Inflectional structure without morphemes: similarities between creoles and non-creoles

Estrutura flexional sem morfemas: semelhanças entre línguas crioulas e não-crioulas

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Abstract: This paper investigates creole word structure in the light of the current debate between morphemic and non-morphemic approaches to inflection. The representation of word structure has been a hotly debated issue within morphological theory, especially since Matthews (1972) convincingly argued that languages systematically display inflectional phenomena which seriously contradict the morphemic view of word structure proposed by American Structuralists (cf. Harris 1942, Nida 1949). This study extends the debate to creole languages by drawing on a small sample of Portuguese-based creoles. Empirical evidence will be offered which shows that creole inflection is also best accounted for within a non-morphemic (i.e., realisational) model of morphology (Anderson 1992, Aronoff 1994, Spencer 2004, Stump 2001).

Keywords: Creole inflection, morphological analysis, word-based morphology.

Resumo: Este artigo examina a estrutura morfológica das palavras crioulas à luz do debate entre abordagens morfêmicas e não-morfêmicas da morfologia. A representação da estrutura flexional tem sido um tema muito debatido no âmbito da morfologia teórica, especialmente desde que Matthews (1972) defendeu convincentemente a ideia de que as línguas apresentam estruturas flexionais que seriamente comprometem a visão morfémica de morfologia proposta pelos Estruturalistas Americanos (cf. Harris...

**Palavras-chave:** Flexão das línguas crioulas, análise morfológica, morfologia da palavra.

1 **Introduction**

Central issues about the nature of inflectional morphology are generally discussed on the basis of highly inflecting languages (i.e., languages with both a large inventory of inflected forms and various inflectional affixes per word)\(^1\). It is therefore implicitly assumed that creole languages, due to the lack of sufficiently abundant inflection, do not merit the same amount of theoretical discussion. Over the past decade, however, research on inflectional morphology has made much progress, with a wide range of studies providing the much needed empirical evidence to challenge traditional claims about the absence of inflection in creoles (Baptista 2003, Kihm 2003, Holm 2008). In parallel, a number of studies have also been trying to show that although creoles and non-creoles differ with respect to paradigm size and word size, creoles nonetheless exhibit inflectional phenomena which operate in ways that are identical to those attested in non-creole languages (Luis 2008, Plag 2008). Such findings clearly indicate that quantitative differences should not hinder scholars from drawing on creole languages to investigate questions that are central to our understanding of the nature of inflection (Luis 2011, Bonami & Luis to appear). Within this context, the goal of our study will be to examine creole inflection in the light of the debate between morphemic and non-morphemic morphology.

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The debate between morphemic and non-morphemic morphology has been a hot topic in morphology, especially since Matthews (1972) pointed out that languages exhibit various types of mismatch between inflectional form and morphosyntactic meaning that are challenging to the definition of the morpheme (as proposed by American Structuralists). Morphemic approaches to morphology take the morpheme as the minimal unit of word structure (Harris 1942: 169, Nida 1949: 1) and assume that an inflected word is derived through the piecewise attachment of morphemes. Underlying the definition of the morpheme is the assumption that there is a one-to-one correspondence between inflectional form and morphosyntactic meaning. On the contrary, within a realisational approach (as developed by Anderson (1992) and Stump (2001)), there is no such thing as a systematic one-to-one relationship between minimal units of form and minimal units of meaning. No role is therefore assigned to the morpheme. Instead, primary status is given to the inflected word and to its position within the word’s paradigm (cf. Anderson 1992, Stump 2001).

In this paper, we extend the debate between morphemic and non-morphemic approaches to creoles and examine the degree to which they exhibit mismatches between inflectional form and morphosyntactic meaning. Based on a small sample of Portuguese-based creoles, it will be argued that creole languages also exhibit deviations that are best captured by a non-morphemic approach. To the best of our knowledge, this claim has not yet been made for creole languages.

The structure of this paper is as follows: section 2 briefly surveys the debate on morphemic vs. non-morphemic approaches to morphology. Section 3 offers an overview of inflectional phenomena that are challenging to the definition of the morpheme, with evidence from non-creole languages. Section 4 shows that Portuguese-based creoles exhibit inflectional phenomena that are identical to the phenomena observed in section 3, further weakening the morphemic approach to creole inflection. Finally, in section 5 we explain how the phenomena surveyed in section 4 can be accounted for within a realisational model of morphology, such as Paradigm-Function Morphology (Stump 2001). We sum up and conclude our discussion in section 6.

2 Background

This section briefly lays out the theoretical background of our paper, offering a short survey of the main assumptions underlying morphemic and non-morphemic approaches to inflectional structure.
2.1 A morphemic view of word structure

The morphemic view under discussion in this paper originated within American Structuralism (Bloomfield 1933, Harris 1942, Nida 1949). It emerged more precisely from the concern to segment word structure into minimal units of form and meaning (cf. Matthews 2001). In essence, a morphemic approach relies on the claims that (i) morphemes are minimal units of form and meaning and that (ii) inflected words consist of a concatenation of such minimal units. According to the first claim, each morpheme has exactly one meaning and each identifiable meaning in the word should be expressed by exactly one morpheme. Morphemes may be free or bound, and must all have their own lexical entry specifying phonological form, meaning and syntax. A classical morpheme-based representation of lexical entries is shown in (1) and (2), for the bound plural morpheme and the free morpheme CASA, respectively:

(1) Phon: /ʃ/
   Meaning: [PLURAL]
   Syntax: N._

(2) Phon: /kazə/
   Meaning: ‘house’
   Syntax: N

The second claim encapsulates the principle of radical agglutination which also forms the basis of the morphemic view of morphology. Inflected words are analysed as a concatenation of morphemes, as shown in (3), with the plural noun casas ‘houses’.

