ | 'big fireplace' |
| (ii) | *zi*$_{21}$*u*$_{14}$*ta*$_{14}$ | **z*$_{21}$*u*$_{14}$*ta*$_{14}$ | > /zi+u+ta/ | 'big bow' |

Table 15: Augmentative *zì*$_{21}$ (singular and plural, shaded cells involved blocking)

| SINGULAR | PLURAL | | GLOSSS |
|---|---|---|---|
| AUG-CLASS.SG-N | *AUG-CLASS.PL-N | PL-AUG-CLASS.PL-N | |
| *zì*$_{21}$*mù*$_1$*kómáná*$_1$<br>*zì*$_{21}$VCE$_5$*gómáná*$_1$ | **zì*$_{21}$*và*$_2$*kómáná*$_1$ | *mà*$_6$*zì*$_{21}$VCE$_5$*gómáná*$_1$ | 'big boy(s)' |
| *zì*$_{21}$*mù*$_3$*sùmá*$_3$ | **zì*$_{21}$*mì*$_4$*sùmá*$_3$ | *mà*$_6$*zì*$_{21}$*mì*$_4$*sùmá*$_3$ | 'big suma trees' |
| *zì*$_{21}$VCE$_5$*gòré*$_5$ | **zì*$_{21}$*mà*$_6$*kòré*$_5$ | #*mà*$_6$*zì*$_{21}$*mà*$_6$*kòré*$_5$<br>*mà*$_6$*zì*$_{21}$*kòré*$_5$ | 'big cloud(s)' |
| *zì*$_{21}$*chì*$_7$*kwèpá*$_7$ | **zì*$_{21}$*zvì*$_8$*kòré*$_5$ | *mà*$_6$*zì*$_{21}$*zvì*$_8$*kwèpá*$_7$ | 'big pipe(s)' |
| *zì*$_{21}$*rù*$_{11}$*kòvá*$_{11}$ | **zì*$_{21}$N$_{10}$*hòvá*$_{11}$ | *mà*$_6$*zì*$_{21}$N$_{10}$*hòvá*$_{11}$ | 'big stream(s_' |
| #*zì*$_{21}$*kà*$_{12}$*mbùyú* $_{12}$<br>*zì*$_{21}$*mbùyú* $_{12}$ | **zì*$_{21}$*tù*$_{13}$*mbùyú*$_{12}$ | #*mà*$_6$*zì*$_{21}$*tù*$_{13}$*mbùyú*$_{12}$<br>*mà*$_6$*zì*$_{21}$*mbùyú* $_{12}$ | 'big insect(s)' |
| *zì*$_{21}$*ù*$_{14}$*tá*$_{14}$ | **zì*$_2$*ù*$_{14}$*tá*$_{14}$ | *mà*$_6$*zì*$_2$*ù*$_{14}$*tá*$_{14}$ | 'big bow(s)' |

Especially revealing are the shaded cells, as they demonstrate that in contexts where prefix-stacking is ruled out, it is the lower prefix that drops out. The relevant structures are given in (30). Note that it is not double-marking of the plural which provokes prefix drop. Rather, the lower prefix drops out when its expressive meaning either contradicts the expressive force of AUGMENTATIVE *zì*$_{21}$, as with DIMINUTIVE *kà*$_{12}$ and *tù*$_{13}$ in (30a-b), or is redundant, as with AUGMENTATIVE *mà*$_6$ in (30c). The latter is likely due to phonological (rather than semantic) blocking, in light of the fact that the VOICE$_5$ AUGMENTATIVE is possible with class 1 nouns; indeed, prefix-stacking is the only option in those contexts, (30)d. (For related discussion, see Lafon (1994).)

(30) [$_{EVAL}$ Expressive [$_{N\text{-}ASP}$ Number [$_{nP}$ *n* ] ] ] ]

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a.i | * | | AUGMENTATIVE | *zì*$_{21}$ | *kà*$_{12}$ | [DIMINUTIVE] (singular) | PREFIX STACKING |
| a.ii | | | AUGMENTATIVE | *zì*$_{21}$ | ∅ | | PREFIX DROP |
| b.i | * | (plural) | AUGMENTATIVE | *mà*$_6$*zì*$_{21}$ | *tù*$_{13}$ | [DIMINUTIVE] (plural) | PREFIX STACKING |
| b.ii | | (plural) | AUGMENTATIVE | *mà*$_6$*zì*$_{21}$ | ∅ | | PREFIX DROP |
| c.i | * | (plural) | AUGMENTATIVE | *mà*$_6$*zì*$_{21}$ | *mà*$_6$ | [AUGMENTATIVE] (plural) | PREFIX STACKING |
| c.ii | | (plural) | AUGMENTATIVE | *mà*$_6$*zì*$_{21}$ | ∅ | | PREFIX DROP |
| d.i | | | AUGMENTATIVE | *zì*$_{21}$ | VCE$_5$ | [AUGMENTATIVE] | PREFIX STACKING |
| d.ii | | (plural) | AUGMENTATIVE | *mà*$_6$*zì*$_{21}$ | VCE$_5$ | [AUGMENTATIVE] | PREFIX STACKING |
| d.iii | * | (plural) | AUGMENTATIVE | *mà*$_6$*zì*$_{21}$ | ∅ | | PREFIX DROP |

*5.3 Prefix raising corresponds to substitutive evaluative marking*

We have seen that an evaluative prefix can be added to an already prefixed N-stem, yielding prefix stacking. This is illustrated in (31a) with the class 7 prefix *chì*$_7$, which is added to the already prefixed N-stem *mù*$_1$*kómáná*$_1$ 'boy'. But the evaluative can also combine directly with an (unprefixed) N-stem, in which case the prefix seems to substitute for the canonical N-class prefix, (31b-c). We argue that (31b) arises via prefix raising.

| | | | | |
|---|---|---|---|---|
| (31) | a. | *chì*$_7$*mù*$_1$*kómána*$_{1.\text{HUMAN}}$ | 'small sturdy boy' | STACKING |
| | b. | *chì*$_7$ *kómána*$_{1.\text{HUMAN}}$ | 'small sturdy boy' | RAISING |
| | c. | *mù*$_1$*kómáná*$_{1.\text{HUMAN}}$ | 'boy' | |

