Piapoco and Natural Morphology Theory

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1 Introduction

Piapoco is an agglutinative language spoken in the Vichada, Meta and Guaviare River regions in Colombia. According to the 1993 census (www.sil.org), there are 4,542 speakers. The morphological analysis proposed here focuses on the Piapoco nominal system within the framework of the Natural Morphology Theory (NMT) proposed by Dressler (1985) and Wurzel (1987). Section 2 presents a summary of NMT. Section 3 presents a summary of the Piapoco noun system\(^1\) and section 4 analyzes the Piapoco nominal system within the NMT framework. Section 5 presents some observations regarding Piapoco derivation, nominalization, and compounding. Section 6 concludes that Piapoco conforms to the NMT principles of constructional iconicity, biuniqueness and system congruity.

2 Natural Morphology Theory

NMT is concerned with the relationship between morphemes within a word and their meanings; thus, NMT analyzes “the relationship between expression and meaning” (Carstairs 1991). Bauer (2003) explains that NMT also provides “a partial explanation for morphological behavior.” In order for a morphological behavior to be considered “natural” it is required to be:

\(^1\) The information used for this analysis was taken from Reinoso Galindo’s (2002) analysis of the Piapoco grammatical system. For the purposes of this paper, I only take into account the noun system. Galindo’s original translation of the Piapoco is in Spanish, but I present the glosses and translations in English here. Any misinterpretations are my own.
There are several characteristics that define natural morphological behavior:

- **Widespread in languages of the world**
- **Frequent and widely distributed within a particular language**
- **Relatively resistant to language change**
- **Acquired early by children**

Therefore, if a morphological behavior complies with these requirements, it is considered natural; otherwise, it is unnatural. Dressler (1985, 1986, 1987) and Wurzel (1987) explain that morphological processes that occur across languages are considered universally natural (system independent). Morphological processes that occur in a specific language are language particular (system dependent).

Mayerthaler (1981) proposes that in morphological processes that are system independent, there are markedness relationships which “can be derived directly or indirectly from the primacy of the prototypical speaker... where markedness is natural when it is constructionally iconic, uniform, and transparent and more marked if it deviates from these features” (cited in Wurzel 1994).

Within this framework, the morphological processes that occur in languages have three functions: (1) word formation, (2) inflection, and (3) “to derive the meaning of a derived word from its base” (Dressler 1985). In NMT, morphology is constrained by morphotactic transparency, which implies that a morpheme may convey only one meaning and/or mark one function. Therefore, morphotactic transparency is tightly related to the biuniqueness and iconicity principles (semiotic principles discussed in section 4 below) since (a) morphotactic transparency is more frequent than opaque morphotactic processes, and (b) children acquire transparent morphotactic processes earlier than opaque ones.

Wurzel’s (1987) NMT takes into account the word base form to be inflected with identifiable morphosyntactic category suffixes (as in Turkish, for example). He proposes 5 parameters for inflection in NMT:

1. **Class stability** (“depends on what types of paradigm structure conditions hold for the respective inflectional classes [in a particular language]” (p. 80))
2. **System congruity** (“degree of conforming to normal patterns” (p. 7))
3. **Phonetic iconicity** (categories that conform to phonetic patterns)
4. **Uniformity and transparency** (“one form – one function” (p. 7))

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2 Wurzel (1987) explains that, within the NMT framework, inflection is done at the word base level, not at the stem level. This is exemplified in German, which uses the word base level (i.e., *Freund* ‘friend’ GEN SG → *Freund* + es), vs. Latin, which uses the stem level (i.e., *amic* + us ‘friend’ GEN SG → *amic* + i).

3 Wurzel (1987) explains that this principle is more related to derivational morphological processes than to inflectional ones.
5. Constructional iconicity (marked categories are formally marked more often than less marked categories)

Principles 1 and 2 are related more to language particular morphological processes and 3-5 to language universal ones.

Bauer (2003) points out some implications of NMT: (1) word-based morphology is preferred over stem-based morphology, (2) morphological conversion processes (for example cut_V → cut_N) are not iconic since they are not realized by affixes, (3) discontinuous morphemes (i.e., infixation, circumfixation, and transfixation) are less natural, and (4) homophonous affixes are considered more natural in the morphology of a language (i.e. unmarked).

In the following section, I present the Piapoco noun system, leading to an analysis of it within NMT.