(3) casas
   casa -s
   [HOUSE] [PLURAL]

Admittedly, representations as shown in (3), can be used to represent the internal structure of inflected words such as casas ‘houses’. The crucial question we would like to address in this paper, however, is whether the structure in (3) can be adopted as a theory of inflectional word structure. In sections 3 and 4, it will be shown that inflection cannot always be derived by purely concatenating pieces of morphology. It will also be shown, following Hockett (1947), that inflectional phenomena do not necessarily display a one-to-one correspondence between morphosyntactic meaning and inflectional form. While a morphemic
view can be used to describe morphological structure of a certain kind, it cannot be used to account for the numerous deviations from the morphemic ideal (Anderson 1992, Spencer 2004, among other). Based on such evidence, we will argue that morphemes should not be adopted as theoretical primitives of word structure.

Matthews (1972, 1991) played a crucial role in the development of the non-morphemic model of inflection known as Word-and-Paradigm Morphology, which subsequently gave rise to more detailed realisational models of inflection such as A-Morphous Morphology (Anderson 1992) and Paradigm-Function Morphology (Stump 2001). Within a realisational model, inflected words do not acquire their morphosyntactic meaning by virtue of acquiring affixes and attaching them to a root. Instead, the morphosyntactic meaning is a pre-existing property of inflected words which defines their position (or cell) within the paradigm. Each cell corresponds to a complete set of morphosyntactic features that determines the realisation rules that derive the inflected word form (see also section 5).

2.2 Extending the debate to creole languages

As alluded to before, under a morphemic approach, the morphosyntactic meaning of an inflected word is obtained through the sum of its affixes. For creole languages, this approach might even seem unproblematic. Creole inflection is, in fact, predominantly agglutinative and, given the reduced number of affixes per word and the reduced number of inflected forms per lexeme, it may also seem transparent and compositional.

However, as will be argued in this paper, inflected words in creoles cannot always be segmented into minimal units of form and meaning. Although agglutination is indeed the dominant morphological process in creole inflection, it cannot be claimed that word structure can be smoothly accounted for by segmenting inflected words into morphemes. In section 4, evidence from Portuguese-based creoles will show that creoles exhibit form-meaning mismatches that are identical to those that have been previously found in the non-creole languages.

One of the building blocks of the morphemic view of morphology, namely the one-to-one correspondence between form and morphosyntactic meaning, is thus seriously weakened by creole evidence. Before examining the creole data, however, we will first introduce the relevant inflectional phenomena.
Tab. 1: Types of mismatch between inflectional form and morphosyntactic meaning.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>morphosyntactic meaning without a corresponding inflectional marker (cf. 3.1)</td>
</tr>
<tr>
<td>Type 2</td>
<td>inflectional markers without morphosyntactic meaning (cf. 3.2)</td>
</tr>
<tr>
<td>Type 3</td>
<td>inflectional markers expressing more than one morphosyntactic meaning (3.3)</td>
</tr>
<tr>
<td>Type 4</td>
<td>morphosyntactic meaning with multiple inflectional markers (3.4)</td>
</tr>
</tbody>
</table>

3 Evidence against a morphemic view of inflection

In this section, we offer an empirical survey of the inflectional phenomena that have been used in the literature as evidence against the role of the morpheme in morphological analysis and in favour of a non-morphemic approach to creole inflection. In our survey, we draw on Hockett (1946) and Matthews (1972), and also on more recent work by Spencer (2004). The inflectional phenomena will be classified as shown in Table 1.

3.1 Type 1: Morphosyntactic meaning without a corresponding inflectional marker

We start our survey by examining inflected words which express a morphosyntactic feature but do not display a corresponding inflectional marker. The morphosyntactic feature ‘singular’ is rarely marked overtly on nouns. In Table 2, for example, the Portuguese noun casa ‘house’ represents the singular form of the lexeme CASA, while casas ‘houses’ stands for the plural form. The same is true for the singular and plural forms of the lexemes CARRO ‘car’ and PIVETE ‘stench’. In all cases, the unmarked singular form is expressed without the presence of an overt singular affix.

Consider also the Portuguese verb forms in (4). Although all Portuguese verbs express TMA and P/N, not all verb forms actually contain TMA or P/N markers. While (4a) takes two separate inflectional markers, namely -va expressing ‘imperfect’ and -mos expressing ‘1st plural’, there is no explicit P/N marker in (4b) nor is there an explicit TMA marker in (4c). A more extreme case is illustrated in (4d), where there is neither a TMA nor a P/N marker.
Tab. 2: Singular and plural exponence in Portuguese.

