PRODUCTIVE COMPOUNDING AND NOUN CLASSIFICATION SYSTEMS: A CASE STUDY IN APURINÃ (ARAWAK)

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ABSTRACT: A classificatory noun system in Apurinã (Arawak, Brazil) is shown to develop out of productive noun compounding, where salient meaning properties, primarily of plant parts, other nature elements and secondarily of body parts, are extended to refer to properties of other semantic domains either as part of noun compounds or incorporated in the verb. Notions from studies on *Conceptual Metaphors* are used to identify and describe three semantic domains: (i) *plant parts or other nature elements*, (ii) *body parts*, and (iii) *manufactured elements*. The domains containing the literal meaning properties (i.e. [i] and [ii]) are *source domains*, whereas the domains containing extended meaning properties are *target domains* (i.e. [ii] and [iii]). Semantic relations among the various uses of classificatory nouns form a *network of semantic mappings between source and target domains*, out of which a classificatory system based on *shape* and *consistency* emerges. On one hand, these classificatory nouns bear some resemblance to classifiers in terms of their semantic transparency, since their salient meaning properties tend to be preserved as they are extended to refer to the semantic properties of other nouns; on the other hand, they also bear some resemblance to gender systems in terms of their grammatical status, since they cannot stand by themselves as words and, in this sense, are phonologically bound forms. Finally, classificatory nouns share behavioral properties with *class terms*, well known in South East Asian languages such as Thai, except that the former but not the latter can be incorporated into the verb.
KEYWORDS: classificatory nouns; classifiers; Apurinã; Arawak.

INTRODUCTION[2]

The semantic nature of noun classification systems has received much attention in the linguistic literature in terms of their underlying semantic, grammatical and, to a less extent, discourse-pragmatic properties (see Adams 1986, various papers in Craig 1986, Corbett 1991, Aikhenvald 2003, among many others). Less attention, however, has been given to classifying systems also used with more derivation-like functions, where the classifying noun

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[2] An earlier version of this paper appeared in 2000, as chapter 4 of the author's unpublished Ph.D Dissertation. The current version has been updated.

is often used to expand the vocabulary of the language. To illustrate the defining property of these classifying nouns, we can compare it to a typical classifier system such as the Thai (Sino-Tibetan, Thailand) numeral classifiers. In Thai a numeral classifier such as *kon*, used for people, as in *kruǔu song kon* (teacher two CLF) 'two teachers', is employed to quantify human referents in discourse. In Apurinã (Arawak, Brazil), a classifying noun such as *tãta* '(tree) bark' can be productively used to derive new lexemes, such as *uku*-tãta (uku tree-bark) 'bark of "uku" tree', and *uky-tãta* (eye-bark) 'eye glasses'.

If we describe the properties of such classifying nouns as mappings from source to target semantic domains, it is possible to determine which semantic information is being lost or preserved as each classifying noun is used as part of different word forms. Having established source and target domains, then we can arrive at the specific semantic properties being mapped between domains. The results reveal a system of core semantic properties underlying the various mappings and which emerges in terms of schemas comparable to those used to motivate metaphors (Lakoff 1987, Lakoff and Johnson 1986, Johnson 1987). Finally, having arrived at the semantic properties underlying the use of classifying nouns in Apurinã, we can compare them to typical class terms in Thai, and then address the question of the place of such classifying systems in the general typology of classifier systems.

1. CLASSIFICATORY NOUNS AS SIMPLE NOUNS

Apurinã has nouns that are phonologically bound forms and which possess the property of recurring as part of compound nouns. In past studies on this language, these nouns have been called *classificatory nouns* (Facundes 1994, 2000), hereafter CNs. For example, a noun such as *-tsuta* is an inalienable noun (lexically marked as obligatorily possessed) meaning 'trunk of' (where 'trunk' is the part of a tree). If marked with the third person masculine singular form *y-*, as in *y-tsuta*, it will mean 'its trunk'. The property of taking a person marker that functions as a possessor is a feature intrinsic to nouns. Hence, CNs such as *-tsuta* constitute a subclass of simple nouns that happen to be phonologically bound, i.e. a *bound noun*.

Overall, there are at least four ways in which inalienable nouns such as *-tsuta* constitute a special type of noun, i.e. a classificatory noun. First, such CNs are generally phonologically bound nouns insofar as they only occur either as part of a compound word base (as in *uku-tsuta* 'trunk of "uku" tree') or with a pronominal marker attached to them (as

in *y-tsuta* 'its trunk'). Second, CNs can recur as part of a compound noun; that is, as long as semantics allows for it, a classificatory noun can repeatedly occur as part of various compound nouns, as illustrated in (1). The compound nouns formed with non-CNs plus one (or more) classificatory noun are here called *productive compound nouns*.

