

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 system¹ 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.

- 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 form² 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)³
4. Uniformity and transparency (“one form – one function” (p. 7))

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 $\text{cut}_V \rightarrow \text{cut}_N$) 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).⁴

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

3 Piapoco noun system⁵

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.

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 = perlativ, 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.

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

	Relative	Absolute	
Gender	-íRi	-i	Masculine
	-íRu	-u	Feminine
Number ⁸	-nái	-nái	Plural ⁹

- (5) tzamananái
 tzamana- nái
 alligator- PL
 ‘Alligators’
- (6) nudeetulunái
 nu- de:- átúa- íRu-nái
 1SG-in.law-clase¹⁰- F- PL
 ‘My sisters-in-law’

3.3 Specifiers

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

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

Specifiers	Examples
Emphatic identity /-Tiwa/: shows the identity of the entity among the members of a class.	(7) damuláiziwa dámurÁi-Tiwa mojarra- EMP.ID 'True mojarra' ¹¹
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-wanáí- 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-/¹²:

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

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

3.5 Derivation, nominalization and compounding

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

Table 5: Derivational morphemes

Derivational morphemes	Examples
Ablative /-iTe/: determines the entity's place of origin.	(15) íwitaize i- íwita-íTe 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 inuRúí- mi Guabina-CADUC 'The one who was a Guabina' ¹³ (17) béeriziamimi bé:-íRi-Tia- 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 /-Tia/: requires the caducity morpheme /-mi/.	(19) kapiiziami kapi:- Tía- 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 /-pa/, place for ships /-Ruta/, class of land /-taRi/, cover the entity /-i/, the feather of the birds /-Tai/, the group of people /-nawi/, temporospace of the entity /-a/, the class of water /-wéni/, atmospheric phenomena /-be/, related to water /-áRil, /-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

Nominalization morphemes	Examples
Allative /-Ré/: nominalizes the patient of the verb.	(21) nubanakale nu- bana-ka- Ré 1SG-sow- REAL-ALAT 'My sow'
Autonomizer /-Ti/: there is only one example of the appearance of this morpheme with the adjective /kiRa-/ 'red' to express 'new born'.	(22) kíraziu kíRa- Ti- u red- AUTON-F 'Redish' (new born girl)
Adjective asociatives /-ka/ and /-ma/: nominalize the adjective and the verb (see example 23).	
Frequentative /-káí/: changes the verb into a noun. It can be found with the autonomizer /-Ti/.	(23) kabalákairi ka- baRá-kái- íRi ASOC-fish _V -FREQ-M 'Fisherman'
Perlative /-ba/: marks the place from where the action takes place.	(24) yaatabakawa y- a:- ta- ba- ka- wa 3SG.M-go-RESTR-PERL-REAL-MV 'His way / path'
Possessives : attaches to adjectives in order to nominalize them.	(25) ibáawa i- bá:wa 3SG.M-evil _{Adj} 'His evil _N '
Other nominalization morphemes : place where the event happens /-taí/, place or territory /-Ru/, environment/instrument from which the action was realized /-ná/, person /-da/, and adjectival asociatives /-ka/ and /-na/ (see appendix for examples).	

- 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

Compounds	Examples
N + N absolute + absolute (26) absolute + relative (27)	(26) Absolute + absolute luelue aiku RueRue-aiku chorlo- tree ‘Chorlo tree’ (27) Absolute + relative kaliáwiiri kaRi:-áwi- íRi earth- grandfather-M ‘The grandfather of the earth’, ¹⁴
Quantifier + N	(28) Manútura manu- i- tuRa QUANT-DERIV-belly ‘Huge belly’
Adj + N	(29) kiréeri tzáwi kíRa-íRi-tzáwi red- M- tiger ‘Red tiger’ (Felis concolor)
N + V	(30) píizi ipiadeerina pí:iTi- 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 affixes 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

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 */-náil/*, 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).¹⁵
- The plural form */-náil/* is the unmarked form for gender and noun class in plural nouns.¹⁶
- 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 affix 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 diagrammaticity¹⁷) states that an “extra amount of meaning is represented by an extra amount of form”

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 inflecting languages types” (Dressler 1985).

(Bauer 2003).¹⁸ 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 /-ni/, ablative /-íTe/ ~ /-éTe/, 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 Transparency¹⁹, 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.