<table>
<thead>
<tr>
<th>Singular form</th>
<th>Plural form</th>
<th>Lexeme</th>
</tr>
</thead>
<tbody>
<tr>
<td>casa ‘house’</td>
<td>casa-s ‘houses’</td>
<td>CASA ‘house’</td>
</tr>
<tr>
<td>carro ‘car’</td>
<td>carro-s ‘cars’</td>
<td>CARRO ‘car’</td>
</tr>
<tr>
<td>pivete ‘stench’</td>
<td>pivete-s ‘stenches’</td>
<td>PIVETE ‘stench’</td>
</tr>
</tbody>
</table>

(4) a. salta-va-mos
   jump-IMPF-1PL
   ‘we jumped’

b. salta-va
   jump-IMPF.1/3SG
   ‘I/he/she jumped’

c. salta-mos
   jump-PRS.1PL
   ‘we jump’

d. salta
   jump-PRS.3SG
   ‘he/she jumps’

Unmarked words clearly pose a challenge to a morphemic view of word structure, given the mismatch they exhibit between form and meaning. Proponents of the morphemic approach claim that unmarked inflected forms (such as the singular forms in Table 2) contain effectively a zero morph, i.e., a morph which conveys morphosyntactic meaning but has no form (Bloomfield 1933:219). Such zero morphs also have a lexical entry, as shown in (5), and attach to a free root, as in (6).

(5) Phon: [∅]
   Meaning: [SINGULAR]
   Syntax: N_

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When an inflected word has more than one unexpressed morphosyntactic feature, as in (4b-d), the morphemic representation will include more than one zero morph. Under a morphemic view, then, each ‘missing’ marker would be represented by a distinct zero morph expressing each one of the unmarked morphosyntactic features: the verb in (4b) contains a zero suffix expressing the features ‘1\(^{st}\) & 3\(^{rd}\) singular’ (e.g., salta-va-∅); (4c) contains a zero suffix for the feature ‘present indicative’ (e.g., salta-∅-mos), and (4d) contains two zero affixes, namely one expressing ‘present indicative’ and another one expressing ‘1\(^{st}\) & 3\(^{rd}\) singular’ (e.g., salta-∅-∅). There will be as many zero morphs as there are ‘unexpressed’ morphosyntactic features.

However, the need to postulate zero morphs is entirely motivated by the formalism and by the definition of the morpheme. There is no empirical reason why words should be segmented into such units except for the fact that it is the only way to salvage the claim that morphemes are the minimal units of meaning. In this paper, we argue that form-meaning mismatches of the kind observed in (4) can be naturally accounted for under a non-morphemic analysis of inflection, without postulating zero morphs. Under a realisational approach, each inflected verb form is defined on the basis of its position within the word’s paradigm and derived independently of the nature of the correspondence between form and meaning (see section 5 for analysis). Hence, mismatches as illustrated in (3) and (4) fall out naturally.

3.2 Type 2: Inflectional markers without morphosyntactic meaning

The morphemic approach is further weakened by empirical evidence showing that inflectional affixes may be morphosyntactically meaningless. Theme vowels, for example, are inflectional units which identify the conjugation class of verbs, determining how verbs inflect within their inflectional paradigm. In (7) below, we can see that the feature ‘imperfect’ is sensitive to the conjugation class of the verb: while -va is used in the first conjugation, -i is found in the third (and second) conjugation.

(7) a. salt -a -va -mos
    jump -TVa -IMPF -1PL
    ‘we jumped’
Inflectional structure without morphemes...

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Despite their genuine inflectional status, theme vowels cannot be claimed to express morphosyntactic meaning. They are purely inflectional units which cannot therefore be treated as morphemes (Aronoff 1994).

Another example of a meaningless affix is the Portuguese suffix -r, which is contained in future and conditional forms, as shown in (9). When -r occurs verb-finally, as in (8), it expresses the feature ‘infinitive’ (cf. (8)). However, when it occurs word-internally, inside tensed verb forms, as in (9), it cannot be assigned the feature ‘infinitive’ as this would clash with the tensed properties of the verbs. The suffix, therefore, does not express any morphosyntactic meaning.

(8) salt -a -r
  jump -TVa -INF
  ‘jump’

(9) a. saltaremos
    ‘we will jump’

b. saltaríamos
   ‘we would jump’

In sum, evidence shows that inflectional affixes may not necessarily express morphosyntactic meaning. From this conclusion it follows that the morpheme is of little help when it comes to analysing inflected words containing meaningless markers. To some, a morphemic account of theme vowels (or other meaningless morphs) can be preserved if some arbitrary feature is assigned to them. However, in so far as such arbitrary features are abstract and not part of the morphosyntax of the language, they constitute remedial strategies aimed at overcoming the shortcomings of the morphemic biuniqueness condition. Realisational models, on the contrary, are not committed to this biuniqueness condition, as will be shown later.

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2 The ‘infinitival stems’ to which the future and conditional tense markers attach are known in the literature as Priscianic stems (cf. Aronoff 1994).
3.3 Type 3: Inflectional markers expressing more than one morphosyntactic meaning

So far we have seen examples of morphosyntactic meaning without inflectional form (cf. 3.1) and also examples of inflectional form without morphosyntactic meaning (cf. 3.2). Another type of form-meaning mismatch occurs when a single affix realises a combination of two or more morphosyntactic features.