3 Piapoco noun system

3.1 Noun classes

Piapoco nouns are divided into two classes: absolutes and relatives. These two classes are further divided into two groups: discrete and continuous nouns.

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4 Haiman (1985: 19) presents the Isomorphism Hypothesis which states that “different forms will always entail a difference in communicative function. Conversely, recurrent identity of form between different grammatical categories will always reflect some perceived similarity in communicative function” (as cited in Bauer 2003: 264)

5 The notations used for Piapoco are: 1 = first person, 2 = second person, 3 = third person, ABLAT = ablative, ADJ = adjective, ALAT = allative, ASOC = associative, AUTON = autonomizer, CADUC = caducity, CLASS = classifier, CLASE = clase, DERIV = derivative, DET = deteriorated, DIM = diminutive, DUR = durative, ENV = environment, EMP.ID = emphatic identity, F = feminine, FREQ = frequentative, GEN = genitive, HABIT = habitat, HUMAN = human, HYPO = hypocoristic, INES = inessive, LOC = locative, M = masculine, MV = median voice, N = noun, NOMZ = nominalizer, O = object, PL = plural, PEJ = pejorative, PERL = perlative, Q = quantifier, QUANT = quantity, RAD.PRON = radical pronominal, REAL = real, REIT = reiterative, RELAT = relativizer, RESTR = restrictive, S = subject, SG = singular, SURF = surface, SUS.GRAM = grammatical substitute, TOTAL = totalizer, V= verb.
Table 1: Piapoco noun classes

<table>
<thead>
<tr>
<th>Absolute</th>
<th>Relative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alienable entities that are independent (nature, animals, plants, rivers, and objects used in daily life)</td>
<td>Inalienable entities that depend on another entity (body parts and kinship terms)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Discrete</th>
<th>Continuous</th>
<th>Discrete</th>
<th>Continuous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncountable nouns like fire, water, sand, air, etc.</td>
<td>Countable nouns, objects that take a quantifier</td>
<td>Uncountable nouns</td>
<td>Countable nouns, objects that take a quantifier</td>
</tr>
</tbody>
</table>

Absolute nouns can become relative nouns when:

- Absolute objects of daily use are considered inalienable by the speaker.\(^6\)
  This change of class is marked with the genitive \(-a:qu/-\):

(1) Antonio ya:Tu tsipari
    Antonio y- a:qu tsipari
    Antonio 3SG.M-GEN axe
    ‘Antonio’s axe’

- There are allomorphy cases (suppletive forms) when absolute nouns change to relative:

(2) Kuweezi ‘animal (absolute)’ → nupiria
    nu- piRia\(^7\)
    lSG-animal (relative form)
    ‘My pet’

Some relative nouns (only parts of the body) can become absolute nouns by neutralizing the possessive prefix into a 3SG.M plus the autonomy suffix \(-Tî/-\):

(3) Nukutzúi → ikutzúizi
    nu- kutsúi i- kutsúi-Tî
    lSG-knee 3SG.M-knee- AUTON
    ‘My knee’ ‘A knee’

\(^6\) This differs from speaker to speaker. Objects that can be considered inalienable for one speaker can be considered alienable by another one.

\(^7\) Hereafter, the phoneme /R/ represents a continuant retroflex flap.
3.2 Noun inflection

Nouns are inflected for possession, gender, number and case (see section 3.4 for case marking). Noun inflection involves both prefixes and suffixes:

a. Possessive prefixes, which are used only on relative nouns:

(4) nu-1SG i- 3SG.M wa- 1PL
pi- 2SG u- 3SG.F na- 3PL

b. Gender and number marker suffixes:

Table 2: Gender and number

<table>
<thead>
<tr>
<th>Gender</th>
<th>Relative</th>
<th>Absolute</th>
<th>Masculine</th>
<th>Feminine</th>
</tr>
</thead>
<tbody>
<tr>
<td>-fRí</td>
<td>-í</td>
<td>-í</td>
<td>Masculine</td>
<td></td>
</tr>
<tr>
<td>-fRu</td>
<td>-u</td>
<td>-u</td>
<td>Feminine</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Relative</th>
<th>Absolute</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>-nái</td>
<td>-nái</td>
<td>-nái</td>
<td>Plural</td>
</tr>
</tbody>
</table>

(5) tzamananái (6) nudeetulunai

tzamana- nái nu- de:- átúa- fRu-nái
alligator- PL 1SG-in.law-clase 10 - F- PL
‘Alligators’ ‘My sisters-in-law’

3.3 Specifiers

Specifiers in Piapoco restrict the size, nature, and quantity of the entity:

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8 *inanái* ‘woman’ is a pejorative word where the plural marker has been lexicalized. In order to mark the plural for this word, it is necessary to add an additional plural: *inanáinái* ‘women’.