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 (sing_v → song_N) or morphological conversion (cut_v → cut_N). 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

		Locat	Ablat	Iness	Perlat	Durat	Allat	-ne	Nominal Root
1.	Locative	---		®	✓		®	✓	✗
2.	Ablative		---	✗	✗			✓	✓
3.	Inessive		✗	---	✓		✓	✓	✓
4.	Perlative	✓	✗	✓	---		✗	✓	✓
5.	Durative					---			✓
6.	Allative			✓	✗		----	✓	✓

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 compounding²⁰

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

²⁰I 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.²¹ 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: *casa_N → 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.²² 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:

(31) Hypocoristic
 Zumaiyana
 Tuma-i- ya- na
 child- M-HYPO-DIM
 ‘Little child’

(32) Diminutive
 makaduna
 makadu-na
 casabe- DIM
 ‘Little casabe’²³

(33) Caducity
 inuRúimi
 inuRúi- mi
 Guabina-CADUC
 ‘The one who was a Guabina’

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

(34) béeriziamimi
 bé:-íRi-Tia- mi- mi
 old-M- DET-CADUC-CADUC
 ‘Old man’

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):²⁴

- (35) Ibáawa
i- bá:wa
3SG.M-evil_{Adj}
'His evil_N'

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 nor 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 kíRa-íRi
tiger red- M
'The tiger is red'

- (37) Compound
kiréeri tsáwi
kíRa-íRi-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 */-náii/* 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

- Aikhenvald, Alexandra Y., & Robert M. W. Dixon. 1998. Dependencies between grammatical systems. *Language*, 74, 1: 56-80.
- Aronoff, Mark, & Kirsten Fudeman. 2005. What is Morphology? Australia: Blackwell Publishing.
- Bauer, Laurie. 2003. Natural morphology. In *Introducing linguistic morphology*. 2nd edition, 253-267. Washington, D.C.: Georgetown University Press.
- Capell, Arthur. 1938. Word-building and agglutination in South-Eastern Papua. *Bulletin of school of Oriental studies, University of London*, 9, 3:765-780.
- Carstairs-McCarthy, Andrew. 1991. Current morphology. London, U.K.: Routledge.
- Dressler, Wolfgang U. 1985. On the predictiveness of Natural Morphology. *Journal of linguistics*, 21: 321-338.
- Dressler, Wolfgang U. 1986. Explanation in Natural Morphology, illustrated with comparative and agent-noun formation, *Linguistics*, 24, 4: 519-548.
- Dressler, Wolfgang U., Wolfgang U. Wurzel, Willi Mayerthaler, & Oswald Panagl. 1987. Leitmotifs in Natural Morphology. *Studies in language companion series*, 10. Philadelphia: John Benjamins Publishing Company.
- Kilani-Schoch, Marianne. 1988. Introduction à la Morphologie Naturelle. New York, N.Y.: Editions Peter Lang S.A.

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- Klump, Deloris A. 1982. La palabra fonológica en Piapoco. *Artículos en lingüística y campos afines*, 11: 83-98. Bogotá, Colombia: Asociación Instituto Lingüístico de Verano.
- Klump, Deloris A., & Stephen Levinsohn. 1985. Piapoco: continuity of situation and antitopic in narrative discourse. In: Ruth M. Brend, editor. From phonology to discourse: Studies in six Colombian languages. *Language data, Amerindian series*, 9: 117-133. Dallas, TX: Summer Institute of Linguistics.
- Klump, Deloris A. 1995. Vocabulario Piapoco-Español. Bogotá, Colombia: Asociación Instituto Lingüístico de Verano.
- Jackendoff, Ray. 1975. Morphological and semantic regularities in the lexicon. *Language*, 51, 3: 639-671.
- Mayerthaler, Willi. 1988. Morphological naturalness. *Linguistica extranea, studia 17*. Germany: Karoma Publishers.
- Reinoso Galindo, Andres E. 2002. Elementos para una gramática de la lengua Piapoco. Bogotá, Colombia: Ministerio de la Cultura.
- Spencer, Andrew. 1997. Morphological theory. Malden, M.A.: Blackwell Publishers Inc.
- Taylor, Douglas. 1958. Compounds and comparison. *International journal of American linguistics*, 24, 1: 77-79.
- Taylor, Douglas. 1960. Compounds and comparison again. *International journal of American linguistics*, 26, 3: 252-256.
- Wurzel, Wolfgang. 1987. See Wolfgang U. Dressler, et al. 1987.
- Wurzel, Wolfgang. 1994. Natural morphology. In *The encyclopedia of language and linguistics*, 5: 2590-2598. In R. E. Asher and J. M. Y. Simpson Editors. Tarrytown, NY: Pergamon Press Inc.

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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) maapuínawí
ma- a:pu- íRi-nawí
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) íwítapu
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) édatáli
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- túi- ya
1SG-eye-tear
'My tear'

n. /-*wéni*/ marks the class of water

- (14) amanaweni
amana- wéni
alligator-water
'Water of alligator'²⁸

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

a. **Person** /-*da*/ has only been found with the adjective /*kuli*-/ 'black' to refer to "black people"

- (15) kúlidau
kúRi- 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'