In Portuguese, the 1st singular present indicative -o expresses both tense and agreement, as shown in (10a). Such features are usually expressed separately, as in (10b), where the feature ‘imperfect’ is expressed by -va and the ‘2nd singular’ feature by -s.

(10) a. lav-o
   wash-PRS.1SG
   ‘I wash’

   b. lav-a-va-s
      wash-TV-IMPF-2SG
      ‘you.sg washed’

The evidence in (10a) constitutes yet another challenge to the view that one given morphosyntactic feature can only be expressed by one single form. As will be illustrated in section 5, under a realisational view, the fact that two morphosyntactic features are cumulatively realised by only one affix is unproblematic.

3.4 Type 4: Morphosyntactic meaning with multiple inflectional markers

We will now look at inflected words in which a given morphosyntactic feature is expressed more than once. In (11), we offer an example from Portuguese which shows that the plural feature is expressed by both the noun-final suffix -s and the root allomorph tunei-. Crucially, this morphosyntactic feature is redundantly marked twice, contradicting the morphemic one-to-one mapping between form and meaning (Stewart & Stump 2007).

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3See Matthews (1991) for a discussion of different kinds of cumulative exponence.
(11) túnel → túnei-s
   tunnel.SG   tunnel-PL
   ‘tunnel’    ‘tunnels’

Multiple marking can also take place when morphosyntactic meaning is expressed by more than one affix. One of the most commonly cited examples is shown in (12), with the Latin verb form [reːɡsɪ], spelled řēxī ‘I ruled’ (Bennet 1918: 105):

(12) (Matthews 1972: 50, Spencer 2004: 82)

\[
\text{PERFECT} \\
\text{reːɡ} \quad s \quad i:\n\]

‘I ruled’

In (12), the perfect is marked at three different points: (i) the -s, which has no other function; (ii) the 1st singular suffix -i which is exclusive to this form, and (iii) the stem reːɡ, which in the perfect tense has a long vowel, unlike in other tenses where it has a short vowel. In cases of extended exponence such as these (Matthews 1972), the morphosyntactic meaning has usually a primary marker and then one or more secondary markers. In (12), the principal marker of ‘perfect’ tense is the -s, and the secondary markers of ‘perfect’ are both the 1SG ending and the long stem.

3.5 Summary

The above survey has shown that there are mismatches between inflectional form and morphosyntactic meaning which play an important role in determining the representation of inflectional structure. Such mismatches are problematic for a morphemic view of inflection which is based on the assumption that each form must have exactly one meaning and that each meaning must have exactly one form. Within a realisational approach to morphology, on the contrary, the various types of mismatch follow naturally from the principled separation between meaning and exponence (Stewart & Stump 2007). In what follows, we show that the four types of mismatch examined in this section are also attested in creoles.
4 Evidence from creole inflectional morphology

In this section, we extend the debate about the nature of inflectional structure to creole languages. Evidence will be drawn from a small sample of Portuguese-based creoles.

4.1 Creole inflection: morphosyntactic meaning without a corresponding inflectional marker

As shown in section 3.1, unmarked forms express their morphosyntactic meaning by virtue of not carrying a corresponding inflectional affix. Such unmarked forms are also attested in the Portuguese-based creoles of Cape Verde (Santiago variety), Guiné-Bissau and Ziguinchor.

As shown in (13), (14) and (15), Portuguese-based creoles take an overt plural suffix\(^4\) but do not carry a singular marker. The exact form of the plural marker varies: simplifying somewhat, there is the suffix -s in Cape Verde Creole (Santiago variety) (cf. (13)); b) there is also the -is marker in Guiné Bissau Kriyol (cf. (14)) and c) there is the -us marker in Ziguinchor, as in (15)\(^5\). Crucially however the singular form is unmarked.

\[(13) \quad \text{fidju} \rightarrow \text{fidju-s} \]
\[
\begin{array}{ll}
\text{child.SG} & \text{child-PL} \\
\text{‘child’, ‘children’ (cf. Baptista 2007: 84)}
\end{array}
\]

\[(14) \quad \text{minjer} \rightarrow \text{minjer-is} \]
\[
\begin{array}{ll}
\text{woman.SG} & \text{woman-PL} \\
\text{‘woman’, ‘women’ (Kihm 2007: 146)}
\end{array}
\]

\(^4\)The conditions under which plural marking is used differ slightly, with some creole languages favouring plural marking on [+animate] and [+definite] nouns (e.g., Cape Verde Creole), and others exhibiting invariable marking plural on both animate and inanimate nouns (e.g., Ziguinchor and Kriyol).

\(^5\)The plural suffix in Guiné Bissau Kriyol and Casamance/Ziguinchor can also be -s, when the stem ends in a vowel, as in kasa ‘house’ vs. kasas ‘houses’. For more details on the conditions on plural marking, see Kihm (2007).
(15) **padas** → **padas-us**  
  piece.SG → piece-PL  

Unmarked inflected words can also be found in creole verbal paradigms. Let us consider Cape Verde Creole (Santiago variety), where unmarked verb forms express the feature ‘past’ with non-stative verbs. This is illustrated in (16) with the verb *papia* ‘speak’ and in (17) with the verb *anda* ‘walked’.