9 The plural marker is neutralized in both noun classes and gender. However, when the speaker wants to specify the gender, the plural marker attaches directly to the gender marker (see example 6)

10 ‘Clase’ marks kinship relationships.
Table 3: Specifiers

<table>
<thead>
<tr>
<th>Specifiers</th>
<th>Examples</th>
</tr>
</thead>
</table>
| **Emphatic identity** /-Tiwa/: shows the identity of the entity among the members of a class. | (7) damuláizíwa
mojarra- EMP.ID
‘True mojarra’
|
| **Median voice** /-wa/: indicates an intrinsic quality. | (8) Mutuzi inanáiwa
Mutuzi inanái- wa
Palm bear woman-MV
‘Palm bear is a womanizer’
|
| **Restrictive** /-ta/: restricts the nature of the entity. It attaches to the relativizer morpheme /-wanái/ or the totalizer /-nama/. | (9) Aikuwanaita
aiku-wanái- ta
tree- RELAT-RESTR
‘Stick’
|
| **Relativizer** /-wanái/: diminishes the size/quantity of the entity. Requires the presence of the restrictive /-ta/ (9). | |

3.4 Case marking

There are two major classes of cases: 1) **Direct cases** are marked by their position in the phrase (e.g., agent, which is hierarchically higher than patient). 2) **Oblique cases** are marked by affixes which also have a spatial function. They can be attached to the noun base or to the grammatical substitute for space /ne-/.

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11 “Mojarra” is a kind of fish.

12 From the examples presented in Reinoso Galindo (2002), one can see that the oblique cases can attach directly to the noun, or they can attach to this /ne-/ while still having the noun present. Therefore, I do think that there are no restrictions in when to attach a form directly to the noun or to the grammatical substitute for space /-ne/ (see appendix for examples).
### Table 4: Case markers

<table>
<thead>
<tr>
<th>Case</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allative</td>
<td>/-lé/ ~ /-Re/: puts the entity away from the location set as a reference point.</td>
</tr>
<tr>
<td></td>
<td>(10) nuawa kalizale</td>
</tr>
<tr>
<td></td>
<td>nu- a:- wa kaRiTa-Re</td>
</tr>
<tr>
<td></td>
<td>1SG-go-MV lake- ALAT ‘I go to the lake’</td>
</tr>
<tr>
<td>Ablative</td>
<td>/-íTe/ ~ /-é Te/: marks where the entity is coming from or that the entity is getting close to the center.</td>
</tr>
<tr>
<td></td>
<td>(11) nuanaaka kalizaize</td>
</tr>
<tr>
<td></td>
<td>nu- ana:- ka kaliza-iTe</td>
</tr>
<tr>
<td></td>
<td>1SG-come-REAL lake- ABLAT ‘I come from the lake’</td>
</tr>
<tr>
<td>Durative</td>
<td>/-ya:pi/: contributes to aspectual meaning. It attaches to nouns denoting time.</td>
</tr>
<tr>
<td></td>
<td>(12) nufáidaka eeriapinama</td>
</tr>
<tr>
<td></td>
<td>nu- íbáida-ka e:Ri-ya:pi-nama</td>
</tr>
<tr>
<td></td>
<td>1SG-work-REAL sun- DUR-TOTAL ‘I worked the whole day’</td>
</tr>
<tr>
<td>Inessive</td>
<td>/-ku/: places the entity inside a space. It appears in: a) /–ya/ 3SG.M + ku: liquid space, b) /–Ri/ (casual root) + ku closed space, c) nominal root + ku the entity is in the place where it belongs.</td>
</tr>
<tr>
<td></td>
<td>(13) kubái iya kaliza yaku</td>
</tr>
<tr>
<td></td>
<td>kubái i- ya kaRiTa</td>
</tr>
<tr>
<td></td>
<td>fish 3SG.M-stay lake</td>
</tr>
<tr>
<td></td>
<td>y- á- ku 3SG.M-RAD.PRON-INES</td>
</tr>
<tr>
<td></td>
<td>‘The fish stays inside the water’</td>
</tr>
<tr>
<td>Locative</td>
<td>/-ni/: locates the entity in an open space (example 14).</td>
</tr>
<tr>
<td>Perlative</td>
<td>/-ba/: Place where the action takes place.</td>
</tr>
<tr>
<td></td>
<td>(14) tzáwi yeepünkawa neniba</td>
</tr>
<tr>
<td></td>
<td>tsáwi y- e:pu- ní- ka- wa</td>
</tr>
<tr>
<td></td>
<td>tiger 3SG.M-walk-REIT-REAL-MV</td>
</tr>
<tr>
<td></td>
<td>ne- ni- ba SUS.GRAM-LOC-PERL</td>
</tr>
<tr>
<td></td>
<td>‘Tiger walked over here’</td>
</tr>
</tbody>
</table>