1a.	*ãã-myna-tsuta*	NRt+CN+CN	'tree trunk'
	plant-trunk-trunk.of		
b.	*mãku-tsuta*	NRt+CN	'mango tree trunk'
	mango-trunk.of		
c.	*uku-tsuta*	NRt+CN	'"uku" tree trunk'
	uku-trunk.of		

The types of compounds taking CNs above are somewhat parallel to compound nouns in English such as *banana tree*, *mango tree*, *apple tree* etc., where *tree* also recurs as part of the compound. Different from English, however, words that are used with a generic meaning as part of a compound in Apurinã are bound formatives. Even if speakers were to accept a neologism such as, e.g., *kema-kywy* 'tapir's head', under some special circumstances, still the non-classificatory inalienable noun *kywy* 'head of' will NOT have the property of recurring as part of compound nouns. That is, the non-classificatory noun *kywy* cannot be systematically used as part of the compound nouns in (2):

2a.	**kyky-kywy*	NRt+NRt	(man's head)
	man-head.of		
b.	**sytu-kywy*	NRt+NRt	(woman's head)
	woman-head.of		
c.	**hãkiti-kywy*	NRt+NRt	(jaguar's head)
	jaguar-head.of		

Non-CNs such as *kywy* will be used systematically in syntactic possessive constructions, but not in compound nouns, as shown in (3). A major difference between compound nouns and

branched phrasal nominals is that the former carry only one primary stress —omitted in the standardized transcription used here— whereas the latter will carry as many primary stresses as the number of phonologically independent words present in the phrasal construction.[3]

3a. *kyky   kywy*   'a man's head'
      man   head.of

b. *sytu   kywy*   'a woman's head'
      woman   head.of

c. *hãkiti   kywy*   'a jaguar's head'
      jaguar   head.of

As a bound formative, CNs would appear to resemble -*berry* in English (as in *cranberry*, *strawberry*, *blackberry* etc.) However, the similarities end there. The third special property of CNs (more precisely, a subset of them) is that they can be incorporated into the verb to refer to the semantic properties of a nominal form previously referred in the discourse. So, in (4a) the classificatory noun -*pe* 'pulp of' is incorporated into the verb base *ysunãka-ta-ka* 'dry-VBLZ-INTENS' to refer to a consistency property of the nominal form *kumyry* that precedes the verb in the same clause. In (4b) the classificatory noun *xiti* 'earth of' is incorporated into the verb base *yutika-ta* 'burn-VBLZ' to refer back to properties of the noun form *kikiu* 'field farm' which had been previously mentioned in the text:

4a. *atha   kumyry   ysunãka-pe-ta-ka*
      1PL   manioc   dry-pulp.of-VBLZ-CAUS
      'We put the manioc pulp to dry.'

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[3] Non-IPA symbols used in the Apurinã orthography are th=[c], y=[ɨ], x=[ʃ], tx=[tʃ], and y=[j]. Abbreviations are as follows:

ALIEN	alienable noun	F	feminine	VBLZ	verbalizer
BRt	bound root	FRt	free root	1	first person
AUX	auxiliary verb	INAL	inalienable noun	2	second person
CAUS	causative marker	INTENS	intensifier	3	third person
CN	classificatory noun	Rt	root		

b. Preceding context: 'First, we prepare the field farm by cutting down the trees... then...'

> *atha   yutika-xiti-ta   txa-ru*
> 1PL   burn-earth.of-VBLZ   AUX-3M.OBJ
> '....we set it (the field farm) on fire.'

Finally, there is one last major reason to distinguish classificatory from non-CNs, namely the properties that motivate further subcategorization within the class of CNs. CNs form a subset of nouns in that that they can be productively used to refer to their source (literal) meanings[4] or target meanings that consist of extensions of their source meanings. As the data below show, the semantics of CNs, in addition to their source domain, includes target domains. The source semantic domains for CNs are plant/forest elements or body parts, and their target semantic domains are body parts and of manufactured elements. In simple terms, CNs are those CNs that have undergone semantic bleaching and that, as a consequence, can refer to more general semantic properties of a wider range of nouns, thus, occurring more productively and with the functional power of nominal classifier. As CNs become semantically bleached, they tend to preserve only the salient physical properties of their source (original) meaning. As seen in the first examples in (5), the form *-myna* has '(tree) trunk of' as source meaning, since this is the recurring meaning in (5) and since *y-myna* means 'its (thick tree) trunk':

> 5a. *ãã-myna*   NRt + CN   'tree (trunk)'
>   plant-trunk.of
>
> b. *uku-myna*   NRt + CN   '"uku" tree trunk'
>   uku-trunk.of
>
> c. *yeye-myna*   NRt + CN   '"yeye" tree trunk
>   yeye-trunk.of

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[4] The notion of 'meaning' relevant for the foregoing discussion is that of 'lexical meaning' (rather than 'propositional' or 'pragmatic' meaning).