Additional examples of *chì*$_7$ used as an evaluative prefix with other N-classes are given in (32) and (33). In (32), *chì*$_7$ combines with the class 11 noun -*kòvá*$_{11}$ 'stream', to yield 'small stream' via addition or substitution. And in (33), *chì*$_7$ combines the class 12 noun -*mbùyú*$_{12}$ 'insect', to yield 'small sturdy insect'. Here we see the effect of semantic blocking. Stacking is infelicitous because of the double-marking of two diminutives, (33a): the class 12 prefix *kà*$_{12}$ marks inherently small objects, and the class 7 *chì*$_7$ is associated with the evaluative meaning of SMALL & STURDY. But the evaluative prefix can substitute for the canonical one, (33b-c).

| | | | | |
|---|---|---|---|---|
| (32) | a. | *chì*$_7$*rù*$_{11}$*kòvá*$_{11.\text{EXTENDED}}$ | 'small stream' | STACKING |
| | b. | $^{>}$*chì*$_7$ *kòvá*$_{11.\text{EXTENDED}}$ | 'small stream' | RAISING |
| | c. | *rù*$_{11}$*kòvá*$_{11.\text{EXTENDED}}$ | 'stream' | |
| (33) | a. | $^{\#}$*chì*$_7$*kà*$_{12}$*mbùyú*$_{12.\text{SMALL}}$ | ['small sturdy insect'] | STACKING |
| | b. | *chì*$_7$ *mbùyú* $_{12.\text{SMALL}}$ | 'small sturdy insect' | RAISING |
| | c. | *kà*$_{12}$*mbùyú* $_{12.\text{SMALL}}$ | 'small insect' | |

In our analysis, prefix stacking arises when two different N-class prefixes associate to distinct syntactic positions, namely EVAL and N-ASPECT, (34). This results in additive morphology. Another possibility, given the logic of association, is prefix raising. This arises if a prefix associates to a lower syntactic head and then raises to a higher one. This accounts for the emergence of multi-functionality: depending on the syntactic position that a prefix associates to, it has (predictably) different functions. We have seen that prefix raising is at play with count/mass multi-functionality, where the same prefix can mark number contrasts with both count and mass nouns. The same mechanism accounts for multi-functionality with the descriptive/evaluative partition. Substitutive evaluative marking arises when an N-class prefix with expressive meaning associates to N-Aspect, and then raises to EVAL, as in (34). The most compelling reason for associating substitutive evaluative prefixes to N-Aspect comes from the fact that they preserve number contrasts. (In this respect, they differ crucially from AUGMENTATIVE *zì*$_{21}$ which, as discussed above, requires additive, rather than substitutive, number-marking.)

(34) [$_{\text{EVALUATIVE}}$ [$_{\text{N-ASPECT}}$ [$_{\text{nP}}$ *kómána*$_1$ ] ] ] ]

| | | | | | |
|---|---|---|---|---|---|
| | ↑ | ↑ | ↑ | | |
| a. | *chì*$_{7.\text{SG}}$ | *mù*$_{1.\text{SG}}$ | *kómána*$_1$ | 'small sturdy boy' | STACKING |
| | *zvì*$_{8.\text{PL}}$ | *và*$_{1.\text{PL}}$ | *kómána*$_1$ | 'small sturdy boys' | |
| b. | *chì*$_{7.\text{SG}}$ | ~~*chì*~~$_{7.\text{SG}}$ | *kómána*$_1$ | 'small sturdy boy' | RAISING |
| | *zvì*$_{8.\text{PL}}$ | ~~*zvì*~~$_{8.\text{PL}}$ | *kómána*$_1$ | 'small sturdy boys' | |

Dialect variation provides another argument which supports the analysis of substitutive evaluative marking as prefix-raising. If substitutive evaluative prefixes were directly inserted into the EVAL head, this predicts sequences of identical prefixes. Although this is not possible in Karanga Shona (the variety that we treat here), it is attested in Zezuru Shona (Fortune, 1984, p.

36). Illustrative examples are given in (35)a-c. We take this dialect variation to indicate that the expressive use of N-class prefixes can be derived in one of two ways: (i) via insertion into the evaluative position (Zezuru); (ii) via head-movement from N-Aspect to Eval (Karanga). Of course, it could be that, in Karanga, the absence of sequences of identical prefixes is ruled out by haplology or by some mechanism prohibiting adjacent phonologically identical morphs, along the lines proposed by Pescarini (2005, 2010) for Romance clitic clusters. However, this type of explanation is not tenable, at least for Karanga. That the prohibition against sequences of identical N-class prefixes is morpho-syntactic in nature, rather than morpho-phonological, is confirmed by the fact that Karanga elsewhere allows sequences of phonologically identical prefixes, as long as they are not evaluative. As shown in (35d), locative *mù*$_{18}$ can co-occur with the class 3 prefix *mù*$_{3}$.

| (35) | | Zezuru & Karanga | Zezuru | Karanga |
|---|---|---|---|---|
| | a. | *chì-dèmbò*<br>C7-polecat<br>'polecat' | *chì-chì-dèmbò*<br>C7-C7-polecat<br>'habits of a polecat' | **chì-chì-dèmbò* |
| | b. | *rw-ìzí*<br>C11-river<br>'river' | *rù-rw-ìzí*<br>C11-C11-river<br>'long thin trickle of a river' | **rù-rw-ìzí* |
| | c. | *ù-swá*<br>C14-grass<br>'grass' | *ù-ù-swá*<br>C14-C14-grass<br>'nature of grass' | **ù-ù-swá* |
| | d. | | | *mù-mù-sáná*<br>C18-C3-back<br>'in the back'<br>(Mudzingwa, 2010, p. 85) |

*5.4 The High Tone HONORIFIC evaluative vá*$_{2.\text{HON}}$

We have argued that N-class prefixes can occupy the following syntactic positions: INNER N-ASPECT, OUTER N-ASPECT, and EVALUATIVE. We claim that honorific *vá*$_{2.\text{HON}}$ occupies an even higher position in the syntactic tree, namely D, as in (36). In term of their context of use, honorifics occur in folktales, in conversation for humorous effect, and for coining nicknames.