(16) Cape Verde Creole, Santiago variety (Baptista 2003: 75)  
  
  N *papia*  ‘I spoke’  
  *bu papia*  ‘you spoke’  
  e *papia*  ‘he spoke’  
  *nu papia*  ‘we spoke’  
  *nhos papia*  ‘you spoke’  
  *es papia*  ‘they spoke’  

(17) N **anda**  *tudu txon di Ponta.*  
  I walked all ground of Ponta  
  ‘I walked all over Ponta.’ (Baptista 2003: 76)

An identical situation can be observed in the Portuguese-based creoles of Ziguinchor and Guiné-Bissau, where unmarked non-stative verbs also express the feature ‘past’. This is illustrated in (18) with the non-stative verb *kumé* ‘eat’, from Ziguinchor, and in (19) with the non-stative verb form *ciga* ‘arrive’, from Kriyol^6.

(18) a. **awonti no kumé sabi**  
  yesterday we eat well  
  ‘Yesterday we ate well’ (Biagui 2012: 160)

   b. **Jugude cigá cif**  
  vulture arrive smoothly  
  ‘The vulture landed smoothly’ (Kihm 1994: 85)

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^6In both these creoles, the feature ‘present’ can only be expressed if the unmarked verb form is stative (Biagui 2012, Kihm 1994).
The evidence thus shows that verb forms express the feature ‘past’ without any explicit inflectional marker.

We could obviously give many more examples from other creole languages (not necessarily of Portuguese origin), to show that unmarked inflected forms are not rare exceptions. In effect, given the proliferation of unmarked forms in the worlds’ languages, it seems obvious that the one-to-one mapping between form and meaning, postulated by American Structuralists, is far from empirically adequate. Any theory of morphology therefore must be able to accommodate and analyse such mismatches as typical instantiations of inflectional word structure.

4.2 Creole inflection: inflectional markers without morphosyntactic meaning

Equally challenging for a morphemic analysis of creole inflection is the fact that inflectional affixes may be morphosyntactically meaningless (see section 3.2). Meaningless affixes are admittedly rare in creoles. However, the crucial point for our discussion is that they are not absent. Previous work by Luís (2008, 2011) has shown that they can indeed be found in Indo-Portuguese creoles, including the varieties spoken in Korlai, Daman and Diu, which have genuine theme vowels identifying the conjugation class of the verb. Within the context of Indo-Portuguese, conjugation classes effectively determine how past forms inflect, as summarised in (19).

(19) Past forms in Korlai Indo-Portuguese:

a. first conjugation verbs build their past form by taking a theme-less stem and the -o past suffix;

b. second and third conjugation verbs take their thematic stem (ending in -e, -i) and attach the -w past suffix to it;

c. fourth conjugation verbs only take their thematic stem (ending in -u).

Verbs in Korlai, Daman and Diu Portuguese also conjugate their participle forms depending on the conjugation class (Clements 1996, Cardoso 2009) as shown in (20).
(20) Completive forms in Korlai Indo-Portuguese:

a. first and fourth conjugation verbs take their thematic stem (ending in -\(a\)) and the suffix -\(d\);

b. second and third conjugation verbs take the thematic stem of the third conjugation (ending in -\(i\)) and the suffix -\(d\).

As discussed in Luís (2008, 2011), theme vowels do not express morphosyntactic meaning, but have instead a purely formal value. This evidence nicely illustrates the fact that displaying inflectional markers without morphosyntactic meaning is an inherent property of languages. The fact that they exist in creole languages simply reinforces our claim that inflectional morphology is more complex than the morphemic view seems to suggest.

4.3 Creole inflection: inflectional markers with more than one morphosyntactic meaning

We now turn our attention to inflectional forms expressing more than one morphosyntactic feature. One remarkable example of cumulation can be found in the Santiago variety of Cape Verde Creole, where two morphosyntactic features are fused into one single marker (Pratas 2007, Baptista 2003, Lang 2009, Veiga 2000, Quint 2000). We are here referring to the suffix -\(da\) which expresses both the feature ‘anterior’ and the feature ‘passive’, as illustrated in (21).

(21) **Bolus kumeda**

\[\text{cake} \quad \text{eat-PASS.ANT} \]

‘The cakes had been eaten.’ (Rendall, Pratas & Costa 2012)

In this Creole variety, there are also inflectional markers expressing ‘anterior’ and ‘passive’ separately. There is the -\(ba\) suffix expressing ‘anterior’, in (22) and the -\(du\) suffix expressing ‘passive’, in (23).

(22) **n kumebay tudu kumida**\(^7\)

\[\text{I} \quad \text{eat-ANT} \quad \text{all} \quad \text{food} \]

‘I had eaten all the food.’ (Baptista 2011: 11)
The fused suffix -\textit{da} has captured the attention of a number of creolists, including DeGraff (2005), who has offered a morphemic analysis of this inflectional marker. In what follows, we will briefly survey DeGraff’s analysis and take the opportunity to illustrate the difficulties a morphemic analysis runs into while trying to account for the fact that -\textit{da} expresses two distinct morphosyntactic meanings.