### 3.5 Derivation, nominalization and compounding

- **Derivation:** creates a new word from a word base. Each affix has a specific function.
Carolina Bailey

Table 5: Derivational morphemes

<table>
<thead>
<tr>
<th>Derivational morphemes</th>
<th>Examples</th>
</tr>
</thead>
</table>
| **Ablative** /-i Te/: determines the entity's place of origin. | (15) íwitaize  
  i- íwita-fTe  
  3SG.M-head-ABLAT  
  ‘His thought/behavior’ |
| **Caducity** /-mi/: shows that the entity existed previously but not now (16). Reduplicated shows that the entity is in danger of disappearing (17). | (16) inuRúimi  
  inuRúi- mi  
  Guabina-CADUC  
  ‘The one who was a Guabina’ |
|  | (17) béeriziamimi  
  bé:-fRi-Ti- mi- mi  
  old-M- DET-CADUC-CADUC  
  ‘Old man’ |
| **Diminutive** /–na/: express size (see example 18) | |
| **Hypocoristic** /-ya/: needs to be attached to the diminutive morpheme /-na/ | (18) Zumaiyana  
  Tuma-i- ya- na  
  child- M- HYPO-DIM  
  ‘Little child’ |
| **Pejorative** /-Tía/: requires the caducity morpheme /–mi/. | (19) kapiiziamami  
  kapi:- Ti- mi  
  house-PEJ-CADUC  
  ‘Ugly house / what was an ugly house’ |
| **Perlative** /-ba/: marks the habitat. | (20) tzáwiba  
  tsáwi-ba  
  tiger- HABIT  
  ‘Habitat of the tiger’ |
| **Other derivational morphemes**: the border of the entity /-pi/, the head of the entity /-pal/, place for ships /-Ruta/, class of land /-taRi/, cover the entity /-i/, the feather of the birds /-Tái/, the group of people /-nawi/, temporospace of the entity /-a/, the class of water /-wéni/, atmospheric phenomena /-be/, related to water /-dáiRi/, /-Ta/, and /-dani/ (see appendix for examples) | |

b. **Nominalization [Adj/V + suffix → N]**: is accomplished by attaching suffixes to base adjectives and verbs. Possessive prefixes also attach to adjectives in order to nominalize them.

13 “Guabina” is a colloquial way to designate a female child in Colombian Spanish.
Table 6: Nominalization morphemes

<table>
<thead>
<tr>
<th>Nominalization morphemes</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>**Allative <em>/-Ré/</em>: nominalizes the patient of the verb.</td>
<td>(21) nubanakale nu- bana-ka- Ré 1SG-sow- REAL-ALAT ‘My sow’</td>
</tr>
<tr>
<td>**Autonomizer <em>/-Til/</em>: there is only one example of the appearance of this morpheme with the adjective <em>/kiRa-</em> ‘red’ to express ‘new born’.</td>
<td>(22) kíraziu kéRa- Tí- u red- AUTON-F ‘Redish’ (new born girl)</td>
</tr>
<tr>
<td>**Adjective associatives <em>/-ka/</em> and <em>/-mal/</em>: nominalize the adjective and the verb (see example 23).</td>
<td></td>
</tr>
<tr>
<td>**Frequentative <em>/-kái/</em>: changes the verb into a noun. It can be found with the autonomizer <em>/-Til/</em>.</td>
<td>(23) kabálákaíri ka- baRá-kái- íRi ASOC-fishV-FREQ-M ‘Fisherman’</td>
</tr>
<tr>
<td>**Perlative <em>/-ba/</em>: marks the place from where the action takes place.</td>
<td>(24) yaatabakawa y- a:- ta- ba- ka- wa 3SG.M-go-RESTR-PERL-REAL-MV ‘His way / path’</td>
</tr>
<tr>
<td><strong>Possessives</strong></td>
<td>(25) Ibáawa i- bá:wa 3SG.M-evilAdj ‘His evilN’</td>
</tr>
<tr>
<td><strong>Other nominalization morphemes</strong>: place where the event happens <em>/-taí/</em>, place or territory <em>/-Ru/</em>, environment/instrument from which the action was realized <em>/-ná/</em>, person <em>/-da/</em>, and adjectival associatives <em>/-ka/</em> and <em>/-na/</em> (see appendix for examples).</td>
<td></td>
</tr>
</tbody>
</table>