(36) [$_{\text{KASE}}$ … [$_{\text{DET}}$ … [$_{\text{EVALUATIVE}}$ [$_{\text{OuterNAsp}}$ Sg/Pl [$_{\text{InnerNAsp}}$ Sort [$_{\text{nP}}$ *n* ]]]]]]

HONORIFIC ↑ N-class

Four diagnostics support our claim that *vá*$_{2.\text{HON}}$ is in D. First, the honorific always functions as a proper name. We adopt Longobardi's (1994) analysis, wherein proper names are DPs, while ordinary nouns are NPs. For honorific nouns, an obvious source for their DP-hood is the honorific class prefix, and more specifically the high-tone that it bears. This high-tone is syntactically conditioned: besides appearing with honorific nouns (37a), it also appears with relative clauses (37b), and nominal predicates (37c).

(37) a. [*Vá-chì-kwèpá*] *vá-ká-svík-à* *kù-chì-tóró*
C2.HON-C7-pipe C2.HON-PAST-arrive-FV C17-C7-store
'Mr. Pipe arrived at the store'

b. *Và-kómáná* [*vá-svík-à*] *ndà-và-ón-á*
C2-boy C2.SM-arrive-FV 1SG.SM-C2.OM-see-FV
'I saw the boys who arrived'

c. [*Vá-kómáná*]
COP.C2-boy
'They are (the) boys'

Second, honorific *vá*$_{2.HON}$ is the only N-class prefix to bear high tone. In languages such as Zulu and Xhosa, such a left-edge H-tone is the tonal correlate for a D-position (Taraldsen, 2010; Visser, 2008).

Third, as shown in (38), honorific *vá*$_{2.HON}$ is the only N-class prefix that combines with doubly and triply prefixed N-stems. This distribution is predicted if honorific *vá*$_{2.HON}$ occupies D.

(38) a. *vá*$_{2.HON}$*shúmbà*$_9$ 'Mr./Ms. Lion'
b. *vá*$_{2.HON}$*chì*$_7$*kwèpá*$_7$ 'Mr./Ms. Pipe'
c. *vá*$_{2.HON}$*zì*$_{21}$*mù*$_3$*káká*$_3$ 'Mr./Ms. Big Amount of Milk'
d. *vá*$_{2.HON}$*màzì*$_{21}$*ù*$_{14}$*chí*$_{14}$ 'Mr./Ms. Big Amounts of Honey'

Fourth, in contrast with other H-tone left-edge pro-clitics, such as associative *sá*= (39a), and *ná*= (39b), which undergo vowel raising before a high vowel (Mudzingwa, 2010) honorific *vá*$_{2.HON}$ does not, (39c). We take this difference to indicate that while *ná*= and *sá*= are prepositions external to DP, *vá*$_{2.HON}$ associates to D, and so is contained within DP. This is confirmed by the fact that honorific may themselves be the object of a preposition, (39d).

(39) a. *ndà-kà-ón-á* *sé=chì-kwèpà* cf. **sá=chì-kwèpà*
1SG-PAST-see-FV ASSOC-CL7-pipe
'I saw (something) that looked like a pipe'

b. *ndà-kà-ènd-à* *né=chì-kwèpà* cf. **ná-chì-kwèpà*
1SG-PAST-go-FV ASSOC-CL7-pipe
'I went with the pipe'

c. *ndà-kà-ón-á* *vá-chì-kwèpà* cf. **vé-chì-kwèpà*
1SG-PAST-see-FV CL2.HON-CL7-pipe
'I saw Mr. Pipe'

d. *ndà-kà-ènd-à* *ná=vá-chì-kwèpà*
1SG-PAST-go-FV ASSOC- CL2.HON-CL7-pipe
'I went with Mr. Pipe'

## 6. The significance of alliterative agreement

Bantu noun classes enter into a wide range of agreement relations. Notably, the same set of formatives that are recruited as N-class prefixes are also used to mark agreement; this is an instance of *alliterative* or *concordial* agreement. We show how our analysis predicts the existence of alliterative agreement (§6.1), and how it accounts for its interaction with evaluative N-class prefixes (§§6.2-3).

### *6.1 The inevitability of alliterative agreement*

The *Interface Syntax* model captures the systemic multi-functionality that we see with Shona N-class prefixes, where a sound-meaning <π,Σ> pairing can associate to different category labels. For a language such as Shona, this mechanism also provides insight into why the same prefixes that code N-class distinctions are also recruited to mark various types of agreement relations. This includes the nominal inflection that marks agreement on adjectives, enumeratives[15], quantifiers, question words, demonstratives and pronouns, as well as the verbal inflection agreement that marks subject and object agreement. An illustrative example is given in (40), where the N-stem *-kómáná*$_1$ 'boy' is inflected with the class prefix *và*$_2$ (HUMAN, PLURAL), which triggers alliterative subject agreement, as well as alliterative adjectival and demonstrative agreement.

(40)

| *và-kómáná*$_1$ | *và-rèfú* | *ì-và* | *và-nò-fámbá* |
|---|---|---|---|
| C2-boy | C2-tall | DEM-C2 | C2.SM-HAB-walk |

'These tall boys walk'

Alliterative agreement is yet another instance of multi-functionality, and predictably arises from the re-association of the same N-class prefix with a multiplicity of syntactic positions. Thus, Shona shows massive recycling of sound-meaning <π,Σ> formatives throughout the entire grammar. To see this consider the Shona agreement paradigms in Table 16, which we have grouped following the conventions of Fortune (1984). Observe that, with one exception, each N-class prefix has a counterpart in the agreement system that is either homophonous with the N-class prefix, or derived from it by a combination of regular morpho-syntactic and morpho-phonological processes. The one exception involves the 3sg subject prefix *á-*.

[15] Enumeratives are a closed-class set of three stems (*-mwè* 'a certain, some, others, more', *mwé* 'one, the same', and *-í* 'of what sort'). On the basis of the surface form of their concordial agreement, they constitute a distinct inflectional class. See Fortune (1984, p. 112) for details.