As can be inferred from (6), the target meaning of -*myna* is 'big, long, roundish', or, in one word, 'cylindrical' —like a thick tree trunk:

6a. *lãtehna-myna*   NRt + CN   'flashlight tube'
      flashlight-trunk.of

  b. *aiku-myna*   NRt + CN   'house beam'
      house-trunk.of

  c. *pitxi-myna*   NRt + CN   'penis (body)'
      penis-trunk.of

  d. *kiri-myna*   NRt + CN   'animal's nose'
      nose-trunk.of

  e. *ãã-myna-katy*   NRt + CN+ NRt   'tree branch'
      plant-trunk.of-branch.of

In (6a) -*myna* refers to the 'cylindrical' shape of a flashlight tube; in (6b) it refers to the 'round' and 'cylindrical' shape of a beam which is used to support the roof of the Apurinã houses; in (6c) it refers to the 'cylindrical' shape of the detached genitals of a male tapir (in a context specific to an Apurinã story); in (6d) it refers to the sort of 'cylindrical' shape of an animal's nose (e.g. of a tapir, a cowfish, a cow, a horse, etc.). Interestingly, (6e) shows that the productive nominal compounding formation with (at least some of the) CNs may consist of more than one classificatory noun within the same compound noun, thus with some potential recursion: that is, while -*myna* 'trunk of' is the CN of the compound *ãã-myna* 'tree (with a large trunk),' -*katy* 'branch of' is the noun root of [[*ãã-myna*]ₙ -*katy*]ₙ 'tree (thick) branch'. Although productive noun compound formation with CN is potentially recursive, it is in fact restricted to a few cases. At most three CNs have been attested in the same word.

From a diachronic perspective, CNs, therefore, are farther advanced along a grammaticalization continuum than regular simple nouns; that is, CNs are more grammaticalized elements which preserve only salient perceptual parts of their lexical meaning and derive a distinct noun which may fall into the two semantic (target) domains of body parts or manufactured elements.

Table 1 summarizes the attested cases of CNs in the first column; in the second column their attested meaning properties are listed; and, from the third column on, +/-indicates whether they preserve their source meaning in, respectively, the domains of plant/forest elements, body parts, and manufactured elements. As seen in this table, there is only one attested case of CNs that have a body part as the source meaning. For all other cases, the source meaning of CNs is plant/forest elements: (For reasons of space 'of' has been removed from the gloss in Table 1. It should be kept in mind, however, that obligatory possession is part of the meaning of each CN listed below.)

Although CNs have semantic properties typical of classifiers (as those described in Dixon 1986[5]), they also have the semantic and syntactic properties of noun class/gender markers (cf. the typology in Dixon 1986. The similarities and differences between CNs and classifiers and noun class/gender markers will be addressed in the next subsection.)

CN	Gloss	Plant Elem.		Body Elem.		Manufactured Elem.	
		source	target	source	target	source	target
ã	water, juice; tear; liquid	+	-	-	+	-	+
ke	wood stick; long, thin	+	-	-	+	-	+
ky	rounded, small, hard	+	-	-	+	-	+
mata	skin; flat, soft	-	-	+	+	-	+
myna	trunk; long, cylindrical	+	-	-	+	-	+
pẽ	water, juice; liquid	+	-	-	+	-	+
panhi	powder	+	-	-	-	-	+
pe	mush; paste	+	-	-	+	-	+
pytsa	liana; tripe; long, flexible	+	-	-	+	-	-
riko	hole	+	-	-	-	-	+
tãta	bark; shell; flat, thick	+	-	-	+	-	+
tsa	liana; long, flexible	+	-	-	-	-	+
tsopa	wide leaf; flat, wide	+	-	-	-	-	+
xike	small leaf; flat, flexible	+	-	-	+	-	+

Table 1: The set of CNs

2. FUNCTIONS AND TYPOLOGICAL NATURE OF CNS

At a first glance, one could describe CNs as some sort of unproductive compound words such as those that make use of the morpheme *berry* in English. The association, though well taken, is misleading when it ignores the properties of CNs which the morpheme *berry* lacks in English. To the extent that *berry* occurs in English as part of compound nouns

referring to fruits of a small size (e.g., *cran-berry*, *straw-berry*, *mul-berry*, *blue-berry*, *rasp-berry*, *black-berry* and so on), it resembles, for example, the CN *ky* 'seed of, kernel of; small and round' in Apurinã. However, as was said above, neither can *berry* be metaphorically extended nor can it incorporate into verbs in roughly anaphor-like constructions.

In fact, grammatical and discourse roles of CNs pervade the Apurinã language. In the context of discourse there are clear instances of CNs being used in productive compounding to disambiguate meaning. One example is the attested use of the noun *kumyry* in a text about the making of manioc flour. By itself *kumyry* can refer to 'manioc bulb', 'manioc tree', or 'manioc bread'. However, when the textual context does not allow to discriminate the meaning, CNs are added to disambiguate meaning, as when *kumyry-katy* is used to refer to 'manioc tree', when *kumyry-kata* is used to refer to 'manioc flat bread', when *kumyry-purũĩ* is used to refer to manioc 'round (ball like) bread', and so on. CNs can also be used to highlight intrinsic permanent or temporary semantic features of noun references, such as size, dimension, shape or consistency. This author's name in Apurinã, *iuyka*, was consistently pronounced as *iuyka-ke* by one of the speakers. When asked another speaker why I was being called *iuyka-ke,* instead of simply *iuyka*, by the other speaker, I was told (after a few laughs) that "It's because you are skinny and tall." That is, CNs are also used in discourse to play the functional role of attributive modifiers, which is typical of adjectives or descriptive verbs in many other languages.