To deal with the form-meaning mismatch displayed by -\textit{da}, without compromising the definition of the morpheme, DeGraff proposes to split up the suffix -\textit{da} into two suffixes, namely the passive suffix -\textit{d} and the anterior suffix -\textit{a}, as shown in (24a-b).

(24) DeGraff (2005: 361)

\begin{enumerate}
  \item -\textit{d}: the exponent of a passive voice head;
  \item -\textit{a}: the exponent of an anterior tense head in the environment of the passive voice;
  \item -\textit{u}: the exponent of the tense head in the environment of the passive voice
\end{enumerate}

This proposal reflects, above all, the diachronic origin of -\textit{da}, namely the fact that it developed from the fusion of -\textit{du} and -\textit{ba} (Lang 2002). Empirical evidence however does not suggest that -\textit{da} indeed behaves like a concatenation of two ‘pieces’. One obvious reason for this is the fact that the suffixes listed in (24) never occur on their own, except -\textit{ba}. It is therefore not obvious why the language should have such (pseudo-)suffixes.

There are other problems with DeGraff’s morphemic analysis, however. One such problem is that DeGraff also analyses the suffix -\textit{du} as comprising a voice and a tense marker, namely -\textit{d} and -\textit{u}, respectively. To the best of my

\footnotesize
\textsuperscript{7}Non-stative verbs, when combined with the postverbal anterior suffix -\textit{ba}, express the feature ‘past perfect’ (Baptista 2003).

\normalsize
knowledge, however, -du is perceived in the literature as a well-behaved voice marker, which is shared by all Cape Verde varieties. In fact, it is assumed in the literature that verb forms containing the -du suffix are overtly marked for voice, but unmarked for tense. So, the claim that -du contains an overt tense marker fails to capture important empirical insights.

Another problem with the analysis in (24) is that it proposes four suffixes (i.e., -d, -a, -u and -ba) instead of just the usual three (i.e., -da, -du and -ba). There is however no known empirical evidence motivating this proliferation, as argued above. Instead, the proliferation of suffixes in (24) is motivated by purely theory-internal principles, in particular by a morphemic perception of the morphology-syntax interface which prevents a single inflectional suffix (i.e., -da) from expressing both tense and voice features. Such a morphemic analysis of -da however is untenable.

From a comparative point of view, DeGraff’s analysis also faces puzzling results within the context of the other Cape Verde Creole varieties. Note that while all other varieties have the -ba and the -du markers, none has the fused -da. So, the question is how to account for the inflectional status of -ba and -du in the other varieties, given (24). Two options seem possible, but none desirable nor insightful: i) it could be assumed that in all other varieties -ba and -du are subject to the same split and that therefore -du is in fact the concatenation of -d and -u; ii) alternatively, it could simply be claimed that in all other Cape Verde Creole varieties -du constitutes a single suffix. The problem with the first option is that -d and -u are inseparable. The problem with the second option is that it wrongly predicts that the suffix -du in the Santiago variety has a different distribution from the suffix -du in the other varieties.

We will not dwell any further into DeGraff’s analysis. Instead we propose in section 5.2 a realisational analysis of -da, -du and -ba, which derives the suffix -da as the more specific exponent that preempts the realization of -ba and -du (see section 5.2).

4.4 Creole inflection: morphosyntactic meaning with multiple inflectional markers

Extended exponence takes place when a given morphosyntactic feature is expressed more than once within an inflected word. This phenomenon can also be observed in creoles, as will be shown next.

In Cape Verde Creole (Santiago variety), lexical stress always falls on the penultimate syllable in bare verb forms. The anterior marker -ba triggers rightward migration of stress, moving lexical stress to the syllable occurring
immediately before the suffix (Lang 2009, ms)\(^8\). In (25a), the verb *kába* ‘finish’ is stressed on the leftmost syllable, while in (25b) the verb form *kabába* ‘finished’ is stressed on the penultimate syllable. Both in (25a) and (25b), the verb *kantába* also shows the past tense stress pattern. In this variety, then, the feature ‘anterior’ has two exponents: the inflectional suffix *-ba* and a stem that is stressed on the last syllable of the root\(^9\).

(25)  

a. **Es kába di kantába kántu n txiga li.**  
3PL finish of sing-ANT when 1SG arrive here  
‘They had finished singing when I arrived here.’ (Lang 2009: 20)

b. **Es kabába di kantába kántu n txiga li.**  
3PL finish-ANT of sing-ANT when 1SG arrive here  
‘They had finished singing when I arrived here.’

Another example of multiple exponence can be found in Korlai Indo-Portuguese, where the past suffix of the first conjugation attaches to a themeless stem. This means that both the suffix and the stem express the feature ‘past’. In (26), we can see that this verb form effectively differs from other verb forms with respect to the stem and the inflectional ending: a) unlike unmarked forms of the same conjugation, the stem does not exhibit a theme vowel; b) unlike past forms of verbs from different conjugations, it takes an *-o* suffix. In other words, both the stem and the suffix are exclusive to the first conjugation.

(26)  

Unmarked and past verb forms from Korlai Indo-Portuguese (Clements 1996)

a. 1\(^{st}\) class: *kata* ‘sing’ → *kato* ‘sang’
b. 2\(^{nd}\) class: *bebe* ‘drink’ → *bebew* ‘drank’
c. 3\(^{rd}\) class: *subi* ‘climb’ → *subiw* ‘climbed’

---

\(^{8}\)Lexical stress also shifts with the passive suffix *-du* (e.g., *kánta*→*kantádu*) and the anterior/passive suffix *-da* (*kánta*→*kantáda*).