Table 16: Shona agreement paradigms (adapted from Fortune, 1984, p. 16)

| | I N | II A | III enum. | IV quant. | V wh | VI(a) dem.prox V-… | VI(b) dem.dist V-…-o | VII proN | VIII poss. pro | X subj | XI obj |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *mù-* | *mù-* | *mù-* | *w-* | *ú-* | *-yù* | *-y-* | *-yè* | *w-* | *á-* | *-mù-* |
| 2 | *và-* | *và-* | *và-* | *v-* | *vá-* | *-và* | *-v-* | *-v-* | *v-* | *vá-* | *-và-* |
| 3 | *mù-* | *mù-* | *mù-* | *w-* | *ú-* | *-yù* | *-y-* | *-w-* | *w-* | *ú-* | *-ù-* |
| 4 | *mì-* | *mì-* | *mì-* | *y-* | *í-* | *-yì* | *-y-* | *-y-* | *y-* | *í-* | *-ì-* |
| 5 | [VCE]- | [VCE]- | *rì-* | *r-* | *rí-* | *-rì* | *-r-* | *-r-* | *r-* | *rí-* | *-rì-* |
| 6 | *mà-* | *mà-* | *mà-* | *Ø-* | *á-* | *-y-* | *-y-* | *-w-* | *Ø-* | *á-* | *-à-* |
| 7 | *chì-* | *chì-* | *chì-* | *ch-* | *chí-* | *-chì* | *-ch-* | *-ch-* | *ch-* | *chí-* | *-chì-* |
| 8 | *zvì-* | *zvì-* | *zvì-* | *zv-* | *zví-* | *-zvì* | *-zv-* | *-zv-* | *zv-* | *zví-* | *-zvì-* |
| 9 | [N]- | [N]- | *ì-* | *y-* | *í-* | *-yì* | *-y-* | *-y-* | *y-* | *í-* | *-ì-* |
| 10 | *Ø-* | *Ø-* | *dzì-* | *dz-* | *dzí-* | *-dzì* | *-dz-* | *-dz-* | *dz-* | *dzí-* | *-dzì-* |
| 11 | *rù-* | *rù-* | *rù-* | *rw-* | *rú-* | *-rwù* | *-rw-* | *-rw-* | *rw-* | *rú-* | *-rù-* |
| 12 | *kà-* | *kà-* | *kà-* | *k-* | *ká-* | *-kà* | *-k-* | *-k-* | *k-* | *ká-* | *-kà-* |
| 13 | *tù-* | *tù-* | *tù-* | *tw-* | *tú-* | *-twù* | *-tw-* | *-tw-* | *tw-* | *tú-* | *-tù-* |
| 14 | *Xù-* | *Xù-* | *Xù-* | *hw-* | *hú-* | *-hwù* | *-hw-* | *-hw-* | *hw-* | *hú-* | *-hù-* |

Such pervasive alliterative agreement is predicted to arise if: (i) there is a pre-syntactic sound-meaning <π,Σ> pairing; and (ii) agreement copies instances of <π,Σ> (Wiltschko, 2009). Consequently, the same form marks agreement in all contexts; this elegantly derives the concordial agreement that is characteristic of Bantu languages.

A closer look at the Shona agreement paradigm reveals that it is governed by three organizing principles: (i) syntactic context; (ii) phonological context; (iii) anti-homophony. Consider Table 17; the shaded cells are suppletive. Formatives that have stable segmental [CV] melodies predictably show three allomorphs: [CV] with a low-tone melody; [CV] with a high-tone melody; and [C]. This holds of class 2 ($va_2$), class 7 ($chi_7$), class 8 ($zvi_8$), and class 12 ($ka_{12}$). The distribution of these allomorphs is determined by a combination of syntactic and phonological factors. The low-tone [CV] allomorph is found with nominal, adjectival, enumerative and proximal stems, as well as with object agreement; we take this to be the base form. The high-tone [CV] allomorph is syntactically conditioned, and is found with WH-stems, subject agreement, and honorifics. The [C] allomorph, which is phonologically conditioned, is found with quantifiers, distal, pronominal and possessive stems; these all share the property of being vowel initial. In addition, the segmental melody of the agreement morphemes determines, in a predictable fashion, their surface form. C*i* prefixes ($ri_5$ and $dzi_{21/10}$) are suppletive in two contexts with nominal or adjectival stems (where they surface as an autosegmental voicing feature); they otherwise show regular allomorphy (Lafon, 1994). C*u* prefixes ( $ru_{11}$, $tu_{13}$ and $Xu_{14}$) are subject to glide formation, a completely general process in Shona (Mudzingwa, 2010). This yields four allomorphs: [Cù], [C$^{w}$ù], [Cú], and [C$^{w}$]. Finally, formatives that begin with a nasal — this includes $mu_1$, $mu_3$ $mi_4$, $ma_6$ and $N_9$ — are subject to various types of reductive phonology that yield a vowel or glide. We also observe the emergence of suppletive forms conditioned by anti-homophony. For example, some class 1 pronominal forms have suppletive forms, which all have the effect of avoiding homophony with class 3; the object marker for class 1 is *-mù-*, rather than the expected *-ù-*; the subject marker is *á-*, rather than the expected *ú-*; and the pronoun is *-yè*, rather than the expected *-w*. There is also suppletion with class 6 (which is ∅-

with possessive pronouns) and class 9 (which is *ì-* with enumerative stems). A remarkable feature of these agreement paradigms is the almost complete absence of suppletion; moreover, what little suppletion there is involves suppletion of the prefix, rather than the stem or the whole word-form.