c. **Compounding**: conforms to the following patterns: (a) N + N (absolute + absolute, absolute + relative), (b) quantifier + N, (c) N + V, and (d) Adj + N.
Table 7: Compound nouns

<table>
<thead>
<tr>
<th>Compounds</th>
<th>Examples</th>
</tr>
</thead>
</table>
| N + N           | (26) Absolute + absolute  
absolute + absolute (26) 
absolute + relative (27) |
|                 | Absolute + absolute  
luelue aiku  
RueRue-aiku  
chorlo- tree  
‘Chorlo tree’ |
|                 | (27) Absolute + relative  
kaliáwiiri  
kaRi:-áwi- fRi  
earth- grandfather-M  
‘The grandfather of the earth’ |
| Quantifier + N  | (28) Manuítura  
manu- i- tuRa  
QUANT-DERIV-belly  
‘Huge belly’ |
| Adj + N         | (29) kiréeri tzáwi  
kiRa-fRi-tsáwi  
red- M- tiger  
‘Red tiger’ (Felis concolor) |
| N + V           | (30) píizi ipiadeerina  
pí:i Ti- i- pia- da- iRi-ná  
bee- 3SG.M-run-CLASS-M- MED  
‘Running bee’ |

The next section presents an analysis of the Piapoco noun system in an NMT framework.

4 Piapoco noun inflection and Natural Morphology Theory

As shown in section 3, Piapoco noun inflection is done by the addition of suffixes to the word base (see footnote 2). Nouns are inflected for gender, number, case, and possession. Possessor markers are prefixes that separate the nouns into two main classes: relative and absolute. A noun that has the possessive marker always belongs to the relative noun class.

In NMT, the system-defining structural properties of a language are “generalizations available to speakers of a language concerning the morphology

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14 Mythological mountain in the Orinoco tradition.
of the language… [producing] unity in the morphological system of the language” (Bauer 2003). Piapoco inflection observes the following system-defining structural properties:

- Noun inflection occurs at the word base level.
- The morphosyntactic categories (e.g., gender, number, and case) are represented by formally discrete morphemes (i.e., there are no multiple exponent morphemes).
- In Piapoco each affix within a given category has a specific meaning and function (semiotic biuniqueness) and a specific order. For example, gender is marked by one of four morphemes. Each morpheme unambiguously identifies the gender as well as the noun class. The gender suffix always precedes the number marker (see section 3.2).
- Number is represented with a singular/plural distinction, where the latter is an overtly marked morpheme /-náí/, contrasted with the former, which is not overtly marked. In this case, singular is considered the unmarked form and plural is considered the marked one (see section 3.2).
- The plural form /-náí/ is the unmarked form for gender and noun class in plural nouns.
- The 3SG.M /i-/ converts a relative noun into an absolute one. This conversion is done by neutralizing the presence of any possessive marker for the 3SG.M possessive marker (see section 3.1). Thus, this 3SG.M /i-/ is the unmarked (default) morpheme used in this morphological process.
- Direct cases are identifiable by the noun position in the verbal phrase. Oblique cases are marked by suffixes on the noun. Therefore, the direct cases are the unmarked cases because they do not require the presence of another suffix that identifies them as direct. Oblique cases are the marked ones because they need a suffix that identifies them as oblique.