\(^{9}\)In all other Cape Verde Creole varieties, bare forms are stressed on the last syllable (Lang, pc). The suffixation of *-ba* does not trigger stress shift, which indicates that the feature ‘anterior’ has only one exponent.
4.5 Summary

This section has surveyed mismatches between form and meaning in the Portuguese-based Creoles of Cape Verde (Santiago variety), Guiné Bissau, Ziguinchor and Korlai. The evidence has demonstrated that creole inflection can also be used to challenge one of the building blocks of morphemic morphology, namely the one-to-one correspondence between inflectional form and morphosyntactic meaning. Such mismatches, which have been attested in non-creole languages, strongly support our claim that languages are not morphosyntactically transparent and that a morphemic view of inflectional word structure is not insightful. In the next section, an alternative approach to inflection will be discussed, namely a realisational approach, in which inflected words are treated as the realisation of complete sets of morphosyntactic features.

5 A non-morphemic approach to creole inflection

Within realisational morphology, word structure is derived through a set of operations known as Realisation Rules (henceforth RRs). These RRs a) take as their input pre-existing features that are associated to paradigm cells and b) realise the exponents expressing those features. Two theoretical models endorsing a realisational view of morphology include Anderson’s Amorphous Morphology (1992) and Stump’s Paradigm Function Morphology (2001). In this section, we will broadly illustrate how Paradigm Function Morphology (PFM) would account for the four types of deviation surveyed in section 4.

5.1 Morphosyntactic meaning with simple exponence

For ease of exposition, we will start by illustrating how PFM deals with instances of simple exponence (i.e., instance where an affix expresses effectively only one morphosyntactic feature). Let us, then, consider, the plural form of the Cape Verde Creole noun *fidjus* ‘children’, which forms a cell in the inflectional paradigm of the lexeme *fidju*. Within (a simplified version of) PFM, the feature ‘plural’ will be realized by applying the RR in (27) to the lexeme *FIDJU* and delivering the word form *fidjus*. In (27), \( \sigma \) stands for the complete morphosyntactic feature set expressed by the derived inflected word form.

\[
(27) \text{Realisation Rule for the plural } -s \text{ in Cape Verde Creole (cf. (13))}
RRI \{\text{NUMBER: PL}\},N (\text{< X, } \sigma \text{ >}) = < Xs, \sigma >
\]
It is worth noting that the RR in (27) can only be triggered by a paradigm cell of the type \(< X, \sigma >\), which maps a lexeme onto a morphosyntactic feature set. One possible instantiation of such a cell is given in (28).

(28) Paradigm cell for the plural form of FIDJU ‘child’
\(< \text{FIDJU, NUMBER: PL}>\)

Thus, the role of RRs is to assign inflectional exponents to morphosyntactic features that are associated to lexemes. In the case of the plural noun fidjus, we have one morphosyntactic feature being expressed by one inflectional exponent.

5.2 Inflectional markers with more than one morphosyntactic meaning

Let us now look at the Cape Verdean suffix -\(da\), which realizes both the feature ‘passive’ and the feature ‘anterior’, and which is in complementary distribution with the anterior suffix -\(ba\) and the passive suffix -\(du\). Within PFM, such exponents can be derived through RRs which realize two (or more) morphosyntactic features, as shown in (29), where the suffix -\(da\) is indicated as the exponent of the features ‘passive’ and ‘anterior’.

(29) Realisation Rule for the exponent -\(da\) (cf. (21))
\(\text{RR}_{Ia} \{\text{VOICE: PASSIVE; TENSE: ANTERIOR}\}, V (< X, \sigma >) = < Xda, \sigma >\)

For the suffixes -\(du\) and -\(ba\) (which compete directly with -\(da\)), we propose RRs in (30a) and (30b), which assign one exponent to one feature.

(30) Realisation Rules for -\(du\) (cf. (25)) and -\(ba\) (cf. (23a))
a. \(\text{RR}_{Ib} \{\text{VOICE: PASSIVE}\}, V (< X, \sigma >) = < Xdu, \sigma >\)
b. \(\text{RR}_{Ic} \{\text{TENSE: ANTERIOR}\}, V (< X, \sigma >) = < Xba, \sigma >\)

Overall, then, for the verbal paradigm of Cape Verde Creole we will need three RRs: a) the RR realising the passive marker (cf. (30a)); b) the RR realising the anterior marker (cf. (30b)), and c) the RR realising the fused/portmanteau suffix (cf. 29)). None of these rules can apply to the same verb form, because they all belong to the same rule block, i.e., RR\(_1\), which means that they compete for the same position within the verb form and can therefore never co-occur (see Anderson 1992).
Also, under the Elsewhere Principle (Anderson 1992), the more specific form is preferred over a more general one, which means that the narrowest rule applies first, pre-empting all others. Thus, within a context of morphological competition, if a verb cells contains the features ‘passive’ and ‘anterior’ (as in (31a)), the RR in (29) will apply first, ruling out the application of the rules in (30a) and (30b). The RRs in (30) will only be triggered by the cells given in (31b) and (31c), which each contain only one of the features. Crucially, then, the RRs in (29) and (30) stand in opposition to each other and compete for the same position in the verb form.