Both of the discourse roles played by CNs in productive compounding, disambiguating and highlighting meanings, are also attested for CN incorporation. For example, the word for 'manioc mush' is attested in texts as the productive compounding *kumyry-pe* in which case *-pe* not only qualifies the 'mushy' and 'paste-like' consistency of the 'manioc mush', but it also discriminates 'manioc mush' from 'manioc bulb', 'manioc tree' etc. Approximately the same disambiguating or attributive function can be accomplished by simply incorporating the CN *–pe* into the verb; as in the example below:

7. (*kumyry(-pe))*   *ata   oka-pe-ta*

   manioc-pulp of we   throw-pulp-VBLZ

   'We thrown the (manioc) mush in.'

The fact that the noun to which the verb incorporated CN refers can be omitted, and most often is, suggests that, when CN incorporation is used somewhat "anaphorically", the discourse participant whose properties the incorporated CN refers to is background discourse information.   Another piece of evidence for this discourse property is the fact that incorporated CNs are widely used to make reference to discourse participants mentioned repeatedly in the same text. Finally, there are many cases in which a subset of incorporated CNs narrow the meaning of the verb. For example, the verb *iataruta* by itself means 'to mix'; but when the CN for liquid things, *ã*, is incorporated, as in *iataru-ã-ta*, the meaning becomes 'to stir a liquid thing'.   Thus, the function of CNs when incorporated approximates the function of what Mithun (1986a, 1986b, 1984) describes as incorporated classifiers (or verbal classifiers).   This similarity to a certain type of classifier, however, does not hold grammatically when CNs are used in nominal compounding.

Doris Payne (1987) attempted to typologize the classifying systems attested in the Amazon region of South America, with the finding that there were problems for the opposition between classifiers and noun class/gender systems suggested by Dixon (1986) with certain classifying systems which happened to share properties of both types. In a more recent work, Grinevald (a.k.a. Craig, in p.c.) suggests the following typology for classifiers:

Classifiers

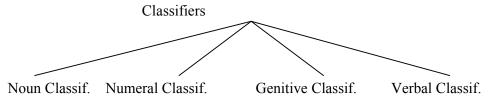Noun Classif.   Numeral Classif.   Genitive Classif.   Verbal Classif.

Fig. 1: Grinevald's Typology of Classifiers

These various types of classifiers can be generally seen in a semantic continuum of classification systems, from *the most to the least semantically based*, as seen in Fig. 2. And a CN system, at least in its initial stage, seems to be closer to the semantic systems than to the grammatical systems.

Most semantically based (lexico-syntactic, in Dixon's terms)

→   e.g.   CNs, Numeral Classifier of Southeast Asia (cf. DeLancey 1986, Erbaugh 1986, Downing 1986) and Austronesian languages (cf.Adams 1986)

→   e.g.   Noun Class Gender System of Indo European language (cf. Zubin and Köpcke 1986, Corbett 1991), Apurinã (Facundes 1998a), among others.

Least semantically based (Noun Class/Gender)

Figure 2: Semantic Continuum of Classifying Systems

On the other hand, insofar as CNs occur as parts of compoundings, in terms of their grammatical structure they have morphosyntactic properties of noun class/gender systems. Such properties place CNs in an intermediary position in a continuum where, at one end, numeral classifiers are *the least grammatically based* classifying systems, and at the opposite end, class/gender systems are *the most grammatically based* classifying system.[6]
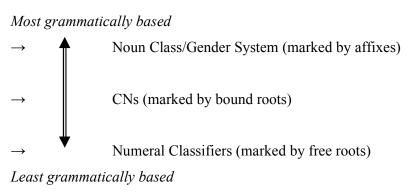
Most grammatically based

→   Noun Class/Gender System (marked by affixes)

→   CNs (marked by bound roots)

→   Numeral Classifiers (marked by free roots)

Least grammatically based

Figure 3: Grammatical Continuum of Classifying Systems

As to the typological nature of CNs, in some ways they are not as unique as has been suggested in the linguistic literature (cf. Payne 1987). In fact, in some of the literature on Southeast Asian languages, the expression *class terms* has been used to refer to the head element of productive noun compounds; class terms have classificatory properties similar to those which I have described here for Apurinã. As DeLancey (1986) defines it, "[t]hese are morphemes which occur as the head of a number of noun compounds which are exemplars of

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[6] The typology above is obviously simplified, since it is likely that different types of class/gender marking

the category labeled by the class term." Moreover, DeLancey states that "[t]hus class terms have a semantic classifying function quite similar to that of classifiers, although they do not ordinarily show the incoherent range of uses which is a not uncommon feature of classifiers." (pp. 438)

The use of the expression "class terms" seems to have originated in the work of Haas (cf. DeLancey 1986). In the same article, DeLancey suggests that class terms are a major source for the development of new classifiers in Tai languages. Examples of class terms are attested, for example, in Thai. DeLancey lists the following as some of the examples of class terms:

8a. *ŋuu*   'snake'
  b. *ráan*   'shop'
  c. *khon*   'person'
  d. *duaŋ*   'round obj.'
  e. *lam*   'long obj.'