As we can see, Piapoco conforms to the NMT principles of:

1. Constructional iconicity
2. Uniformity and Transparency
3. System congruity

First, the *constructional iconicity principle* (or diagrammaticity) states that an “extra amount of meaning is represented by an extra amount of form”

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15 Chomsky and Halle (1968) (as cited in Wurzel 1994) explain that markedness and regularity are tied to naturalness. In NMT, “unmarked” refers to the most natural indexing in a language.
16 When the gender is specifically feminine plural, the feminine gender is marked by its respective suffix preceding the plural suffix.
17 “Constructional diagrammaticity is already a defining criterion of the agglutinating language type as contrasted with the inflecting and introflecting languages types” (Dressler 1985).
Piapoco is a maximally iconic language because, for example, the plural marker is represented with an overt marked morpheme that conveys more information.

Second, the uniformity and transparency principle is a biuniqueness principle that “favours inflectional systems which are structured according to the formula ‘one function - one form’” (Wurzel 1987). In Piapoco, each oblique case marker has only one function and one meaning: allative /-Re/, locative /-nil/, ablative /-íTe/ - /-é Te/, inessive /-ku/, perlative /-ba/, durative /-ya:pi/. In this sense, these morphemes are morphotactically and semantically transparent because there are no other markers with the same functions in this language.

Dressler (1985) claims that the ideal size of a word is 2-3 syllables, which reflects the phonological size of a prosodic foot (taken from Carstairs-McCarthy 1991: 224). However, this does not apply to agglutinative languages because one word can be a full sentence. In these languages word sizes greater than 3 syllables are common. Thus, “agglutinative type [languages] sacrifice...optimal size of word-forms for the sake of (both semantic and morphotactic) transparency” (Dressler 1985). Piapoco, being an agglutinative language, sacrifices the “ideal size” in order to conform to morphological transparency. However, there are some cases of suppletion where the relation between morphemes is not so transparent.

In Dressler’s (1986) Natural Scale of Morphotactic Transparency, the suppletion processes are the lowest ones in the hierarchy (i.e., are the least transparent). In Piapoco, nouns like kuweezi ‘animal (absolute noun form)’ take the suppletive form -piria ‘animal (relative noun form)’ when its class is changed from absolute to relative. In this example, there is no identifiable affix that could relate the absolute to the relative noun form. Therefore, this example is a case of strong noun suppletion in this language.

Finally, the system congruity principle “favours inflectional systems which are structured typologically in a uniform and systematic way” (Wurzel 1987). Piapoco is a congruous system not only because it complies with the constructional iconicity and the biuniqueness principle, but also because Piapoco is realized according to the language structural properties particular to its own system, presented above at the beginning of this section.

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18 In NMT, diagrammaticity only accounts for affixation. It does not take into account information conveyed by other processes that are not done through affixation, such as umlaut (singV → songN) or morphological conversion (cutV → cutN). It also does not account for the presence of interfixes that do not contribute any information (e.g., -ov- in Russian).

19 The Natural Scale of Morphotactic Transparency illustrates the hierarchy in which morphological and phonological rules cause some morphemes to be more transparent than others. The scale is: Total Transparency > Resyllabification > Phonological Rules > Morphological Rules > Weak Suppletion > Strong Suppletion.
Piapoco is uniform in a systematic way because the position of the morphemes in a word is not free; there is an internal order among morphemes. For example, in case marking (section 3.4) there are restrictions on which morphemes can appear with which other morphemes.

Table 8: Morpheme compatibility relationships

<table>
<thead>
<tr>
<th></th>
<th>Locat</th>
<th>Ablat</th>
<th>Iness</th>
<th>Perl</th>
<th>Durat</th>
<th>Allat</th>
<th>-ne</th>
<th>Nominal Root</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Locative</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td>®</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2.</td>
<td>Ablative</td>
<td>---</td>
<td>×</td>
<td>×</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3.</td>
<td>Inessive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4.</td>
<td>Perlative</td>
<td>✓</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5.</td>
<td>Durative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>×</td>
<td>✓</td>
</tr>
<tr>
<td>6.</td>
<td>Allative</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 8 shows compatibilities and incompatibilities between morphemes. A (✓) marks morphemes that can appear together and an (×) marks ones that cannot. For example, in row 1, the (✓) shows that the locative morpheme can appear with the perlative (and vice versa) and that it can also be attached to the grammatical substitute for place /–ne/. In this same row, (×) marks that the locative cannot be attached directly to the nominal root, but as said before, it can attach to the substitute for place /–ne/. The symbol (®) in row 1 indicates that there is neither a compatibility relation nor a restriction between the suffixes. This symbol shows that the locative morpheme can replace the inessive and the allative morpheme but not vice versa. The cells left blank require further investigation because there were not enough data. For example, there is no data concerning whether the durative (row 5) can appear with other morphemes.