(31) Paradigm cells
a. <KUME, VOICE: PASSIVE; TENSE: ANTERIOR>
   b. <KUME, VOICE: PASSIVE>
   c. <KUME, TENSE: ANTERIOR>

5.3 Morphosyntactic meaning without inflectional marker

Within a morphemic model, as we have shown, zero exponence is an exception to the one-to-one mapping. However if we adopt a realisational approach, such exception is derived by ‘doing nothing’ to the inflectional base. We illustrate the derivation of zero exponence with a non-stative Kriyol verb (cf. section 4.1).

(32) Realisation Rule deriving past forms of non-stative verbs in Kriyol
RR{ (TENSE: PAST),V_{dyn} ( \langle X, \sigma \rangle ) = \langle X, \sigma \rangle }

As shown in (32), there will be no exponent realizing the feature ‘past’. Given that no exponent is expressed, the RR delivers the root unchanged. Within PFM, RRs which deliver an unchanged root are maximally general rules, known as Identity Function Defaults (Stump 2001), and they can exist for any given morphosyntactic feature.

By adopting maximally general RRs, a realisational approach can express a feature without realizing a discrete exponent. To us, this kind of analysis is more insightful than assuming that there are as many zero affixes as there are unmarked morphosyntactic features.
5.4 *Inflectional marker without morphosyntactic meaning*

Having seen how meaning can be expressed without inflectional form, we will now deal with meaningless forms, such as theme vowels.

Within PFM, stem formation rules apply to the root to derive a stem. For theme vowels, such rules attach a theme vowel to the root. The stem containing the root and the theme vowel will then serve as input to the RR that follows. We must therefore assume that there is (i) one rule block containing rules that derive theme vowels, as in (33), and (ii) a second rule block containing RRs that realize morphosyntactic exponents, as in (34).

(33) Stem formation rule deriving i-final stem in Korlai Indo-Portuguese
\[
\text{RR}_{0d} \ <\text{Class 3}> \ , \ V \ ( < X, \sigma > ) = < X-i, \sigma >
\]

(34) Realisation Rule for the completive marker -d in Korlai verb forms
\[
\text{RR}_{1b} \ \{\text{TENSE: COMPLETIVE}\}, V \ ( < X, \sigma > ) = < X-d, \sigma >
\]

RR$_0$ applies to the root sub- and delivers the stem subi-. The RR in (34) then takes subi- as input and delivers subid. Stem Formation Rules thus derive theme vowels as component parts of the inflectional paradigm (Stump 2001).

5.5 *Morphosyntactic meaning with multiple inflectional markers*

Finally, multiple marking is captured within PFM by defining more than one inflectional rule expressing the same morphosyntactic feature. This allows a given feature to be expressed by more than one rule (and at different points of the inflected word). Crucially, the rules expressing the same feature must be allowed to co-occur, which means that they cannot belong to the same rule block.

In the Latin example illustrated in (12), the feature ‘perfect’ will appear both in the feature-set of the RR deriving the perfect marker -s and in the feature-set of the RR deriving the 1st singular suffix -i. In addition, given that the long vowel of the stem is also exclusive to the perfect tense, the Stem Formation Rule deriving rēx- will be also be specified with the feature ‘perfect’.

An identical procedure will be adopted for cases of multiple marking in creoles, where the same feature will be expressed by different inflectional rules. As shown above, Korlai Portuguese past forms in the 1st conjugation take both a past marker and a stem that are exclusive to this tense and to this conjugation class. Under this proposal, the feature ‘past’ will be expressed both by the Stem Formation Rule deriving the theme-less stem and by the RR deriving the past marker.
6 Conclusion

This paper discusses the nature of inflectional word structure in creole languages by examining the relationship between (inflectional) form and (morphosyntactic) meaning. Empirically, the aim of this study has been to investigate whether creoles display form-meaning mismatches of the kind that have been attested in highly inflecting or fusional languages. We have shown that deviations are clearly not absent from creole languages and that all four logical possibilities are attested, namely: (a) meaning without form; (b) form without meaning, (c) one form with several meanings and (d) one meaning with several forms.

Theoretically, such deviations lend empirical support to the claim that creole inflection also constitutes a serious challenge to the definition of the morpheme as a unit that maps one form onto one meaning. We have shown that the creole data is unproblematic for a realisational model such as PFM, in which the various types of mismatch follow naturally from the principled separation between meaning and exponence (Stewart & Stump 2007). Our analysis thus naturally captures the complex nature of the mapping between inflectional form and morphosyntactic meaning.

Abbreviations

1 first person, 2 second person, 3 third person, ANT anterior, COMP complementiser, COND conditional, DYN dynamic, FUT future, IMPF imperfect, INF infinitive, N noun, PASS passive, PERF perfect, PL plural, P/N person/number, PFM Paradigm Function Morphology, PRS present indicative, RR realization rule, SG singular, TMA tense, mood, aspect, TV theme vowel.

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Inflectional structure without morphemes...  
Estrutura flexional sem morfemas...  


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