The following examples illustrate the use of class terms in Thai:[7]

9a. *ŋuu-lŭam*   'anaconda'
    CLASS.TERM-anaconda

  b. *ŋuu-hàw*   'cobra'
    CLASS.TERM-cobra

10a. *ráan-rǎŋtáǔ:*   'shoe store'
    CLASS.TERM-shoe

  b. *ráan-nǎŋsǔ:*   'bookstore'
    CLASS.TERM-book

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systems and numeral classifying systems can have a typology of themselves.
[7] I thank Nuttanart Facundes, who provided me the Thai examples used here.

11a. *duaŋ-tcan*   'moon'

    CLASS.TERM-moon

  b. *duaŋ-a:thít*   'sun'

    CLASS.TERM-sun

12a. *lam-than*   'small river'

    CLASS.TERM-river

  b. *lam-khĕ*   'arm'

    CLASS.TERM-arm

Thus, once we have added CNs to the typology of classifying systems, it comes as no surprise to note DeLancey's suggestion of the existence of a continuum from pure noun to pure classifier, and that such continuum can be observed in the syntactic and semantic behavior of certain nouns and classifiers. Such a continuum has been attested in the form of class terms in some South-East Asian languages. CNs in Apurinã then would constitute another manifestation of similar continuum, this time in an Amazonian language.

3. THE SEMANTIC NATURE OF CNS

In the previous sections we have seen that Apurinã has CNs that are the recurring elements in productive noun compounding; that some CNs can be used as anaphor-like nominal elements that can be incorporated into the verb in a manner similar to certain verb incorporated classifiers; and that CNs play important grammatical roles in the morphology, syntax and the lexicon of the language, as well as that they can encompass important discourse and pragmatic roles.

The analysis presented above for CNs suggests that there is enough synchronic evidence pointing toward a continuum within which the nature of CNs can be understood. When we look at CNs in productive compounding by isolating parts of this continuum based on observable differences in their semantic or syntactic behavior, we identify parts of the mechanisms by which lexical meaning "emerges" as a result of language use and language variation. In terms of their semantic properties, we have seen that CNs have two sources

currently attested: most CNs derive from plant parts/nature elements, and a few others derive from body parts. The fact, however, that there are too few instances of the latter cases does not allow us to discard the possibility that further investigation may reveal that all CNs have plant parts/nature elements as source meanings. Moreover, CNs occur as one of the elements in a productive noun compound and they refer to anatomical properties of the derived meaning of the compound. Thus, CNs may refer to semantic properties of nouns which fall into two or three of the following meaning categories: (i) plant parts/nature elements (as source meaning), (ii) body parts (as derived meaning and, perhaps, also as source meaning), (iii) manufactured elements (as derived meaning).

The semantic development of CNs suggests a number of semantic changes that can be explained through metaphorical extensions of particular source meanings into particular target meanings. One type of semantic change observed was that which occurs when plant parts have their meaning extended to refer to body parts. In contrast, another semantic change occurs with the extension of meaning from plant parts to manufactured elements. For instance, there is a sense in which the use of *-myna* in *ãã-myna* 'tree' is different from its use in *kiri-myna* 'animal's nose'; and the use of *-myna* in *aiku-myna* 'house bean' is different from both of the previous uses. In the first case, *-myna* refers to the properties of a plant; in the second case, *-myna* refers to the properties of a body part; and in the third case, *-myna* refers to the properties of a manufactured element. Is it the case that, in the three instances, *-myna* carries the same meaning properties? If yes, then what are these meaning properties? Are the various uses of *-myna* a case of *polysemy* or *homonyny*?

As Sweetser points out "[n]o historical change of meaning can take place without an intervening stage of polysemy. If a word once meant A and now means B, we can be fairly certain that speakers did not just wake up and switch meanings on June 14, 1066. Rather, there was a stage when the word meant both A and B, and the earlier meaning of A eventually was lost" (1991:9). In that view, *-myna* could be, conceivably, treated as an instance of polysemy. Now, does this help us answer question I or II posited above? How can we show that each instance of *-myna* in words like *ãã-myna* 'tree,' *aiku-myna* 'house beam,' *kiri-myna* 'animal nose' etc... corresponds to different word meanings that happen to be expressed in the language by the same phonological form? If we followed a strict version of the polysemy view, we would end up having to accept a lexicon consisting of lexical entries such as $-myna_1$, $-myna_2$, $-myna_3$, $-myna_4$, $-myna_5$ etc... which when applied to the other CNs of the language would generate a close to infinite number of lexical meanings the language learner would need to memorize. This certainly is not a desirable result. If on the other, we assume

that there are enough similarities among the various uses of *-myna* that justify treating them as semantically related in some ways, we find ourselves in the position of having to show which "similarities" those are.