Table 17: Shona alliterative agreement (suppletive forms are shaded)

| CONDITIONING FACTOR | | LEXICAL CV; L | | | | | SYNTACTIC CV; H | | | PHONOLOGICAL C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SYNTACTIC CONTEXT | | N | A | enum. | obj | dem prox | wh | subj | hon | quant. | dem.dist | proN | poss. pro |
| FORM | | | | | | | | | | | | | |
| CV | 2 | *và-* | *và-* | *và-* | *-và-* | *-và* | *vá-* | *vá-* | *vá-* | *v-* | *-v-* | *-v-* | *v-* |
| | 7 | *chì-* | *chì-* | *chì-* | *-chì-* | *-chì* | *chí-* | *chí-* | | *ch-* | *-ch-* | *-ch-* | *ch-* |
| | 8 | *zvì-* | *zvì-* | *zvì-* | *-zvì-* | *-zvì* | *zví-* | *zví-* | | *zv-* | *-zv-* | *-zv-* | *zv-* |
| | 12 | *kà-* | *kà-* | *kà-* | *-kà-* | *-kà* | *ká-* | *ká-* | | *k-* | *-k-* | *-k-* | *k-* |
| Ci | 21 | *dzì-* | *dzì-* | *rì-* | *-rì-* | *-rì* | *rí-* | *rí-* | | *r-* | *-r-* | *-r-* | *r-* |
| | 5 | [VCE]- | [VCE]- | | | | | | | | | | |
| | 10 | Ø- | Ø- | *dzì-* | *-dzì-* | *-dzì* | *dzí-* | *dzí-* | | *dz-* | *-dz-* | *-dz-* | *dz-* |
| Cu | 11 | *rù-* | *rù-* | *rù-* | *-rù-* | *-rwù* | *rú-* | *rú-* | | *rw-* | *-rw-* | *-rw-* | *rw-* |
| | 13 | *tù-* | *tù-* | *tù-* | *-tù-* | *-twù* | *tú-* | *tú-* | | *tw-* | *-tw-* | *-tw-* | *tw-* |
| | 14 | *Xù-* | *Xù-* | *Xù-* | *-hù-* | *-hwù* | *hú-* | *hú-* | | *hw-* | *-hw-* | *-hw-* | *hw-* |
| N(V) | 1 | *mù-* | *mù-* | *mù-* | *-mù-* | *-yù* | *ú-* | *á-* | | *w-* | *-y-* | *-yè* | *w-* |
| | 3 | *mù-* | *mù-* | *mù-* | *-ù-* | *-yù* | *ú-* | *ú-* | | *w-* | *-y-* | *-w-* | *w-* |
| | 4 | *mì-* | *mì-* | *mì-* | *-ì-* | *-yì* | *í-* | *í-* | | *y-* | *-y-* | *-y-* | *y-* |
| | 6 | *mà-* | *mà-* | *mà-* | *-à-* | *-yì-* | *á-* | *á-* | | Ø- | *-y-* | *-w-* | Ø- |
| | 9 | [N]- | [N]- | *ì-* | *-ì-* | *-yì* | *í-* | *vá-* | | *y-* | *-y-* | *-y-* | *y-* |

*6.2 The patterning of alliterative agreement with evaluative prefixes*

The patterning of alliterative agreement with evaluative N-class prefixes confirms their syntactic status as heads, and also confirms that the displacement of the N-class prefix from N-ASPECT to EVAL is an instance of head-movement. Consider the examples in (41), where the class 1 noun *-kómáná*$_1$ 'boy' is the head of a noun phrase that also contains a modifiying adjective (*-rèfú* 'tall') and a demonstrative (in the form of a harmonic vowel), which both agree with the noun. Because the noun phrase is in subject position, we also see subject agreement on the verb. When *-kómáná*$_1$ 'boy' appears with its canonical class prefix, namely class 1 *mù*$_1$, then the adjective, demonstrative, and verb all show class 1 agreement, (41a). If an evaluative N-class prefix replaces the canonical N-class prefix, then agreement is with the evaluative N-class prefix. Thus, evaluative *chì*$_7$ 'triggers class 7 agreement (41b). Likewise, evaluative *kà*$_{12}$ triggers class 12 agreement, (41c).

(41) a. *mù-kómáná*$_1$ *mù-rèfú* *ù-yù* *à-nò-fámbá*
C1-boy C1.tall DEM-C1 C1.SM-HAB-walk
'This tall boy walks'

b. *chì-kómáná*$_1$ *chì-rèfú* *ì-chì* *chì-nò-fámbá*
C7-boy C7-tall DEM-C7 C7.SM-HAB-walk
'This strong sturdy tall boy walks'

c. *kà-kómáná*$_1$ *kà-rèfú* *à-kà* *kà-nò-fámbá*
C12-boy C12-tall DEM-C12 C12.SM-HAB-walk
'This slim tall boy walks'

Additional confirmation that evaluative N-class prefixes are heads comes from the interaction of prefix-stacking and agreement. When the evaluative prefix stacks onto the canonical class prefix, then only the leftmost prefix triggers agreement. This is shown in (42) with evaluative *chì*$_7$, and in (43) with evaluative *kà*$_{12}$.

(42) a. **chì-mù-kómáná*$_1$ *mù-rèfú* *ù-yù* *à-nò-fámbá*
C7-C1-boy C1-tall DEM-C1 C1.SM-HAB-walk

b. *chì-mù- kómáná*$_1$ *chì-rèfú* *ì-chì* *chì-nò-fámbá*
C7-C1-boy C7-tall DEM-C7 C7.SM-HAB-walk
'This strong sturdy tall boy walks'

(43) a. **kà-mù-kómáná*$_1$ *mù-rèfú* *ù-yù* *à-nò-fámbá*
C12- C1-boy C1-tall DEM-C1 C1.SM-HAB-walk

b. *kà-mù-kómáná*$_1$ *kà-rèfú* *à-kà* *kà-nò-fámbá*
C12-C1-boy C12-tall DEM-C12 C12.SM-HAB-walk
'This slim tall boy walks'

*6.3 Augmentative zì*$_{21}$ *and concordial agreement*

The participation of class 21 in concordial agreement is unusual in that: (i) only modifiers show class 21 agreement; (ii) purely (pro-)nominal elements such as demonstratives and grammatical function agreement (in the form of subject-marking and object-marking) show concordial class 5/6 agreement. Consider the pattern of agreement triggered by AUGMENTATIVE *zì*$_{21}$. In the presence of a head noun marked with AUGMENTATIVE *zì*$_{21}$, adjectival modifiers show concordial class 21 agreement, e.g. *zì*$_{21}$*rèfú* 'tall'. But demonstratives and grammatical-function marking deploy class 5/6 agreement with an augmentative head noun. If the head noun is singular, it triggers class 5 agreement, as in (44) and (45). And if the head noun is plural, it triggers class 6 agreement, as in (46) and (47).