Table 8 shows that Piapoco has morphological dependencies that are systematic; therefore the noun system in this language is system congruous.

5 Piapoco derivation, nominalization and compounding

5.1 Derivation

Derivation is a morphological process in which a derivational affix produces a new lexeme from a base. Bauer (2003) and Aronoff and Fudeman (2005), among many others, explain that the difference between inflection and derivation is that

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I present here some initial observations regarding Piapoco derivation, nominalization and compounding. The lack of data precludes a complete analysis of these morphological processes at this point.
the latter changes the lexical category of the lexeme while the former does not. This definition is somewhat problematic when analyzing the Piapoco data. Spencer (1997: 197) explains that there are certain cases in which derivational morphemes behave like inflectional morphemes. He illustrates this with the Spanish diminutive /-it-/ since it does not change the lexical category of the noun: \( \text{casa}_N \rightarrow \text{casita}_N \). This situation can also be seen in Piapoco. The caducity /-\( mi \)/, diminutive /-\( na \)/ and the hypocoristic /-\( ya \)/ morphemes are derivational affixes that behave like inflectional affixes. In Piapoco, these derivational affixes attach to nouns in order to create a new word. The resulting word is still a noun, but its meaning changes:

\[
\begin{array}{ll}
(31) \text{Hypocoristic} & (32) \text{Diminutive} \\
\text{Zumaiyana} & \text{makaduna} \\
\text{Tuma-i-} & \text{makadu-na} \\
\text{ya-} & \text{casabe-} \\
\text{na} & \text{DIM} \\
\text{child- M-HYPO-DIM} & \text{‘Little casabe’}\text{,}\text{23}
\end{array}
\]

\[
\begin{array}{ll}
(33) \text{Caducity} \\
\text{inuRúi-mi} & \text{b́e:-iRi-} \\
\text{Guabina-CADUC} & \text{Tia-} \\
\text{mi} & \text{mi} \\
\text{‘The one who was a Guabina’}
\end{array}
\]

Reinoso Galindo (2002) shows that when the caducity affix is reduplicated, it indicates that the noun is in danger of disappearing:

\[
\begin{array}{ll}
(34) \text{b́eeriziamimi} \\
b́e:-iRi-Tia-} & \text{old-M-} \\
m_i & \text{DET-CADUC-CADUC} \\
\text{‘Old man’}
\end{array}
\]

---

21 In the morphological literature there is still no clear consensus on the difference between inflection and derivation (e.g., Spencer 1997).

22 I adopt the view that the caducity, diminutive, and hypocoristic affixes are derivational morphemes taking into account Spencer’s (1997) explanation of derivative morphemes behaving like inflectional ones. My view differs from Reinoso Galindo’s (2002), in which he analyses these affixes as inflectional.

23 A root used for cooking.
5.2 Nominalization

Nominalization is a morphological process in which nouns are formed from verbs (Bauer 2003 and Spencer 1997). As shown in section 3, nominalizations in Piapoco can occur not only from verbs but also from adjectives, as in example (35):

(35) Ibáawa
   i- bá:wa
   3SG.M-evilAdj
   ‘His evil’

5.3 Compounding

A compound is “a derived form resulting from the combination of two or more lexemes” (Aronoff and Fudeman 2005). Reinoso Galindo (2002) shows that in Piapoco, compounding occurs between the following categories (see section 4.3 in appendix for examples):

(a) Q + N
(b) N + N
(c) N + V
(d) Adj + N

(a) Q + N follows the syntactic structure of determiner and N. In (b) these two nouns can be absolute + absolute, or absolute + relative. I observe that there are no relative + relative or relative + absolute compounds. This could be due to (1) the meaning of the relative nouns, since they are inalienable entities in Piapoco, or (2) their morphology, since these nouns cannot stand by themselves, but require the presence of a possessor prefix. In (c), I observe that the N + V compounding follows the syntactic order subject-verb. In (d), Galindo also shows that in a statement, the order of the NP is N + Adj as in (36); however, the order is reversed in the compound in (37):

(36) Statement
   Tzáwi kiréeri
   tsáwi kfRa-fRí
   tiger red- M
   ‘The tiger is red’