We may take regular simple nouns (i.e. plant parts/nature elements and perhaps body parts) to constitute the set of semantic properties expressing a *source domain*, whereas CN$_S$ (manufactured elements) would constitute a *target domain*. In order to understand, express or conceptualize elements within the target domain, elements of the source domain are used. The meaning of CNs would emerge out of the mappings between *image-schematic models* containing "specific schematic images, such as trajectories or long, thin shapes or containers" (Lakoff 1986:31). There would be three of such image-schematic models involved here, one for (i) plant parts/nature elements, another for (ii) body parts and, finally, a third for (iii) manufactured elements. These mappings could be characterized as metaphorical mappings within a *metaphorical model* (idem), in which elements from one image-schematic model maps onto another one, as (i) maps onto (ii) and onto (iii), and (ii) maps onto (i) and (iii), as in the diagrams below:
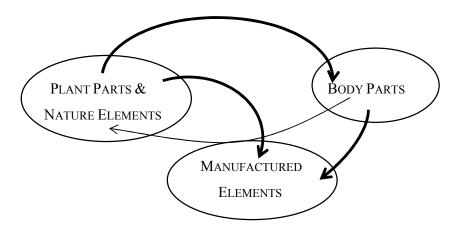

Figure 4: Mapping between source and target domains

Apurinã then would have conceptual mappings of a sort that motivate the meaning alternation of CNs. As a first approximation, Apurinã could be said to have the following global conceptual metaphoric mapping:

THE PHYSICAL PROPERTIES OF ANIMAL BODIES/MANUFACTURED ELEMENTS ARE THE PHYSICAL PROPERTIES OF PLANT PARTS OR NATURE ELEMENTS.

Figure 5: Generic Metaphoric Model

A version of such a conceptual metaphorical mapping in Apurinã could be grounded on the Apurinã cosmology wherein plants and non-human animals are treated as the same sort of beings —as attested in the Apurinã traditional narratives. Thus, what we would be finding is that there would be a generic metaphoric model embedded into an Apurinã idealized cultural model (or an Idealized Cognitive Model, see Lakoff 1987) which would work to motivate the use of certain semantic domains in connection with other semantic domains, in this case, the semantic domain of plant parts/nature elements in connection with that of body parts, or of plant parts/nature elements in connection with that of manufactured elements, or the semantic domain of body parts in connection with that of manufactured elements (Fig. 4). Within this semantic analysis, CN_S can be treated as items that constitute a natural category (see Lakoff 1982); their commonality consists of the similarities perceptually identifiable in their semantic contribution to the derived compound noun, such similarities consisting of **shape** and/or **consistency**. Physical shape and consistency are the general set of semantic features making an **anatomical image-schematic** model that, once made available to the speakers, can be extensively used with CN_ss with functions beyond that of a simple head of a noun compound. That is when CN_ss can be used as modifying elements with attributive function in nouns or in verb incorporation.

In order to motivate the properties of CNs in terms of image-schematic mappings, we need to specifically describe which particular properties are being mapped between domains. That is, it still remains to be said which of the several different "physical properties of Plant Parts/Nature Elements" are associated to the "physical properties of Body Parts/Manufactured Elements," and so on. This is what is dealt with in the next paragraphs.

A semantic analysis of the data allows us to make sense out of the descriptive facts by positing schematic models which would motivate the association of the semantic fields given in (i)-(iii) above. Such an analysis also allows us to note that it is the perceptually salient physical properties inherent to (i) and/or (ii) that are mapped onto (ii) and/or (iii). However, we have only been able to account for the semantic classes whose properties are associated to one another (through metaphorical mappings), and to motivate only one very general set of properties involved in the semantic mappings, namely the set of "physical salient properties." The obvious question then would be "How do we know which properties are salient?" One way to find the answer to this question would be to perform psycholinguistic experimental tests such as those used in Prototype studies à la Rosch 1977. Another possibility would be to

use linguistic information through a structural analysis of the data. It is the structural analysis that follows below.

The CN -*myna* can be used to illustrate how the data presented in the paper indicate that it is that the most salient features inherent to the source domain turn out to be preserved in the target domain (i.e. CN). As we have already seen above, -*myna* can only be used with plant parts names (when used with the plant parts/nature elements category) to refer to trees with large trunks. It is generally the case that such large trunks have as salient perceptible properties the fact that they are 'thick,' 'rigid,' and 'cylindrical'. Hence 'thick,' 'rigid', and 'cylindrical' can be naturally interpreted as the salient source meaning properties of the CN -*myna*. Now, having established the source salient properties of -*myna*, we can examine which of such properties remain or are lost when -*myna* is used to refer to body parts or manufactured elements. As seen in the Table 2 below, the 'rigid' property is lost when used to refer to body parts, but maintained when used to refer to manufactured elements. Thus, the recurring properties of -*myna* across categories are 'thick' and 'cylindrical'.

In Table 2, I extend the analysis for each CN in order to illustrate the recurring properties which can be observed when CNs refer to the shape or consistency of plant parts/Nature Elements, body parts, and manufactured elements. Hence, in Table 2 we track the original salient properties for each CN as such properties are preserved or lost when the CNs are used with any of the relevant noun categories. As a result, we arrive at the (presumed) "core" properties, that is, meanings that may recur across categories, as summarized in Table 3.

Thus, in Table 3 the "core" properties can conceivably be taken to be the specific features which are mapped from the source to the target domains which were represented in Fig. 4.