(44) a. *zì-mù-kómáná* *zì-rèfú* *ì-rì* *rì-nò-fámbá*
C21-C1-boy C21-tall DEM-C5 C5.SM-HAB-walk
'This big tall boy walks'

b. **zì-mù-kómáná* *mù-rèfú* *ù-yù* *à-nò-fámbá*
C21-C1-boy C1-tall DEM-C1 C1.SM-HAB-walk

(45) a. *zì-mù-sùmá* *zì-rèfú* *ì-rì* *rì-nò-kúrá*
C21-C3-suma C21-tall DEM-C5 C5.SM-HAB-grow
'This big tall suma tree grows'

b. **zì-mù-sùmá* *mù-rèfú* *ù-yù* *ú-nò-kúrá*
C21-C3-suma C3-tall DEM-C3 C3.SM-HAB-grow

(46) a. *mà-zì-gómáná* *mà-rèfú* *à-yà* *á-nò-fámbá*
C6-C21-C5.boy C6-tall DEM-C6 C6.SM-HAB-walk
'These big tall boys walk'

b. **mà-zì-và-kómáná* *và-rèfú* *à-và* *vá-nò-fámbá*
C6-C21-C2-boy C2-tall DEM-C2 C2.SM-HAB-walk

(47) a. *mà-zì-mì-sùmá*$_3$ *mà-rèfú* *à-yà* *á-nò-kúrá*
C6-C21-C4-suma C6-tall DEM-C6 C6.SM-HAB-grow
'These big tall suma trees grow'

b. **mà-zì-mì-sùmá*$_3$ *mì-rèfú* *ì-yì* *í-nò-kúrá*
C6-C21-C4-suma C4-tall DEM-C4 C4.SM-HAB-grow

We understand the concordial agreement associated with AUGMENTATIVE *zì*$_{21}$ as follows. First, unlike all other N-class prefixes, AUGMENTATIVE *zì*$_{21}$ never functions as an N-class prefix with descriptive content. We take this to indicate that *zì*$_{21}$ associates directly to the EVAL head. Second, languages that have Class 21 regularly employ class 5/6 concordial agreement (Maho, 1999, p. 204). In fact, Kadima (1969) argues that class 21 is the result of a previous split of class 5. In Shona, we see synchronic morpho-syntactic evidence for this split. Based on phonological criteria, Lafon (1994) concludes that classes 5/6/21 constitute a sub-paradigm in Shona.

## 7. Using noun-class prefixes to test models of morphology

A key feature of our analysis is the idea that Shona (and all Bantu languages) aggressively exploit the pre-syntactic lexicon. A surface correlate of this is the massive multi-functionality found with N-class prefixes. This follows from the association of uncategorized Saussurean formatives, which we treat as sound-meaning <π,Σ> pairings, with different category labels. We briefly compare our analysis, couched within the framework of *Interface Syntax*, with alternatives, focusing on the implications for minimalist-style feature-checking (§7.1); analyses that exploit under-specification of vocabulary items, as in Distributed Morphology (§7.2); and analyses that posit an exo-skeletal syntax (§7.3).

### *7.1 How Minimalist feature-checking might handle N-class prefixes*

The most detailed and explicit treatment of Bantu N-class prefixes using minimalist-style mechanisms is to be found in a series of papers by Carstens (2000, 2001, 2005, 2010, 2011). We cannot do justice to the theoretical sophistication and intricacy of these papers, so we discuss only the most recent one (Carstens, 2011), which is convergent with our proposal, especially as regards the formal treatment of alliterative agreement. However, at a conceptual level, the two

approaches are profoundly different. Within the logic of minimalism, grammatical features (called "formal features") are interpretable or uninterpretable. Carstens' (2011) analysis claims that Bantu N-class prefixes introduce gender features (i.e. class features) that are valued but un-interpretable. (In this regard, they contrast with case features, which are un-valued and un-interpretable.) Assuming that syntactic valuation results in the de-activation of un-interpretable features, this predicts that Bantu gender features are "infinitely reusable", and accounts for the alliterative (concordial) agreement that is a hallmark of Bantu languages.[16] Relative to the concerns of the present paper, which is to provide a principled account for the multi-functionality and semantic heterogeneity of N-class prefixes, this type of minimalist analysis falls silent, because its attention is restricted to syntactic contexts where N-class prefixes have what we call descriptive meanings. As seen above, N-class prefixes with expressive meaning are subject to the same formal agreement relations as those with descriptive meaning. This challenges any account that invokes "un-interpretability" as a criterion.

*7.2 How Distributed Morphology might handle N-class prefixes*

No full-fledged account of Bantu N-class prefixes has yet been attempted in the framework of Distributed Morphology (Halle and Marantz, 1993; Harley, 2008; Harley and Noyer, 1999). But van der Spuy (1995, 2001, 2006, 2010), in a series of papers which treat various aspects of the paradigm of Zulu N-class prefixes, develops an algorithm in the spirit of Distributed Morphology. In a more recent paper, van der Spuy (2013) explicitly adopts Distributed Morphology formalism. Although developed to account for Zulu data, van der Spuy's proposals extend to Shona, and yield the insertion rules in (48), where vocabulary items are inserted into the N-class position labelled [+N] in (49).

(48)
| | | | | |
|---|---|---|---|---|
| a. | [+N] class 1 | ↔ | /mù-/ |
| b. | [+N] class 2 | ↔ | /và-/ |
| c. | [+N] class 3 | ↔ | /mù-/ |
| d. | [+N] class 4 | ↔ | /mì-/ |
| e. | [+N] class 5 | ↔ | /VOICE-/ |
| f. | [+N] class 6 | ↔ | /mà-/ |
| g. | [+N] class 7 | ↔ | /chì-/ |
| h. | [+N] class 8 | ↔ | /zvì-/ |
| i. | [+N] class 9 | ↔ | /N-/ |
| j. | [+N] class 10 | ↔ | /N-/ |
| k. | [+N] class 11 | ↔ | /rù-/ |
| l. | [+N] class 12 | ↔ | /kà-/ |
| m. | [+N] class 13 | ↔ | /tù-/ |
| n. | [+N] class 14 | ↔ | /Xù-/ |
| o. | [+N] class 21 | ↔ | /zì-/ |

(49) $[_{DP}$ [+D] $[_{N\text{-}CLASS}$ [+N] $[_{STEM}$ [X] ]

[16] Carstens' (2011) proposal explains a wide range of syntactic phenomena that is characteristic of Bantu languages, including Subject-Object Reversal, locative inversion, subject agreement, hyper-raising, concord, operator agreement, and multiple subject agreement.