(37) Compound
   kiréeri tzáwi
   kfRa-fRí-tsáwi
   red- M- tiger
   ‘Red tiger’ (Felis concolor)

---

24 This nominalization process is not exclusive to Piapoco. Other languages like English also nominalize adjectives: red → redness.
6 Conclusion

Piapoco is an agglutinative language that obeys the Natural Morphology Theory principles of constructional iconicity, biuniqueness and system congruity. In section 2 a summary of NMT was presented. Section 3 introduced the Piapoco noun system. Section 4 analyzed this system in an NMT framework. In the noun system of Piapoco, each morpheme is biunique, making the nominal system both transparent and congruous. In this theory, natural means unmarked; therefore the plural /-nái/ in gender, the direct cases and the 3SG.M are the unmarked morphemes in this language.

Finally, section 5 presented some observations regarding derivation, nominalization, and compounding. Derivational morphemes like the diminutive, hypocoristic, and the caducity morpheme behave like inflectional morphemes. In nominalization, Piapoco shows that compound nouns can be formed from verbs as well as from adjectives. Also, compound nouns follow the syntactic structure determiner-noun or noun-verb, and the order noun-adjective is inverted when forming a compound.

References


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Appendix: Piapoco data

1 Derivation

a. /-a/ marks the temporospace of an entity

(1) unía
    úni- a
    water-DERIV
    ‘Rain’

b. /-áRi/ marks water or river

(2) wáwiali
    wáwi-aRi
    deer- river
    ‘Deer river’

25

c. /-be/ marks atmospheric phenomena

(3) uniabe
    úni- a- be
    water-DERIV-be
    ‘Winter’

d. /-dani/ marks the parts that surround one part of the body

(4) nutúidani
    nu- túi- dani
    1SG-arm-DERIV
    ‘Triceps’

e. /-i/ marks what covers the entity

(5) nukawai
    nu- kawa-i
    1SG-leg- cover
    ‘Pants’

25 Another name for the Guaviare river.
f. /-nawi/ marks the group of people

(6) maapuírinawi
    ma- a:pu- íRi-nawi
    without-anus-M- DERIV
    ‘People without anus’²⁶

g. /-pi/ marks the border of an entity

(7) idulepi
    i- duRe-pi
    3SG.M-lip- SURF
    ‘Border’

h. /-pu/ marks the head of an entity

(8) íwitapu
    i- íwita-pu
    3SG.M-head- pu
    ‘Head or heading’

i. /-Ruta/ marks the place for ships

(9) ídaluta
    ida- Ruta
    canoe-place for
    ‘Jetty’

j. /-taRi/ marks the class of land

(10) édatali
    éda- taRi
    Zamuro-land
    ‘Zamuro’s land’²⁷

²⁶ mythological beings that live under the earth
²⁷ Venus Planet
k. /-Ta/ converts non human nominals or adjectives into humans

(11) énuzairi
    énu- Ta- íri
    thunder-HUMAN-M
    ‘Thunder man’

l. /-Tai/ marks the feather of birds

(12) yaapuzai
    y- a:pu-tai
    3SG.M-anus-feathers
    ‘His tail feathers’

m. /-ya/ has only been found with the nominal root /-túi/ ‘eye’ to express ‘eye tears’:

(13) nutúiya
    nu- tíu- ya
    1SG-eye-tear
    ‘My tear’

n. /-wéni/ marks the class of water

(14) amanaweni
    amana- wéni
    alligator-water
    ‘Water of alligator’

2 Nominalization: [Adj/V + suffix → N]

a. Person /-da/ has only been found with the adjective /kuli-/ ‘black’ to refer to “black people”

(15) kűlidau
    kűri- da- u
    black-person-F
    ‘Black woman’

28 Arm of Amanawen
b. /-ná/ marks the environment, or the instrument from which the action was realized

(16) iikakanawa
    i-       iká-ka-    ná-    wa
3SG.M-see-REAL-ENV- MV
‘His look / what he looks like’

c. /-Ru/ marks the place or territory

(17) nuyáakaRu
    nu-  yá:-ka-     Ru
1SG.-eat-REAL-NOMZ
‘My dining-table’ (belongs to me)

d. /-taí/ marks where the event takes place

(18) nuyáakatai
    nu-  yá:-ka-    taí
1SG.M.-eat-REAL-NOMZ
‘My dining-table’