Plant parts / Nature elements			Body parts			Manufactures		
Apurinã	Gloss	CN meaning	Apurinã	Gloss	CN meaning	Apurinã	Gloss	CN meaning
ãã-myna	tree	thick, rigid, cylindrical	*pitxi-myna*	a big penis body	thick, cylindrical	*lãtehna-myna*	flashlig ht tube	thick, rigid, cylindrical
ãã-pytsa	liana-like root	thin, flexible, twisted	*tika-pytsa*	intestines	thin, flexible, twisted			
kemy-ky	corn seed/gra n	spherical, small	*teny-ky*	mammilae	small	*xamyna-ky*	small bullets	spherical, small
xamy-panhi	ash	powder				*xamyna-ke-panhi*	gun powder	powder
anana-pẽẽ	pineappl e juice	liquid, non-transparent	*teny-pẽẽ*	maternal milk	liquid, non-transparent	*tata-pẽẽ*	umamar i juice	liquid, non-transparent
ãã-riku	tree hole	internal cavity				*xamyna-riku*	gun hole	internal cavity
ãã-myna-tãta	tree bark	outer layer, glued	*ximaky-tãta*	fish scale	outer layer, glued	*uky-tãta*	glasses	outer layer
ãã-tsa	string-like liana	flexible, long thing				*mapuwa-tsa*	cotton string	flexible, long, thin
ãã-tsupa	type of big leaf	wide, thin, flat, flexible, green, smooth				*ãã-tsupa*	paper	wide, thin, flat, flexible, smooth

tata-pe	umari fruit pulp	viscous	*ĩ-pe*	fat	paste	*ĩ-pe*	grease	viscous
ãã-ke	pole, stick	linear, thin, flexible,	*kanu-ke*	arm	thin, flexible	*iumẽti-ke*	harpoon	linear, thin, flexible
kamuwa-ã	dove river	liquid, transparent,	*uteny-ã*	maternal milk	liquid	*txipari-ã*	banana juice	liquid
			hãkiti-mata	jaguar skin	outer layer, glued, flexible	*kiti-mata*	sandals	outer layer, flexible
			tserĩ-ta	chin	round edge	*pẽtxi-ta*	comb	round edge

Table 2: Sample of CNs and Their Recurring Meaning

Semantic sources of CNs			Recurring semantic properties		"Core"
Forms	Meaning	Salient properties	In body parts	In manufactures	properties
myna	trunk	thick, rigid, cylindrical	thick, cylindrical	thick, rigid, cylindrical	thick, cylindrical
pytsa	root	thin, flexible, twisted	thin, flexible, twisted		thin, flexible, twisted
ky	kerne, seed	spherical, small	small	spherical, small	small
panhi	ash	powder		powder	powder
pẽẽ	juice	liquid, non-transparent	liquid, non-transparent	liquid, non-transparent	liquid, non-transparent
riku	hole	internal cavity		internal cavity	internal cavity
tãta	bark	outer layer, glued	outer layer, glued	outer layer	outer layer
tsa	liana	flexible, long, thin		flexible, long, thin	flexible, long, thin
tsupa	wide leaf	wide, thin, flat, flexible, green, smooth		wide, thin, flat, flexible, smooth	wide, thin, flat, flexible, smooth
pe	pulp	paste	paste	paste	paste

ke	stick	cylindrical, thin, flexible,	thin, flexible	cylindrical, thin, flexible,	thin, flexible,
ã	water	liquid, transparent	liquid	liquid	liquid
mata	skin	outer layer, glued, flexible		outer layer, flexible	outer layer, flexible
ta	?[8]	round edge		round edge	round edge

Table 3: Summary of the Recurring Meaning of CNs

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ta has clearly the semantics of a CN; however, its meaning source cannot be precisely determined only on the basis of its synchronic properties.

Therefore, a cognitively based semantic analysis can motivate general semantic categorization patterns for CNs. Their semantic structures can be partially described in terms of an internal structural semantic analysis. In conclusion, when we observe the general semantic patterns and the specific semantic properties involved, we notice that a semantic system based on the two general categories of shape and consistency (plus their subordinate classes) seems to be in progress in Apurinã. Thus, what we see then is that the following classification system emerges:[9]
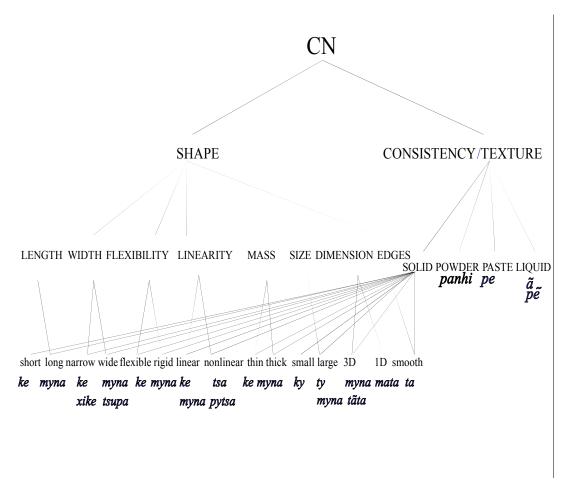

Figure 6: Recurring semantic properties of CNs

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[9] The diagram below suggests a process of lexicalization which deserves further research and whose in-depth analysis is beyond the scope of this work.