In this way, *Vocabulary Insertion*, together with a specification of the relevant insertion nodes, can account for the placement of Shona N-class prefixes when they are used in the descriptive dimension. But there remains the question of how *Vocabulary Insertion* would manipulate these formatives when they are used in the expressive dimension, namely with evaluative force. On independent grounds, based on data from Zulu, van der Spuy (2010) argues that N-class prefixes restrict the denotation of the noun stem they attach to. Although he only discusses the descriptive meanings of N-class prefixes, his proposal generalizes to their expressive meanings. Accordingly, an N-class prefix could be associated with two vocabulary insertion rules, as shown in (50). One set of rules would insert semantic features associated with the descriptive denotation of the N-class prefix; the other set of rules would insert the semantic features associated with the expressive denotation of the N-class prefix.

(50)

| | VOCABULARY INSERTION RULES FOR DESCRIPTIVE MEANING | | VOCABULARY INSERTION RULES FOR EXPRESSIVE MEANING | |
|---|---|---|---|---|
| a. | [+N] C1 ↔ /mù/ | HUMAN, SG | — | |
| b. | [+N] C2 ↔ /và/ | HUMAN, PL | [+D] C2 ↔ /vá/ | HONORIFIC |
| c. | [+N] C3 ↔ /mù/ | SPREAD | [+N] C3 ↔ /mù/ | %PEJORATIVE |
| d. | [+N] C4 ↔ /mì/ | SPREAD, PL/COLL | — | |
| e. | [+N] C5 ↔ /VCE/ | *u*SPREAD | [+N] C5 ↔ /VCE/ | AUG, SG |
| f. | [+N] C6 ↔ /mà/ | *u*SPREAD, PL/COLL | [+N] C6 ↔ /mà/ | AUG, PL |
| g. | [+N] C7 ↔ /chì/ | ARTEFACT, SG | [+N] C7 ↔ /chì/ | SMALL STURDY, SG |
| h. | [+N] C8 ↔ /zvì/ | ARTEFACT, PL | [+N] C8 ↔ /zvì/ | SMALL STURDY, PL |
| i. | [+N] C9 ↔ /N/ | ANIMAL, SG | — | |
| j.i | [+N] C10↔ /N/ | ANIMAL, PL | — | |
| j.ii | [+N] C10↔ /N/ | OUTLINE, PL | — | |
| k. | [+N] C11↔ /rù/ | OUTLINE, SG | [+N] C11↔ /rù/ | THIN SICKLY, SG |
| l. | [+N] C12↔/kà-/ | SMALL, SG | [+N] C12↔/kà-/ | DIM, SG |
| m. | [+N] C13↔ /tù-/ | SMALL, PL | [+N] C13↔ /tù-/ | DIM, PL |
| n. | [+N] C14↔ /Xù-/ | ABSTRACT | — | |
| o. | — | | [+N] C21↔ /zì-/ | AUG |

In this way, a *Distributed Morphology* analysis could account for the possibility of substituting a descriptive N-class prefix with an evaluative N-class prefix. However, such an analysis does not account for prefix stacking, where an evaluative prefix attaches to an already prefixed N-stem. Indeed, in the *Interface Syntax* analysis that we propose here, prefix-stacking is a diagnostic for additional syntactic structure, and motivates the association of a given formative to distinct insertion sites,. Indeed, a central claim of our syntactic analysis is that N-class prefixes associate to a multiplicity of syntactic nodes, including INNER N-ASPECT (the locus of UNIT/COLLECTION contrasts), OUTER N-ASPECT (the locus of SINGULAR/PLURAL contrasts), an EVALUATIVE position (the locus of expressive meanings), and a DETERMINER position (the locus of honorific proper name meanings). Of course, a *Distributed Morphology* account could be supplemented with a similar range of additional insertion sites. On this score then, such an enriched *Distributed Morphology* analysis would be a notational variant of the *Interface Syntax* proposal developed here. This much establishes that each framework can generate comparable results. However, they nevertheless differ significantly at a conceptual level. In particular, whereas *Interface Syntax*

predicts that, at least in some languages, this combination of syntactic multi-functionality and semantic heterogeneity will be pervasive and systematic (as it is in Bantu languages), no such claim is made in the *Distributed Morphology* account.

*7.3 How Exoskeletal Syntax might handle N-class prefixes*

One remarkable feature of the Shona, and more generally Bantu, N-class system is the fact that both count and mass Ns are marked for number. We have proposed that while count denotations associate with OUTER N-ASPECT (and code a SINGULAR/PLURAL contrast), mass denotations associate with INNER N-ASPECT (and code a UNIT/COLLECTION contrast). Consequently, count and mass nouns are equally "marked", from the point of view of the structures they invoke. However, our formalization challenges the influential analysis of Borer (2005), for whom mass Ns have a simpler structure then count Ns. In particular, as shown in (51), for Borer count nouns have an additional layer of dividing structure which mass nouns lack.

(51) Borer's (2005) analysis of the MASS/COUNT partition

| | | | |
|---|---|---|---|
| a. | $[_{DP}\,[_{D}\,[_{\#P}$ much $[_{\#}$ <e>$_{\#}$ | $[_{NP}\,[_{N}$ salt ]]]]]] | MASS |
| b. | $[_{DP}\,[_{D}\,[_{\#P}$ three $[_{\#}$ <e>$_{\#}$ **$[_{CLmax}$ cat,  $[_{CL}$ <e>$_{div}$** | $[_{NP}\,[_{N}$ ~~cat~~ ]]]]]]]] | COUNT |

Our analysis, like Borer's exoskeletal analysis, treats the MASS/COUNT partition as structurally determined. However, we depart from her in claiming that both MASS and COUNT nouns are associated with "dividing" structures: mass nouns have sortal contrasts (our INNER N-ASPECT), while count nouns have number contrasts (our OUTER N-ASPECT).

## 8. Conclusion

Gender is a heterogeneous phenomenon within and across languages: it is "constructed" (i.e. structured) in different ways within and across languages. The one thing that all types of gender share in common is class partition, i.e. subset formation (Corbett and Fraser, 2000). In the Interface Model, the emergence of gender — of which Shona noun classes are an exuberant example — is the by-product of the recursive application of the purely formal structure-building operation ASSOCIATE. Shona gender/N-class prefixes display massive multi-functionality, with concomitant semantic heterogeneity. We have argued that this multi-functionality is a consequence of the *pre-syntactic association* of sound with meaning, yielding uncategorized — — and therefore multi-functional — sound-meaning <π,Σ> formatives. As for the heterogeneity of Shona gender/N-class prefixes, we have shown that one simple mechanism is responsible, namely the possibility of associating a <π,Σ> formative to distinct syntactic positions. Specifically, we have argued that Shona N-class prefixes associate to one of four syntactic positions: to INNER N-ASPECT as sortal heads for mass nouns; to OUTER N-ASPECT as number-marking heads for count nouns; to a dedicated EVALUATIVE position as expressives; to D as honorifics. The analysis achieves the following four outcomes.

First, we derive the existence of alliterative (concordial) agreement. In treating N-class prefixes as uncategorized <π,Σ> formatives, our analysis correctly predicts that a sound-meaning <π,Σ> bundle is, in principle, compatible with a variety of different syntactic contexts. This provides a non-stipulative and natural account for why the same set of morphemes that are used as N-class markers also function as agreement markers. Thus, the same prefix that marks the N-class of a nominal stem is also found with adjectival stems, demonstratives, quantifiers, wh-

words, pronouns, as well as subject agreement and object agreement. Any departure from the normal CV and low-tone melody is attributed to regular rules of syntax (some syntactic contexts require a high tone) or phonology (e.g. truncation of CV to C, glide formation, etc.).

Second, our analysis provides a structural basis for the count/mass contrast. If an N-class prefix associates to INNER N-ASPECT, it codes for sortal contrasts, yielding a mass denotation. But the same N-class prefix can associate to OUTER N-ASPECT, in which case it codes for number contrasts, yielding a count denotation. This provides a principled account for the ambiguity of *mì-nyú*, which may be construed as 'much salt' (mass denotation) or as 'salts' (count denotation). As far as we know, such MASS/COUNT contrasts have not been treated in previous studies of Shona N-classes. And such systematic ambiguity is not specific to Shona, as Gillon (2010) describes a similar contrast in Innu-aimun, an Algonquian language.

Third, we correctly predict the distribution of substitutive and additive number-marking. Substitutive marking is the norm for both count and mass nouns: this yields a singular/plural contrast for count nouns (e.g. *mù-tí* 'tree' versus *mì-tí* 'trees'), and a unit/collection contrast for mass nouns (e.g. *mù-káká* 'milk' versus *mì-káká* 'much milk'). If an N-class prefix is number-neutral, as is the class 14 prefix *ù-*, then number marking is additive; again this holds of both count nouns (e.g., $^{\&}ù_{14}tá_{14}$ bow(s)' and $mà_{6}ù_{14}tá_{14}$ 'bows') and mass nouns (e.g., $^{\&}ù\text{-}chí_{14}$ 'honey(s)'; $^{\&}mà_{6}ù_{14}chí_{14}$ 'honeys, much honey').

Fourth, we provide a structurally based account for the fact that N-class prefixes are associated with descriptive or expressive meanings. On independent grounds, the parallel existence of these two dimensions of meaning is proposed by Potts (2007), and applied to Shona augmentatives and diminutives (Fortin, 2011) . The significance of the Shona data is that it makes clear that, in their expressive function, N-class prefixes occupy a distinct morpho-syntactic position. This is confirmed by the fact that prefix stacking is possible, with the inner N-class prefix contributing descriptive meaning, and the outer N-class prefix contributing expressive meaning, as in $chì_{7}mù_{3}kómána_{3}$ 'small sturdy boy'.

There remain many unsolved problems. As discussed by Fortin (2011), N-class prefixes, in both their descriptive and their expressive function, show a mixture of properties relative to the traditional division between inflection and derivation. On the one hand, they trigger N-class agreement, which suggests that they are inflectional in nature. On the other hand, they derive new meanings, which suggests that they are derivational in nature (Mufwene, 1980; Schadeberg, 2001). This mix of properties is not specific to Shona, nor to Bantu, and indicates that the distinction between "derivation" and "inflection" is gradient, rather than being a primitive of the grammar (Haspelmath and Sims, 2010). For related discussion, see Steriopolo and Wiltschko (2010).

The data discussed here by no means exhausts the many and varied use of Shona N-class prefixes, which also function as reflexives, adverbializers, and nominalizers (Déchaine, 2012; Déchaine and Wiltschko, 2011). But we are encouraged by the fact that the type of sound-meaning bundling that the *Interface Syntax* model predicts — namely uncategorized Saussurean <π,Σ> formatives — permits a more insightful and systematic treatment of Shona N-classes than has previously been attempted. To our knowledge, no other analysis of N-class prefixes, either in Shona or in any other Bantu language, has achieved this level of descriptive adequacy. We take this to be a strong argument in support of both the conceptual underpinnings of the *Interface Syntax* model, and the analytic tools that it makes available to the linguist.

**Acknowledgments**

This research was supported by a SSHRC Standard Research Grant. For feedback and discussion, many thanks to Paolo Acquaviva, Andrei Anghelescu, Greville Corbett, Laura Downing, Antonio Fortin, Larry Hyman, Joash Johannes, Ruth Kramer, Juvénal Ndayiragije, Douglas Pulleyblank, Hotze Rullmann, Andrea Wilhelm, and audiences at IMM15 (*Exploring Grammatical Gender Workshop*, Vienna) and ACAL 43 (New Orleans).

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