4. FINAL REMARKS

The analysis of the data presented above lead to the conclusion that CNs evolved out of simple nouns lexically marked as obirgatorily possessed nouns. These obirgatorly possessed nouns would frequently occur following a possessor noun, finally becoming phonologically attached to it. The structure of productive compound nouns, then, evolves as represented below:

13. $[N_{Possor} \# NRt_{INAL}]_{NP} > [N + CN_1]_N$

In (13), the meanings of CNs are used as lexical items with their source meaning still partially preserved, giving the productive nominal compounding as a whole a partial "compositional" (transparent) semantic structure. As the meanings of CNs get more and more bleached out (thus, also more abstract/generic) they are used with more and more lexical items to refer to their **shape** and **consistency** properties, therefrom giving rise to CN_2s. The whole path of grammaticalization can then be represented as in (14):

14. $[N_{Possor} \# NRt_{INAL}]_{NP} > [N + CN_1]_N > [N + CN_2]_N$

Thus, the system of classificatory nouns in Apurinã develops out of productive noun compounding where the possessed noun is morphologically unmarked and the possession function is marked by juxtaposition. Typologically, this system bears some resemblance to the phenomenon traditionally called class terms and found in some South East Asian languages, and can be best understood within a continuum of classification systems. Allowing for some variation, depending on the individual classificatory noun, they are closer to classifiers in terms of their semantic transparency but to gender markers in terms of their grammatical status. Finally, the analysis also illustrated how the semantic properties of such classifying nouns can be described in terms of the mapping of properties between a source and a target domains -- making use of some notions found in Lakoff (1987), Lakoff and Johnson (1986), Sweetser (1990), Gibbs (1994), Talmy (2000) among others in their studies on metaphor and semantic change. In Apurinã the source domain consists primarily of plant parts or nature elements, and next of body parts. The target domain consists primarily of manufactured elements and, to a less extent, body parts.

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ABSTRACT: A classificatory noun system in Apurinã (Arawak, Brazil) is shown to develop out of productive noun compounding, where salient meaning properties, primarily of plant parts, other nature elements and secondarily of body parts, are extended to refer to properties of other semantic domains either as part of noun compounds or incorporated in the verb. Notions from studies on *Conceptual Metaphors* are used to identify and describe three semantic domains: (i) *plant parts or other nature elements*, (ii) *body parts*, and (iii) *manufactured elements.* The domains containing the literal meaning properties (i.e. [i] and [ii]) are *source domains*, whereas the domains containing extended meaning properties are *target domains* (i.e. [ii] and [iii]). Semantic relations among the various uses of classificatory nouns form a *network of semantic mappings between source and target domains*, out of which a classificatory system based on *shape* and *consistency* emerges. On one hand, these classificatory nouns bear some resemblance to classifiers in terms of their semantic transparency, since their salient meaning properties tend to be preserved as they are extended to refer to the semantic properties of other nouns; on the other hand, they also bear some resemblance to gender systems in terms of their grammatical status, since they cannot stand by themselves as words and, in this sense, are phonologically bound forms. Finally, classificatory nouns share behavioral properties with *class terms*, well known in South East Asian languages such as Thai, except that the former but not the latter can be incorporated into the verb.
KEYWORDS: classificatory nouns; classifiers; Apurinã; Arawak.

RESUMO: Um sistema de nomes classificatórios em apurinã (aruák, Brasil) se desenvolve a partir de nomes compostos produtivos, em que propriedades semânticas, principalmente de partes de plantas ou outros elementos da natureza e secundariamente de partes do corpo, são estendidos para denotar propriedades de outros domínios semânticos formando um nome composto ou incorporado ao verbo. Conceitos baseados em estudos sobre *metáforas conceituais* permitem identificar e descrever três domínios semânticos: (i) *partes de plantas ou outros elementos naturais*, (ii) *partes do corpo*, and (iii) *objetos construídos*. Os domínios contendo o sentido literal (i.e. [i] e [ii]) constituem os *domínios fontes*, enquanto que os domínios contendo os sentidos estendidos constituem os *domínios alvos* (i.e. [ii] e [iii]). As relações semânticas entre os vários usos dos nomes classificatórios formam uma *rede de mapeamentos semânticos entre domínios fontes e alvos*, a partir do qual um sistema classificatório baseado em *forma* e *consistência* emerge. De um lado, nomes classificatórios apresentam alguma semelhança aos classificadores em termos da transparência semântica, já que suas propriedades semânticas mais salientes tendem a ser preservadas quando estendidas para denotar propriedades de outros nomes; por outro lado, eles apresentam alguma semelhança a sistemas de gênero em termos de seu status gramatical, já que eles não ocorrem sozinhos como palavras e, nesse sentido, são formas fonologicamente presas. Finalmente, nomes classificatórios de apurinã e *termos de classe* de línguas do Sudeste Asiático tais como o tailandês compartilham de várias propriedades, exceto que apenas os primeiros podem ser incorporados no verbo.
PALAVRAS-CHAVE: nomes classificatórios; classificadores; apurinã; aruák.